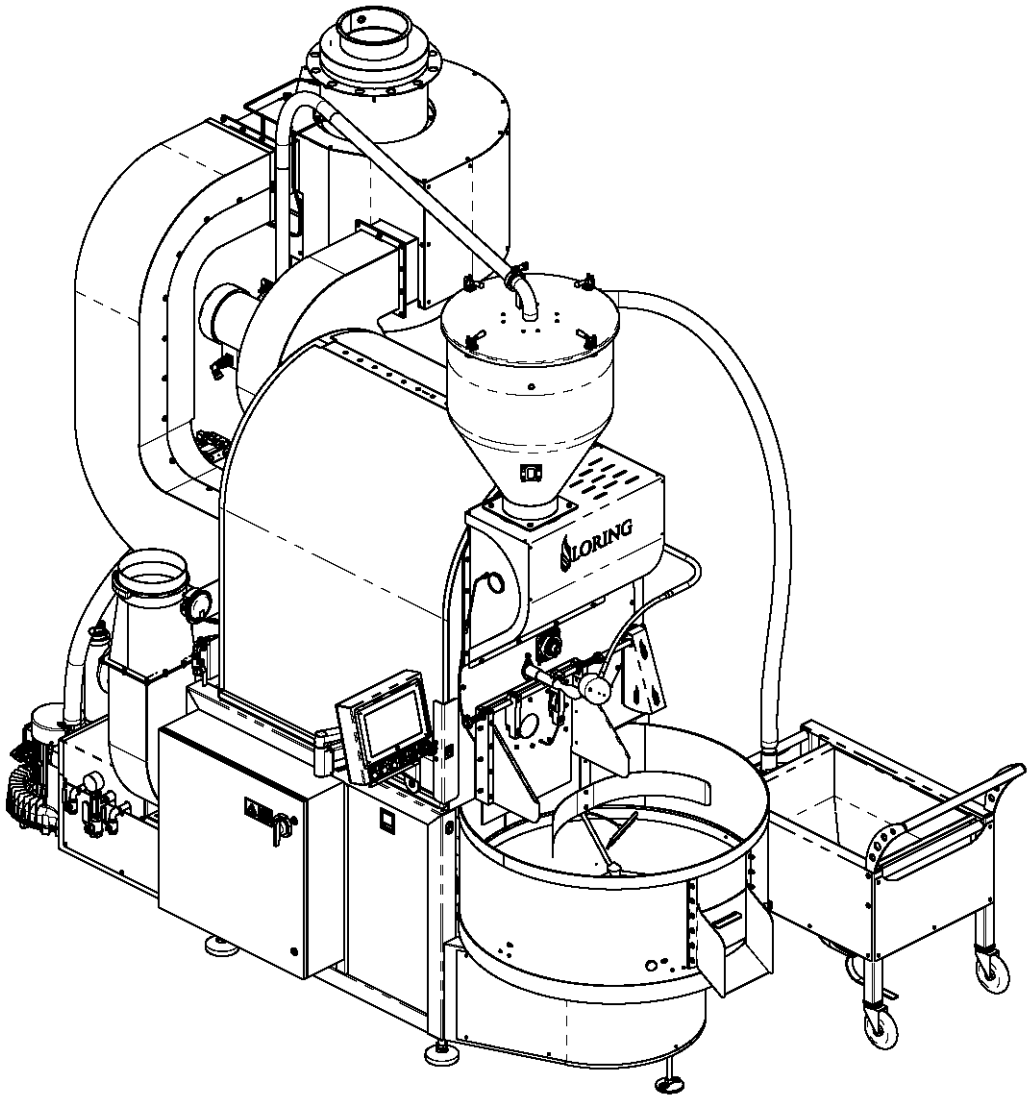
LORING




# Pre-Installation and Site Preparation Guide

## Loring S70 Peregrine™ Coffee Roaster

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# Notices

## Document Versioning Information

**Document No. 1008235 Rev B**

**Date Last Exported: September 3, 2018**



Warranty is void unless product is installed and used in accordance with all written instructions.

This manual, along with other manuals in this series, is intended to be a guideline for the installation and use for the product lines manufactured by Loring Smart Roast, Inc. The customer is responsible for complying with all applicable regulations.

The customer should refer to a licensed professional contractor or contractors for all installation details.

## Dangers, Warnings, and Cautions

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.

## Pre-Installation and Site Preparation Guide General Notes

Follow all written instructions provided by Loring, and verbal instructions from Loring Customer Support, regarding site preparation prior to receiving the coffee roasting equipment.

All contractors or subcontractors involved in installation or working with specific connections (e.g., water, air, gas, electrical, hot and cold exhaust ventilation) should be fully licensed and qualified in that particular functional area.

Comply with all applicable rules and regulations and governing agencies.

Loring reserves the right to change information within this document at any time without notice.

# Contents

# Introduction

## Audience

The intended audience for this manual, the *S70 Pre-Installation and Site Preparation Guide*, includes customer-side administrators, floor employees, general contractors, facilities managers and other individuals who are responsible for preparing the site for installation of the roaster.

## Acquiring a Coffee Roaster

Preparing for and installing a Loring coffee roaster requires cooperation between the customer and Loring over several weeks. Generally, the customer should begin preparing the site 3 months prior to shipping. Upon receiving the roaster, the customer's general contractor assembles the roaster, connects the utilities including water, gas, and electric, connects the hot and cold exhaust ventilation, and then waits for the Loring Field Service Technician to perform final system commissioning. The commissioning period also includes hands-on customer training in the use and maintenance of the roaster.

Some tasks, such as ordering stack ventilation components, may require specifying and purchasing equipment from third-party suppliers. Allow sufficient lead times.

WARNING: Operating the roaster prior to final inspection and commissioning by an authorized Loring Field Service Technician will void the warranty.

# Additional Documentation

The following additional documentation is available to aid with installation and setup. Contact your Loring Account Representative for more information.

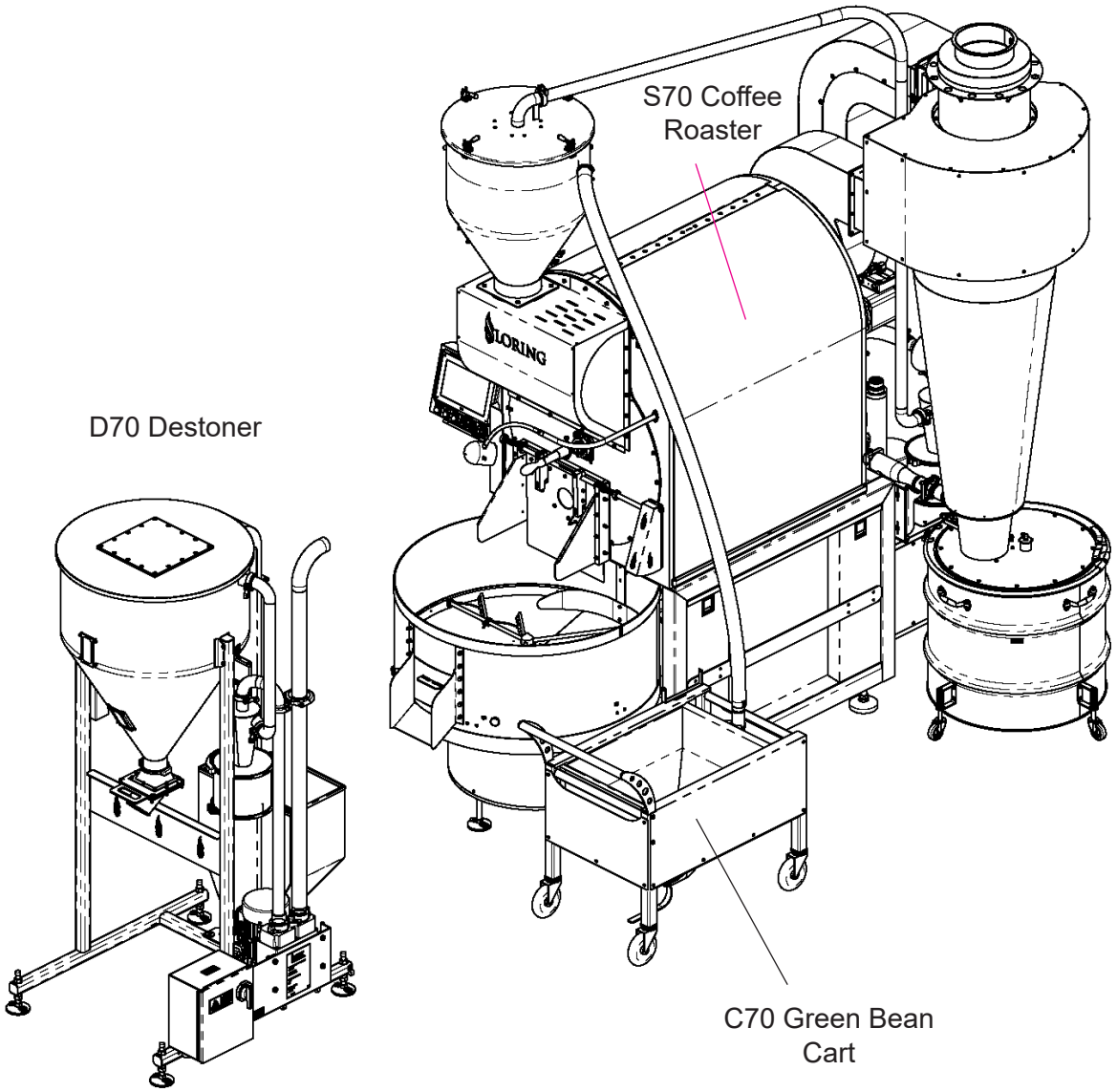
- Welcome Packet. The *Welcome Packet* contains detailed instructions and information sent by Loring to each new customer upon purchase of a coffee roaster. One item, the Product Specification Form, must be completed and returned to Loring in order for Loring to begin building the roaster.
- Product Specification Form (PSF). The customer must provide information to Loring regarding the site's utility characteristics. This information is used to configure the roaster at the factory, a process that requires several weeks' lead time. Loring strongly recommends working with a licensed professional contractor when providing this information. This form is included in the *Welcome Packet*.
- Suggested Stack Manufacturers. One of the items in the Welcome Packet is a list of recommended manufacturers of stack ventilation components. Loring recommends ordering stacks 6 weeks prior to the arrival of the roaster.
- Installation and Assembly Guide. After receiving the coffee roaster, the customer must engage with a licensed general contractor to assemble, position, and hook up the roaster to various utilities and stack ventilation.
- Mechanical Interface Control Documents (MICDs). These technical drawings provide detailed information on system dimensioning and components, as well as system weights. They are intended for permit submittals and for use by general contractors, as well as by architects and facilities planners. These drawings are available upon request from Loring.
- Special Reports for Permitting. Additional reports on various technical subjects are available from Loring. Each customer may need to satisfy unique local or regional regulatory requirements. For example, air quality reports are typically required, and some locations may require both county and city permits.

The *Product Specification Form (PSF)* conveys extremely important customer information regarding the customer site's power supply voltage and network configuration. Loring requires this form to be completed by the customer a minimum of 9 weeks prior to production completion. Any delay in providing any portion of this information can delay the roaster production by a corresponding number of weeks.

# Equipment

The core pieces of Loring coffee-roasting equipment are as follows:

- S70 Coffee Roaster
- C70 Green Bean Cart (included with S70 roaster)
- D70 Destoner (optional)



# S70 Specifications

**Table 1. S70 Basic Equipment Specifications**

| S70 Specification | Value |
|---|---|
| **System Weight** [1] | 3889 lb (1764 kg) uncrated |
| **System Weight (Destoner)** [1] | 554 lbs (251 kg) uncrated |
| **Maximum Batch Size** | 154 lbs (70 kg) |
| **Minimum Batch Size** | 30 lbs (14 kg) |
| **Nominal Electrical Power** | 8.6 kW |
| **Peak Electrical Power** | 17.5 kW |
| **Maximum BTU Rating** | 620,000 BTU/hr (156 Kcal/h) |
| **Hot Stack Max Continuous Temperature** [2] | 1400°F (760°C) |
| **Hot Stack Max Intermittent Temperature** [2] | 1550°F (843°C) |
| **Hot Stack Max Flow** [3] | 107 dscfm (182 dsm^3/h) |
| **Hot Stack Max Flow (Peak Air Cool)** [5] | 950 dscfm (1614 dsm^3/h) |
| **Hot Stack Minimum Duct Diameter** [4] | 10 in (254 mm) |
| **Cooling Exhaust Max Flow** [5] | 2,180 scfm (3704 sm^3/h) |
| **Cooling Duct Diameter** [4] | 10 in (254 mm) |

Notes:

1 Exact system weight may depend on options selected.

2 Consult local and regional regulations for air quality, temperature, and emissions requirements.

3 Dry, or water content of the flue removed, under standard pressure and temperature conditions, i.e. 29.9 in HG (760 mm HG) and 68°F (20°C).

4 Larger stack diameters or stack openings may be required under some conditions.

5 Add the Hot Stack Max Flow (Peak Air Cool) and Cooling Exhaust Max Flow to obtain the total air flow out of the building. This may be needed in the event that additional air intake, otherwise known as makeup air, is needed at the installation site.

# Requirements for Utilities

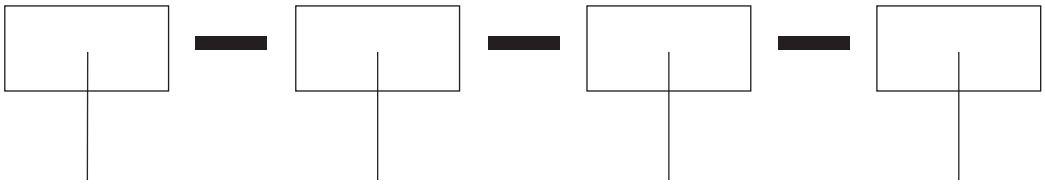
In order to ensure proper roaster performance, the customer should verify that the site utilities meet basic requirements for water, compressed air, and gas. The customer must indicate whether the site uses natural gas or propane.

**Table 2. S70 Utilities Requirements**

| S70 Specification | Value |
|---|---|
| **Water Supply (Flow) Minimum** | 1 GPM (3.8 LPM) or greater |
| **Water Pressure Minimum** | 50 psi (345 kPa) or greater |
| **Compressed Air Flow, Minimum** | 4 CFM (0.11 $m^3$ min) or greater |
| **Compressed Air Pressure, Minimum** | 80 psi (552 kPa) or greater |
| **Natural Gas Pressure (Min/Max Range)** | 4 – 7 in WC (1.0 – 1.7 kPa) |
| **Natural Gas Caloric Content, Minimum** | 1000 BTU/$ft^3$ (37 MJ/$m^3$) or greater |
| **Propane Gas Pressure (Min/Max Range)** | 11 – 13 in WC (2.7 – 3.2 kPa) |
| **Propane Gas Caloric Content, Minimum** | 2500 BTU/$ft^3$ (93 MJ/$m^3$) or greater |

# Power Specification

Loring coffee roasters can be built to accommodate a wide range of electrical configurations. To determine which Loring topology matches your facility's supply, the customer should engage a licensed electrician to perform a site survey, in order to provide the following information:



**Model Number:**

Eg. S70

**Gas Type:**

NG - Natural Gas
LPG - Propane

**Power Voltage:**

200 (3P)
208 (1P)
208 (3P)
220 (3P)
230 (3P)
240 (1P)
240 (3P)
380 (3P)
400 (3P)
415 (3P)
480 (3P)

**Power Frequency:**

50 - 50Hz
60 - 60 Hz

**Example: S70 - NG- 380 (3 P) - 50**

## Supply Voltage Combinations

For example, a typical U.S. installation might be 208 VAC, 3-phase, at 60 Hz.

This equates to a specification of 208 (3P) - 60

A typical installation in Europe might be 400 VAC, 3-phase, at 50 Hz.

This equates to a specification of 400 (3P) - 50

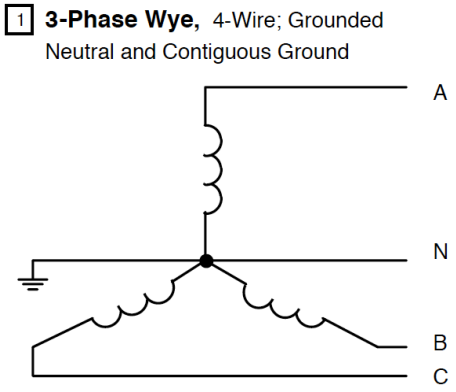
On the Product Specification Form, the customer has the option to choose among some commonly occurring configurations. However, the customer should NOT approximate by choosing the closest one if it is not an exact match.

If the customer site is not represented, contact Loring immediately for other possible configurations.

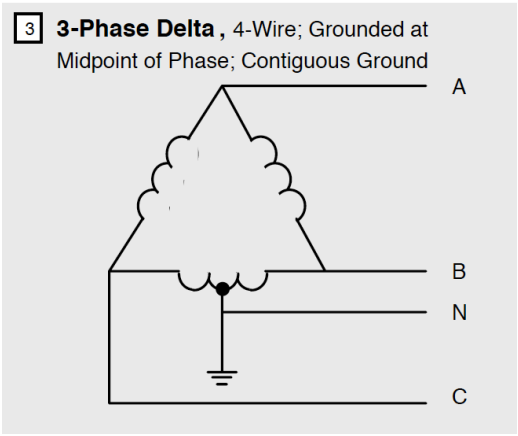
# Supply Voltages, Explained

The information under Power Specification is as follows:

- Voltage: Designates the type of power voltage at the site.
  - » The L-L number is the Primary or Line-to-Line voltage.
  - » The L-N is the Secondary Line-to-Neutral voltage. A neutral wire is no longer required for Loring roasters.
- Number of Phases: The Number of Phases represents the number of Line-to-Line phases. This is either 1P or 3P, indicating single phase or three phase respectively.
- Wiring Topology: The type of circuit. Refer to *Loring Engineering Document No. 1001163* for more information.
  - » Y= Wye
  - » D= Delta
- Power Frequency: The last informational block designates the site's voltage frequency, in Hertz (Hz).




3-Phase Wye




3-Phase Delta

# Supply Amperage

In order for the roaster to function properly, the customer is responsible for installing service to the required level of amperage as follows:

- 200 VAC – 240 VAC:
  - » 3P – 50 Amps
- 380 VAC – 480 VAC – 30 Amps

# Dimensions and Clearances

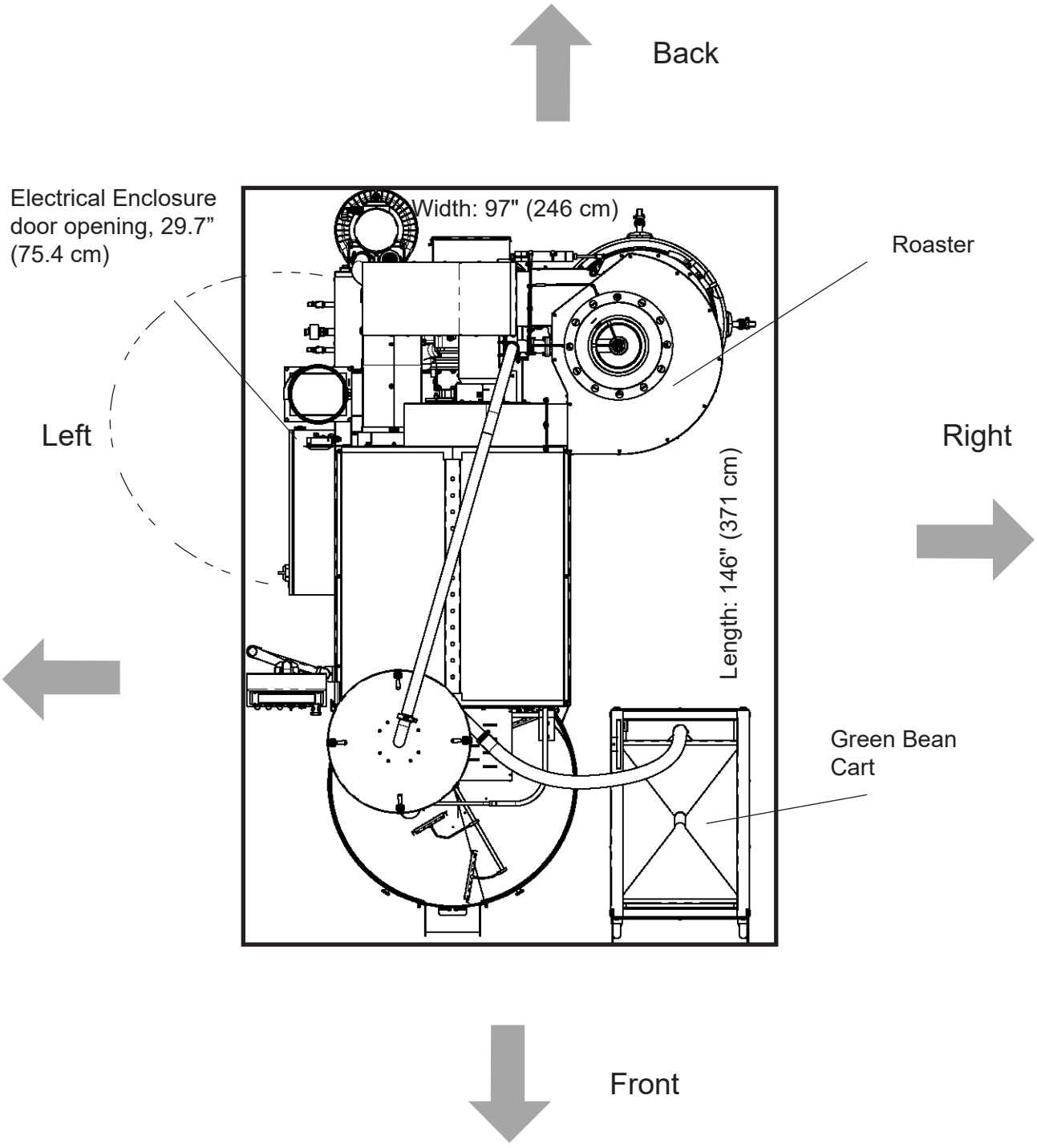
## Overall Footprint

**Table 3. S70 Dimensions and Clearances**

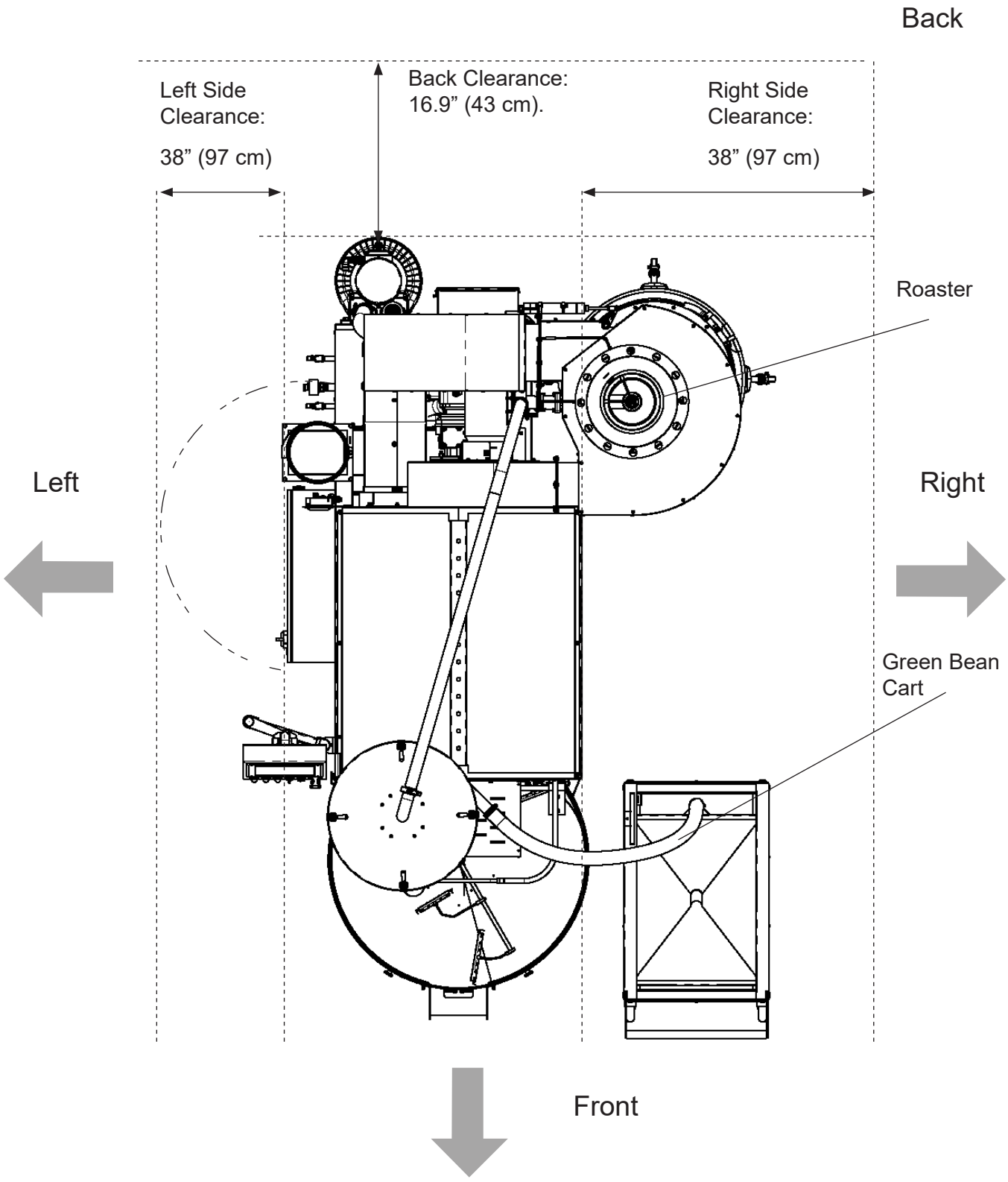
| S70 Dimension | Value |
|---|---|
| **Footprint (Roaster only)** | 92.4” W x 136” L x 129” H<br>(235 cm W x 345 cm L x 328 cm H) |
| **Footprint (Roaster and Green Bean Cart)** | Standard positioning:<br>97" W x 146" L x 129" H<br>(246 cm W x 371 cm L x 328 cm H) |
| **Footprint (D70 Destoner)** | 46" W x 53" L x 92" H<br>(117 cm W x 134 cm L x 233 cm H) |
| **Clearance** | 38” L-R sides and front, 16.9” in back<br>(97 cm L-R sides and front, 43 cm in back) |
| **Roaster Height** | 129" (328 cm) |
| **Minimum Ceiling Clearance** | 12" (31 cm) above Stack Hat |
| **Total Ceiling Height** | 141” (358 cm) |

Refer to the *Mechanical Interface Control Document (MICD)* from Loring for further information, including CAD diagrams with construction details.

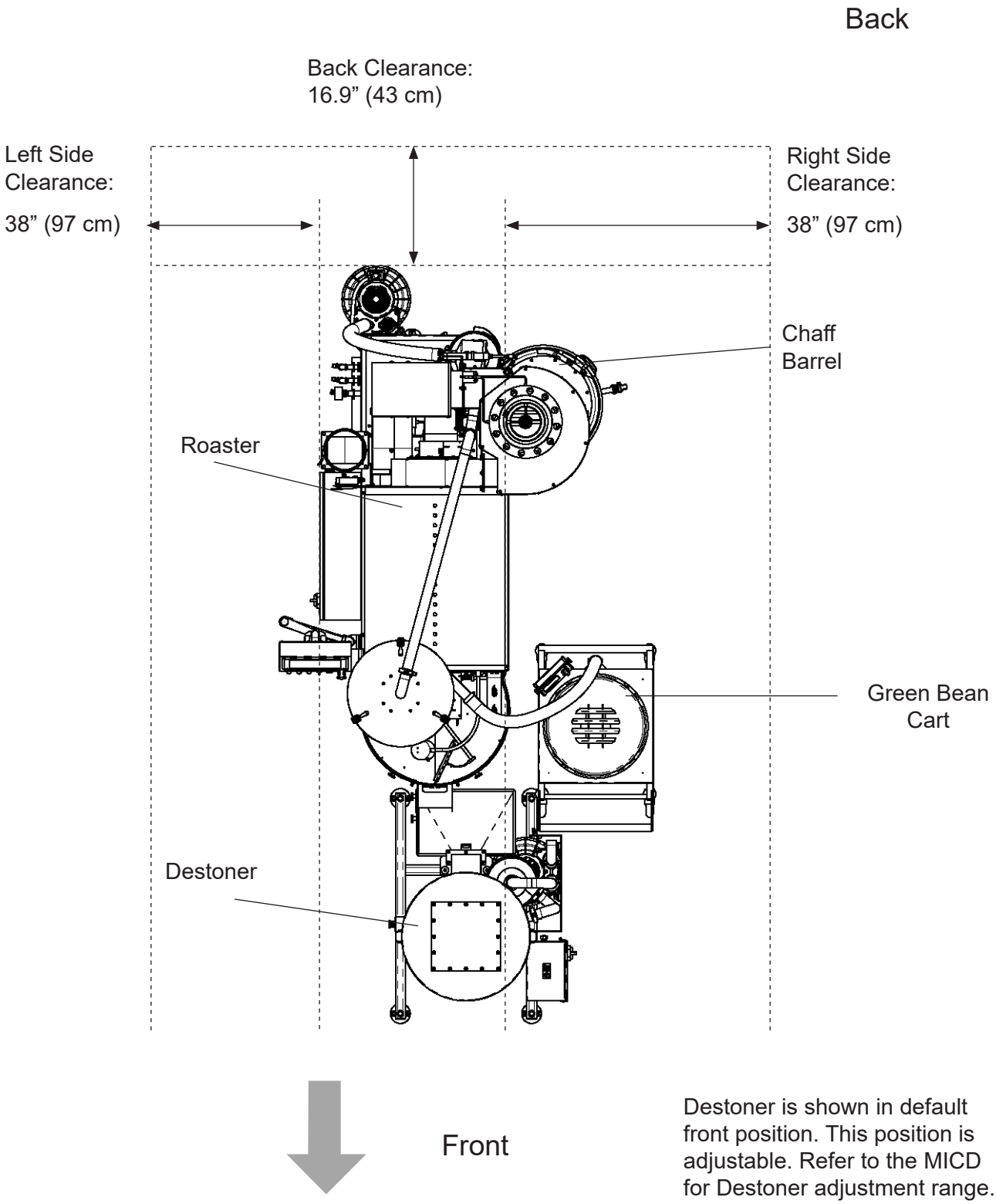
# Footprint – S70 Roaster and Cart



# Floor Clearances – S70 Roaster and Cart

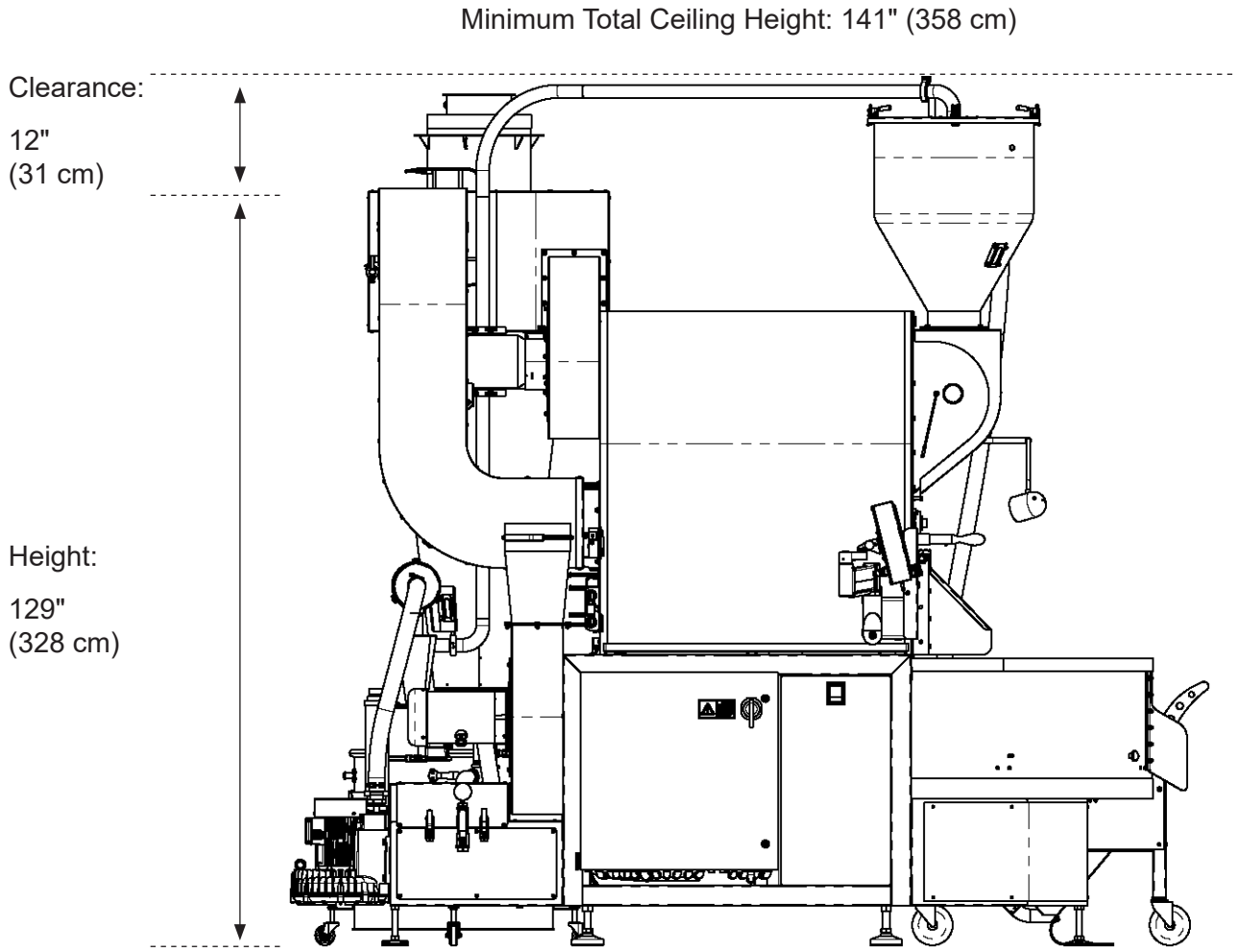


# Floor Clearances – S70 with D70 Destoner




Destoner is shown in default front position. This position is adjustable. Refer to the MICD for Destoner adjustment range.

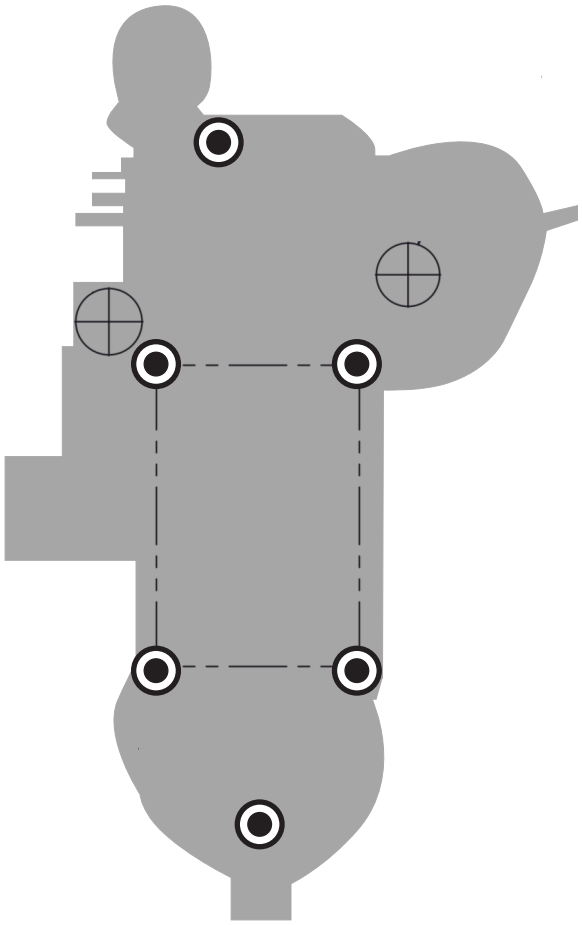
# Overhead Clearances – S70 Roaster




Overhead clearance should accommodate the roaster plus a minimum stack height. This clearance is also necessary for routine maintenance, as well as providing room to maneuver during installation.

# Footprint - S70 Roaster Feet

For dimensions of roaster feet spacing, contact Loring Support for the S70 MICD.
support@loring.com



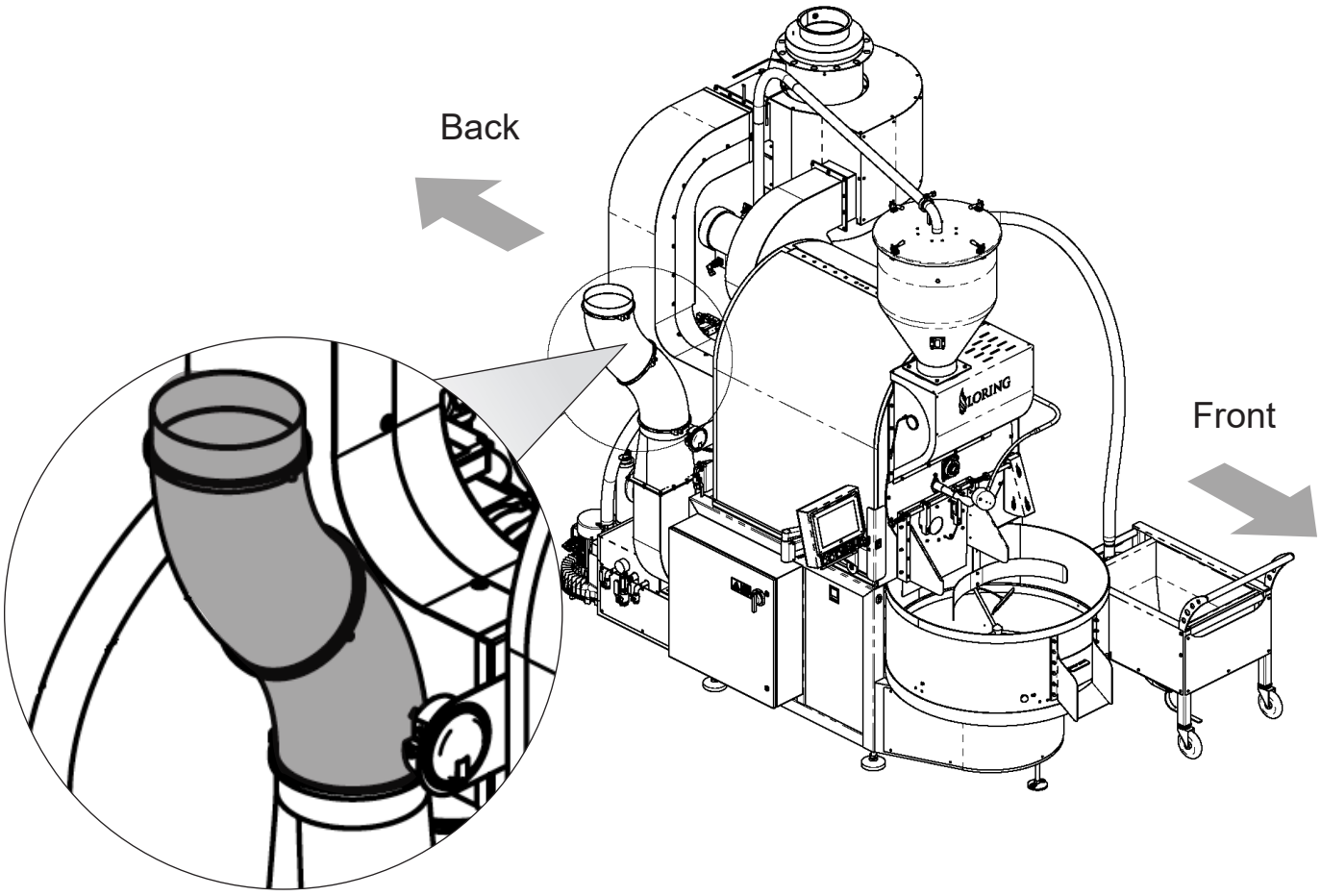
The roaster rests on 6 Roaster Feet, which support the entire weight of the roaster and allow for leveling on uneven floor surfaces. The floor must be able support the concentrated weight.

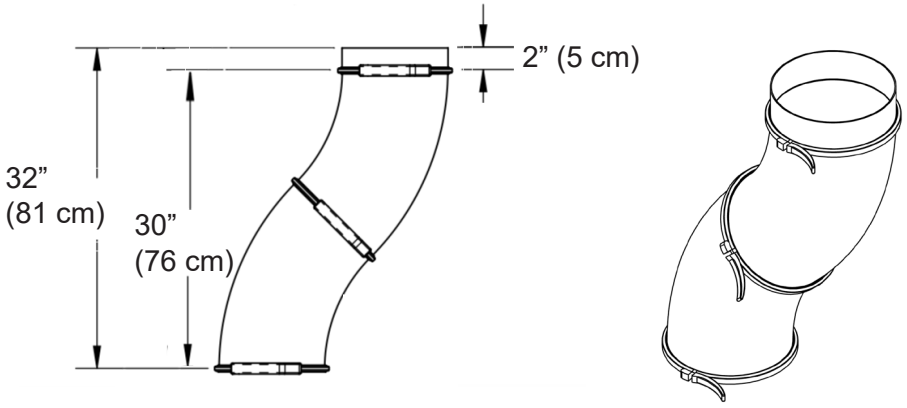
Note that total system weight may vary depending on options selected. The S70 roaster alone weighs 3889 lb (1764 kg). Most of this weight is concentrated in the 4 Roaster Feet that are under the roaster body itself.

# 45-Degree Vent Kit

The 45-Degree Vent Kit is an optional 2-piece component set for the Cooling Exhaust Vent that acts as an extender. It provides additional range for positioning the exit point, including rotating around the roaster attachment point, and can be removed to facilitate cleaning of the Cooling Vent.

This kit is a special order item. If needed, it is shipped with the roaster in the Accessory crate.

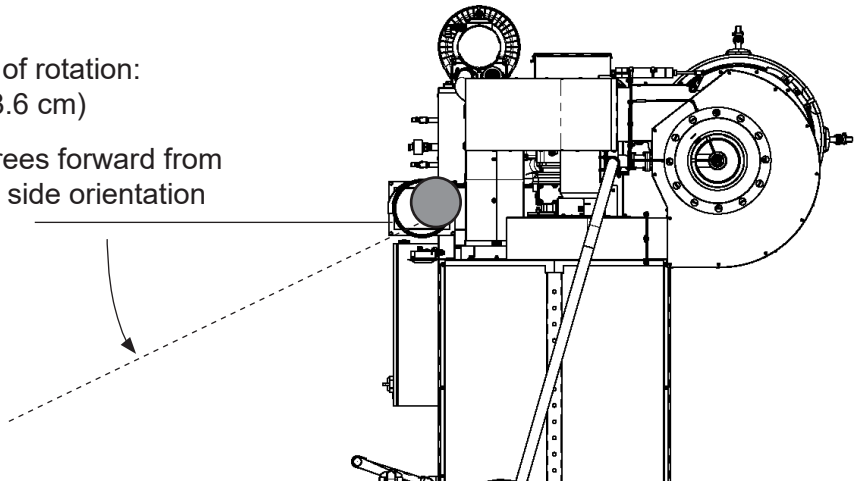


# 45-Degree Vent Kit Rotation

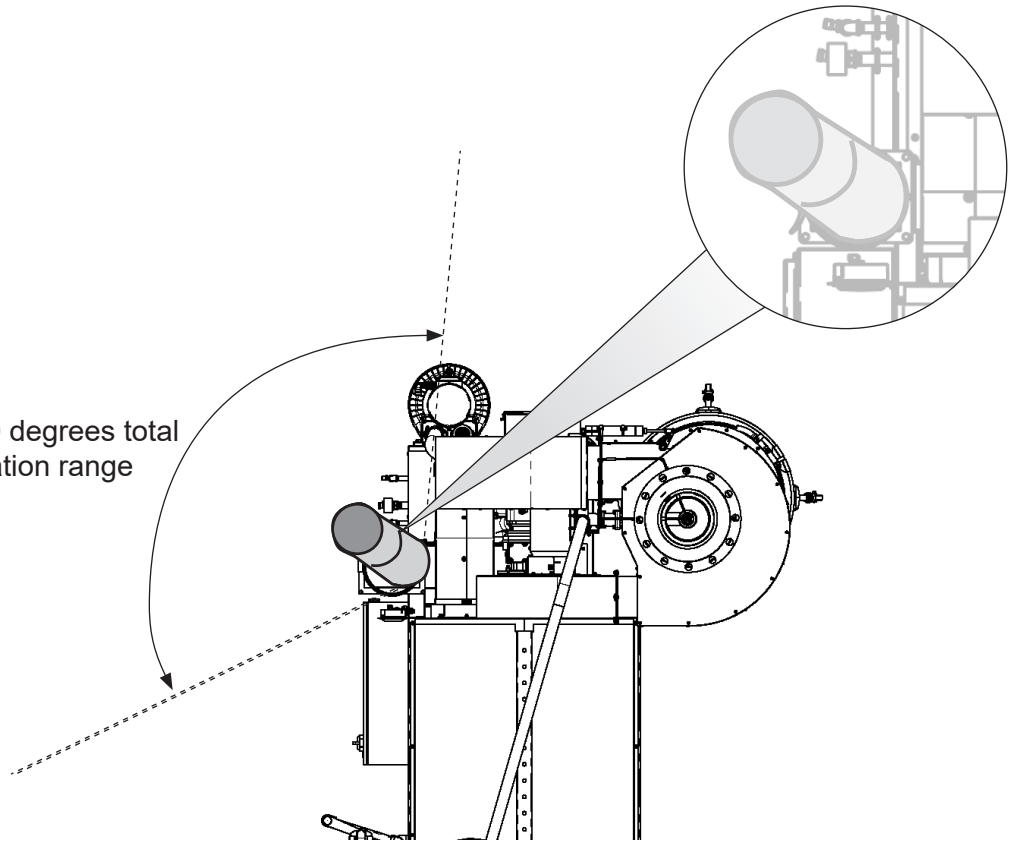
Radius of rotation:
9.3" (23.6 cm)

25 degrees forward from
straight side orientation



Top Down Views

120 degrees total
rotation range

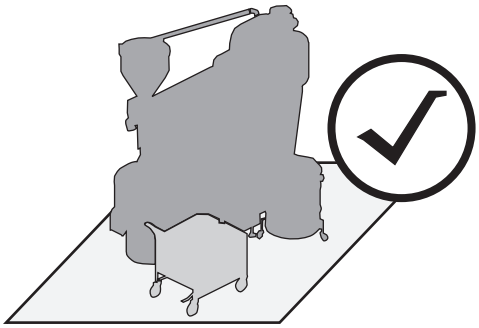


# Space Planning

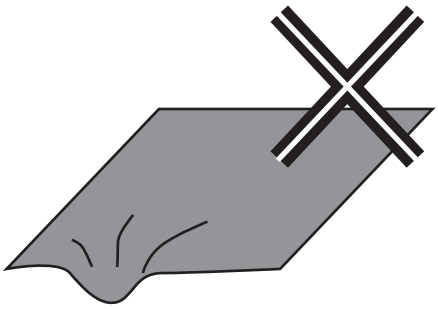
## Indoors

Locate the coffee roaster in an area that is protected from the elements and from water intrusion. The area does not need to be a fully conditioned space.

## Floor



Flat and Level



No Soft Spots

Place the roaster on a flat, level, and firm surface such as hard wood or concrete. The floor should be strong enough to support the total system weight of the roaster and all supplemental equipment.

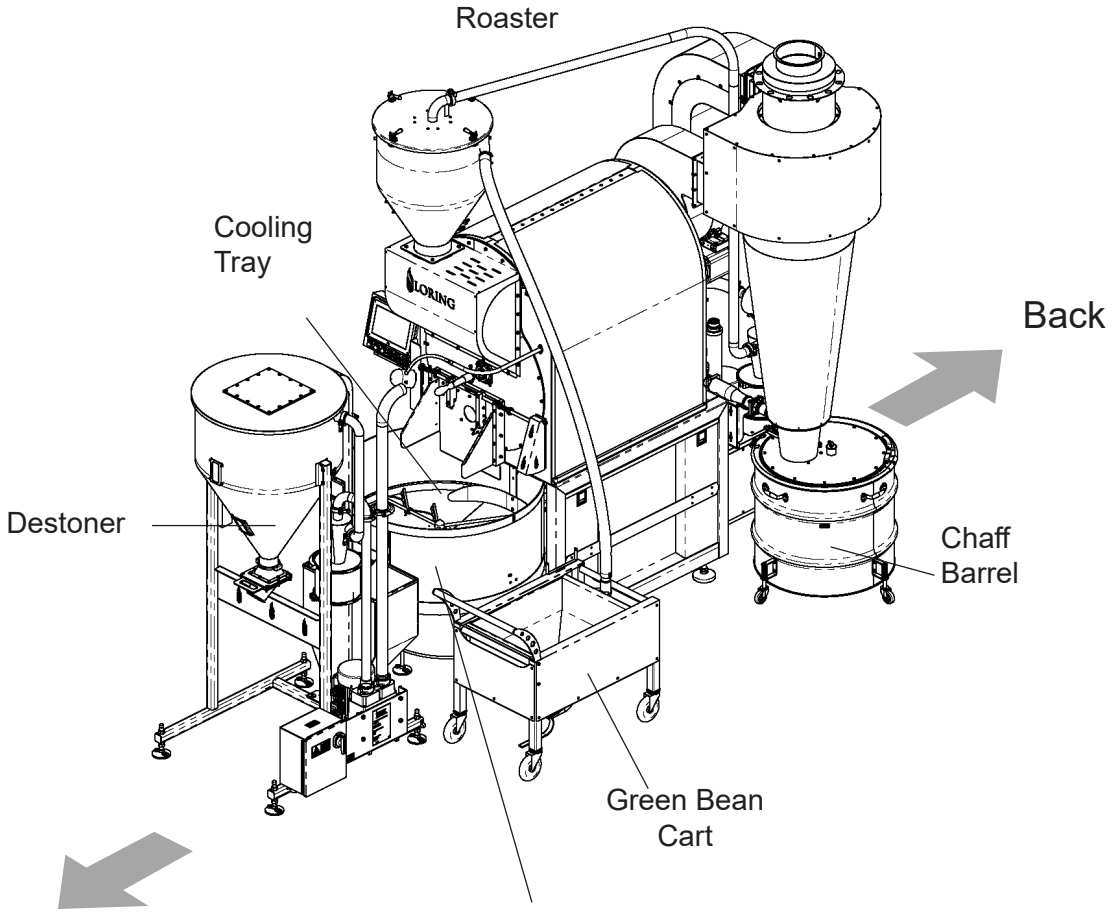
WARNING: Do not place the roaster on a soft or unstable surface.

CAUTION: Use care when transporting the equipment over bumpy or uneven flooring.

# Destoner Position

The Destoner is an optional piece of equipment for removing stones and debris from freshly roasted beans. It is positioned up against the Cooling Tray.

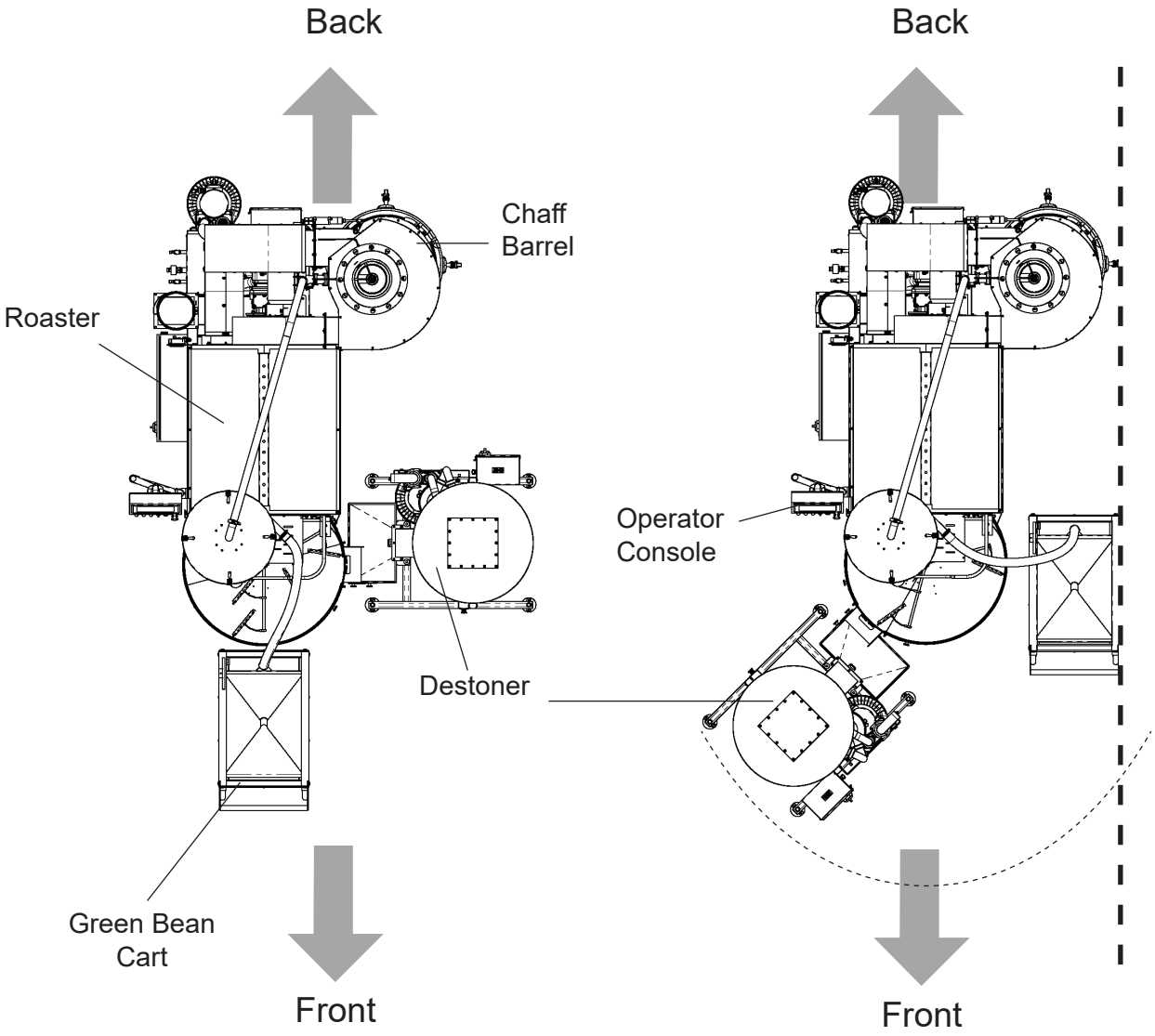
The Destoner cannot be easily moved, once placed. The Green Bean Cart is on wheels, and is more easily moved.




The operator can rotate the Cooling Tray in place as needed.

The default position of the Destoner in front of the roaster.

# Destoner Alternate Positions




Allow space for an operator to access the Operator Console (operator interface), for operating and controlling the roaster.

Additional custom options are available upon request. Allow several weeks lead time for Loring to configure.

If a wall is close to the roaster on the right, place the Destoner on the left at 45 degrees, to allow space for emptying the chaff barrel.

# Stack Connection Location

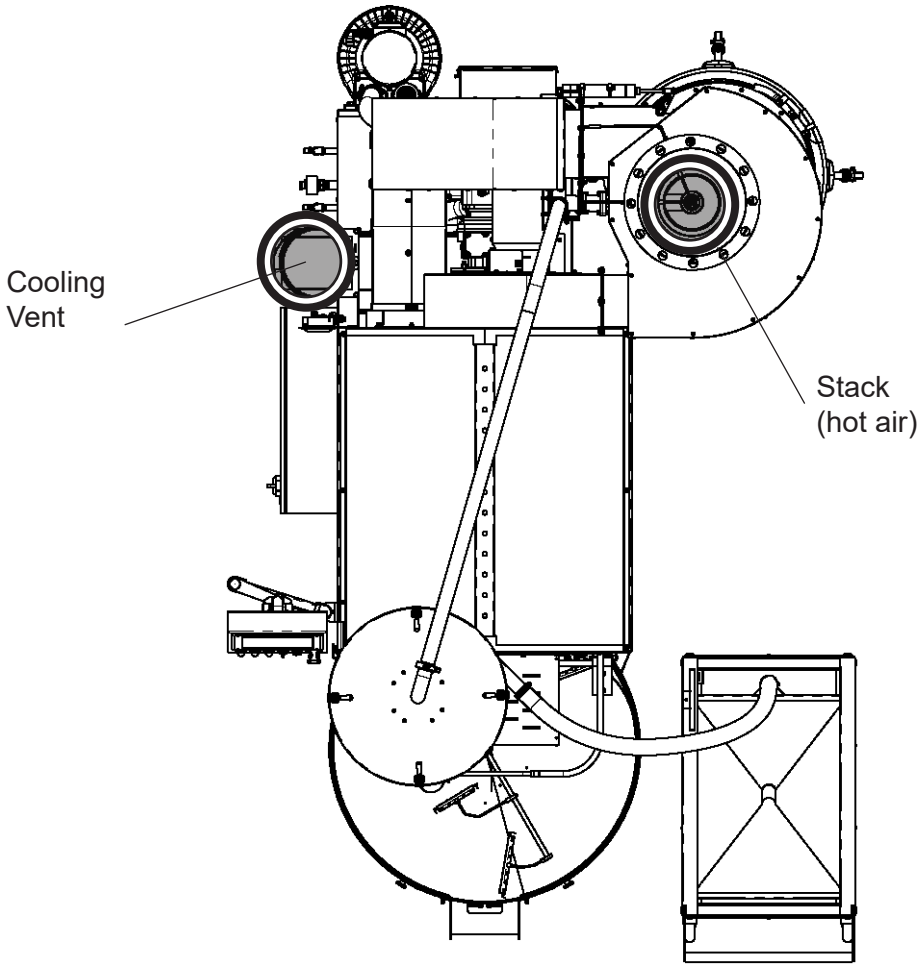
The ventilation stacks connect to openings in the wall or roof. An optimal location is directly above the corresponding stack connections on the roaster.

**Refer to the Mechanical Interface Control Documents from Loring for:**

- Exact dimensions and locations on the roaster.
- Stack elbow options for routing through existing openings.

Check local building codes for additional stack ventilation requirements.

Assistance with stack design is available through Loring upon request. Loring recommends engaging with a stack design consultant to create details for complex site configurations.



# Door Openings

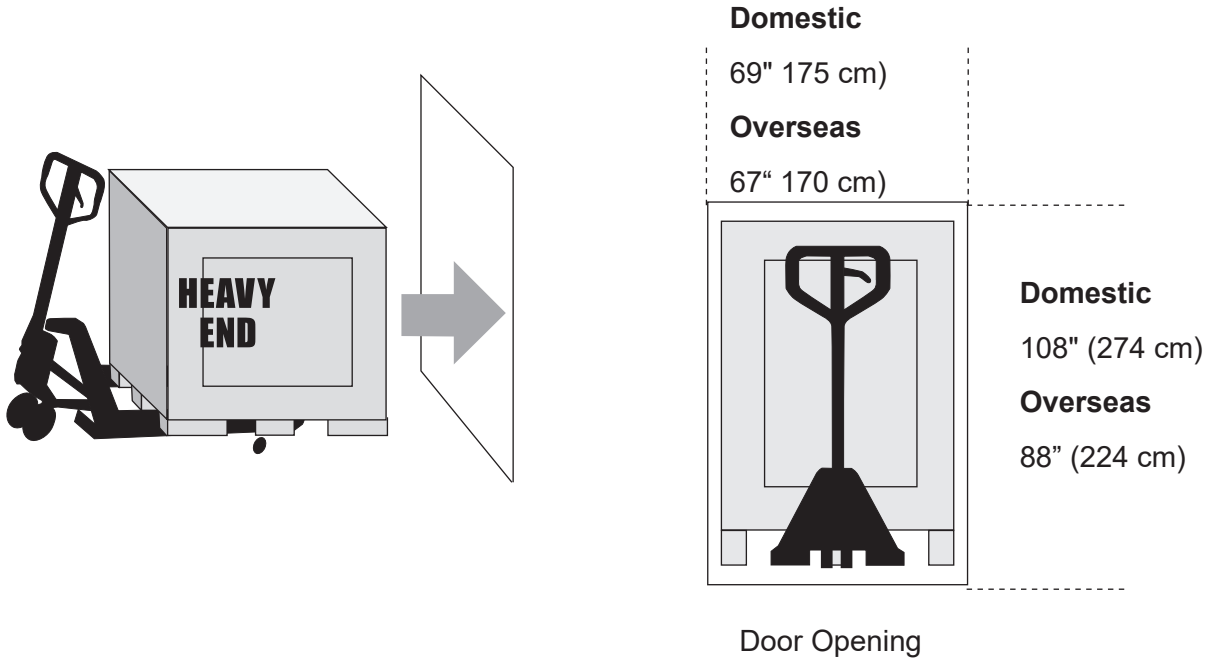
Customers must consider not only the room where the roaster will be installed, but also any openings or corridors that the roaster equipment must fit through during transport and assembly.

Generally speaking, the smallest opening for domestic shipments of S70 (crated) 108" (274 cm) tall by 69" (176 cm) wide, and for overseas shipments of S70 (crated) 88” (224 cm) tall by 67” (170 cm) wide.

These dimensions are when the crates are side loaded onto a pallet jack, Heavy End inwards. However, under special circumstances, Loring may be able to suggest further measures to fit a piece of equipment through a tighter space.

For more information on S70 crating dimensions, go to S70 Shipping Configuration on page 33.

For small openings, load pallet long ways on pallet jack.




Door Opening

Roaster Crate (Crate #1) is the largest and heaviest for domestic shipments

Roaster Crate (Crate #3) is the largest and (Crate #1) is the heaviest for overseas shipments

**Domestic Shipments**

Crate Handling Dimensions:

69" (175 cm) W

105" (267 cm)
+ 3" (8 cm) for pallet jack

**Overseas Shipments**

Crate Handling Dimensions:

67" (170 cm) W

85" (216 cm)
+ 3" (8 cm) for pallet jack

# Local Codes

Local building codes and regulatory standards may require additional steps during construction and installation in areas such as seismic reinforcement or air quality. Allow sufficient time to address these requirements, including steps for mitigation if needed.

# Utilities

A licensed professional should evaluate the utility services at the installation site with the minimums shown under the Specifications section, and test that each utility meets the listed requirements. For example, if actual gas pressure is lower than rated, the roaster will not function properly.

It is important to verify that this information is correct, because the roaster will be configured to match what is available at the site. For example, some 220V AC electrical outlets are actually 230V. Note also if the gas supply is propane or natural gas.

# Room Size and Ventilation

If the roaster is located in a small, sealed room, the air outflow from the hot air and cooling air vents can create negative air pressure inside the room. Additional air intake may be needed. Refer to the Specifications section of this manual for more information.

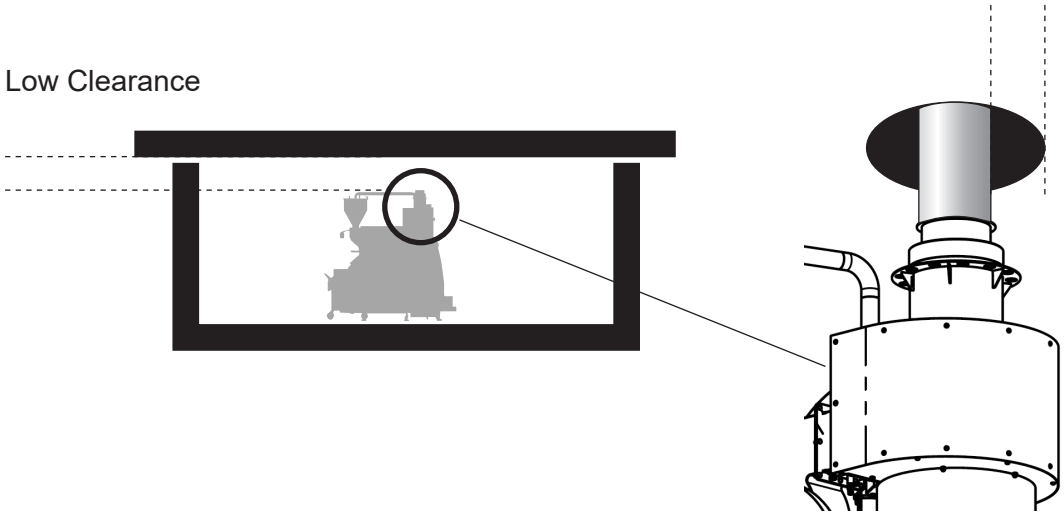
For the S70 roaster, the total air makeup air flow rate is the combination of the Hot Stack Max Flow (Peak Air Cool) and Cooling Vent Max Flow (makeup air) from Table 1. S70 Basic Equipment Specifications on page 10.

# Low Ceiling

For rooms with low ceilings, the stack opening should be bigger than stack to allow air space for cooling, and so radiant heat can dissipate. Refer to local code requirements for the amount of space to allow. Radial stack clearances may differ based on stack manufacturer's installation requirements. Additional rain proofing measures may be required.

Contact Loring for assistance with custom configurations for very low ceilings.

Low Clearance



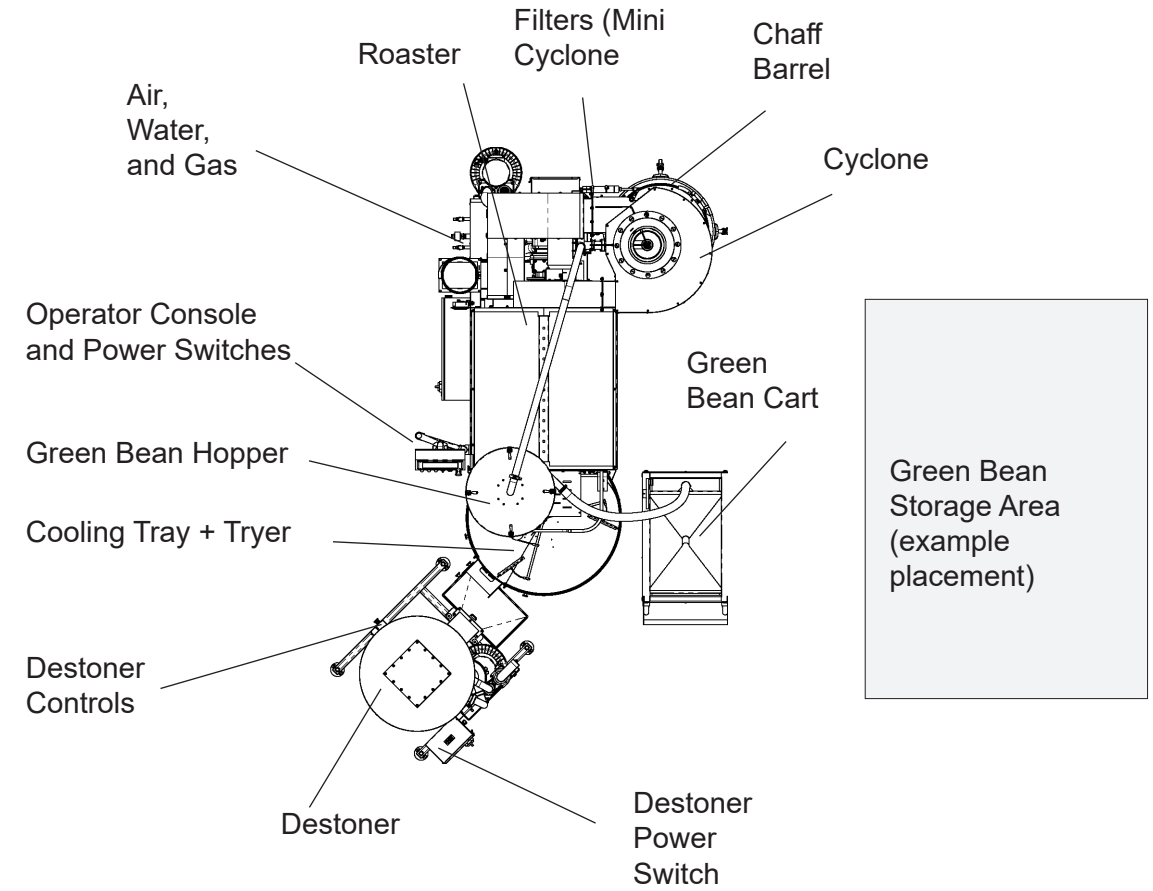
# Multi-Story Buildings

If ceiling is taller than 15 feet (457 cm), the stacks can go straight up and out of the roof, or they can bend after a certain height and exit the wall instead. This height may vary based on local regulatory requirements.

During roaster operation, air from the Hot Stack is a continuous 1400°F (760°C), and can get as hot as 1550°F (843°C). It can reach 1600°F (871°C) or higher if the flame is too rich. Check local code requirements on wall openings for hot air ventilation. Some municipalities may not allow hot air to be vented directly onto a sidewalk or pedestrian walkway.

# Workflow Space

Workflow refers to the smooth operation of one or more personnel within the same physical space. Both access and lighting should be considered. Some of the main access areas are shown below from the top down. Note that some controls are at eye level, while others are at floor level.




(The “Tryer” is a small scoop used for sampling beans during roasting.)

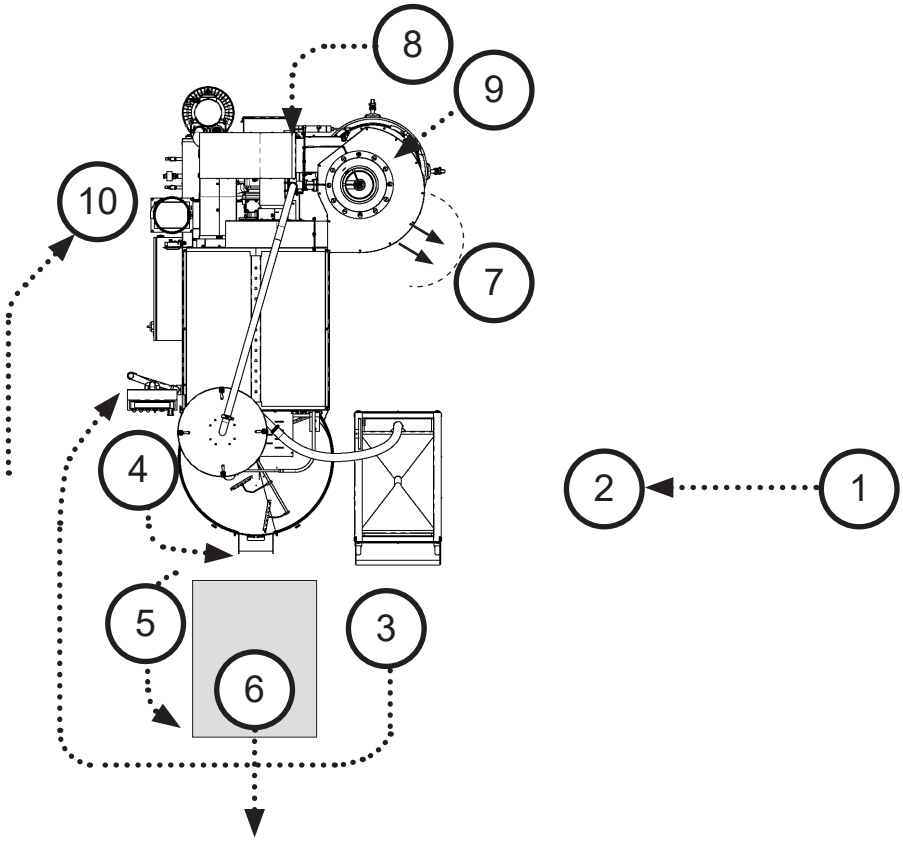
The tasks comprising daily roasting operations include:

Beans In, Beans Out. Roasting requires several points of access:

1. Load green beans into the Green Bean Cart in green bean storage area.
2. Move Green Bean Cart over to roaster, and connect the Green Bean Hopper Vacuum Hose.
3. Go to the Operator Console Touchscreen (operator interface) to initiate a roast cycle. This includes vacuum-loading the green beans from the Green Bean Cart into the Green Bean Hopper above the roaster.
4. During roasting, the operator may use the Tryer (a small sampling tray) to periodically inspect bean samples. After roasting, the beans are ejected into the Cooling Tray. If there is no Destoner, the Cooling Tray is emptied and the roasted beans are transported to the next processing area.
5. Cooled beans may be run through the Destoner, if a Destoner is used.
6. Hopper on the Destoner is emptied and transported to the next processing area.

Moving Parts. Other tasks require additional points of access:

7. On the right of the roaster, the Chaff Barrel must be removed and emptied, sometimes several times a day.
8. Periodically, the filter in the back by the Mini Cyclone must be replaced.
9. In the event of ignition problems, the operator may also use the Cyclone's Sight Glass to view the interior of the Cyclone.
10. The utility valves for air, gas, and water may be shut off at the end of daily operations.



# Lighting

A minimum level of lighting should be available on all sides of the roaster, at all levels including overhead and underneath.

# Network

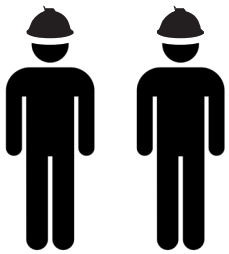
The roaster has the capability of connecting to an existing hard-wired Ethernet network. This allows you to monitor and control the roaster remotely from a desktop or laptop computer, email roaster data and machine fault reports, as well as upload, download and save Roast Profiles.

> Customers must determine their own network configuration prior to final site commissioning, and must be able to provide this information to the Loring Field Service Technician.

It is recommend to use a Windows 7 OS or newer. This will allow the Loring Technicians the environment for support. The MAC operating system will work, but some utilities will not allow the Loring Technicians to update the roaster's software or run diagnostic tools.

# Receiving Shipment

Pallet Jack



3 People

Forklift

Minimum Capacity 5000 lbs

# Shipping Notes

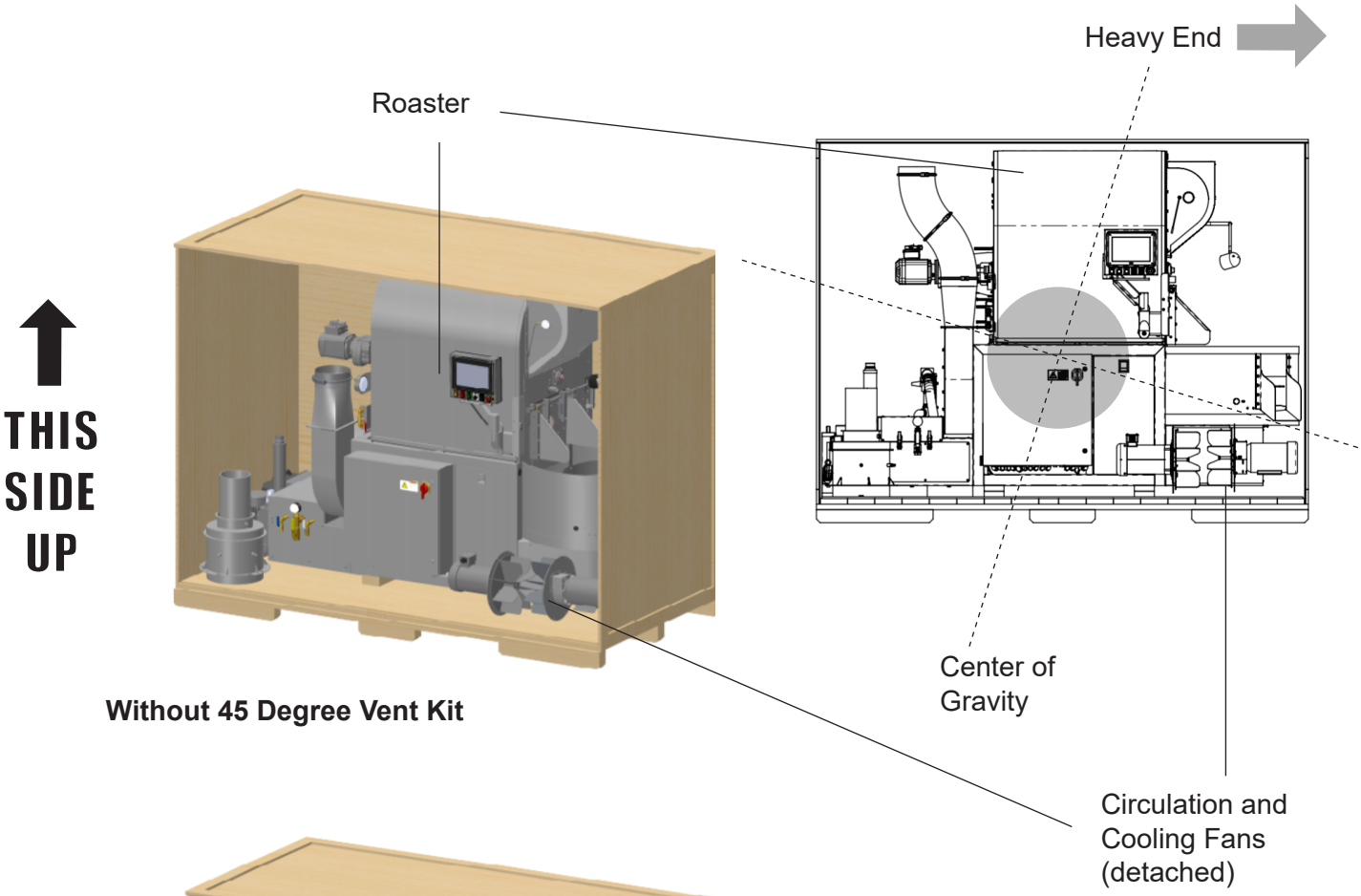
> Shipping the roaster according to Loring's guidelines is required in order to maintain product warranty.

The customer is responsible for shipping arrangements, after notification from Loring that the roaster is ready to be picked up for shipping. In particular, the customer should comply with the following guidelines:

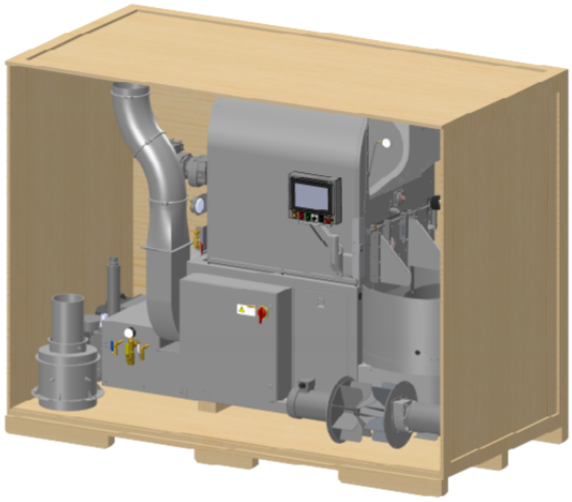
- Be sure to state that the roaster is to travel on a vehicle equipped with air ride suspension to dampen the vibration and minimize the chance of damage during shipment.
  - » For a cross-country shipment within the United States, Loring will not load the roaster equipment onto a trailer that does not have air ride suspension.
  - » For domestic shipments, request a nose / front load in order to minimize loading and unloading at multiple terminals along the way, which will reduce the opportunity for potential damage.
- Overseas customers are advised to use a Full Container Load (FCL) shipment as this will minimize the amount of transfers and handling by others.
- Handle the crates according to markings on crate for "This Side Up" and "Heavy End".

# S70 Shipping Configuration

## Domestic, Frame and Body Crate #1




**Without 45 Degree Vent Kit**



**With 45 Degree Vent Kit**

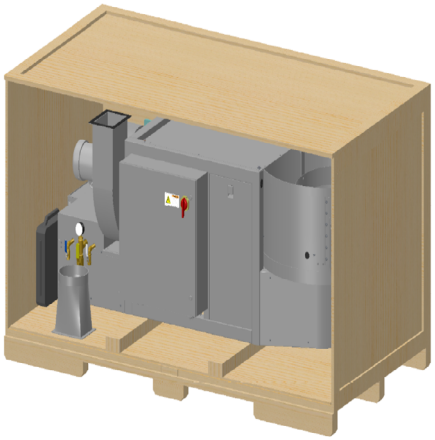
S70 Crate #1

Total Shipping Weight: 3876 lbs (1758 kg)

Dimensions:

- Length: 135” (343 cm)
- Width: 69” (175 cm)
- Height: 105” (267 cm)

# Overseas, Frame Crate #1

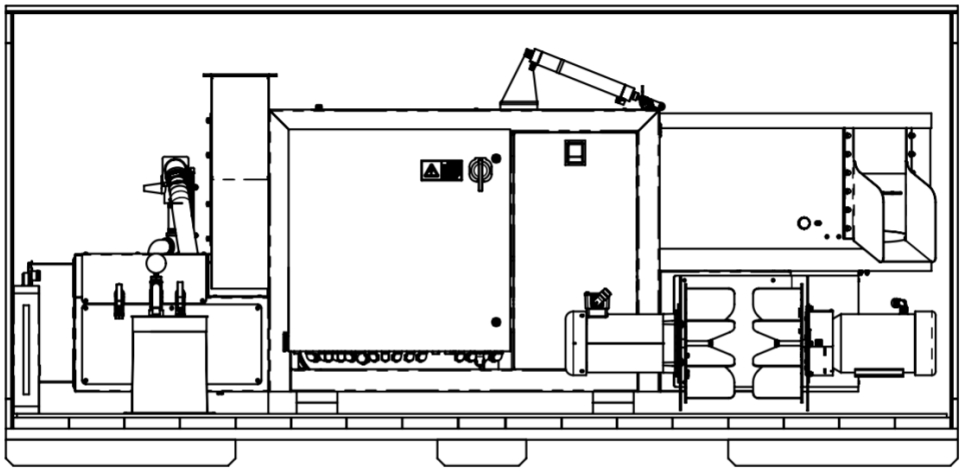


Total Shipping Weight: 2022 lbs (917 kg)

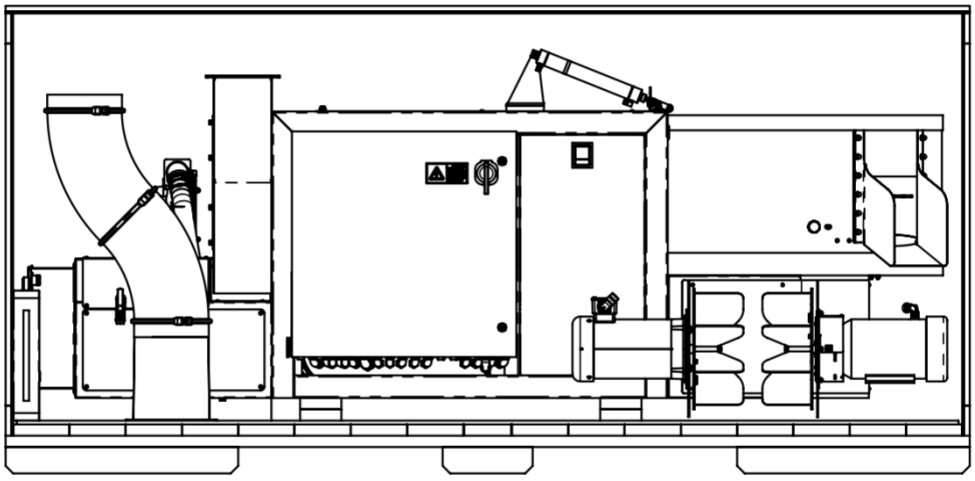
Dimensions:

- Length: 129” (328 cm)
- Width: 67” (170 cm)
- Height: 63” (160 cm)

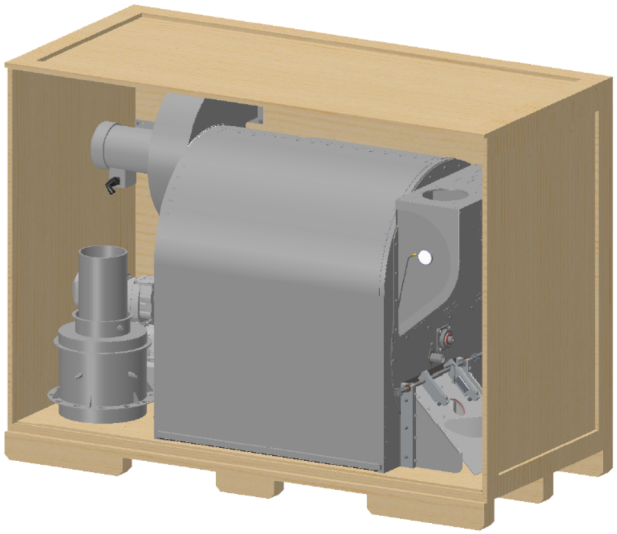
**Without 45 Degree Vent Kit**



**With 45 Degree Vent Kit**



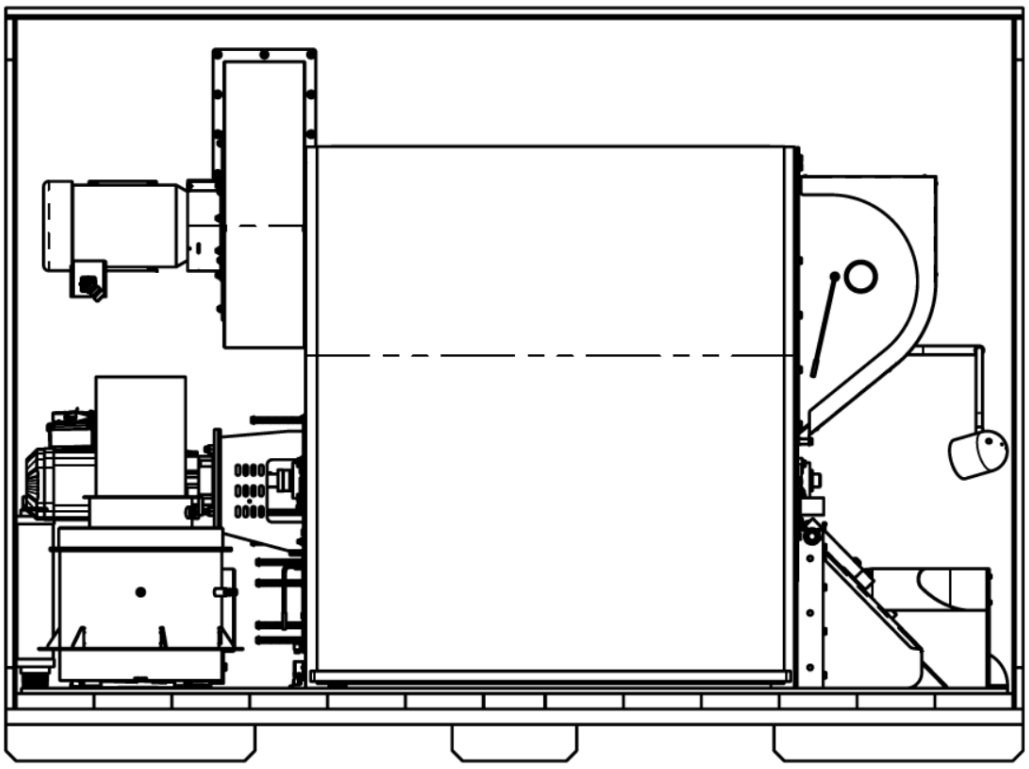
# Overseas, Body Crate #2



Total Shipping Weight: 1822 lbs (826 kg)

Dimensions:

- Length: 98” (244 cm)
- Width: 46” (117 cm)
- Height: 73” (185 cm)



# Accessory Crate

The accessory crate will be slightly different for domestic and overseas shipments. It will be crate #2 for domestic shipments and crate #3 for overseas shipments. The contents may vary with different options being ordered.

Note: the sides cannot be removed until the S-Duct , Circulation fan Housing, CBS, Green Bean Cart, Green Bean Hopper, and Chaff Barrel are removed.

a *Green Bean Cart handle

b Green Bean Cart

c S-Duct (see instructions)

d Cyclone Burner System (CBS)

e Circulation Fan Housing

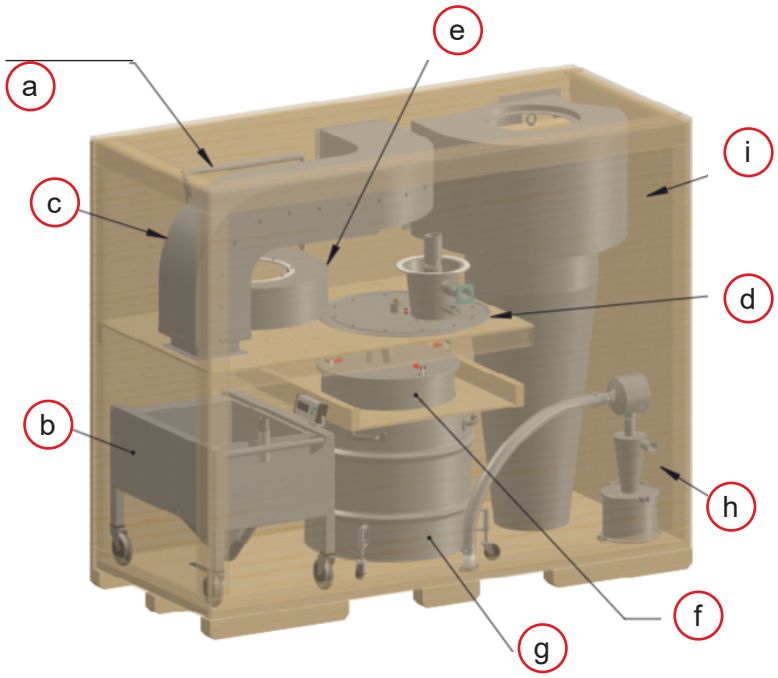
The Green Bean Cart handle is only included in the accessory crate for domestic shipments

f Green Bean Hopper and Lid

g Chaff Barrel

h Mini Cyclone (behind Cyclone)

i Cyclone (see instructions)




**Domestic crate #2 weight and dimensions :**

Total Shipping Weight: 1263 lbs (573 kg)

Dimensions:

- Length: 101” (257 cm)
- Width: 44” (112 cm)
- Height: 85” (216 cm)

**Overseas crate #3 weight and dimensions :**

Total Shipping Weight: 1215 lbs (551 kg)

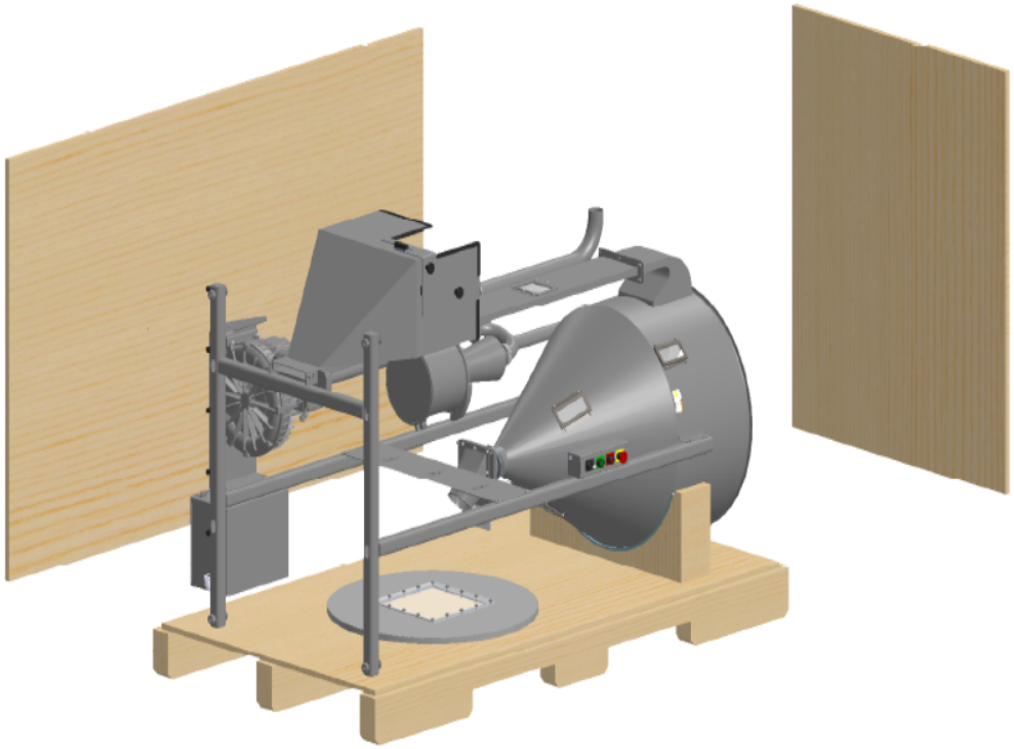
Dimensions:

- Length: 101” (257 cm)
- Width:44” (112 cm)
- Height: 85” (216 cm)

# Destoner Crate

D70 Destoner Crate

THIS SIDE UP



**D70 Destoner weight and dimensions :**

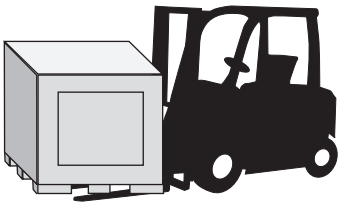
Total Shipping Weight: 800 lbs (109kg)

Dimensions:

- Length: 94” (241  cm)
- Width: 41” (104 cm)
- Height: 57” (145  cm)

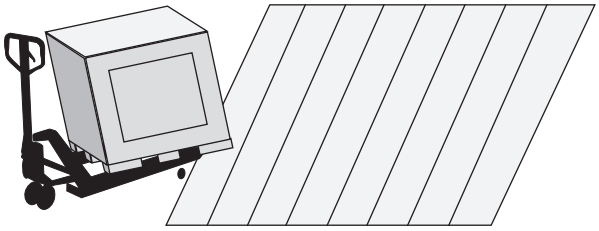
# Lifting and Moving the Roaster

## Off-Loading

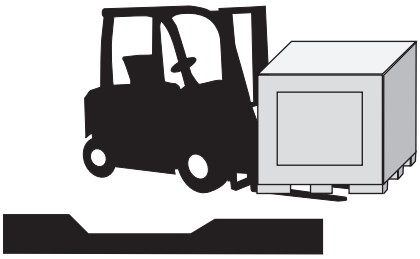


Use forklift rated for weight of crate + pallet

## Transporting

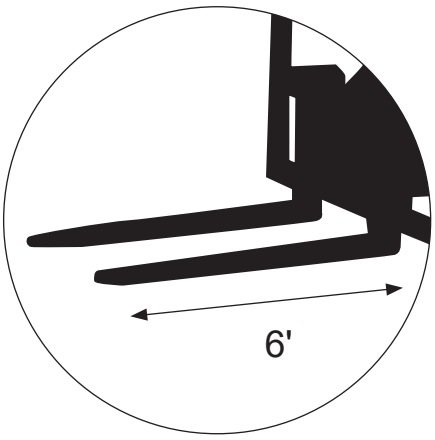


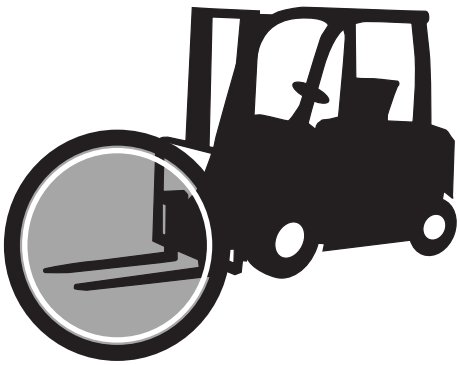
Use pallet jack for smooth surfaces



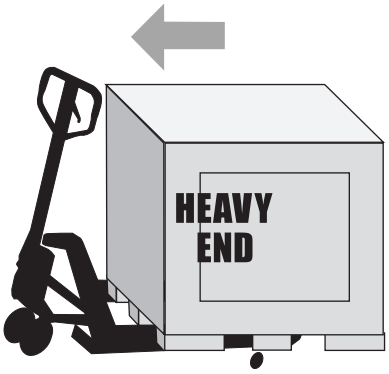
Use forklift for uneven ground with level changes

## 6' Fork Extensions

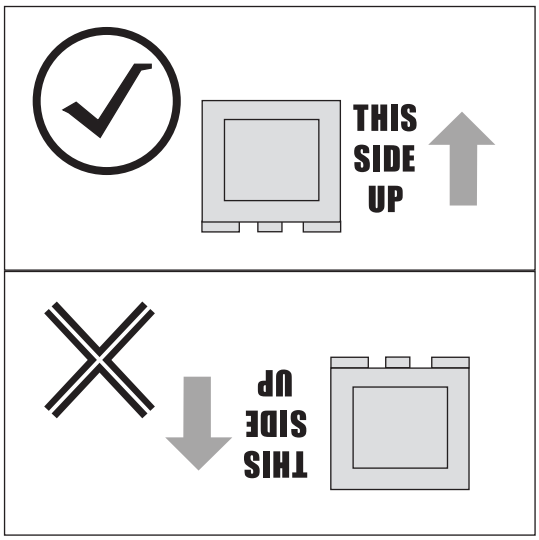


## Handling



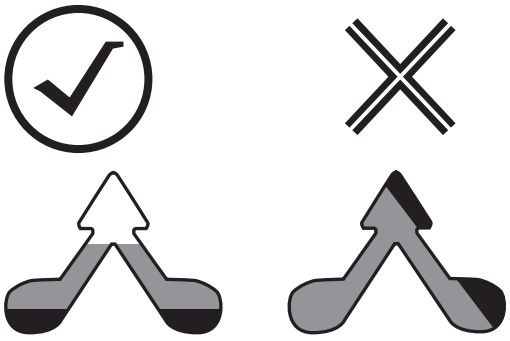

For side loading, always load "Heavy End" inwards.



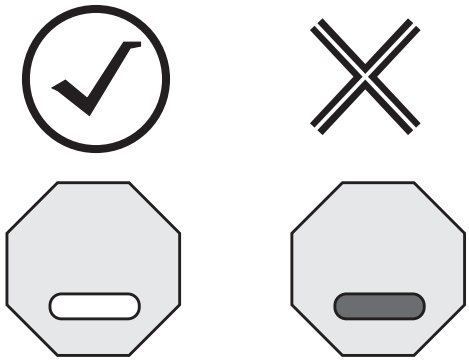

WARNING: Always keep shipping crates upright during handling and storage.

## Inspecting

Each crate ships with 2 shock indicators and 2 tilt indicators. Inspect crates for damage at time of delivery. Note any shipping damage on the Bill of Lading. Refer to the instructions on the indicators for detecting damage.

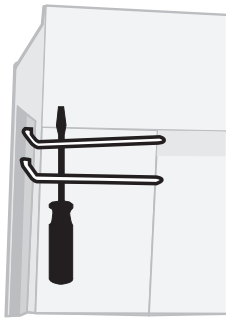


Tilt indicator shows color above line if crate has tipped

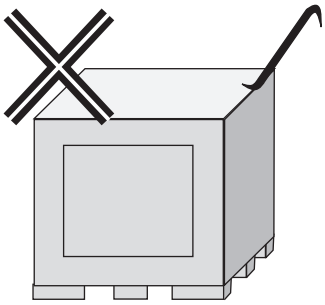


Shock indicator changes color if crate has been dropped or impacted

## Opening

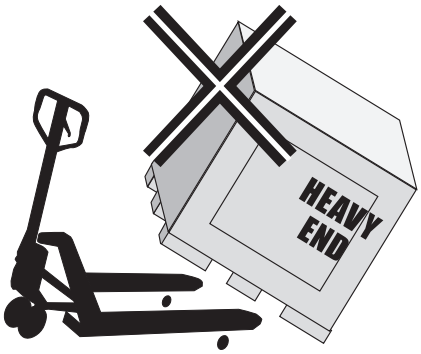


Open crate using the clips provided.



CAUTION: Do not pry open the shipping crates.

## Transporting




Do not load “Heavy End” out, as crate may fall.

WARNING: Do not drop the roaster.

# Next Steps

After confirming the shipping date with Loring, the customer should:

1. Review the *Assembly and Installation Guide* and the *Mechanical Interface Control Documents* (MICDs), available from Loring.
2. Provide the roaster model's *Pre-Installation Guide*, the *Assembly and Installation Guide*, a copy of the customer's completed *Product Specification Form*, and the *Mechanical Interface Control Document* drawings to the licensed contractor responsible for roaster assembly and installation.

# Site Preparation Checklist

Use the following informal checklist to ensure that the site is fully prepared:

- ☐ Building meets footprint and clearance requirements for selected roaster model
- ☐ Building doorways, elevators and corridors can accommodate the roaster
- ☐ Roaster location is clearly marked
- ☐ Stack hookup locations exist and are marked
- ☐ Site Detail/Construction Drawings are completed, accurate, and available
- ☐ Destoner position has been determined and marked, if applicable
- ☐ Local code requirements are known, and have been addressed
- ☐ Required permits have been obtained
- ☐ Both the moving equipment and the final installation location can handle system weight
- ☐ Water, Air, Gas, and Electric Utilities have been measured and verified to be within required ranges

# Gas and Gas Supply

## Gas Connection Planning

Loring roasters can be fueled by either natural or propane gas. The gas supply pressure is the same for each roaster, but the gas volume is different between them.

Gas connections to the roaster must be made by a licensed contractor in accordance with all applicable local and regional regulations regarding installations of this type. It will be the responsibility of the contractor to not only be sure that the connections meet local code guidelines but also will supply the BTU/HR demand of the roaster. Improper connection type and pipe size will cause the roaster to perform poorly, potentially rendering it unusable. The gas contractor will be able to verify the potential BTU/HR of the supply system he installs based on pipe size, length, path and available pressure.

Provided on the utility tray of the roaster is a 1” NPT Ball Valve  pipe fitting, which is the inlet to the burner assembly. There is a shutoff valve provided at the roaster as well as a gauge for monitoring the incoming gas pressure.

Proper regulators are required to provide proper pressure and volume to the roaster. A separate regulator may be required to feed the roaster if the upstream pressure is too high.

Multiple fittings or a long path may reduce flow, which must be taken into consideration.

It is vital to the proper operation of the roaster as well as the safety and legality of the system that proper care and planning go into the gas supply system.

## Gas requirements

### Caloric Content

In order to provide adequate roasting performance, Loring roasters require that the gas supply maintain a minimum caloric level.

- Natural gas: 1000Btu/ft^3 (37 MJ/m^3)
- Propane: 2500Btu/ft^3 (93 MJ/m^3)

This is critical to the proper operation of the roaster. Confirm with your gas supply company that the minimum caloric content is supplied and constant.

## Operating gas pressure

In order to provide proper burner operation, it is critical that a constant operating pressure is available. Loring roasters require the following pressures to operate in all situations.

- Natural gas: 4 in.WC to 7 in.WC (1.0 kPa to 1.7 kPa)
- Propane: 11 in.WC to 13 in.WC (2.7 kPa to 3.2 kPa)

A regulator or a combination of regulators may be needed to attain the proper operating pressure.

# Propane Installation Specification

BTU minimum requirements of the Loring S70 Roaster: Propane must have a minimum of 2500 BTU/FT^3 (93 MJ/m^3) caloric content.

- S70 Peregrine requires a 620,000 BTU/hr (156 kCal/h) gas supply

Note: These are peak BTU requirements and the average can be less based on usage.

BTU/hr delivery is based upon 11” water column (WC) (2.7 kPa) dynamic flow with a maximum of 13” WC (3.2 kPa).

## Components of a Propane System:

- Propane Tank(s)
- 3/8” (0.95 cm) x 3’ (91 cm) long flexible gas line(s) (hog-tail depending upon how many tanks in the manifold)
  - » POL TEE(s) if making a manifold
  - » Additional 3/8” (0.95 cm) x 3’ (91 cm) long flexible gas line(s) (hog-tail depending upon how many tanks in the manifold)
- Hi Pressure Regulator 10 PSI (70 kPa)
  - » Sometimes an additional 2 PSI (14 kPa) regulator is required
- Low Pressure Regulator 11” WC (2.7 kPa)
- Gas Pipe properly sized for distance between regulators and BTU/hr requirement
  - » Flexible gas line 1” (2,54 cm) x 3’ (91 cm) for S70)
- Gas Meter (sometime required to meet Permit Conditions)

# Natural Gas Installation Specifications

BTU minimum requirements of the Loring S70 roasters:

- S70 Peregrine requires a 620,000 BTU/hr (156 kcal/h) gas supply

BTU delivery is based upon minimum 4” water column (WC) (1.0 kPa) dynamic flow with a maximum of 7” WC (1.7 kPa).

## Components of a Natural Gas System

- Utility Company supplying Natural Gas to your building
- Gas Regulator(s)
- Gas Meter
- Plumbing to Appliances

## Recommended Gas Supply System:

Gas supply to the outside of the building is always higher than the working pressure and needs to be regulated according to the specific demand.

The distance from the meter to the roaster will determine if more than one regulator is needed. If a first and second stage regulator is required, typically the first regulator is set for 2 PSI and the second regulator is set for working pressure of 4” to 7” WC (1.0 kPa to 1.7 kPa).

Meter and regulator must be designed to handle BTU load, S70 Peregrine 620,000 BTU/hr (156 kCal/h).

Second Regulator or Working Pressure Regulator less than 100 feet (30.5 m) and more than 10 feet (3.0 m) from the roaster to reduce higher pressure to the minimum working pressure of 4” WC (1.0 kPa) to a maximum of 7” WC (1.7 kPa).

Recommended Natural Gas Working Pressure Regulator: Sensus 143-80-2 with ½” orifice and Blue Spring with appropriate pipe inlet and outlet size. After installation, adjust working pressure of 5” WC (1.2 kPa) to 8.5” WC (2.1 kPa).

# Installing the Vent Stack

Exhaust gases are produced during the roasting process that need to be vented to the atmosphere. There are two sources of exhaust gas. Hot gas (products of combustion) through the cyclone assembly passes up into the “Hot Stack.” Also, air is drawn through the hot beans in the cooler tray to cool them is passed up the “Cooling Stack.”

To keep rain out of the stack, caps must be attached at the exit of the stacks and any joints in the stack ducting must also be designed to keep rain out.

In general, a survey of the building will be made to determine where to position the roaster and how then to position the stack ducting to vent exhaust gases to the atmosphere. In the following pages are examples of common ducting configurations and techniques to provide ducting flexibility using the 45-degree vent kits.

## Hot Stack

The Hot stack connects to the top of the cyclone to the stainless steel “Stack Hat” which is provided with the roaster. From this stack hat, you can attach to the customer supplied stack by welding, clamping, screwing, riveting and caulking. The best connection is with a V-Band. No amount of leakage is acceptable.

The stack must be supported above and not by the roaster. Also, the effects of thermal expansion should be taken into account so that thermal growth does not put force on the roaster.

## Cooling Stack

The cooling stack will attach to the top of the cooler housing outlet, typically with a V-band to a flange fitting, or at the preference of the customer and contractor may be attached by a variety of other methods. It is important that this connection is sealed but also easily removable for cleaning. The roaster may have the optional 45-degree offset kit, which does not alter the connection type, but allows for an easily removable and cleanable section.

## Roaster Placement installation

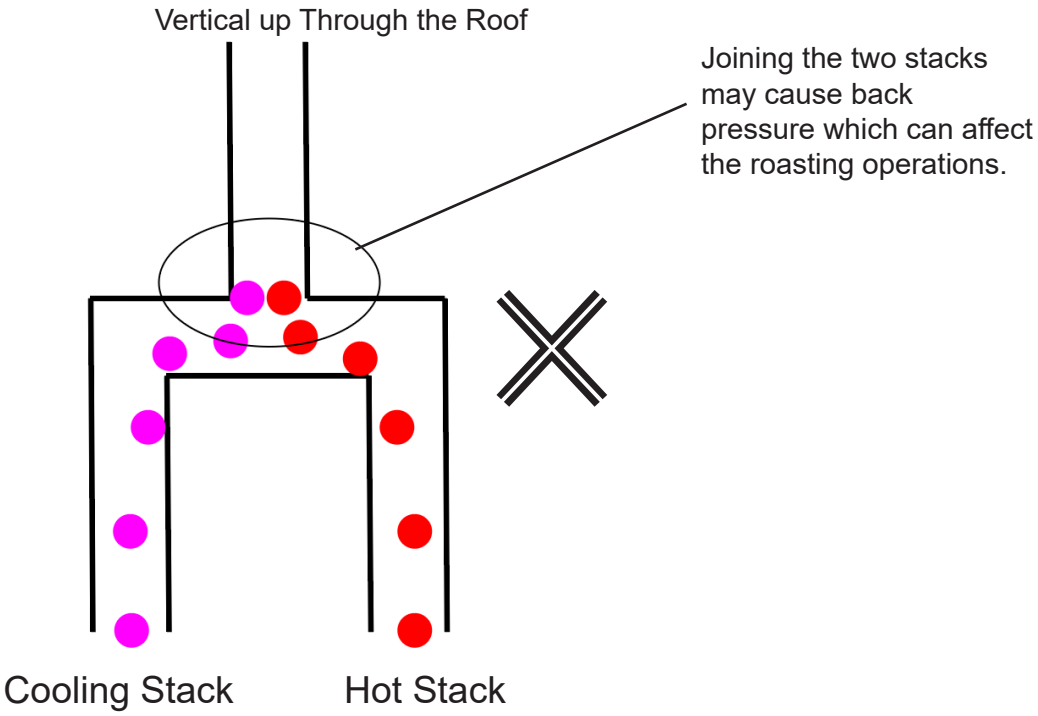
The roaster should be placed on a level, solid and cleanable work surface. The ball swivel mount leveling feet will allow the roaster to be leveled after it is put into position.

There may be regulations in your area which will mandate surface structure, seismic anchoring, and minimum clearances.

## Getting Help

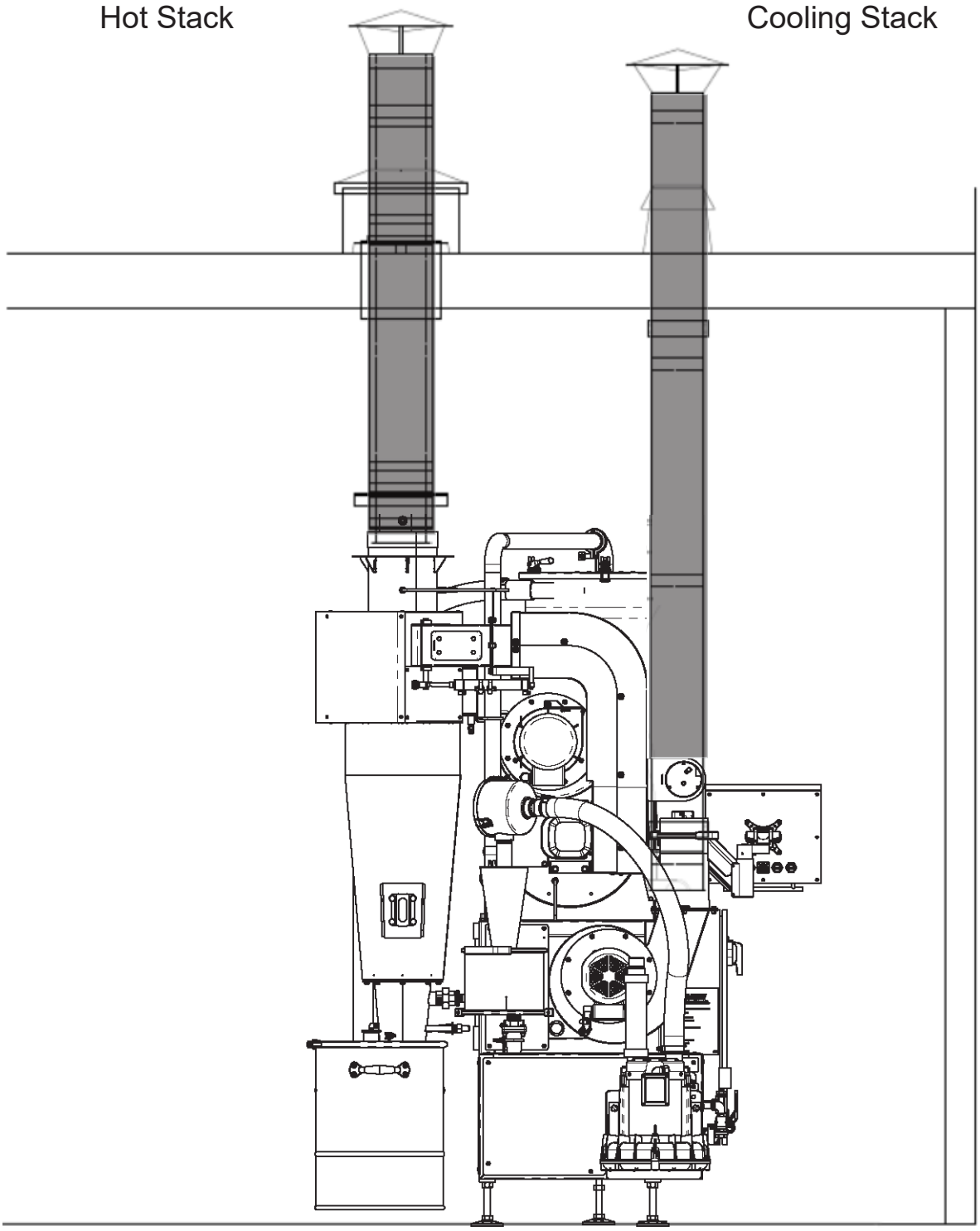
You will need to refer to your ventilation contractor for the preferred method of attachment. In turn, your ventilation contractor will need to be sure to comply with all applicable local and regional regulations regarding installations of this type.

# Connections to be avoided

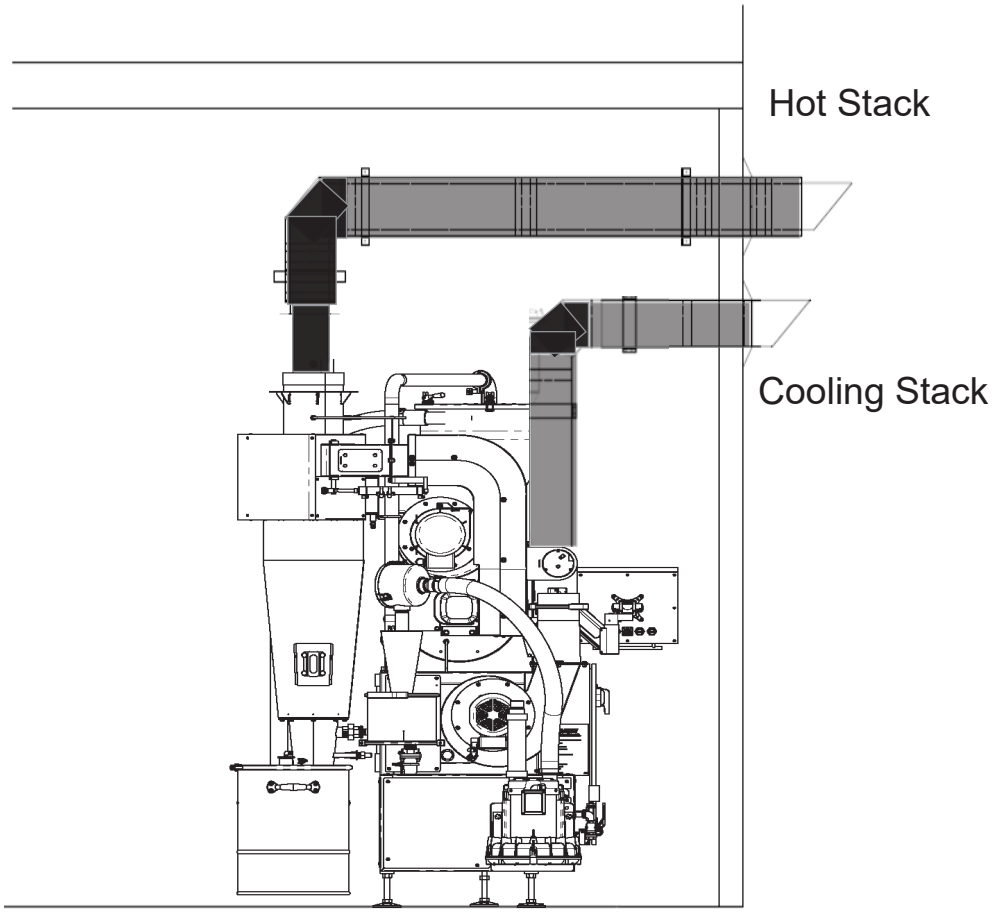


# Vent Stack Configurations

## Vertical up Through the Roof

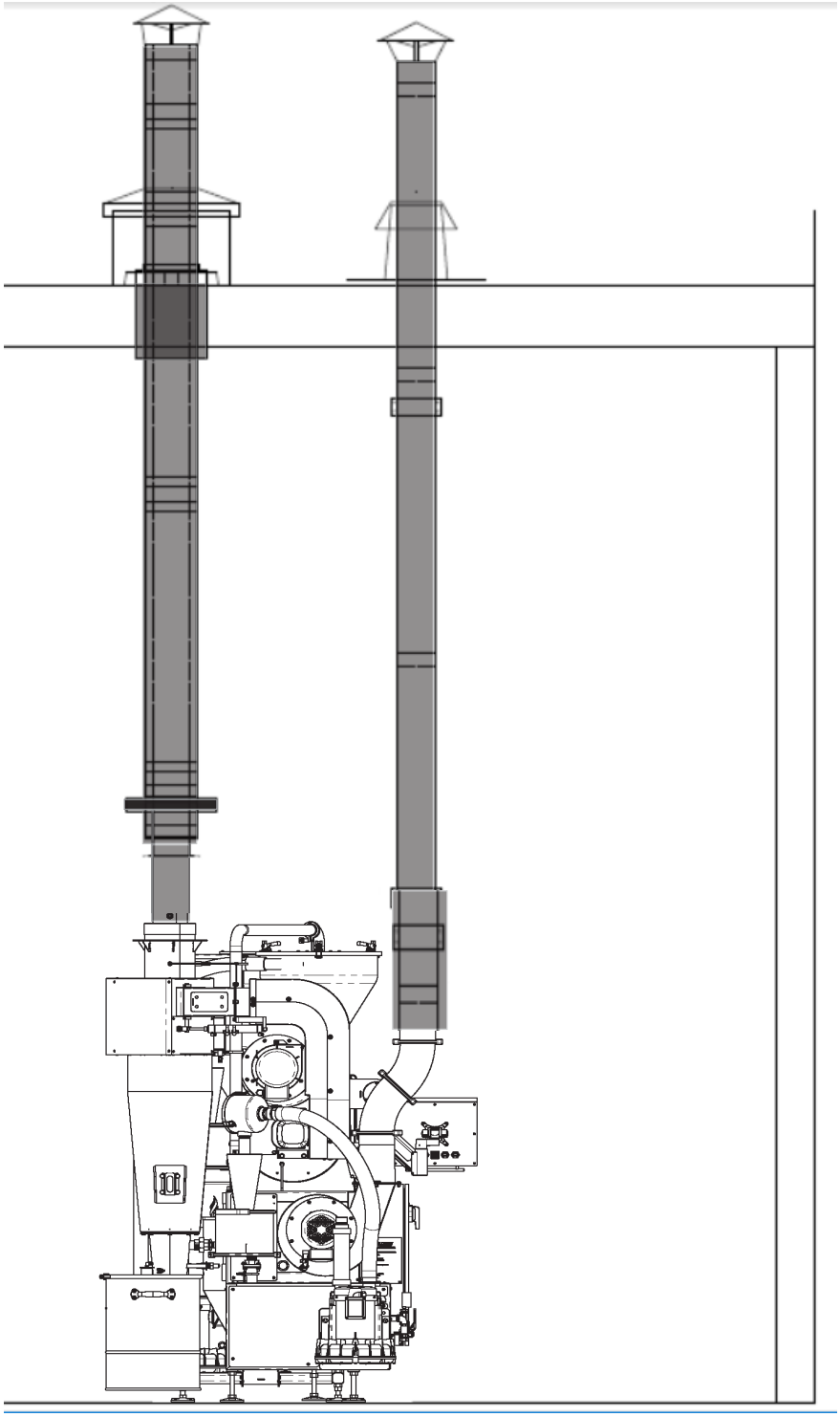


# 90 Degree Horizontal Through the Wall



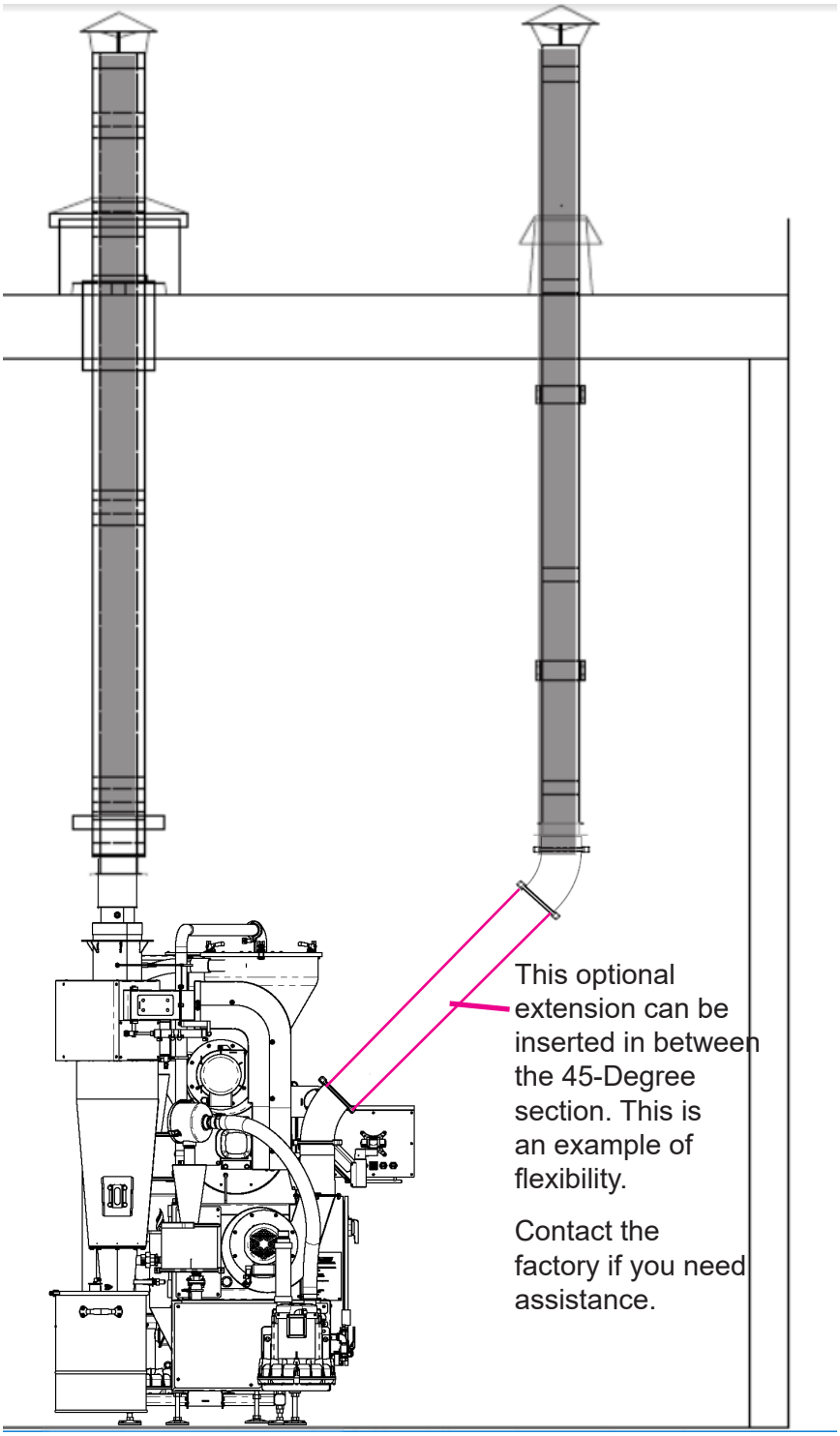
# Vertical with 45 Degree Vent Kit

Hot Stack Cooling Stack



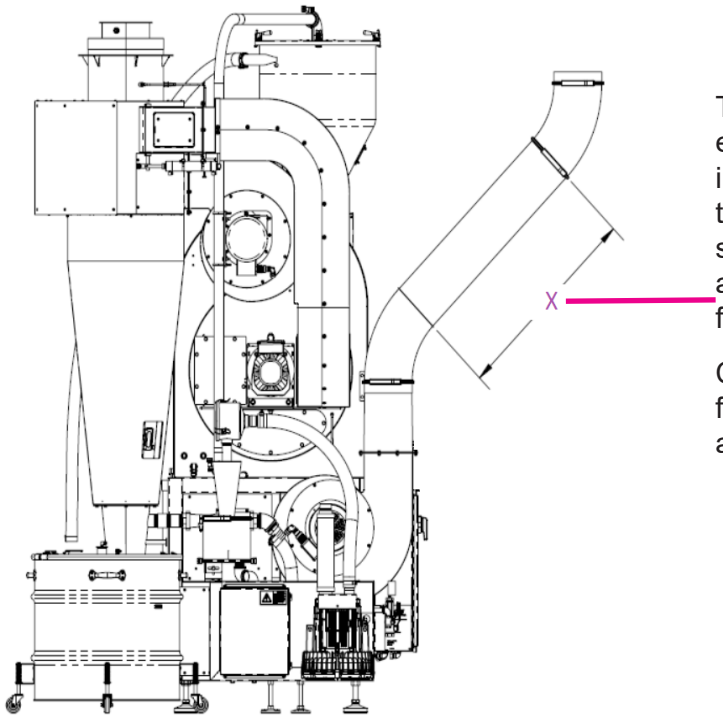
# Vertical with Extended 45 Degree Vent Kit

Hot Stack Cooling Stack



# Adjusting Roaster to the Vent Stack

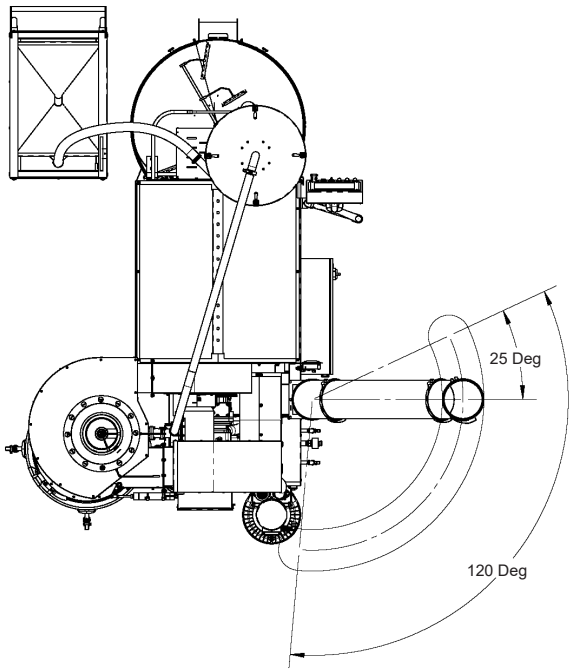
Extended 45 Degree Extension on Cooling Duct



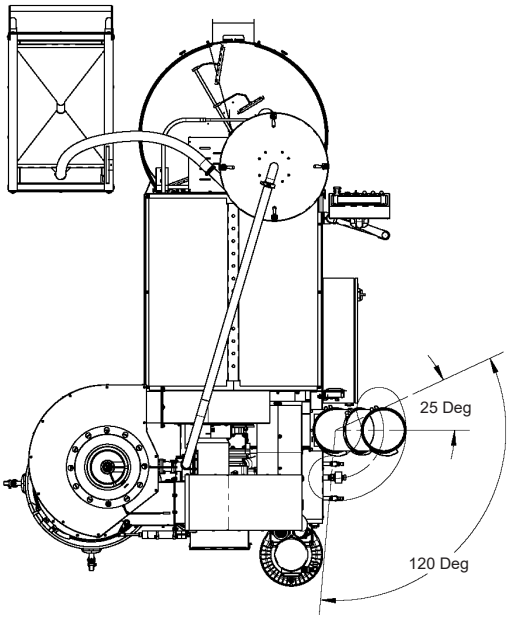

This optional extension can be inserted in between the 45-Degree section. This is an example of flexibility.

Contact the factory if you need assistance.

# With Extended 45 Degree Extension on Cooling Duct




# With Standard 45 Degree Extension on Cooling Duct



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# Manufacturer Contact Information

This equipment is manufactured by:

Loring Smart Roast, Inc.
3200 Dutton Ave #413
Santa Rosa, CA 95407
(707) 526-7215

For questions, please contact Loring Customer Support:

www.loring.com/support
(707) 526-7215 ext. 217
support@loring.com