

"The Difference is in the Detail"



DIEDRICH COFFEE ROASTER

OWNER'S MANUAL

For Model IR-3 Floor Mount and Table Top

READ THIS MANUAL

**for important safety, installation,
operation and maintenance instructions.**

**Keep this manual with the roaster at all
times and locate it in a prominent place.**

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PREFACE

This owner's manual covers installation, operation and maintenance as well as important safeguards for your IR-3 Diedrich Coffee Roaster. Information described reflects current production and operation of the Roaster.

This manual covers all the components which make up a coffee roaster. If you have any questions about the roaster, its accessories, or the proper use of them and they are not answered in this manual contact Diedrich Manufacturing, Inc. immediately.

Over the years, Diedrich Coffee Roasters have undergone an evolutionary design process. As new technologies have become available they have been incorporated. As the demands of the modern market have changed, Diedrich Manufacturing, Inc. has found ways to meet them while maintaining the fundamental principles by which premium coffee is roasted for optimum cup quality.

The Diedrich IR Series Coffee Roasters feature a highly efficient gas-infrared heating system, which is combined with a non-perforated, high-carbon steel roasting drum to radiantly heat the coffee beans evenly and at such low temperatures that optimum roasting standards are achieved.

This manual is not necessarily intended to teach one how to roast coffee but does describe the proper techniques to operate the Diedrich Coffee Roaster.

1.0 IMPORTANT SAFEGUARDS

Proper installation, cleaning and safe operation of the coffee roaster is the owner's and operator's responsibility. Read this manual carefully for important operation, maintenance and safety information.

This owner's manual must be kept with the roaster at all times and be located in a prominent, easily accessible place. The contents of the manual, including the fire control instructions described in **Section 11 Fire Control** must be reviewed regularly by all operators of this roasting system.

All persons operating the Diedrich Coffee Roaster must be familiar with this manual and be properly trained in the safe and proper use of the roasting system. **The safe use of this equipment also requires an understanding of the basic chemistries that occur during the roasting process so that subtle warnings can be identified before critical problems arise.**

The roaster's internal compartments should be cleaned on a daily basis and more thoroughly cleaned after every 60 hours of use. More frequent cleaning may be required if chaff and residue build-up becomes excessive. Refer to Section 9.0 Cleaning for detailed instructions.

CAUTION - Always be aware of the risk of a fire. Fires are caused by failure to maintain a clean roaster and its exhaust duct system. A dirty roaster will also affect the efficiency of the roasting process. We cannot over-emphasize the importance of a safe installation that is kept clean!

A sufficient number of fire extinguishers should be located within easy reach of the roasting system. These should preferably be CO2 extinguishers with sufficient capacity for a roasting fire. Consult with your local fire marshal for recommendations on suitable fire extinguishers. You can also have a water hose accessible near the roaster. If a water hose installation is not possible, a two-gallon water sprayer is recommended. If water is used, great care must be taken to keep the water away from the electrical system.

1.0 IMPORTANT SAFEGUARDS (Continued)

Never leave the Roaster unattended while it is in operation...from start-up to shutdown. Leave the drum and blower motors running until the temperatures have dropped below 200 ° Fahrenheit (93 ° Celsius). Prior to leaving the roaster, perform all necessary post-roasting cleaning.

Never, under ANY circumstances while operating or servicing the machine, thrust a hand or arm into the roasting drum or any other access port until the roaster is switched OFF and disconnected at its electrical source. Keep clear of moving parts such as the drive chain at the rear of the roaster and the agitator arm and brushes in the cooling bin if so equipped. Injury can result from snagged, loose clothing, jewelry, hair or fingers.

Never permit an unqualified person to operate the roaster. A qualified operator will have thoroughly read this manual. All qualified operators must have a clear understanding of the proper and intended use of the equipment, roasting methods, cleaning requirements, fire suppression procedures and be aware of all safety precautions.

Keep your customers clear of the roaster when it is operating. They may not be aware of potential hazards. A barrier **must** separate the roaster from the customers.

Keep the roasting area clear and free of combustible material, such as gasoline and other flammable vapors and liquids.

Install a CO Monitor when roasting or storing roasted coffee in confined spaces due to the emission of carbon monoxide.

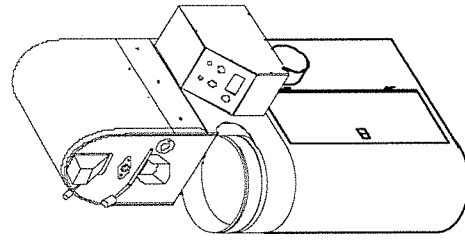
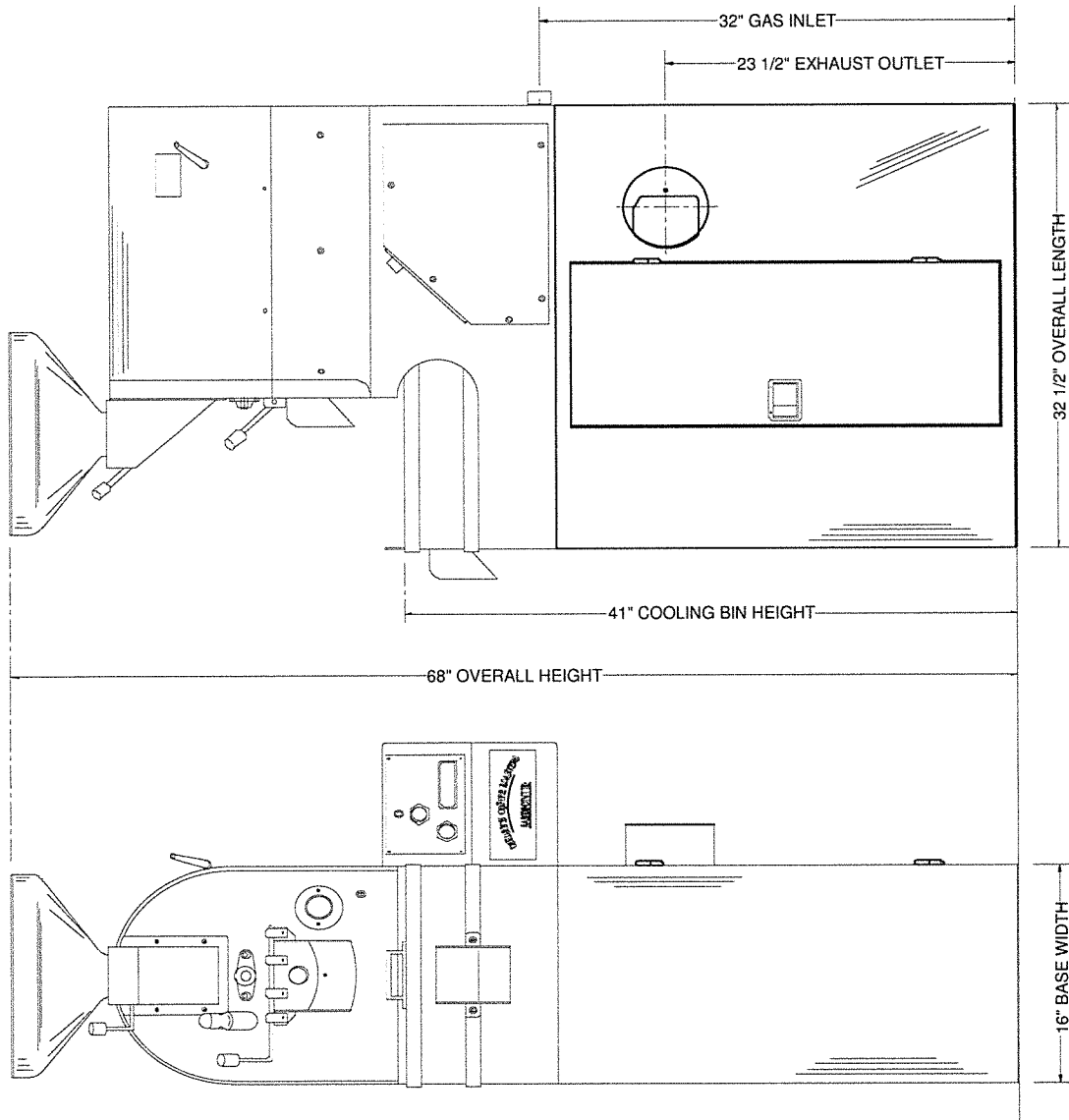
During and after the roasting, take care when touching the roaster's exterior surfaces. The upper half of the front plate, can be very hot while the lower half is usually very warm. The painted cowling encasing the roasting drum is warm to the touch during roasting. The cooling bin becomes hot when cooling freshly roasted beans.

Table A - Technical Specifications

IR Series Basic Specifications

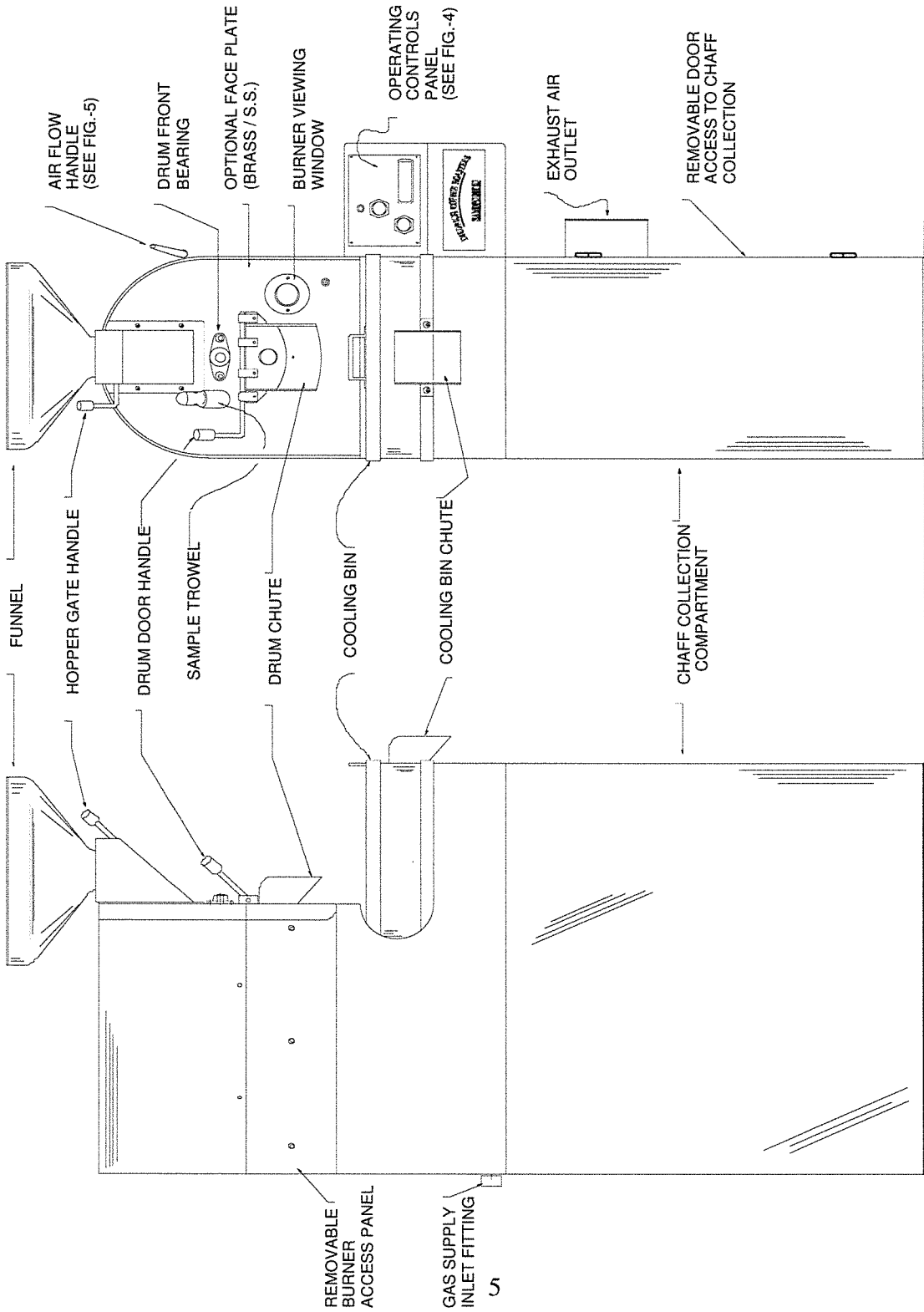
Description	Unit of Measure	Model	Model
		IR-3TT	IR-3FM
Single Roast Range	lbs	1-7	1-7
	kg	.453 - 3 kg	.453 - 3 kg
* Hourly Roast Output (maximum)	lbs	25	25
	kg	11	11
Roaster Weight Empty	lbs	263	360
	kg	120	164
Floor Bearing Weight with maximum load of beans	lbs	270	367
	kg	123	167
Floor Space Required includes exhaust air outlet	inches	38 x 35	27 x 35
	centimeters	96.59 x 88.9	68.58 x 88.9
Roaster Overall Height with funnel	inches	37.62	68
	centimeters	95.57	172.72
Roaster Overall Length with exhaust outlet	inches	32.5	32.5
	centimeters	82.55	82.55
Roaster Overall Width	inches	25.5	25.5
	centimeters	64.77	64.77
Gas Consumption (maximum rate)	BTU/Hour	12,000	12,000
	Kilowatts	3.5	3.5
Gas Consumption (actual/estimated rate)	BTU/Hour	5,838	5,838
	Kilowatts	1.7	1.7
Electrical Supply	Volts AC - U.S.A.	110	110
	Volts AC - International	220	220
Amperage	110 V AC	5.8	5.8
	220 V AC	2.9	2.9
Exhaust Duct Air Flow	Cubic Feet Minute (CFM)	132	195
	Cubic Meters Second m3/s	0.062	0.092
Exhaust Duct Diameters	inches	6	6
	centimeters	15.24	15.24

*Based on maximum load every 16 minutes at 425 degrees F (218 degrees C) for 15% weight loss.



DIEDRICH MFG.
IR-SERIES IN STORE ROASTER
TECHNICAL SPECIFICATIONS

FIGURE - 1 IR-3 FLOOR MOUNT ROASTER ELEVATION VIEW FRONT / RIGHT SIDE



FRONT END
DIEDRICH MFG.
 IR-SERIES IN STORE ROASTER
 TECHNICAL SPECIFICATIONS

LEFT SIDE

FIGURE - 1a IR-3 FLOOR MOUNT ROASTER ELEVATION VIEW FRONT / LEFT SIDE

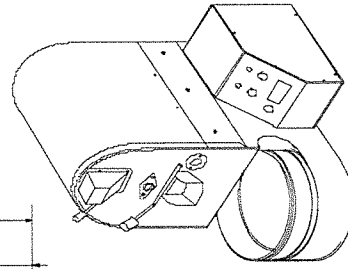
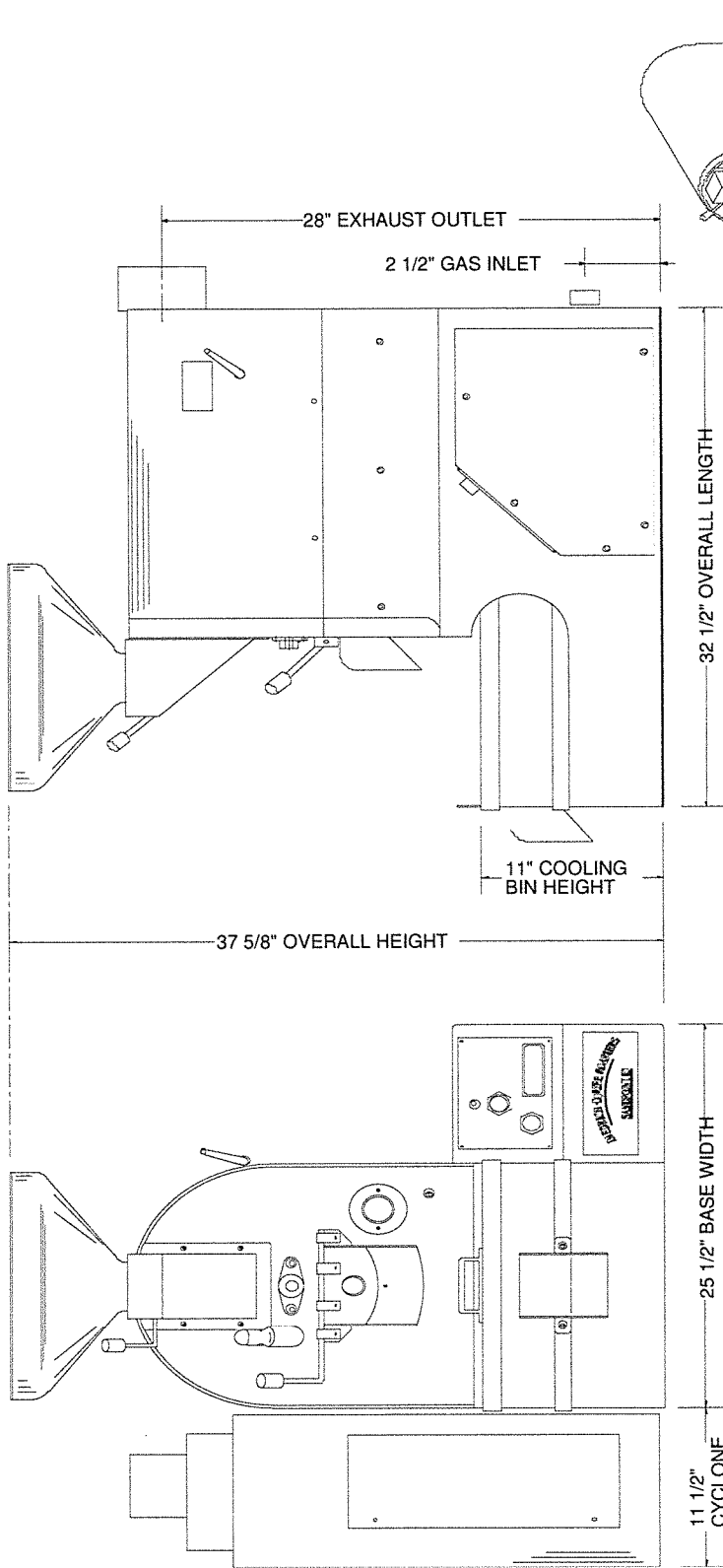


FIGURE - 2 IR-3 TABLE TOP ROASTER ELEVATION VIEW FRONT / RIGHT SIDE

DIEDRICH MFG.

IR-SERIES IN STORE ROASTER
TECHNICAL SPECIFICATIONS

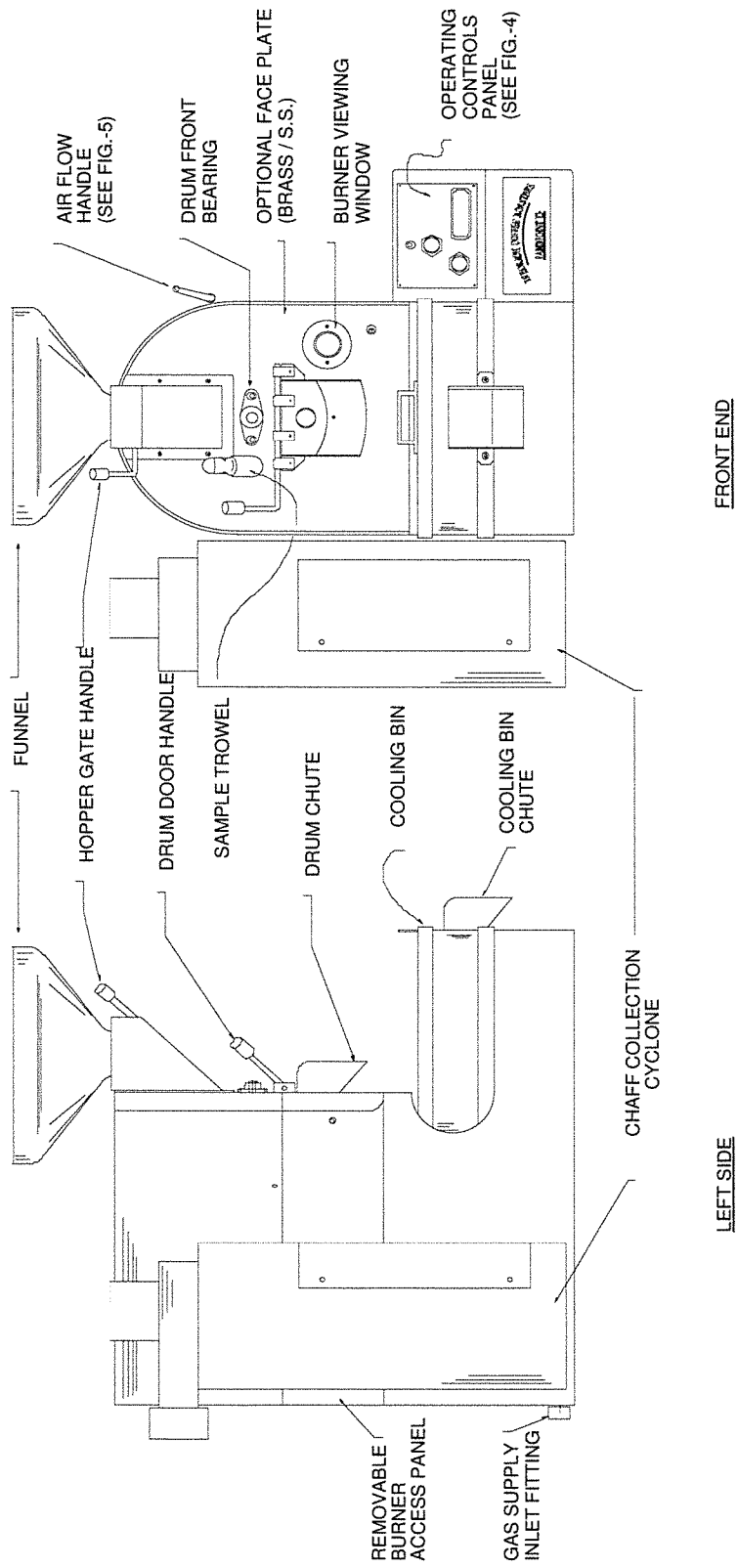


FIGURE - 2a IR-3 TABLE TOP ROASTER ELEVATION VIEW FRONT / LEFT SIDE

DIETRICH MFG.
 IR-SERIES IN STORE ROASTER
 TECHNICAL SPECIFICATIONS

2.0 INSTALLATION INSTRUCTIONS

IMPORTANT: The Diedrich Coffee Roaster is designed and manufactured for ease of installation and simplicity of operation. However, professional installation is required. The installer should read the instructions completely before starting the installation to save time, ensure good performance and warranty protection.

2.1 RECEIVING AND UNPACKING SHIPMENT

When the roaster is received, immediately check for crate damage. Do not refuse shipment if damage is evident. Make notes of such on the appropriate shipping forms. Uncrate and look for damage to the roaster i.e., dents, scratches or chipped paint, and if found, immediately file a claim with the freight carrier. Photo documentation of damaged areas is suggested!

In your shop or restaurant, if possible, locate the roaster where its operation and coffee roasting can be observed in natural light or under consistent light conditions. To detect the true color changes which beans undergo during roasting, natural light is essential for best results. For consistency in roasting the use of a full spectrum fluorescent light to simulate the full color of sunlight is recommended.

2.2 LEVELING THE COFFEE ROASTER

The roaster must be installed on a flat, non-combustible floor. A combustible floor requires a fireproof insulation on the floor areas occupied by the roaster. The floor must meet load-bearing requirements of local codes for commercial buildings.

The gross weight of the Floor Mount IR-3 with a maximum load of coffee beans is 400 pounds (182 kgs).

The gross weight of the Tabletop IR-3 with a maximum load of coffee beans is 300 pounds (136 kgs).

It is recommended that the floor mount model be bolted to the floor to keep the roaster stable. About two-thirds of the weight of the roaster is in the upper portion of the machine.

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.2 LEVELING THE COFFEE ROASTER (Continued)

Careful leveling of the roaster is critical not only for performance, but for safety. Use a carpenters level.

For side-to-side leveling, set level across the top of the cooling bin. Shim roaster as required to level.

For front-to-back leveling, set level lengthwise on top of cooling bin (at 90° from side-to-side leveling). Shim roaster as required to level.

Use only non-combustible shims under the roaster.

The tabletop model is leveled with the installed leveling feet.

2.3 PROXIMITY TO WALLS

Due to the intended use of the roaster, clearances to combustible or non-combustible walls or counters listed below must be followed to ensure adequate cooling of the roaster and adjacent walls. Failure to abide by these clearances will void the manufacturer's warranty.

Clearance from the roaster to adjacent walls, counters or other appliances must be 18 inches (46 cm) or greater. No cabinets or storage areas are to be installed over the roaster or near the ducting.

Clearances required for Class A positive pressure grease ducting will vary among manufacturers. Diedrich Manufacturing, Inc. recommends minimum clearances of 6-inches (16 cm) from non-combustibles and 15-inches (38 cm) from combustibles.

Make sure all controls, access doors and removable panels on the roaster are accessible and without restrictions to allow complete opening and closing movements.

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.4 GAS INSTALLATION

Use a locally licensed heating contractor or the gas company for the gas line installation.

Gas installation must conform with local, city, county, municipality, province, state, or the countries building codes, regulations, or laws. It is imperative that your licensed gas contractor is familiar with which building codes, regulations or laws apply.

The gas supply line must be sized to accommodate the total length of the run and must be sized to accommodate any required elbows; this dictates that the line must be no less than the roaster's inlet size. See paragraph 2.4.4 for volume determinations. If needed, use a reducer fitting. All pipe used for the installation must be at least Schedule 40 pipe. Sealant on pipe joints must be resistant to liquid propane.

A water trap to collect condensation and loose particles should be installed in the last vertical gas supply line upstream from the Roaster.

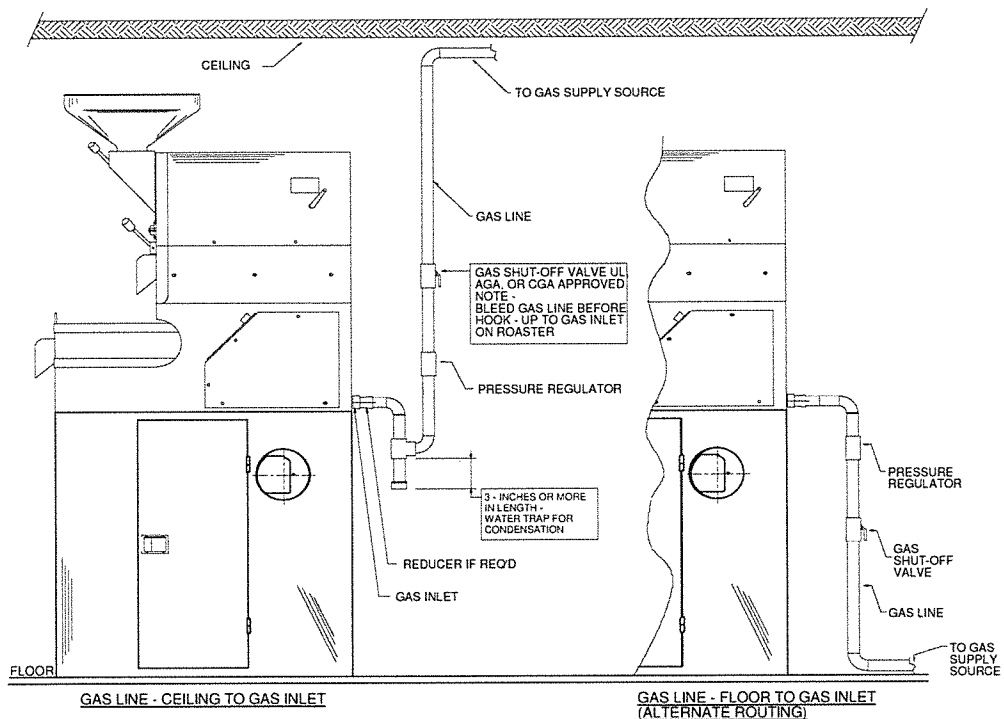


FIGURE - 3 INSTALLATION HOOK-UP FOR GAS LINE

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.4 GAS INSTALLATION (Continued)

2.4.1 SAFETY SHUT-OFF VALVE

A safety shut-off valve must be installed in the gas supply line close to the roaster and pressure regulator in a location where it can be reached quickly in an emergency. In an emergency any operator, qualified or not, can turn off the gas flow to the roaster. Valve must be approved by UL in USA, AGA in Australia, CSA in Canada, and CE in the European Union.

2.4.2 PRESSURE REGULATOR

The roaster's factory installed regulator is preset to the pressure requirements of the burners. **Warning!** The regulator may experience damage if the incoming line pressure to the roaster exceeds 14-inches WCL(35 mbars). A pressure regulator will be required on the incoming gas supply line between the safety shut-off valve and the roaster's gas inlet (see Figure-3) if the incoming line pressure exceeds 14-inch WCL (35 mbars). Diedrich Manufacturing recommends 7 to 8 inches WCL (17 – 19 mbars) for natural gas and 11 to 13-inches WCL (27-29 mbars) for LP at the roasters gas inlet for an optimally running roaster.

Note: The WCL measurement on the manometer (which is located on the top of the coffee roaster) should read 6-inches WCL (15 mbars) for natural gas and 10-inches WCL (25 mbars) for liquid propane when the burners are set at maximum gain. The reason the manometer WCL readings are lower than the above paragraph's recommended readings is due to the fact that the manometer is located on the other side of the gas valve.

2.4.3 FLEXIBLE CONNECTIONS

If the roaster is to be installed with flexible couplings and/or quick-disconnect fittings, the installer must use a heavy-duty, certified commercial flexible connector of at least 1/2inch (1.3cm) NPT (with suitable strain relief

Before plumbing hook-up, double-check any installer supplied pipes, shut-off valve and pressure regulator for dirt particles, threading chips or any other foreign matter. Use compressed air for cleaning. Any particles of foreign matter will clog burner orifices when gas pressure is applied. Pressure test the gas piping before connecting to roaster.

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.4 GAS INSTALLATION (Continued)

2.4.4 GAS INSTALLATION CHECK-OUT

Sizing of the gas supply line to the roaster is critical for proper performance. Ensure a licensed gas contractor or the gas company sizes the gas supply line in accordance with the Maximum BTU demands of the roaster and any other appliances connected to the gas line. Check the roaster and/or afterburner's data plaques for this information. Also, take into account any other appliances such as water heaters, furnaces, etc. when sizing the gas line.

The roaster must be isolated from the gas supply line by closing the safety shut-off valve during any pressure testing of the gas supply line.

Before connection to the roaster, open the gas shut-off valve to bleed air out of the gas supply line. This ensures prompt ignition of the burners the first time the roaster is started. After bleeding, close shut-off valve and connect piping to roaster.

IMPORTANT: When the gas installation is complete, have your contractor check the gas pressure at the point where the gas line connects to the roaster. The roaster and/or afterburner and any other appliances connected to the gas line should be running at the full flame setting for this test. The pressure at the roaster must be in compliance with paragraph 2.4.2.

Before placing the roaster in operation, always check connections for gas leaks with a soapy water solution or other acceptable method. **DO NOT USE AN OPEN FLAME TO CHECK FOR LEAKS!**

Do not remove permanently affixed labels, warnings or rating plates from the roaster or from its components, as this will void manufacturer's warranties and create hazardous operating conditions.

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.4 GAS INSTALLATION (Continued)

2.4.5 WARNING LABELS

WARNING
IF THE INFORMATION IN THIS DIEDRICH ROASTER OWNERS MANUAL IS NOT FOLLOWED EXACTLY, A FIRE OR EXPLOSION MAY RESULT, CAUSING PROPERTY DAMAGE, PERSONAL INJURY, OR DEATH.

1. Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this roaster or any other appliance.
2. **WHAT TO DO IF YOU SMELL GAS:**
 - *Do not try to light any appliance.
 - *Do not touch any electrical switch; do not use any phone in your building.
 - *Immediately call your gas supplier from a neighbor's phone.
 - *Follow the gas supplier's instructions.
 - *If you cannot reach your gas supplier, call the fire department.
3. A qualified installer, service agency, or the gas supplier must perform installation and service.

WARNING

If this roaster is not installed, operated and maintained in accordance with the Diedrich Roaster Owner's Manual, you could be exposed to substances in fuel or from fuel combustion which can cause death or serious illness and which are known to cause cancer, birth defects or other reproductive harm.

For example, benzene is a chemical which is a part of the gas supplied to the cooking product. It is consumed in the flame during combustion. However, exposure to a small amount of benzene is possible if a gas leak occurs. Formaldehyde and soot are by-products of incomplete combustion. Properly adjusted burners with a bluish rather than yellow flame will minimize incomplete combustion.

Note: These warning labels should be copied and posted in a prominent location for use in case the user smells gas.

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.5 ELECTRICAL INSTALLATION

Use a locally licensed electrician for the electrical installation.

Electrical installation must conform with local, city, county, municipality, province, state, or the countries building codes, regulations, or laws. It is imperative that your licensed electrical contractor is familiar with which building codes, regulations, or laws apply. The roaster must be hard-wired (pipe conduit with grounding wire) from the electrical source to the roaster. For those countries with 115 Volts 60 Hertz electrical supply the circuit must be a polarized 20 amp dedicated circuit. For those countries with 230 Volts 50 Hertz electrical supply the circuit must be a 10 amp dedicated circuit.

WARNING! If the electrical source is not grounded or if the polarity is reversed, a severe shock hazard will exist. All components in the roaster are grounded electrically to the roaster frame.

It is recommended that the power cord be plugged into an outlet with a safety disconnect switch.

2.6 ROASTER EXHAUST DUCTING

Review applicable city, county, state or federal building codes. Class A Positive Pressure Grease Ducting is required from the roaster's exhaust outlet to the outside air.

USE ONLY DOUBLE-WALL, POSITIVE PRESSURE PS GREASE DUCTING OR SINGLE-WALL, WELDED SEAM 18-GAUGE (1.3mm thick) STEEL DUCTING.

WARNING! DO NOT USE CLASS B OR SPIRAL-WRAP DUCTING UNDER ANY CIRCUMSTANCES.

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.6 ROASTER EXHAUST DUCTING (Continued)

DIEDRICH MANUFACTURING, INC. RECOMMENDS THAT CLASS A POSITIVE PRESSURE GREASE DUCTING IS INSTALLED WITH CLEARANCES TO NON-COMBUSTIBLES OF AT LEAST 6" (15.2 CM) AND AT LEAST 15" (38 CM) TO ALL COMBUSTIBLES

2.6.1 ROASTER EXHAUST DUCTING DESIGN

The proper design of the exhaust duct system is critical to the performance and safe operation of the roaster. The ducting must be of sufficient diameter to accommodate the cubic feet per minute (CFM) cubic meters per hour (CMH) of airflow for a particular model of roaster as indicated in the Table A (Technical Specifications) on page 3. The system should have no more than ¼ -inch maximum internal static pressure (WCL) (.62 mbars) for proper airflow requirements. Restricted air flow presents a severe fire hazard. Consult the separate Ducting Fact Sheet shipped in the package containing this operations manual.

A faulty design of the exhaust ducting system can result in a restricted airflow which, in turn, can cause longer roasting times, premature build-up of residue, slower cool-down times and a system that is difficult to clean as well as presenting a **SEVERE FIRE HAZARD**. Restricted airflow additionally causes a build-up of flammable gas in the roasting drum and the chaff collection system.

The ducting system must be suitable for 1100°F (593°C) continuous and 1400°F (760°C) intermittent operating temperatures. The ducting must be installed with clearances compatible with the ducting manufacturer's specifications. When utilizing positive pressure grease ducting, Diedrich Manufacturing recommends a minimum of 6 inches (15.2 cm) to non-combustibles and 15 inches (38 cm) to combustibles. When using single-wall welded 18-gauge (1.3 mm) steel ducting, Diedrich recommends a 15 inch (38 cm) clearance to non combustibles and a 25 inch (63.5 cm) clearance to combustibles. (If the ducting manufacturer recommends greater clearances, please adhere to their recommendations.)

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.6.1 ROASTER EXHAUST DUCTING DESIGN (Continued)

Note: Always check with local codes due to different regulatory requirements. Wherever possible, the ducting should be installed in a straight, vertical line from the roaster, to and through the roof.

Eliminate or minimize the number of elbows as they reduce the exhaust airflow efficiency from the roaster's blower. When using elbows, make gradual turns. Minimize the use of 90 degree elbows. Each 90-degree elbow effectively increases the duct length by 5-10 feet (1.53 – 3 m). To obtain adequate airflow, use 45-degree elbows to construct gradual turns **if the space is available**.

If the duct run is longer than 20-25 feet (610 – 762 cm), the duct diameter size may need to be increased by at least one-inch diameter after the first 10 feet (305 cm) to improve air flow performance. A booster fan may be required at the end of the duct run. To be sure, consult an airflow engineer.

Where ducting changes direction, use a T or Y-fitting (capped) rather than an elbow to make the duct system more accessible for cleaning and for removal of exhaust residue.

2.6.2 EXHAUST DUCT SURROUNDINGS

Class A Positive Pressure Chimneys are primarily intended to be used in non-combustible surroundings and installed unenclosed. **Do not enclose the ducting in a wood chase or passageway constructed with combustible material.**

Where the duct extends through any drop ceiling or story of a building above that in which a roaster is installed, it must be enclosed with walls of non-combustible construction having a fire resistance rating of not less than one hour for buildings of two or three stories in height. Greater requirements are required for taller buildings. Check with duct manufacturer requirements or local codes.

Penetrating a combustible roof requires the use of a ventilated roof thimble or the appropriate roof support assembly required for combustible roof penetrations by the particular manufacturer of the duct being used.

2.0 INSTALLATION INSTRUCTIONS (Continued)

2.6.2 EXHAUST DUCT SURROUNDINGS (Continued)

Most Class A Positive Pressure Vent Systems weigh a considerable amount. Make certain that the duct is properly supported, that component parts are not over-loaded and that adequate auxiliary structural members are used.

Note: The weight of the exhaust system must not, under any circumstances, be supported by the roaster.

2.6.3 RECOMMENDED DUCTING SOURCES

See current Diedrich Manufacturing Ducting Fact Sheet enclosed with this Operators Manual.

2.7 INSTALLATION INSPECTION

After completing hook-up of the exhaust duct system, gas and electrical connections, check the operating control panel. Be sure all switches and the flame control are in the "OFF" position. Turn one switch on at a time.

Note: After completing the installation of the Roaster, locate two or more fire extinguisher near the roaster and readily accessible by the operator. Consult with your local fire marshal for recommendation of an appropriate type fire extinguisher. See paragraph 10.1.

WARNING!

The completed roaster installation MUST BE INSPECTED for compliance with these Diedrich installation instructions by local city or county building inspectors and by fire inspectors BEFORE OPERATING THE ROASTER. Failure to have these inspections performed may invalidate the warranty and will relieve Diedrich Manufacturing Incorporated of any liability associated with the installation and use of your machine.

3.0 INITIAL START-UP (for drum seating - read carefully)

Note: Sometimes during shipment and installation, a slight shifting of the roasting drum and end plates may occur to disturb alignment. Check for misalignment. Adjust drum seating as follows:

- 3.1 Place air control handle in the “50-50” (mid) position. Set blower and drum switches to “ON” positions. Flame control remains “OFF”. Listen for rubbing sounds. If rubbing is heard, stop operation and contact Diedrich Manufacturing, Inc., for instructions.
- 3.2 If no rubbing sound is heard with drum still rotating, set gas switch to “ON”. Move flame control to obtain a low flame setting, after several seconds you will hear the igniter clicking. The ignition system has a 10 second lock out. If the pilot does not ignite after 10 seconds turn the gas switch off. Turn the gas switch back on and repeat this procedure of turning the gas on for 10 seconds then off until the pilot lights. If the gas line was not sufficiently bled this sequence may need to be followed for two or three minutes.

Note: The first time the pilot ignites, extra time may be necessary to allow air to bleed out of the gas line. Following the ignition of the pilot, two to three minutes may be required to allow the two infrared burners to ignite for the first time. Watch through the view window for burner ignition.
- 3.3 Move flame control to obtain a medium flame setting while the drum continues to rotate. If a rubbing sound is heard, stop operation and contact Diedrich Manufacturing, Inc., for instructions.
- 3.4 Move flame control to a high flame setting and watch the digital temperature unit on the control panel. Let the roaster warm to 415° F, (213° C). If no rubbing sound occurs up to 415°F, the initial warm-up is completed and the roasting can commence. If a rubbing sound continues, stop operation and contact the Diedrich Manufacturing Technical Support Department for instructions.

Note: *During initial warm-up, DO NOT let roaster heat exceed 415° F (213°C) without coffee beans in the roasting drum.*

3.0 INITIAL START-UP (Continued)

- 3.5** Check the exhaust system for leaks. The vent that **MUST** be installed is a positive pressure system and if leaks are present, the integrity of the system is compromised. If leaks are present, the ventilation contractor must be notified to correct the situation before proceeding to the next step.

This completes the initial start-up procedure.

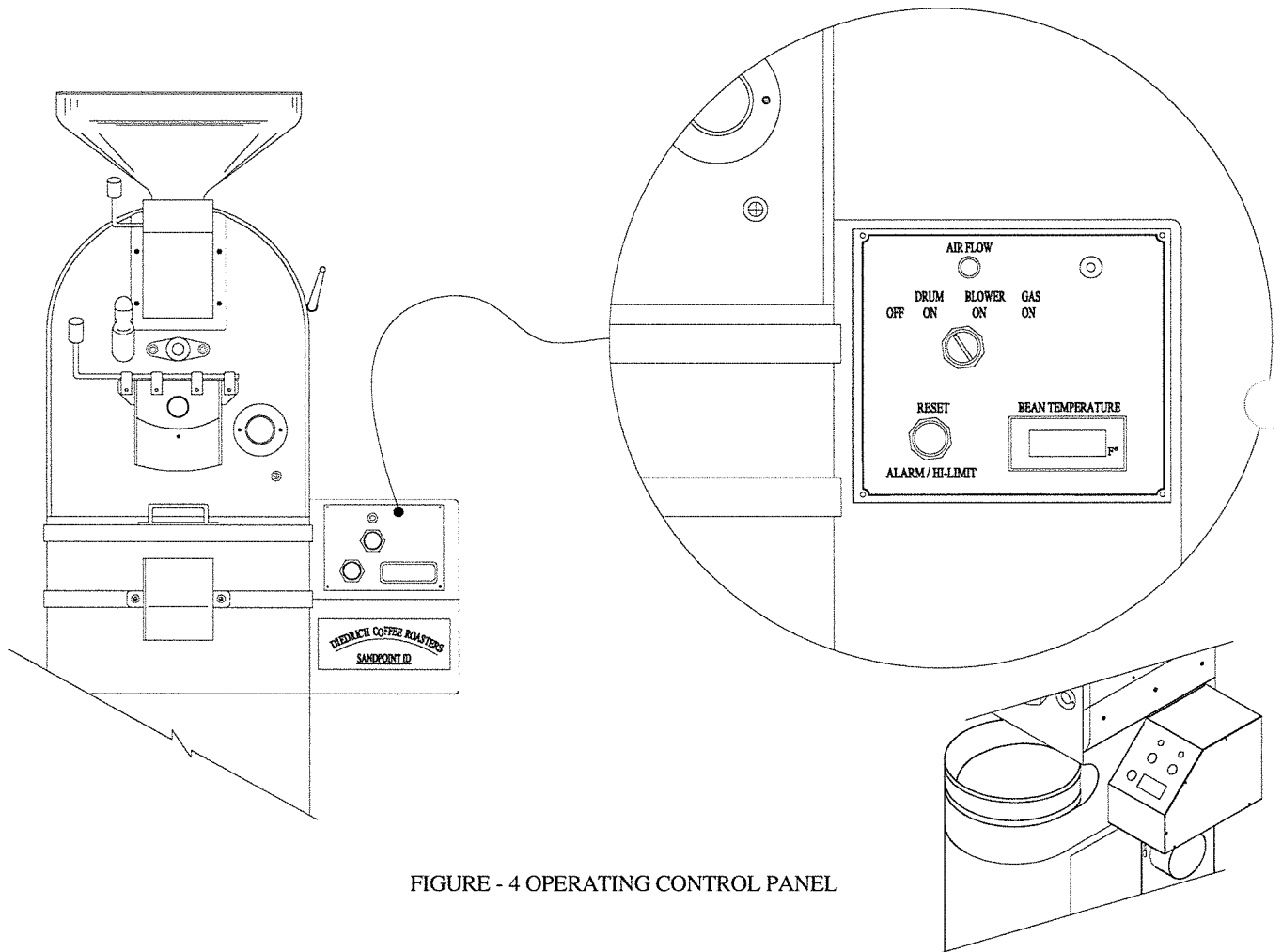


FIGURE - 4 OPERATING CONTROL PANEL

4.0 SEASONING THE ROASTING DRUM

Before you roast coffee for customer consumption in a new roaster, the drum should be seasoned to get it impregnated with coffee oil. For this seasoning process, use an inexpensive coffee. Do not use Robusta coffee as it does not emit enough oil for the seasoning process nor will you be able to learn from the experience or get the proper feel for the roasting process.

The new drum requires from 5-10 seasoning roasts to become properly oiled. Each seasoning roast requires about 3 pounds (1.4 kilos) of coffee, enough to fully cover the drum's lower surfaces. After completion of each seasoning roast, discard the roasted coffee after it cools. It may take additional roasts to achieve the best flavor from your new roaster.

This drum seasoning process will give you the opportunity to become familiar with the controls on your roaster and the roasting process itself.

- 4.1 To start the seasoning, preheat the roaster to 400° F (204°C). Follow the initial steps for setting the controls noted in the following paragraph **5.0 Start-Up**. After preheating, load the green coffee beans into the funnel, through the hopper gate and into the drum.
- 4.2 As the roast is started, move the air control handle from the "50/50" (mid) position to the "THROUGH COOLING BIN" position. See Figure 5. The coffee will change in color from green to a pale yellow. During this progression, look through the drum door view window. You will start to see chaff, the bean's outer skin, separating from the coffee bean. Unwashed coffees have considerably more chaff than washed coffees and decaf coffees have almost no chaff.
- 4.3 As the coffee develops from the green to the yellow stage and chaff is visible through the view window, the air control handle must be temporarily moved to the "THROUGH ROASTING DRUM" position so that the increased airflow will remove the chaff from the roasting drum. Leave the air flow control handle in the "THROUGH ROASTING DRUM" position, for a minute or so, until the coffee becomes clean and free of chaff.
- 4.4 When the coffee is free of chaff, return the air control handle to the "THROUGH COOLING BIN" position. See Figure 5. This procedure must be repeated once or twice during the early stage of the roasting. If the chaff is not pulled out of the drum by the increased air flow at this stage of the roast (before it is broken up and soaked with oil), it will become more difficult to separate from the beans; even the increased air flow through the drum during the latter part of the roast may not be sufficient to clean the coffee.

4.0 SEASONING THE ROASTING DRUM (Continued)

- 4.4** Once the chaff is broken up and soaked with the coffee oils, even the maximum air flow through the drum will have difficulty removing the chaff and you will have chaff in the cooling bin. As a result, the compartment below the cooling bin screen will require more frequent cleaning.
- 4.5** When the coffee reaches the yellow stage 280°F (213°C), the airflow control handle must be moved to the “50/50” (mid) position. As the coffee reaches the yellow stage, the moisture in the coffee that was a good conductor of heat early in the roast, is now turning to steam. At this stage in the roast, the air flowing through the roasting drum becomes a more important and uniform heat medium.

The roast will progress from the yellow to the cinnamon color as the coffee begins to expel carbon dioxide (CO₂) gas.

- 4.6** After the cinnamon color stage of the roast is reached, the coffee will start its first cracking. It is important to move the airflow control handle to the “THROUGH ROASTING DRUM” position for the remainder of the roast. See Figure 5.
- 4.7** Let the roast progress in the full roasting stage until the coffee develops through the second crack, and oil begins to appear at the tips of the beans.

When you begin to notice the first traces of oil, turn the flame control “OFF”. Let the coffee roast in its own liberated heat until the beans are fully oiled and almost black. At this point of the roast, with good lighting, you should still see some brown in the coffee. When the coffee is almost black and fully oiled, discharge the coffee into the cooling bin, while moving the air control handle to the “THROUGH COOLING BIN” position. See Figure 5.

As the coffee reaches a temperature of 340°F (171°C) the chemical changes in the coffee start an exothermic reaction (the chemistry creates its own heat). This exothermic reaction continues through the remainder of the roast. The high limit system turns the gas off at 465°F (240°C) but the temperature continues to rise due to the exothermic heat. If the coffee is not removed from the drum at 500°F(260°C) the coffee may ignite even though the flame was turned off at 465°F(240°C).

4.0 SEASONING THE ROASTING DRUM (Continued)

When the coffee temperature reaches 465°F (240°C) the high limit automatically turns off the gas flow to the burners and activates the high limit alarm. After the temperature drops to 450°F (232°C), press the high limit reset button on the control panel to restore the gas flow and re-ignite the burners and silence the alarm.

- 4.8** Load the next batch of green beans into the drum. After the coffee is in the drum, reset the high limit alarm and turn on the flame to start the next roast. Repeat this complete dark roasting cycle (18-20 minutes) 5-8 times then start to develop lighter (15-18 minutes) roasts. This procedure will properly season the roasting drum.

This completes the procedure of seasoning the roasting drum.

5.0 START-UP (for Roasting)

Unlike other flame heated roasters, the Diedrich IR Series Roasters use efficient infrared, gas-fired burners to produce radiant heat. This heat is directed at the roasting drum as well as the heat exchangers to produce the hot air required for the roasting process. The heat from the heat exchangers is then directed to the roasting drum and transferred by conduction to the tumbling coffee beans.

- 5.1** Place air control handle to the “50/50” (mid) position. See Figure 5.

- 5.2** Set blower and drum switches to “ON”.

Note: The heating system is wired through the blower and drum motors so that both must be on before the gas system is activated.

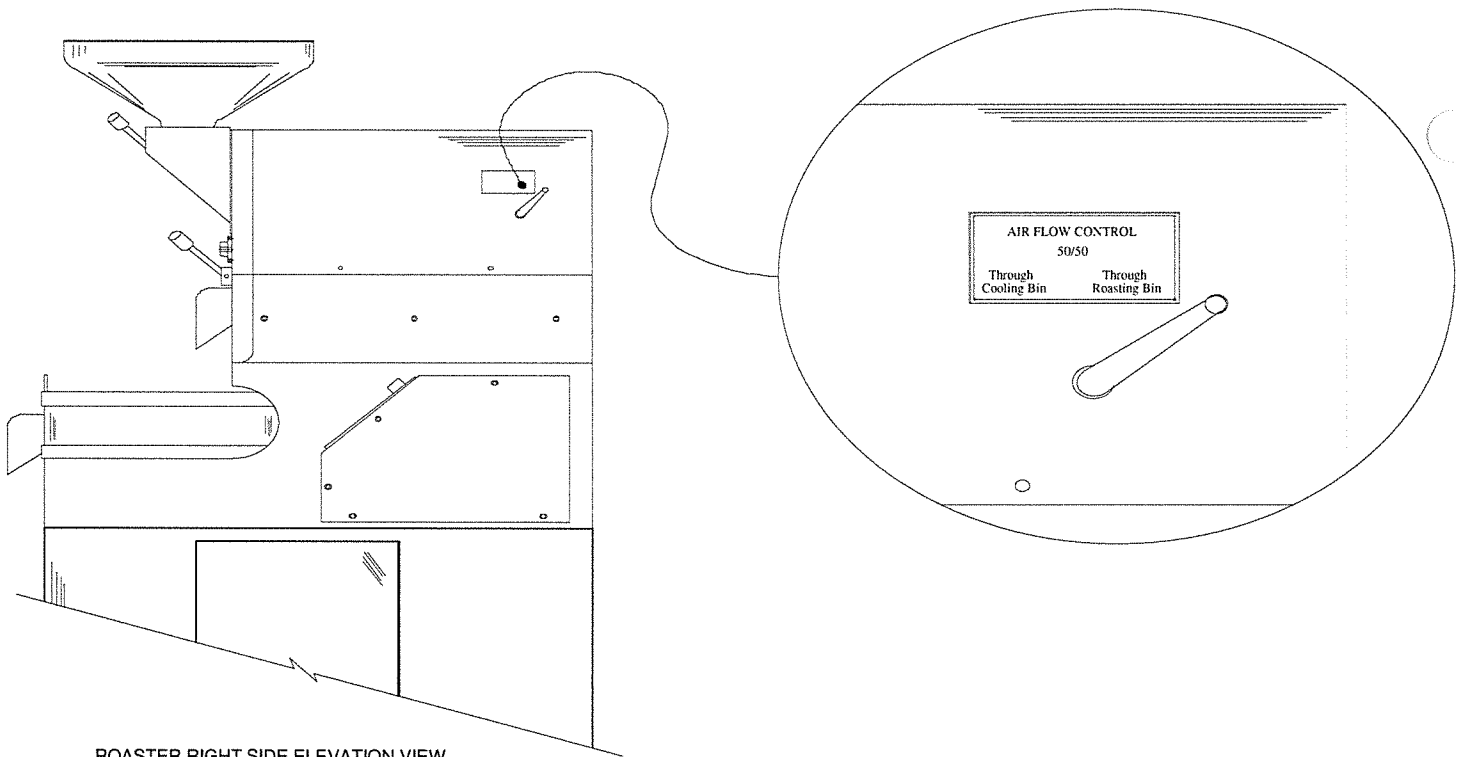
- 5.3** Set gas switch to “ON”.

- 5.4** Move flame control to “HIGH” (temperature) setting for warm-up. Watch through lower front Pyrex window for burner ignition.

- 5.5** After burner ignition, move the air control handle from “50/50” (mid) to “THROUGH COOLING BIN” position. See figure 5. The handle remains in this position throughout the early part of the roast.

- 5.6** Preheat the empty drum until the temperature indicates 415° (213°C). The digital temperature unit's thermocouple is mounted on the back of the roasting drum. During the initial start-up the temperature reading indicates the air temperature inside the empty drum, not the higher temperature of the drum's metal surfaces, the latter a corresponding 400-450 ° Fahrenheit (204-232 ° Celsius).

This completes the Start-Up (for roasting) procedure.



ROASTER RIGHT SIDE ELEVATION VIEW

FIGURE 5 AIR FLOW CONTROL PANEL

6.0 ROASTING FOR CONSUMPTION

These instructions explain how to operate the roaster. It is not an attempt to teach all the subtleties and proper techniques of roasting the many different varieties of coffee beans. For this, Diedrich Manufacturing, Inc. offers monthly roasting classes.

Recommended roasting times are from 14-15 minutes for a light roast, and 15-18 minutes for a darker roast, depending on the type of beans. If the beans roast too fast, reduce the flame during the roast. The temperature of the roasting system (comprised of the coffee beans, roasting drum, and end plates) reacts slower than the flame adjustments. So do not expect a quick temperature change when the heat level is changed.

By using the sample trowel to obtain samples, you can observe the change in bean color and its state of development during roasting. By referring to a set of previously roasted bean samples or color tiles, you can develop a consistent roast for current and/or future roasts

Sampling of beans should be consistently viewed under *a full spectrum natural fluorescent lamp*, regardless of day or night, to maintain a consistent sample comparison. Refer to paragraph 2.1.

6.1 After the roaster's empty drum has been preheated to a thermometer reading of 415°F (213°C) temperature (see paragraph 5.6 preceding), use the funnel to load the green beans into the hopper. **Never allow the beans to sit for any length of time in the hopper.** In this area of the roaster the metal becomes very hot and will result in pre-roasting, uneven roasting or even scorching of the beans. If you exceed 415°F (213°C) when first warming up the roaster, most coffees will scorch.

Move the hopper gate handle up to release the green beans from the hopper into the drum. Move the handle down to close the hopper gate. If the hopper is not closed after loading, heat will be lost and roasting times will be longer.

6.2 Adjust the flame to an appropriate setting for the size of the batch being roasted. The larger the batch, the greater the heat required and the higher the flame can be raised without accelerating the roast times.

6.0 ROASTING FOR CONSUMPTION (Continued)

- 6.3** To start the roasting process, move the air control handle to the “THROUGH COOLING BIN” position. This splits the airflow, moving 20% through the drum and 80% through the cooling bin. This allows sufficient airflow through the drum to gently assist in the heating process without drying out the coffee excessively. The Diedrich Coffee Roaster utilizes the moisture that is present in the green coffee to assist in the conduction of heat to the center core of the green coffee bean.

Thus, we do not like to force large volumes of hot dry air through the coffee which, in turn, will dry the coffee out excessively. Our philosophy is to allow the beans to absorb heat at their own natural absorption potential, as various types of coffee have different weight densities and absorb heat differently.

- 6.4** Watch through the discharge gate window for the separation of chaff from the beans. Move the air control handle to the “THROUGH ROASTING DRUM” position. This changes the airflow split to 70% through the drum and 30% through the cooling bin. This increased flow of air through the drum exhausts the chaff which is shedding from the beans out of the drum.

Leave the air control handle in the “THROUGH ROASTING DRUM” position until the coffee appears clean. It is important to get the chaff out of the drum at this early stage, before it gets broken up and soaked with oil. It is relatively easy for the air to pick the chaff up when the particles are big and light but more difficult later in the roast.

This chaff removal procedure is very important especially when working with coffee varieties that have very heavy chaff coatings. Decaf coffee has no chaff on the exterior of the bean, so this procedure becomes unnecessary.

- 6.5** Between 45-60 seconds when the beans are fairly free of chaff, move the air control handle back to the “THROUGH COOLING BIN” position. Leave the handle in this position until the beans reach a yellow color.

The yellow color of varietal coffees is an off-shade of orange for decaf coffees. This is a stage of roast that is easy to identify, so it makes a good time reference.

6.0 ROASTING FOR CONSUMPTION (Continued)

- 6.5** You should be into the roast six to seven minutes when the coffee reaches this yellow color. If you are at six minutes, but far from the yellow color, the coffee requires more heat. If you are at four minutes and the coffee is already turning yellow, you need to reduce the heat.
- 6.6** When the beans have reached the yellow color, move the airflow control handle to the “50/50” (mid) position until the beans reach a cinnamon brown color at 370°F (188°C).

The cinnamon brown color is another checkpoint that is easily identifiable. You should reach this color at 13-14 minutes into the roast. If you hit the yellow stage at the right time, you should be fairly close, but fine-tuning of the heat may be necessary at this point.

As the beans reach the cinnamon brown color, the chemical changes in the coffee start to produce a large volume of carbon dioxide (CO₂) gas. This gas will pressurize the roasting drum if the airflow is not increased. Normally, a pressurized roasting vessel is the most efficient heat transfer medium, but for coffee, a pressurized roasting drum will hinder bean development. As more airflow through the drum is needed, move the air control handle to the “THROUGH ROASTING DRUM” position.

The darker the roast, the more smoke is produced. This requires a greater airflow to keep clean air moving through the drum. After about 15 minutes of roasting time, observe the gradual color change of the beans from cinnamon brown to brown. Use the sample trowel to obtain sample beans to observe bean development.

Soon after the beans have reached the cinnamon brown color, they will come into the first crack. This is the most significant stage of bean development. At this stage, the beans fully open up, and for a lighter roast, the roasted coffee may be ready to release into the cooling bin.

All coffees should be roasted at least to this stage. Now the roast progresses very quickly. The operator should pay close attention to the coffee. Frequent sampling is most important. *These last few minutes are very critical as the bean development accelerates very rapidly.* While learning to roast, it may be advisable to lower the heat to slow down this stage of the roast.

6.0 ROASTING FOR CONSUMPTION (Continued)

6.7 When the coffee reaches this final stage of roast, prepare to discharge the roasted coffee into the cooling bin. Turn the agitator motor “ON” (if your IR-3 is equipped with an agitator) and move the air flow control handle to the “THROUGH COOLING BIN” position and turn the flame “OFF”. Then, all that remains is to discharge the coffee into the cooling bin.

WARNING! NEVER LEAVE THE FLAME ON WITHOUT COFFEE IN THE ROASTING DRUM.

After the coffee has been in the cooling bin for a minute or so, turn off the agitator and spread out the coffee. With the agitator turned off the air can find a path through the coffee. The air is hindered if the coffee is in motion. This will allow the coffee to cool faster.

While the drum discharge gate is open, wipe clean the viewing window. It is much easier to clean residue from the window while it is hot rather than letting the residue bake on and harden during the cooling.

Note: After completing the first roast, the drum metal temperature will be close to the same temperature as indicated on the digital temperature unit. This allows the next roast to be started immediately.

When the beans have cooled to room temperature, position a container under the cooling bin chute, turn on the agitator if equipped, and discharge the beans out of the cooling bin. Set agitator switch to “OFF”.

Note: At any time during the roasting process you notice excessive smoke in the room, smoke coming from the sample trowel port, or after roasting, the discharged beans require longer cool down times than usual, check for the following:

1. An excessive build-up of residue throughout the airflow system within the roaster
2. An excessive build-up of residue in the exhaust ducting

If, at any time during roasting, these abnormalities occur, inspect the roaster and ducting for probable cause and take immediate action to rectify the situation. Refer to Section 9.0 Cleaning.

This completes the roasting procedure.

7.0 SHUT DOWN (after last roast)

- 7.1 Set gas switch to "OFF".
- 7.2 After the roasted beans in the cooling bin have cooled to room temperature, move the air flow control handle to the "THROUGH ROASTING DRUM" position to cool the drum and roasting sections of machine. The roasted and cooled beans are ready for removal from the cooling bin through its chute.
- 7.3 After the temperature reading has dropped to 250°F (121°C) or lower, set the blower and drum switches to "OFF". Turn flame control to "OFF", if not already in the "OFF" position.
- 7.4 Remove the chaff from the lower compartments of the roaster or from the cyclone on Table Top models. Open the side doors for access, removal of chaff, and general cleaning. Inspect for smoldering chaff. If found, extinguish with water (a small spray bottle is handy for this purpose). Vacuum out the cooled chaff.

WARNING! NEVER LEAVE THE ROASTER AFTER ROASTING WITHOUT CLEANING OUT THE CHAFF.

Note: For faster cooling of the roaster, leave all the doors closed, place the airflow control handle in the "THROUGH ROASTING DRUM" position. This action moves air through the roasting drum cooling down the complete system evenly and efficiently.

8.0 ROASTING AND CLEANING LOG - See Table B

Diedrich Manufacturing, Inc. recommends that you maintain a roasting and cleaning log. This log will assist in keeping track of the amount of coffee roasted during the course of the day, week or month; how long the machine has been working since the last cleaning or maintenance, and how much weight has been lost from the green to the roasted beans. You will find the log very valuable for many different aspects of the roasting process.

It is a good idea to get into the habit of making entries into the log between roasts or after the green coffee has been discharged into the roasting drum before the coffee roast requires all your attention.

8.1 Type of Coffee: The type of coffee is important, as naturals (unwashed coffees, i.e. Indonesians) have much more chaff than washed coffees (i.e. Central and South American coffees); and decafs have virtually no chaff on the outside of the bean. Thus, the chaff box and burner tray require much more attention if a fair quantity of Sumatra is roasted, but almost no cleaning if you are roasting decaf.

8.2 Weight Loss: The green weight IN minus the roasted weight OUT divided by the green weight, equals the percentage of weight loss. Example:

$$15 \text{ lbs. IN minus } 12.75 \text{ lbs. OUT} = \frac{2.25 \text{ lbs.}}{15 \text{ lbs. green}} = 15\% \text{ weight loss}$$

The weight loss is a good indicator of the degree of roast. For example, take a coffee that has a 15% weight loss. Such variables as humidity, how the coffee was stored and ambient air temperature, will affect the weight loss. It may go up or down 1% from day to day or month to month, but you should always see 15% \pm 1%. If, after a few months, you start to see the weight loss moving to 16-17%, the roast is gradually getting darker. On the other hand, if the weight loss starts to drop down to 13-14%, the roast is gradually getting lighter.

8.3 Roasting Times: Roasting times for a particular roast are also important. This may explain why the weight loss is different from the last time a particular coffee was roasted (the longer the roast, the higher the weight loss) even if the color is the same. Longer roast times and cooling times are also indicators that the airflow passages may be plugging up. Roast times are also important to calculate total time on the roaster.

8.0 ROASTING AND CLEANING LOG (Continued)

9.0 CLEANING

9.1 GENERAL: Keeping your roaster and its exhaust ducting clean, from inside the roaster to its termination outside the building is of utmost importance. Failure to do so will create a SEVERE FIRE HAZARD.

Accumulated chaff and oil residues are extremely flammable. Poor airflows can result in a build-up of flammable gases in the roaster as well as the exhaust ducting. Residue also insulates the ducting from within, resulting in higher internal duct temperatures.

It is vitally important that all qualified operators of the roaster understand that ***A DIRTY AIR FLOW SYSTEM INCREASES THE RISK OF A FIRE!***

Any restriction of airflow anywhere in the system (including exhaust ducting) will create a “snowball” effect of residue/creosote build-up in all airflow passages. This build-up directly affects the performance and efficiency of the roaster. To prevent excessive residue build-up, the airflow system requires periodic cleaning.

Establish a cleaning schedule that is proportional to the amount of coffee roasted, taking into consideration the type of coffee and the degree of roast, as well as the climatic conditions.

Most of this information can be obtained from the data gathered in the Roasting and Cleaning Log, Table B.

The seasonal climate of the region in which the roaster is used will greatly affect the amount of cleaning required.

A moist, humid climate requires more frequent cleaning of the roaster than a hot, dry climate. A moist, cold climate creates severe condensation as will those coffees with excessive moisture. This moisture will adhere to the roaster’s internal components and exhaust duct causing build-up to accumulate faster.

Cleaning Items	See Para.	Every 4 Hrs Roast	Every 12 Hrs Roast	Every 60 Hrs Roast	Every 150 Hrs Roast	End Day	Every 2 Wks	Monthly	Every 6 Months	Annual
Inside / Outside Roaster General clean-up, remove chaff	9.2 9.12					●	●	●	●	●
Lower Compartments General clean-up, remove chaff	9.6	●				●				
Drum Chaff Tray General clean-up, remove chaff	9.7		●			●				
All Compartments Thorough cleaning	9.5 9.6 9.7 9.9			●				●		
Cooling Bin a. General clean-up b. Remove & clean screen	9.8		●				●		● ●	
Blower - Impeller / Housing Clean Impeller - See Note 2	9.9			●			●	●		
Chaff Collector Duct Clean & remove chaff	9.10				●					
Exhaust Ducting - See Note 3 (from Roaster to outside vent) Clean residue, remove chaff	9.11							Check See Note 2	Check See Note 2	● See Note 2

- Cleaning time periods may be adjusted based on data acquired from the Roasting and Cleaning Log. Every roast should be logged. Residue may build-up faster depending on the type of coffee roasted. The degree of the roast may also dictate more frequent cleaning of the Roaster.
- Blower housing residue build-up must not exceed 1/8 inch. If so, more frequent cleaning will be required.
- Cleaning of exhaust ducting requires the service of a professional licensed and bonded chimney sweep experienced in cleaning industrial or restaurant equipment that is subject to heavy tar or oily build-up. Duct residue build-up must not exceed 1/8 inch build-up in elbows or exhaust cap or any other section of ducting.

TABLE C - ROASTER CLEANING SCHEDULE

9.0 CLEANING (Continued)

9.1 General: (Continued)

The types of coffees and degree of roast will also influence the amount of cleaning required. Some geographic regions, more than others, are known for their dark roasted coffees. The darker the roast, the more the oils come to the surface of the bean, which in turn contributes to oil in the exhaust smoke. The oily smoke adheres to all surfaces with which it comes in contact. Thus, if more coffee is roasted dark rather than light, more frequent cleaning is required.

Natural or unwashed coffees (i.e. Indonesians) have much more chaff on the bean than washed coffees (i.e., Central and South American) coffees. Thus, if more unwashed coffees are roasted than washed coffees, the chaff box, burner tray and cooling bin require more frequent cleanings.

Decaf coffee has almost no chaff on the exterior of the bean so if a fair quantity of decaf is roasted light, the chaff box will require very little cleaning. Decafs are usually roasted dark and oily so duct cleaning will require more attention.

In reading this, you will understand why the Roasting and Cleaning Log (see Table B) is most important.

- 9.2 Daily Basis** - Spend about five minutes to do a general cleaning, inside and out, checking for residue build-up. After every four hours of roasting, remove the chaff from the lower compartments. (see Paragraph 9.6) **Note:** Before leaving the roaster at the end of the day's roasting, clean and remove the chaff from the lower compartments to reduce potential fire hazard.

Immediately after shutting the roaster down, clean and remove the chaff from the lower compartment or cyclone to reduce potential fire hazard.

- 9.3 After Every 12 Hours** of continuous roasting, remove the chaff and broken beans from the drum chaff tray (see Paragraph 9.7) located directly under the drum.

To maintain sanitary standards and general appearance, clean and polish the outside surfaces of the roaster on a regular basis.

9.0 CLEANING (Continued)

9.4 Every Two Weeks or less, clean below the cooling bin to retain cooling efficiency. (see Paragraph 9.8).

9.5 After 60 Hours of Roasting: or once a month, do a thorough cleaning of all compartments. Do a service check of all components in the roaster including the blower impeller (see Paragraph 9.9). After 150 hours of roasting, clean the collector duct (see Paragraph 9.10) The first three 40 hour cleaning cycles should include checking the tension of the drum drive chain

9.6 LOWER COMPARTMENTS and CYCLONE

On the Floor Mount Model the chaff is collected in the lower compartment and on the Table Top Model the chaff is collected in the cyclone which is a separate cylinder-shaped device attached at the rear of the roaster. Both the lower compartments and the cyclone are designed to separate the chaff from the exhaust airflow. Clean out the chaff after every three to four hours of roasting and before leaving the roaster at the end of the day.

Inspect for smoldering chaff. Extinguish with water (a small spray bottle is handy for this purpose) Use a vacuum cleaner and a putty knife to remove **COOLED** chaff from compartments. Thoroughly clean compartment areas and corners as well as the inside surfaces of the access doors and panels.

9.7 DRUM CHAFF TRAY

Clean out broken beans and chaff collected from the roasting drum tray daily. The tray is located directly under the drum and burners. Access is through burner access panels on each side of the roaster, above the control panel. These panels are fastened with three thumb screws each. Keep clean by vacuuming or sweeping chaff before it exceeds a depth of 1/2-inch (1.25 cm). Use care in cleaning around pilot gas lines and electrode leads. A bent gas line can hamper burner ignition.

9.0 CLEANING (Continued)

9.8 COOLING BIN

For cooling efficiency and to minimize a fire hazard, the area below the screen must be cleaned along with the lower compartments after every four hours of roasting. The area under the cooling bin is accessible from the chaff box door.

To clean below the cooling bin, simply pull up on the agitator to remove it from the cooler. Then, the cooler simply lifts out allowing full access for cleaning.

When chaff and oil build-up below the screen becomes excessive, chaff will pass through the exhaust ducting. To clean the cooling bin, use a vacuum cleaner (with airflow reversed) to blow debris through the screen. Use a wire brush to dislodge debris from the screen. Clean the wire brushes of the agitator assembly. At least every six months, remove the screen from the bin and thoroughly clean both sides of the screen.

To remove screen:

- a. Lift agitator assembly from gearbox drive shaft. Lift out cooling bin.
- b. To reassemble, simply reverse order.

9.9 BLOWER FAN

The blower fan on the Table Top Model is mounted directly on top of the cyclone. The Floor Mount Model has the fan mounted in the rear bottom compartment. The lower back cover of the Floor Mount Model must be removed to access the blower motor.

To remove the fan:

- a. Disconnect the power source to the roaster.
- b. Disconnect the yellow cord from the motor by loosening the black nut on the cord and then unplugging the cord from the motor. This procedure is the same for both models.

9.0 CLEANING (Continued)

9.9 BLOWER IMPELLER (Continued)

- c. Remove the three mounting bolts from the blower base. At this point, the motor can be removed from the roaster.
- d. To remove the fan blade from the blower motor assembly, loosen the small set screw in the hub of the fan blade. Pull the fan blade out and soak in water.
- e. Reinstall the fan and the motor assembly by reversing the removal procedure.

9.10 INTERNAL DUCTING

The cleanliness of the internal duct system is vital to the proper airflows needed for optimum roasting conditions and efficient cooling of the roasted coffee. Residue build-up in any section of this ductwork impedes the proper operation of the roaster.

The internal ducting is located at the back of the machine. The same back covers described in the blower fan section must be removed to access this ducting. On the Table Top Model, it is one cover, mounted with three thumbscrews. On the Floor Mount Model, it is the same top cover plus the lower cover held in place with four additional screws that must all be removed to open up the top and the bottom of the roaster.

Remove all clamps connecting duct sections and remove complete system. Cleaning with a wire brush is the most effective method.

9.11 ROASTER EXHAUST DUCTING

A professional chimney sweep or company experienced in cleaning industrial or restaurant equipment that is subject to heavy tar and/or oily build-up must do the cleaning of the exhaust ducting. Make sure that they are properly licensed and bonded. Improper cleaning can result in a fire.

9.0 CLEANING (Continued)

9.11 ROASTER EXHAUST DUCTING (Continued)

Every **month**, check the ducting from the roaster to the outside of the building for residue build-up. If residue thickness exceeds 1/8-inch in the elbows or the exhaust cap on the roof, the ducting must be cleaned.

Even if residue build-ups do not exceed 1/8-inch per year, clean system annually in order to prevent the accumulated residue from becoming baked-on surfaces, making it impossible to clean.

Excessive build-up of residue will have an adverse effect on the airflow and the efficient performance of the roaster. The exhaust cap, elbows or Y-fittings tend to collect residue faster than the straight exhaust sections, thus requiring more frequent cleaning.

Coffee residue is just as flammable as wood stove creosote, so proper cleaning is of the utmost importance. ***Fire prevention cannot be stressed enough!!***

9.12 GENERAL CLEANING

Outside painted surfaces can be cleaned with a mirror glaze (Meguiar's Mirror Glaze is recommended and available at most paint stores and plexiglas shops). Use of a mirror glaze (rather than a wax-based cleaner), prevents the paint from becoming hazy, a result of roasting heat on the paint. The viewing windows, chute and the agitator assembly (in cooling bin) are easier to clean while they are still warm from roasting heat. For polishing brass or stainless parts, use only a polishing compound made for these types of metals.

This completes the roaster cleaning procedure.

10.0 MAINTENANCE

CAUTION: ALWAYS DISCONNECT ROASTER AT ELECTRICAL SOURCE (at circuit breaker or safety shut-off switch) BEFORE SERVICING MOTORS OR MOVING COMPONENTS.

10.1 SUGGESTED HAND TOOLS

Note: (one each) to be available for cleaning and maintenance:

TOOLS REQUIRED:

Allen wrench set
Combination wrench set
 5/16, 3/8, 7/16, 1/2, 9/16, 5/8
Fire Extinguishers,
 Dry chemical or carbon
 dioxide, two or more
Phillips 3-inch screwdriver #2
Slotted screwdriver, 3-inch
Nut driver, 5/16-inch
Grease gun (cartridge type)
Wire brush
Small spray bottle
Putty knife (flexible)
Kitchen knife
Vacuum cleaner (reversible air flow)

LUBRICANTS REQUIRED:

USDA H1 rated High Temperature
Food Grade Grease (**AVAIL-
ABLE ONLY FROM DIED-
RICH COFFEE ROASTERS**)
SAE20 non-detergent oil or sewing
WD-40 spray lubricant

Water Hose

10.0 MAINTENANCE (Continued)

Service Item	See Paragraph	Service Period
Blower Motor, oil.	10.2	Every 6 months
Roasting Drum Drive Chain, oil and adjust.	10.5, 10.6	Every 6 months
Roasting Drum Bearings, lubricate.	10.7	20 hours roasting
Burner & Drum Chaff Tray, Access Doors, lubricate hinges, clean.	10.8	Every 6 months
Agitator Drive Shaft Universal Joint, lubricate.	10.9	Every 6 months
Agitator Brush Assembly, adjust.	10.10	As required
Air Flow Control Handle, lubricate.	10.11	Every 6 months

TABLE D – ROASTER SERVICE SCHEDULE

10.2 BLOWER MOTORS

Sealed motor. No service required.

10.3 AGITATOR MOTORS

Sealed motor. No service required

10.4 DRUM MOTOR

Sealed motor. No service required

10.0 MAINTENANCE (Continued)

10.5 ROASTING DRUM DRIVE CHAIN

Oil every six months with SAE20 non-detergent oil or sewing machine oil. For access, remove the top back cover. At control panel, set drum switch to "ON". Apply 4-5 drops of oil to the chain at various intervals. Do not over-lubricate. After several such lubrications, set drum switch to "OFF".

WARNING: KEEP FINGERS, HAIR AND LOOSE CLOTHING CLEAR OF MOVING CHAIN AND SPROCKETS.

While chain is still accessible, check chain adjustment. Correct chain adjustment is achieved when there is $\frac{3}{4}$ to 1-inch (1.9 to 2.54 cm) of slack in the chain loop when squeezed together mid-way between the two sprockets.

10.6 FRONT AND REAR DRUM BEARINGS

Bearings should be lubricated every 20 operating hours, NOT roasting time. Operating time is the time the roaster is turned "ON" until it is turned OFF. Use only H1 High Temperature Food Grade Grease. Hardware store or automotive types of grease can be toxic and are not to be used in the proximity of food products. Roaster must be at roasting temperatures (without beans in drum). Lubrication is best done upon finishing the day's roasting while the roaster is still hot at 450°F (232°C).

To lubricate the front bearing attach grease gun to bearing fitting. Bring operating temperature to approximately 450°F (232°C). With drum rotating, use grease gun to inject 2-3 pumps of grease into the bearing fitting.

Before lubricating the rear bearing **STOP THE DRUM FROM ROTATING**. Access to the bearing requires opening the small hinged panel on the upper cover plate. Insert the grease gun fitting **WITH BOTH HANDS CLEAR OF CHAIN AND SPROCKET**. Start the drum rotating. Inject 2-3 pumps of grease into the bearing fitting. **STOP THE DRUM FROM ROTATING**. Remove grease gun and wipe off excess grease.

10.0 MAINTENANCE (Continued)

10.7 AGITATOR DRIVE SHAFT UNIVERSAL JOINT

To access the universal joint, remove the agitator assembly from the cooler and remove the cooler from the roaster. Lubricate drive shaft universal joint every six months. Use the same grease that is used on the drum bearings to lubricate the agitator universal joint. Afterward, wipe the universal joint clean.

10.8 AGITATOR BRUSH ASSEMBLY ADJUSTMENT

To adjust, loosen setscrews in the agitator arm. Push brush down until brush bristles slightly touch the cooling bin screen. Tighten setscrews - do not over-tighten.

10.9 AIR FLOW CONTROL HANDLE

Lubricate every six months with high temperature grease.

This completes the maintenance instructions.

11.0 FIRE CONTROL - READ CAREFULLY AND PRACTICE!!!

Roaster Fire Checklist For IR-Series Coffee Roasters

- ___ 1. Turn the **gas shut-off valve** on the gas supply line to the Roaster to the **off** position.
- ___ 2. Turn the Blower Motor "OFF" at the roaster's Control Panel.
- ___ 3. Identify the location of the fire

- ___ Roasting Drum – go to step 4.
- ___ Cooling Bin/Below Cooling Bin Screen – go to step 5.
- ___ Blower Compartment/Ducting - go to step 6.
- ___ Chaff Collection Compartment – go to step 7.
- ___ Under the Roasting Drum – go to step 8.
- ___ Electrical Panel/Motors – go to step 9.

___ 4. Roasting Drum Fire.

- ___ **Warning!** Do not discharge coffee into cooling bin. Exposure to fresh oxygen will accelerate the fire.
- ___ Locate CO2 Fire Extinguisher.
- ___ Turn the Drum Motor "ON" at the control panel.
- ___ Remove Sample Trowel and insert CO2 Fire Extinguisher hose into the sample trowel tube. If unable to insert into sample trowel tube, then proceed to next step.
- ___ Remove the Aluminum funnel and pull down on the Hopper Handle. Insert the fire extinguisher hose into the hopper and discharge a liberal amount of CO2 into the hopper. This procedure will insert the flame retardant into the roasting drum and should extinguish the fire. Repeat if necessary.
- ___ Fire is out of control. Disconnect main power supply and call 911 or Fire Department and evacuate all personnel to a safe area away from fire and smoke.
- ___ Fire is completely extinguished, then proceed to Step-10.

___ 5. Cooling Bin Fire/Below Cooling Bin Screen

- ___ Turn the Blower and Drum "OFF" on Control Panel.

- ___ Locate water spray bottle or CO2 Fire Extinguisher.
- ___ Ensure Agitator is "ON" at Control Panel.
- ___ Discharge water or CO2 liberally over the whole cooling bin surface area while the coffees are agitated.
- ___ Check for pockets of fire or smoldering coffees and extinguish again if necessary.
- ___ Fire is out of control. Disconnect main power supply and call 911 or Fire Department and evacuate all personnel to a safe area away from fire and smoke.
- ___ Fire is completely extinguished, then proceed to Step-10.

___ 6. Blower Compartment or Ducting Fire

- ___ Locate CO2 Fire Extinguisher
- ___ Turn the Blower and Drum "OFF" on Control Panel.
- ___ Carefully open the blower compartment door.
- ___ Discharge a liberal amount of CO2 into the Blower Compartment. Repeat if required.
- ___ Fire is out of control. Disconnect main power supply and call 911 or Fire Department and evacuate all personnel to a safe area away from fire and smoke.
- ___ Fire is completely extinguished, then proceed to Step-10.

___ 7. Chaff Collection Department

- ___ Turn the Blower and Drum "OFF" on Control Panel.
- ___ Locate water spray bottle or CO2 Fire Extinguisher.
- ___ Carefully open the Chaff Collection Compartment Door.
- ___ Discharge a liberal amount water or CO2 into the Chaff Collection Compartment. Repeat if required.
- ___ Fire is out of control. Disconnect main power supply and call 911 or Fire Department and evacuate all personnel to a safe area away from fire and smoke.
- ___ Fire is completely extinguished, then proceed to Step-10.

___ 8. Under the Roasting Drum

- ___ Turn all switches on Control Panel "OFF".
- ___ Locate CO2 Fire Extinguisher.
- ___ Open side panel Door.
- ___ Discharge CO2 under the drum, should quickly extinguish any fire in this area. Repeat if required.

- ___ Fire is out of control. Disconnect main power supply and call 911 or Fire Department and evacuate all personnel to a safe area away from fire and smoke.
- ___ Fire is completely extinguished, then proceed to Step-10.

___ 9.. Electrical Motors or Electrical Control Panel

- ___ Disconnect power at main supply; i.e., unplug at outlet or flip circuit breaker at Main electrical control panel to off.
- ___ Locate CO2 Fire Extinguisher.
- ___ Discharge CO2 at motors if motors are engulfed in flames. Repeat if required.
- ___ Fire is out of control. Disconnect main power supply and call 911 or Fire Department and evacuate all personnel to a safe area away from fire and smoke.
- ___ Fire is completely extinguished, then proceed to Step-10.

___ 10. Post Fire Evaluation

- ___ Completely evaluate all areas for physical damage.
- ___ For fires that effected electrical components have a certified electrician evaluate for Damage.
- ___ For fires that effected any gas components have a certified gas technician evaluate for damage.
- ___ Thoroughly clean all areas of your roaster. The majority of fires are caused by a very dirty system. Residue and debris buildups act as a fuel source. Remove the fuel source.
- ___ CO2 evaporates quickly. However, we recommend wiping down all surfaces effected with a clean rag. For Drum fires roast 2 to 3 full batches of coffee and throw the coffee away.
- ___ Contact Diedrich Manufacturing Tech Support at 1-877-263-1276-ext 208 to order parts or for general trouble shooting assistance.

Notes:

1. **Recommend laminating and posting this checklist near the Roaster.**
2. **Practice these procedures regularly**
3. **Do not PANIC. Panic contributes to a situation getting out of control**