DR-12 Roasting System Manual

Please read all sections of this manual and retain them for future reference.

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Technical Support: support@diedrichroasters.com
Visit our website www.Diedrichroasters.com

Original Instructions

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1. FACILITY AND INSTALLATION PREPARATIONS

Review the Roasting System Manual upon purchase. Read this manual thoroughly prior to installation of the equipment.

It is the purchaser's responsibility to ensure the installation conforms with local codes and regulations. These requirements will govern in the event they exceed or contradict the information provided by Diedrich Roasters LLC, in this document or elsewhere.

Obtain any required permits such as building and air quality permits. Requests for information or assistance with permitting and/or certification forms must be submitted to Diedrich within 30 days of purchase. Anticipate approximately 15 business days from submittal of forms for Diedrich to complete our part.

Diedrich Roasters, LLC may assist with a customized layout to fit within a specified space. This service is primarily available for Diedrich systems with roasters and other ancillary equipment.

Seek licensed and certified professionals for preparation, installation, and connection of equipment. Provide this manual and review the "2 EQUIPMENT TECHNICAL DATA" with all professionals used to install this equipment. Ensure to confirm the following with your contractors:

- Facility space - allowable proximity to walls/ceiling and "clearance to combustibles" requirements for fire codes
- Load bearing weights of flooring.
- Ducting requirements out of building.
    - Make up air into building.
- Gas connection volume and pressure.
- Electrical connections, voltage, and amp requirements.
- Internet/network connectivity.

The customer is responsible for unloading and positioning their roasting system.

The information in this document is intended to assist customers with purchasingand facility preparation decisions. It is important for customers to read these documents to ensure that the installation and operation phases are smooth and safe.

Please feel welcome to reach out to us with questions or information requests.

Phone: 844-343-3742
E-mail: Support@DiedrichRoasters.com
Website: DiedrichRoasters.com

1.1. Additional equipment may be required to operate this coffee roaster.

- An afterburner to clean the roast air exhausted from this equipment is required in many places and is highly recommended where not required.

2. EQUIPMENT TECHNICAL DATA

Equipment Information	English units	Metric units
Green coffee capacity, min-max	13.25 – 26.5 lbs.	6 - 12 kg
Dimensions[1], maximum L x W[1] x H	81 x 35 x 86 in	2.0574 x 0.889 x 2.184m
Recommended space[1], minimum L x W[1] x H	153 x 112 x 104 in	3.886 x 2.845 x 2.641 m
Proximity to walls		
Recommended Clearance for Operation, Maintenance, and Repairs	3 – 4 ft	1 – 1.2 m
Clearance to combustibles must be from sides and back of equipment and from ducting	18 in	457 mm
Load bearing weights		
Roaster & Cooling Bin (combined)	~1700 lbs.	771 kg
Load bearing weight (Leveling feet)	154 psi	10.6 bar
Hole Count x Hole Diameter	4 x 7/16 in	4 x 11.1 mm
Ducting Information		
Roast Air – Airflow Volume Maximum	150 CFM	255 CMH
Roast Air Outlet Diameter	4 in	101.5 mm
Cooling Air – Airflow Volume Maximum	300CFM	509 CMH
Cooling Cyclone Outlet Diameter	4 in	101.5 mm
Combined – Airflow Volume Maximum	450CFM	764 CMH
Combined Outlet Diameter	8 in	203.2 mm
Temperature High Limit	485°F	252°C
Static Flue Pressure Drop (All exhaust ducts)	-0.15 to +0.25-inch WC	-0.37 to +0.62 mbar
Hot Air Duct (roast air, cooling air)	500 °F Continuous 1800°F Intermittent	260 °C Continuous 982 °C Intermittent

Gas Information		
Gas Types (Ordered gas specific)	Natural gas, Propane	
Maximum Consumption	90 KBTU/hr.	26 kW
Inlet Pressure LP	12 – 14 inches WC	30-35 mbar
Inlet Pressure NG	8 – 14 inches WC	20-35 mbar
Inlet Gas Supply Connection	1/2 Inch Female NPT	
Combustion Chamber Volume (to inlet of after burner)	8.16 cu ft.	0.231 cu m.
Purge Air Flow	45 CFM	76.45 CMH
Purge Time (4 changes)	45 Seconds	
Temperature High Limit	485°F	252°C
Electrical Information		
Volts AC	200-240VAC 1 phase	
Frequencies	50Hz or 60Hz	
Full Load Amps[4] (FLA)	11 AMP At 240Vac	
Internet/Network Information		
Ethernet connection	Cat5 or Equivalent	
Customer network connection	Customer will have to supply a common network between their laptop and the Diedrich equipment to utilize Modbus TCP/IP connection for data logging	
Internet connection	An internet connection is required for remote trouble shooting with Diedrich Roasters Technical Support.	
Environmental conditions[5]		
Temperature Range:	41°F and 86°F	+5°C and +30°C
Relative Humidity	Up to 50% at a maximum temperature of 104°F/40°C.	
Altitude Above Mean Sea Level	up to 3281 ft	up to 1,000 m
Transportation and Storage Temperature	4°F to 140°F	-20°C to 60°C

[1] Dimensions rounded to the nearest inch.
[2] Hourly “green” coffee output. Thus, the weight has not been corrected for moisture loss.
[3] Based on a 15-minute roast to 440°F/227°C.
[4] Full Load Amps (FLA) at voltages other than what is shown will differ some.
[5] It is suggested that the equipment be operated under the following environmental conditions:

3. SHIPPING INFORMATION

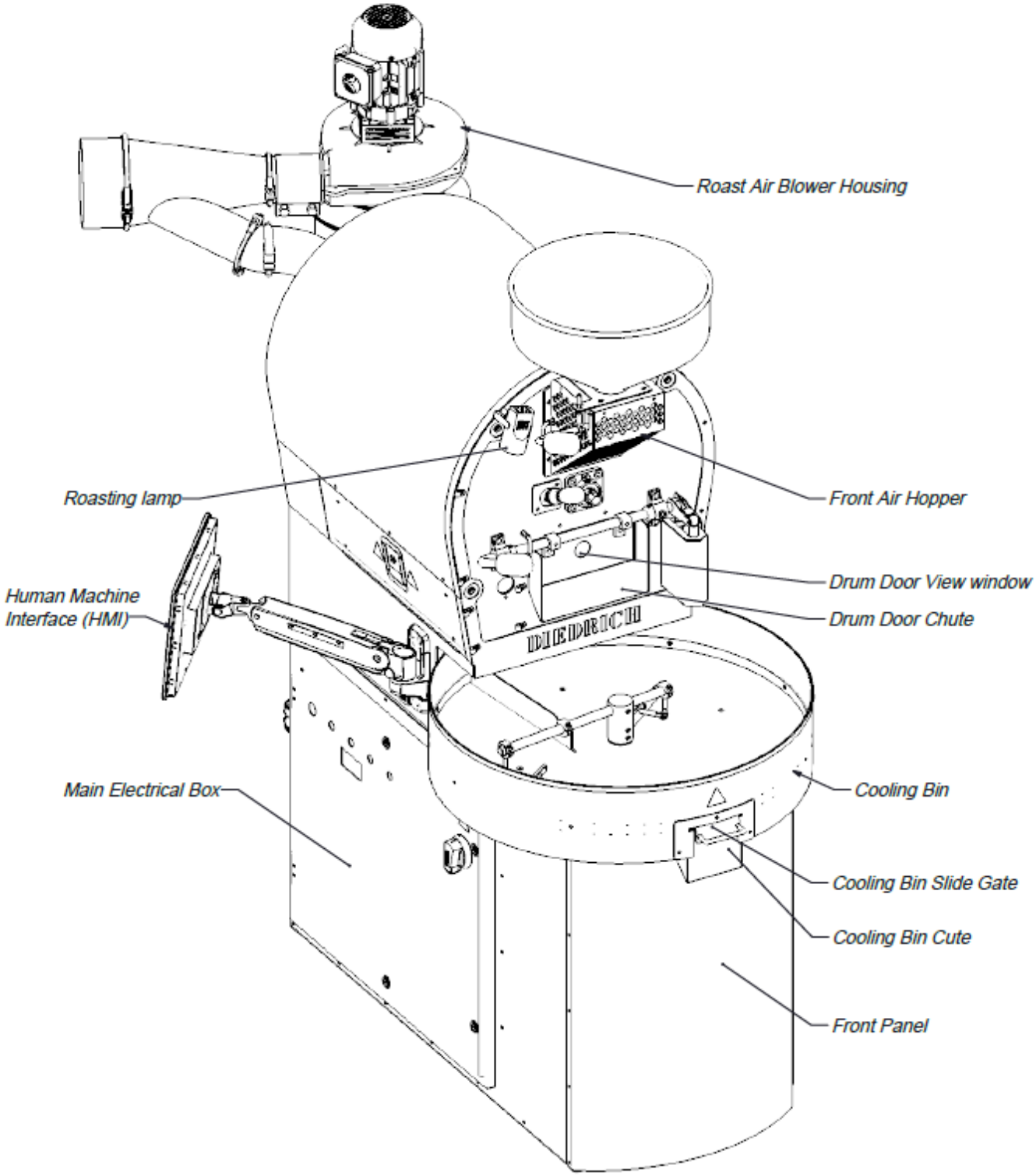
Shipping Information	English units	Metric units
Shipping weight (Approximate)	Actual shipping weight may vary	
Roaster	2,675 lbs.	1,213 kg
Shipping crate size, L x W x H	Actual crate size may vary	
Roaster	67 x 78 x 85 in	1702 x 1981 x 2159 mm

4. EQUIPMENT DRAWINGS

Request full system layouts from Diedrich Roasters, LLC for specific equipment dimensional information and general locations for utility connection.

This section contains drawing views with dimensions and component descriptions. These drawings are valuable for familiarization with the Diedrich equipment and for space and utility connection planning. Dimensions and other details are subject to change.

These drawings each take a full page, so the remainder of this page is intentionally blank.



Front Left - Isometric View

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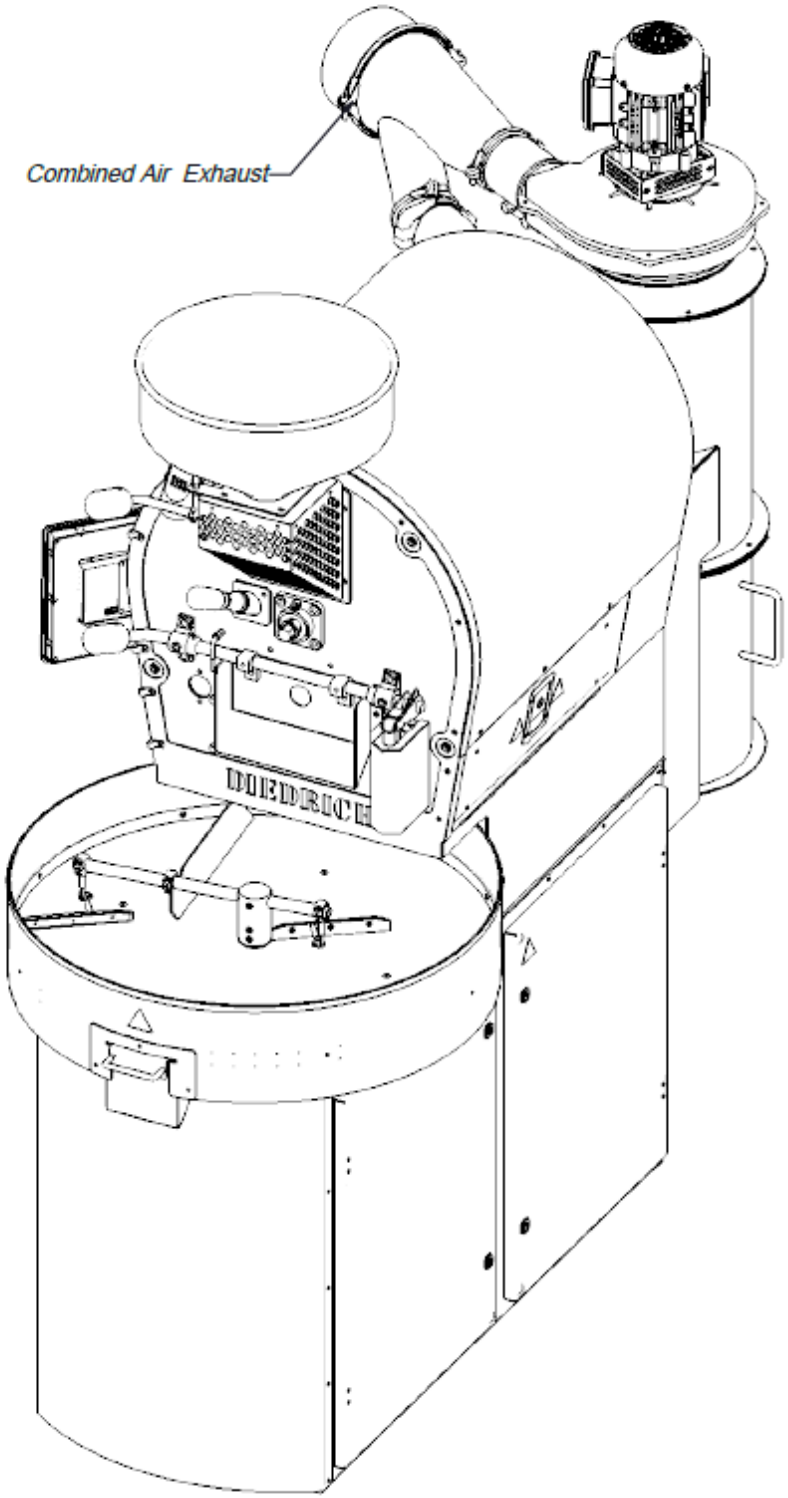

Front Right - Isometric View

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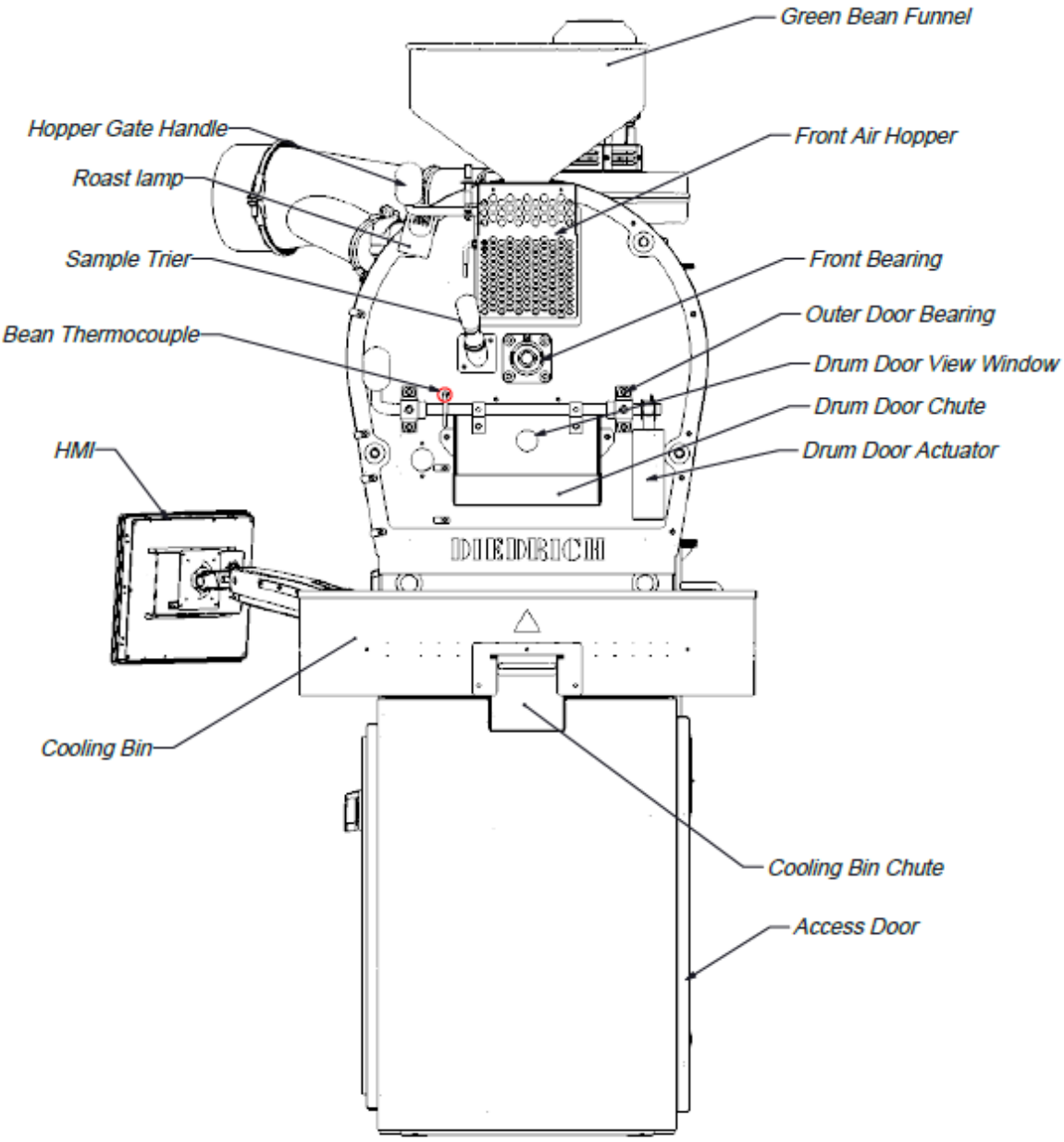

Front View

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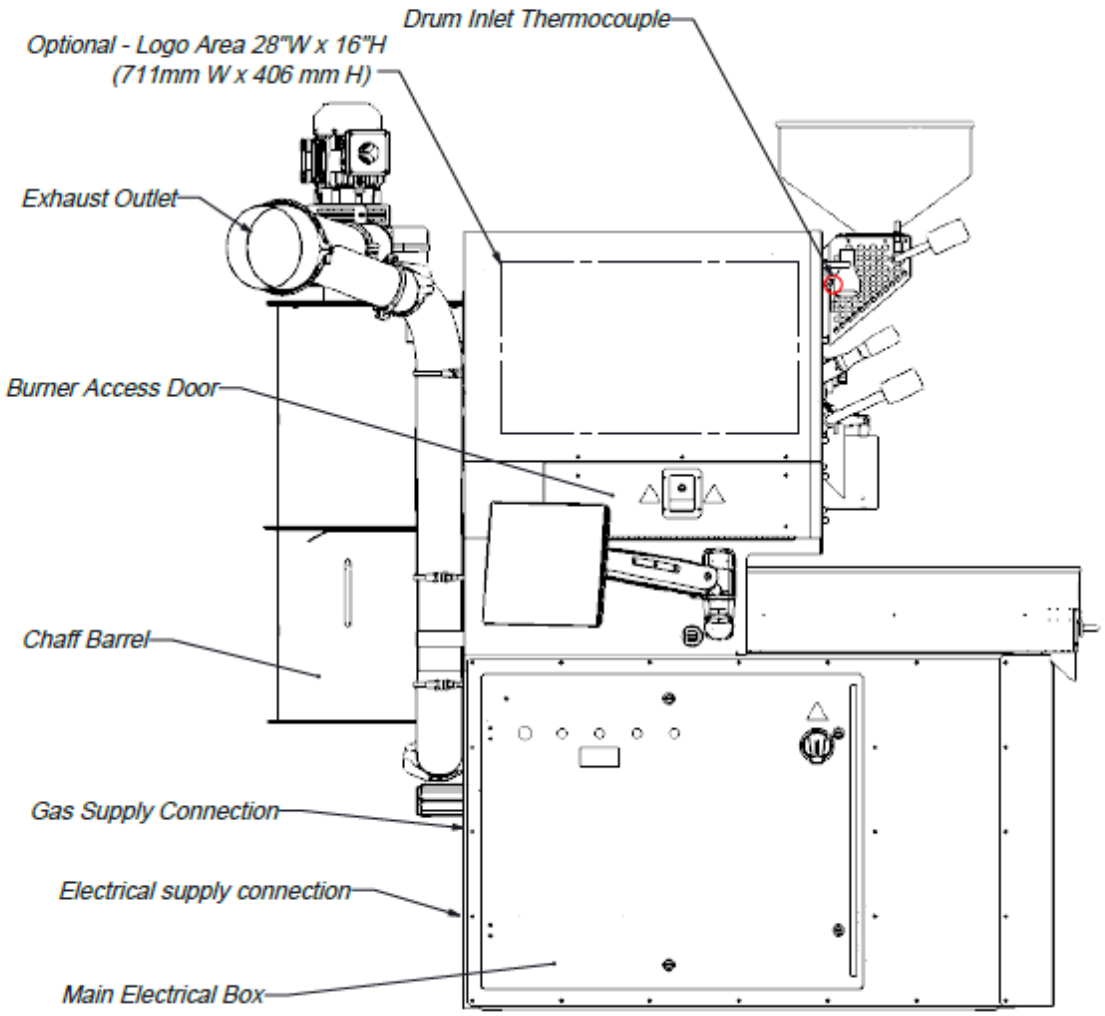

Left Side View

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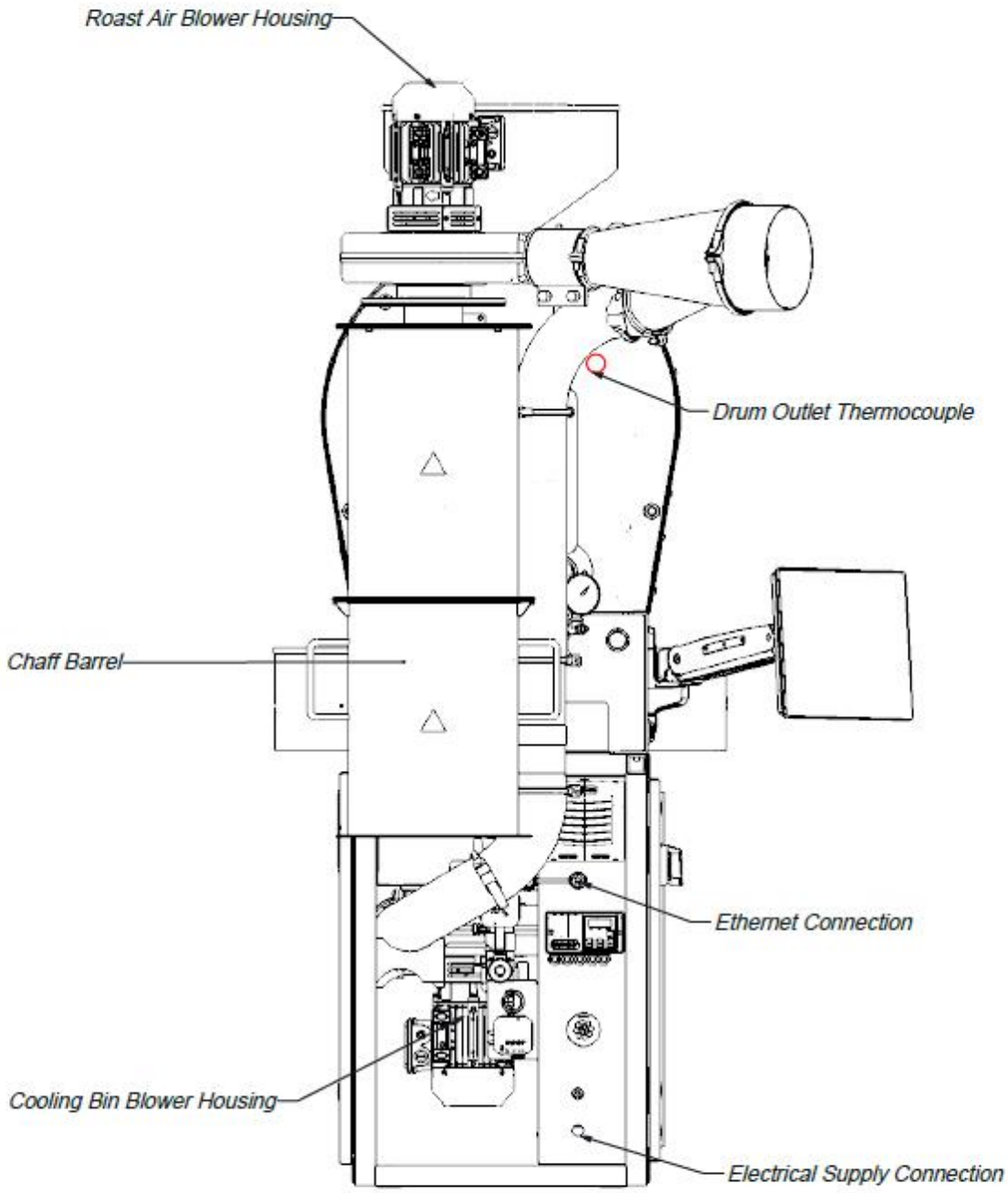

Rear View

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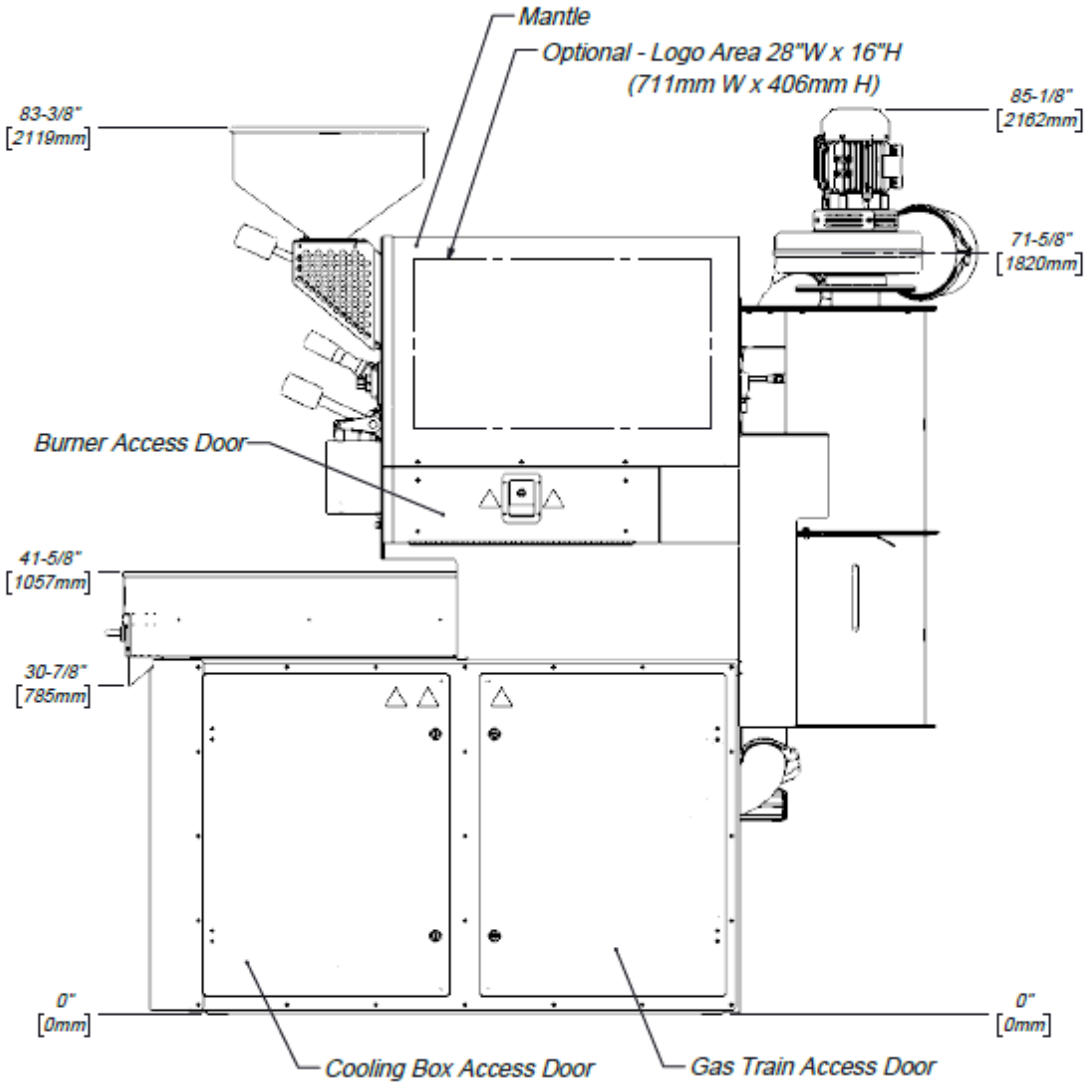

Right Side View

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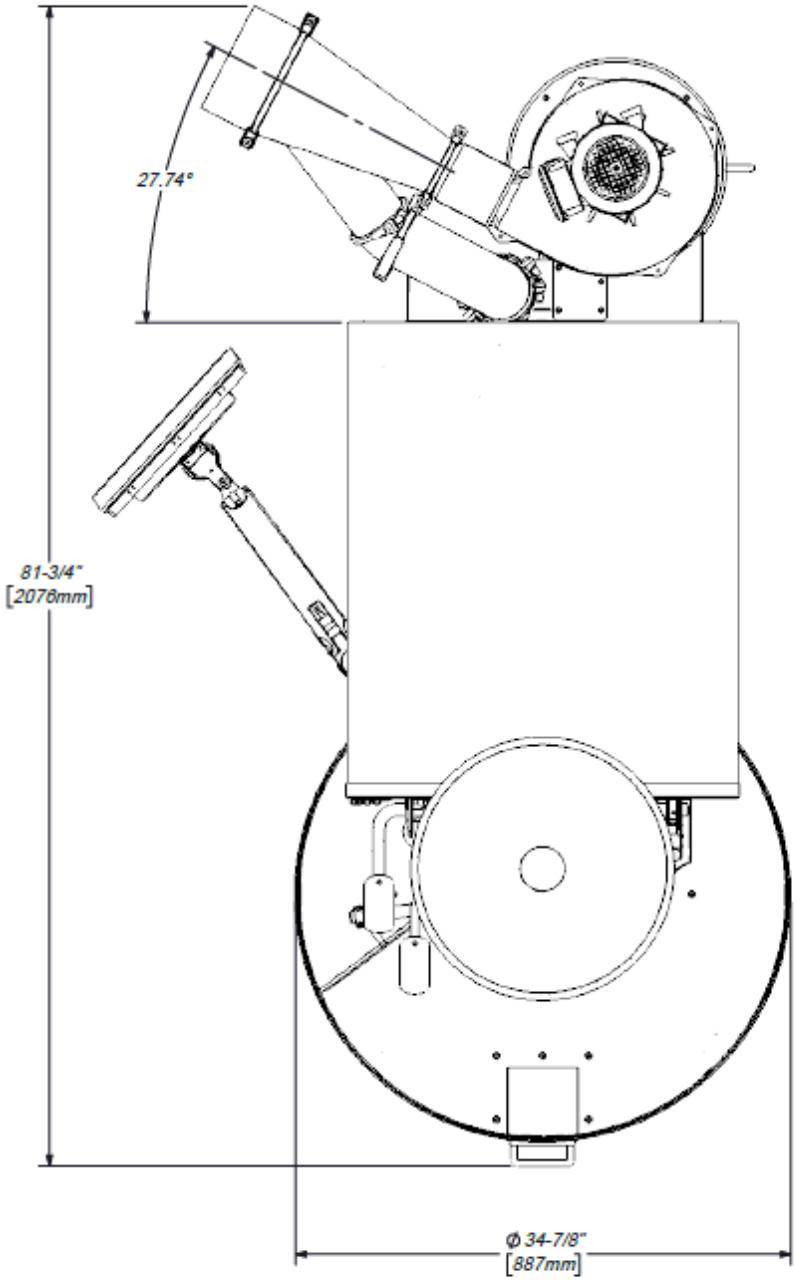
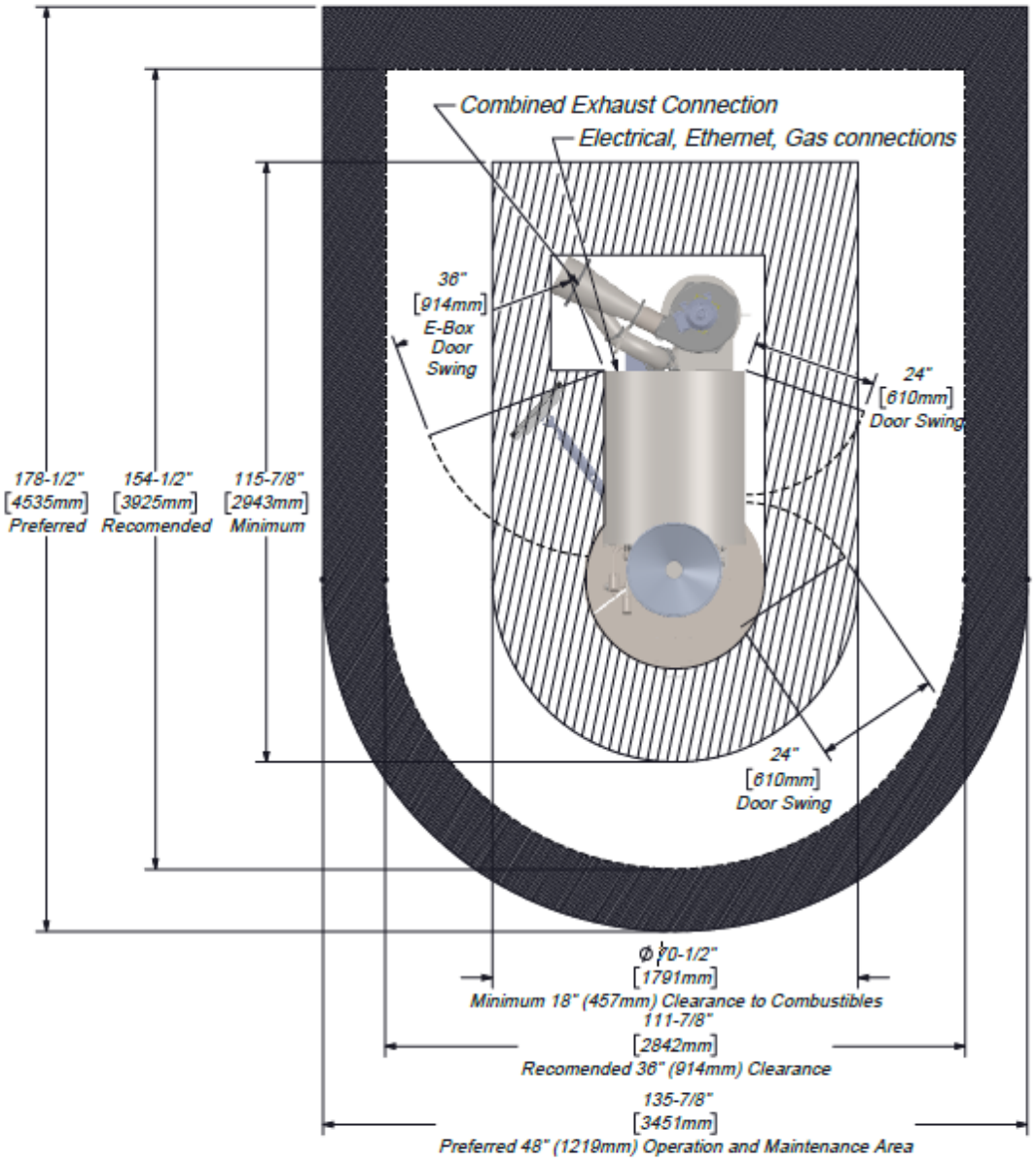


TOP VIEW

SCALE 1:12

Space and Utility Connection Information



Top View

SCALE 1:32

5. Component Descriptions

NOTE: In this manual, references of left and right-hand side are determined by facing the front of roaster.

Roaster: The upper portion of the roaster consists of a carbon steel, A roasting drum with a unique paddle arrangement supported by bearings mounted at each end and driven by a heavy-duty gearmotor. Hot air is pulled from the burner chamber, passed through the drum and coffee mass, and into the chaff collection cyclone The lower section houses the burner chamber, gas train components, and the roaster control panel (electrical junction box).

Chaff Collection Cyclone: The chaff collection cyclone(s) separate the coffee husk from the exhaust air before it is expelled into the exhaust system. The cyclones are positioned at the rear of the roaster and a detachable collection barrel is positioned under the cyclones to collect chaff.The chaff collection barrel requires periodic emptying.

Cooling Bin: The cooling bin is a round piece of equipment located at the front of the roaster. The cooling bin's function is to contain the roasted coffee and cool it when it is discharged from the roasting drum. The cooling bin consists of two levels. The upper level is called the cooling tray. The cooling tray contains the agitator that levels the coffee as it exits the roasting drum. The agitator also stirs the coffee in the cooling bin and moves it to the outer area for discharge. The lower area contains the agitator gear box that powers the agitator. An access exists for accessing the agitator gearbox. A blower pulls room temperature air down through the coffee to cool it. After the coffee is cooled, it can be discharged into storage containers or into an optional destoner.

Blower Housing: Is any blower motor and impeller that moves the air that cools or roasts the coffee.

Optional Equipment

Destoner: An additional piece of equipment used to separate and collect foreign objects that may be in the roasted coffee (i.e., small stones).

Afterburner: An Afterburner is an additional piece of equipment that burns the smoke created by roasting coffee. Afterburner requirements are often dictated by air quality regulations in your area.

6. SAFETY

It is the customer's responsibility to read and understand this manual to operate this equipment safely.

Responsibility for health, safety, accident, and environmental regulation falls to the operator. All personnel working in proximity to the equipment should be trained in all instructions and safety precautions. Despite all warnings and labeling, the operator incurs some risk in operation. It is imperative that the operator uses caution while the machine is in use. Surfaces become hot to the touch and moving parts are accessible while in operation. Keep your hands away from heat and all moving parts.

Products roasted in Diedrich roasters are not intended for direct consumption. As such, products to be consumed following the roasting process should be prepared in accordance with local health standards. Contact the local health department for details on these requirements.

Disclaimer: Diedrich Roasters, LLC is not liable for machinery use not covered in this document, the employment of untrained personnel or alterations and changes made to the machinery and/or systems.

6.1. Misuse

Warranty is void unless the product is installed and used in accordance with all written instructions. Do not remove any labels, warnings, or rating plates from the equipment or from its components as this may void the manufacturer's and Diedrich Roasters' warranties.

The operator is responsible for proper use of the equipment – roasting and cooling coffee. Improper use can result in safety concerns. Improper use may include, but is not limited to:

- Using the equipment for any product other than coffee, without the approval of Diedrich Roasters, LLC.
- Operating outside the limitations of the equipment (temperature, max batch capacity, electrical rating etc.).
- Modifications to the equipment or systems.
- Use by untrained personnel.
- Unsafe work practices, ignoring listed safety precautions.
- Removal of warning labels and/or safety devices.
- The use of unauthorized spare parts.
- Operating without awareness of risks and taking proper precautions.
- Equipment being improperly installed or operated in a potentially explosive environment.

6.2. Dangers, Warnings, and Cautions

The following safety indicators are found on the roaster, to identify potential hazards.

	DANGER: Electric shock and/or hazard risk.
	WARNING: Pinch point. Keep hands clear during operation.
	CAUTION: Hot surface. Do not touch.

Throughout this manual, the following signal words are used to identify the degree of seriousness in any operation that presents a potentially hazardous situation.

	DANGER: Indicates a hazard that *WILL* cause severe personal injury, death, or substantial property damage if ignored.
	WARNING: Indicates a hazard that *COULD* cause severe personal injury, death, or substantial property damage if ignored.
	CAUTION: Indicates a hazard that could cause MINOR personal injury or property damage if ignored.
	ATTENTION: Indicates an instruction that should be followed.

6.3. Noise Level

It is recommended that the use of hearing protection be implemented when operating the machine, as the following airborne noise emissions have been observed during operation:

a) Maximum A-weighted: 73.5 dBA,
b) Maximum C-weighted: 75.7 dBC

6.4. Installation Safety

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

- Keep the area around the Equipment free and clear from combustibles and always maintain a minimum of 18-inches clearance around the roaster.
- Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.
- Heavy equipment is needed to uncrate and install this equipment. Ensure proper safety equipment and rigging is used to move and position equipment.

6.5. Electrical Safety

Work on the electrical system should be carried out by qualified personnel only. All power should be shut down and locked out prior to maintenance. To prevent electrical shock and injury, all access doors should remain locked, unless the equipment has been properly locked out and service is being performed.

6.6. Gas Safety

If gas is smelled, the equipment operation and main gas must be shut off. Immediately exit the building and call the fire department and local utility company. Perform periodic leak tests on building and equipment gas train piping.

6.7. Moving Parts and Pinch Points

- Drum and agitator are large moving components that can create pinch points.
- Cooling bin drop gates and drum door are smaller moving components that can create pinch points.
- Slide gates and rotary air locks can be a pinch point hazard if not properly locked out during maintenance.

6.8. Inhalation Danger

- Some roasted products emit a significant amount of CO (carbon monoxide) gas. Inhalation of this gas is dangerous and can prove fatal.
- When entering any roasted silo or container, the silo or container must be well ventilated, and an observer must be present during this time.

6.9. Hot Surfaces and Fire

The operator should use caution when working around the equipment during operation, as some surfaces become hot and could cause physical harm.

- Areas to pay particular attention to include, but are not limited to:
  - The drum
  - The faceplate
  - Exhaust ducts
  - Chaff Cyclones and Barrels
- Avoid contact with hot surfaces.
- Always be aware of the risk of a fire.
- Maintain clean equipment and its exhaust duct system. Immediately turn off the burners if there is any indication they are not functioning properly.
- If there is any indication of fire, immediately turn off the gas line, turn on the quench and ventilate the room.
- Instructions to be followed in the event the operator smells gas or otherwise detects a gas leak, must be posted in a prominent location. This information can be obtained from the local gas company or gas supplier.
- A fire extinguisher should be located close to the roasting system. Consult with your local fire department for recommendations on suitable fire extinguishers.
- Proper installation, cleaning, and safe operation of the equipment are the owner and operators' responsibility.
- Most fires are caused by failure to maintain clean equipment and its exhaust ducting system. Regular cleaning of the equipment and exhaust ducting will prevent the buildup of residues that could cause fire.

7. INSTALLATION INSTRUCTIONS

Professional installation is required. Your local building authority should be contacted to obtain local codes and installation requirements before installing your roaster.

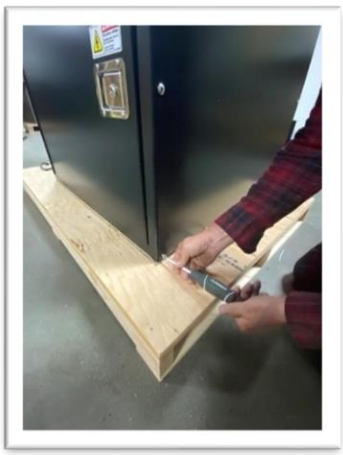
7.1. Receiving Equipment

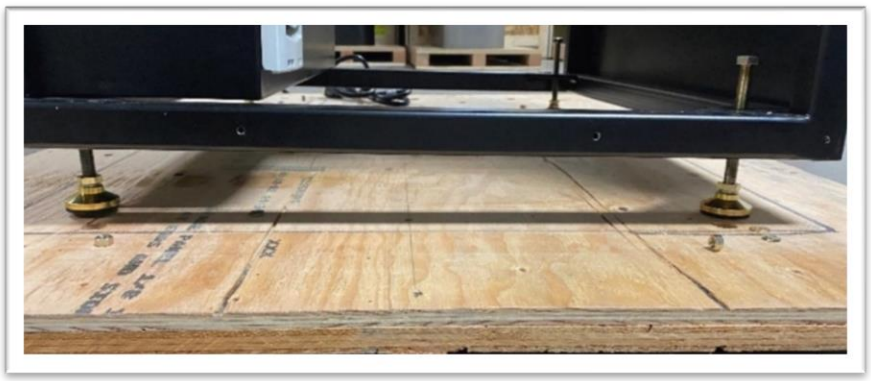
Upon receipt of your equipment, immediately check for crate damage. On larger roasters, there is a *"tip tell" indicator* in the upper right corner of the crate. Do not refuse shipment if damage is evident. Make notes of damage on the appropriate shipping forms and take photos. Uncrate and look for damage to the roaster, i.e., dents, scratches, or chipped paint, and if found, immediately file a claim with the appropriate freight carrier. Prepare to have several capable people/tradesmen and for a forklift and pallet jack (5' long minimum) to be available based on the weight stated. See "2 EQUIPMENT TECHNICAL DATA". Stage the equipment near the final location for uncrating.

7.2. Uncrating Equipment

- Using a #2 Phillips screwdriver / screw gun, remove the top and 4 sides of the crate.
- Carefully remove the shrink wrap and paper from the equipment.
- Remove the front panel fasteners and set the panel to the side to expose the other crate fasteners.
- Locate the (4) outside corner fasteners at the base of the roaster. Using a ½" socket and wrench, remove the fasteners that secure the roaster to the pallet. You will have to reach under the pallet to hold the bolt head with a wrench.
- The roaster now must be raised to accept a forklift for removal from the pallet. Using a ¾" socket with impact or air tool, rotate the (4) levelling feet (clockwise) **EVENLY** from front to rear to raise the roaster to its maximum level (or high enough to get the forklift under).

Failure to rotate evenly could result in the roaster tipping over.





7.3. Positioning / Leveling the Equipment

The final layout of purchased equipment is often customer specific please place equipment by using customer specific layout provided to the customer.

The equipment must be placed on a flat, non-combustible floor that meets the weight-bearing requirements of local codes. Refer to "2 EQUIPMENT TECHNICAL DATA" chart for load bearing weights. Careful leveling of the equipment is critical, not only for performance but for alignment of the roasting drum. Using a carpenter's level, check front to rear and side to side. Use leveling feet to achieve level.

Clearance from the equipment to adjacent walls, counters or other appliances must be at least 18-inches (46 cm) or greater to ensure adequate cooling of the equipment and adjacent walls. Failure to abide by required clearances will void your Diedrich warranty. No cabinets or storage areas are to be installed over the equipment or near the ducting. Make sure all controls, access doors, and inspection panels are accessible and can be opened without restriction.

Place the equipment where operation and coffee roasting can be observed in natural light or under consistent light conditions. Natural light is essential for best results when observing the true color changes coffee undergoes during roasting. The use of a full-spectrum fluorescent light to simulate the full color of sunlight is recommended for consistency in roasting.

If you have an afterburner, position that first to align with the exhaust stack. Work your way from rear to front assembling ducting and final connections to the roaster. Refer to "2 EQUIPMENT TECHNICAL DATA" for proximity to walls, etc.

7.3.1. Position Roaster

- With the forklift position the roaster. The roaster must be lowered to the floor level.
- Use a ¾" socket with an impact or air tool, rotate the (4) leveling feet (counterclockwise) **EVENLY** from front to rear to **lower** the roaster to its minimum level.
- Careful leveling of the roaster is critical not only for performance but for alignment of the roasting drum. Using a carpenter's level, check front to rear and side to side using the cooling bin as a reference. Adjust the (4) legs with a ¾" wrench / socket to achieve the proper level.
- Once level, re-install the front panel with fasteners.

7.4. Gas Connection

See “2 EQUIPMENT TECHNICAL DATA” for specifications, and the gas piping and instrumentation diagram (P&ID) sent with your roaster.

- Use a licensed gas company for the gas pipe installation.
- Gas installation MUST conform to local codes, regulations, and/or laws.
- The sizing of the gas supply is critical. It is the customer’s responsibility to ensure the gas supply is sized to meet the maximum BTU/hr. and pressure demands of all gas appliances installed in their facility.
- The gas supply line must be sized to provide the full BTU/hr. rating of the roasting equipment at the supplied inlet pressure. Pressure drop due to total length of run and number of elbows must be accounted for. It is not recommended to use a pipe sizing less than the roasters inlet size.
- Water Trap - A water trap used to collect condensation and loose particles and should be installed in the gas supply line upstream from the roaster.
- Safety Shut-Off Valve - A manual shut-off valve MUST be installed in the gas supply line close to the equipment and in a location where it can be reached quickly in case of an emergency. The shut-off MUST be marked to identify it as the gas shut-off.
- Pressure Regulator - A pressure regulator may be required if your building supply pressure is greater than the maximum inlet pressure of the equipment.
    - If the installation has both a roaster and an afterburner, a separate incoming pressure regulator MUST be used for each piece of equipment. Your gas technician will be able to provide the correct regulator for the specific installation. Locate the regulator on the incoming gas supply line between the safety shut-off valve and the roasters gas inlet.
- Perform a gas leak test before proceeding with the equipment operation. Check connections for gas leaks with a soapy water solution or other acceptable method. The equipment must be isolated from the gas supply line by closing the safety shut-off valve during any pressure/leak testing of the gas supply line.
- The equipment factory installed valve is preset for the BTU requirements of the equipment burner.

IMPORTANT: When the gas installation is complete, have your gas technician 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.

7.5. Electrical Connections

Refer to the included electrical drawings for incoming power, reconnects, and conduit schedule. Electrical drawings are in the equipment packet of information.

- Use a licensed electrician for the electrical installation.
- Refer to “2 EQUIPMENT TECHNICAL DATA” for specifications.
- Electrical installation must conform to local regulations.
- Do not remove any labels, warnings, or rating plates from the equipment or from its components as this may void the manufacturer’s and Diedrich Roasters’ warranties.
- All electrical components supplied in the equipment are grounded electrically to the equipment frame.

This equipment must be electrically grounded in accordance with local codes. A severe shock hazard exists if the electrical source is not grounded or if the polarity is reversed.

7.6. Exhaust ducting

See "2 EQUIPMENT TECHNICAL DATA" for ducting requirements & specifications / layout.

One of the most important aspects of the equipment installation is the use of an approved exhaust ducting system, it can greatly affect the equipment performance and the product quality. The cost and time to order and install the exhaust ducting are also important customer considerations. Throughout the remainder of this document, the term exhaust ducting refers to the ducting that the customer, or their contractor/representative, select, acquire, and install. The exhaust ducting will connect to the applicable Diedrich provided equipment.

Designing the exhaust ducting system requires a qualified professional, a licensed engineer or a heating, ventilation, air conditioning (HVAC) professional. Information the qualified professional will need, such as the diameter of the exhaust ducting and the maximum exhaust air flow, is found in the technical data table in "2 EQUIPMENT TECHNICAL DATA". The design of the exhaust ducting should include:

- The ducting must be of sufficient diameter to accommodate the air flow (CFM - cubic feet per minute or CMH - cubic meters per hour).
- The ducting must meet the static pressure loss requirement at the exhaust of the equipment. See "2 EQUIPMENT TECHNICAL DATA".
- A properly designed and installed chimney and rain cap is essential to the equipment's performance and longevity. Water leaking in may cause an electrical shortage or damage to the equipment. Your contractor will be able to coordinate with local jurisdictions for the correct cap. The cap should not have a screen since it will clog with residue of chaff over time.
- Installation must be done in accordance with appropriate NFPA standards in the USA or equivalent standards in other countries. The installation must also comply with the ducting manufacturers installation specifications and allowable distance to combustible/noncombustible materials.
- Diedrich recommends the roast air and cooling air ducting be suitable for 500°F (260°C) continuous, 1800°F (982°C) intermittent and comply with UL-1978/ULC-SC662 standard for grease ducts in the USA/Canada, and/or equivalent standards for other countries (such as CE standards for the European Union).
- The hot exhaust air from the roasting process is hot and contains oils and residues which are flammable. In the event of a ducting/flue fire, the internal duct temperatures can exceed 1000° F (538°C), which could cause nearby combustible materials to ignite.
- The Diedrich equipment MUST NOT support the weight of the exhaust system.
  The system will remove fresh air from the building. An additional fresh air inlet to the building is required to allow for burner "make up air." The size and type are dictated by local codes and often must be installed prior to roasting.

There are companies that offer ducting products that comply with both the UL 1978 and the UL 103 standards. Some of these companies are listed below along with their websites and contact information.

Van-Packer www.vpstack.com, 888-877-8225, and/or VPTech@vpstack.com

Selkirk www.selkirkcorp.com and/or customer service at 800-848-2149

Jeremias www.jeremiasinc.com and/or e-mail jeremiastech@jeremiasinc.com

DuraVent www.duravent.com and/or e-mail customerservice@duravent.com

7.7. Installation Inspection

The completed equipment installation MUST BE INSPECTED for compliance with local codes and by your local fire department PRIOR TO OPERATING THE ROASTER. Failure to have these inspections performed will void the warranty and will relieve Diedrich of any liability associated with the installation and use of our products.

8. OPERATION

The instructions below are for the sole purpose of checking the machine installation and operation while contractors are present. For normal operation please read the automation manual provided with the machine.

8.1. Operator Control Console/ HMI

Emergency stop: The emergency stop button turns off all control power when pushed in. All the motors will stop, and the gas will shut off. When pulled out to the "ON" position the reset button can be pushed to start the motors once again. This button is required for machinery entanglement purposes.

HMI: This is the touch screen mounted in the control panel used to control the roasters automation system. Please refer to the automation manual for a full description of automation controls.

8.2. Initial start up

- Apply power to the main control panel and ensure all breakers are on (up) in the electrical enclosure. Then turn on the enclosure disconnect.
- Apply power to the roaster control panel to ensure disconnect is on.
- Ensure gas valves on the equipment are open.
- Ensure the E-Stop button is out (twist knob) and press the safety reset button.

8.3. Light gas system

- On the operator control panel Log in as USERNAME: owner1, PASSWORD: 1
- Press the bottom center of the screen and select "Trend Screen."
- Press the power button on the upper right-hand side of the screen.
  - This will start the ignition sequence and turn on the drum, roast air, and cooling air motors during the startup sequence.
  - Ensure all incoming gas valves are turned on.
  - On the roaster gas train, the minimum and maximum gas pressure switches may need to reset.
  - Press the red button in the middle of the yellow dial through the clear cover to reset.
  - The gas system will go through a purge time prior to lighting the burner.
  - Once the burner has lit, a green status bar will appear above the red flame symbol on the operator control panel.
  - Increase the air to 100% with the air symbol on the right-hand side of the screen.
  - Increase the fuel to 100% with the fire symbol on the right-hand side of the screen (NOTE: You only have about 30sec before the system will shut down due to high temp limit without coffee in the system).
  - Verify the inlet pressure gauge is above the minimum inlet gas pressure requirement.
  - Decrease fuel to 0%.
  - Decrease air to 0%.
  - Power down system with the power button on the upper right-hand side of the screen (NOTE: System may go into automatic cool down if above a specified temperature in the automation and will only shut the system down if below that temperature).

8.4. Fire Procedures

It is the customer's responsibility to put their own facility fire procedures in place for the roasting equipment and facilities. Fires can happen in any part of the machine or ducting. A good cleaning and maintenance plan is the best way to prevent fires. All personnel working with or around the equipment should be trained in fire procedures.

- It is the equipment operator's responsibility to monitor and identify possible warnings of a fire in the machine:
  - Bean temp
  - Outlet temp
  - Cyclone temps
  - Visual smoke from the equipment
    - Cooling bin
    - Roaster
    - Cyclones
    - Chaff barrels
- If a fire is identified call for help and:
  - Start facility fire procedures,
  - Call 911 or the local emergency number.
- Fire extinguishers should be located within easy reach of the roasting system. These should preferably be CO_2 extinguishers with sufficient capacity for a severe roasting system fire. Consult with your local fire professional for recommendations on suitable fire extinguishers.

8.5. Power Loss/Outage

It is the customer's responsibility to put their own power loss plan in place for the roasting equipment and facilities.

- In the event of a power loss while roasting
  - Keep calm.
  - Start your fire procedures.
  - Keep the coffee in the roasting drum to contain the fire.
  - Monitor temperatures in the roasting system,
  - If temperatures are concerning.
    - Add water through the sample trier hole with a garden hose.
    - Keep the coffee in the drum until the power is restored and a safe temperature of less than 250°F is achieved for a sustained period.
  - In the case of a long-term power outage, it is not recommended to leave the coffee in the drum, and unattended. (ONLY DO THE FOLOWING IF THE COFFEE IN THE DRUM HAS BEEN COOLED)
    - Engage the E-stop of the system to prevent motors from coming back on with the power.
    - The drum shaft is designed to accept a 7/8-inch hex socket. Use an air impact wrench to rotate the drum clockwise.
    - Use a combination of turning the drum motor, opening the drum door, and turning the agitator by hand to clear the coffee.

9. ROASTING

A possibility of fire exists if the coffee is not removed from the drum before 500°F (260°C). The coffee may ignite even though the gas system is interlocked to shut down at 485°F (252°C).

If any of the following happens: excessive smoke in the room, smoke coming from the sample trier port, longer cool down times, or excessive chaff in the burner compartment, it is likely time to clean your equipment.

Diedrich recommends that you maintain roasting and cleaning logs. These logs will aid in tracking the amount of coffee roasted, roasted bean weight loss, and cleaning intervals.

These instructions explain the operation of the roaster. They are not an attempt to teach all the subtleties and proper techniques of roasting the many varieties of coffee beans. Further information on roasting is available on our website www.diedrichroasters.com/learn

10. CLEANING AND MAINTENANCE PROCEDURES

It is the customer's responsibility to create appropriate lockout, or "tag-out" procedures prior to performing any cleaning or maintenance on the equipment.

Electrical power MUST be disconnected and locked out prior to performing any maintenance or cleaning. Turn off the roaster, shut down power source and place a lock on the electrical panel to prevent accidental restart while in service. All gas and water lines should also be closed, using shut off valves.

Ensure the equipment is cool to the touch prior to cleaning or servicing.
Wear protective gloves and eyewear when scraping residue off internal walls and components. Do not use a water hose or any type of sprayer other than a normal cleaning bottle for the purposes of cleaning. At a minimum, the cleaning & maintenance schedule found at the back of this manual should be completed as directed.

Cleaning and maintenance of the equipment is extremely important for safety, equipment performance and cup quality. Keeping the roasting system clean internally and externally cannot be over-emphasized. The oil and dust mixture that accumulates is a fire hazard. A dirty system also makes servicing more difficult. It is extremely important to keep exhaust ducting clean. From inside the equipment to its termination outside the building. Accumulated chaff and oil residues are extremely flammable. Poor airflow can result in a build-up of flammable gases in the equipment and exhaust ducting. A restriction of airflow anywhere in the system will create a "snowball" effect of residue/creosote build-up in all airflow passages within the system. This build-up directly affects the performance and efficiency of the roaster.

Take time daily for general cleaning. Check for residue build-up. A maintenance chart is supplied. These times will vary based upon the degree of roast, type of coffee, and environmental conditions (such as humidity). A cleaning timeline must be established which reflects these unique conditions. When the roast system is new and clean it is easy to gauge how quickly the residue accumulates in the different areas. Inspect all the airflow components in the system every 20 hours during the initial 100 hours of operation. This will allow you to observe the rate of residue accumulation as it relates to your style of roasting and help establish a cleaning schedule.

Diedrich roasters are specifically designed to require minimal maintenance. Following 10.3 will help to achieve your performance expectations.

10.1. Suggested Hand Tools & Lubricants

Suggested tools	Suggested lubricants
• Allen wrench set (both English and metric) • Wrench set: 5/16” 3/4” • Phillips 3-inch screwdriver #2, and #3 • Flathead screwdriver • Socket set: 5/16” 3/4” • Grease gun (cartridge type) • Wire brush • Spray bottle • Putty knife (flexible) • Pry bar • Hammer • Shop Vac (metal canister) • Broom	• High Temperature Food Grade Grease (available for purchase from Diedrich Roasters, LLC): Use on bearings. • Food Grade Anti-Seize: Use on impeller hubs / agitator shaft(s) • WD-40 spray lubricant / Use on hinges.

10.2. Daily startup checklist

Daily startup checklist	Date	Initials
Maintenance checks		
Review maintenance log from previous day for completion.		
Verify Chaff barrels, burner compartment, and area under cooling bin are clean and empty.		
Electrical checks		
Check Main electrical panel and Roaster control panel power are on, and errors are pending reset.		
E-stop pulled out and reset.		
Gas checks		
Manual ball valves on the gas system are on.		
Low gas pressure switch reset.		

10.3. Equipment Cleaning & Maintenance Schedule

Diedrich Equipment Cleaning & Maintenance Schedule		
Every 4 hours or as necessary	**Date**	**Initials**
Empty chaff barrel (1/2 to ¾ full barrel should be emptied).		
Daily	**Date**	**Initials**
Empty and vacuum any chaff and/or bean debris from the burner compartment.		
Inspect perforated cooling bin screen for clogging. Clean as necessary with a screen roller, wire brush or by utilizing a sharp point to clean out the perforated holes.		
Sweep/Vacuum all debris out from under the perforated cooling bin screen.		
Daily startup checklist complete.		
Weekly, every 40 hours of roasting, or as necessary	**Date**	**Initials**
Grease front and rear drum bearings (when bearings are still warm).		
Check the vacuum sensor tube for evidence of residue blockage. Clean all residue from the tube or port.		
Wipe down all exterior surfaces of the roasting system.		
Inspect the roast air and cooling impellers / compartments and clean accordingly. If accumulation is greater than 1/8th inch (3mm), scrape /clean all interior surfaces and clean the impellers with a liquid cleaner and brush.		
Check the residue build-up in the roast air cyclone chaff collection compartment. If accumulation is greater than 1/8th inch (3mm), then scrape/clean all affected interior surfaces.		
Check the residue build-up at the roaster's exhaust outlet & intermediate ducting. If the accumulation is greater than 1/8th inch (3mm), then clean thoroughly.		
Check the clean out port on the exhaust ducting. It the residue accumulations is greater than 1/8th inch (3mm), scrape / brush down to bare metal in all the exhaust ducting.		
Semi Annually (Every 6 months)	**Date**	**Initials**
Do a cursory check of all bolts and screws and ensure they are tight.		
Clean electrical cabinet air filters		
Annually	**Date**	**Initials**
Have a professional chimney sweep clean the exhaust ducting at least once a year regardless of the buildup.		

10.4. Lubrication

10.4.1. Grease Front Drum and Rear Drum Bearings

Failure to lubricate the bearings may cause premature failure. USE HIGH TEMPERATURE FOOD GRADE GREASE ONLY.

NOTE: The grease will flow more easily if the equipment is warm. It is best done after finishing the day's roasting while the equipment is still hot and with drum rotating.

- Insert the grease gun fitting in to the “zerk fitting” of the bearing.
- Apply 1-2 pumps of grease.
- Remove the grease gun and wipe off any excess grease.

10.4.2. Motors and Gear Boxes

The electric motors and gear boxes are sealed, and no service is required.

10.4.3. Access Door Hinges

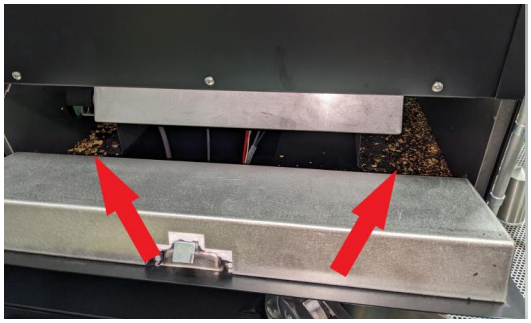
These can be lubricated as necessary with WD-40. Ensure to wipe away any excess prior to operation.

10.5. Cleaning Points

- Burner Compartment - Located behind the mid-level access panel on either side of the roaster.
- Roast Air Blower & Cyclone - internal cleaning of cyclones with over 1/8in buildup.
- Cooling Air Blower - Air impeller and associated housing - the air moving unit for each air flow associated with the roasting system.
- Cooling Bin Screen - Clean the screen by clearing ports and cleaning the floor of the cooling bin under the screen through access doors.
- Roast air box to cyclone transition
- Roast air Pressure Switch Pickup:
    - NOTE: Do not use a vacuum cleaner or compressed air to clear the line as it can damage the vacuum switch. If any debris or residue is evident, clean the inside of the tube using a thin tool or wire to pull the residue through the tube.
- Ducting - all ducting between the roasting equipment and the exhaust of the facility
- Chaff Barrel - Located underneath each cyclone.

10.5.1. Burner Compartment

The burner compartment should be cleaned at least Daily and sometimes more often depending on your coffee type and degree of roast.



10.5.2. Chaff barrel

The chaff barrels should be emptied between roasts when the barrel is between ½ - ¾ full.

- Slide the chaff barrel from cyclone.
- Inspect the chaff barrel for any smoldering embers.
    - Stir and spray with water if embers are suspected or detected.

10.5.3. Cyclone Blower Housing Fan Removal and Cleaning

Cyclone

- The residue that builds up inside the cyclone should never be more than 1/8 inch (3 mm) thick.
- Before cleaning the chaff collection cyclone internally, adequate ventilation must be provided.
- Disconnect the roaster's electrical source (lockout tagout) before disassembly.
- Removed top of cyclone to reach inside for cleaning.
- Scrape the inside clean with a putty knife (clean down to bare metal)
- Reassemble cyclone and blower on roaster and reconnect motor electrical cord to roaster electrical panel.
- Ensure blower housings are cleaned prior to roasting.

Blower housing

To remove:

- Unscrew the bolts which split the blower housing in half. Use caution as the blower housing is heavy.
- Unscrew the 2 set screws in the fan hub then using a large chisel or pry bar force the hub and fan apart
- Once you have the impeller off, scrape debris off the inside of the blower housing.
- Scrape the impeller clean. Clean thoroughly as an uneven cleaning will create an imbalance and vibration when the blower is running.
- Clean the blower housing

To install

- Put the impeller on the motor shaft Making sure to line up the keyway in the hub to key in the shaft.
- Position the impeller so there is about ¼ inch clearance to the blower housing.
- Tighten the 2 set screws in the fan hub.
- Torque specs - ¼" bolts (7/16" wrench) 9 ft. lbs. or 108 in. lbs.; 5/16" bolts (1/2" wrench) 15ft. lbs. Or 180 in. lbs.

10.5.4. Cooling Bin / Agitator / Cooling blower

The area below the cooling bins screen must be cleaned of any accumulated residue for cooling efficiency and to reduce the fire hazard. The area is accessible from the access door on the side of the cooling bin.

To clean the cooling bin screen:

- Compressed air can be used with proper personal protective equipment (PPE) to blow loose debris through the screen into the compartment below.
- Stuck debris will need to be manually cleared from the screen with the use of the following tools:
    - Diedrich Roasters screen cleaner wheel
    - Wire brushes
    - A pointy object like small screwdriver, pick, or awl

To clean the agitator:

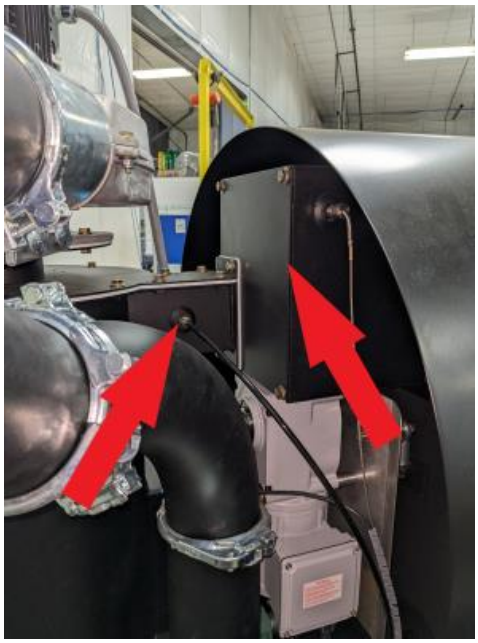
- The agitator assembly can be removed from the cooling bin by simply lifting straight up on the assembly.
    - Ensure to re-apply anti-seize as necessary when reinstalling agitator.
- Wipe down the arms and paddles.
- Use a pointy object like a small screwdriver, pick, or awl to remove any beans lodged in the hinge mechanisms of the paddle. Or bolt heads.

The cooling bin blower Cleans the same as the cyclone blower.

10.5.5. The Roast Air Box to Cyclone and Roast Air Pressure Switch Port

The roast air box to cyclone transition is important to clean at the same time as the cyclone and ducting cleaning. To clean this box, remove the bolt on cover plate while leaving the cyclone attached to the bottom left corner of the box as your looking at the cover. This bolt can be loosened and then Slide the cover plate and cyclone gasket out of the way and scrape the insides of the box clean.

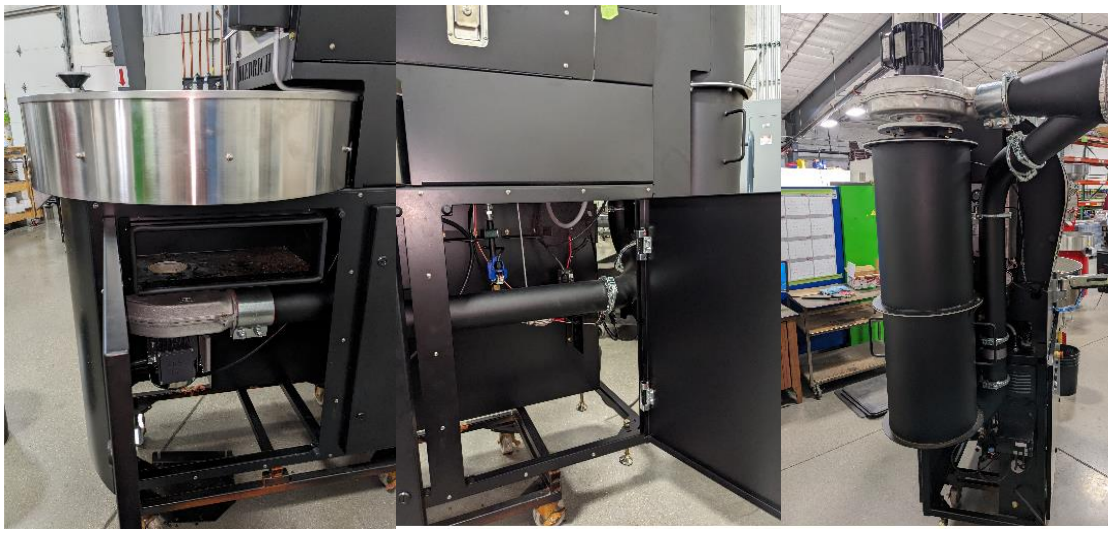
The Roast air pressure switch port is where the plastic airline is connected to the cyclone. If you compress the top of the push lock fitting, the plastic tubing can be pulled free. Inspect the end of the tubing for clogs and build up. The end of the tubing and the inlet of the pressure port can be scraped clean with a small flat head screw driver.



10.5.6. Ducting Equipment and Building Exhaust

The residue build-up within the venting acts as fuel in the event of a ducting fire. Air ducts must be thoroughly cleaned if more than 1/8 inch (3.0 mm.) of residue accumulates in any part of the vent system. The air ducts include the front air plenum, the ducting from the drum and cooling bin exhausts, through the cyclone blower and afterburner systems, and the ducting from the cyclone/afterburner to the exhaust of the building. Air ducting from this roasting system to the outside of the building is as important as the ducting within the roasting system and must also be cleaned at regular intervals. Any residue buildup within the complete system, whether it is in the equipment or from the equipment to the outside of the building, creates a fire hazard.

For the Roaster ducting it is suggested that the ducting pieces only be partially disassembled for cleaning for ease of reassembly of ducting. Quick release Jacob's tubing clamps have been provided in specific locations to help the ease of re-assembly.

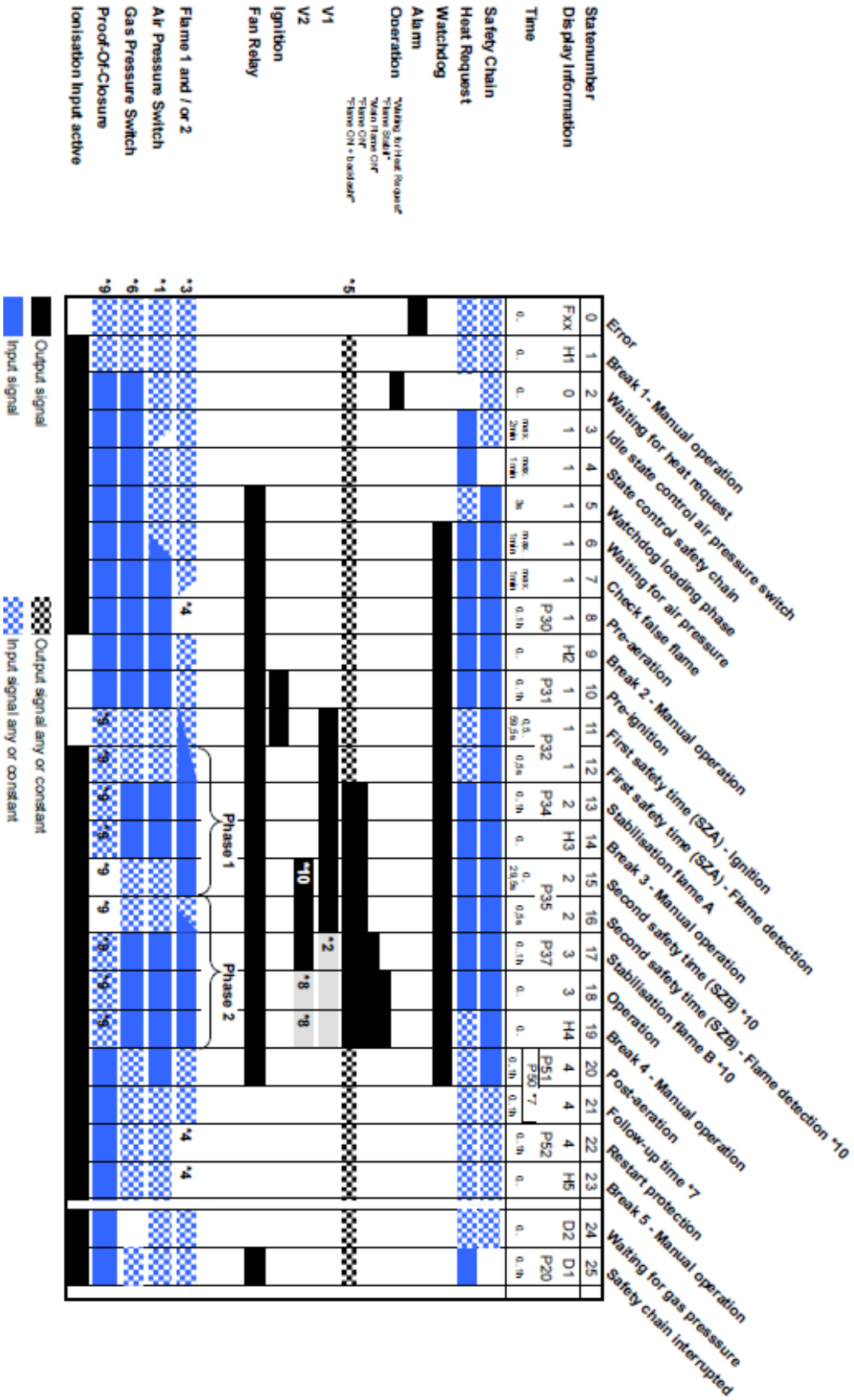


11. TROUBLESHOOTING

11.1. General Troubleshooting

PROBLEM	POSSIBLE SOLUTION
No power to the roaster	Check main power and ensure emergency stop button is disengaged (pulled out) and reset. Check circuit breakers are on.
Roaster ignition has no spark or not lighting	Error code “FA B” on Dungs display. Ensure roaster has been thoroughly cleaned as excessive build-up of residue will interrupt the Dungs ignition module. Read Error code on dungs ignition module. See table of fault codes below. Hit Ignition reset on Roaster control panel or the return key on the ignition module. Error code “F 4” on Dungs Ignition Module display. Indicates that too many ignition attempts have been made. Press and HOLD reset button (5 sec) and try again.
Drum door not opening or closing	Check operator control panel screen for error. Check Fuse 3 (F3) for a red light in electrical panel. Check output from PLC. Refer to electrical drawings for specifics
Motor(s) not running	Check operator control panel screen for error. Check estop is out and hit reset push buttons. Check electrical disconnects. Check motor circuit breakers. Check VFDs for fault code.
Roast cycle timer not activated after starting a roast	Check position indication switches of the hopper gate handle.
Drum rotation error	Check that proximity sensor is “blinking” as the drum rotates (sensor located between the drum motor and rear plate of roaster). If not, ensure sensor gap is ~1/8” from the metal target. If light still does not illuminate, check voltage / replace sensor.
Drum door not closed error	Check that proximity sensor is within 1/8” from the metal target when the door is closed. Check that input EI-04 on the PLC is activated (lit) when the door is closed.

11.2. Dungs Ignition Module Flow Chart



11.2.1. Dungs Ignition Table of General Fault Codes

TABLE 1: FAULT CODES		
ERROR ID	**DESIGNATION**	**CHECK**
F A2	SAFETY CHAIN OPEN	Check gas pressure switches (min pressure & max pressure may need manual reset).
F A7	NO FLAME DURING FIRST SAFETY TIME	Flame was not sensed for pilot during State 11 (See Dungs Flow Chart) Check that gas is igniting, and flame is contacting flame rod. Check that the flame rod is properly positioned over pilot/main burner. Check that flame rod is not suffocated with carbon buildup.
F BC	NO FLAME DURING SECOND SAFETY TIME	Flame was not sensed during State 15 (See Dungs Flow Chart) Check that gas is igniting and flame is contacting flame rod. Check that the flame rod is properly positioned over pilot/main burner. Check that flame rod is not suffocated with carbon buildup.
F A9	FLAME OUT DURING STABILIZATION	Flame was sensed but lost during States 11 or 15. Check that gas is igniting and flame is contacting flame rod. Check that the flame rod is properly positioned over pilot/main burner. Check that flame rod is not suffocated with carbon buildup.
F A8	FLAME GONE OUT DURING OPERATION	Flame sense was lost during normal operation of main burner. Check that gas is igniting and flame is contacting flame rod. Check that the flame rod is properly positioned over pilot/main burner. Check that flame rod is not suffocated with carbon buildup.
F AB	NO AIR PRESSURE	Ignition module will wait for 1 minute to prove airflow before faulting. Check rotation of roast air motor. Check the air pressure switch is closing. Verify air pressure switch settings.
F A6	EXTERNAL LIGHT	Flame was sensed when gas valves were closed. Check flame rod and wiring. Verify no flame is contacting flame rod.
F B6	LIMIT SWITCH MAIN GAS (POC)	Proof of closure and/or limit switches are not closed. Check proof of closure switch on bottom of main valve is closed.
STATE NUMBERS	**DESIGNATION**	**CHECK**
D1	SAFETY CHAIN INTERRUPTED	Check gas min & gas max pressure switches (manual reset). If gas pressure is less than 80% of operating pressure, the min pressure switch will trip. If gas pressure is greater than 125% of operating pressure, the max pressure switch will trip. Check incoming gas pressure.
D2	WAITING FOR GAS PRESSURE	Proof of closure and/or limit switch is not closed at startup (States 1-10). Check proof of closure switch on bottom of main valve is closed.

11.2.2. Dungs Ignition Troubleshooting Using State View

- With the ignition module powered, press both “plus” & “minus” buttons at the same time and release quickly.
    - This will display the state number instead of the display information.

- The State Number (reference the Dungs Flow Chart) is used to indicate at which point in the ignition sequence the ignition module is in.
    - Ex. State number 3 is displayed. Following the Dungs flow chart, it indicates that the ignition module is “Idle state control air pressure switch” meaning that the ignition module is checking that the air pressure switch is open.
    - Ex. State number 6 is displayed. Following the Dungs flow chart, it indicates that the ignition module is “Waiting for air pressure” meaning that the ignition module is checking that the air pressure switch is closed.

- Using the state number and the Dungs flow chart is the best method for troubleshooting the BMS (Burner Management System).

- If the ignition module faults, it will display the last state number that the module faulted at.
    - Ex: Ignition module faults and state number 4 is displayed. following the Dungs flow chart, it faulted in the “State control safety chain”.
    - This indicates that the ignition module faulted while checking the “state control safety chain”, meaning that the safety chain is open. The safety chain is the gas min & gas max pressure switches. Check that the gas pressure to the machine is within operating range and reset the pressure switch that has tripped.

- Pressing the “plus” & “minus” buttons at the same time again, will put the ignition module back into “display information” mode.
    - This will display fault codes, which are also useful for determining which portion of the BMS has faulted (refer to the Table of General Fault Codes).

12. GAS CONVERSION INSTRUCTIONS

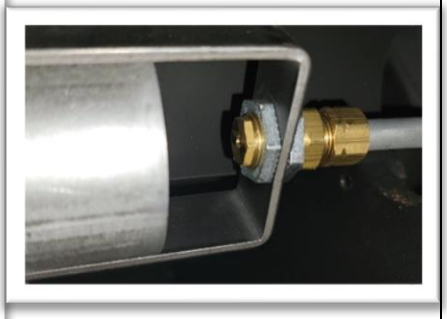
Tools Recommended:

- #2 Philips Screwdriver
- 5/8” Wrench
- 7/16” Socket
- ½” Socket
- ½” Wrench
- 7/16” Wrench
- Parts required: Correct LP or Nat Gas Conversion Kit

12.1. Main Burner Orifice Change:

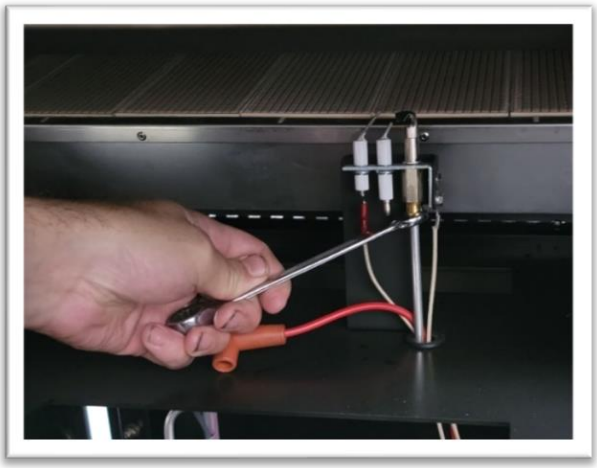
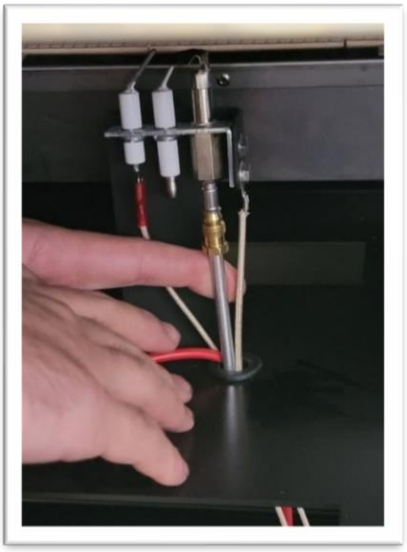
- Turn off gas and disconnect power to the roaster.
- Open the right-side burner compartment door.
- Remove right side burner only to access the pilot assembly.
- Loosen the brass fitting with a 5/8” wrench and slide the burner to the left and then straight out to remove the burner.
- Using a ½” wrench, remove and replace both burner orifices with the new gas type - the orifice is screwed into the brass fitting.





12.2. Pilot burner Orifice change

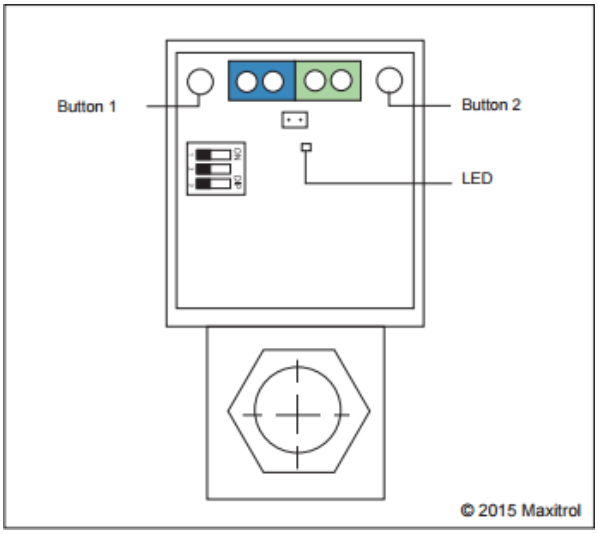
- Using a ½” wrench, loosen the brass nut and gently separate the pilot “T” from the gas line and change the bell-shaped gas orifice located in the brass compression fitting.
- With the new pilot orifice in place, reverse the procedure to tighten the gas line to the pilot tee, and install the burner back into the roaster. Make sure all fittings are seated and tightened properly.


12.3. Gas Train Tuning

- Using the gas train P&ID provided with your roaster. Set the customer supplied regulator (PRV3) and adjust the regulator to the new incoming gas pressure. This can be seen on the pressure gauge (PG1).
- Follow the Maxitrol Tuning strategy below to tune the gas valve for the new gas type.

12.4. Maxitrol Tuning:



- Turn on the system and log in.
- Once the pilot has lit and flame verification has been established, set fuel to 1% on HMI Screen
- On Maxitrol control board, hold the button to the right of the terminal block (button 2) until the red LED starts to blink. The valve is now in low fire set mode.
- Button 1 now represents increasing pressure and button 2, decreasing pressure. Use these buttons to set your low fire to the proper INWC. All DR-roasters are set to 1.5 INWC at low fire.
- Once the low fire is set, press and hold both buttons simultaneously until the red LED turns off.
- Set fuel to 50% on HMI screen.
- Next hold the button to the left of the terminal block (button 1) until the red LED turns on. The valve is now in high fire set mode.
- Button 1 now represents increasing pressure and button 2 decreasing pressure. Use these buttons to set your high fire to the proper set point (FCV1) using the gas train P&ID provided with your roaster.
- Once the high fire is set, press, and hold both buttons simultaneously until the red LED turns off.
- The valve is now set.

12.5. Staged Burner Percentage

- Your roaster is equipped with a zone 2 staged burner, the last step is to adjust the fuel % at which the zone 2 or the non-operator side burner is kicked on at.
- DR-Flex Roasters, press the Diedrich logo on the home screen.
  - Adjust the staged burner % to the appropriate value of (FCV2) Using the gas train P&ID provided with your roaster.

13. CERTIFICATES & CONFORMITIES

Diedrich Roasters, LLC manufactures coffee roasters in compliance with UL or CE regulations. The roasters are built to order, specifically to the standards of the governing regulatory body in the country of operation. Please refer to your equipment data labels for reference to the regulatory specification to which the equipment has been built.

13.1. EU Declaration of Conformity

EU DECLARATION OF CONFORMITY

MANUFACTURER:	**Diedrich Roasters, LLC** **850 Hawthorne Avenue** **Ponderay, Idaho 83852 USA** Phone: 844.343.3742 URL: www.diedrichroasters.com
EU CONTACT ADDRESS:	**Jamie Banwell** **Rubiacaea Consulting Ltd** **Unit 3a Imperial Studios** **Imperial Road** **Fulham** **SW6 2AG**
MODEL / TYPE:	DR Series: DR-3, DR-25
DESCRIPTION:	Coffee Roaster
REPORTS:	F2P25157A-01S-R1, F2P25157A-02E
DIRECTIVES:	Machinery Directive 2006/42/EC, EMC Directive 2014/30/EU

STANDARDS CONSIDERED, FULL OR IN PART:

- EN / ISO 13849-1:2015
- EN 60204-1:2018
- EN 61000-6-3:2007+A2:2011
- EN 61000-6-1:2007

THIRD PARTY TESTING:

www.f2labs.com

26501 Ridge Road
Damascus, MD 20872 USA
Phone: 301.253.4500
Fax: 301.253.5179
Toll Free: 877.405.1580

16740 Peters Road
Middlefield, OH 44062 USA
Phone: 440.632.5541
Fax: 440.632.5542

8583 Zionsville Road
Indianapolis, IN 46268 USA
Phone: 317.610.0611
Fax: 317.610.0525

Diedrich Roasters, LLC declares under its sole responsibility that the **DR Series Coffee Roaster** is in conformity with the Machinery Directive 2006/42/EC and the EMC Directive 2014/30/EU.

Authorized by: Karl J. Schmidt
(signature)

Date: September 16, 2021

Name: Karl Schmidt

Title: CEO

Location: Ponderay, Idaho

13.2. UL 508A, Industrial Control Panels C22.2 No. 14, Industrial Control Equipment

CERTIFICATE OF COMPLIANCE

Certificate Number	20160525-E478523
Report Reference	E478523-20150831
Issue Date	2015-MAY-25
Issued to:	DIEDRICH ROASTERS, LLC. 24 Emerald Industrial Park Road Ponderay, ID 83864 USA
This is to certify that representative samples of	Industrial Control Panels USL, CNL - Industrial Control Panels – General Coverage.
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 508A, Industrial Control Panels C22.2 No. 14, Industrial Control Equipment
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

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Page 1 of 1

13.3. ANSI Z83.11b-2016/CSA 1.8b-2016 CERTIFICATE OF COMPLIANCE Standard for Gas Food Service Equipment,

CERTIFICATE OF COMPLIANCE

Certificate Number	UL-CA-L61804-21-82606102-3
Report Reference	MH61804-20160628
Date	7-Oct-2022
Issued to:	Diedrich Roasters, LLC 850 Hawthorne Ave Ponderay, ID 83852 United States
This is to certify that representative samples of	LGQX7 - Gas-fired Food Service Equipment and Gas-fired Equipment for Food Processing Certified for Canada See Addendum Page for Product Designation(s). Have been evaluated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	CSA CSA 1.8, 4th Ed., Issue Date: 2016-02-01
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Programs

UL LLC

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