Questions and Troubleshooting

How can I correct a value that's been incorrectly typed before pressing Enter?

Clear the display by pressing all zeros, then enter the correct digits for the step you are programming. A cone number incorrectly entered is not corrected this way. After pressing **0000** and **Enter**, the screen will again ask for a cone number. Enter the correct cone number and continue entering other data. Press **Cone Fire**. Enter the correct cone value and press **Enter** for all other questions. Press **Start** when you are satisfied that all values are correct. See pages 19-22 for detailed instructions.

How can I change only one value for a complicated Ramp/Hold firing profile without reentering the whole program?

Use the method for entering a new program, but press **Enter** for every value that will remain the same. Make a change in the value that is incorrect, then continue. See pages 23-25 for detailed instructions.

How can I change the firing profile during the firing process?

Press the **Stop** key. This will stop the firing. Use either the Cone Fire mode or Ramp/Hold mode to input the new firing profile for the remaining portion of the firing. Press **Start** to resume the firing. The controller will automatically determine where to enter the program (based on the current internal temperature) to proceed with the firing. See pages 19-22 for detailed instructions.

How can I fire my kiln with preprogrammed instructions for a certain cone number?

Set the kiln in Cone Fire mode where the only entries are cone number, firing speed and hold time.

How will I know the temperature a given Cone will fire to?

Proper heat work is a factor of both time and temperature. Using visual cones is the most accurate way to ensure proper firing. The built-in Cone Table gives firing temperatures based on optimum firing conditions. According to Orton's information, a Cone 04 with a heating rate of 80½ F will produce a final temperature of 1935½ F when fired in Slow Mode. A heating rate of 200½ F will produce a final temperature of 1954½ F firing in Fast Mode. As mentioned earlier, firing at a slower rate usually results in ware with fewer problems.

Kiln Problems

The kiln shuts off too early.

The kiln can be restarted if the cones on the shelf indicate an under-fired load. (This should be used only if you were present when the kiln fired off.) The cones are no longer accurate if they have cooled much from the time of shut off. To restart follow these steps.

1. Press **Cone Fire** or **Ramp/Hold** to view the firing just completed.
2. Press **Enter** to accept any of the segments that are correct until the point where the cone number or final firing temperature is requested.
3. Program in a hotter cone or higher firing temperature. You could also add a few minutes of hold time at the final firing temperature.
4. Press **Start** after the reprogramming is complete. The kiln will begin firing based on current temperature and will fire to completion using the newly programmed data.

Helpful hint: If the firing is just slightly underfired, program 5 minutes of hold time at the final firing temperature. This will allow the sections of the kiln that are somewhat cooler to catch up to the hotter sections.

The kiln says CPLt but the kiln won't cool off.

Check to see if elements are still glowing inside the kiln. This may indicate that a relay has stuck and needs to be replaced. Unplug the kiln and contact your distributor for further information.

At night I see a blue flash coming out of the control box when it clicks. Is it serious?

The flash occurs when the contacts open causing a small arc. This is a normal occurrence and should not be a concern.

I pressed a cone number but the new cone number is not displayed.

After entering new values for any step in programming, it is necessary to press **Enter.**

I programmed a Ramp/Hold profile and when I pressed Start, the alarm sounded.

Review the program to insure that all segments of the profile have a value entered. Also, check the alarm to see if a value has been entered that is lower than the room temperature. The default setting for the alarm is 9999.

The kiln is plugged in, but there is nothing on the display.

First check your circuit breaker to ensure it has not tripped. If the circuit breaker is okay, check the fuse. The fuse is located on the bottom of the KM-1 Controller and on the lower left side of the kiln mounted controller. Turn the knob a quarter turn counter-clockwise to remove the fuse. Check the fuse wire, and if broken, replace the fuse. If the fuse is smokey, replace it. After the fuse is replaced, if the new fuse blows, check for other possible causes. A blown fuse may be caused by a short in the circuit or a power surge.

(More overleaf.)

Some segments of the display are dimmer than others.

When a few segments of the LED-display become dimmer than the others, the problem may be the result of age, indicating the circuit board may soon fail. Another possible cause is exposure of the controller to high heat. This situation needs attention. Do not use the kiln when this problem is present. Contact your distributor.

The thermocouple is flaking.

Flaking is normal with Type K thermocouples, especially when high fired. Use a soft bristle toothbrush to remove the flakes and vacuum them from the kiln so they do not attach to your ware. Remove the thermocouple element periodically and check it for thinning.

The end firing temperature is different now than when I first got my kiln and the results do not seem quite right. What should I do?

After about 50 Cone 6 firings, or 150 Cone 04 firings, it is necessary to replace the thermocouple element. When the temperature seems to drift, it is an indication that the thermocouple is become thinner and wearing out. Another possibility is a cone correlation difference. Fine tuning of firing temperatures is available. Call the Skutt factory for instructions.

WARE IMPERFECTIONS

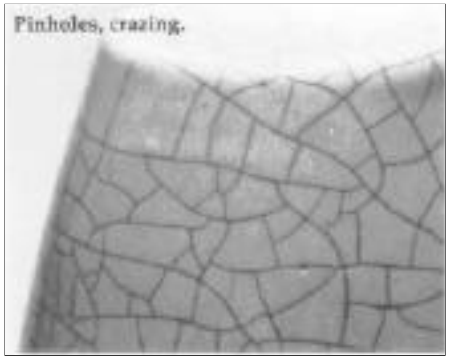
Common glaze faults

Crawled glaze. In "crawling", blank or bald spots appear in the glaze surface after firing. Crawling may be caused by having a dusty or dirty bisque surface, or applying the glaze heavily. Skin oils from excessive handling of greenware may clog clay pores, causing the glaze to be repelled. Hard spots in the clay surface created by excessive sponging or polishing of the greenware is also a cause. To salvage such a piece, apply additional glaze to the bare spot and refire, or cover the entire piece with a textured glaze and refire.


Crawling glaze.

Cratered or bubbled glaze. In this glaze error, the craters develop as a result of body gases erupting through the glaze and "freezing" as the kiln cools. This condition is caused by underfiring. To salvage such a piece, grind down the high spots, apply a thin coating of glaze and refire to a higher temperature.

Pinholes. Pinholes are tiny indentations in the glaze surface which are generally no larger than the point of a pin. This fault may occur in almost any type of glaze, and is caused by underfiring. To salvage a piece, refire at a higher temperature.


Pinholes, crazing.

Sagging glaze on a vertical surface. Sagging or running glaze is generally caused by too heavy an application of glaze. It is a warning sign that too much glaze is being applied. Take extra care with similar pieces.


Excess glaze.

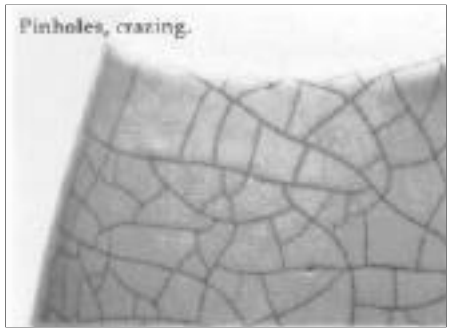
Excessive application of glaze. The example shown demonstrates the type of surface which can result from too heavy an application of glaze. This error is difficult to salvage, so remember to apply less glaze in the future. In general glaze should be the thickness of a postcard when applied. Allowing the glaze to dry thoroughly between coats will assist in identifying the amount of glaze that has been applied.

Excess glaze.

Discolored overglazes. Underfiring occasionally leaves small pin holes or pores in the glaze that can't be seen without a magnifying glass. If there is poor ventilation in the kiln, china paint oils may seep into these pores and burn to charcoal, seriously affecting the color of the finished piece. You can sometimes repair the damage by soaking the piece for several hours at a low red heat about $1200^0F/650^0C$, cooling and inspecting to be certain that all the carbon has been oxidized, and then giving the piece a true glaze firing.

Cracks in the body. When a crack occurs in the body, examine the glaze at the edge of the crack. If the glaze is inside the crack or rounded over the corners, the break occurred early in the glaze firing, and was probably present in the clay body before the piece was glaze fired. In some instances a sound appearing piece of ware will crack during a glaze or overglaze firing. This can be caused by an excess of water used in the original clean-up of the greenware. Too much moisture applied to an area of greenware causes that area to expand while the dry or slightly damp areas have already gone through normal shrinkage. Even if a piece of dry, cleaned greenware shows no visible cracks, it is possible an internal stress is there. This crack can open up during later firings. If the glaze at the edge of the crack is sharp, the break developed after the glaze was fired. This type of crack is usually due to opening the kiln door or peepholes while the ware is still hot.

Crazing. Crazing is characterized by a network of fine cracks in the glaze surface. It may be caused by underfiring bisque, clay or glaze, incompatible clay and glaze, or by opening the kiln door before the ware is completely cooled. Crazing might be eliminated by refiring the piece to a temperature one cone higher than the original firing.



Pinholes, crazing.

Delayed or aftercrazing. Crazing may also occur days or months after the piece has been fired. Although the finish may look perfect when it is first removed from the kiln, crazing may occur. While underfiring may not be the direct cause of immediate crazing, it is the major cause of delayed crazing. To correct it, refire the piece to the cone recommended by the manufacturer of the glaze. Allow the kiln to cool naturally.

Shiny matte surface. A matte glaze which becomes glossy in the glaze firing is generally caused by overfiring. It is extremely difficult to correct. Remember to fire to a lower temperature in the future.

Textured glazes, smoothed. A textured glaze is formulated to develop an irregular surface when fired. If it fails to do so, it is generally due to too light an application of glaze. It is extremely difficult to correct this condition. Reglazing and refiring rarely will help.

Cloudy or discolored glazes. This condition is characterized by a muddy or discolored appearance in the fired glaze. It may be caused by using dirty or contaminated brushes, by not leaving enough space between the glazed pieces during firing so chemical fumes jump from one glaze to another, or by placing the piece too close to the kiln elements. It is extremely difficult to correct.

Grainy glaze. Uneven or irregular color in the glaze surface is generally caused by too thin an application of glaze. To correct, apply a coat of glaze, then refire.

Gray or discolored red glazes. Gray wash out, or black areas in the red glaze may be caused by too thin an application of glaze, the red glaze being fired with colors which it is incompatible, (generally yellows and greens) or firing too hot. This may also be the result of too little oxygen present during the firing. Cone 07 to 06 is usually the best range for red glazes. To salvage, apply a heavy coat of glaze and refire. Use of the Skutt EnviroVent is another way to eliminate these problems.

Underglaze peeling. Underglaze may pull away from the clay body. This may be caused by too heavy an application, or not firing the underglaze before applying glaze. It is extremely difficult to correct this error.

This section on glaze faults prepared in collaboration with Martin L. LaVor who assisted with information and illustrations.