

Operating Manual

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Congratulations

Congratulation on your purchase of the newly designed EnviroVent 2. The EnviroVent 2 is a Downdraft Ventilation System designed to extract fumes from your electric kiln and vent them outdoors before they have a chance to enter the room. Because it is a DownDraft Ventilation System the EnviroVent 2 also improves the firing atmosphere in the kiln while it is protecting you from the odorous fumes that can be emitted from certain clay bodies and glazes when they are fired. Here is what you get:

- True Downdraft Venting
- Vent Up to 24 Cubic Foot Kiln •Corrosion Resistant Ducting •

Mounts Away From Heat

- UL Listed Safe
- No Vibration to the Kiln
- Potential to Control With Kiln

Ability to Vent 2 KilnsSpring Loaded Plenum Cup

How It Works

A designated number of holes are drilled in the lid and floor of the kiln either in the factory or on location. A spring loaded plenum cup (see diagram on page 4) is placed under the kiln and tensioned between the floor of the kiln and the floor under the kiln. The holes in the floor of the kiln are drilled in a tight pattern so the plenum cup can cover them all. The other end of the cup is connected by 3" ducting to a fan which is generally mounted on the wall. On the opposite end of the fan the air is ducted through the wall to the outside air.

The plenum cup has 3 additional holes from which it draws room temperature air to mix with the heated air from the kiln. This serves 2 purposes. Since the kiln air is mixed with cooler room air the air coming out of the end of the vent is never hotter than an average hair dryer. Secondly, the holes in the plenum cup are sized to reduce the vacuum on the kiln chamber so only a small amount of air is moving through the kiln. This ensures the firing time is not affected and the ware is not at risk.

Better Heat Uniformity

Most people are aware of the fact that heat rises. The EnviroVent 2 helps compensate for this rising heat by creating a flow of air moving back down the kiln chamber. As the air moves in a downward direction it is also deflected by ware and shelves causing turbulence. This turbulence helps move heat to cooler areas of the kiln.

Better Kiln Atmosphere

When you are firing in an electric kiln you are firing in an Oxidation atmosphere. The EnviroVent 2 helps bring in more oxygen and flush out fumes which can form a reduction atmosphere. A reduction atmosphere can be desirable in a gas or wood fired kiln however it only causes problems in an electric kiln. Your elements will last longer, your glazes will be clearer and brighter and you will help prevent glazes migrating between pieces.

Better Working Environment

Prior to the introduction of venting systems it was still necessary to vent the kiln. This was done by propping the lid open with a wedge of brick until the kiln reached 1000 $^{\circ}$ F (538 $^{\circ}$ C). Not only was this inconvenient, it also radiated the fumes right into the room.

A Better Vent

A new benefit of the EnviroVent 2 is that it is now a **Negative Pressure System**. This means that since the motor is pulling the air instead of pushing the air, if there is ever a hole in the ducting the fumes will not escape into the room. Also since the motor is now mounted away from the kiln it is **protected from the heat** of the kiln and the kiln is **protected from possible vibration** from the motor.

A unique feature that no other vent on the market has is that the plenum cup is spring loaded. The floor of your kiln will have a tendency to cup when it heats up. This cupping can compromise the seal and reduce the pull of air on other models. With the EnviroVent 2 the **Spring Loaded Plenum Cup** ensures a tight seal throughout the entire firing.

STANDARD ENVIROVENT 2 INSTALLATION

This section of the manual covers standard installations of The EnviroVent 2 on a single top loading, multi-sided, electric kiln with a chamber size under 12 cubic feet. A Dual Intake Kit is available for venting a single kiln over 12 cubic feet or two kilns with chamber volumes each under 12 cubic feet. The maximum chamber volume that can be vented with one motor is 24 cubic feet. For instructions on venting two kilns, kilns greater than 12 cubic feet and other custom installations consult the <u>Custom Installations</u> section of this manual.

As with any change in firing routine, we recommend that you closely follow all instructions and monitor your firings with witness cone groups on each shelf of your kiln both before and after you install the EnviroVent 2. If you have any questions, please contact your supplier.

EnviroVent 2 Contents

Blower Motor w/6 ft. Power Cord w/In-line Switch

8" x 12" Mounting Plate

8 ft. x 3" Flexible Aluminum Duct

Spring Loaded Plenum Cup Assembly

Cast Plenum Cup

Fiber Gasket

Plenum Stand w/Base

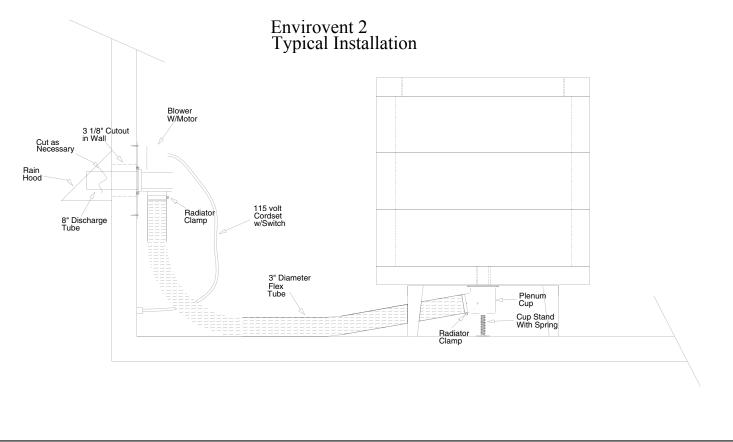
Plenum Spring

Blower Inlet Tube

Blower Discharge Tube

Operating Manual Mounting Hardware

- 4 #10 x 1 ½" Sheet Metal Screws
- 4 8-32 x ¼" Screws
- 4 8-32 Lock Washers
- 4 8-32 Hex Nuts
- 4 1/8" x 2" Toggle Bolts
- 1 1/4'' twist drill
- 1 3/32" twist drill
- 2 Hose Clamps



Setup

Step 1 - Preparation

- Unplug the kiln
- At the time of purchase it is possible to order the kiln factory drilled. If your kiln has already been drilled for the EnviroVent 2 by Skutt you may skip to Step 6.
- Before drilling the holes in the kiln it will be necessary to empty all of the ware and shelving from the chamber.
- Nearly every Skutt kiln uses a 8" high stand. The EnviroVent 2 is designed to fit under this 8" stand. If your stand is lower you can either shim the legs until it is 8" off the ground or replace it with a correctly sized Skutt Stand. If your stand is higher than 8" you can shim the plenum cup up so the bottom of the base is 8" from the bottom of the kiln or replace the stand with one with 8" clearance.
- If your kiln has been previously drilled for an EnviroVent or any vent other than an EnviroVent 2, it will be necessary to patch the existing holes before drilling new ones. Failing to patch incorrect holes in the kiln floor could cause the vent not to perform as designed. It is usually not necessary to patch holes in the lid unless they are drilled further than an inch away from the kiln wall. The amount of air vented is regulated by the holes in the floor so additional holes in the lid will not affect performance but could affect your ability to test the vent. See the <u>Testing</u> section of this manual. If you find that you need to patch holes in the lid follow the instructions below.

Patching Existing Holes

- Disassemble the kiln to allow full access to the kiln floor. (This will need to be done to remove an existing EnviroVent anyhow).
- Cover one end of the openings to existing holes with tape.
- Use Skutt Sairset (part# 0290) to fill the holes through the uncovered opening. Use a paper clip or element pin to help fill the hole. When you can't get any more in the hole use a spackling knife to clean up the excess cement.
- Turn the kiln floor over, remove the tape, and fill any voids with Sairset.
- Re-assemble the kiln and allow the patch to dry for 1 hour before turning on the vent.

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

Use the Vent Hole Chart and Location Diagrams to determine the number, size and location of the holes for your particular kiln. The chart and diagrams are based on standard multi-sided top loading electric kilns greater than 2 cubic feet in size. If you are planning on venting a kiln smaller than 2 cubic feet please contact Skutt for hole drilling instructions.

The Vent Hole Chart refers to the number of "sides" a kiln has to determine the chamber width. This number refers to the number of brick used to form the circumference in a round or oval shaped kiln. This measurement is fairly standard between brands. Some kilns with 3" brick have smaller diameters but will not change the number or size of the holes drilled.

Kilns that are square or rectangular with multiple bricks per side will not fit this rule. For these kilns find out the total cubic feet of the kiln and use the closest value in the chart.

6	Setup				
			V	ENT HOLE	CHART
	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

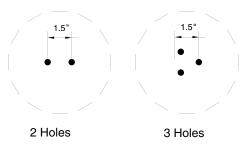
STEP 3 - DRILLING HOLES IN THE KILN FLOOR

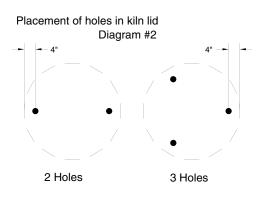
- Locate and mark the center of the kiln floor.
- Use Diagram #1 as a guide to drill the appropriate hole(s) in the kiln floor. Important: The holes in the floor must fit within a 1 1/2" diameter circle at the center of the floor.
- Use an electric drill with the correct size bit. Drill slowly, keeping the drill straight. Precision and care are important to avoid drilling an oversize hole or chipping of the floor underside.

STEP 4 - DRILLING HOLES IN THE KILN LID

- Measure the thickness of the kiln sidewall fire brick and add 1" to this measurement. This will be the distance from the outside edge of the kiln that your holes will be drilled.
- Space the holes evenly around the kiln lid but no closer to the edge than the distance above. Because the holes introduce room temperature air into your kiln, they must not be clustered together or directly above the thermocouple.. Refer to diagram #2 for proper hole location and spacing.
- Drill the holes in the lid using the same method as used for the floor.
- Vacuum out any brick dust from inside your kiln caused during the drilling.

Placement of holes in kiln floor Diagram #1





STEP 5 - INSTALLING THE PLENUM CUP AND SPRING STAND

- Attach the length of 3" diameter aluminum flex tubing to the 3" sleeve on the plenum cup and secure with the hose clamp.
- Using gloves to protect your hands, stretch the flex tubing to the proper length for your installation. Be careful not to collapse the open end of the flex tubing. You should be able to stretch the flex tubing 6 ft. to 8 ft.
- Place the spring over the plenum cup stand post and insert the 7/16" stand post into the small hole in the bottom of the aluminum plenum cup. Refer to the installation drawing if necessary. When properly assembled the plenum stand should be spring loaded into the bottom of the plenum cup.
- Place the plenum cup and stand under the holes drilled in the kiln floor by rotating the cup horizontally, compressing the spring to permit cup rotation to vertical and releasing the spring tension. Ensure that the plenum cup is centered under the holes in the kiln's floor.

STEP 6 - INSTALLING THE BLOWER AND MOTOR ASSEMBLY

- Locate a spot on the wall to mount the blower assembly and discharge tube. Important: Choose a spot that is close enough for the aluminum flex tubing to reach. Remember that the kiln must be a minimum of 18" from the wall. If possible, locate a spot that allows you to mount the vertical edge of the mounting plate into a wall stud or ceiling joist. If you need to go further then the ducting will allow consult the Custom Installation section of this manual.
- Drill a 3 1/8" clearance hole in the wall or ceiling to accept the 3" diameter discharge pipe. Be sure to check for wires and pipes in the wall prior to drilling.
- Insert the discharge pipe through the 3 1/8" hole and fasten the mounting plate in place using the supplied sheet metal screws or toggle bolts. Choose the proper fastener for your wall type of material. If you are using the toggle bolts you will need to position the mounting plate and mark where the holes will be. Predrill the holes for the toggle bolts using a 3/8" drill bit . The 3" metal discharge tube is supplied at 8" in length. This tube may be trimmed shorter or added to in order to allow for any installation.
- Attach the open end of the aluminum flex tube to the blower inlet flange using the hose clamp provided.
- We recommend attaching a hood with a screen over the end of the discharge tube. This will help prevent snow, rain or debris from entering into the discharge tube or blocking the air flow. The screen is important to prevent small animals and insects from entering the tube. This item is not included with the kit but can usually be found at local hardware stores.

FLOOR MOUNTED VENTS

A floor mounting accessory kit is available for purchase through your local distributor. This bolt-on plate allows you to place the vent motor on the floor when wall-mounting is not possible. Simply bolt the plate on to the bottom lip of the mounting plate using the hardware included in the kit and you are done.

STEP 7 - TESTING THE ENVIROVENT2 FOR PROPER OPERATION

- Check to make sure the plenum cup has not shifted during installation. It should be perpendicular to the floor and have a good seal to the bottom of the kiln.
- Plug the EnviroVent2 power cord into a 110 120 volt outlet.
- Turn on the blower by activating the switch in the power cord. Ensure that the blower motor starts and operates normally. If the blower doesn't start or the sound of air passage is not evident, immediately unplug the blower and check for the cause of the malfunction.
- Close the lid of the kiln.
- Install all peep plugs.
- Ensure that no other kiln openings are left open except the drilled holes in the kiln lid.
- Test your new vent system by placing a lighted match directly over and level with one of the lid holes. The flame from the match should be pulled into the kiln as a result of the draft. If you are unsure of the effect of the draft, observe the action of the flame away from the hole and then move it over the hole. If the flame is not pulled into the kiln, the kiln is not venting properly. See page 13 on Troubleshooting. Repeat this test regularly to ensure continuing accurate operation.

TESTING PREVIOUSLY DRILLED LIDS

As mentioned earlier it may not be necessary to patch existing holes. If there are more holes, or holes with a larger diameter than this manual recommends in your kiln lid, you may not be able to flame test it as previously recommended. If a flame is not drawn through the lid try covering up some of the holes in the lid. If after covering all the holes in the lid you still cannot get a flame to draw down into the chamber, contact your distributor for further instruction.

CHECKING THE PLENUM CUP

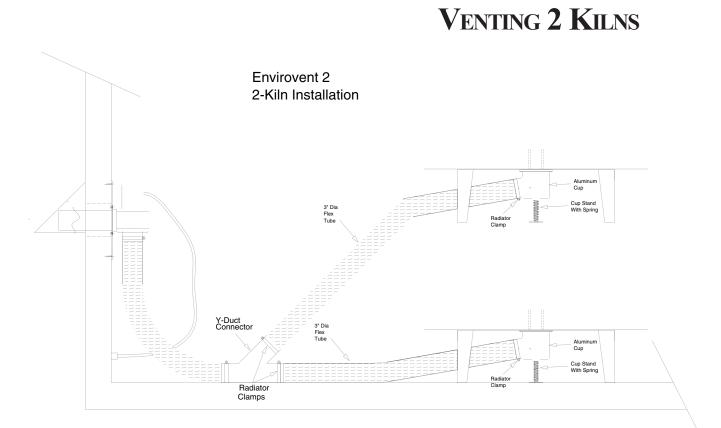
The floor of a 12 sided kiln will flex up to 1/4'' due to the uneven heating of the floor. The spring loaded action of the EnviroVent2 will allow the plenum cup to rise and fall with the flexing of the kiln floor. If the 3'' aluminum flex is kicked, bumped or otherwise dislodged, the position of the plenum cup may change. If this occurs, simply look at the plenum cup to ensure it is positioned properly. To reposition the plenum cup simply push down on the cup to release the spring pressure, reposition the cup and let go.

DUAL INTAKE KIT

A Dual Intake Kit is required when you are venting 2 kilns with one Envirovent 2 or a single kiln that is greater than 12 cubic feet in volume.

Dual Intake Kit Contents

A Dual Intake Kit contains : an additional Spring Loaded Plenum Cup Assembly, 4 - Hose Clamps, 1- 3" Y Duct Connector and 2 - 8' x 3" Flexible Aluminum Duct Sections.



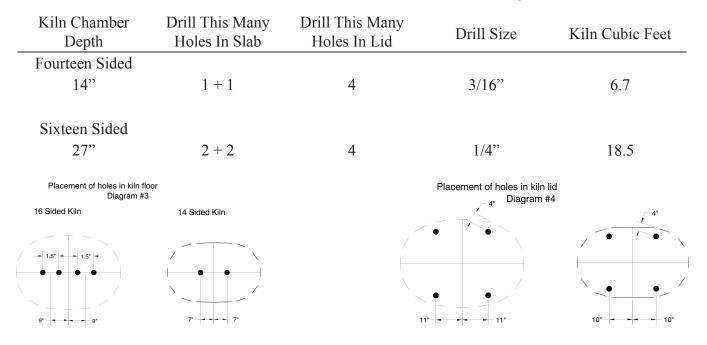
Installation for Two Kilns

Follow the instructions for installing the EnviroVent 2. The only difference will be that the 3" ducting from the Plenum Cup Assemblies of the two units will attach to a Y-Duct connector and then up to the motor. See above diagram.

VENTING KILNS OVER 12 CUBIC FEET

On kilns over 12 cubic feet, and up to 24 cubic feet, you will need a Dual Intake Kit to vent the chamber using two plenum cups. This is to ensure the proper amount of air is vented without overheating the ducting. For oval kilns use the charts and diagrams below to drill the proper holes in the lid and slab. Otherwise, follow the instructions for installing an Envirovent 2 with a Dual Intake Kit.

For other kilns between 12 and 24 cubic feet contact the manufacturer before installing the Envirovent 2



Additional Ducting Requirements

An 8 ft. length of flexible 3" diameter, aluminum ducting is supplied with your kit for installation. If the distance from your kiln to the vent hole in the wall is greater than 2 ft. you may need additional ducting. This depends on how high up the wall you are ducting and how much stretch you can get from your 3" flexible ducting.

When additional ducting is required you have several options.

Option 1

You may purchase one or more 8 ft. extension kits from Skutt or a Skutt Distributor. The kit comes with one 8 ft. length of 3" flexible ducting, one 3" coupler, and one hose clamp. If you are going to vent the kiln further than 60 ft. or have 4 or more 90 degree bends you will need to transition to 4" ducting no further than 8 ft. from the plenum cup.

If it is necessary to step up to 4" ducting, we recommend you use PVC since it will not corrode and is relatively inexpensive. A transition piece from 3" to 4" may be difficult to locate but is available through Skutt along with the transition piece needed to go from the 4" PVC back down to the 3" motor mount. See the Accessories Section for more details.

Option 2

If you prefer you can transition directly from the 3" ducting to 4" PVC. Remember that you will need to purchase the transition pieces from Skutt.

USING CENTRAL DUCTING

If you have more than one EnviroVent 2, you may connect them to a central duct. If a central duct is used, hook the individual vent ducts to that central line. It is recommended that the central duct be located outside the kiln room if possible to maintain a vacuum system inside the room.

To determine what size of central ducting to install, use the chart below.

Central Duct Sizing

Number of EnviroVent 2	Recommended Size Central Ducting
1	4″
2	6″
3	8″
4	8″
5	10″
6	10″

The duct discharge may be horizontal or vertical with the exit located a minimum of four feet from any opening (window or door) into the building. Provide a cover on the end of the discharge to prevent rain or snow or small animals from entering the duct. For horizontal discharge, a flapper or hood type dryer exhaust vent may be used. For vertical discharge, a cap type shield that does not reduce the discharge may be used.

SIDE MOUNTING

On certain model kilns it is not possible to mount the vent cup under the kiln and it will be necessary to mount the cup on the side of the kiln. In order to get the positive effects of Downdraft Ventilation you will want to mount it as low on the side of the kiln as possible. You will not need the plenum stand or plenum spring since the plenum cup will be screwed into the side of the kiln. Don't worry about the exposed hole at the bottom of the cup.

To mount the cup you will need to drill 3 holes around the flange of the cup sized for the mounting screws you are using. To find the size and number of holes to drill on the side and top of the kiln find the closest chamber size in the Vent Hole Chart and use those values. Once the cup is mounted the rest of the installation instructions will be the same. Remember that it is always a good idea to consult with the Manufacturer of the kiln if it is a brand other than Skutt.

OPERATION

Loading the Kiln

The bottom kiln shelf needs to be supported at least one inch off the kiln floor to allow sufficient air circulation. If the holes are blocked, venting cannot take place. If you are using half shelves a slight gap left between them will allow better air circulation in the kiln chamber. If you are loading ware near the lid be sure not to place it directly under a vent hole. This may cause discoloration in glazes or thermal shocking.

Be sure to close the lid and plug all of the peep holes. You can open any peephole during the firing to check the bending of witness cones and the progress of your firing. Do not prop the lid or leave any peepholes open during a normal firing. To do so can cause fumes to enter the room and additional room temperature air drawn into the kiln may affect the firing.

Important: Keep the kiln floor clean and the holes unobstructed for the EnviroVent 2 to continue doing its job properly.

Motor Operation

The EnviroVent 2 motor is equipped with an in-line toggle switch in the power cord. This switch must be turned ON in order to ventilate your kiln and collect the fumes.

Leaving the motor in the on position during cooling will reduce the amount of time it takes to cool the kiln to a temperature where you can safely handle your ware. Turning the motor off will not significantly affect the kilns ability to maintain temperature or perform a slow cooling therefore it is not necessary. If you would like to be able to automatically control when the Envirovent 2 turns on and off, you can install an EnviroLink on KilnMaster and GlassMaster Kilns. See the Accessories section for more details.

Fresh Make-up Air

It is essential to have a source of fresh air to replace the air vented outdoors. The EnviroVent 2 fan moves 140 cubic feet per minute. 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

When the correct holes are drilled in your kiln, firing times should not be much longer than normal. If firing times are significantly longer, see the Troubleshooting section for help.

TROUBLESHOOTING

PROBLEM: VENT NOT OPERATING

Possible Cause: No Power to the vent..

Solutions:

Check to see the vent is plugged in. Check to make sure the in-line switch is on. Check the power to the outlet. If there is no power to the outlet, check the breaker.

PROBLEM: SMELL OR ODOR COMING FROM KILN AREA Possible Cause: Air is not being pulled through the slab.

Solutions:

Check to see that the holes are correctly drilled in the slab. Check to see that the holes are not blocked by debris in the chamber or a shelf placed on the slab. Check to see that the plenum cup is aligned with the holes. Check to see if there are holes or poor connections in the ducting. Check to see if the exit duct is free of debris and has a clear passage to the outside.

PROBLEM: KILN SLOW TO REACH TEMPERATURE Possible Cause: Too much air is being pulled into the kiln chamber

Solutions:

Check to see the holes in the lid and slab are drilled to specification. Check to see if the lid is closed during firing. Check to see the all the peep plugs are in place.

PROBLEM: DUCTING IS GETTING TOO HOT Possible Cause: Holes in slab are too large

Solutions: Check to see the holes in the slab are drilled to specification.

PROBLEM: MOTOR IS VIBRATING

Possible Cause: Squirrel cage in motor is imbalanced by debris sucked into the motor.

Solutions:

Blow out motor with compressed air. Be sure to clean area around motor intake. Check all mounting screws to see if they are secure.

For all other problems contact your Skutt Distributor.

ACCESSORY ITEMS

Dual Intake Kit

The Dual Intake Kit is used when you are venting 2 kilns that are each under 12 Cubic Feet or When you are venting a single kiln between 12 and 24 Cubic Feet. The kit contains the following items.:

- Two 8 ft. x 3" Flexible Aluminum Duct
- One Spring Loaded Plenum Cup Assembly
 - Cast Plenum Cup
 - Fiber Gasket
 - Plenum Stand w/Base
 - Plenum Spring
- Four Hose Clamps
- One Y Duct Connector

Extension Kit

The Extension Kit is used when you need additional ducting than what is provided with a standard Envirovent 2. The kit contains the following items:

- One 8 ft. x 3" Flexible Aluminum Duct
- Two Hose Clamps
- One 3" Connector

Floor mount Kit

The Floor mount Kit allows you to place the vent motor on the floor without mounting it to a wall for support. The kit contains the following items:

- One Floor mount Plate
- Four Bolts, Lock Washers, and Hex Nuts

Individual Fittings





3" Connector





3" Y Duct Connector

EnviroLink

The EnviroLink is an accessory item that can be ordered for the EnviroVent and EnviroVent 2 that works in conjunction with the Skutt KilnMaster or Glass-Master controller. It allows you to program the controller to automatically turn the vent on and off throughout a firing program. You simply enter an on/off setting for each segment of a Ramp and Hold program while you are programming the kiln. There are preset "vent programs" that can be run in conjunction with a ConeFire Mode program as well.





Service

If your EnviroVent 2 requires service, contact your dealer, distributor or Skutt Ceramic Products, Inc. Warranty information can be found on the warranty card included with your EnviroVent 2.

Reference

The EnviroVent 2 is a UL listed accessory when used with the following Skutt UL listed kilns.

N <i>t</i> 1 1	X7.14	ות	N 1 1	X7.14	DI
<u>Models</u>	<u>Voltage</u>	<u>Phase</u>	<u>Models</u>	<u>Voltage</u>	<u>Phase</u>
1227-3	240 or 208 volt		GM1227-3	240 or 208 volt	
1227-3	240 or 208 volt	3 phase	GM1227-3	240 or 208 volt	3 phase
1027-3	240 or 208 volt		GM1018	240 or 208 volt	
1027-3	240 or 208 volt	3 phase	GM818	240 or 208 volt	
1027	240 or 208 volt		GM1414	240 or 208 volt	
1027	240 or 208 volt	3 phase	GM1414	240 or 208 volt	3 phase
1018-3	240 or 208 volt		GM1014	240 or 208 volt	
1018	240 or 208 volt		GM814	240 or 208 volt	
818-3	240 or 208 volt		GM22CS	240 or 208 volt	
818	240 or 208 volt		GM22CS	240 or 208 volt	3 phase
NOTE: All of the abo	ove kilns may have a prefix of KM	1 or KS.			

KS818P-3	240 or 208 volt	
KS818P	240 or 208 volt	
KM818-30A-3	240 or 208 volt	
KM1218-3	240 or 208 volt	
KM1218-3	240 or 208 volt	3 phase
KM1627-3-PK	240 or 208 volt	3 phase
KM1627-3-PK-LF	240 or 208 volt	
KM1627-3-PK-LF	240 or 208 volt	3 phase
KM1231-3-PK	240 or 208 volt	
KM1231-3-PK	240 or 208 volt	3 phase
КМ1227-3-РК	240 or 208 volt	
KM1227-3-PK	240 or 208 volt	3 phase

Specifications

Motor: 115 volt 1.4 amps 50/60 Hz

Heat exiting blower: 160 °F maximum

Blower: 140 cfm

Maximum kiln capacity for use with EnviroVent 2: 12 cubic feet (24 cubic feet with dual intake kit)