

# DIEDRICH

## — ROASTERS —



# CR-280

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### 1. CR-280 ROASTER TECHNICAL DATA

This section contains a table, on the next pages, with technical information applicable to both a CR-280 Manual roaster and a CR-280 Auto roaster. A Manual roaster and an Auto roaster each have the same size operator control console. The difference is that the operator control console for a manual roaster has manual controls and a roaster with automation has a touch screen which is linked to an automation computer and control systems. Information in the technical data table is subject to change.

<b>CR-280 Roaster Information</b>	<b>Technical Data</b>
Green coffee capacity, min-max	308 – 617 lb.; 140 - 280 kg
Dimensions, maximum L x W x H	19'10"x 12'6" x 13'5"; 6045 x 3810 x 4089 mm
Shipping weight (Approximate)	Actual shipping weight may vary
Roaster and electrical main ctr panel	7,500 lb; 3,402 kg
Cooling Bin	3,242 lb; 1,471 kg
Other Components	Available upon request
Shipping crate size, L x W x H	Actual crate size may vary
Roaster and electrical main ctr panel	150 x 86 x 100 in; 3810 x 2185 x 2540 mm
Cooling Bin	98 x 92 x 84 in; 2489 x 2337 x 2134 mm
Other Components	Available upon request
Full batch roast time to 440F (227C)	Approximately 15 minutes
Hourly output <sup>1</sup> (Four 15 minute roasts)	2,469 lb/hr.; 1120 kg/hr.
Roast Air, maximum	2,000 scfm; 3,398 scmh
Cooling Bin Air, maximum	5,000 scfm; 8,495 scmh
Roast Air Cyclone outlet diameter	14 in; 356 mm
Cooling Bin Blower outlet diameter	18 in; 457 mm
Cooling Bin Cyclone outlet diameter	24 in; 610 mm
Loader Exhaust Air, maximum	3,431 scfm; 5,829 scmh
Loader Exhaust diameter	8 in; 203 mm
Destoner Exhaust Air, maximum	4,081 scfm, 6,933 scmh
Destoner Exhaust diameter	8 in; 203 mm
Temperature high limit	475F/246C burner off, 485F/252C pilot off
Air Pressure	70 psi; 4826 mbar
Air Connection	¼ inch female NPT on the roaster
Water Pressure	40 - 70 psi; 2757-4826 mbar
Water Connection	⅜ inch female NPT on the roaster
Water flow to roaster at 40 psi/2.8 bar	10 gallons per minute; 37.85 liters per minute
<b>Gas Information</b>	
Gas Types (others if pre-approved)	Liquid Propane (LP) or Natural Gas (NG)
Maximum consumption	2.0 Million BTU/hr.; 586 kW
Typical consumption per roast <sup>2</sup>	360,000 BTU.; 105.5 kWh
Inlet Pressure, LP	2 psi; 68.9-137.9 mbar
Inlet Pressure NG	2 psi; 68.9-137.9 mbar
Inlet gas supply connection	1-1/4" female NPT on the roaster
<b>Continued on next page with Electrical Information</b>	<b>Continued on next page</b>

<sup>1</sup> Hourly "green" coffee output. Thus, the weight has not been corrected for moisture loss.

<sup>2</sup> Based on a 15 minute roast to 440F.

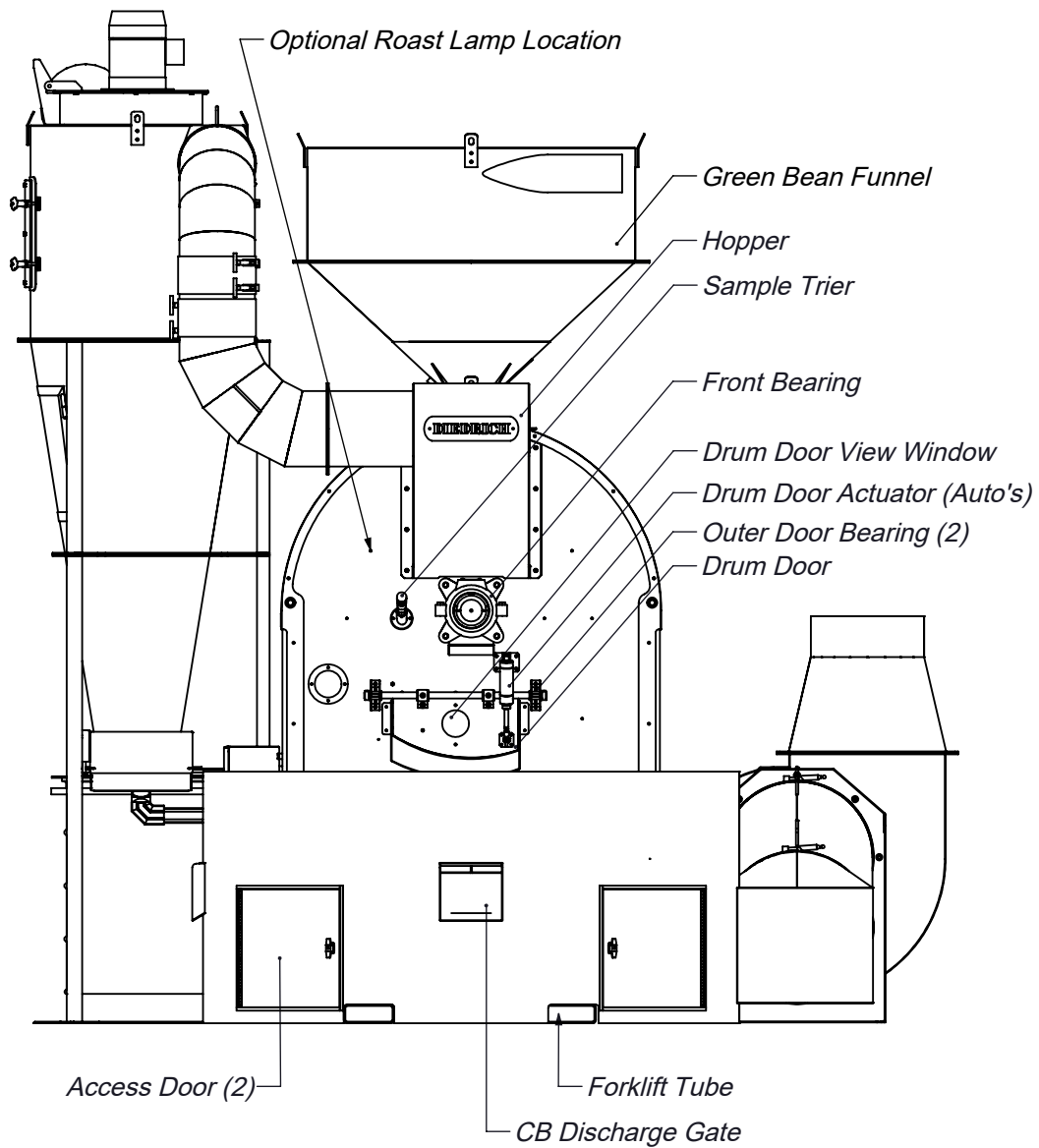
<b>Electrical Information</b>	
Volts AC	200-240V 3 PH, 380-480V 3PH
Frequencies	50Hz/60Hz
Full Load Amps; <u>Roaster without loader</u> Full Load Amps (FLA) at voltages other than what is shown will differ some.	84 Amps at 230V 3PH 50/60Hz 46.5 Amps at 480V 3PH 50/60Hz
Full Load Amps; <u>Roaster with loader</u> Full Load Amps (FLA) at voltages other than what is shown will differ some.	112 Amps at 230V 3PH 50/60Hz 61.3 Amps at 480V 3PH 50/60Hz
Main Breaker size; (The same for Roaster with or without loader)	150 Amps at 230V 3PH 50/60Hz 90 Amps at 480V 3PH 50/60Hz

## 2. CR-280 ROASTER DRAWINGS

This section contains drawing views with dimensions and component descriptions. These drawing are valuable for familiarization with the Diedrich CR-280 roaster and for space and utility connection planning. There are also drawings of the CR-280 roaster with optional loader, destoner, cyclone, and Afterburner.

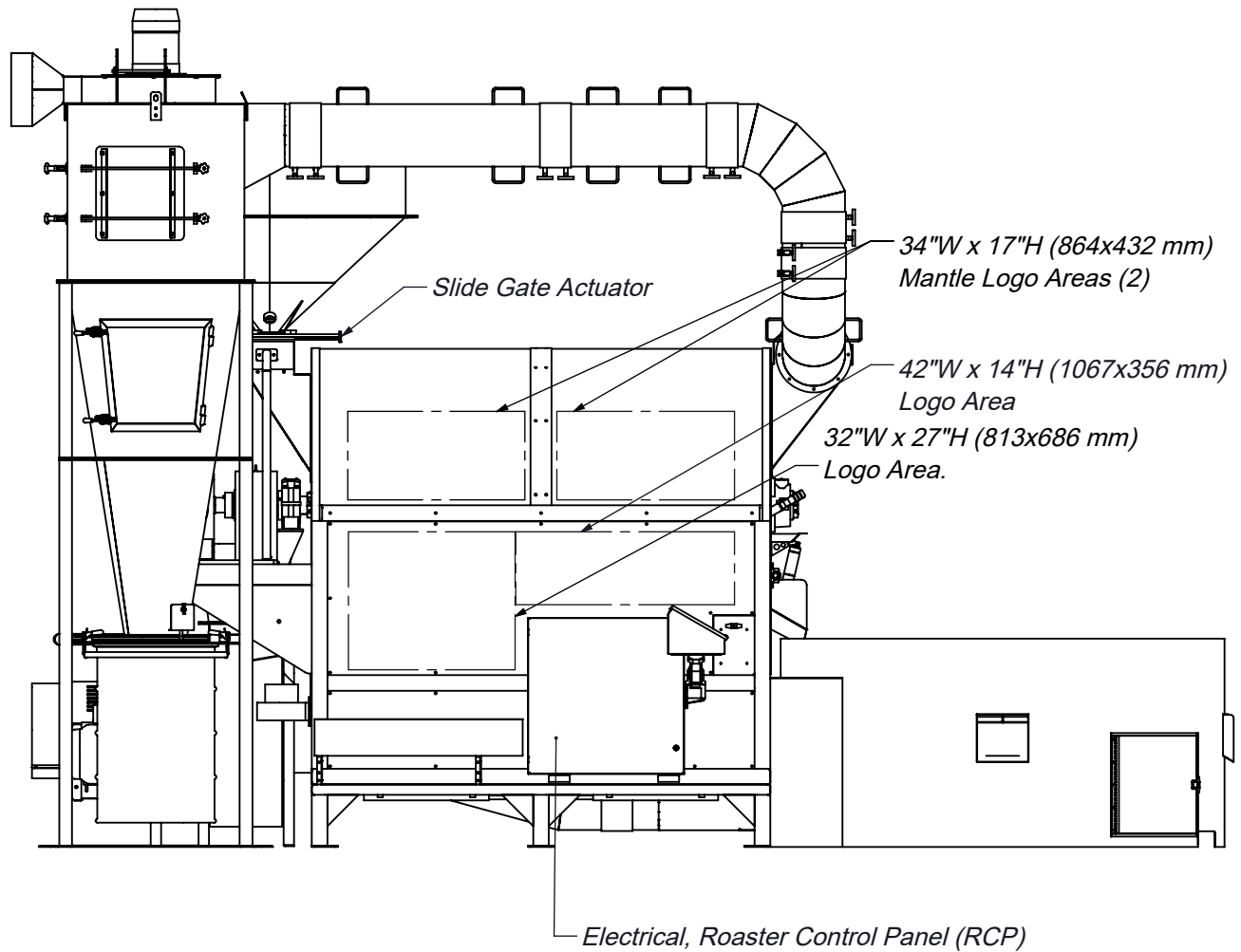
Dimensions and some details are subject to change.

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



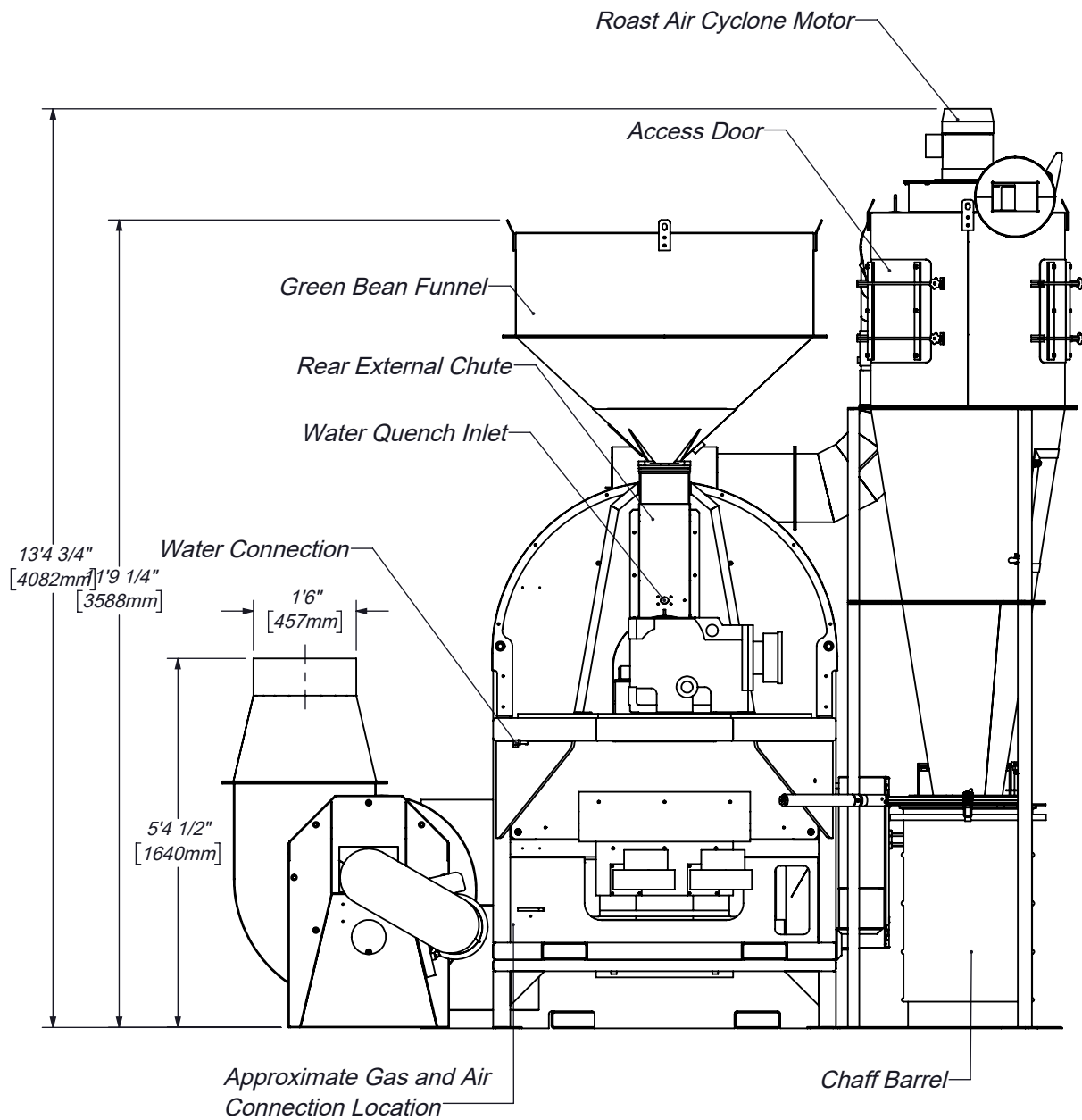
## ***Front View***

*Scale 1:30*



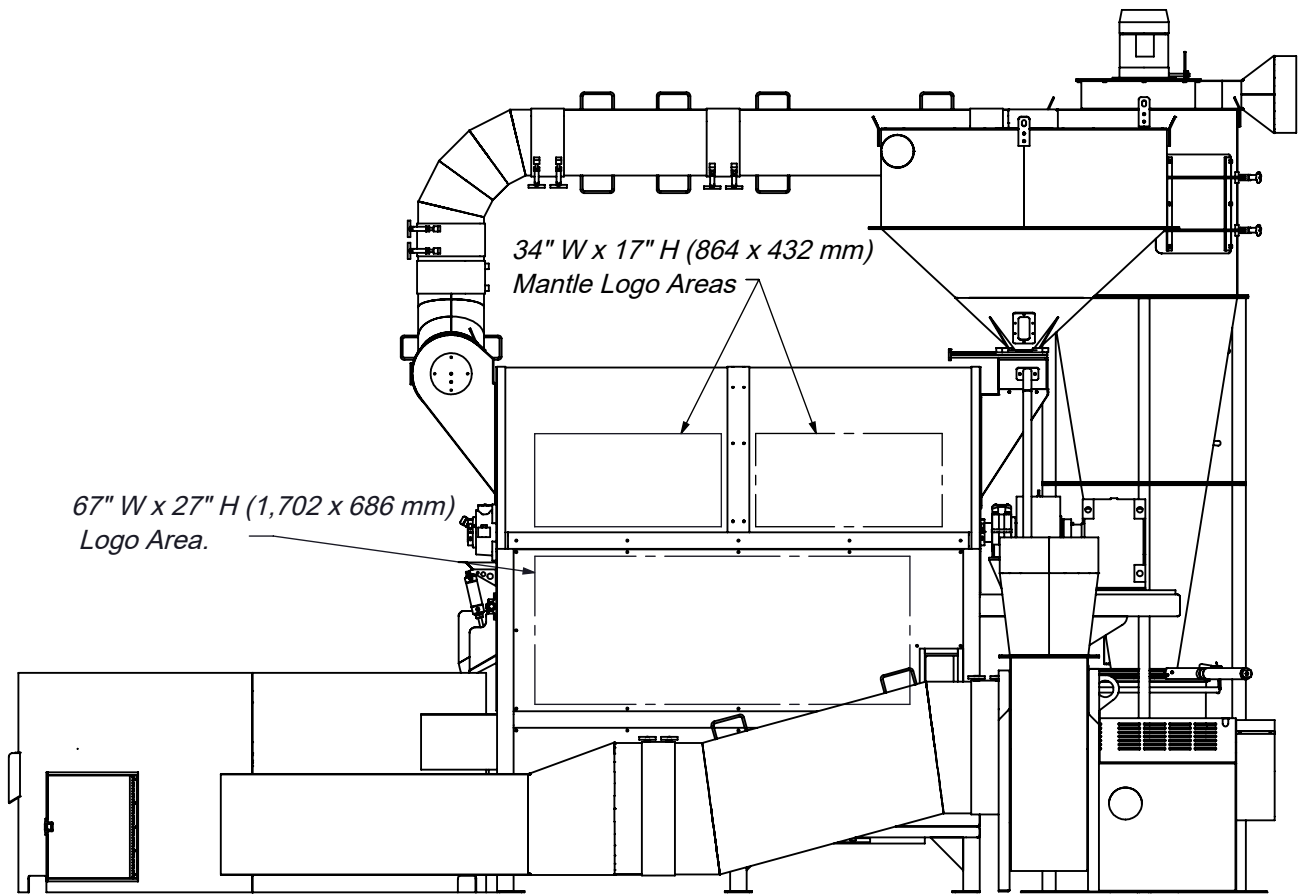
## ***Left Side View***

Scale 1:35



## ***Rear View***

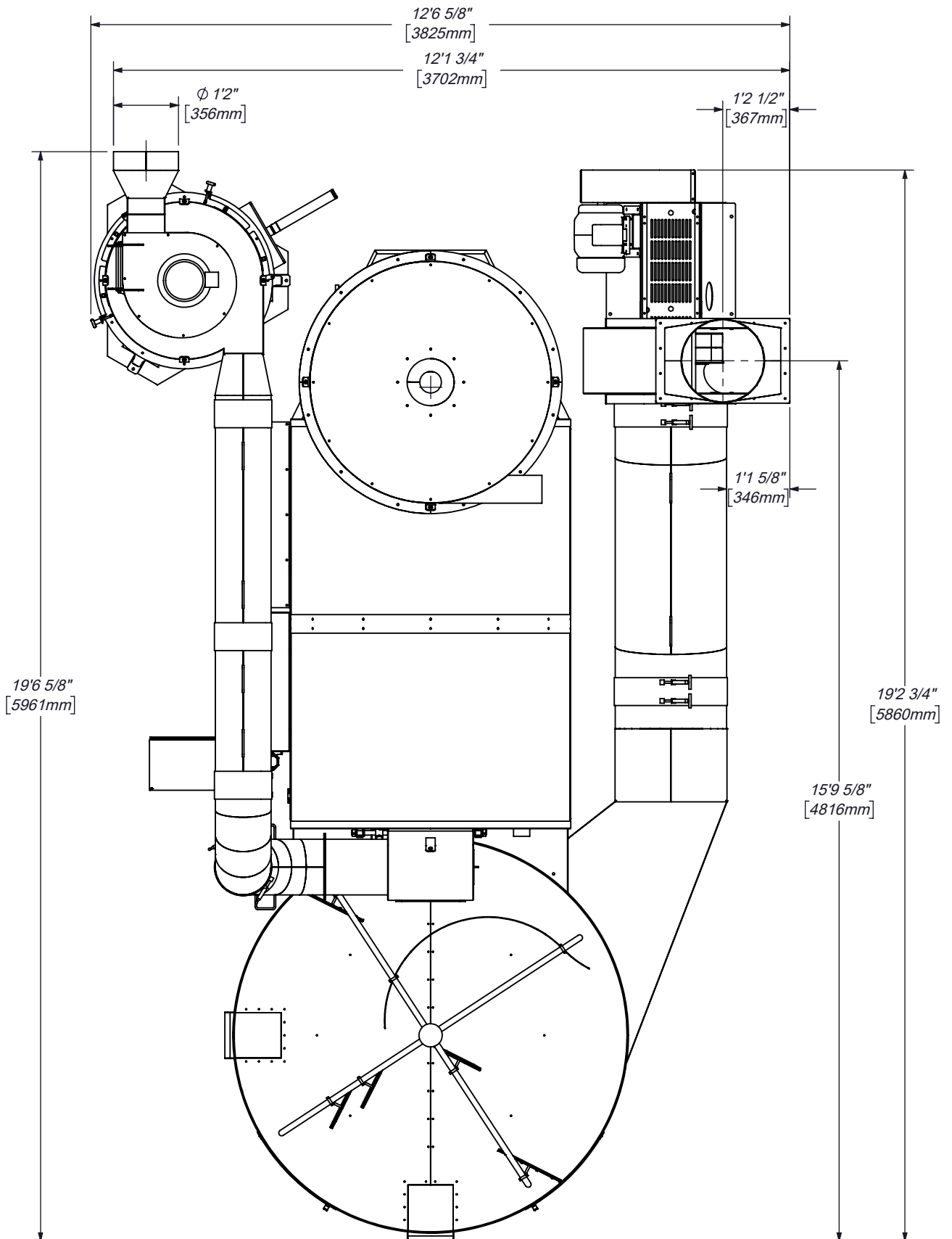
*Scale 1:30*



***Right Side View***

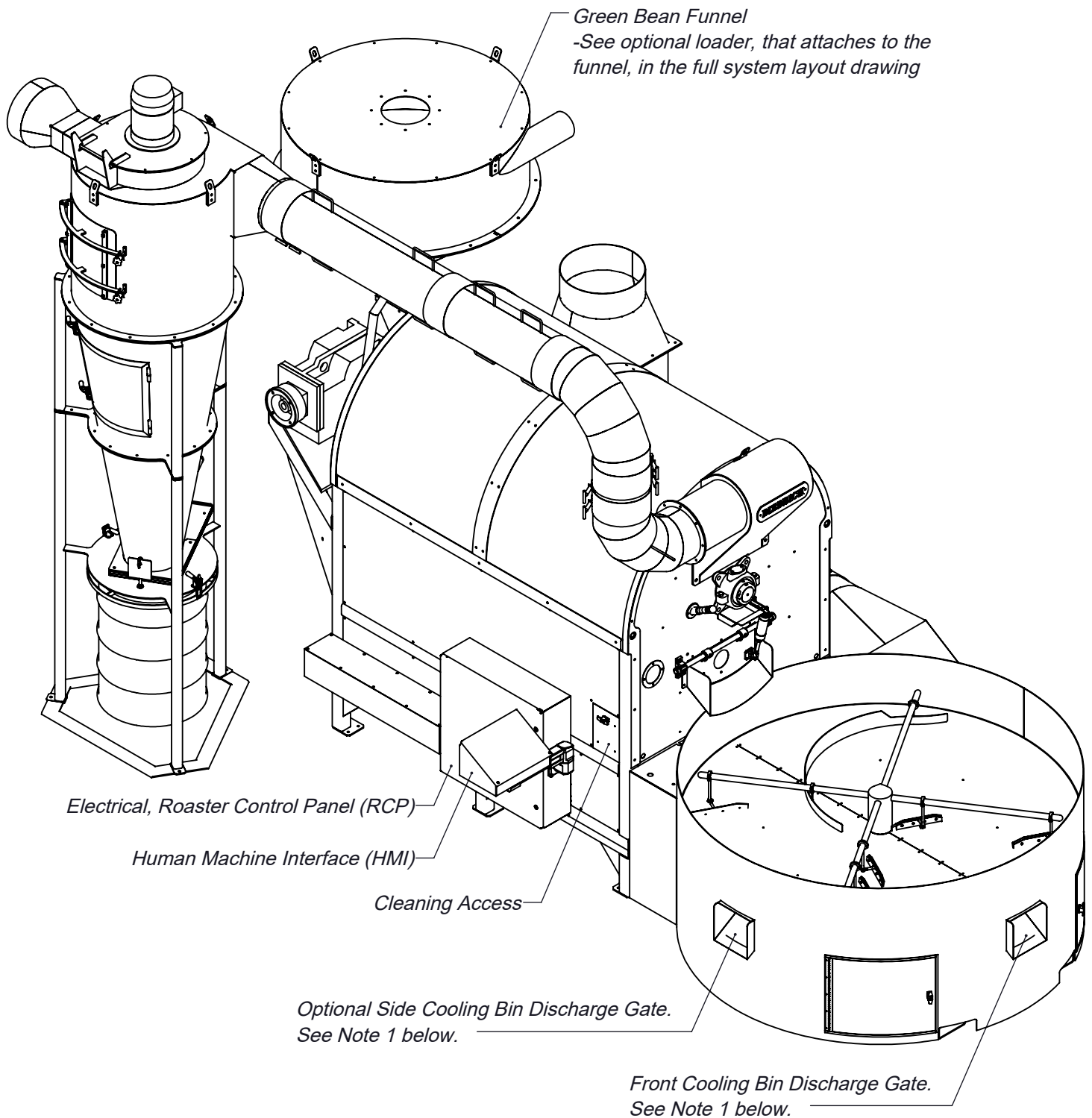
*Scale 1:35*





**Top View**

Scale 1:30



**Note:**

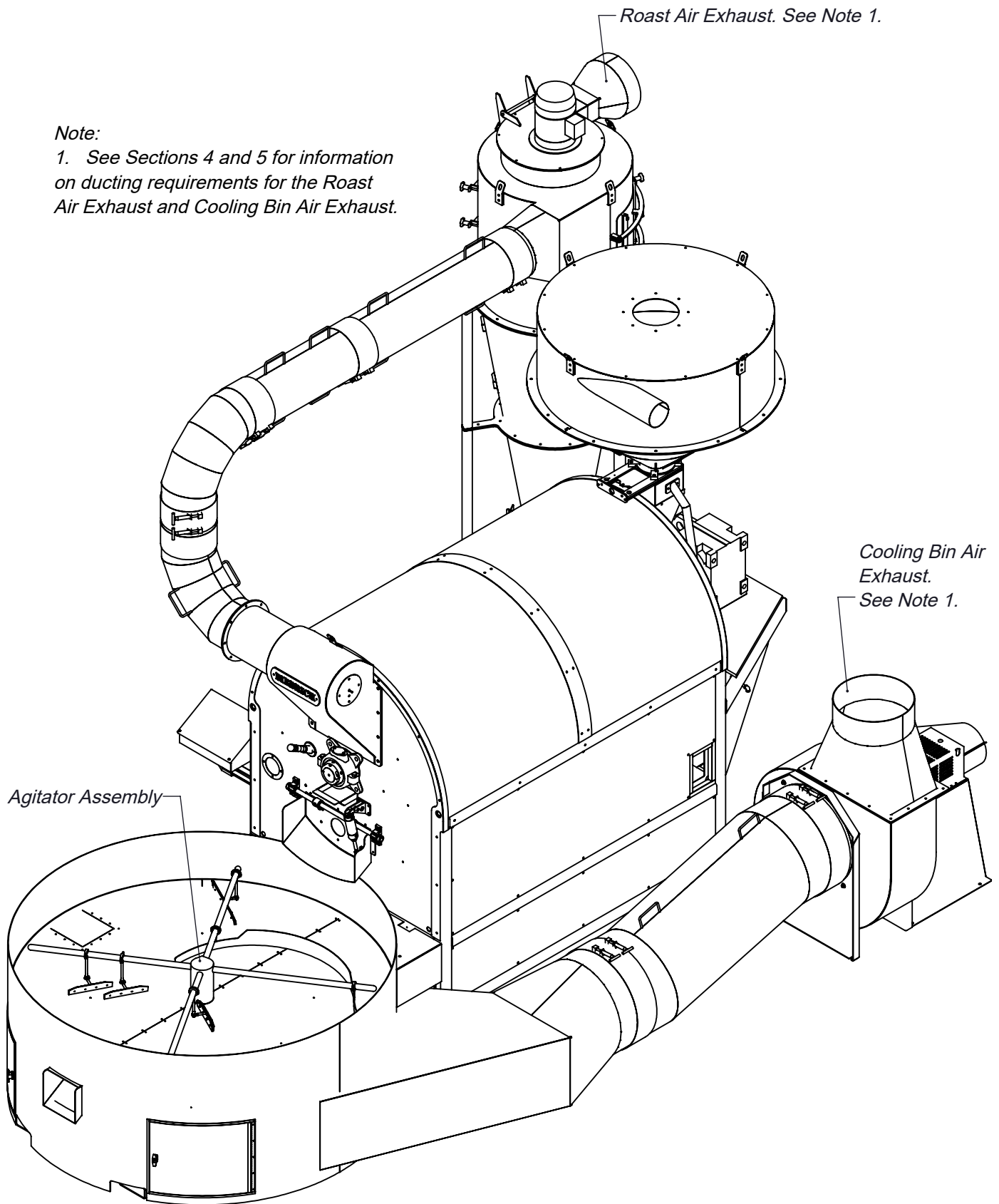
1. One Cooling Bin Discharge gate is standard. A 2nd discharge gate is an optional feature. Cooling Bin Discharge gates can be installed at the front and/or operator side (left).

## Front Left - Isometric View

Scale 1:30

*Note:*

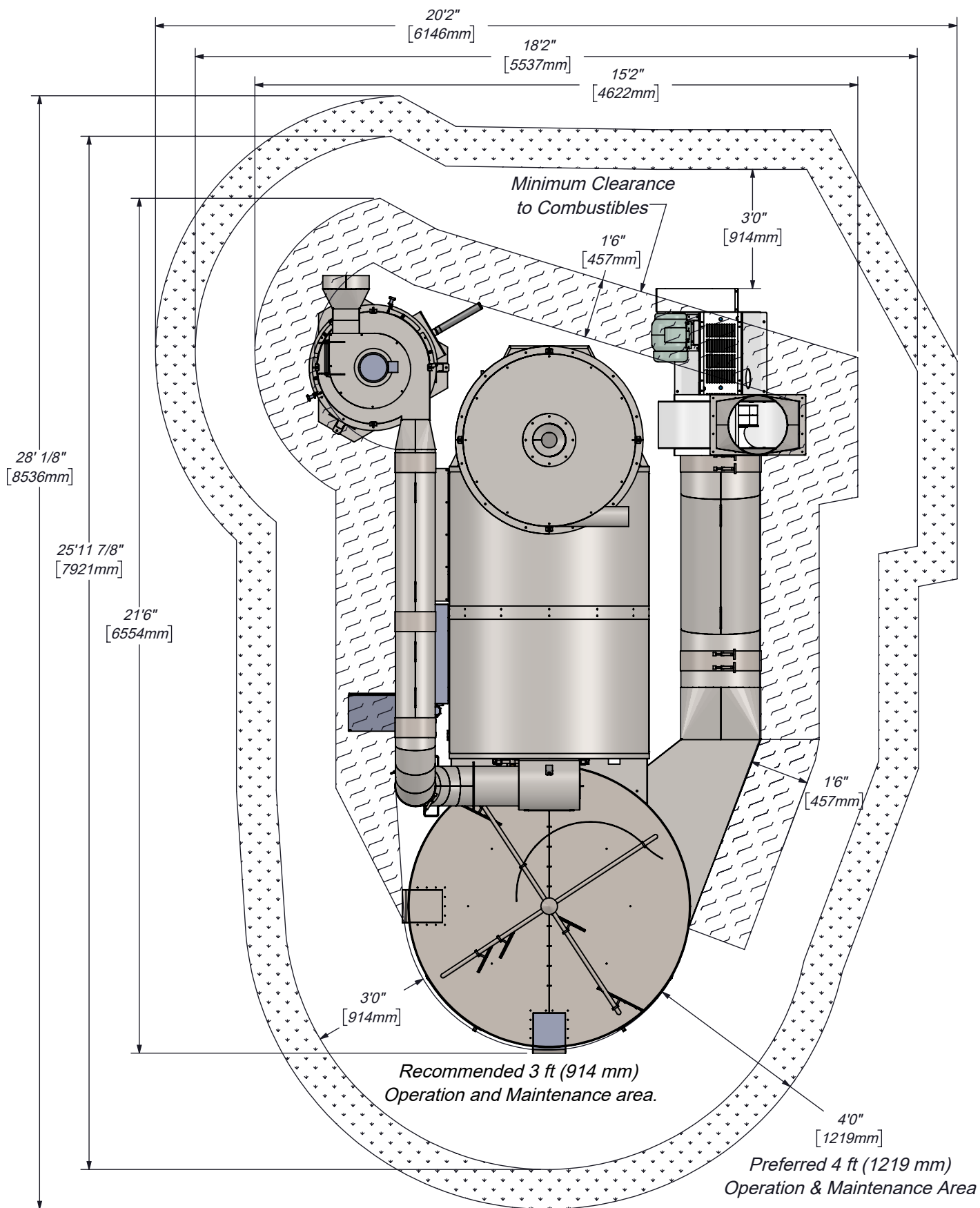
*1. See Sections 4 and 5 for information on ducting requirements for the Roast Air Exhaust and Cooling Bin Air Exhaust.*



***Front Right - Isometric View***

*Scale 1:30*

# Space Considerations



**Top View**

Scale 1:40

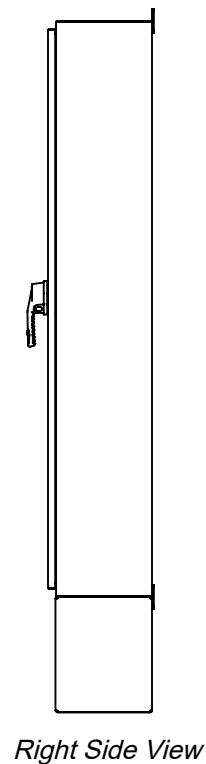
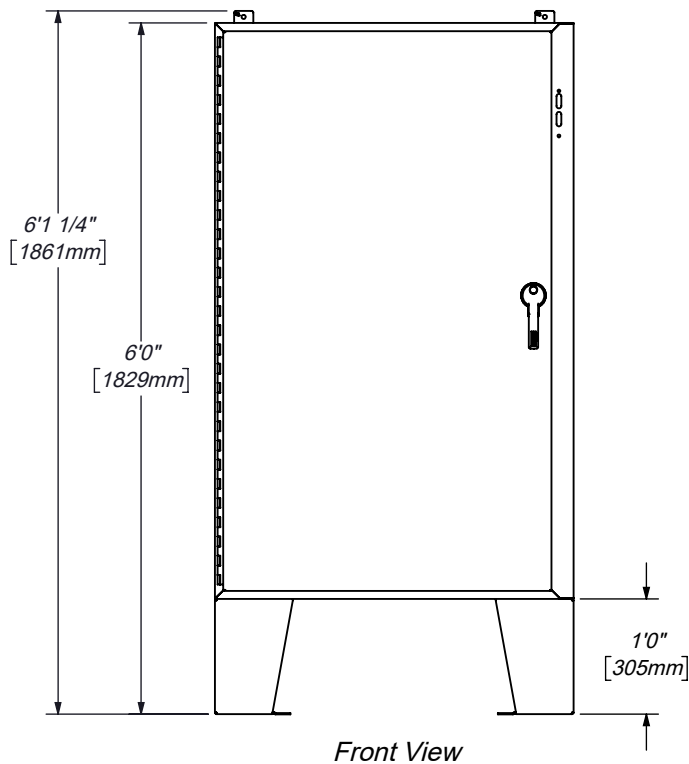
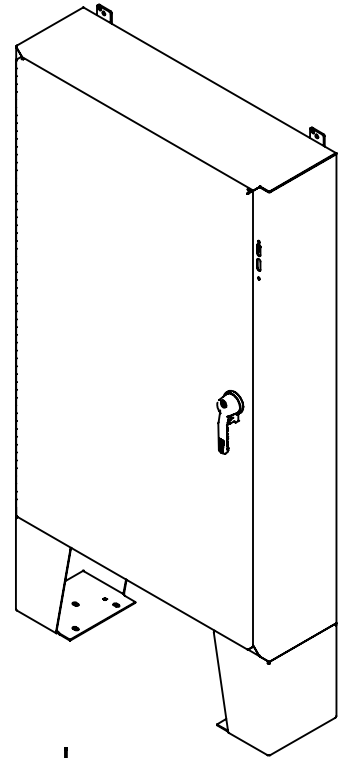
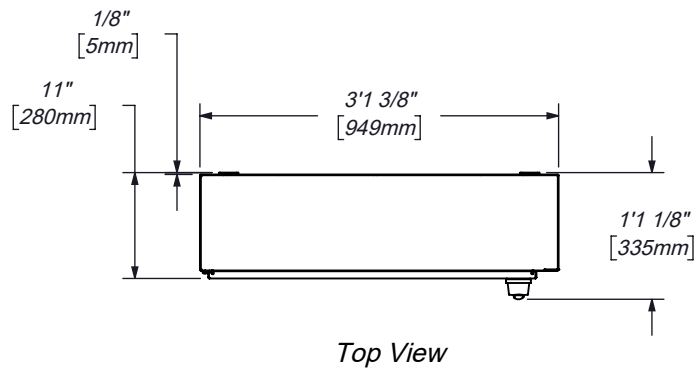
## Main Control Panel (MCP) Information

**Purpose:** Houses electrical components needed for equipment operation.

**Location:** Customer/contractor chooses where to place, and how to secure.

**Customer/Contractor responsibility.**

1. Connect incoming line power from facility to MCP
2. Route and connect wires from MCP to other equipment per Diedrich provided conduit schedule. The conduit schedule identifies all line voltage and low voltage wires that need to be connected to the MCP and any other electrical panels on other equipment.

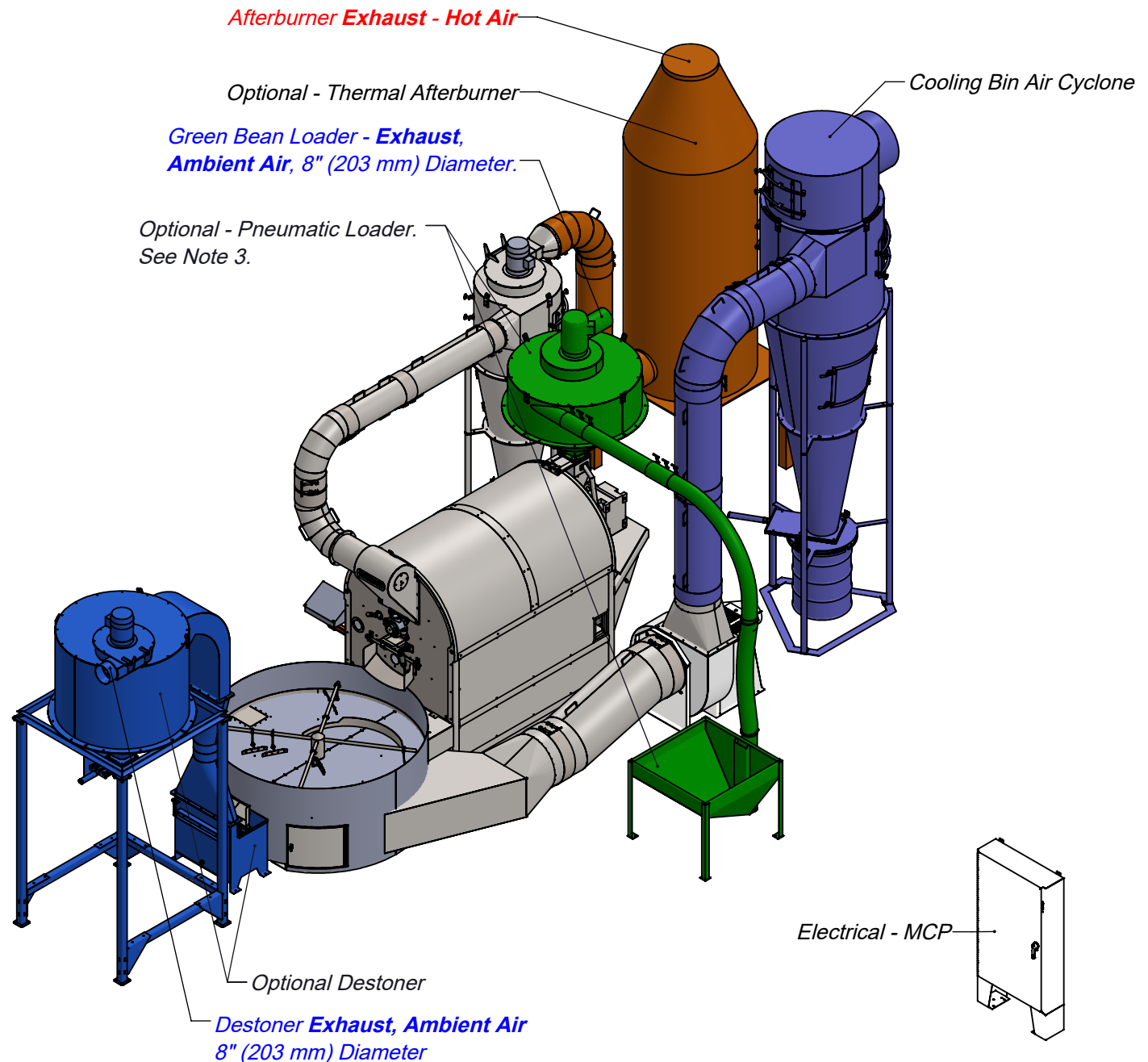


## ***Electrical - Main Control Panel (MCP)***

Scale 1:20

Note:

1. The customer is responsible for the exhaust ducting from the exhaust air locations noted below in **blue** and **red** text. See sections 4, 5, and 6 for additional exhaust ducting information.
2. The Diedrich provided ducting from and between the roaster, cyclones, and oxidizer must be at least 18" (0.457m) from combustibles.
3. The Pneumatic Loader ground station can rotate around the feed pipe, for ideal positioning. The Pneumatic Loader blower with exhaust, and the funnel with the feed pipe stub, can each rotate approximately 360 degrees, for optional positioning of the inlet feed and the exhaust (as long as they don't hit or interfere with each other or other equipment).



## Isometric View - Full Roasting System

Scale 1:60



### **3 FACILITY AND INSTALLATION PREPARATIONS**

- 3.1 Review the Installation and Operation Manual upon purchase. Read it thoroughly prior to installation of the roaster and/or ancillary equipment.
- 3.2 Check local building/fire codes and regulations. Installation must conform with local codes and local codes, regulations, and requirements will govern in the event they exceed or contradict information provided by Diedrich Roasters LLC, in this document or elsewhere.
  - 3.2.1 It is the purchaser's responsibility to ensure the appropriate codes and regulations, specific to their area, are followed and met.
- 3.3 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.
- 3.4 Determine the layout/location of the roaster and any ancillary equipment.
  - 3.4.1 Clearance to combustibles must be a minimum of 18 inches (457 mm) from the sides and the back of the roaster and from the roast air and cooling bin air ducting. However, 3-4 feet (1-1.2 meters) minimum clearance is recommended for operation, maintenance, and repairs. See the Top View Space and Utility Connection Information drawing.
  - 3.4.2 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.
- 3.5 Seek licensed and certified professionals for preparation, installation, and connection of electrical, gas, and exhaust ducting to the roaster and any ancillary equipment.
- 3.6 Make sure the appropriate electrical power is available. Ancillary equipment such as the, destoner, and afterburner will require their own power source, since they are not powered by the roaster. See section 1 of this document and the Installation, Operation, & Maintenance Manual for additional information.
- 3.7 Make sure the appropriate gas supply is available. See section 1 of this document and the Installation, Operation, & Maintenance Manual for additional information. Additional considerations for the gas supply line include:
  - 3.7.1 A safety shut-off valve must be installed in the gas supply line before, and close to, the connection to the roaster.
  - 3.7.2 An incoming regulator must be installed to adjust the incoming pressure to the roasters required pressure. A separate incoming pressure regulator is required for an afterburner, if an afterburner is used. Venting of the roaster and supply line regulators will likely require venting to the outdoors, per code.



- 3.7.3 A strainer or sediment trap, as well as a moisture separator or moisture trap/drip, must be installed upstream of the roaster. These must be capable of capturing and cleaning or draining sediment and moisture.
- 3.8 The roasting system will remove fresh air from the building. An additional fresh air inlet may be required to allow “make up air”. See section 1 of this document for roaster airflow information. Consultation with a licensed Heating, Ventilation, and Air Conditioning (HVAC) contractor is recommended.
- 3.9 Ensure the appropriate size and type of exhaust ducting is installed. Section 1 of this document, and the “Exhaust Ducting” section below, provide technical data and other pertinent information. *The exhaust ducting can be expensive and have a long lead time.*

#### **4 EXHAUST DUCTING – GENERAL INFORMATION**

- 4.1 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.
- 4.2 One of the most important aspects of the equipment installation is the use of an approved exhaust ducting system. Its design 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.
- 4.3 Designing the exhaust ducting system requires a qualified professional to calculate the efficiency of the system and the proper size of ducting. The ducting must be of sufficient diameter to accommodate the air flow (SCFM - standard cubic feet per minute or SCMh - standard cubic meters per hour), meet the static pressure requirement (noted below), and meet applicable regulations. A licensed engineer or Heating, Ventilation, Air Conditioning (HVAC) professional can assist. Information the qualified professional will need, such as the diameter of the exhaust ducting and the maximum exhaust air flow, is located in the section 1 *Technical Data* table. Customers should contact their sales or project manager representative with any questions.
- 4.4 A properly designed and installed chimney and rain cap is essential to the equipment performance and longevity. Water leaking in may cause an electrical short or damage 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.
- 4.5 The Diedrich equipment (roaster, cyclone, Afterburner, loader, or destoner, as applicable) MUST NOT support the weight of the exhaust system.
- 4.6 The exhaust air from Diedrich products fits into one of the two general categories. Either hot exhaust air, such as from the roaster or an afterburner; or ambient/room temperature exhaust air, from products such as loaders and destoners. The sections that follow will discuss ducting considerations specific to these general categories

## 5 EXHAUST DUCTING, HOT AIR – ROASTERS AND AFTERBURNERS

- 5.1 The 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. Thus, Diedrich recommends, at a minimum, stainless steel, double wall, positive pressure grease ducting that meets the applicable region/local standards, such as UL for USA, ULC for Canada, and CE for the European Union.
- 5.2 An important consideration when designing an exhaust ducting system is the static pressure. The static pressure is the backpressure or suction within the system. The exhaust ducting that connects to the roaster, cyclone, or afterburner, must be designed to operate with a static flue pressure between negative 0.15"WC (suction) and positive 0.25"WC (backpressure) at the exhaust of the roaster (cyclone or Afterburner, as applicable) while in operation.
- 5.3 For Roasters (with or without cooling bin cyclone, and without an Afterburner).
  - 5.3.1 Ducting must be suitable for 500°F (260°C) continuous, 2,000°F (1,093°C) for 30, minutes, 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).
  - 5.3.2 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 manufacturer's installation specifications and allowable distance to combustible/noncombustible materials.
- 5.4 For Roasters with an Afterburner.
  - 5.4.1 Ducting from the Afterburner must be suitable for 1,000°F (538°C) continuous, 1,400°F (927°C) intermittent, and comply with UL-103/ULC\_ORD-C959 in the USA/Canada, and/or equivalent standards for other countries (such as CE standards for the European Union).
  - 5.4.2 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 manufacturer's installation specifications and allowable distance to combustible/noncombustible materials.
- 5.5 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](http://www.vpstack.com), 888-877-8225, or [VPTech@vpstack.com](mailto:VPTech@vpstack.com)

[Selkirk www.selkirkcorp.com](http://www.selkirkcorp.com) or customer service at 800-848-2149

[Jeremias www.jeremiasinc.com](http://www.jeremiasinc.com) or [JeremiasTech@jeremiasinc.com](mailto:JeremiasTech@jeremiasinc.com)

[DuraVent www.duravent.com](http://www.duravent.com) or [e-mailcustomerservice@duravent.com](mailto:e-mailcustomerservice@duravent.com)



#### **DANGER**

**DO NOT USE CLASS B OR SPIRAL-WRAP DUCTING FOR ROASTER OR AFTERBURNER DUCTING UNDER ANY CIRCUMSTANCES.**



#### **DANGER**

**Fires are caused by failure to maintain a clean roaster and its exhaust ducting system. Regular cleaning of the roaster and exhaust ducting will prevent the buildup of residues that could cause fire.**

## **6 EXHAUST DUCTING, AMBIENT AIR –LOADERS AND DESTONERS**

- 6.1 The exhaust air from **loaders** and **destoners** is about the same temperature as the ambient air in the room or operating area. The regulatory requirements for the exhaust ducting for these components are much less stringent than the requirements for the hot air roaster, cyclone and afterburner exhaust.
- 6.2 The exhaust air from the green bean loader and the destoner will likely contain some dust and/or other particulate matter. A dust collection system should be considered.

## **7 ADDITIONAL DOCUMENTS AND INFORMATION**

The information in this document is intended to assist customers with purchasing and facility preparation decisions. Upon purchase of a Diedrich Roaster, additional documentation will be provided. 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.

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Website: [DiedrichRoasters.com](http://DiedrichRoasters.com)

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Instagram: [Instagram.com/DiedrichRoasters](https://www.instagram.com/DiedrichRoasters)

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