

MILL CITY ROASTERS

MCR1500/MCR-2 DIGITAL




# INSTALLATION MANUAL

2 KILOGRAM GAS ROASTER  
WITH DIGITAL CONTROL PANEL

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May 24, 2022

 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.

 Note: This manual shall be retained for future reference.

** 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. Disconnect all power before performing maintenance or repairs.**

** WARNING**

**Keep the appliance area free and clear of combustibles.**

**Keep the flow of combustion and ventilation air free of obstruction.**

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# PART ONE: OVERVIEW

# 2 KILOGRAM GAS COFFEE ROASTER WITH DIGITAL CONTROL PANEL



Model: MCR1500  
Capacity: 2 Kilogram

Mill City Roasters, Minneapolis, MN, USA

## SPECIFICATIONS

Model Information			
General	<ul style="list-style-type: none"> <li>- Intended for use on counter or workbench</li> <li>- Integrated chaff collector</li> <li>- Requires power, gas and exhaust venting</li> </ul>		
Dimensions & Clearances			
Roaster Size (L x W x H) / Weight	45.13 in x 37.1 in x 45.81 (114.6 cm x 94.2 cm x 116.4 cm) / 345 lb (156.5 kg)		
Chaff Collector Size (Ø x H) / Weight	12 in x 29 in (30.48 cm x 73.66 cm) / 44.1 lb (20 kg)		
Clearances to Combustibles	18 in (45.72 cm)		
Capacity / Output			
Batch Size	0.3 kg - 2.4 kg		
Batch Time	< 15 minute batch		
Production Output	15.8 lb/hr, 126 lb/day (7 kg/h, 56 kg/day)		
Drum Size (Ø x L)	9 in x 9.75 in (22.86 cm x 24.765 cm)		
Drum Construction	Double-walled Drum, 430 Stainless Steel, Welded		
Cooling Tray Size (Ø x D.)	14.5 in x 6.06 in (36.8 cm x 15.4 cm)		
Data Logging			
Connection	Integrated USB connection via MODBUS		
Temperature Data	BT, ET, IT, DT		
Roaster Data	Fan Speed, Drum Air Pressure, Drum Speed, and Gas Pressure		
Power			
Electrical Service Required	Single Phase, 220-230V, 15A, 50-60Hz		
Electrical Connection	Nema 6-15p		
Light Bulb	220V LED		
Gas			
Fuel Type	LP Gas or Natural Gas. Factory-installed orifices are sized for LP Gas. Natural Gas conversion kits are available. Gas conversions to be completed by owner using orifices and instructions provided by manufacturer.		
Fuel Input	LP Gas: 19,200 Btu/hr / Natural Gas: 23,400 Btu/hr		
Gas Connection	1/2" NPT		
Gas Service Pressure	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px;"> <u>Required for CSA Installations*</u>                      LP Gas: 11" of water column;                      Natural Gas: 7" of water column                 </td> <td style="width: 50%; padding: 2px;"> <u>Suggested for Non-CSA Installations**</u>                      LP Gas &amp; Natural Gas: 14" of water column                 </td> </tr> </table>	<u>Required for CSA Installations*</u> LP Gas: 11" of water column; Natural Gas: 7" of water column	<u>Suggested for Non-CSA Installations**</u> LP Gas & Natural Gas: 14" of water column
<u>Required for CSA Installations*</u> LP Gas: 11" of water column; Natural Gas: 7" of water column	<u>Suggested for Non-CSA Installations**</u> LP Gas & Natural Gas: 14" of water column		
Gas Regulator	LP Gas: Maxitrol 325-3 with Red Spring (Adjusted to 14" of water column)  Natural Gas: Maxitrol 325-3 with Red Spring (Adjusted to 14" of water column)		
Burner Control	Digital Electronic Modulating Valve		
Number of Burners	6		

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Exhaust Fans			
Exhaust System	Power-vented, dual exhaust.		
Roaster Exhaust Fan	Description	Pulls exhaust from drum, pushes through chaff collector to termination outdoors.	
	Volume	78 CFM (max.) Typical variable high-medium-low use throughout batch.	
Cooling Tray Exhaust Fan	Description	Pulls exhaust from cooling tray, pushes to termination outdoors.	
	Volume	117 CFM (max.) Typical use is max airflow for 2-3 minutes at end of batch.	
Venting			
Venting Type	Positive pressure ducting is required for all venting. Venting near components should disassemble for easy cleaning. Venting beyond chaff collector should be arranged to allow for sweeping/cleaning.		
Venting Direction	Exhaust can be vented vertically or horizontally. See below for length limitations.		
Venting Layout	Roaster exhaust is required to pass through chaff collector and beyond to termination outdoors. Cooling Tray exhaust is merged into roaster exhaust above chaff collector and is required to be terminate outdoors along with roaster exhaust.		
Roaster Exhaust Venting	Line between Roaster & Chaff Collector	Included. Chaff collector is integrated into roaster body. No additional venting required between roaster & chaff collector.	
	Line between Chaff Collector & Termination Outdoors	Heat Rating	500°F
		Size	6"Ø (nominal, line can be increased in diameter)
		Max. Length	***Recommended maximum venting run is 20 feet (decrease by 5 feet for each 90 degree elbow or equivalent).
		Clearance to Combustibles	Installations with combustibles at the roof/wall penetration or within 18" of venting will require a double-wall venting product with appropriate clearance-to-combustible rating.
Condensation	Insulated duct or lining is suggested in cold environments (interior or exterior) to prevent excessive condensation inside venting.		
Cooling Tray Exhaust Venting	Line between Cooling Tray & Termination Outdoors	Partially included. Cooling tray exhaust is integrated into roaster exhaust venting above chaff collector. See above for requirements for line between chaff collector and termination outdoors.	
Venting Kits & Termination Outdoors	See <i>Venting</i> section in manual for information.		

Certifications	
All Models:   	MCR Series Models Only:   <ul style="list-style-type: none"> <li>• ANS Z83.11</li> <li>• CSA 1.8-2016</li> <li>• Food Service Equip.</li> <li>• Not intended for household use.</li> </ul>

\*CSA Certification is only available on model MCR1500 and other MCR Series models.

\*\*Contact Mill City Roasters for more information on optimizing fuel pressure to increase batch size/output.

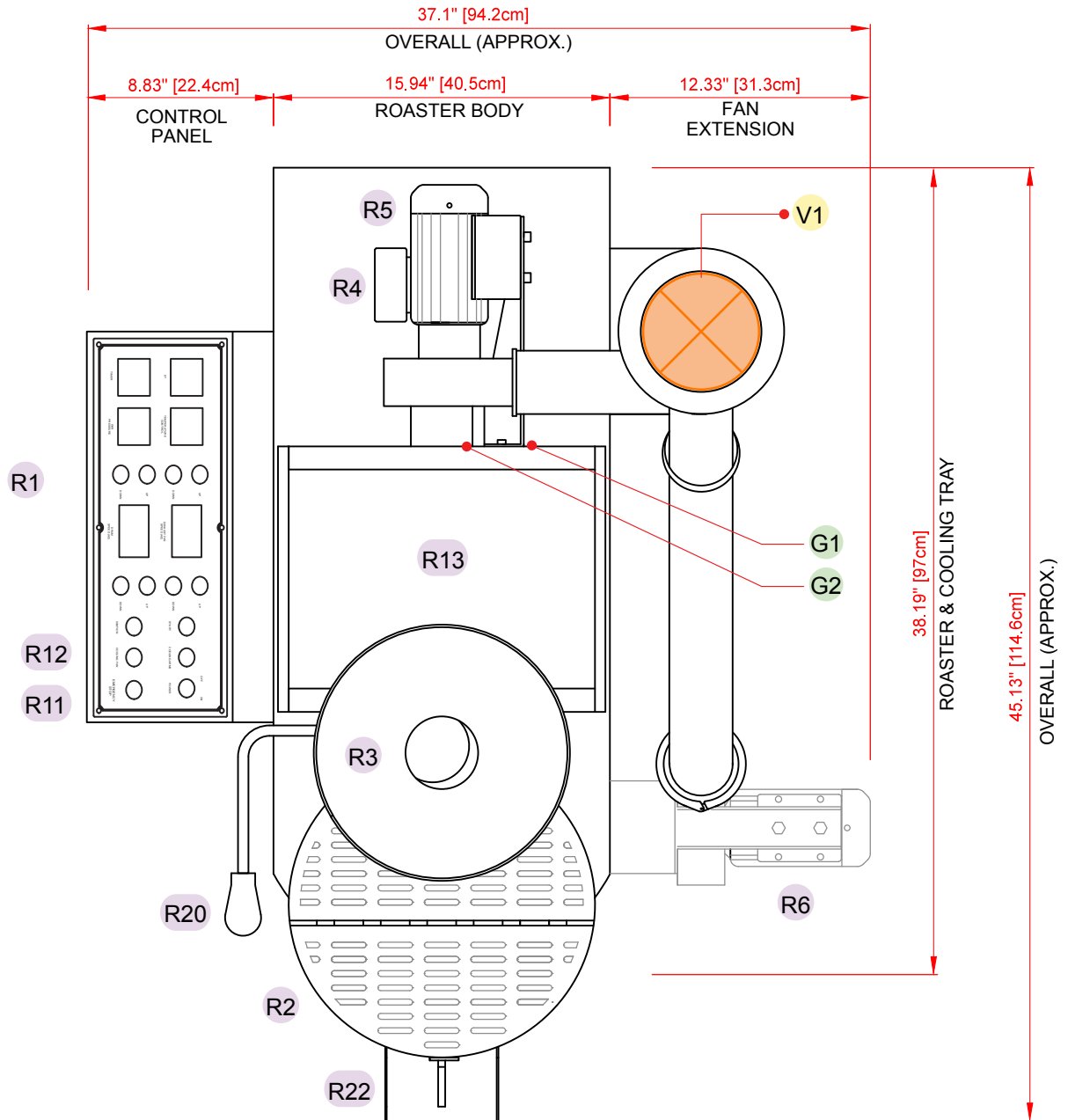
\*\*\*Extending venting lines beyond recommendations can cause back-flow, decreased airflow capacity, and chaff dispersal. Contact Mill City Roasters for strategies to minimize lengths or counteract side effects of long vent runs.

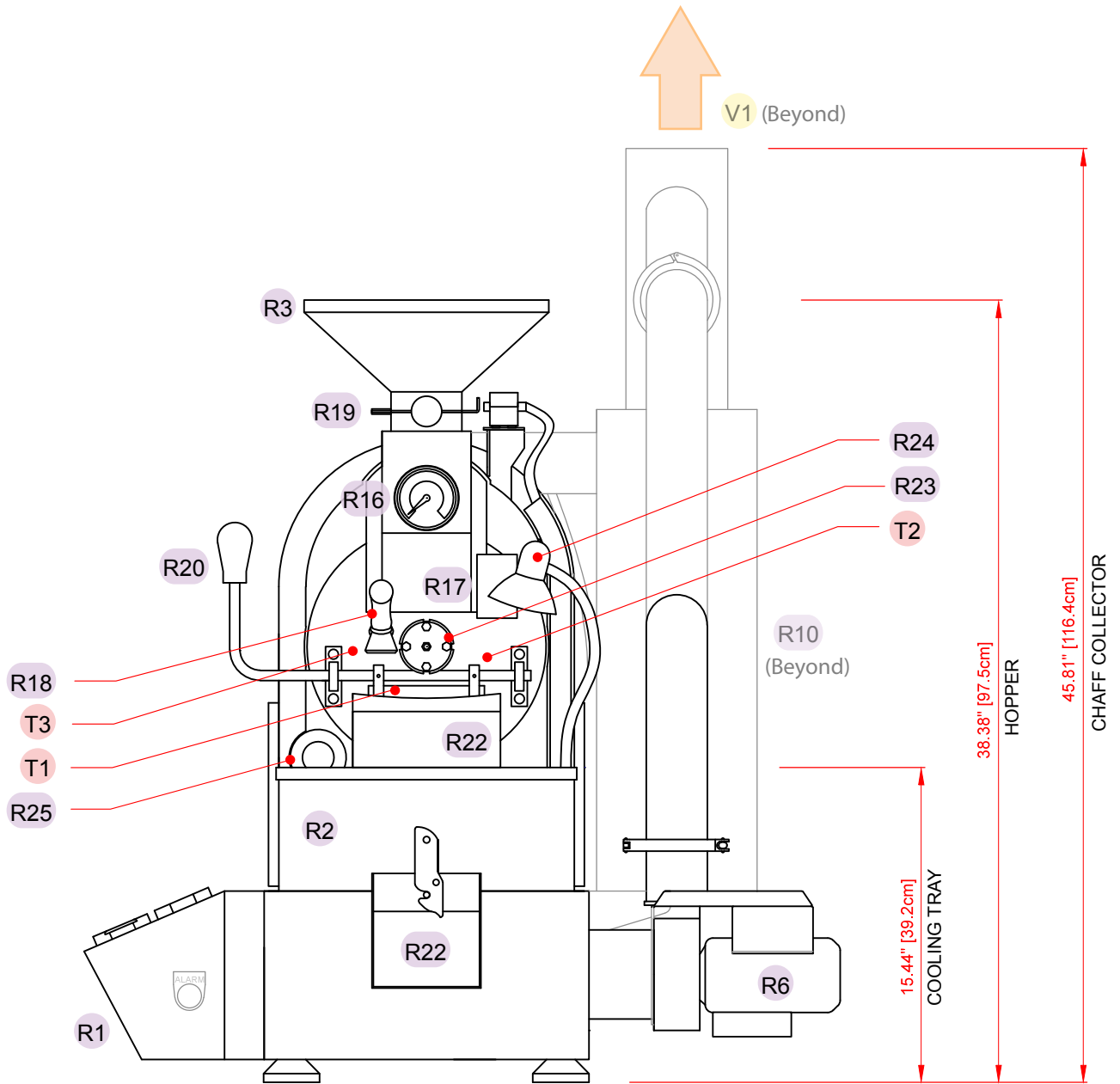
Assembled in China.

# ROASTER LAYOUT

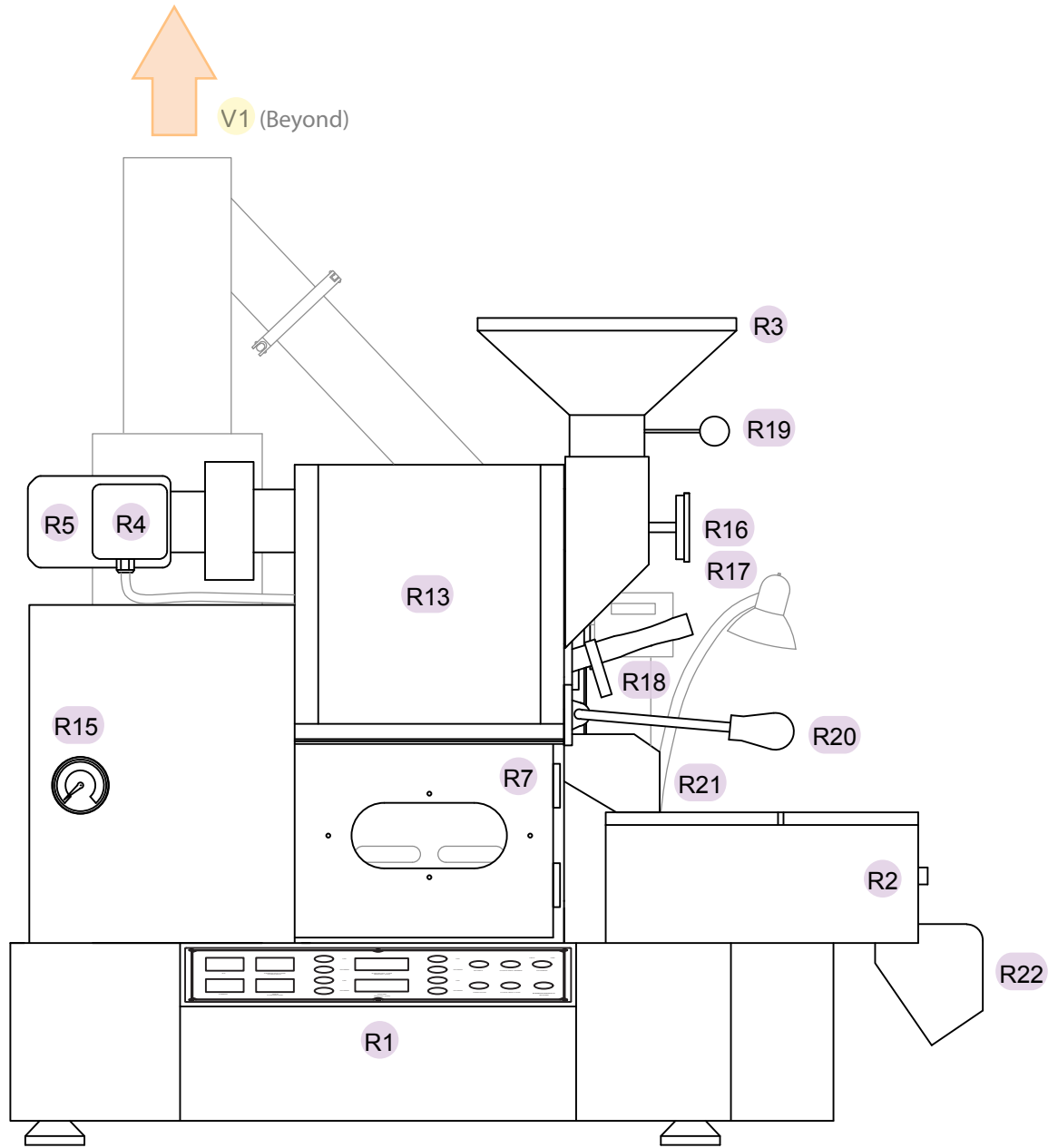
R1	Control Panel		
R2	Cooling Tray		
R3	Hopper		
R4	Drum Motor		
R5	Roaster Exhaust Fan		
R6	Cooling Tray Exhaust Fan		
R7	Access Panel To Burners		
R8	Access Panel To Electronics		
R9	Access Panel To Chaff Collector		
R10	Chaff Collector		
R11	Emergency Stop		
R12	Fan Speed Control		
R13	Drum Cover		
R14	Roaster Drum Shaft Enclosure		
R15	Gas Pressure Gauge		
R16	Analog Temperature Gauge		
R17	Digital Drum Pressure Gauge		
R18	Tryer		
R19	Hopper Chute Lever		
R20	Drum Door Lever		
R21	Drum Door		
R22	Cooling Tray Chute		
R23	Drum Shaft		
R24	Lamp		
R25	Sightglass		
V1	Port - Chaff Collector Exhaust Outlet		
G1	Power Cord Location		
G2	Gas Valve		
T1	Thermocouple - (BT) Bean Temperature		
T2	Thermocouple - (ET) Environmental Temperature		
T3	Thermocouple - (DT) Drum Temperature		
T4	Thermocouple - (IT) Incoming Air Temperature		

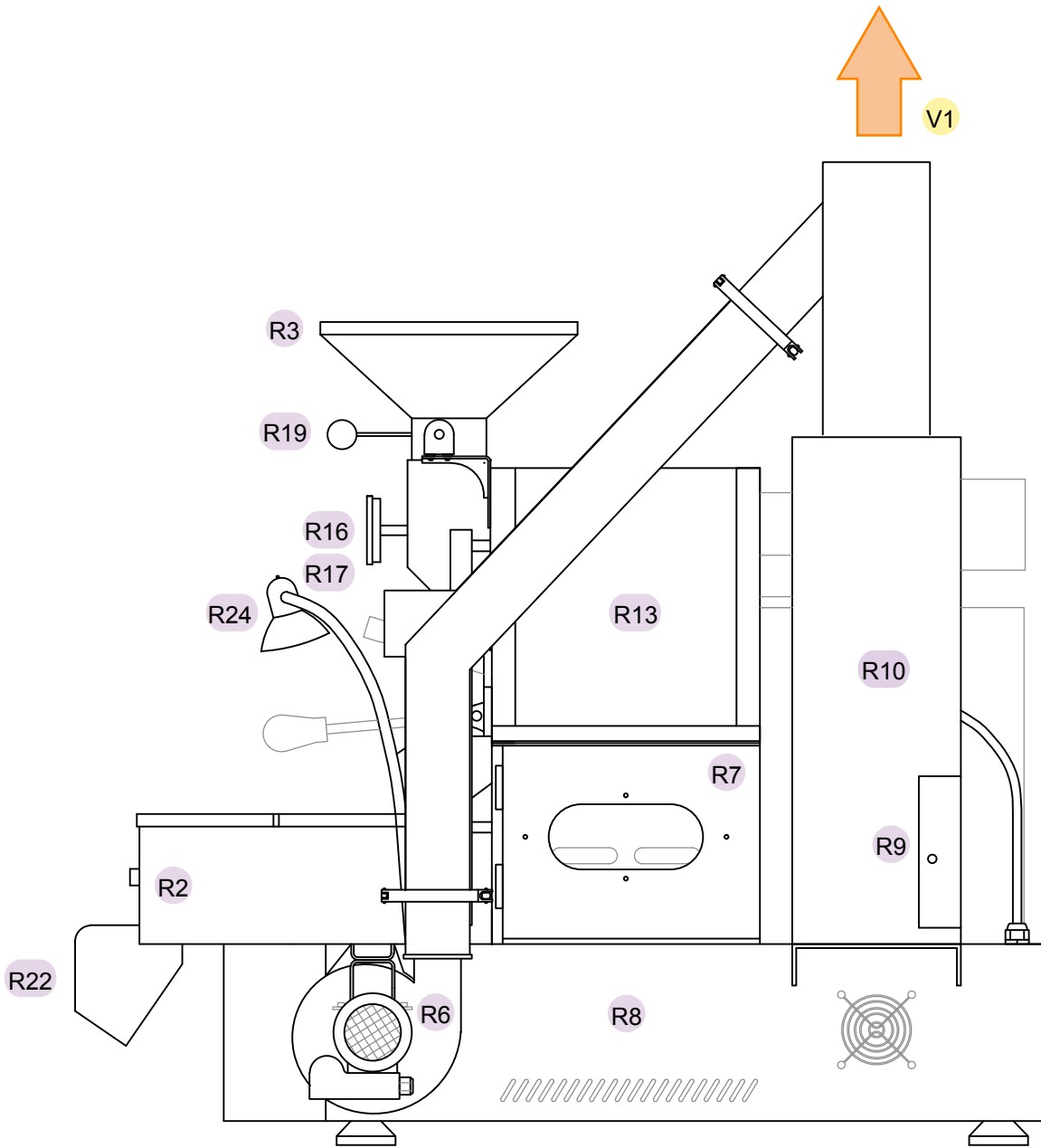
# ROASTER - TOP VIEW



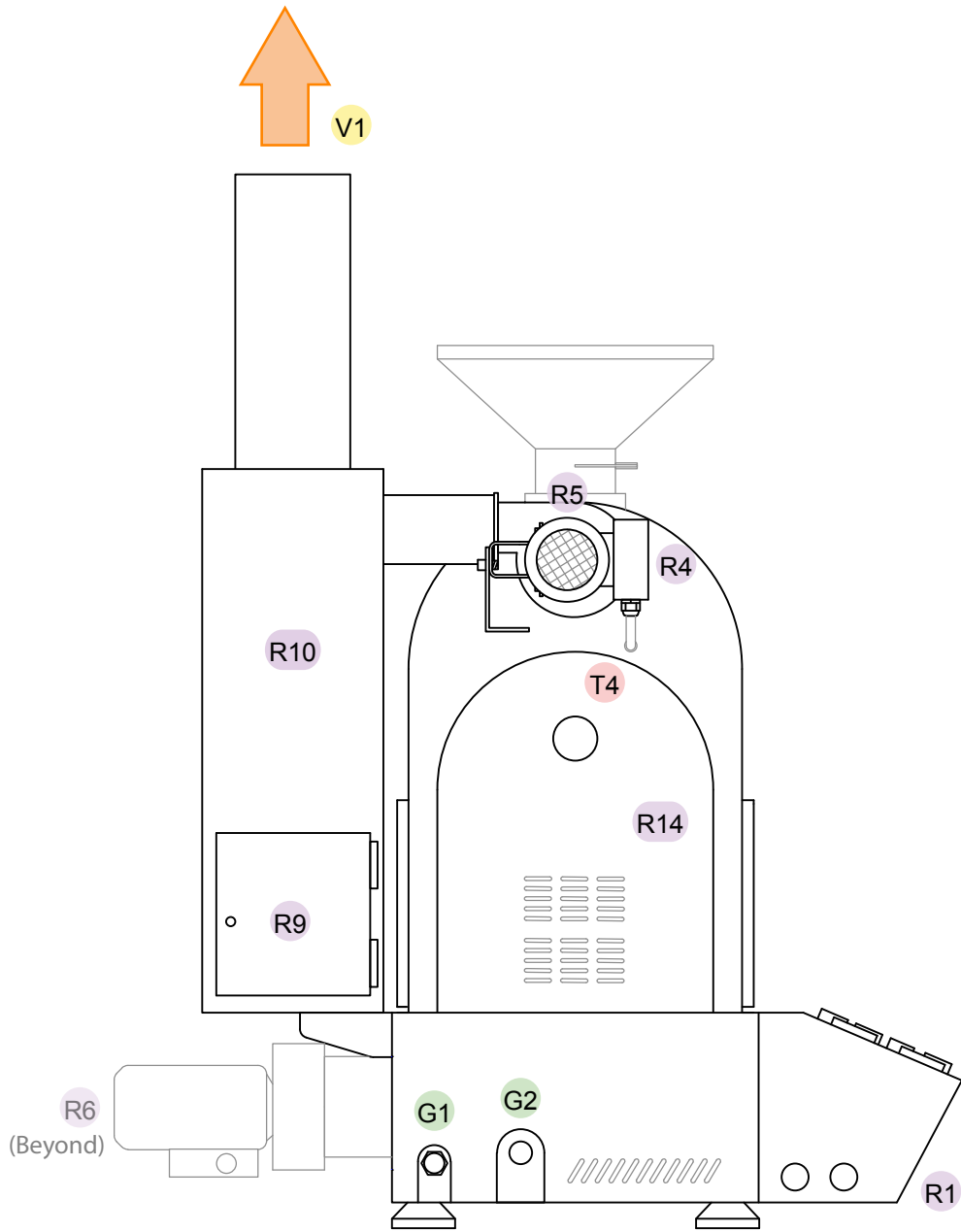


# ROASTER - LEFT SIDE (CONTROL PANEL SIDE)



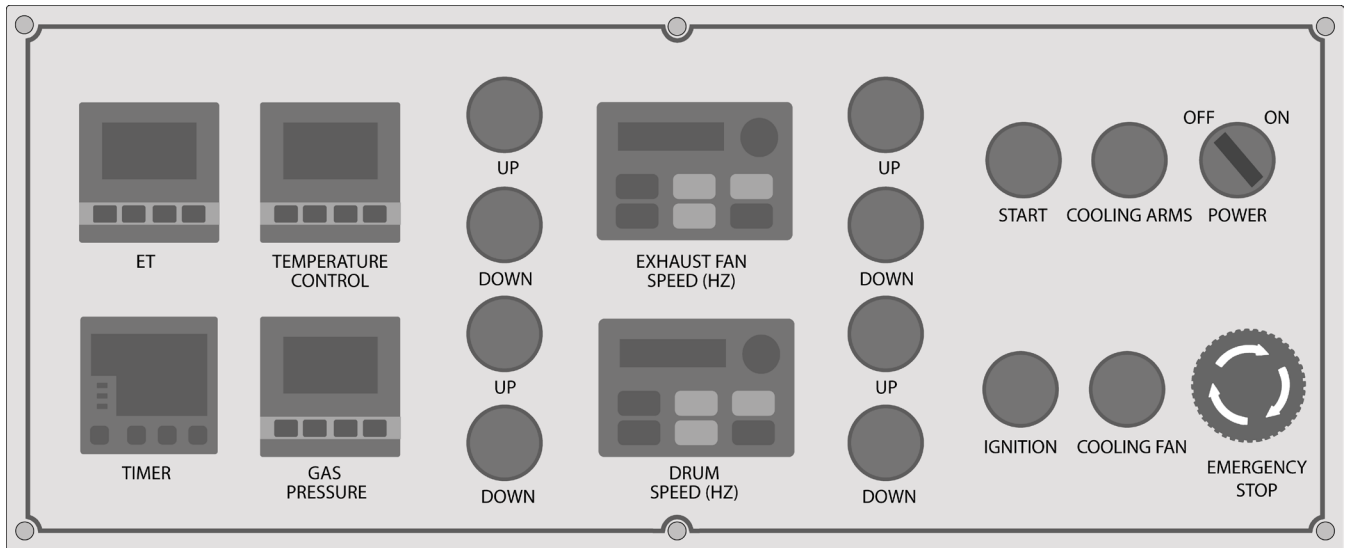


# ROASTER - REAR





# CONTROL PANEL OVERVIEW



(front of panel)

Temperature Controller: Heating limit controller. Set to factory maximum temperature for preheat and finish temp. Turns off at set point and turns on again after 30F decrease in temp.

Timer: Elapsed roast time

Power Switch: Main power switch

Roasting Switch: Burner ignition switch

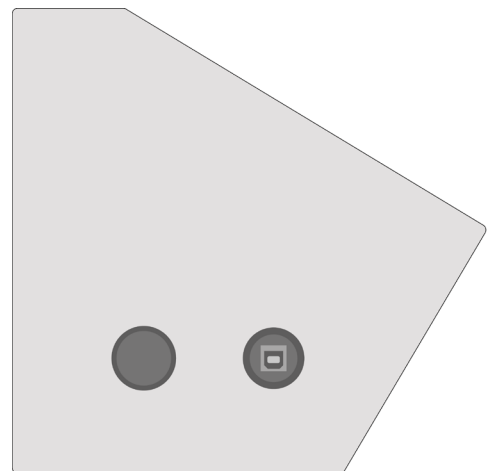
Cooling Switch: Starts and stops cooling tray fan.

Timer Switch: Starts and stops roast timer.

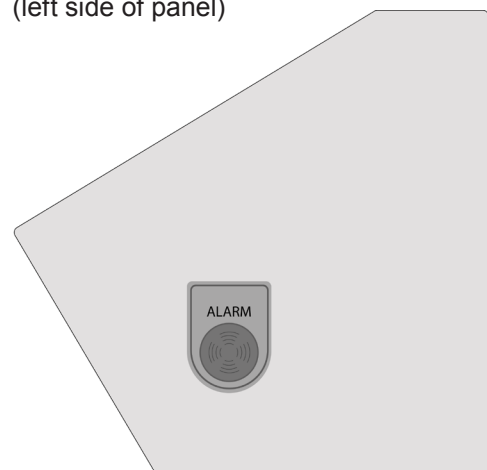
Exhaust Fan Speed: Fan speed adjustment

Drum Speed: Drum speed adjustment

Emergency Stop Button: Disables drum motor, fan motors, and ignition system.



(left side of panel)



(right side of panel)

# SPACE PLANNING

## Considerations when installing a commercial coffee roaster

### Fire & Building Safety

1. Verify with local zoning regulations that coffee roasting is allowed on the property.
2. Venting Termination: Identify a viable exhaust termination point through the roof or exterior wall based requirements and recommendation in this manual. Check your local municipal building & mechanical codes for regulations regarding exhaust locations of combustion gas. The requirements of your local authorities will govern in the event they exceed the recommendations made in this manual. See Specifications for maximum recommended venting line lengths and contact Mill City Roasters for alternative venting strategies if this recommendation cannot be met.
3. Clearance to Combustibles: Maintain 18" clearance to combustibles on sides and top of roaster components and any single-wall venting provided by Mill City Roasters. Components can be placed on combustible floor when included feet are installed. When possible, we recommend allowing a minimum of 24" of clearance on non-working sides of roaster, chaff collector and venting for cleaning access and proper maintenance.
4. Cleaning & Fire Safety: When placing roaster, maintain easy access to doors of chaff collector and clearance to allow for frequent removal of chaff.
5. Check your local fire code. Ensure final placement of equipment and supplies does not impede required egress paths. The requirements of your local & state authorities will govern in the event they exceed the recommendations made in this guide.
6. Evaluate proximity of heat-triggered fire suppression systems (i.e. sprinkler heads) to the roasting components.

### Consumer Safety

1. Verify requirements for a roasting operation with your local health department. Certain municipalities may have requirements including three compartment sinks, hand wash stations, mop sinks, wall & flooring materials, work surface types, rodent abatement, signage, cleaning regimen, light bulb covers etc. A certificate or license may be required to operate and/or sell coffee/food for consumption.

### Utilities

1. Review power and gas requirements for your roaster. For new spaces, if gas pressure is unknown, we suggest having the gas pressure measured prior to signing a lease or purchase agreement. Contact us for information on increasing available gas pressure if required.

### Size & Scale

1. Roasting Tools & Supplies: Immediately around the roaster, plan for laptop for data logging, separate containers for green coffee and roasted coffee, vacuum for chaff, fire safety tools such as drum crank and spray bottle. Adjacent to the roaster you may also require staging area, work surface for queueing green coffee and weighing batches.
2. Cupping Area: Space and work surfaces to cup roasted coffee for sample evaluation, profile design and quality control. Space may require grinder, brewers, kettles/towers, wares, etc.
3. Shipping & Receiving: Roasteries of all sizes may benefit from dock access, pallet jacks, lifts to move product. Note: not having dock or lift access for delivery trucks may significantly increase your shipping expenses.
4. Additional Green Coffee Storage: If your on-site storage needs exceed short term use, you may require a dedicated area. Your greens importer can help you understand how to safely store coffee for use over several weeks.
5. Packaging Area: Processing roasted coffee for retail or wholesale. May include grinding for customers. Space may be subject to health department approval.
6. Inventory & Fulfillment: Area for processing orders, preparing shipments and organizing for carrier pickups.
7. Note: It is very common that owners will need to upgrade to larger roasters at some point. Contact us to discuss strategies to consider to plan your space for scaling including flexible space design and installing venting, gas & wiring appropriate for both your current and future equipment.

### Beyond Roasting: Facilities & Access

1. If you plan to have employees and/or allow the public in your space, check your local workforce requirements, applicable commercial building codes, and guidelines for retail businesses serving the public.

# VENTING



## FIRE DANGER

**Fires can be caused by not keeping venting & chaff collector free of build-up and using improper venting could allow fire to spread to your building. Follow the venting specifications and installation guidelines and keep your venting & chaff collector clean.**

### Venting Port (Size / Run)

Chaff Collector Exhaust Port	5"Ø (nominal) / chaff collector -to- termination outdoors (Note: Venting installed beyond this port should immediately increased from 5" Ø to 6" Ø to accommodate dual exhaust flow. Adapters available.)
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\*Port diameters noted are nominal. Field verification is highly suggested.

**SPECIFICATIONS:** See SPECIFICATIONS for information on positive pressure, dual exhaust system. Find more general venting information and FAQ here: <https://millcityroasters.com/commercial-coffee-roaster-venting/>

**SINGLE & DOUBLE WALL:** If your venting will be within 18" of combustible materials in your building (both being in proximity to and/or at the penetration of building envelope to reach termination outdoors), you may be required to use double-wall, positive pressure venting. Follow the venting manufacturers published clearances to combustibles and all applicable building and mechanical codes.

**MAXIMUM LENGTHS/RUNS:** See SPECIFICATIONS for recommended maximum venting lengths. For best performance, place your roaster where it can be immediately vented out a wall or through a roof. Air flow issues caused by long or complex venting runs are not supported by our tech support team but we may be able to consult on venting strategies to minimize your issues.

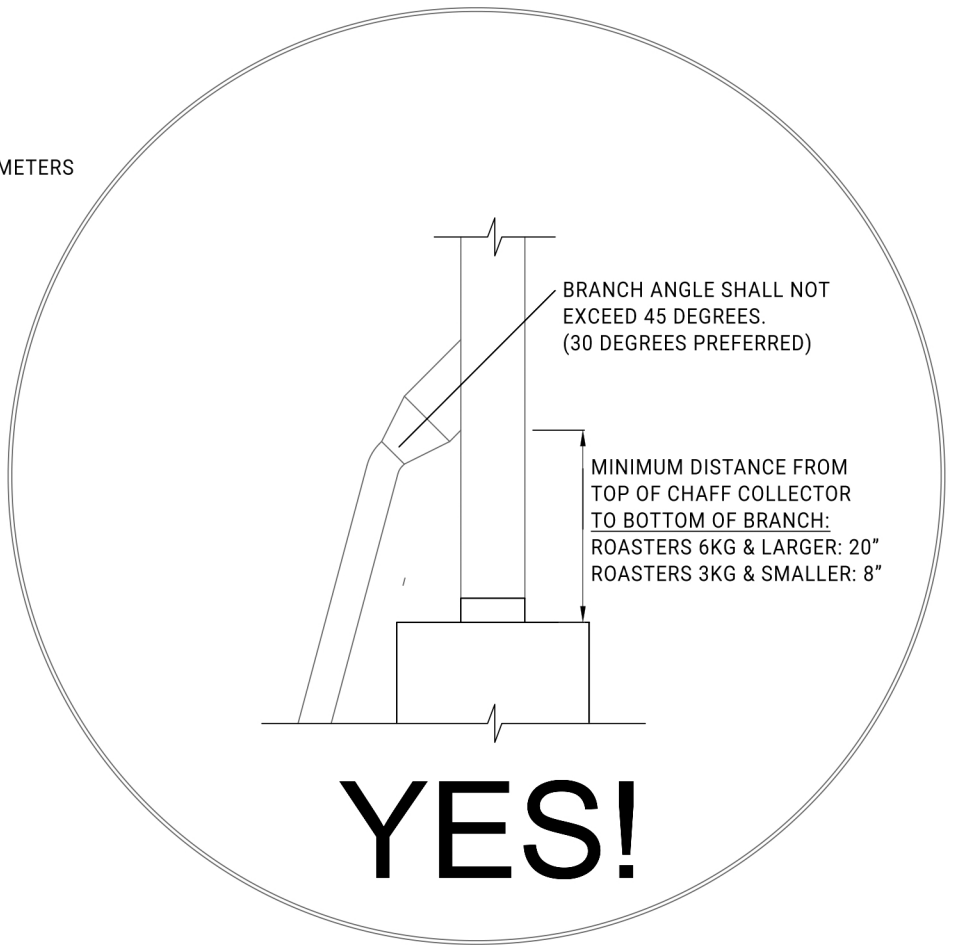
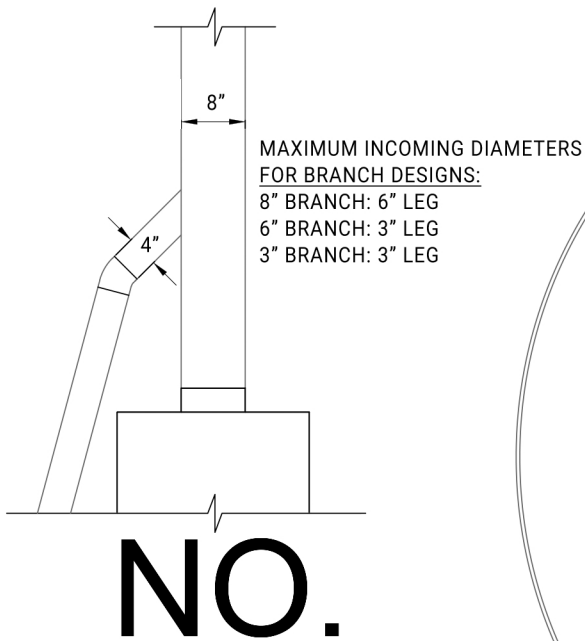
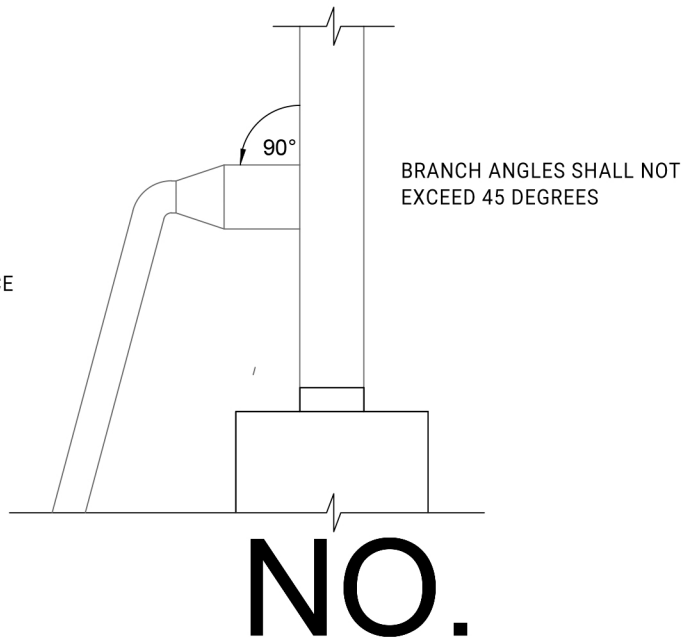
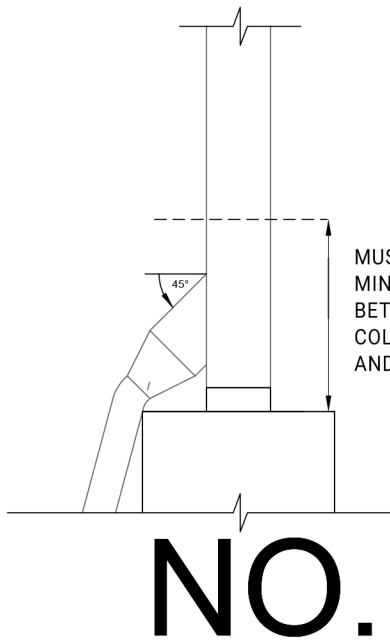
**CAPS AT TERMINATIONS:** Vertical terminations should have simple rain caps (no screens or fins) that stand off the top of the stack at a height equivalent to the diameter of the stack. Horizontal terminations should extend past the face of the exterior wall a minimum of 12" for non-combustible surfaces and 24" for combustible surfaces, be turned downward using a 30 degree or 45 degree elbow and have a simple bird or rodent screen cap applied (no tight screens).

### NOT ALLOWED:

1. Negative pressure ducting/venting types such as Class B or L or A venting, or stovepipe are not allowed.
  2. Reducing diameters of ducting to be smaller than port size is not allowed.
  3. Flexible duct of any rating or type is not allowed.
  4. "T" shaped intersections/clean-outs or "L" shaped elbows with zero radius.
  5. Termination caps with fins or insect screens that limit airflow.
- Using unapproved, uncertified venting may void the warranty on your roaster and all parts & accessories

### NOT SUGGESTED:

1. Low radius elbows (with a center line radius that is less than the pipe diameter).
  2. Ganging multiple roasters together - even when gating is used to isolate systems.
  3. Clean-out doors or intersections in venting lines that disrupt airflow.
- Any of these situations may limit our ability to diagnose airflow issues or provide general tech support.



### OPTIONAL EXHAUST GANGING/MERGING

Roaster exhaust and cooling tray exhaust can be merged after the chaff collector to allow coffee roaster to be vented to termination outdoors using only one vent line or stack.

Note: Mill City Roasters has pre-designed kits for each model that will easily merge exhaust lines.  
Contact us for more information.

This concludes Part One: Overview

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## PART TWO: GAS & POWER

## GAS

**⚠ INSTALLATION MUST CONFORM WITH LOCAL CODES**

In the absence of local codes, installation must conform with *National Fuel Gas Code*, ANSI Z223.1/NFPA 54, or the *Natural Gas and Propane Installation Code*, CSA B149.1, as applicable

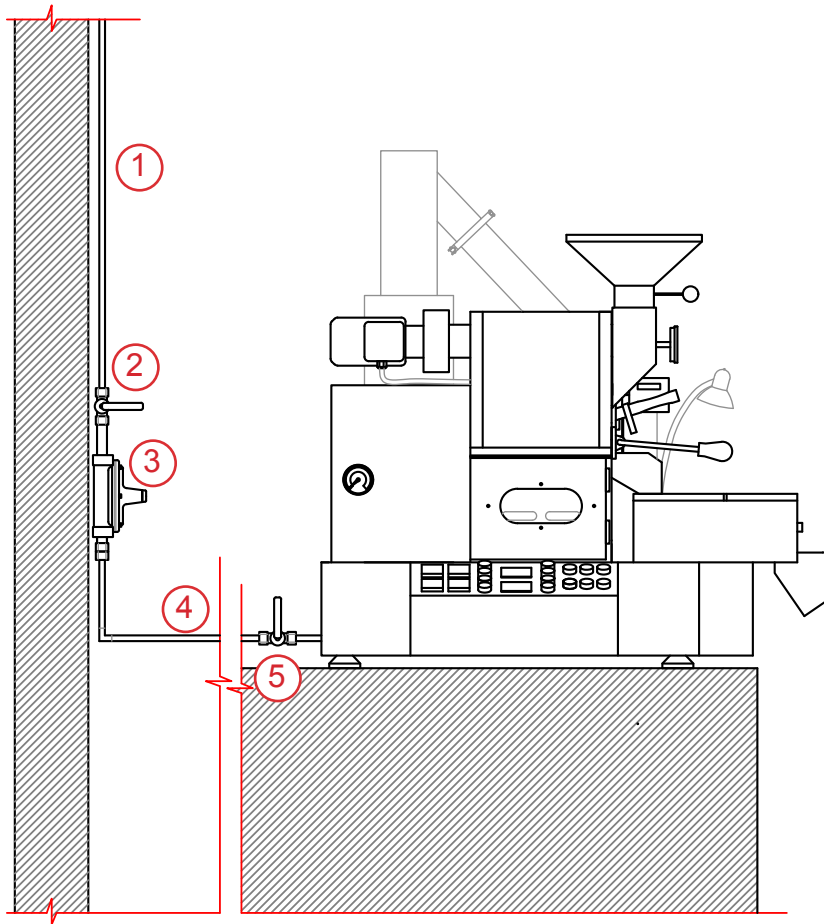
 **FOR YOUR SAFETY**

**The roaster and pressure regulator must be isolated from the gas supply piping system during any pressure testing of that system at test pressures in excess of 1/2 psi (3.5 kPa).**



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# GAS INSTALLATION

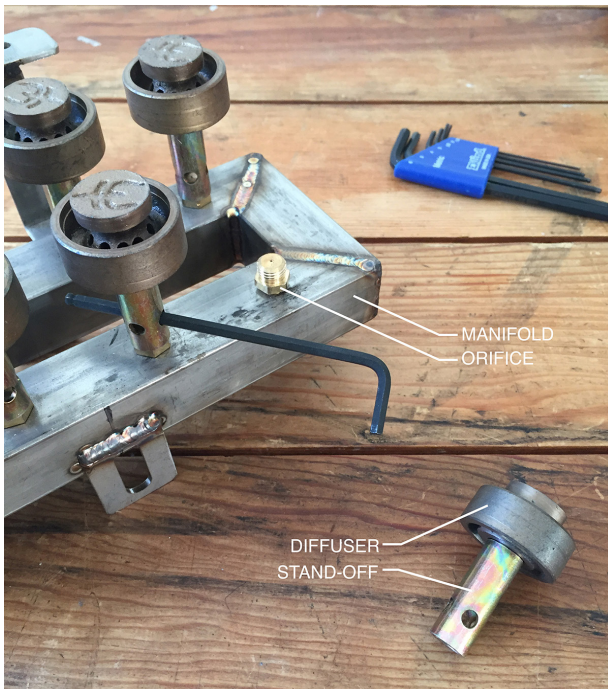


①	Existing Gas Service	Supplied by Owner Installed by Owner	See roaster specifications for gas pressure required.
②	Gas Shut-Off Valve	Supplied by Owner Installed by Owner	Shut-Off Valve required on service side of regulator & roaster. Regulator & roaster must be isolated from the gas supply piping system during any pressure testing of the gas supply piping system at test pressures equal to or less than 1/2 psi (3.5 kPa).  Locate this shut-off valve in an accessible location to allow for daily shut off when roaster is not in use.
③	Gas Regulator	Supplied by Owner Installed by Owner	Maxitrol regulator required. See specifications for required Maxitrol regulator model and required pressure adjustments to be made per gas type.
④	Gas Line to Roaster	Supplied by Owner Installed by Owner	Use rigid or flexible gas line as appropriate for location and gas service. Verify layout with operator prior to installation.
⑤	Gas Shut-Off Valve	Located on roaster (no install required)	Gas Shut-off valve with 1/2" BSPT connection.

## CONVERTING GAS FUEL TYPE (CONTINUED ON NEXT PAGE)

Your roaster arrives with orifices sized for LP Gas already installed. If you need to convert your roaster to use Natural Gas, install the Natural Gas orifices included in your roaster kit. You will be required to replace each orifice using the instructions below.

NOTE: This is a relatively simple procedure but requires the use of tools and a basic understanding of gas installation process. If you feel this is beyond your capability, please contact a local gas installation professional for assistance.




One orifice is located inside the base of each of the burners. For clarity, the photos on the bottom left show the manifold removed from the machine but it is not required that you remove the manifold from the roaster.

1. Unscrew each burner (stand-off and diffuser) from the manifold to reveal the orifice (brass) below. It may be helpful to use a 4mm allen wrench as shown through the stand-off.
2. Once exposed, orifices can be removed by unscrewing the orifice itself using either a 12mm wrench or socket.
3. Reassemble using the correct orifice for your fuel type.
4. Reinstall burners inside roaster.
5. Continued on next page.



(CONTINUED FROM PREVIOUS PAGE)

5. Locate Gas Plate on back of roaster and apply orange conversion label supplied with orifaces to note conversion.

 **Note:** Gas conversion is not complete until conversion label is applied to Gas Plate as shown.

This roaster can use LP Gas or Natural Gas. Factory-installed orifaces are sized for LP Gas. To safely convert to Natural Gas, see conversion instructions for oriface replacement and apply below the conversion label supplied with orifaces to note conversion.

This roaster requires a regulated gas supply. See machine specifications for required gas regulator information and required regulator pressure settings.

LP Gas Pressure	11" WC
LP Gas Orifice Size	0.6 mm

Natural Gas Pressure	7" WC
Natural Gas Orifice Size	0.9 mm

This roaster has been converted to use Natural Gas.  
*Ce torréfacteur a été converti pour utiliser du Gaz Naturel.*

*Ce torréfacteur peut utiliser du gaz LP ou du gaz naturel. Les orifaces installés en usine sont dimensionnés pour le gaz propane. Pour convertir en toute sécurité en gaz naturel, reportez-vous aux instructions de conversion pour le remplacement d'oriface et appliquez-le au-dessus de l'étiquette de conversion fournie avec orifaces pour effectuer la conversion.*

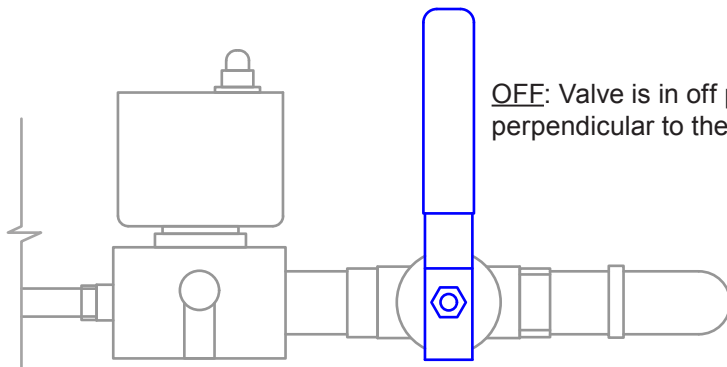
*Ce torréfacteur nécessite une alimentation en gaz réglementée. Reportez-vous aux spécifications de la machine pour obtenir les informations requises sur le régulateur de gaz et les réglages de pression requis.*

<i>Pression de Gaz LP</i>	<i>2.74 kPa</i>
<i>Taille de l'orifice de Gaz LP</i>	<i>0.6 mm</i>

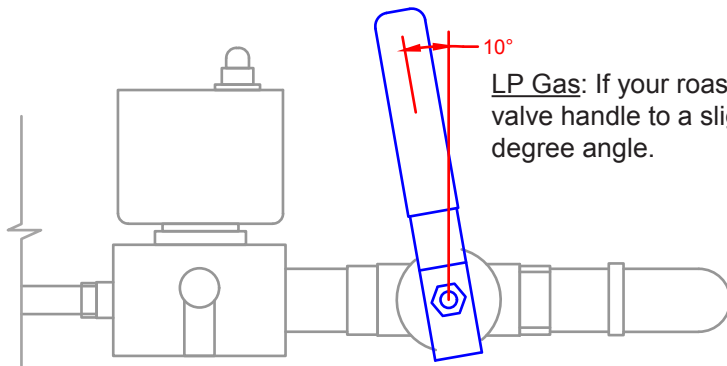
<i>Pression de Gaz Naturel</i>	<i>1.74 kPa</i>
<i>Taille de l'orifice de Gaz Naturel</i>	<i>0.9 mm</i>

## PILOT LIGHT: SET GAS VALVE FLOW RATE

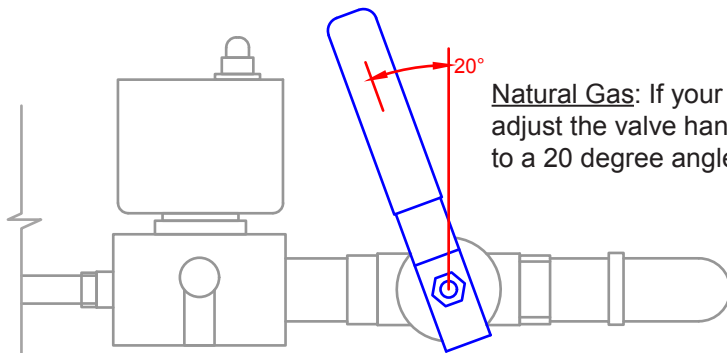
At time of installation, set flow rate of gas to pilot light based on fuel type. Use diagrams below to set minimum flow required to achieve reliable pilot valve ignition.



OFF: Valve is in off position when handle is placed perpendicular to the gas line.

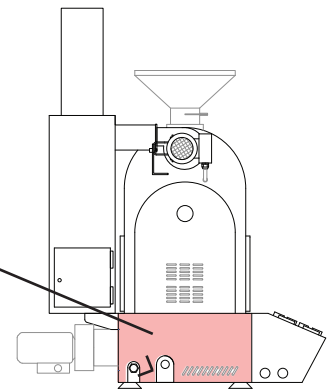


LP Gas: If your roaster is fueled by LP Gas, adjust the valve handle to a slight open position equivalent to a 10 degree angle.



Natural Gas: If your roaster is fueled by Natural Gas, adjust the valve handle to a slight open position equivalent to a 20 degree angle.

NOTE: Pilot Light Gas Valve is located inside the roaster base. Access by removing cover panel on back/rear of roaster base.



## POWER

**⚠ INSTALLATION & GROUNDING MUST CONFORM WITH LOCAL CODES**  
In the absence of local codes, installation and grounding must conform with *National Electrical Code, NFPA 70*, or the *Canadian Electrical Code, CSA C22.2*, as applicable.

### **⚠ WARNING**

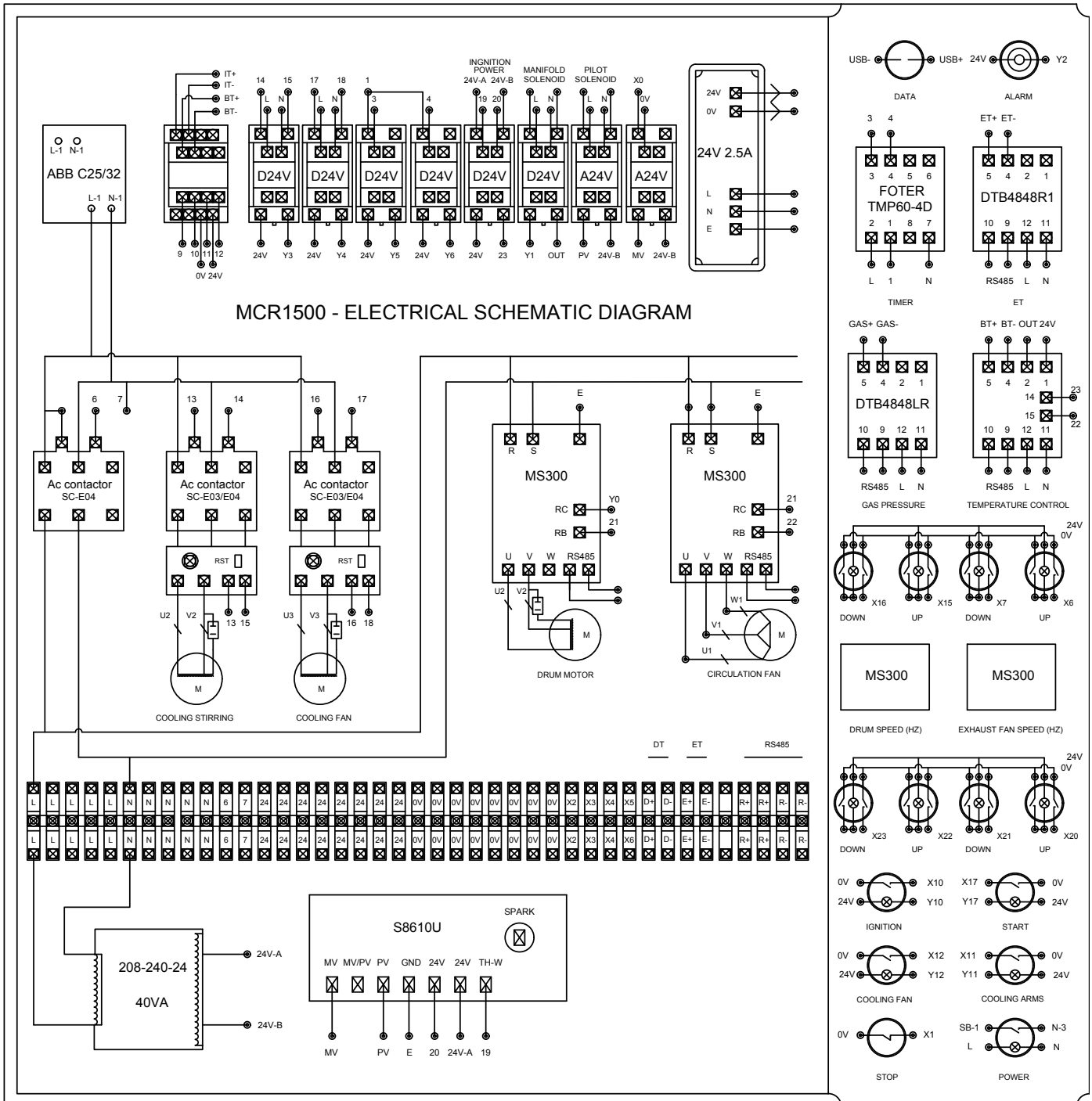
**Electrical Grounding Instructions:** This appliance is equipped with a three-prong (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug.

**⚠** Roasters require a dedicated branch circuit and installation of applicable receptacles. See specifications of individual machines for voltage, phase, frequency and amperage and connection.

### **⚠ WARNING**

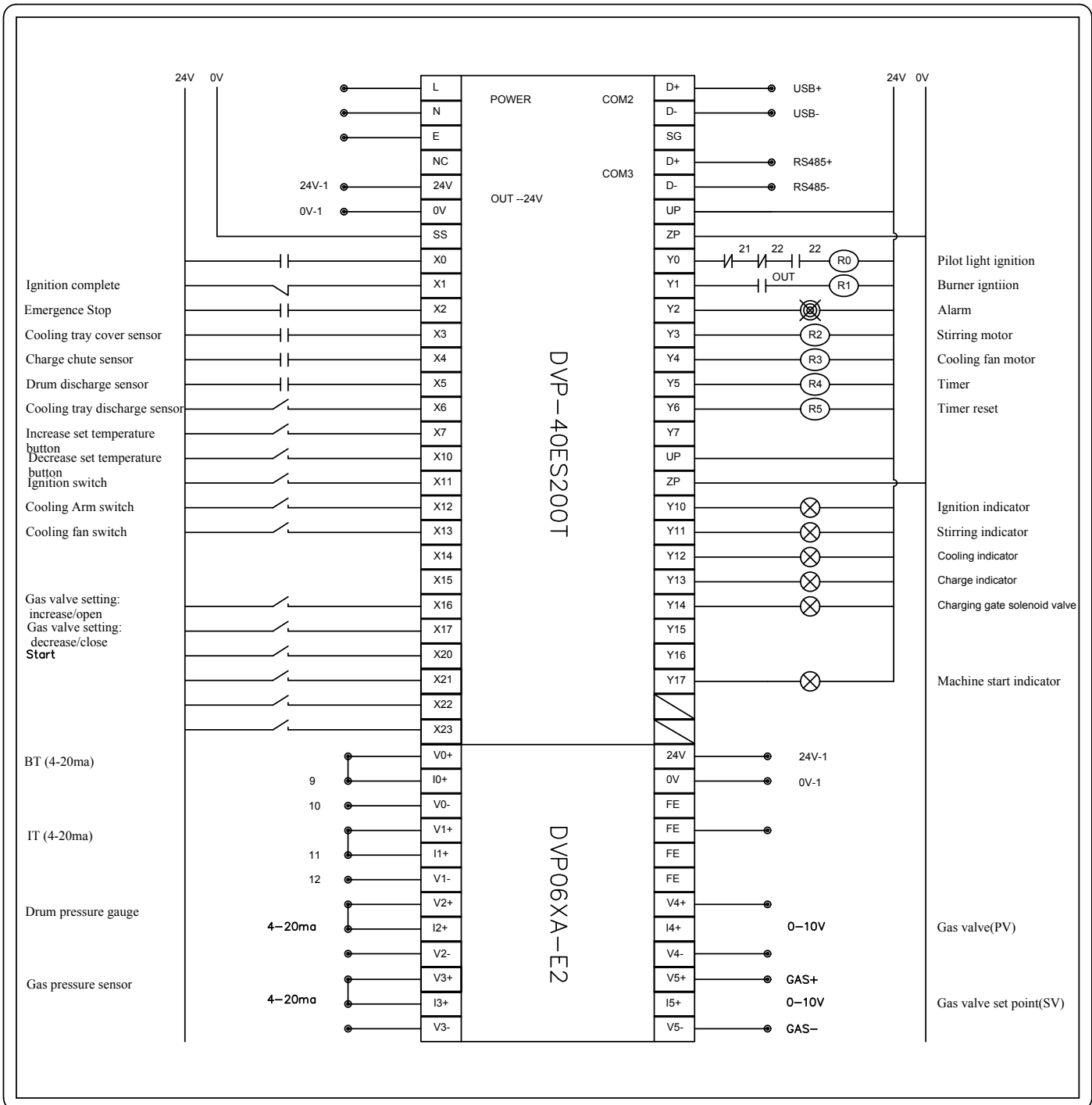
**Disconnect power before performing maintenance or repair work.**

# ELECTRICAL CIRCUIT DIAGRAM (CONTINUED ON NEXT PAGE)



Electrical circuit diagram is also mounted to inside surface of door or body of roaster near the electrical circuits.

(CONTINUED FROM PREVIOUS PAGE)



Electrical circuit diagram is also mounted to inside surface of door or body of roaster near the electrical circuits.



This concludes Part Two: Gas & Power

If you have further questions, contact us.

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## PART THREE: IGNITION & ADJUSTMENTS



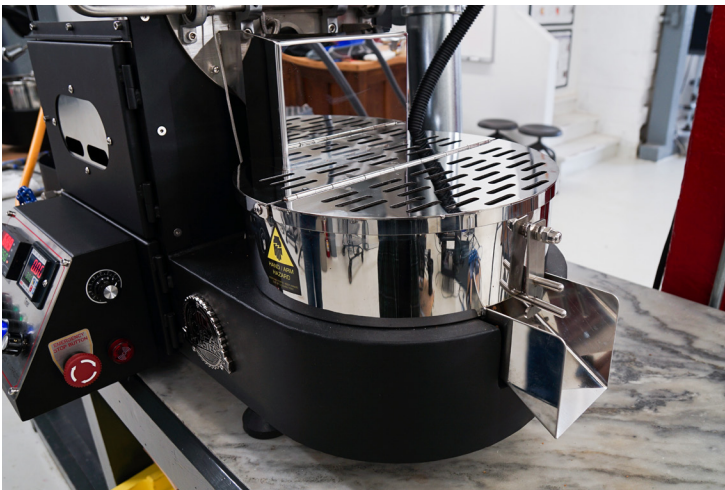
## ROASTER SAFETY

- ⚠ This roaster is industrial machinery and must only be used by experienced, trained operators.**
- ⚠ While in operation, never leave the roaster unattended.**
- ⚠ Do not block or obstruct flow combustion air into the combustion chamber or ventilation exhaust.**
- ⚠ When finished roasting, turn off gas at the source.**
- ⚠ Disconnect power before performing any kind of maintenance or repair work.**
- ⚠ Surfaces of the roaster, chaff collector and venting will be hot during and after roasting. Maintain 18” clearance between machinery/venting and combustibles.**
- ⚠ Be aware of your surroundings when operating and keep children and untrained individuals away from the roaster, fans, chaff collector and venting.**
- ⚠ Restrain long hair, remove jewelry and do not wear loose-fitting clothing or other items that can be potentially caught in the moving parts of the roaster. Failure to comply may result in severe injury or death.**
- ⚠ Never put hands or fingers inside the rear chain guard, roasting drum or cooling tray while the roaster is operating.**
- ⚠ Clean chaff collector and venting regularly to avoid fire.**
- ⚠ Roasters with casters must have all casters locked at all times while gas is present in gas line.**

## SAFETY FEATURES



**EMERGENCY STOP (above):** The emergency stop button is either located on the back of your roaster or the right side of the control panel. Once pressed, it will disable all fans, motors, and gas flow.



**COOLING TRAY COVER (above):** Cooling tray arms will NOT rotate if the cooling tray cover is open or removed or the sensor cable is unplugged.



**MANUAL DRUM TURNING/COOLING (above):** In case of power outage, use included hand crank (left) to turn drums from rear shaft access on 3kg roasters and above until roast is safely cooled. For roasters 2kg and smaller (right), use an 8mm Allen wrench (not included) to turn drum shaft from the front. Additionally, spraying water on to the roast through the tryer hole may help cool the roast faster.

# ROASTER IGNITION & SHUT DOWN

## TO IGNITE BURNERS

1. Turn power switch to 'ON'.
2. Set drum rotation to 50 rpm.
3. Set exhaust fan to minimum setting to draw air through the roaster.
4. Turn on main gas valve.
5. Press 'IGNITION' once. (Roaster Switch will blink red if only the pilot light is ignited; it will be lit solid when burners are also ignited.)

## TO SHUT OFF BURNERS DURING ROASTING

1. Press 'IGNITION' once.

## TO SHUT DOWN ROASTER

1. Close gas valve.
2. Turn drum speed to low.
3. Allow roaster drum to fully cool
4. Turn power switch to 'OFF'.

## DRUM SEASONING ROASTS

The drums of new coffee roasters which have never roasted coffee must be seasoned before roasting any coffee that will be consumed. To season, you will roast several batches of greens to a very dark roast that will allow the oils from the roasted coffee coat the inside of the drum. The coffee will be discarded after it cools. Inexpensive 'Seasoning Greens' are available for purchase from [millicityroasters.com](http://millicityroasters.com).

### **HOW TO SEASON YOUR DRUM**

A. Preheat roaster to 350F.

B. Airflow at minimum (view Roasting 101 on Youtube: <https://www.youtube.com/watch?v=bIDMsEQ27DY>)

C. Gas at 70%

D. With full capacity charge (500 grams on 500 gram roaster, 2 kg on 2 kg roaster, etc.) Allow roast to run straight through to 2nd crack. Record time and temperature of the roast phases: green/yellow transition, first crack, and second crack. There will be much smoke.

E. About 30 seconds into second crack, turn off the burners and allow the beans to slowly cool in the drum.

F. Repeat 5-7 times modulating heat for roasts 3 and 4 to hit green/yellow transition around 320F at 5 minutes, 1st crack about 390F at about 9 minutes, and second crack at about 11 minutes.

G. For roasts 5-7, increase air to medium low after green/yellow transition (320F) and again to full medium airflow about 10F prior to first crack. Modulate heat as necessary to hit target phase times.



## DAILY CLEANING & MAINTENANCE

What to do:	How to do it:	Why:
Remove chaff build-up inside chaff collector at bottom.	Access the bottom of the chaff collector through the access panel in the side of the chaff collector. Remove all chaff collected between each roast. (Pro Tip: Keep a small vacuum with a long suction tool close by to make this job easy.)	Chaff is highly flammable. Removing chaff is the most important step in preventing chaff fires which could spread through your venting system and building.
Clear the metal collection tray below the drum	Open the access door to the drum compartment. The metal tray below the drum is removable and can be removed and emptied into a waste can.	Any build-up here could be flammable but more importantly, monitoring the contents of this tray will help you diagnose the need for a drum gap adjustment.

## WEEKLY CLEANING & MAINTENANCE

What to do:	How to do it:	Why:
Clean the cooling tray	Wipe, brush, scrape and clear out perforations on bottom surface of cooling tray.	General good practice to care for all areas that hold consumable products but clearing perforations improves airflow and allow for coffee to be cooled faster.
Chaff collector inspection	Open all access doors and inspect interior. Remove any chaff build-up with a wire brush.	Chaff is highly flammable. Removing chaff is the most important step in preventing chaff fires. Removing build-up also improves airflow.

## QUARTERLY CLEANING & MAINTENANCE

What to do	How to do it	Why?
Inspect & clean venting as required.	Remove and inspect interior walls of venting and remove all build up of coffee oils and chaff.	Build-up of coffee oils and chaff can be flammable. Build-up can also narrow the diameter of your venting and limit airflow.
Inspect exterior portions of venting	Access exterior portions of venting and terminations caps and remove any build-up of coffee oils and chaff especially around termination cap openings.	Build-up of coffee oils and chaff can be flammable. Build-up can also narrow the diameter of your openings and limit airflow causing air to back-flow into your roaster or cooling tray.
Lubricate the front and rear bearings.	Use a Zerk grease gun & high temperature grease. One pump per bearing.	Properly greasing Zerk bearings extends bearing life
Lubricate the chain	Use light chain, oil-based lube. Wipe off excess with clean, dry cloth.	

 Shut off all power and gas before performing any maintenance.



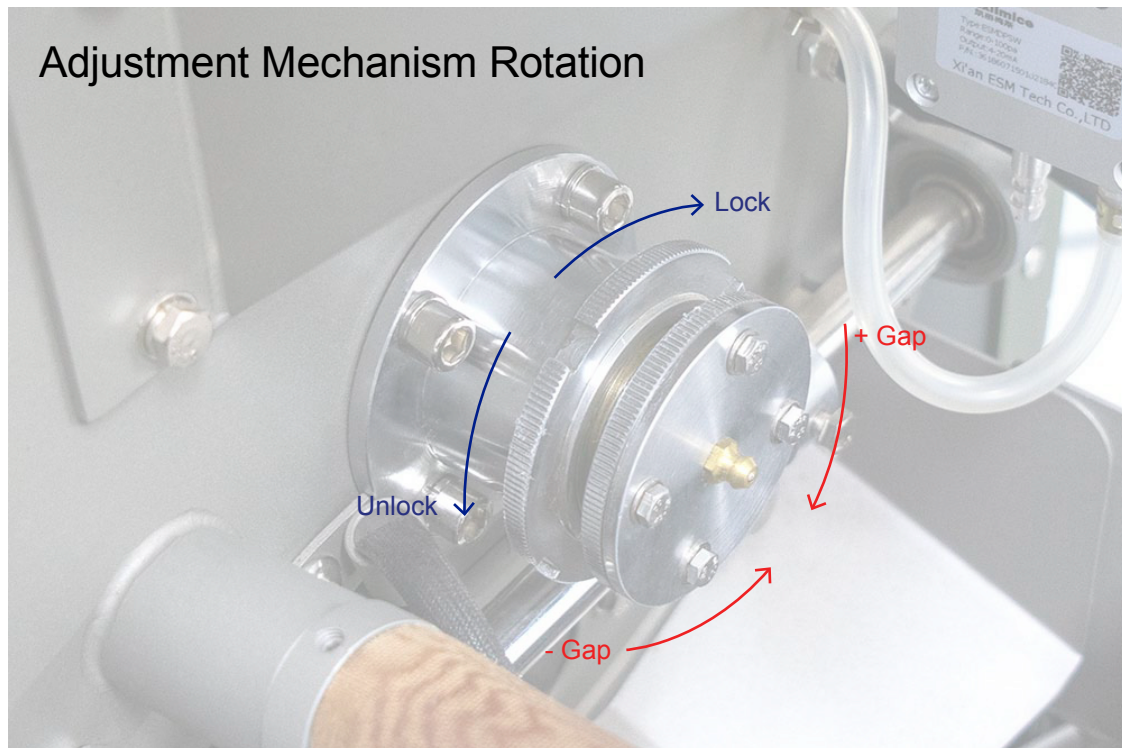
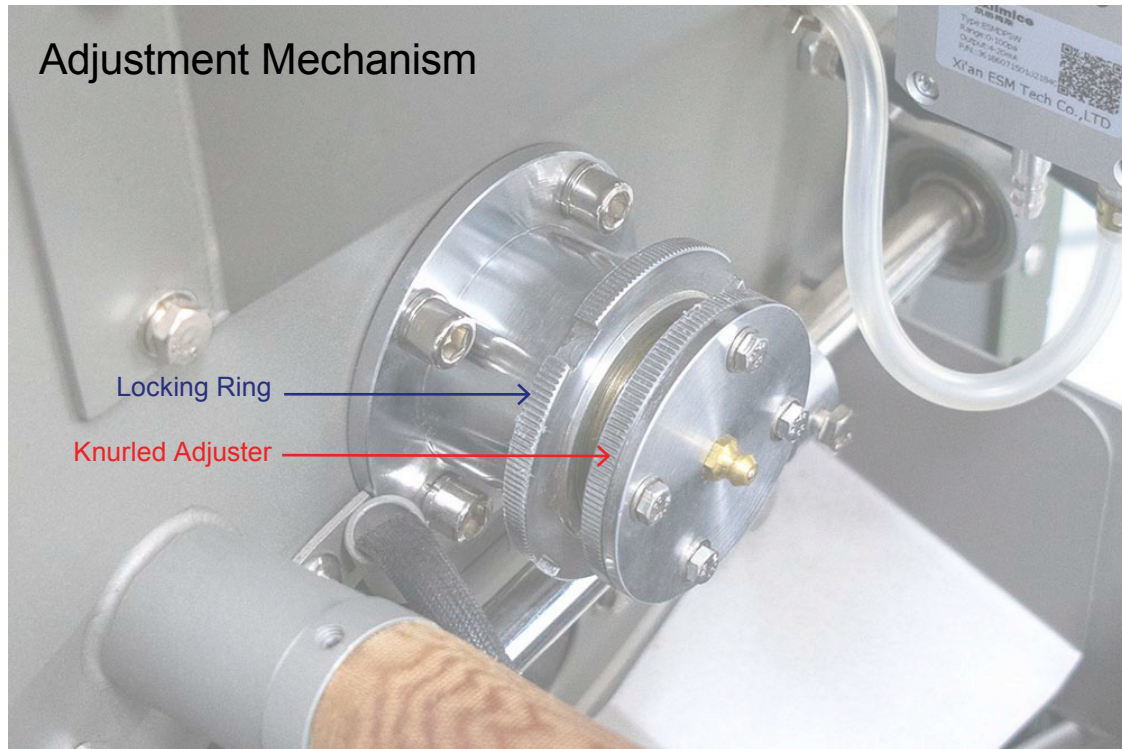
## SEASONAL/ANNUAL CLEANING & MAINTENANCE

What to do	How to do it	Why?
Inspect & tighten all loose nuts & bolts on roaster.	Locate any loose nuts & bolts and tighten, particularly around cooling tray arms.	Tightening loose nuts & bolts keeps your machine in good working order. Prevents cooling tray nuts/bolts from dropping into roasted coffee.

 Shut off all power and gas before performing any maintenance.

## DRUM GAP ADJUSTMENT (CONTINUED ON NEXT PAGE)

Drum gap is the clearance between the drum and the faceplate of the roaster. Too small a gap will cause the drum to scrape or rub against that face plate. Too large a gap will result in coffee beans and chaff accumulating under the burners. Drum gap adjustment is commonly necessary during the break in period on new roasters. Excessive need for adjustment can indicate that the drum and/or airflow speed is too low or the front bearing requires lubrication. If this is the case, please contact [support@millcityroasters.com](mailto:support@millcityroasters.com) for troubleshooting and operational tips.



(CONTINUED FROM PREVIOUS PAGE)



1. Use socket tool to unlock locking ring. Turn clockwise to lock and counter clockwise to unlock. Unlock it with two complete turns to allow room for adjustment.



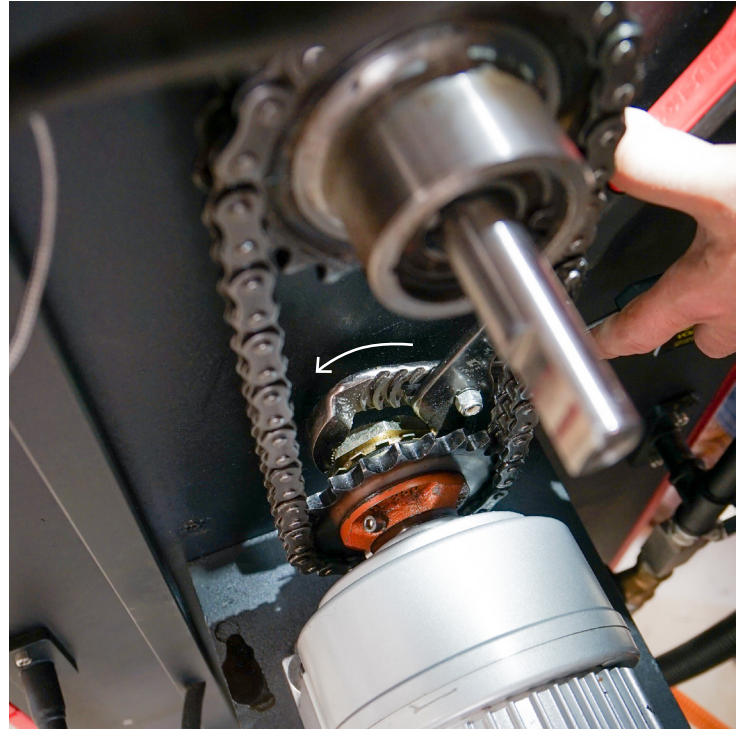
2. If roaster is hot turn knurled adjuster with a shop towel. Turn clockwise to increase the gap and counter clockwise to decrease the gap.

3. Use socket tool to lock locking ring. ⚠ Do not operate machine with locking ring unlocked.



## TORQUE LIMITER ADJUSTMENT

The torque limiter protects the drum motor in the event the drum jams due to improper drum gap adjustment or the introduction of a foreign object (example: a wayward bolt or your tryer spoon separating from the handle and falling into the drum). The torque limiter consists of two friction disks and a tensioning spring. If your roaster drum doesn't turn when the drum is loaded, it's likely that the torque limiter is set too loose.



1. Unplug the roaster.
2. Remove the back cover.

The torque limiter is mounted on the motor shaft and drives the chain.

3. With a large wrench, tighten the friction disk assembly only so the drum rotates with a full charge of coffee inside.

This concludes Part 3: Ignition & Adjustments

If you have further questions, contact us.

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# MILL CITY ROASTERS

## COFFEE ROASTING EQUIPMENT LIMITED WARRANTY

Mill City Roasters coffee roasting equipment is intended for commercial use by trained and experienced professional operators. Installation is to be completed by trade professionals. Equipment owners are solely responsible for verifying the proper installation, operation and maintenance guidelines and instructions, complying with all laws and regulations for installation and operation, as well as all industry standard safety practices pertaining to commercial production equipment, commercial coffee roasting activities and commercial coffee roasting equipment.

Mill City Roasters warrants, to the original purchaser ("Customer"), that 'Fabricated Assemblies & Components' of new coffee roasting equipment ("equipment"), will be free from defects in workmanship and materials, under normal and proper use and maintenance, for a period of two (2) years from the date of delivery. 'Electrical Assemblies & Components' such as motors, switches, relays, ignition modules, data sending units, etc are warranted to be free from defect for a period of one (1) year from the date of delivery. This warranty is limited to repair or replacement of defective parts within the warranty period. Mill City may require that defective parts be returned for inspection and failure analysis. Customer is responsible for on-site diagnostic, shipping, repair, installation, labor, or travel expenses.

Our warranty does not apply to any failure or malfunctioning of equipment, or any of its component or assembly that has been, in Mill City Roasters' judgement, affected by negligence; misuse; abuse; neglect; alteration to equipment or control parameters not authorized by Mill City Roasters; improper installation or operation; lack of or improper maintenance, repair or cleaning; or use of equipment other than for its intended purpose; missing or altered serial nameplates; damage resulting from accidents, natural disasters or criminal activities.

In addition, our warranty does not apply to shipping damage; aesthetic or cosmetic damage or defect; defect or wear not affecting operation; normal wear and tear; or parts or items subject to normal wear and use such as gaskets and seals.

To be evaluated for warranty coverage, Customer must first notify Mill City Roasters of any potential defect prior to the expiration of the Warranty Period via telephone or e-mail so that Mill City Roasters may provide remote (via email, telephone or video chat service) diagnostics and technical evaluation and support.

If pursuant to the diagnostic and technical evaluation and support, Mill City Roasters determines in its sole discretion that the equipment contains a defect in workmanship or materials, Mill City Roasters will provide any replacement parts it deems necessary to repair the defect. Mill City Roasters will pay for shipping the replacement parts to the Customer via standard shipping for the first 14 days of the Warranty Period, after which the Customer is solely responsible for all shipping expenses.

If remote evaluation and support is not able to determine whether the equipment is defective, or the Customer is unable for whatever reason to complete any repair work recommended by Mill City Roasters, Mill City Roasters may allow the Customer to return the equipment or affected component to Mill City Roasters for evaluation or repair. However, the Customer is solely responsible for all shipping expenses related to delivery and return of the equipment or component for the remainder of the Warranty Period.

All defective parts, components and assemblies of the equipment become the property of Mill City Roasters. Mill City Roasters, at its sole option and expense, may request the return of any alleged defective parts, components or assemblies to Mill City Roasters before the shipment of replacement parts.

Except as stated in the above warranty, Mill City Roasters shall not be liable for any other repair, replacement or installation expenses, or any other expenses incurred by Customer as a result of any alleged or proved defect. Mill City Roasters shall not be liable for any special, incidental or consequential damages or losses of any kind, including but not limited to lost profits, lost sales, loss of use of equipment, customer claims, cost of down time.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

The foregoing warranty shall be governed by and construed in accordance with the laws of the State of Minnesota and the laws of the United States of America.

## TECHNICAL SUPPORT

Technical support is available by phone.

Contact us below.

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Email: [hello@millcityroasters.com](mailto:hello@millcityroasters.com)