Vent Systems Owner's Manual

KilnVent - Stand Version, Catalog No. 29978X
KilnVent - Suspended Version, Catalog No. 29976T
Master KilnVent, Catalog No. 29968J

Read these instructions before you attempt to install or operate the AMACO® KilnVent

Contents

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Introduction

The Instruction Manual

Congratulations on your purchase of an AMACO® KilnVent! This manual covers the use of all AMACO® KilnVents for electric kilns. The Suspended, Master and Stand systems are intended to vent a single kiln, and the Master KilnVent with Expansion Kit will vent two medium kilns, one large kiln or the EXCEL® EX-1850.

The AMACO® KilnVent

The AMACO® KilnVents have been designed to pull sufficient air into the kiln for the proper firing of greenware, stoneware, porcelain, colored glazes, decals, overglaze colors, lusters, metallics, glass and other similar firings. It is also designed to collect the hot, odor-filled gases produced during firing and directly vent them outdoors.

Test after test have demonstrated the following benefits with proper installation and operation:

a. Most kilns will show a more uniform firing from top to bottom.
b. The kiln room environment will be more comfortable. Odors or fumes coming from the kiln essentially will be eliminated.
c. Colors will fire more consistently — particularly reds, oranges and yellows.
d. Safer operation will result because the lid stays closed. Accidental burns and jarring of ware are reduced.
e. With proper ventilation, metal kiln components (such as the Kiln-Sitter®) will last longer.

Unpacking

Each AMACO® KilnVent comes with the following:

- AMACO® KilnVent with 6 ft. power cord and in-line on/off switch
- 4" diameter x 8' long flexible aluminum dryer ducting
- 4" circular hose clamp
- two drill bits
- Blower adaptor
- Test samples of Orton Cones and Bars
- Cones for Ceramics booklet
- Kiln Safety booklet
- 2 springs/hooks (suspended version)
- Plenum stand (stand version)

You will need:

- a screwdriver
- an electric drill (if your kiln has a steel plate on the bottom)
- a vacuum cleaner
- duct tape (optional)
- a dryer vent kit — available from hardware and home center stores (and items necessary to install kit and attach it to the ducting)

Note: When selecting the dryer vent kit, be sure the vent flap is lightweight enough to be blown open easily and the vent pipe is long enough to go through your outside wall.

Ventilation

Due to the many different types of materials which may be fired in all kilns, we recommend that the firing area be supplied with adequate ventilation.

Your kiln will be 6 to 10 inches off the floor using the stand provided. It should be placed away from the wall by at least 18 inches, and plugged into a properly wired outlet.

Location

For safety and convenience follow these basic rules:

1. Be sure that your kiln is properly installed and that installation meets all local electrical codes. Check individual kiln installation instructions to be sure that your kiln is at least 18" away from any wall.
2. Locate your kiln near your present electrical outlet or where a new circuit can be installed with the least cost. Position your kiln to the left of the electrical outlet so the cord will have an easy run and will not place a strain on the plug or outlet.

3. If at all possible, it is recommended that the kiln be kept in a separate room to avoid excess heat in the work areas. This also helps to prevent accidents if children are present.
4. Install it in a well ventilated, sheltered area such as a carport, garage, utility or hobby room. It should be convenient to your clay working area, and out of the way of other traffic.
5. If possible, locate the kiln in a room with a cement floor or other type of non-combustible material.
6. Never fire your kiln within a four sided cabinet or closet. The fourth side must always be open to room air to prevent the kiln from overheating surrounding surfaces. It is best to leave a least two sides open for easy access to controls and peep holes.
7. Keep curtains, aprons, plastic or other flammable materials away from your kiln.

   The outside of an octagon or round kiln will get hotter faster than the outside of a square kiln because of different insulation methods. Our tests reveal that at the end of 9 hours of firing at cone 9 (2336°F, 1280°C inside the firing chamber), the surface temperature of an AMACO® square kiln will reach approximately 250°F (121°C) while the surface temperature of a round kiln will reach 450°F (232°C). Regardless of the type of kiln you are using, always:

   1. Wear dark-shaded glasses (shade number 1.7-3.0) for looking into peephole and use protective kiln gloves when kiln and/or ware are hot.
   2. Allow only a qualified adult to operate or touch a kiln.

Test Firing

Orton Self-Supporting Cones and Pyrometric Bars are provided for your test firings. Use the Self-Supporting Cones on your kiln shelves and the Bars in your Kiln-Sitter® as described in the Cones for Ceramics booklet. One bag is provided for each firing. Orton Pyrometric Cones and Bars measure the amount of heatwork seen by the ware in the kiln. They are much more accurate than any temperature measuring device. Using cones provides an accurate measure of what happened during firing and allows differences between firings to be detected.

Prior to installing the AMACO® KilnVent, make a firing with a series of witness cones on each shelf in the kiln. After installation, make another firing using witness cones and compare the results. We are confident you will be pleased with the improvement in heat distribution.

Kiln Preparation

Preparing the Kiln for KilnVent Installation

Make sure your kiln is unplugged before beginning installation. If it is a multiple ring design, you may wish to remove the top ring(s) to make it easier to drill through the floor of the kiln.

Drilling Ventilation Holes in the Kiln Floor (Suspended and Stand Kiln Vents Only)

Locate and mark the center of your kiln floor. Refer to the chart on page 4 to determine the correct number and size of holes. Refer to the diagrams on page 4 for correct hole pattern. For larger oval kilns resting on two stands, holes should be drilled in that portion of the kiln under which the KilnVent will be located.

Drill the correct number of **LARGE** and **SMALL** ventilation holes around the center mark. Cluster the holes as close together as you desire, but do not space them out too far. They must fit within a 4½" diameter at the center of the floor to align with the hole in the plenum chamber of the AMACO® KilnVent—Suspended Version or Stand Version which will be located below it.

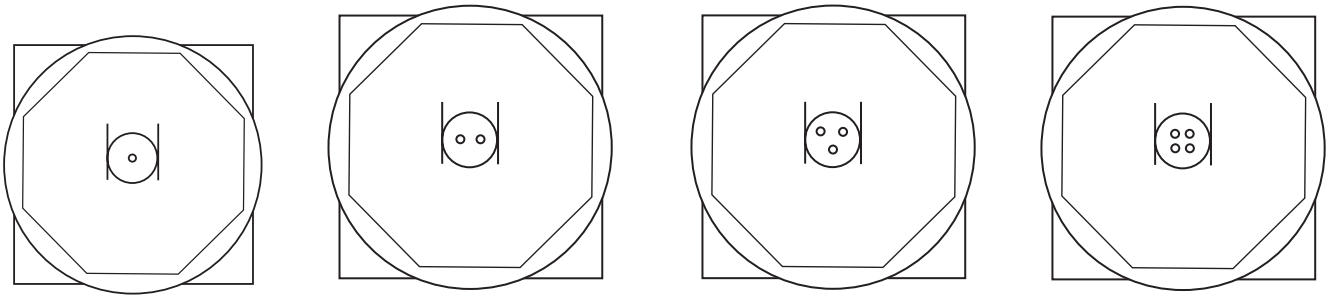
If your floor is supported by a metal plate, use an electric drill. For standard firebrick kiln floors or refractory fiber kilns, the drill bit can be rotated by hand, **OR**, firmly support the floor of the kiln on a piece of scrap wood and use an electric drill to slowly drill through the floor into the wood. Precision and care are important. If you just "drill away" with an electric drill alone, an oversize hole and chipping of the underside may result. Vacuum out any dust that gets in your kiln from drilling.

It is best to drill holes before installing the AMACO® KilnVent since dust may damage its motor.

AMACO® KILNS DO NOT REQUIRE VENTILATION HOLES IN LID OR FRONT DOOR. PEEPHOLE OPENING IS PROVIDED.

KILN VOLUME (cu ft)	MULTISIDED OR ROUND KILNS			RECTANGULAR KILNS			# HOLES		
	sides	diameter	depth	length	width	depth	total	large (¼")	small (⅛")
1-2	8	17.5	12	12	12	18	1	0	1
2-4	8	17.5	27	18	18	18	1	1	0
4-6	–	–	–	18	18	27	2	1	1
	8	17.5	31.5	20	20	20	2	1	1
	10	23.5	18-24	30	20	24	2	1	1
6-8	10	23.5	27	24	24	24	2	2	0
8-10	10	23.5	31.5	22	16	44	3	2	1
10-12	12	28	27-31.5	24	24	36	3	3	0
12-14	12	28	36				4	4	0
18.5	oval	31x46	27				8	8	0

Placement of Ventilation Holes in Kiln Floor



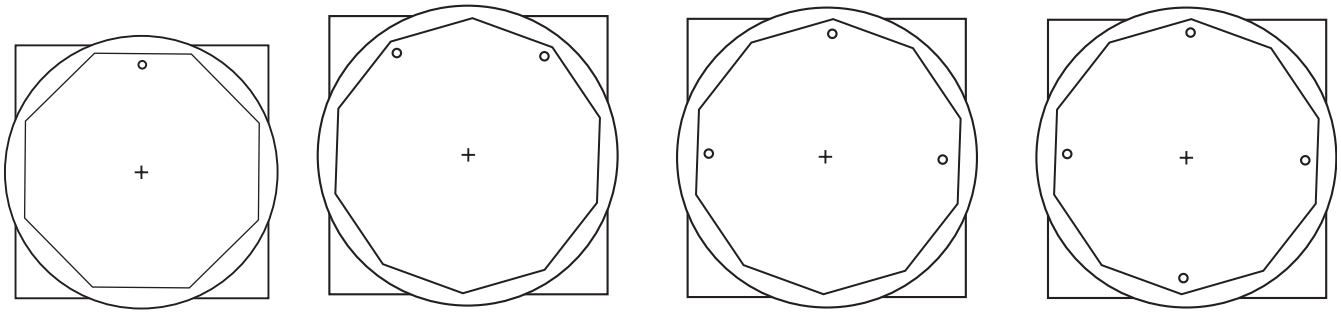
1 hole | 2 holes | 3 holes | 4 holes

Drilling Holes in the Kiln Lid

Use the same size and number of holes for your kiln lid according to the chart above. If the kiln already has an adjustable ventilation port in the lid, open it half way instead of drilling holes.

Because these holes introduce room temperature air into your kiln, they should not be clustered together, but spaced out around your center mark. Refer to the diagram on page 5 for the correct pattern.

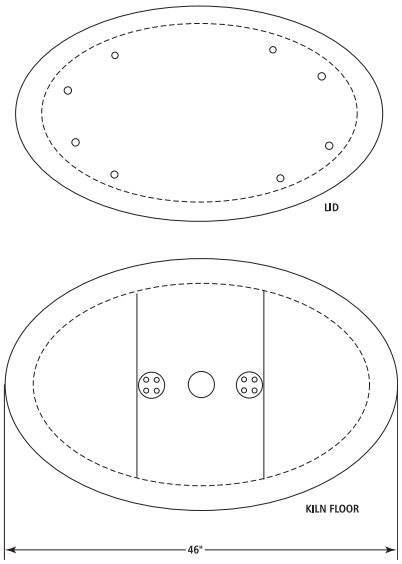
Placement of Ventilation Holes in Kiln Lid

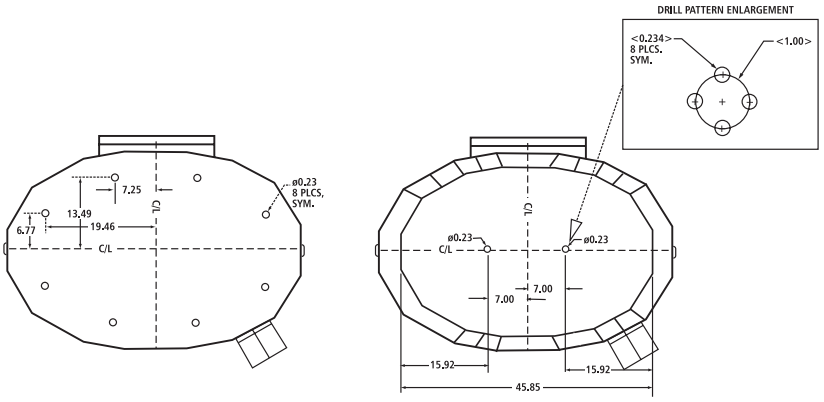


1 hole | 2 holes | 3 holes | 4 holes

Ventilation holes should be equally spaced and located approximately half the distance from the lid center to the inside chamber wall. Lid holes must be above the open firing chamber, not above the kiln wall.

Drill the holes using the drill bits provided. Drill your lid by hand, **OR**, if you firmly support the lid with a piece of wood, you can drill a clean hole with an electric drill. When you are finished, you should have the same number and size of holes in your kiln lid as you have in your floor, although their arrangement is different.





Vacuum out any brick dust that gets in your kiln from the drilling. If you have a refractory fiber lid or bottom, brush liquid hardener into and around the sides of the lid and floor holes to prevent dusting into the kiln and plenum/ motor assembly. You are now ready to install your AMACO® KilnVent.

Suspended Version Installation Instructions

This KilnVent is primarily designed to be used with box kilns not having a replaceable stand. The unit is tightly suspended on the bottom of the kiln using the hooks and springs provided. **NOTE: Current AMACO® box kilns are pre-drilled front and rear for attaching the spring hooks. If your kiln already has the holes, disregard the measuring and drilling instructions below.** See page 15 for parts list.

Preparing the Kiln

Be sure that your kiln has been prepared by drilling ventilation holes according to the directions in your KilnVent owners manual.

Installing the Rear Hooks (for spring)

- Mark two points, 3½" up from the bottom of the kiln and 4" right and left of the center of the kiln as shown in figure 1.
- Drill a hole in the metal using the smaller of the two drill bits provided (5/32")
- Attach two of the hooks using the sheet metal screws provided.

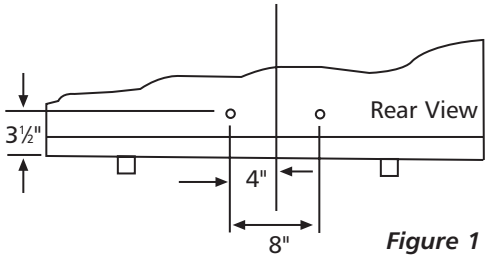


Figure 1

Installing the Front Hook (for spring)

- Mark a point that is 3 5/32" up from the bottom of the kiln and centered left to right.
- Drill a hole in the sheet metal using the small drill bit (5/32").
- Attach the remaining hook using the sheet metal screw provided.

Attaching the KilnVent

The KilnVent comes with a long spring (15") and a short (8") spring.

- Attach the short spring to the front of the metal plenum by hooking the open end of the spring into the small hole located at the bottom front. (See figure 2.)
- Place the KilnVent assembly under the kiln with the motor to the rear and facing up. Locate it so the angle on the plenum will rest up against the rear of the kiln. The fiber-glass gasket will be between the kiln and KilnVent. The gasket will provide a seal and minimize vibration of the kiln. Make sure the plenum is aligned so that the holes in the bottom of the kiln floor are over the opening in the KilnVent and gasket.
- Attach one end of the long (15") spring to one of the hooks. Holding the plenum up against the kiln, pull the spring under the plenum and attach it to the other hook (See figure 2).

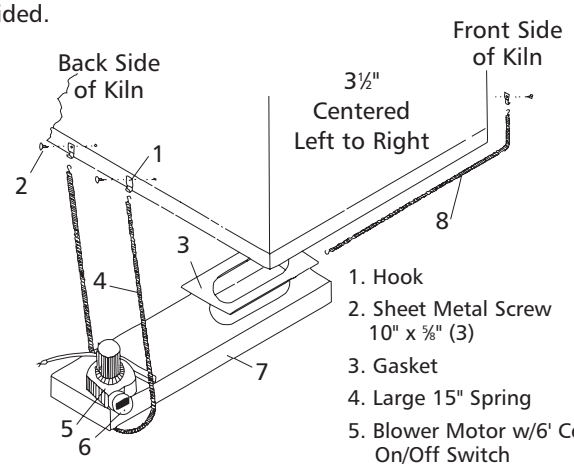


Figure 2

1. Hook
2. Sheet Metal Screw 10" x 3/8" (3)
3. Gasket
4. Large 15" Spring
5. Blower Motor w/6' Cord, On/Off Switch
6. Adapter Blower
7. Plenum Flat
8. Small 8" Spring

Completing the KilnVent Installation

- The front of the metal plenum should be under the kiln with the small (8") spring attached. If the spring is not attached to the metal plenum, do this now.
- Pull the spring and attach it to the hook on the front of the kiln.
- Adjust the metal plenum at the rear so that it rests flush with the back and bottom of the kiln.
- No gap should exist between the bottom of the kiln and the top of the metal plenum. It is important that the gasket around the plenum hole be flush against the kiln bottom. If it is not, then additional steps needed to be taken to seal this gap.
    1. If the gap is small (less than ¼"), purchase a small tube of silicone sealer from any hardware store and place a bead of this sealer on top of the gasket, around the hole. Re-install.
    2. If the gap is large, call AMACO®. We can provide an adapter kit which can seal up to 1½".

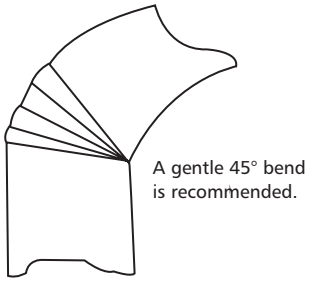
Installing the Flexible Ducting

Place the clamp over the 4" dryer ducting and install the ducting on the KilnVent at the end of the output tube. The ducting should go on the outside of the tube adapter.

Use the clamp provided to hold the ducting in place. You will need a screwdriver to tighten.

Install the dryer vent flap using the instructions provided by the manufacturer and with attention to your local and state codes and regulations.

Once the dryer flap vent is installed, carefully stretch the flexible aluminum ducting and clamp it to the flap vent tube. When stretching the ducting, avoid sharp 90° bends and do not twist or compress the ducting (see illustration). Seal any connections or punctures with silicone sealant or wrap with duct tape.



Ducting will go up to 16' before additional fan is needed. Run wire so same switch operates all fans.

Finishing Installation

Attach the Reminder Tag to your kiln on the switch box where it will always be seen before firing. Plug the KilnVent into a standard 120V outlet. Operate the switch to check out blower operation.

You are now ready for your first test firing. Refer to the kiln owner's manual or KilnVent for recommendations using the test cones provided.

Installation of Multiple Systems

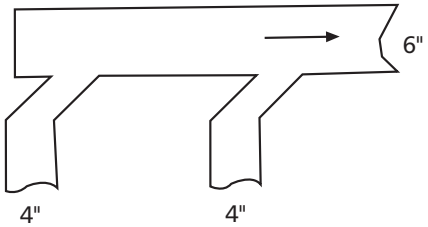
If you have more than one AMACO® KilnVent—Suspended Version, you can install them individually or connect each unit to a central duct to remove the gases. If a central duct is used, hook the individual vent ducts from the AMACO® KilnVent—Suspended Version to that central line.

For best air flow, a 45° elbow should be used. To determine what size of central duct to install, use the chart below. Two kiln ventilation systems can be vented to a single exhaust point using a "Y" adaptor. However, a damper should be installed in each duct line and left closed when that ventilation system is not in use. See illustrations below.

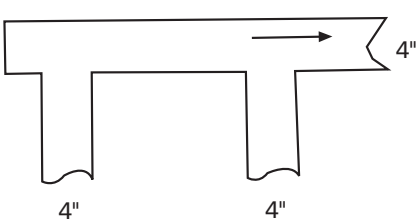
Central Duct Sizing

Number of AMACO® KilnVent—Suspended Versions	Recommended Size of Central Ducting
1	4"
2	6"
3	8"
4	8"
5	10"
6	10"

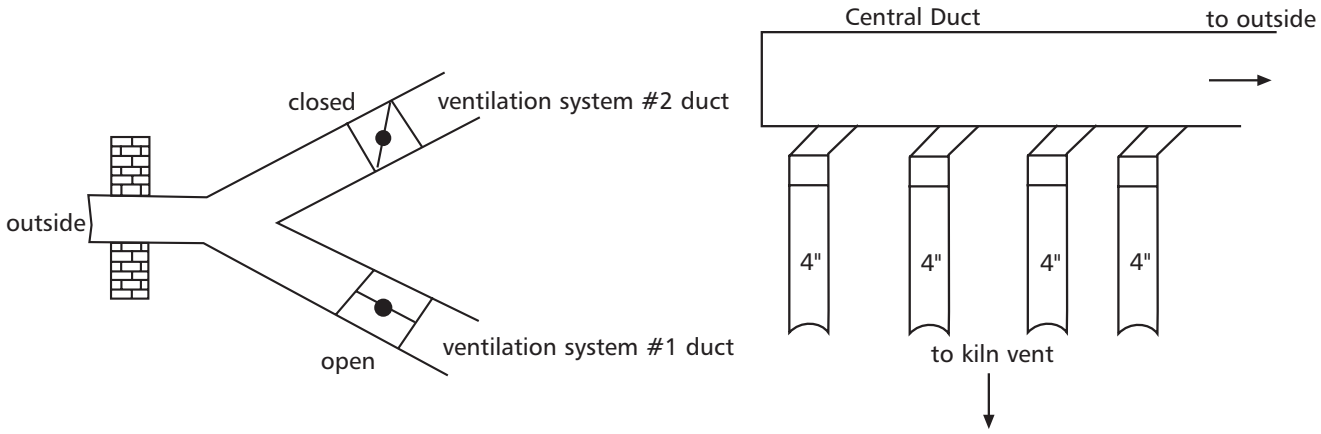
Good Installation



Poor Installation



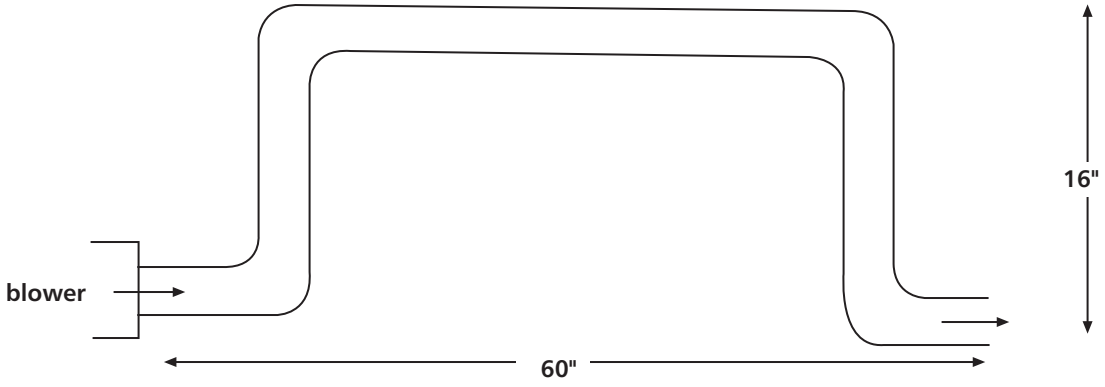
Preferred Method of Installation

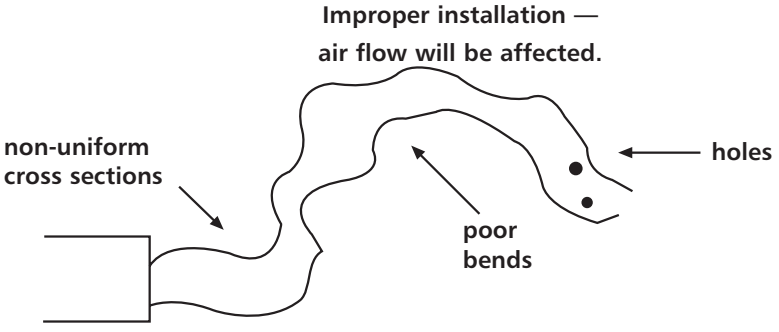


Length of Ducting

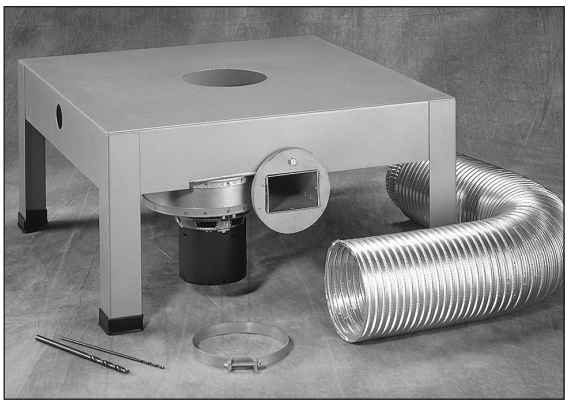
Up to 60 feet of ducting containing four 90˚ bends may be safely used with no drop in static air flow at the duct exhaust point or a reduction in draw at the kiln.

Tests show duct installation similar to below does not affect air flow.





Stand Version Installation Instructions



This version replaces the kiln stand. The kiln rests directly on the KilnVent plenum. If your kiln does not have a kiln stand, or it is too big to replace the kiln stand, contact AMACO® to determine if the Suspended Version is suitable for your kiln. See page 16 for parts list.

Preparing the Kiln

Be sure that your kiln has been prepared by drilling ventilation holes according to the directions given on pages 3-5.

Locating the Kiln

Carefully place your kiln on the AMACO® Kiln Vent plenum. Make sure the kiln is centered on the stand so that the holes in the bottom of the kiln floor are over the opening in the KilnVent. A wire (clothes hanger) can be used to test if the holes are properly aligned.

Installing the Flexible Ducting

Place the clamp over the 4" dryer ducting and install the ducting on the KilnVent at the end of the output tube. The ducting should go on the outside of the tube adapter.

Use the clamp provided to hold the ducting in place. You will need a screwdriver to secure it tightly.

Install the dryer vent flap using the instructions provided by the manufacturer and with attention to your local and state codes and regulations.

Once the dryer flap vent is installed, carefully stretch the flexible aluminum ducting and clamp it to the flap vent tube. When stretching the ducting, avoid sharp 90° bends and do not twist or compress the ducting (see illustration on page 7). Seal any connections or punctures with silicone sealant or wrap with duct tape.

Ducting will go up to 16' before additional fan is needed. Run wire so same switch operates all fans.

Finishing Installation

Attach the Reminder Tag to your kiln on the switch box where it will always be seen before firing. Plug the KilnVent into a standard 120V outlet. Operate the switch to check out blower operation. You are now ready for your first test firing. Refer to the Owner's Manual for recommendations using the test cones provided.

Installing the Master KilnVent

The Master KilnVent can be used for all AMACO® front and top loading square kilns or with the expansion kit to vent the EXCEL® EX-1850. It removes gasses from the kiln to the outside via flexible metal ducting. It can be mounted to both side, bottom or top of all AMACO® front loading kilns. or in the center or bottom of all AMACO® top loading kilns. For installation on round AMACO® EXCEL®kilns, call AMACO® Technical Services, (800) 374-1600.

A. High temperature hose with clamp
B. Blower/motor with 6' power cord
C. Collection cup
D. Adjustable height foot/coupling nut/wing nut
E. Gasket

Not shown—additional parts and tools required (not supplied with vent):
(4) #10 3/4" sheet metal screws
(4) #10 1" dry wall screws
4" Dia. flexible metal ducting (60' maximum)
6" or longer 1/4" diameter drill bit
(use 10" long, 1/4" diameter drill bit for AH-30)
Electric drill
Flat head screwdriver
Phillips head screwdriver
Vacuum cleaner

1. AMACO® kilns are pre-drilled to accept the Master KilnVent.

2. Place insulation piece provided in kit over connector cup and mount cup centered over hole configuration with 3/4" sheet metal screws. Screws will enter directly into metal outer shell of kiln.

3. Connect high temperature hose to connector cup using hose clamps provided, with flat head screwdriver.

4. Connect black high temperature hose to Master Kiln Vent motor/blower with hose clamps provided. **IMPORTANT:** Cover extra high temperature receptacle if not venting two kilns.

5. Master KilnVent motor can be mounted to the wall, stored in underside of kiln stand or placed on top of kiln.

6. If mounting Master KilnVent motor to wall, use 1" sheet rock or appropriate screws.

7. Attach 4" ducting to motor exhaust receptacle using hose clamps (not provided) and vent to outside source or existing ducting if under 60 feet. DO NOT have more than four 90° bends in ducting.

8. Vacuum any brick dust that was generated during drilling.

Note: While the AMACO® vents are key to creating safe work environments and better work, these systems will not reduce the kiln temperature or the ambient heat the kiln radiates into the room. The kiln room area must be adequately sized and exhausted to keep the space under 100°F during peak temperatures and at least 18 inches of clearance must exist around all sides of the kiln. Sprinkler systems in kiln area should be rated so that they will not trigger when the kiln is at peak temperature.

Operation

Fresh Make-up Air

During firing, you must have a source of fresh air to replace the air vented outdoors. The AMACO® KilnVent discharges approximately 60 cubic feet per minute. Unless you know that your room ventilation can handle this air loss, open a window or leave a door slightly ajar for make-up air.

Turn on the AMACO® Kiln Vent using the in-line on-off switch located on the power cord. Close the lid on your kiln, plug the peepholes, and fire as you normally would. You can open any peephole during firing to check the bending of cones and the progress of your firing, but it is not necessary to prop the lid or leave any peepholes open during the firing. If a peephole is left open, cool air will be drawn into the kiln and this may influence your fired results.

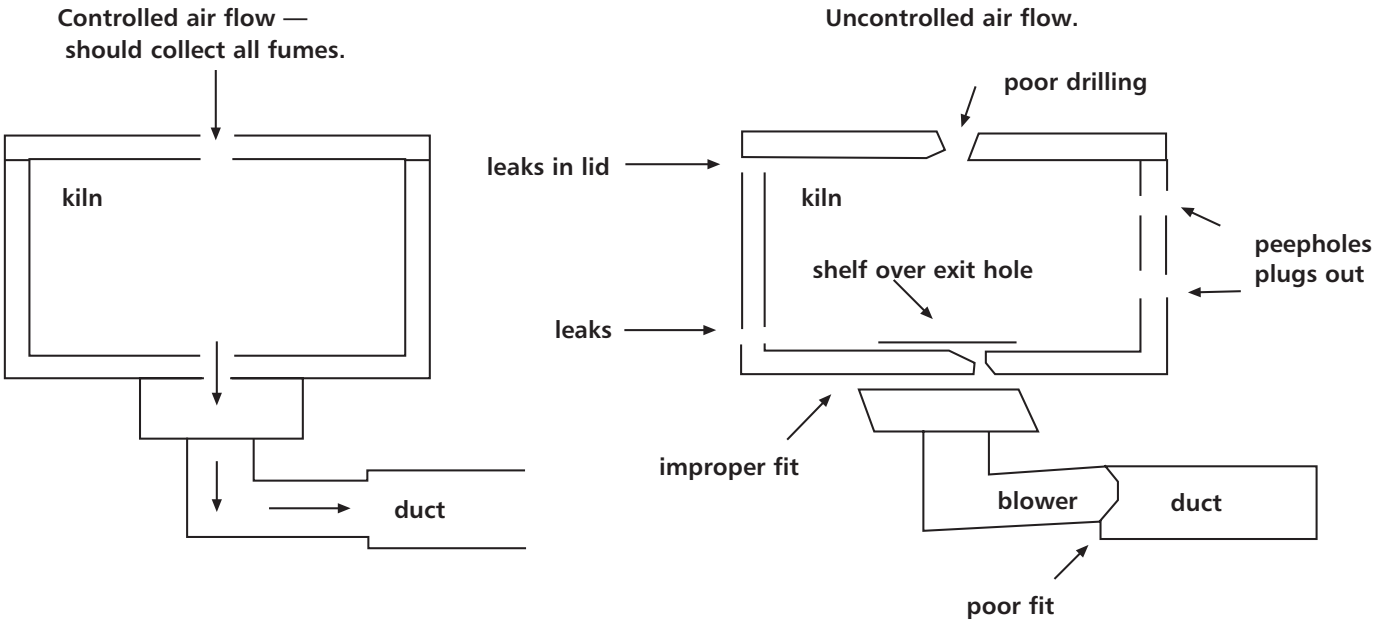
Fume Removal

The KilnVent pulls air into the kiln near or at the top, and then draws air out of the kiln near or at the bottom during firing. This method causes the air pressure in the kiln to be slightly lower than in the space outside of the kiln. As a result of this negative pressure, air will be pulled into the kiln through any hole or crack. This will remove essentially 100% of the fumes generated, providing:

- the system is installed properly for controlled air flow;
- the kiln is not excessively loaded with ware;
- heating rates are less than 350°C/hour for heavy loads; and,
- the kiln does not contain gaps, holes or large cracks allowing too much air to be pulled into the kiln.

Extensive test firings using the AMACO® vent method were done for bisque and glazed ware and no detectable odors were found. Reports from users firing lusters and other odorous products have been very positive, with responses expressing surprise that the ventilation system could eliminate these odors.

The design of the ventilation system includes a 50% safety factor to handle even more difficult problems.



Testing

To test the operation of the AMACO® KilnVent, place 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. Open the top peephole and repeat the test. If the flame is not pulled into the kiln, the kiln is not venting properly. See page 12, "Kiln Not Venting." This test should be done regularly to be sure that the KilnVent is operating correctly.

During Cooling

It is recommended that you leave the KilnVent switch in the **on** position during cooling. This will permit the kiln to cool more quickly and give you access to your ware sooner.

Loading and Firing The Kiln

Loading

For the bottom of the kiln, always use a full or two half shelves pushed tightly together and supported at least one inch off the kiln floor. This allows circulation of air to the floor holes. If you block the floor holes, venting cannot take place.

Place your ware as you normally would in the kiln and include Orton Self-Supporting Cones on each kiln shelf so you can monitor the progress of your firings. Cones measure "heat work" or the combined effects of time and temperature and help you know when your ware is properly fired.

For Additional Ventilation

Additional ventilation may be required when firing wax resist, clay bodies or glazes which have a high sulphur or organic content, or thick-walled bisque pieces (over ¼" thick); or when firing is done outside of the United States where 50 cycle electricity is supplied; or when the volume of the kiln is increased through the addition of wired or blank ring.

To insure proper ventilation, either provide additional ventilation or reduce the total load being fired. Insufficient ventilation can cause black or gray interiors in bisque, reduce element life, permanently alter some colors, and may alter the performance of iron or lead-containing cones. However, too much ventilation may decrease the heating uniformity of the kiln, so reducing the load is often the best solution.

If it is necessary to increase ventilation, drill additional hole(s) in **the kiln floor**. For smaller kilns, drill one additional small (5⁄32") hole. For medium kilns, drill two additional small (5⁄32") holes. For larger kilns, drill one additional large (15⁄64" drill) hole. Under no conditions should more than 6 large holes be drilled in the bottom of a kiln.

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 page 12, "Kiln Slow to Reach Temperature."

Firing Without the KilnVent

Should it ever be necessary to fire with the KilnVent turned off, it is recommended that you plug all holes in the kiln floor.

WARNING: Failure to plug holes could result in a fire if the KilnVent is removed and the kiln is placed over a combustible floor.

Maintenance

Just like your kiln, the AMACO® KilnVent requires periodic housekeeping to maintain it in good condition and insure proper operation. This is very important. Failure to provide proper maintenance could void your warranty and damage the KilnVent or your kiln.

IMPORTANT: You must keep your kiln floor clean and the holes unobstructed for the KilnVent to continue to operate properly.

Monthly

a. Unplug the KilnVent and your kiln.

b. Vacuum around the blower motor to remove accumulated dust and debris. Be sure to clean the motor surface nearest the floor.

Annually

a. Unplug the KilnVent and your kiln.

b. Remove the KilnVent and vacuum the fan blades and inside the plenum chamber.

c. Thoroughly vacuum the motor.

If you determine a hole needs to be closed, your hobby ceramic supplies dealer has firebrick patching materials or ceramic fiber. You can also make a paste of high temperature kiln wash. When making the repair, force the material into the hole from both sides of the hole. Allow to dry before firing.

Troubleshooting

Problem	Cause	Solution
Smell or odor coming from kiln	KilnVent leaking between blower and outside ducting	Seal all leaks around duct connections or seams with silicone sealant or duct tape, place a bead of silicone around plenum
	Too many holes and leaks in upper part of kiln	Plug or repair all cracks in kiln and plug smallest lid hole — test fire
	Fumes discharged outdoors are coming back into room	Locate make-up air source further from discharge exit or raise or extend exit vent or open ventilation port cover wider
	Kiln not venting	See “Kiln Not Venting” below
Kiln not venting	Shelf placed directly on kiln floor without posts	Support first shelf with posts at least 1" tall to permit circulation
	Lid holes drilled above kiln walls	Drill correct holes above firing chamber
	Floor holes not within 4½"	Drill correct holes, plug incorrect holes
	Plenum moved so floor holes blocked	Move kiln or plenum holes are aligned
	Exit ducting blocked, kinked or pinched	Open, straighten or repair exit ducting
	Flapper on dryer vent not opening	Replace flapper with easier operating one
	Exit ducting has too many bends or is too long	Reduce the number of bends and the duct length — avoid 90° bends
	Blower motor is not running	See “Blower Motor Does Not Run” below
Kiln slow to reach temperature	Too many holes or air leaks	Plug or repair cracks in the kiln, plug smallest hole, lid and floor, test fire or partially close ventilation port cover
	Heating elements have aged or other factors are affecting kiln not related to KilnVent	Check heating elements and if necessary have kiln repair person check kiln
“Cold” spot near top of kiln	Lid holes too close together	Plug lid holes and redrill at proper spacing
Blower motor does not run	Switch is turned off	Turn in-line switch on
	Not plugged in	Plug into 120V outlet
	Circuit breaker tripped or fuse blown	Check room electrical panel
	Motor or wiring burnt out	Replace motor

Troubleshooting (continued)

Problem	Cause	Solution
Bisque fires with black or gray interior	Insufficient venting	Increase ventilation (see page 11) or reduce size of load
Black particles of carbon when firing wax resist	Insufficient venting	Reduce amount of wax resist or increase ventilation (see page 11)
Heating elements pitted or metal appears discolored	Insufficient venting	Reduce organic or sulphur content in bodies or increase ventilation (see page 11)
Vibration of kiln	Kiln not level	Make sure gasket installed, check and level kiln

Service

When Service is Required

If your AMACO® KilnVent requires service, contact your AMACO® KilnVent supplier or American Art Clay Co., Inc. For information on warranty service, see warranty, back cover.

Questions and Answers

Q. How will using the AMACO® KilnVent affect my electric bill?

A. The effect is minimal. While there are many influencing factors (your power rate, premium charges, etc.), the typical cost of running the blower is about 1¢/hour.

Q. How will using the AMACO® KilnVent affect my firing time?

A. Because the AMACO® KilnVent helps you kiln cool faster, it will actually reduce the amount of time for each firing. You should be able to unload up to 5 hours sooner when using the AMACO® KilnVent. This means you can complete more firings — especially important during busy times.

Q. Can I still reach and maintain high temperatures with the AMACO® KilnVent?

A. When properly installed (correct number and placement of holes) the AMACO® KilnVent does not affect the maximum rated temperature of the kiln, although aging heating elements and other factors may influence this.

Q. How will a faster cool-down affect my ware?

A. Most of the important reactions have already occurred by the time your ware is cooling, so a quicker cool-down should have little, if any, effect. If a slower cool-down is desired, the KilnVent can be switched off for part or all of the cool-down.

Temperatures During Firing

Testing was done by Orton using an 8-sided, 22½" diameter, 6400 watt kiln to determine the temperatures experienced in and around a kiln heated to Cone 10 (2370°F) in a large open room and also in a confined area. Test results are summarized below.

	Highest Temperatures (°F)	
Location	Open Area	Confined Area
Kiln Lid	432	534
Exterior Surface	595	651
Kiln Lid Handle	286	354
6" from Peephole	203	311

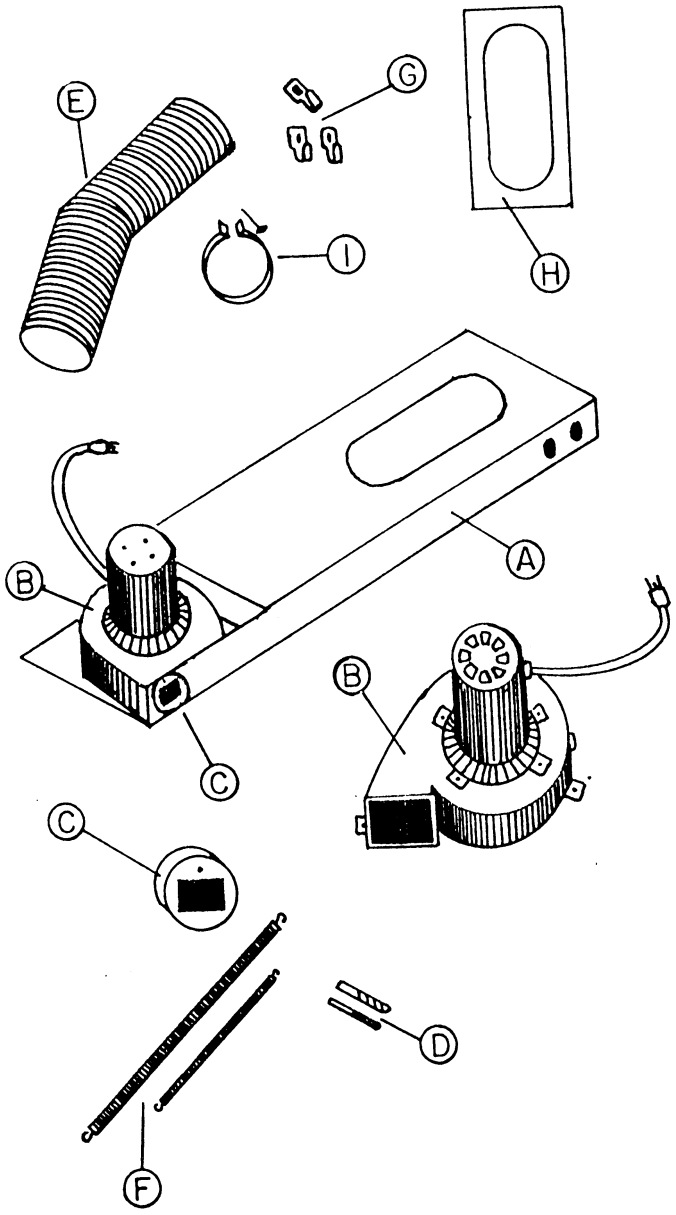
Testing of a similar kiln used with a KilnVent showed that in all cases, the temperatures are lower than those found on the surface of the kiln. Results show:

	Highest Temperatures (°F)	
Location	Blower On	Blower Off
Middle of Plenum	209	353
Duct Attachment	110	105
Exiting Air	156	101

Use the chart below to calculate the approximate air temperature at the blower discharge during firing. Example: if the room air is 100°F, a 10-sided kiln with three 15/64" holes would discharge air at about 215°F when heated to 2350°F (measured near the blower — cooling will occur in the aluminum duct).

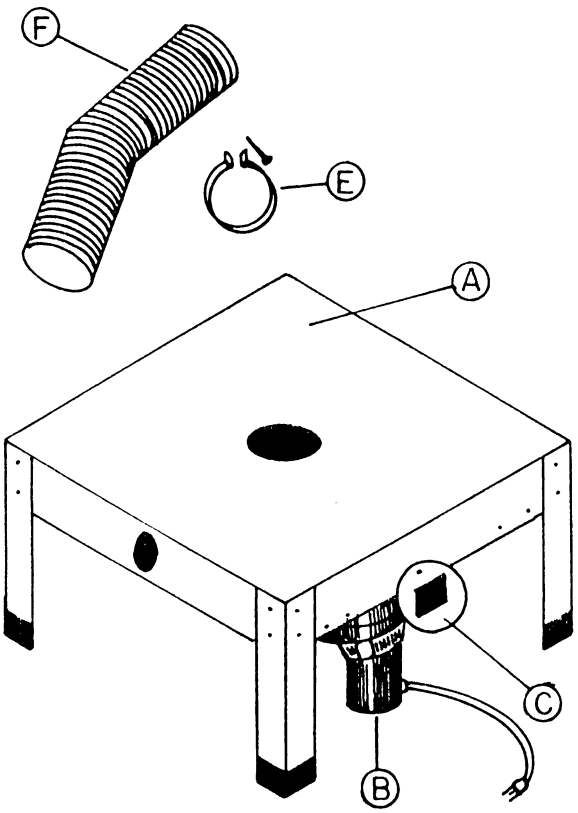
Number of holes in kiln floor		Approximate rise in air temperature at blower when temperature in kiln is:		
Large Drill	Small Drill	2350°F	2200°F	1900°F
1	0	38	36	31
1	1	56	52	45
2	0	76	71	61
2	1	94	88	75
3	0	115	107	92
3	1	133	124	106
4	0	153	143	122
4	1	171	159	137

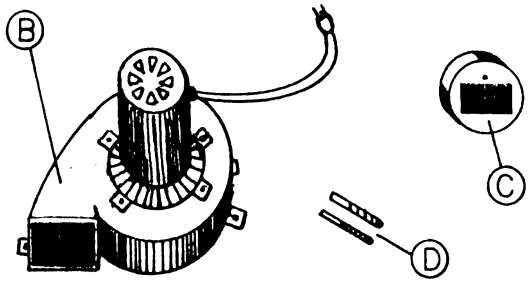
Suspended Version Parts Diagram



A	**Plenum Flat**
B	**Blower Motor with 6’ Cord, Off/On Switch**
C	**Adapter Blower**
D	**Drill Bits ¼" 6" Long ⅛" 6" Long**
E	**Duct—Flex Aluminum, 4" Diameter, 8' Long**
F	**Springs 8", 15" Long**
G	**Hooks f/Springs with 10" x ⅝" Screws**
H	**Gasket**
I	**Clamp Hose/4" Circular**

Stand Version Parts Diagram





A	**Plenum Stand**
B	**Blower Motor with 6' Cord, Off/On Switch**
C	**Adapter Blower**
D	**Drill Bits ⅛" 3" Long** **¼" 3" Long**
E	**Clamp Hose/4" Circular**
F	**Duct—4" Aluminum Flex 8'**

LIMITED WARRANTY

American Art Clay Co., Inc. warrants this KilnVent to be in good working order for a period of 2 years from the date of purchase from AMACO®. Should this product fail to be in good working order at any time during this 2 year period, AMACO® will, at its option, repair or replace this product as set forth below.

The liability of AMACO® is limited to replacement and/or repair of the KilnVent at its factory of any unit that does not remain in good working order, under normal operating conditions. Repair parts or replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of AMACO®.

Limited warranty service may be obtained by delivering the unit during the 2 year warranty period to your AMACO® KilnVent supplier or to **American Art Clay Co., Inc., 6060 Guion Road, Indianapolis, IN 46254**, and providing written proof of purchase and description of defect or problem. Buyer must insure the unit or assume the risk of loss or damage in transit, prepay shipping charges to the service location, and use the original shipping container or equivalent. Buyer will be invoiced for shipping and handling changes incurred in returning the unit after service.

Service may also be obtained on units no longer under warranty by returning unit prepaid to AMACO® with a description of the problem, and buyer's name, address and phone number. Upon request, buyer will be contacted with an estimate of the service charges before any work is performed.

All express and implied warranties for this product including the warranties of merchantability and fitness for a particular purpose are limited in duration to a period of 2 years from the date of purchase and no other warranty, whether expressed or implied, will apply after this period.

This warranty does not apply to any damage resulting from:

1. Overfiring (melting of materials being fired) regardless of the cause of the overfiring;
2. Operation beyond electrical rating;
3. External sources including chemicals, heat abuse and improper use;
4. Improper or inadequate maintenance by the user;
5. Parts or equipment not supplied by AMACO®;
6. Unauthorized modification or misuse;
7. Operation outside environmental specifications;
8. Improper installation;
9. Firing of kiln with AMACO® KilnVent installed but not operating during firing cycle.

Units returned for service where no defect is found will be subject to a service fee.

If this product is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above. Under no circumstances will AMACO® be liable for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use, such a product even if AMACO® has been advised of the possibility of such damages, or for any claim by any other party.

The above limitation of liability does not apply in the event that any AMACO® KilnVent is determined by a court of competent jurisdiction to be defective and to have directly caused bodily injury, death or property damage; provided that in no event shall AMACO®'s liability exceed the greater of $1000 or the purchase price of the specific product that caused such damage.

If you are not satisfied with the performance of the AMACO® KilnVent or the conditions of this limited warranty, return the AMACO® KilnVent in good working condition, transportation and insurance prepaid, within 30 days to your AMACO® KilnVent supplier or to **American Art Clay Co., Inc., 6060 Guion Road, Indianapolis, IN 46254-1222**, and your purchase price will be refunded.

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