The Kilnwright℠

Clear Flow™

OPERATOR'S MANUAL

For both electric

Manual KilnSitter Kilns & Automatic Kilns

DBA of Kilian Enterprises LLC • kilnwright.com • 434-352-1665 help@kilnwright.com • USA

Congratulations

Congratulations on your purchase of the newly designed **ClearFlow™**. This is a Downdraft Ventilation System engineered to extract fumes from your electric kiln and vent them safely outdoors before they enter your workspace.

Because it utilizes **Downdraft technology**, the **ClearFlow™** does more than just remove odors; it also improves the firing atmosphere inside the kiln chamber, ensuring more consistent results for your clay bodies and glazes.

How It Works

The **ClearFlow™** uses a sophisticated downdraft method to manage kiln atmosphere and safety. A specific number of holes are drilled into the kiln lid and floor. A **spring-loaded plenum box** is then positioned under the kiln, tensioned between the kiln floor and the room floor to cover the hole pattern.

The plenum box is connected via 3” ducting to a wall-mounted blower/fan, which exhausts the air outdoors. (For an alternative installation, see page 18.) A key feature of the plenum cup is the inclusion of **two bypass holes** that draw in room-temperature air to mix with the hot kiln exhaust. This serves two critical functions:

1. **Safety:** It cools the exhaust air so that the discharge temperature is comparable to a standard hair dryer.
2. **Efficiency:** It regulates the vacuum strength, ensuring only a small, precise amount of air moves through the kiln so that firing times and ware are not adversely affected.

System Benefits

Better Heat Uniformity

While heat naturally rises, the **ClearFlow™** creates a counter-flow of air moving downward through the chamber. This air is deflected by shelves and ware, creating **turbulence** that redistributes heat to cooler areas, resulting in a more even firing.

Superior Kiln Atmosphere

Electric kilns require an **oxidation atmosphere** to perform correctly. The **ClearFlow™** flushes out fumes that could otherwise create a "reduction atmosphere"—a condition that can damage elements and dull glaze colors. By maintaining high oxygen levels, your elements will last longer, and your glazes will appear clearer and brighter.

A Safer Working Environment

Traditional venting required "propping" the kiln lid with a brick until reaching 1000°F (538°C), which released fumes directly into the studio. The **ClearFlow™** eliminates this inconvenience and keeps your air clean from the start of the firing.

The "Negative Pressure" Advantage

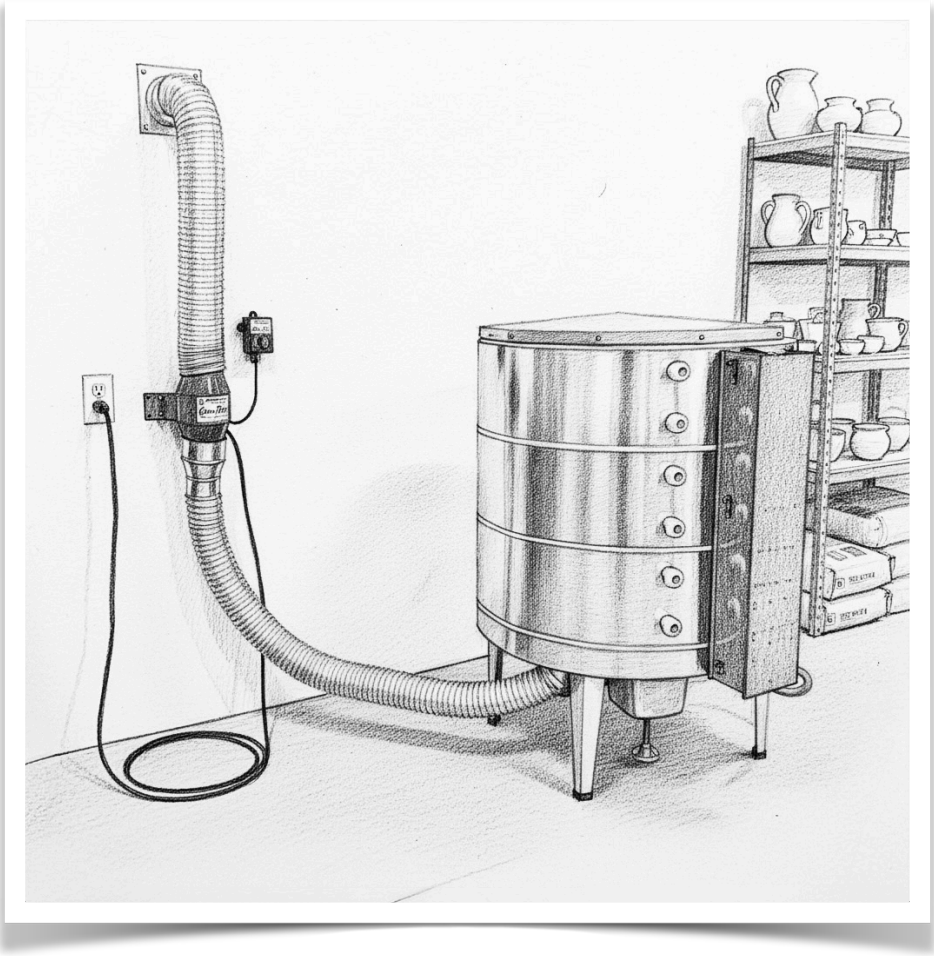
The ClearFlow™ is a **Negative Pressure System**. Because the motor pulls air from the end of the line, any accidental hole in the ducting will pull room air *in* rather than blowing fumes *out*. Additionally, mounting the motor away from the kiln protects the electronics from heat and prevents motor vibrations from affecting the kiln.

ClearFlow™ Contents

- **1×** 3-inch diameter Aluminum Semi-Rigid Duct (8-foot length)
- **1×** 4-inch diameter Aluminum Semi-Rigid Duct (8-foot length)
- **1×** 4-inch Duct Blower/Motor (includes 6 ft. power cable and 3-prong plug)
    - **1x** Fiberglass Gasket (installed)
- **1×** ClearFlow™ Vent Box
    - **1x** Fiberglass Gasket (installed)
    - **1x** Fiberglass O'ring (installed)
    - **1x** Flange (installed)
    - **2×** Washers (installed)
- **1×** Fully Adjustable Box Stand
- **1×** Heavy Duty HVAC Tape (10 ft.)
- **4×** Hose Clamps (2x 3" • 2x 4")
- **1×** Mounting Hardware
    - 4x Sheetrock Screws with Anchors
    - 4x Wood Screws
- **1×** Reducer Fitting (4" to 3")
- **1×** Speed Controller (with 16-ft cable)
- **2×** Wing Nuts

(If you are missing an item, please contact us at help@kilnwright.com.)

ClearFlow™ Typical Installation



SECTION ONE: SETTING UP

STEP 1 • PREPARATION

- **Safety:** Unplug the kiln.
- **Clearance:** The ClearFlow™ requires exactly **8” of clearance** under the kiln. If your stand is not 8” high, you must shim the legs/plenum box or replace the stand.
- **Cleaning:** Remove all ware and shelving from the kiln chamber before drilling.
- **Patching Existing Holes:** If your kiln has holes from a different vent system, you **must** patch the floor holes **IF** they are different from this system's configuration. This is to ensure proper performance. Lid holes only need patching if they are more than 1” from the kiln wall.*****

  ***Adjusting Airflow for Pre-Drilled Lids and Floors**

  If your kiln lid or kiln floor already contains holes from a previous venting system or custom modification, it may not be necessary to patch them. However, the number and size of these holes directly affect the **static pressure** of the system.

  If the total area of existing holes exceeds the manufacturer's recommendations, the vacuum (suction) may be too weak to pass a "flame test."

  How to Test and Calibrate:

  a) **Perform Initial Flame Test:** With the vent system running, hold a match or lighter flame near the lid holes. The flame should be visibly drawn downward into the kiln chamber.

  b) **Diagnosing Weak Suction:** If the flame is not drawn inward, the total volume of air entering through the lid is likely exceeding the fan’s pull capacity, preventing a vacuum from forming.

  c) **Incremental Blocking:** Temporarily cover some of the existing holes with a non-combustible material (such as a piece of kiln brick or a ceramic tile). Re-test the flame pull on the remaining open holes.

  d) **Verification:** Continue covering holes until a steady downward draw is achieved. This indicates the system is successfully maintaining negative pressure within the chamber.

  e) **Final Resolution:** If you have covered all lid holes and a flame is still not drawn into the chamber, there may be an obstruction in the ducting or a leak in the plenum cup seal. In this case, contact **KilnWright** for further technical instructions.

Note: A successful flame test ensures that the "exhaust-to-intake" ratio is balanced. Too many holes act like a vacuum leak, causing the vent to pull air from the room rather than pulling fumes from the kiln.

STEP 2 • DETERMINING THE NUMBER, SIZE, AND LOCATION OF VENT HOLES

Consult the **Vent Hole Chart** (below and page 17) and **Location Diagrams** (1# [page 7] and #3 [page 17]) to determine the exact requirements for your kiln model. These specifications are designed for standard multi-sided, top-loading electric kilns larger than **2 cubic feet**.

Note: If your kiln is smaller than 2 cubic feet or larger than 12 cubic feet, please connect with the KilnWright for specialized drilling instructions and dial settings. More info on page 15, Section 3)

Determining Kiln Size

- **Standardization:** While some kilns use 3” thick bricks, resulting in smaller internal diameters, the number and size of the holes required remain the same based on the side count. See Vent Hole Chart #1.
- **Square or Rectangular Kilns:** These models do not follow the "side count" rule. Instead, calculate the **total cubic feet** of the kiln and use the closest corresponding value found in the Vent Hole Chart #1.
- **Round or Oval Kilns:** The chart uses the number of **“sides”** to determine chamber width. Count the number of individual bricks that form the inner circumference of the kiln. **See Page 17 for special instructions along with Diagrams 3 and 4.**

— VENT HOLE CHART #1 —

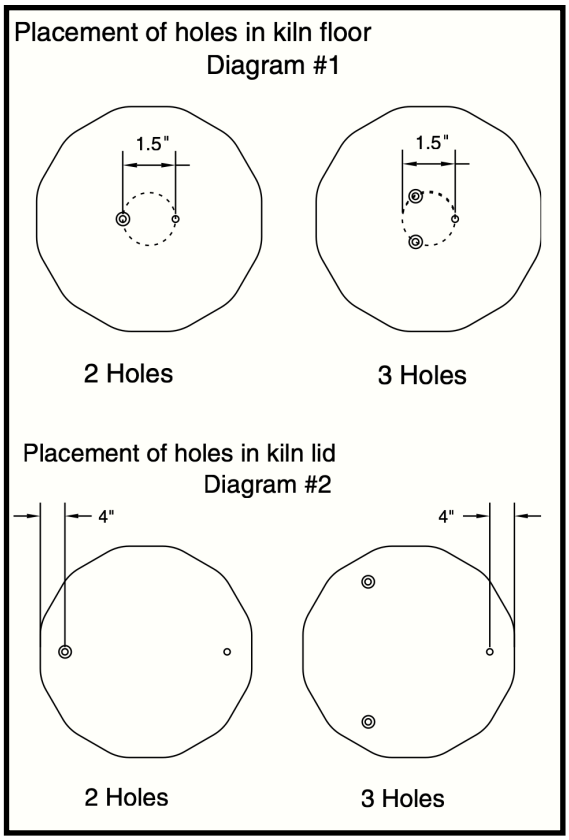
Kiln Chamber Depth	Drill This Many Holes In Floor	Drill This Many Holes In Lid	Drill Size	Kiln Cubic Feet
614 (Model)	1	1	3/16″	0.8
714 and GlazeTech (Model)	1	2	3/16″	1.1 thru 1.4
Eight Sided				
14″	1	2	3/16″	2
18″ and 22″	1	2	3/16″	2.3 thru 3.2
27″	2	3	3/16″	3.5 thru 3.9
Ten Sided				
14″	2	3	3/16″	3.5
18″	2	3	3/16″	4.2 thru 4.6
27″ and 22″	3	3	3/16″	5.3 thru 7.0
Twelve Sided				
14″	1	2	1/4″	5
18″	1	2	1/4″	6.6
27″ and 22″	2	3	1/4″	8.1 thru 9.9
31″	2	3	1/4″	11.6

SETP 3 • DRILLING HOLES IN THE KILN FLOOR

a) **Mark Center:** Locate and mark the exact center of the kiln floor.

b) **Layout:** All floor holes must be contained within a **1.5" diameter circle** at the center (refer to Diagram #1).

c) **Drill:** Use the bit size specified in the chart. Drill slowly and straight to prevent chipping the underside or enlarging the hole.



STEP 4 • DRILLING THE LID

a) **Placement:** Measure the kiln wall thickness and **add 1"**. This is the distance from the outside edge of the kiln where you will drill your holes. (Most will be drilled at 4 inches.)

b) **Spacing:** Space holes evenly around the lid (refer to Diagram #2).

- **Do not** cluster them together.
- **Do not** drill directly above the thermocouple.

c) **Drill:** Use the same careful technique as the floor.

d) **Cleanup:** Vacuum all brick dust from the holes and the kiln interior.

Step 5 • Installing the Plenum Box and Stand

1. Prepare the Flex Tubing

- **Stretch the Ducting:** Put on protective gloves. Gently stretch the **3" diameter aluminum flex tubing** to the length required for your installation (typically 6 ft. to 8 ft.).
- **Expand the Ends:** Ensure the last 3 inches of each end are fully stretched out so they fit easily over the connections.
- **Pro Tip:** Be careful not to crush or collapse the open ends of the tubing while handling.

2. Connect to the Plenum Box

- **Attach:** Slide one end of the flex tubing over the 3-inch sleeve on the **plenum box**.
- **Secure:** Fasten the tubing with a **hose clamp**.

- **Caution:** Tighten the clamp only until the tube is snug. **Do not over-tighten**, as excessive pressure will bend or distort the sleeve or tube.

- **Seal:** Wrap the connection point twice with the **Aluminum Foil Tape** provided in your kit to ensure an airtight seal.

3. Calibrate the Stand Height

- **Measure:** Hold the plenum box (without the stand) against the exterior bottom of your kiln. Use a tape measure to find the distance from the **bottom of the plenum box to the floor**.

- **Mark:** On the **stand post**, measure up from the foot to the distance you just recorded. Mark this height on the post threads with a marker.

- **Set the Nut:** Thread a **wing nut** (wings facing down) onto the post and tighten it until it reaches your mark.

- **Insert:** Slide the stand post into the hole at the bottom of the plenum box until the box rests on the wing nut. (Plenum box has remounted washers.)

4. Dry Fit and Adjust

- **Test Position:** Place the assembly under the kiln. The lip of the plenum box should sit firmly against the kiln's exterior bottom without obstructing the fiberglass gasket.

- **Fine-tune:** If the fit is too loose or too tight, spin the wing nut up or down to adjust the height.

- **Lock in Place:** Once the height is correct, thread the **second wing nut** onto the post from inside the plenum box. Tighten it until it rests loosely against the internal washer.

5. Final Alignment

- **Center the Assembly:** Gently slide the completed assembly directly under the center of the kiln.

- **Verify:** Ensure the plenum box is perfectly centered under the pre-drilled holes in the kiln floor to maximize airflow.

- **Final Alignment:** Confirm the plenum cup is perpendicular to the floor and maintains a tight seal against the kiln bottom.

STEP 6: BLOWER/MOTOR INSTALLATION

- **Location:** Choose a wall or ceiling spot within reach of the aluminum flex tubing.***** Ensure the surface of installation is at least 2' from the kiln. Ideally, mount the blower/motor plate into a wall stud or joist. Be sure the location is free from wires/pipes, and is

within reach of the 8-foot aluminum flex tube. (*****If you are thinking about floor mounting, please read page 13, section three, before proceeding.)

- **Verify Direction:** Before attempting to secure, ensure that the blower is oriented correctly. The fan blades are located on the sucking end, and therefore, it will need to be pointed towards the kiln—the 3" tubing. For reference, the drawing end features a preinstalled fiberglass gasket.
- **Securing:** Select the hardware with which you will secure the mounting plate. Drilling may be required to fasten the hardware.
- **Verify:** Ensure the blower/motor is properly secured by tugging at it up and down, and side to side. If it slid in any way, tighten the fasteners further. Be careful not to over-tighten and weaken the mounting bracket.

Step 7: Connecting Ductwork

1. Connect Flex Tube to Reducer

- **Attach:** Slide the open end of the **3" aluminum flex tube** over the **4" duct reducer**.
- **Secure:** Use a hose clamp to fasten the tube to the reducer.
- **Caution:** Tighten the clamp only until the tube is snug. **Do not over-tighten**, as excessive pressure will bend or distort the duct reducer or tube.

2. Connect Reducer to Blower

- **Attach:** Fit the other side of the duct reducer onto the **blower inlet flange** (the drawing end).
- **Sealing:** The flange features a built-in **fiberglass gasket** to create an airtight seal.
- **Secure:** Apply light but firm tension with a hose clamp.
- **Caution:** Again, avoid over-tightening to prevent distorting the reducer or damaging the flange.

3. Connect Blower to 4" tube

- **Attach:** Slide an open end of the 4" aluminum flex tube onto the blower outlet flange.
- **Secure:** Use a hose clamp to fasten the tube to the reducer.
- **Caution:** Avoid over-tightening.

4. Final Seal

- **Apply Tape:** Wrap **Aluminum Foil Tape** twice around every connection point to ensure a completely airtight system.

- **Inspect:** Check all seams for visible gaps or loose edges.

💡 **Pro-Tip: Understanding Air Pressure.** This is a **negative-pressure** system.

- **Inlet Side (Plenum to Blower):** If a small hole occurs here, air is sucked *into* the tube, so no fumes escape.
- **Outlet Side (Blower to Outdoors):** This side is under **positive pressure**. Any holes or loose connections here will leak fumes back into your room. Ensure the discharge side is perfectly sealed.

Step 8: Discharge Connection

A. External Venting

For safety, the system must vent directly to the outdoors, similar to a residential clothes dryer.

- **Option A:** Run the kit's aluminum tubing directly to the outside wall.
- **Option B:** Connect the system to an existing rigid dryer discharge tube.

B. Exterior Protection

To protect your home and the vent motor, you **must** install the following at the exit point:

- **Rain Hood:** To prevent water from entering the ducting.
- **Pest Guard:** A mesh screen to keep rodents and insects out.
- **Flapper/Damper:** To prevent outside drafts from blowing back into the kiln when the vent is off.

Termination Points: Ensure your exterior vent cap is a high-flow design. "Louvered" dryer vents can sometimes stick shut due to kiln residue; check these monthly to ensure they open freely when the fan is on.

Please also refer to *Page 16*.

3. Multi-Vent Systems

If you are installing multiple **ClearFlow™** units, they should be connected to a centralized main duct. Please refer to **Page 15, selection three,** for airflow requirements.

STEP 9: CONTROL SWITCH/DIAL INSTALLATION & OPERATION

The blower/motor has no cord switch or internal switch, and is controlled by a potentiometer (sir flow controller) for 0-100% flow control. This controller is corded and plugs into an external three-pronged plug fixed on the blower's right side; it is sealed with a screw cap. Once connected, the blower/motor can be controlled remotely, provided by 16' of cord. Hardware is included for a permanent placement. Ensure that you mount the potentiometer (air flow controller) away from the kiln and in a place without direct, sustained heat.

Optimizing Airflow: Scaling Speed

Our system is equipped with a high-performance blower designed to handle complex ducting runs. To maintain a safe, negative-pressure environment, select your speed based on your specific studio configuration.

1. Choosing Your Speed Setting

Setting	Airflow	Recommended Use Case
Low	**140 CFM**	**Standard Runs:** Up to 16ft of ducting with **0–2 bends**. Ideal for most home studios to reduce noise and energy draw.
High	**195 CFM**	**Complex Runs:** Required if you have **3 or more bends**, runs exceeding 16ft, or when firing materials with high organic burnout (e.g., heavy wax resist, etc.).

Dial Setting: The total arc of the dial is roughly **240 degrees** (moving from the 8 o'clock position to the 4 o'clock position).

LOW (STANDARD 140): To reach the required **140 CFM** (72% of the 195 CFM maximum), you must position the indicator line.

- **The 72% Mark:** This is approximately the **1:30 to 2:00 o'clock** position.
- **Graphic Guide:** On your controller's white arc, count to the **fourth large white block** from the left. Align the dial's line with the right edge of that fourth block (see the image illustration to the right).

HIGH (195): To reach the required **185 CFM**, you must position the indicator line, moving from the 8 o'clock position to the 4 o'clock position. To do so, you will see that you move past the white/silver blocks towards the word 'MAX'.

Note: Additional instructions and situational considerations are found in SECTION THREE.

STEP 10: OPERATION TESTING

- **Power On:** Plug the unit into a **110–120 volt** outlet and activate the air-flow controller by turning the dial to the right. Listen for the motor and airflow; if it fails to start, unplug immediately and troubleshoot.
- **Seal the Kiln:** Close the lid and install all peephole plugs. Ensure the only open air paths are the newly drilled lid holes.
- **Verification (The Flame Test):** Regardless of which speed you choose, always verify your installation before the first firing:
  - **a)** Turn the blower on.
  - **b)** Hold a lighter or match near the holes in the kiln lid.

c) **Pass:** The flame is pulled sharply downward into the hole.

d) **Fail:** The flame flickers or stays upright. (Turn dial to a **Higher Speed** or reduce the number of bends in your ducting. If the flame is not drawn inward, the system is not venting properly, please refer to page 18, *Pro-Tips*).

STEP 11: LOADING & OPERATION

- **Shelf Clearance:** Support the bottom shelf at least **1" off the floor** to ensure airflow. Do not block the kiln's floor holes.
- **Shelf Gaps:** If using half-shelves, leave a small gap between them for better circulation.
- **Ware Placement:** Do not place ware directly under lid holes to avoid glaze discoloration or thermal shock.
- **Sealing:** Keep the lid closed and peepholes plugged. Propping the lid or leaving holes open can leak fumes and disrupt firing.
- **Maintenance:** Keep the kiln floor clean and holes clear of debris. Before every firing, ensure that the holes and plenum box are clear of any debris.

SECTION TWO: AIRLOW AND CHECKLIST

Airflow & Timing

- **Fresh Air:** It is essential to have a source of fresh air to replace the air vented outdoors. Unless you know that the room ventilation can handle the total volume of loss, leave a window or door slightly ajar for make-up air. *Remember: do not exhaust fumes near a fresh air intake.*
- **Firing Times:** With correct drilling, firing times should remain near normal. If times increase significantly, consult the Troubleshooting section.
- **Cooling:** You may leave the motor on during cooling to save time; it will not negatively affect the kiln's temperature maintenance.

Maintenance Checklist (Every 10 Firings)

Component	Action
Plenum Box	Remove and vacuum out any brick dust or kiln wash.
Flex Tubing	Check for sagging, "kinks," or holes that might restrict airflow.
Gaskets	Inspect the fiberglass gaskets on the plenum and blower for wear.
Exterior Vent	Ensure the pest guard is clear of lint or dust buildup.

Note: For any technical issues not covered here, please connect with **KilnWright** support.

SECTION THREE:

VENTILATION & DUCTING REQUIREMENTS

1. The Negative Pressure Standard

This system is designed as a **Negative Pressure Ventilation System**. To maintain safety, the fan motor should be mounted as close to the exit point as possible. This ensures that the ducting inside your studio remains under a vacuum (suction). In the event of a small puncture in the hose, room air is sucked *into* the intake duct rather than hazardous kiln fumes being pushed *out* into your workspace.

2. The "Rule of Floor Mounting"

If wall-mounting is not possible and the fan must be placed on the floor:

- **The Exhaust Side (Positive Pressure):** The section of ducting *after* the fan is now under positive pressure.
- **Seal Mandatory:** You **must** seal all joints on the exhaust side with high-temperature foil tape.
- **Rigid Pipe Recommended:** We strongly suggest using rigid galvanized pipe for any floor-to-wall exhaust runs to prevent sagging and leaks.

3. System Specifications

Your kit features a high-output, dual-speed blower and a "Step-Up" duct design to maximize airflow efficiency.

Feature	Specification
Blower Speeds	140 CFM (Low) / 195 CFM (High)
Voltage/Power	120V AC
Primary Duct	8 ft. of 3" Semi-Rigid Aluminum (Intake)
Terminal Duct	8 ft. of 4" Semi-Rigid Aluminum (Exhaust)

4. Speed Selection & Ducting Paths

Airflow is restricted by friction and "static pressure." Use the following guidelines to select your blower speed.

Configuration	Max Bends	Recommended Speed
Standard (under 16ft)	0–2 Bends	**LOW (140 CFM)**

Complex (16ft–40ft)	3 Bends	**HIGH (195 CFM)**
Extended (40ft–100ft)	3 Bends	**HIGH (195 CFM) + Rigid Pipe**

5. The "Rule of Turns"

Every 90-degree bend creates significant air resistance.

- **0–2 Bends:** Ideal performance.
- **3 Bends:** Marginal. Ducting must be stretched completely tight to minimize internal ridges.
- **4+ Bends: COMPROMISED.** Suction may drop below safe levels. If your layout requires 4+ turns, you must transition to 4" rigid metal pipe for the entire run.

6. Extended Runs (Over 16 Feet)

If your studio requires a run longer than the 16 feet provided, you must "bridge" the distance using **4" Rigid Galvanized Pipe**.

CAUTION: Do not use PVC or plastic ducting. These materials can soften or release toxic off-gases if the kiln over-fires. Always use metal.

The "100-Foot Limit"

While this 195 CFM motor is powerful, it cannot move air infinitely.

- **Absolute Maximum:** 100 Equivalent Feet.
- **Why?** Beyond 100 feet, the weight of the air column and the cooling of the gases cause "Kiln Snot" (acidic condensation) to pool and the vacuum to fail.

7. Testing & Calibration (The Flame Test)

Before your first firing, turn the blower to the desired speed and hold a lighter or match near the pre-drilled holes in the kiln lid. The flame must be pulled visibly downward into the kiln chamber.

Testing Pre-Drilled Lids:

If your kiln has existing holes larger or more numerous than recommended, the vacuum may be too weak to pass the test.

- **Adjustment:** Incrementally block extra holes with non-combustible material (like kiln brick) until a steady downward draw is achieved. If you cover all holes and still fail the test, connect with the **KilnWright** for support.

8. Specialized Large-Scale Venting

On kilns over **12 cubic feet**, and up to **30 cubic feet**, the volume of hot air and gases is significantly higher.

- **Required Adjustment:** You will need to adjust your **ClearFlow™ controller** to a specific speed rate to accommodate the larger chamber volume.
- **Consultation Required:** Please contact **KilnWright** before installing on a large-scale kiln. This ensures the system is calibrated to vent the proper amount of air without overheating the ducting or the fan components.
- **Venting 2 Kilns:** An additional intake kit is required when you are venting 2 kilns with one **ClearFlow™**. Connect with the **KilnWright** to place an order.

9. Safety & Maintenance

- **Carbon Monoxide:** Kiln venting exhausts *CO gas*. Always install a digital *CO* detector in your kiln room.
- **Tension:** Keep all semi-rigid ducting stretched tight. Sagging ducting causes turbulence and acidic buildup.
- **Corrosion:** Inspect the fan impeller every 50 firings. Clean out any mineral deposits to ensure the motor continues to hit its rated CFM.

10. Multi-Vent & Central Ducting Systems

If your studio operates multiple kilns, you may consolidate their exhaust into a single **Central Duct**. To maintain a safe environment, follow these specific engineering requirements.

A. Central Duct Sizing Chart

The diameter of your central exhaust line must increase as more vents are added to prevent back-pressure.

Number of Vents	**1**	**2**	**3**	**4**	**5**	**6**
Min. Central Duct Size	4”	6”	8”	8”	10”	10”

B. Critical Guidelines for Central Systems

- **Maintain the Vacuum:** Ideally, the central duct should be located **outside** the kiln room. This ensures that the lines inside the room stay under negative pressure.
- **Blower Placement:** Locate each blower as close as practical to the exterior discharge point or the central duct.

- **The Damper Rule:** If you are not running all kilns simultaneously, you **must** install air-tight dampers on the output side of each blower.
    - *Why?* If one kiln is off while another is on, the central duct will be pressurized. Without a closed damper, fumes from the active kiln can be pushed backward through the idle blower and into the room.
- **Isolated Power:** Do not hook this system directly into another pre-existing powered vent system (such as a building-wide HVAC). This can create an uncontrolled draw that interferes with the kiln's internal atmosphere and temperature.

11. Exterior Discharge & Termination

The point where your duct leaves the building is just as important as the kiln connection.

- **Clearance:** The exit point must be a minimum of **four feet** away from any building opening (windows, doors, or fresh-air intakes).
- **Weather Protection:** All discharge points must be shielded to prevent rain, snow, or animals from entering the duct.
    - **Horizontal Discharge:** Use a louvered flapper or a hood-type dryer exhaust vent.
    - **Vertical Discharge:** Use a "Rain Cap" or "China Cap" shield that does not restrict the exit diameter.

12. Electrical Considerations

- **Switched Receptacles:** If mounting blowers in high or hard-to-reach locations, we recommend having a licensed electrician wire the receptacles to a conveniently located wall switch. This ensures the vent is easy to turn on before every firing.
- **ClearFlow™ Integration:** Ensure the power source is compatible with your **ClearFlow™** controller's requirements as outlined in Section 5.

Final Check for the User:

Central ducting is an advanced installation. If you are connecting more than three kilns to a single line, we recommend consulting with an HVAC professional to ensure the total static pressure does not exceed the capacity of your blowers.

SECTION FOUR: OVAL KILNS

Specialized Drilling

For oval-shaped kilns, it is critical to follow the specific diagrams below for hole placement in both the **lid** and the **floor** to ensure balanced airflow across the elongated chamber.

— VENT HOLE CHART #2 —

Kiln Chamber Depth	Drill This Many Holes In Slab	Drill This Many Holes In Lid	Drill Size	Kiln Cubic Feet
Eight Sided				
14”	1	2	3/16”	2
18”	1	2	3/16”	2.6
27”	2	3	3/16”	4
Ten Sided				
14”	2	3	3/16”	3.5
18”	2	3	3/16”	4.6
27”	3	3	3/16”	6.9
Twelve Sided				
14”	1	2	1/4”	5
18”	1	2	1/4”	6.6
27”	2	3	1/4”	9.9
31”	2	3	1/4”	11.6
Fourteen Sided				
14”	3	4	3/16”	6.7
Sixteen Sided				
27”	2 + 2	4	1/4”	18.5

Diagram #3

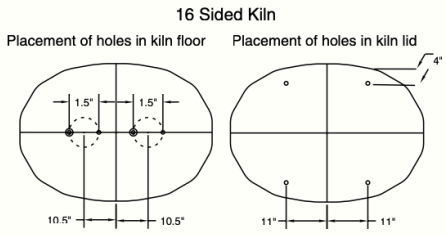
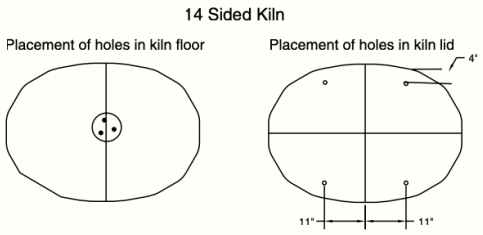


Diagram #4



Some kilns come with a fiber insert that sits on the slab (floor) of the kiln. If your kiln was not predrilled in the factory, you will need to cut holes in these inserts to make sure the air flow is not restricted to the vent.

SECTION FIVE: PRO-TIPS FOR SET-UP

Stretch to Smooth: Semi-rigid aluminum is most efficient when stretched. A "compressed" or sagging hose creates internal turbulence that can cut your CFM by up to 50%. Stretch the ducting until the interior walls are as smooth as possible.

Reducing Resistance: Always use the 3" ducting on the intake side (kiln to fan) and the 4" ducting on the exhaust side (fan to wall). This "Step-Up" design is what allows the blower to hit its 195 CFM potential by reducing exit resistance.

Permanent Solutions for Excess Lid Holes

If you have determined through a **Flame Test** that your lid has too many existing holes for the vent to handle, do not simply leave them covered with loose bricks.

1. **Vacuum the Holes:** Remove any loose dust or kiln debris from the holes you intend to patch.
2. **Use Kiln Repair Cement:** Fill the excess holes with a high-temperature refractory cement or a mixture of firebrick dust and kiln wash.
3. **Flush Sanding:** Once dry, sand the patch flush with the lid surface to ensure a proper seal and to prevent debris from falling onto your ware during a firing.

Alternative Installation: Floor-Mounted Configuration

While wall-mounting is the preferred method for maintaining a negative-pressure environment, floor mounting is a viable alternative if specific engineering standards are met. **Improper floor mounting transforms the system into a positive-pressure setup, which significantly increases safety risks.**

Requirements for Floor Mounting

To maintain system integrity and operator safety, the following rules must be strictly followed:

- **Minimize the "Blower" (Exhaust) Side:** The fan motor must be positioned as close to the exterior exit point as possible. A long run of ducting *after* the fan creates positive pressure, which can force fumes into the workspace if a leak occurs.
- **Utilize Rigid Piping:** For the exhaust section (the run from the fan to the wall), **rigid galvanized stovepipe** is required. Unlike flexible ducting, rigid pipe resists sagging, prevents "dead spots" where fumes can collect, and is far more durable under positive pressure.
- **Airtight Sealant:** While the suction side (kiln to fan) operates under a vacuum, the exhaust side (fan to wall) **must be sealed**. Use high-temperature foil tape or furnace sealant on all joints to prevent hazardous gas leakage.

- **Direct Pathing:** Maintain the straightest path possible to the exit point. Avoid "S-curves," sharp 90-degree bends, or long horizontal runs. These obstructions create back-pressure and allow acidic condensation ("kiln snot") to pool, which can lead to premature equipment failure.

Risks of Non-Compliant Installation

Failure to adhere to these mounting configurations results in two primary categories of failure:

1. **Life Safety Hazards:** An incorrect floor mount pressurizes the flexible hose. The internal friction of the ribbed ducting restricts airflow, increasing the concentration of **Carbon Monoxide** and other toxic byproducts. In this state, any puncture or seal failure will actively pump these invisible, odorless gases into the studio.

2. **Equipment Degradation: Corrosion:** Although components are treated for rust resistance, they are not immune to the highly concentrated acidic vapors produced during firing. Improper pathing leads to condensation buildup that can seize the motor.

    - **Thermal Overload:** Excessive back-pressure forces the motor to work beyond its intended load, leading to overheating and a significantly shortened operational lifespan.

SECTION SIX: TROUBLESHOOTING

Symptom: The Vent Is Not Operating

- **No Power:** Check that the blower is plugged into a functional 110–120V outlet.
- **Controller Switch:** Ensure the dial/potentiometer (flow controller) is securely connected to the blower unit, is past the 0% position, and the blower's cord is securely plugged in. Note: The motor of the blower automatically turns on when plugged in without the controller installed.
- **Breaker Tripped:** Check your home's electrical panel. If the outlet has no power, reset the circuit breaker.

Symptom: Smell or Odors Near the Kiln

- **Blockages:** Verify that the floor holes are not clogged with debris and that the bottom shelf is propped at least 1" high.
- **Alignment:** Ensure the plenum box is centered directly under the drilled holes.
- **Leaks:** Check for holes or loose hose clamps on the **outlet/discharge** side (the tubing leading from the blower to the wall).
- **Exit Path:** Inspect the exterior vent hood to ensure it isn't blocked by debris, bird nests, or a stuck flapper.

Symptom: Kiln Is Slow to Reach Temperature

- **Excessive Airflow:** Verify that you used the correct drill bit size specified in the chart. If the holes are too large, the kiln may lose heat too quickly.
- **Seal Issues:** Ensure the lid is fully closed and **all** peephole plugs are in place throughout the firing.
- **Dial Setting:** You may need to slightly decrease the flow on the controller if your specific kiln is struggling to maintain heat.

Symptom: Ducting is Getting Too Hot

- **Oversized Kiln-Floor Holes:** If the holes in the kiln floor (slab) are larger than specified, too much hot air is entering the tubing. Confirm the drill bit size used matches the **Vent Hole Chart**.