

GRAPHICAL GUIDE SERIES  
BY MILL CITY ROASTERS

NORTH / 2kg



# THE MANUAL

## PART ONE: PLANNING

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 Note: Owner must post in a prominent location instructions to be followed in the event the operator smells gas or otherwise detects a gas leak. These instructions shall be obtained by consulting the local gas company or gas supplier.

 **FOR YOUR SAFETY**

**Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**

 **WARNING**

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

 Note: This manual shall be retained for future reference.

July 26, 2018

# MILL CITY ROASTERS

GRAPHICAL GUIDE SERIES

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# 2KG GAS COFFEE ROASTER



Model: NC-002  
Nominal Capacity: 2 Kilograms

Mill City Roasters, Minneapolis, MN, USA  
Assembled by North Coffee Roaster Co., LTD, Shenzhen, China



# ROASTER SPECIFICATIONS

## Dimensions

Roaster Size (length x width x height)	43.75 x 25.75 x 53.25 in (1111 x 654 x 1352 mm)
Roaster Weight	345 lbs (156.5 kg)
Chaff Collector Size (diameter x height)	15.75 x 37.75 in (400 x 958 mm)
Chaff Collector Weight	55 lbs (24.9 kg)
Drum Construction	Double-walled Drum, 430 Stainless Steel, Welded
Drum Size (diameter x length)	8.75 x 9 in (222 x 228 mm)
Cooling Tray Size (diameter)	12.4 in (315 mm)

## Capacity/Output

Batch Size	0.4 - 2.4 kg
Average Roasting Time	< 15 minute batch
Production	17.6 lb/hr, 141.1 lb/day (8 kg/hr, 64 kg/day)

## Power

Roaster	Single Phase 220v, 15A, 50-60hz
Step-Up Transformer	120v to 220v, 1000W
Drum Motor	45W
Exhaust Fan Motor	50W
Cooling Fan Motor	50W
Cooling Tray Stirring Motor	15W

## Gas

Fuel Type	Natural Gas -or- Propane
Max BTU	30,000
Burner Control	Manual Valve
Gas Connection	1/2" NPT
Gas Pressure Required	LP Gas: 16" of water column Natural Gas: 16" of water column
Gas Orifice Size	LP Gas: 0.7 mm (installed at factory) Natural: 0.9 mm (see conversion/installation instructions)
Max Gas Usage	1.1 lb/hr (0.5 kg/hr)

## Exhaust

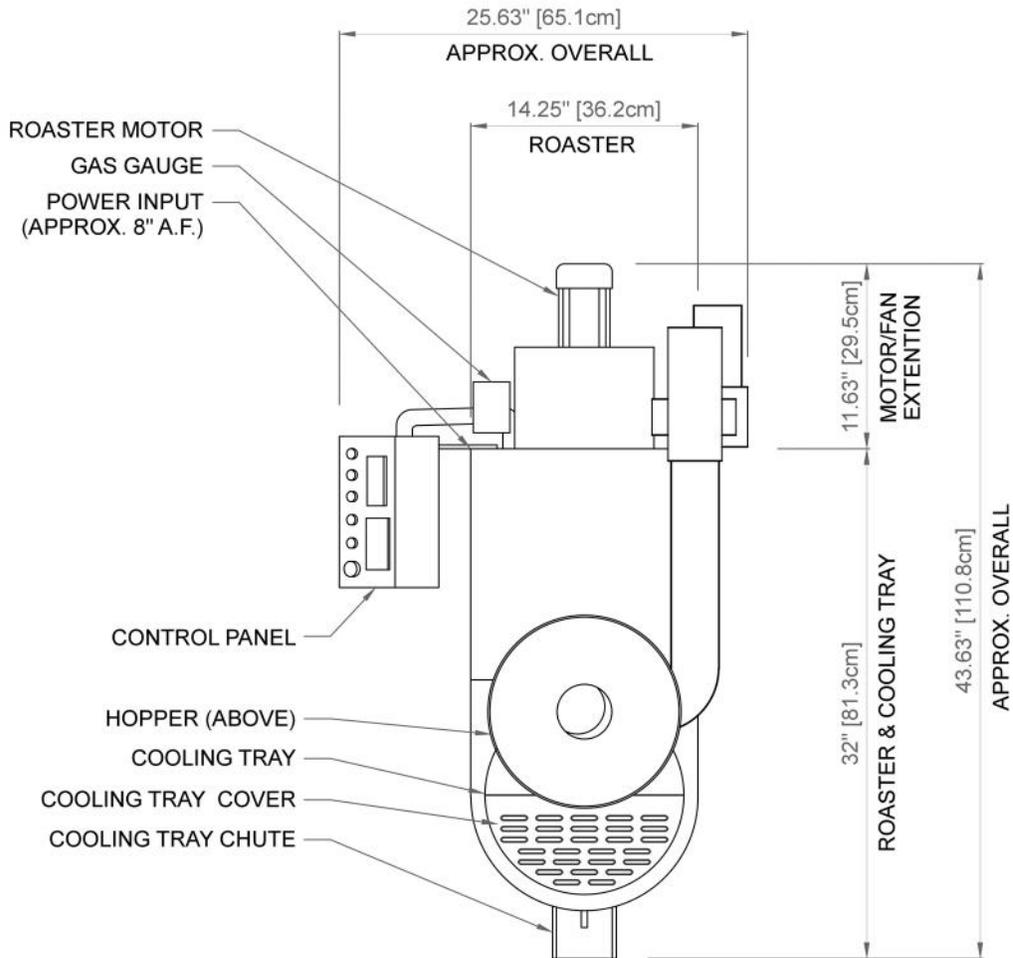
Typical Roaster Exhaust High Temp	400°F - 450°F
Typical Chaff Collector Exhaust High Temp	300°F
Typical Cooling Tray Exhaust High Temp	180°F
Max Exhaust	250 CFM
Exhaust Venting Type Required	Class III, Positive Pressure

## Data Logging

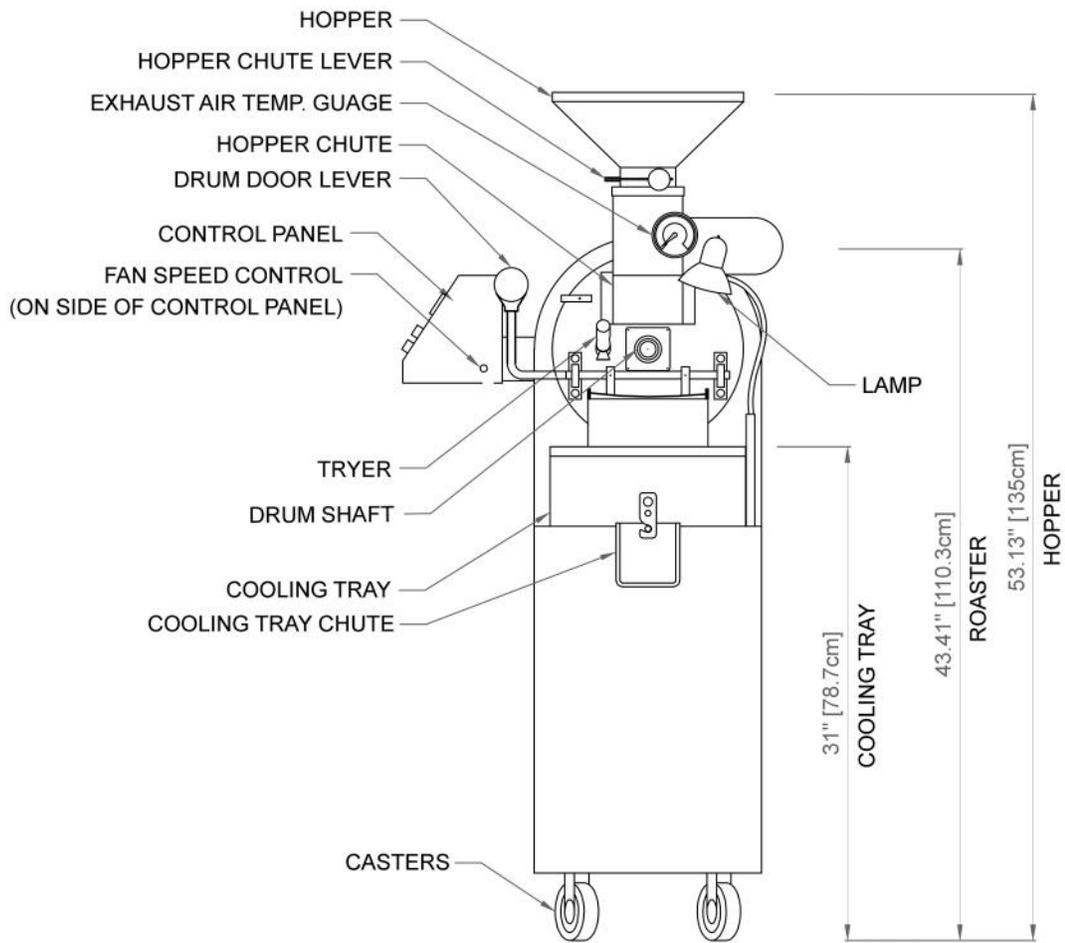
USB Logging Interface	Phidget 1048
Logging Thermocouples	BT, ET, Incoming Air

# MACHINE OVERVIEW

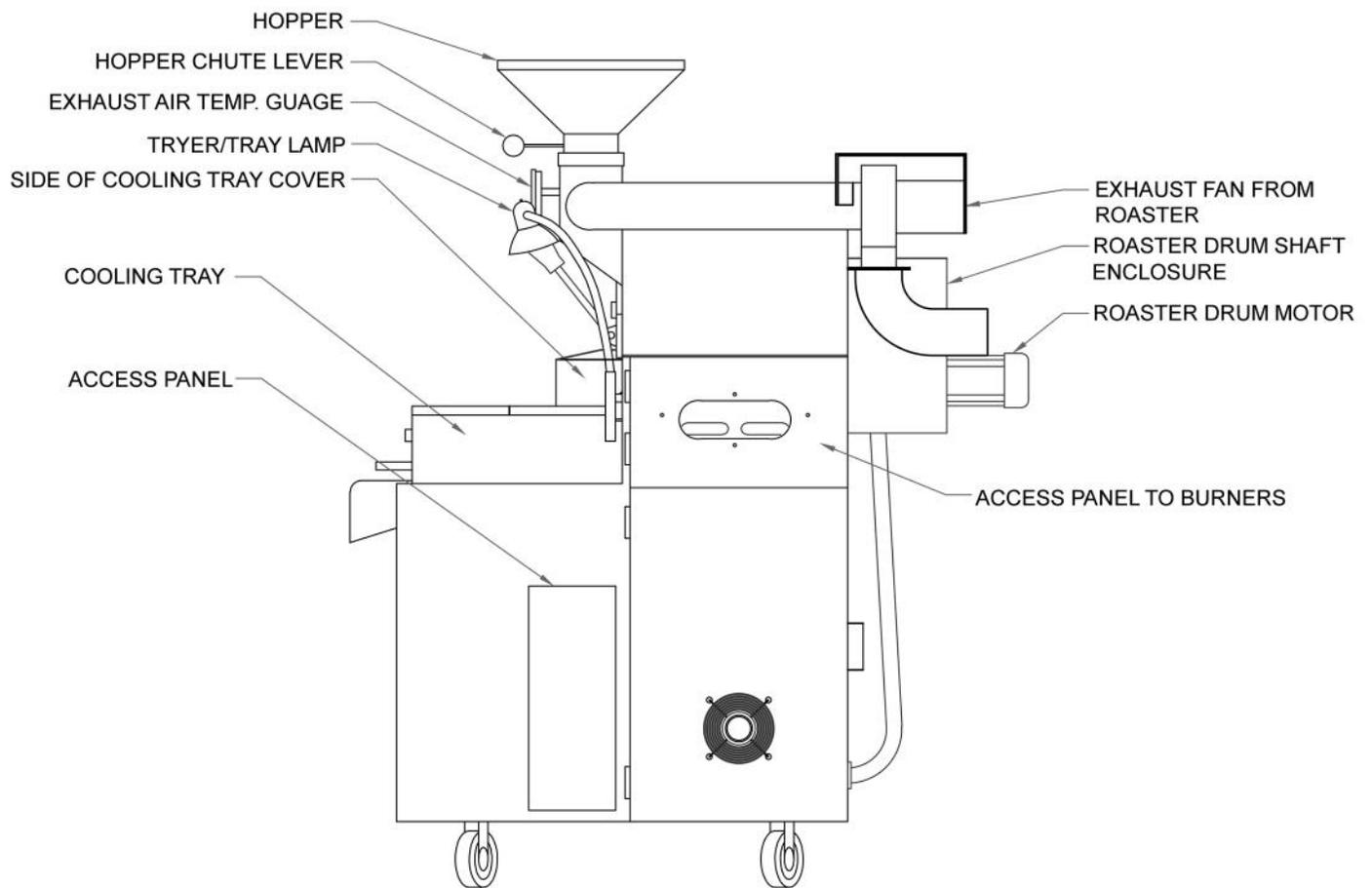
## VISUAL GUIDE TO ROASTER, CHAFF COLLECTOR & COOLING FAN



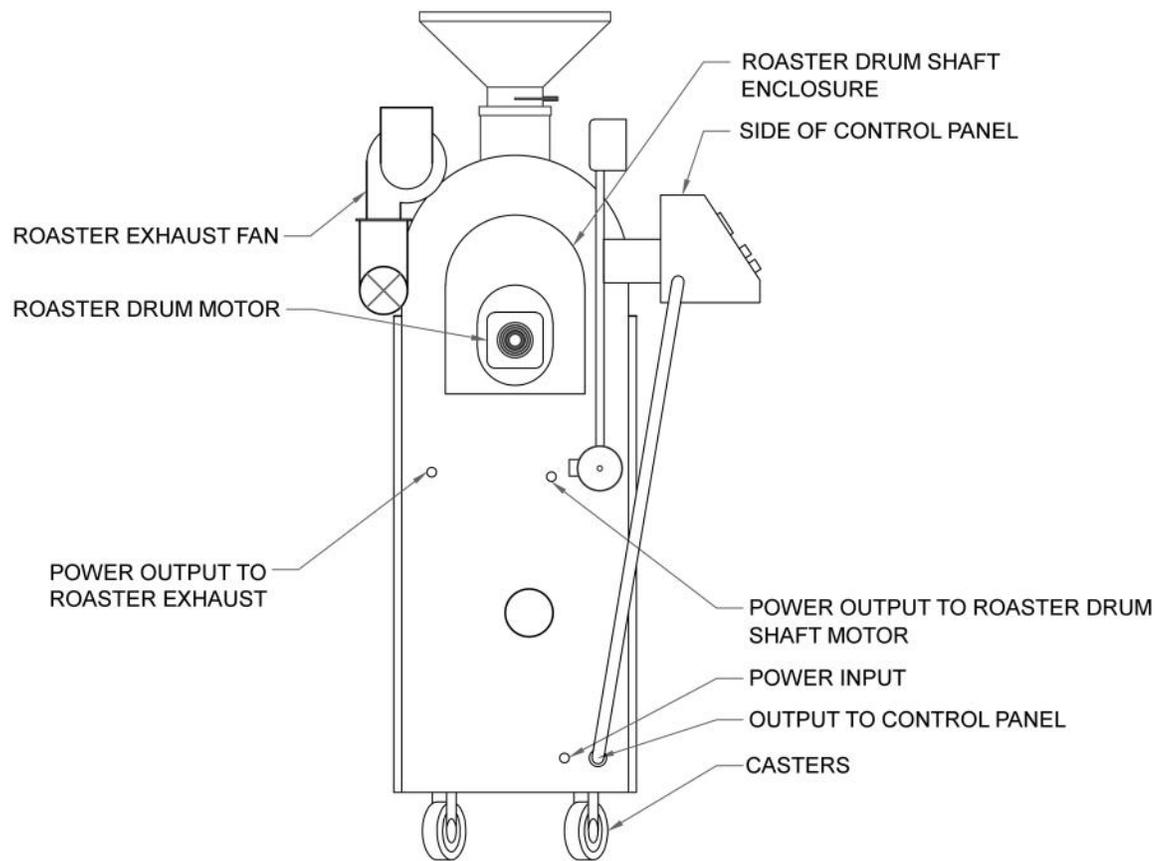
## ROASTER - TOP VIEW



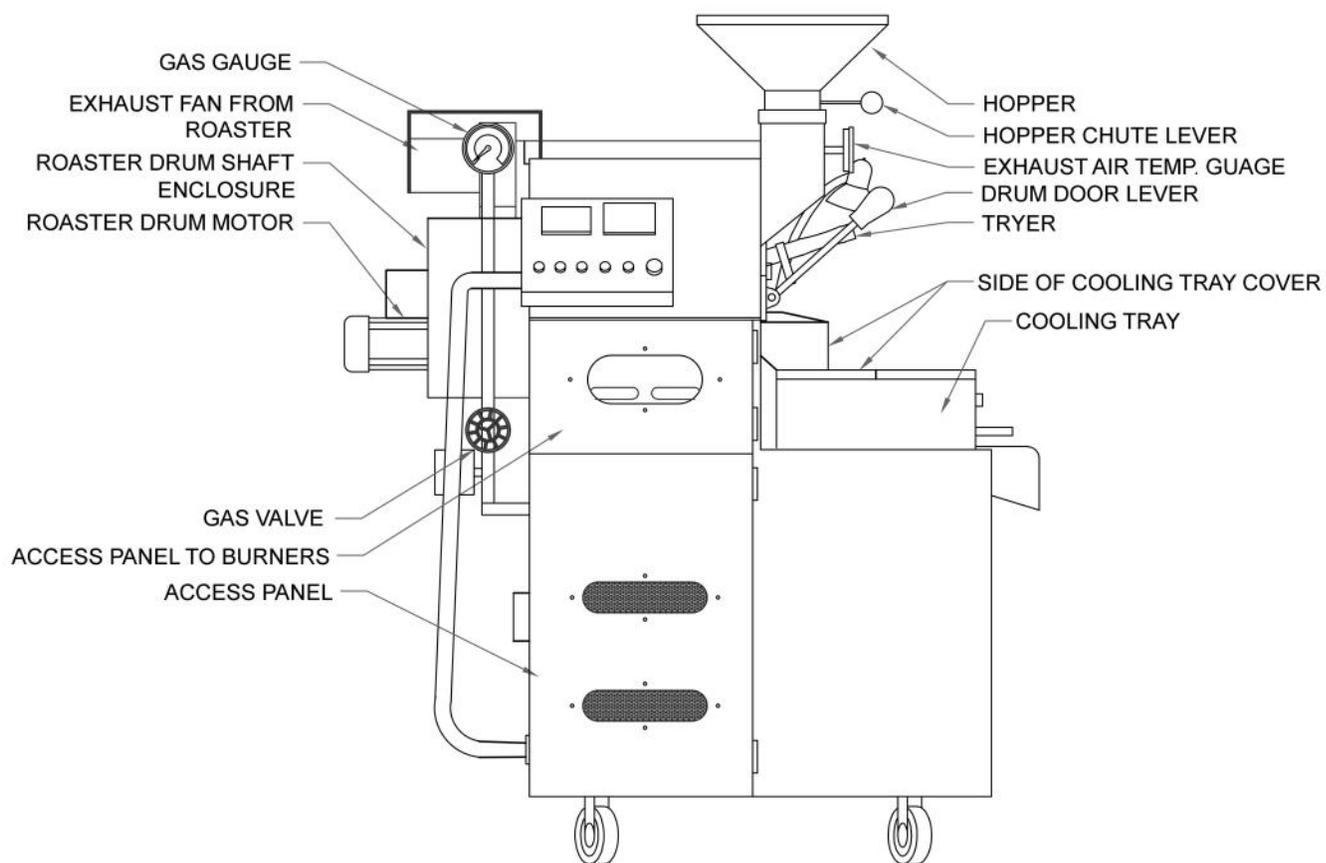
**ROASTER - FRONT**



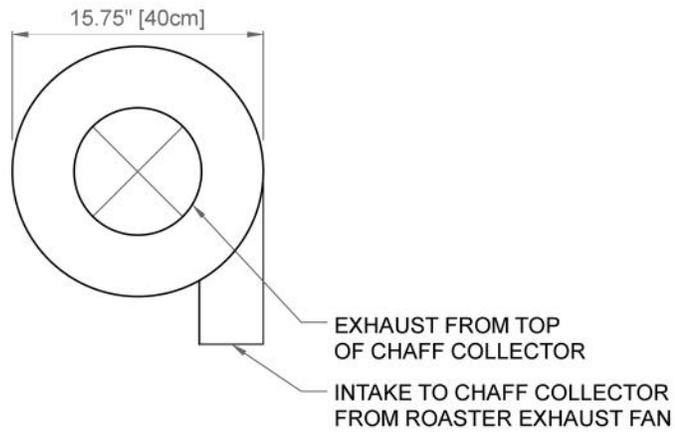
ROASTER - RIGHT SIDE



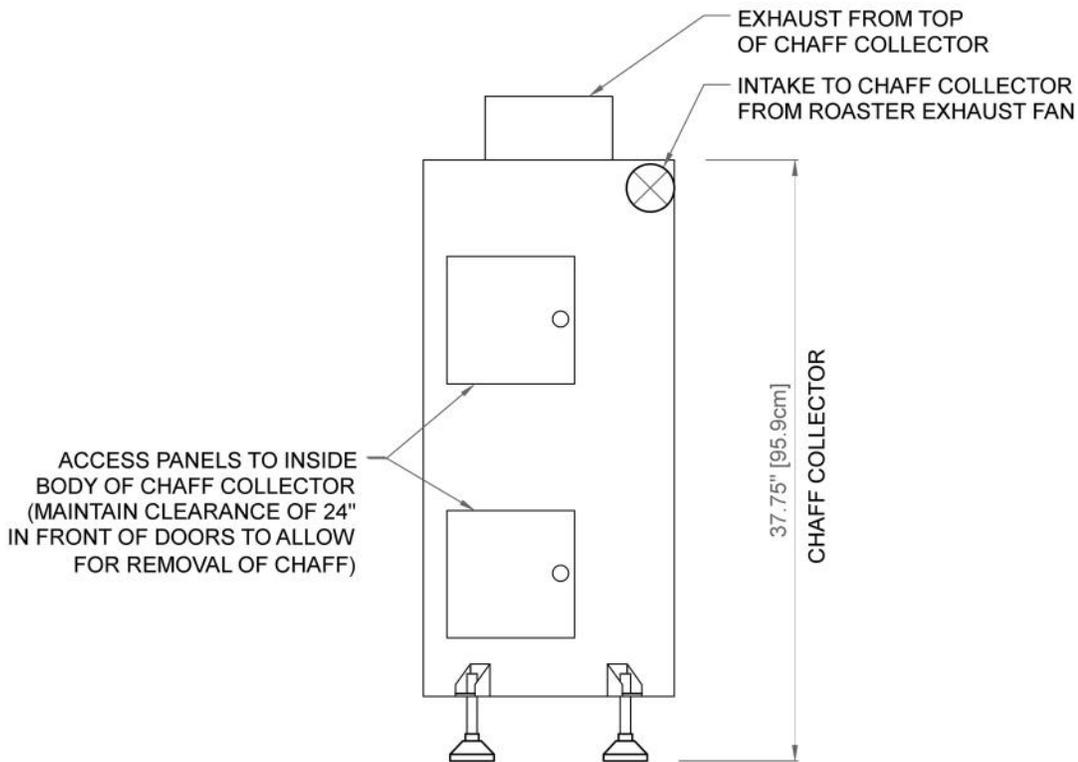
ROASTER - REAR



ROASTER - LEFT SIDE (CONTROL PANEL SIDE)



TOP



FRONT

CHAFF COLLECTOR

# SPACE PLANNING

## CONSIDERATIONS WHEN PLACING YOUR ROASTER

The SPACE PLANNING portion of this guide references the two free-standing components included with this model (Roaster and Chaff Collector), and the venting you will choose to connect those components and vent them to termination outdoors.

Decisions on how to safely vent your machinery will heavily influence your workspace layout but beyond your roaster and the venting you will require, users will likely require space for their own roasting process including containers for green coffee and roasted coffee, stand/desk for a laptop, stools, work table, vacuum for removing chaff from chaff collector, scale, etc. When referencing the minimum space requirements we suggest, please adjust as needed for your own roasting process.

On the next page is a suggested layout of the Roaster and Chaff Collector using the standard 2kg venting kit by Mill City Roasters. Although other layouts are workable, this option is derived by prioritizing connecting the exhaust of the Cooling Fan with the main exhaust stack above/beyond the Chaff Collector to prevent multiple penetrations in your roof/walls, and providing clearance, access and reachability to different parts of the equipment that are required for safe operation.

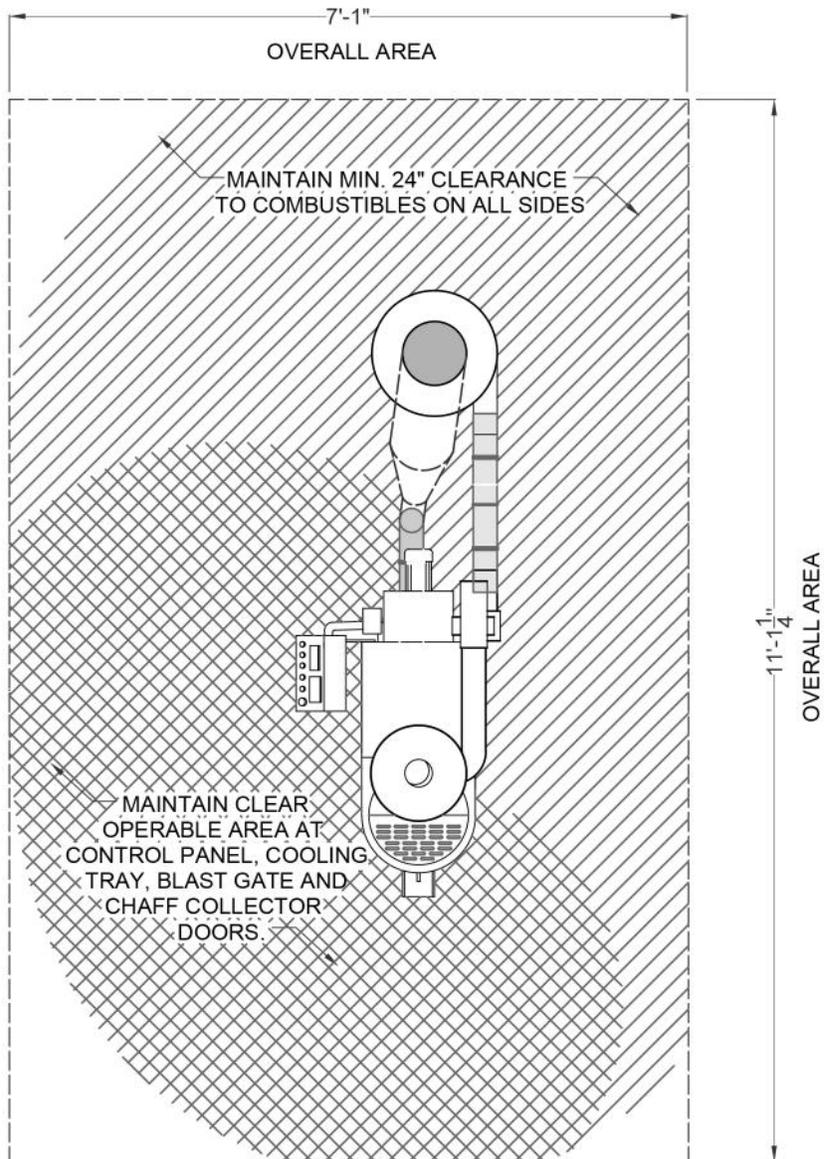
If you are in need of a custom venting layout, you can work with your local HVAC professional or contact Mill City Roasters to discuss a custom project.

impede required egress. The requirements of your local & state authorities will govern in the event they exceed or contradict the recommendations made in this guide.

3. We recommend maintaining 24" clearance at sides and rear of all parts of the roaster, chaff collector and venting for easy access and proper maintenance.
4. Maintain 18" clearance to combustibles.
5. The intake port on the Chaff Collector shall be within 36" of the exhaust port on the Roaster (typically at the rear) with minimal angles in the venting connecting the two ports.
6. Chaff Collector Access: Maintain access to doors of chaff collector and clearance to allow for easy (and frequent) removal of chaff.
7. Blast Gate: When connecting the exhaust of the Cooling Fan to the exhaust flue above/beyond the Chaff Collector, we suggest using a blast gate in that venting line. This prevents back flow of roast exhaust into the fan. This will require the user to open the blast gate when the Cooling Fan is in use and should be within reach during normal operation.
8. We suggest venting components have Quick Release features to allow for venting to be removed for cleaning and to provide clear access to the roaster interior and motors as required for maintenance. See the following pages on 'Venting' for more information.

### Space Planning Guidelines

1. Check your local municipal building & mechanical codes for regulations regarding the placement and venting of combustible production machinery. The requirements of your local authorities will govern in the event they exceed or contradict the recommendations made in this guide.
2. Roasters in commercial spaces should reference applicable fire code to ensure placement of equipment and supplies does not



SUGGESTED SPACE PLAN - TOP VIEW

## VENTING PORTS, PARTS & LINES

### Port/Vent Line Information:

Port	Location	Nominal Diameter	Length
Roaster Exhaust	Rear, top, center, vents towards rear of Roaster	3"	3"-4"
Cooling Fan Exhaust	Rear, low, right. Vents towards rear of Roaster	3"	0"-1"
Chaff Collector Intake	Upper right of Chaff Collector	3"	4"-5"
Chaff Collector Exhaust	Top of Chaff Collector, center, vents vertically	8"	3"-5"

\*Port diameter & length may vary. Field verification is highly suggested.

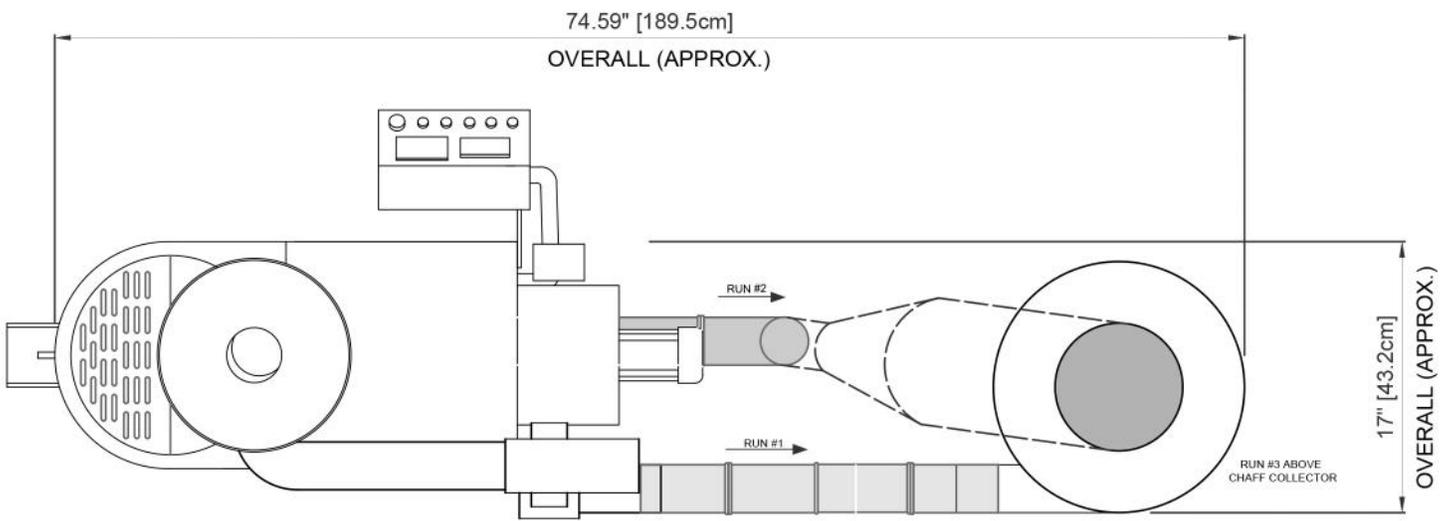
### Venting Notes:

Commercial Coffee Roasters have specific requirements for venting. Combustion gases, steam, smoke, condensed coffee oils are power vented via an exhaust fan creating pressure in the pipe is higher than normal atmosphere. This is called a Positive Pressure system and requires venting that accomodates not only this pressure but the heat the venting carries.

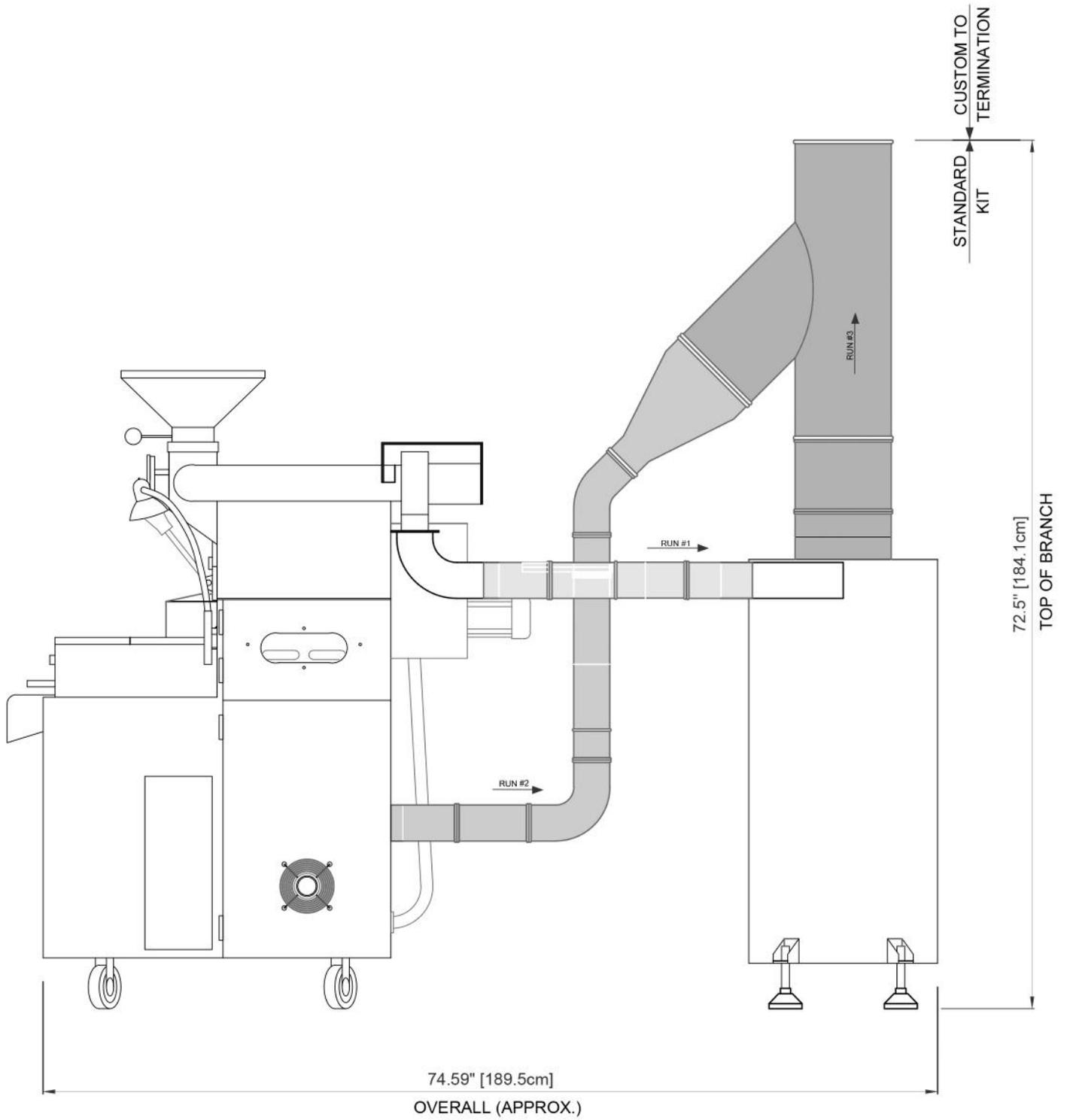
**RECOMMENDED:** To connect your components, we suggest a single-wall, Class III positive presure venting (such as Nordfab™ QF Venting or simliar) as it meets positive pressure requirements, and easily disassembles without tools. Ability to quickly disassemble makes maintenance easier, installation cleaner and safer. Once components are connected but before your venting begins to interact with your building envelope (both being in proximity to and/or penetration building finishes and materials), we suggest transitioning to double-wall, Class III positive presure venting (such as double-wall systems offered by Selkirk™ or Duravent™ or similar). Layouts should be designed to provide access to all portions of the exhaust system and allow for weekly/monthly cleaning/cleaning/sweeping. Follow all applicable building and mechanical codes.

**NOT RECOMMENDED:** Please note, attempting to use a negative pressure venting system like Class B or L or A venting, or stovepipe (typical venting found at the local hardware store) is not recommended as those systems will require each individual joint to be sealed to accomodated the pressurized system. Sealing joints makes cleaning more difficult so proper cleaning is often less frequent than required to maintain safe operation. Flex duct of any rating is not suggested due to its ribbed surface which collects debris and is more difficult to clean. Coffee dust, condensed coffee oil and chaff accumulation can cause fires in the chaff collector and venting. If you have a chaff fire or a fire in your venting line, that light and inexpensive venting will likely not be rated to contain that fire and you may see significant property damage and injury.

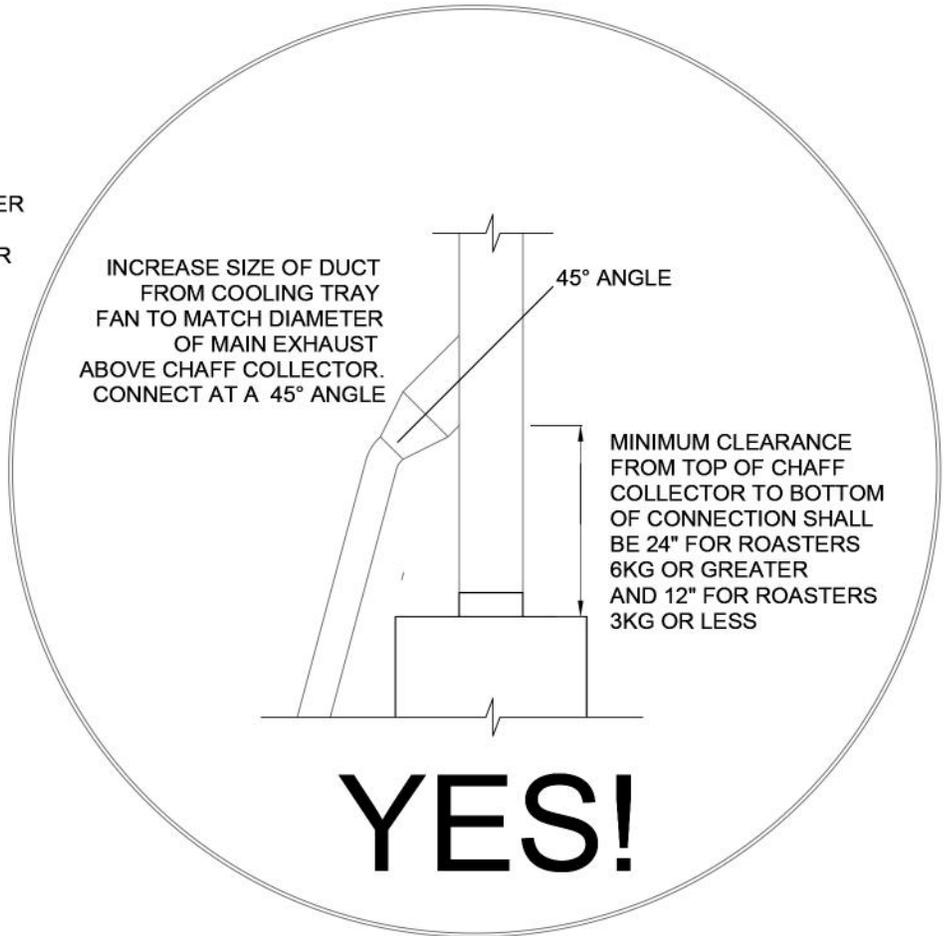
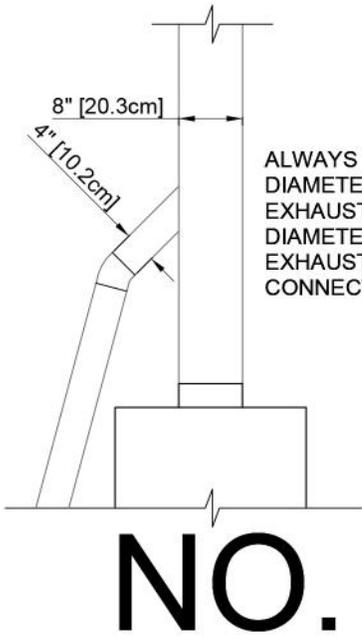
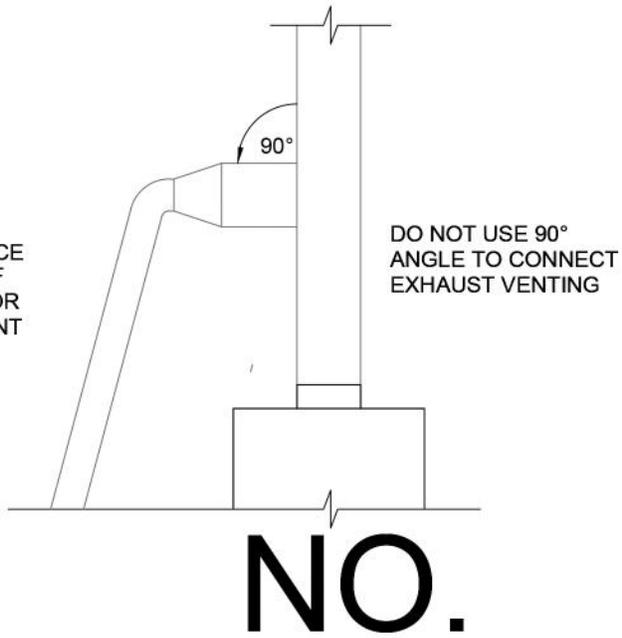
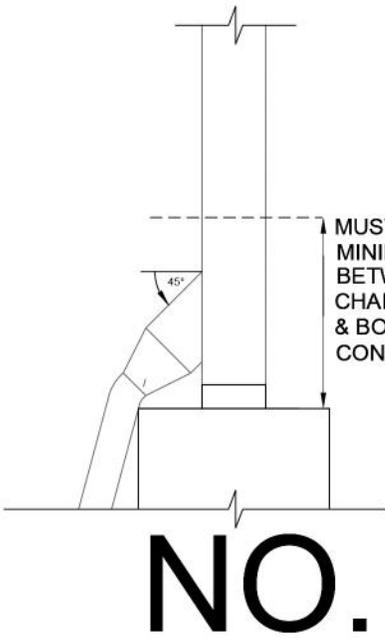
Contact Mill City Roasters fo more information on venting kits and venting design services.



SUGGESTED VENTING DIAGRAM - TOP VIEW



**SUGGESTED VENTING DIAGRAM - RIGHT SIDE**



**VENTING BRANCH DETAIL**  
 CONNECTING COOLING FAN EXHAUST TO  
 MAIN EXHAUST/FLUE ABOVE CHAFF COLLECTOR

This concludes Part I: Planning of the Graphical Guide for this roaster.

If you have further questions or require customized assistance with your planning, contact us.

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