

## Exhaust Systems

### Skutt EnviroVent 2

The EnviroVent 2 allows you to vent up to two 12 cubic foot kilns with one motor (with the optional expansion kit)! Extremely versatile, the new design allows the blower unit to be wall mounted, reducing its exposure to heat and eliminating the transfer of motor vibration to the kiln. A small amount of fresh air is continuously drawn through holes in the top of the kiln. Fumes are directly vented to the outdoors by negative pressure before they enter the studio or classroom atmosphere. This system gives cleaner colors, allowing mixed loads, and improves firing heat distribution and performance. It's great for firing lusters, metallics and high sulfur clays. This system can be fitted to virtually any popular multi-sided electric kiln. Weighs only 25 lbs. and is easy to install. Brochure available.

Skutt Envirovent ..... \$699.00  
Expansion Kit..... \$215.00



*EnviroVent 2 installed on large Skutt kiln*

With the Skutt Envirovent 2 exhaust system, a fan draws air through the kilns firing chamber and exhausts out a pipe to the outdoors. Your firing area stays cool and clear of any gases. Benefits include:

- cleaner room air
- improves firing heat distribution and performance
- out of the way, doesn't hamper loading
- easily installed, no wall brackets, hoods, or pulleys

### OrtonVent Master - special order

The Orton Vent Master is a universal vent and fits virtually any kiln. It is a downdraft vent, and you can mount the blower unit to either the floor or to the wall so that no vibration will be transferred to the kiln itself. An 'expansion kit' is available which will allow you to vent an additional kiln(or is required if you wish to vent any larger kilns which are 12-20 cubic feet in volume). This unit is very simple and versatile to install because it is height adjustable to fit inside of a variety of kiln stands.

Orton Vent Master ..... \$719.00  
Expansion kit ..... \$249.00

*Note: There are other venting systems available. If you are interested in any system not shown here, please inquire. Most are very similar to the two systems on this page.*



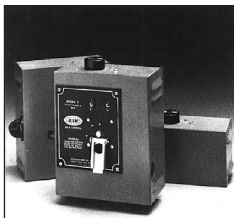
**Kiln parts: Stocked**

**Dawson Kiln Sitters, Timers, and Parts**

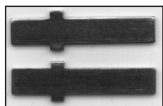
We stock most parts for Dawson Kiln Sitters and timers, but can't list them all here. Please send old parts for matching or select the correct part number from your Dawson instruction booklet. Please state the make and model of the kiln and wall thickness of the kiln when ordering sitter tube assemblies.

Model LT3-K kiln sitter w/timer (faceplate only, no box/tube). \$239.00  
 Box and baffle plate only for kiln sitter ..... \$57.25  
 Sitter tube assembly ..... \$82.39

Timer motor .....\$89.39  
 Sitter rods .....\$13.39  
 Firing claw .....\$9.25  
 Firing Guage .....\$4.25  
 Cone supports (pair).....\$13.39

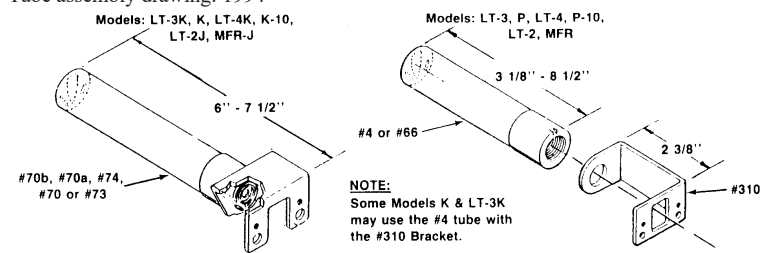


Firing guage

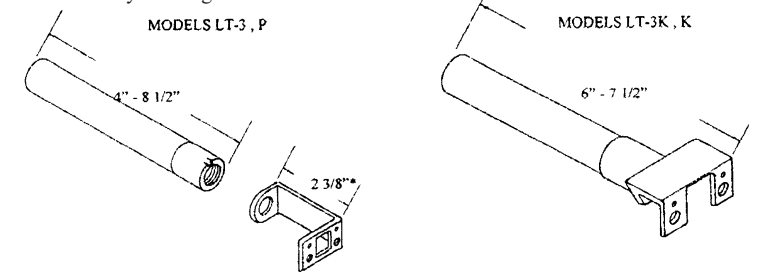


Cone supports

Tube assembly drawing: 1994



Tube assembly drawing: 2003



**Dawson Kiln sitter Parts**

**Stocked parts:**

1.....Firing gauge ..... \$4.25  
 2.....Cone supports (pair)..... \$13.39

Sensing Rods: (by wall thickness).....\$13.39 each  
 3A.....Sensing rod: 2.5"  
 3B.....Sensing rod: 3.0"  
 3C.....Sensing rod: 4.0"  
 3D.....Sensing rod: 4.5"  
 3E.....Sensing rod: 5.0"  
 3F.....Sensing rod: 5.5"  
 3G.....Sensing rod: 6.0"  
 3H.....Sensing rod: 7.0"  
 3I.....Sensing rod, #70 - (short)  
 3J.....Sensing rod, #70A - (long)  
 3K.....Sensing rod, #70B - (X-long)

Sitter Tube Assembly: (by wall thickness).....\$82.39 each  
 4A.....2.5"  
 4B.....3.0"  
 4C.....4.0"  
 4D.....4.5"  
 4E.....5.0"  
 4F.....5.5"  
 4G.....6.0"  
 4H.....7.0"  
 70.....Tube assembly (short)  
 70A.....Tube assembly (long)  
 70B.....Tube assembly (X-long)

16A.....Claw assembly (with #19) ..... \$9.25  
 40 & 42 ..Box & Baffle plate ..... \$57.25  
 67.....Motor (240v-60hz)..... \$89.39

**Misc Parts:**

5.....Gasket (#4 Tube gasket)..... \$5.35  
 15.....Plunger (50 amp)..... \$37.75  
 16B.....Guide plate ..... \$9.25  
 18.....Screw (6-32 x 1/4")..... \$0.50  
 24.....Washer (fiber, center post) ..... \$1.05  
 29.....Set screw (8-32 x 3/8") ..... \$1.50  
 34.....Screw (4-40 x 1/4) ..... \$0.95  
 37.....Screw (3/8" x #6)..... \$0.75  
 40.....Mounting Box (LT-3 or P) ..... \$35.95  
 42.....Baffle, Mounting box ..... \$21.50  
 43.....Spring ring (#5 washer) ..... \$4.50  
 68.....Spring grip (counter weight)..... \$1.65  
 80.....Screw (flat head / #70-#70B)..... \$0.95  
 95B.....Switch block (with #99,95A,15)..... \$85.25  
 96.....Contact (switch)..... \$8.50  
 99A.....Screw (10-32 x 1/2")..... \$1.50

**Miscellaneous Kiln parts:**

**Robertshaw switches:**

240 volt ..... \$56.79  
 120 volt ..... \$61.79  
 Knobs for infinite switches ..... \$7.95

**High Temperature Wire**

14 guage - 200°C .....\$2.65 per foot.  
 - used to connect element to switch.  
 - also used to connect switch to switch, interconnects, & sitter block.

**Kanthal wire**

Kanthal wire is typically used to make elements for electric kilns. 16 gauge wire is the most commonly used and is excellent for making element pins. Artists also use this wire in their kiln to help support or hang beads, jewelry and other pieces. Price is per foot of wire, please specify the number of feet at time of ordering.

16 gauge.....\$0.87

**Notes:**

16 guage wire has 160 feet per pound.

**Pyrometer Systems**

Pyrometer systems consist of three parts; the meter, the thermocouple and the connecting wire. All meters are basically the same. They measure a tiny amount of electrical voltage produced by the hot thermocouple and converts the minivolt reading to a heat reading. The thermocouple consists of two dis-similar wires welded together at one end (the hot end), and connected to a connector block at the cool end. We use two types of thermocouples: type K and type R. Your meter will indicate the one for which the instrument is designed.

The most popular is type K (chromel/alumel) which is used in the lower temperature units, cone 6 has always been considered the maximum reliable temperature for type K. You can get a reading above cone 6, but cannot depend upon it. Up to that temperature it is accurate and reliable. Type K must be protected by a protective porcelain sheath in a reducing atmosphere. In an electric kiln a sheath is not necessary.

Type R (platinum + 13% rhodium/platinum) is accurate and reliable to cone 14, but is very expensive. The thermocouple must also be protected from fumes, so it is sold in a protective sheath. It is also very fragile, so the sheath protects it from damage as well.

Thermocouples and meters must always be hooked together with proper pyrometer hookup wire of the correct length. NEVER use copper wire. The hookup wire is color coded.

The cool end of the thermocouple must always be kept cool, if you cannot hold the cool end in your bare hands, it is too hot and the reading can be off by as much as 25 degrees.

**ACI Analog Pyrometer Systems**

This reliable and inexpensive system utilizes a type K chromel-alumel thermocouple. Accurate to cone 6 but will give a temperature rise to cone 10. A protection tube is optional; not needed if you're firing in an electric kiln environment, but they are required if you're firing in a gas, wood, or salt kiln to help increase the life of your thermocouple.

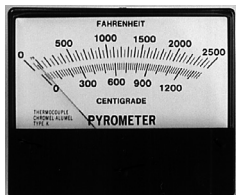
This system comes as a complete unit with a 6 foot cable, analog scale, and a choice of thermocouple length. The 8" thermocouple is the most common length, but 12" and 5" are also available. Please specify your preferred length when ordering. Scales are calibrated for the length of the cable, and varying the cable length greatly can change the reading.

Optional Items: A convenient wall-mounting bracket for the analog scale is available as well as optional porcelain protection tubes for your thermocouple (please see our note above about environments).

Complete Analog System, with scale..... \$137.00

**Replacement & Optional Parts for your Analog System:**

- (Optional) 12" Porcelain Protection Sheath..... \$39.95
- (Optional) Mounting Bracket..... \$19.85
- Replacement Analog Scale ..... \$99.00
- Thermocouple 12" - straight ..... \$38.95
- Thermocouple 8"- straight ..... \$38.95
- Thermocouple 5"- right angle ..... \$38.95
- Replacement 6 foot cable..... \$12.75
- Ceramic block for thermocouple ..... \$9.35



**Industrial Pyrometer System**

High quality system with type R platinum/rhodium thermocouple. Accurate to cone 10. (Comes with 12" thermocouple unit, connecting wire and digital scale.)

Complete System: ..... \$565.00

**Parts for Industrial Pyrometer System:**

- Digital Scale only (battery inc) .....\$265.00
- Replacement thermocouple unit .....\$319.00
- complete: includes sheath, element,cable, term. block & box
- Replacement element only: 12 inch, type R .....\$205.00
- Replacement cable ..... \$13.50
- Replacement 12" porcelain sheath only.....\$39.00
- Replacement Head, box for 12" T/C.....\$17.50
- Replacement terminal block (inside head).....\$5.50

**Skutt Digital Pyrometer Systems**

This system gives you the accuracy of a type K thermocouple, and the convenience of an "at a glance" digital display. In addition, it has the ability to accept a second thermocouple (purchased separately) which would allow you to monitor two separate zones in your kiln with one pyrometer system! With it's bonus ability to remember minimum and maximum temperature from your firing, this system has great functionality at a very reasonable price. Type K thermocouples are most accurate up to cone 6 but they will measure up to cone 10. A protection tube is optional; not needed if you're firing in an electric kiln environment, but they are required if you're firing in a gas, wood, or salt kiln to help increase the life of your thermocouple.

This system comes as a complete unit including a 5 foot cable, digital dual input scale, and a 7" thermocouple. Scales are calibrated for the length of the cable, and varying the cable length greatly can change the reading.

Complete Skutt Digital System, with scale..... \$198.49

**Replacement & Optional Parts for your Analog System:**

Replacement and optional parts (thermocouples and protection sheaths) for your digital system can be found to the left under the ACI Analog Pyrometer section.



### Orton Cones

Orton pyrometric cones have been the standard of the ceramic industry since 1896. Each cone number will melt (bend) at a known temperature, when heated at the rates per hour indicated on the temperature equivalent charts. Cone numbers can be confusing for the beginner. For example, Cone "06" is a lower temperature than Cone "6".

When ordering, please specify the complete number of the cone required. The lowest temperature cone we carry is Cone 020, and the highest is Cone 12. Low temperature cones have a "0" as the first digit. See the sidebar on this page for more information.

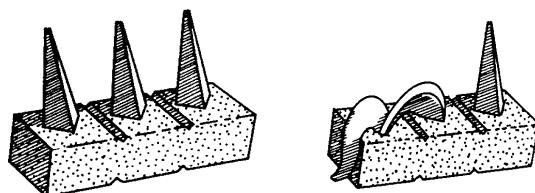
### Orton Cones - Small

Small cones are for use in a Dawson Kiln sitter. When the selected cone bends, it activates a trigger which turns the kiln off. The use of a kiln sitter does not eliminate the use of large cones, as they should be used as "witness" cones to measure temperature variations in the kiln and as a backup for the kiln sitter cone. 50 cones per box.

Small cones (box of 50).....\$13.35  
 Small cones, each.....\$0.50

### Orton Cones - Large

These large 2-1/2" cones are for use inside the kiln. Cones should be set in a cone plaque, then placed inside the kiln in a location where they can be seen through the peephole. Usually three cones are used, one for the intended temperature, one lower and one higher. When the tip of the firing cone touches the plaque, the kiln is to be turned off. 50 cones per box.



Large cones (box of 50) ..... \$19.25  
 Large cones, each ..... \$0.76  
 Cone plaques, clay ..... \$2.19  
 Self Supporting cones (box of 25) ..... \$14.75  
 Self Supporting cones, each ..... \$1.14

**NOTES:**

**Cones 020, 021, 022**

022, 021 and 020 are not available the large (standard) cone type, but they are available in small (junior) and self-supporting versions. Inquire for availability.

**Cone Plaques**

The use of clay cone plaques is recommended when using large cones. Using cone plaques assures that cones are positioned at the correct angle to obtain the most accurate indication of proper firing.

### Cone Numbers

We sell Orton cones from Cone 020 up to Cone 12. Cone 020 is the lowest melting cone and requires the least amount of heat to deform or bend. During firing, a cone softens and melts as it is heated. Cones used on the kiln shelf bend due to the effects of gravity pulling the tip down. This bending indicates the cone and the ware have received a specific amount of heat. It typically takes 15 to 22 minutes for cones to bend fully once they start bending. Each higher cone number requires more heat to bend. Originally, cone numbers started at 1 and went to 20. As demand for cones grew, both lower and higher cones were developed. A zero was added in the front of the number for the lower maturing cones. A cone 01 needs less heat treatment than cone 1 and cone 020 needs less than 019. It is important not to mix up the lower maturing cones, whose numbers begin with an "0", with the higher cones.

### Temperature Equivalents Large Cones

020.....	1180
019.....	1265
018.....	1337
017.....	1386
016.....	1443
015.....	1485
014.....	1528
013.....	1578
012.....	1587
011.....	1623
010.....	1641
09.....	1693
08.....	1751
07.....	1803
06.....	1830
05.....	1915
04.....	1940
03.....	2014
02.....	2048
01.....	2079
1.....	2109
2.....	2124
3.....	2134
4.....	2167
5.....	2185
6.....	2232
7.....	2264
8.....	2305
9.....	2336
10.....	2381
11.....	2399
12.....	2419

### Cones vs. Pyrometers

A pyrometer is simply a thermometer that measures extremely high temperatures. A pyrometric cone, on the other hand, has a number which corresponds to a heating rate/temperature combination which produces a cone deformation.. It is the application of **heat over time**, called **heatwork**, that makes a cone bend when your kiln reaches the desired firing temperature. For example, if you were to bring your kiln up to 2300°F over a period of 48 hours, a cone rated at Cone 8 would melt into a puddle. Similarly, if you were in a hurry and brought your kiln up to 2300°F in just an hour, that same cone would not melt. However, if you brought your kiln to 2300°F at the proper rate, your cone would work properly and would bend as the kiln approached temperature.

*Note that the temperatures indicated above are approximate, and for reference only. These temperatures are for large cones, at an increase of 270° F per hour. A slower or faster temperature increase per hour will affect the actual temperature reached. Also note that temperature equivalents for small cones will be slightly different.*

*In addition to the rate of increase, kiln atmosphere also affects the maturing of ceramic materials, including cones. The results you get in an electric kiln may be somewhat different from the results you would get in a gas fired kiln.*

### Kiln Safety Glasses

Safety glasses for viewing cones in a kiln. Makes it easier to see the cones and also protects your eyes from infra-red. Long term infra-red exposure to your eyes can damage your color vision.

Kiln glasses ..... \$36.59





# TEMPERATURE EQUIVALENTS FOR ORTON STANDARD PYROMETRIC CONES

AS DETERMINED AT THE NATIONAL BUREAU OF STANDARDS

CONE NUMBER	LARGE CONES				CONE NUMBER	SMALL CONES	
	160°C	108°F	150°C	270°F		300°C	540°F
022	585°C.	1085°F.	600°C.	1112°F.	022	630°C.*	1165°F.*
021	602	1116	614	1137	021	643	1189
020	625	1157	635	1175	020	666	1231
019	668	1234	683	1261	019	723	1333
018	696	1285	717	1323	018	752	1386
017	727	1341	747	1377	017	784	1443
016	764	1407	792	1458.	016	825	1517
015	790	1454	804	1479	015	843	1549
014	834	1533	838	1540	014	870*	1596
013	869	1596	852	1566	013	880*	1615
012	866	1591	884	1623	012	900*	1650
011	886	1627	894	1641	011	915*	1680
†010	887	1629	894	1641	†010	919	1686
09	915	1679	923	1693	09	955	1751
08	945	1733	955	1751	08	983	1801
07	973	1783	984	1803	07	1008	1846
06	991	1816	999	1830	06	1023	1873
05	1031	1888	1046	1915	05	1062	1944
04	1050	1922	1060	1940	04	1098	2008
03	1086	1987	1101	2014	03	1131	2068
02	1101	2014	1120	2048	02	1148	2098
01	1117	2043	1137	2079	01	1178	2152
1	1136	2077	1154	2109	1	1179	2154
2	1142	2088	1162	2124	2	1179	2154
3	1152	2106	1168	2134	3	1196	2185
4	1168	2134	1186	2167	4	1209	2208
5	1177	2151	1196	2185	5	1221	2230
6	1201	2194	1222	2232	6	1255	2291
7	1215	2219	1240	2264	7	1264	2307
8	1236	2257	1263	2305	8	1300	2372
9	1260	2300	1280	2336	9	1317	2403
10	1285	2345	1305	2381	10	1330	2426
11	1294	2361	1315	2399	11	1336	2437
12	1306	2383	1326	2419	12	1355	2471
<b>P. C. E. CONES</b>							
150°C				270°F			
12	1306°C.	2383°F.	1326°C.	2419°F.	12	1337°C.	2439°F.
13	1321	2410	1346	2455	13	1349	2460
14	1388	2530	1366	2491	14	1398	2548
15	1424	2595	1431	2608	15	1430	2606
16	1455	2651	1473	2683	16	1491	2716
17	1477	2691	1485	2705	17	1512	2754
18	1500	2732	1506	2743	18	1522	2772
19	1520	2768	1528	2782	19	1541	2806
20	1542	2808	1549	2820	20	1564	2847
23	1586	2887	1590				
26	1589	2892	1605				