

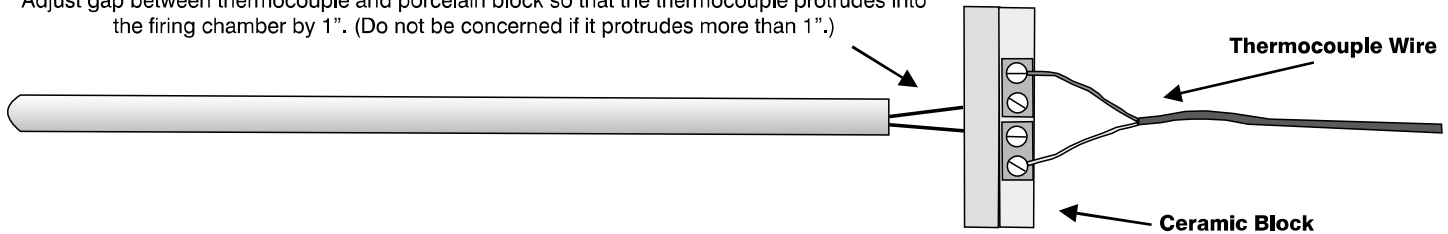


# Paragon Industries, Inc.

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# Installing the 1/4" Diameter Thermocouple

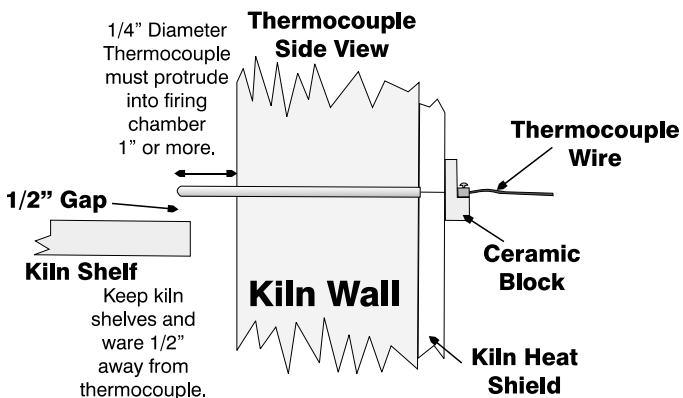
Adjust gap between thermocouple and porcelain block so that the thermocouple protrudes into the firing chamber by 1". (Do not be concerned if it protrudes more than 1".)



## Important Guidelines

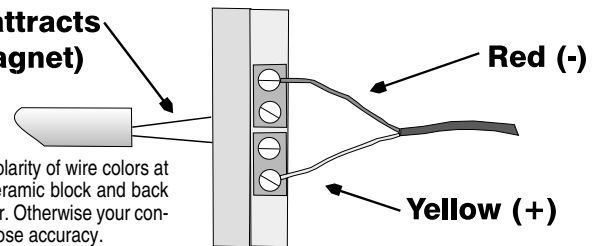
The 1/4" diameter thermocouple replaces the 1/8" diameter thermocouple and the old-style thermocouple that used ceramic insulators.

- 1** Do NOT cut or bend the thermocouple.
- 2** Keep thermocouple wires completely out of the firing chamber. Only the thermocouple tip should be inserted into a firing chamber hole.
- 3** The thermocouple wires must not touch the hot kiln case. The thermocouple itself must not touch anything metallic during operation.
- 4** Even though they are protected by insulation, thermocouple wires are sensitive to electromagnetic interference. Inside the kiln switch box, position the thermocouple wires away from other wires. Never let a thermocouple wire wrap around other wires.
- 5** The yellow and red thermocouple wires must be attached to the correct terminals on the controller. Make a note of color coding when removing the old wires.
- 6** Be sure the thermocouple wire ends are separated where the insulation has been stripped. If bare ends touch, the thermocouple will not work properly.
- 7** The 1/4" diameter thermocouple must protrude 1" or more into the firing chamber.



- 8** The thermocouple wires must be connected properly or you will get inaccurate readings. If your controller gives an error message that thermocouple wires are reversed, remove the switch box.

**Red (the side that attracts a magnet)**

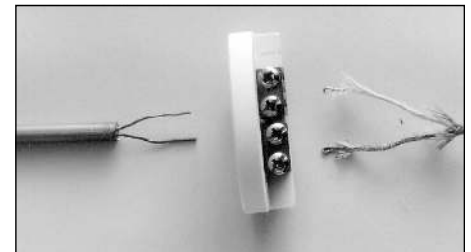


Make a visual inspection of the thermocouple connections on the ceramic block and back of the controller.

## Assembling the Thermocouple

If your thermocouple is already assembled, skip this section.

- 1** You will find four screw connectors on the ceramic block. Turn the ceramic block so the screws are away from the thermocouple. Insert the wires from the thermocouple into the two center screws. The red wire goes into the side marked "-" on the ceramic block. Do not tighten the screws yet.
- 2** Included with a new thermocouple is a length of double wire. Remove 2" of outer insulation from one end of the wire. Remove 1/2" of insulation from the two exposed wires. Fold 1/4" of the end of each wire to form a double-thick end. (See photo above.)
- 3** Insert the wires into the ceramic block outer screw holes. Insert the red wire on the side marked "-". Tighten the two screws securely. But don't tighten the screws from step 1 until after adjusting the thermocouple length for your kiln.

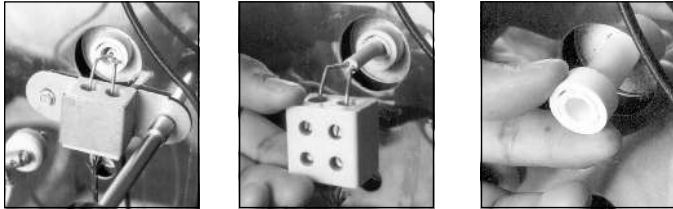


1. Thermocouple screws must be tight. Observe wire color coding. The wire on the thermocouple that attracts magnet is the red side.

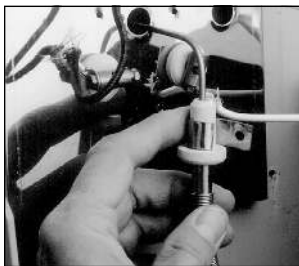
## Replacing an Old-Style Thermocouple

**1** Read Important Guidelines. Then UNPLUG/disconnect the kiln from the power.

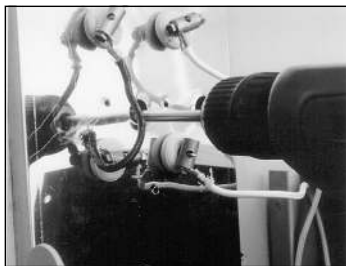
**2** Remove the screws on the sides of the switch box that hold it to the kiln. Gently lift the box away from the kiln. Prop the switch box, if necessary, to prevent straining the wires attached to the elements.



2, 3, 4. Removing old-style thermocouple and ceramic protection tube.



5. Removing old-style bent thermocouple.



6. If the thermocouple hole is 1/8", redrill the hole using a 1/4" bit.

**3** Remove the screw(s) from the thermocouple block hold-down bracket, which holds the thermocouple in place. Pull thermocouple from its firebrick hole. If your kiln has a thermocouple protection tube, remove it also.

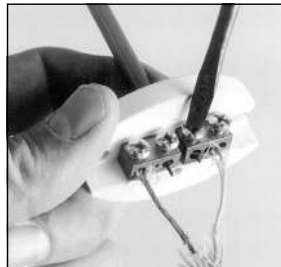
**4** Slide the new thermocouple into the thermocouple hole all the way. If the hole is 1/8" in diameter, enlarge the hole. Use an electric drill with 1/4" bit. If the hole is 1/2", you will need to stuff ceramic fiber around the thermocouple. See step 8.

**5** The thermocouple should protrude into the firing chamber 1" or more. To adjust the thermocouple length, change the gap between the thermocouple and ceramic block. Then securely tighten the four screws in the ceramic block.

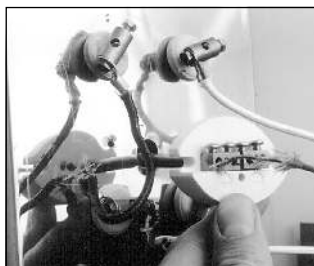
**6** Slide the thermocouple all the way into its hole. If element connectors are near by, turn the ceramic block so that it is away from the element connectors.

**7** The ceramic block is held in place with two screws. Make a mark on the kiln's heat shield where those screws will go. Remove the thermocouple again. Drill 1/8" screw holes.

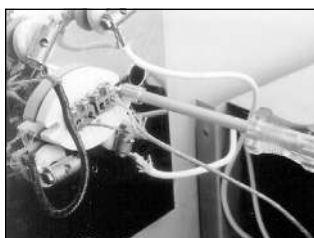
**8** Slide the thermocouple into its hole again. Fasten the ceramic



7. Before fastening the thermocouple connecting block to the kiln, tighten all four screws.



8. Slide the thermocouple into the hole in the kiln.



9. Fastening connector block to the heat shield.

block in place with the two screws supplied with the new thermocouple. If the thermocouple hole is 1/2" in diameter, reach into the firing chamber and stuff ceramic fiber into the hole around the thermocouple. Fiber is available from Paragon.

**9** Remove the controller faceplate from the front of the switch box. Remove the old thermocouple wires attached to the back of the controller.

**10** Attach the new thermocouple lead wires to the correct controller terminals being careful not to twist the terminal block as you turn the screwdriver. Reinstall the faceplate to the switch box.

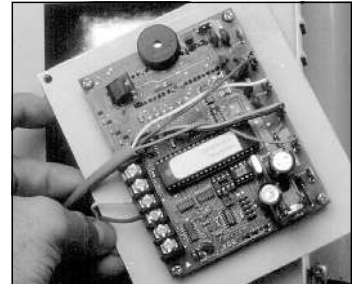
**11** Position the thermocouple lead wires so they are away from the hot sides of the kiln case and electrical wiring.

(Placing thermocouple wires next to or looped around other wires could cause erratic controller readings.)

**12** Check that no wires or wire nuts touch the kiln case or element connectors. Wires touching element connectors or kiln case will burn. Reinstall switch box.



10. If the thermocouple hole is 1/2", stuff ceramic fiber around the thermocouple.



11. Remove the faceplate to connect thermocouple wires to the controller.

## Replacing a New Style 1/4" Diameter Thermocouple

**1** Read Important Guidelines. Then UNPLUG/disconnect the kiln from the power.

**2** Remove the screws on the sides of the switch box that hold it to the kiln. Gently lift the box away from the kiln. Prop the switch box, if necessary, to prevent straining the wires attached to the elements.

**3** Remove the two screws securing the thermocouple ceramic block. Pull thermocouple from its firebrick hole.

**4** Slide the new thermocouple into the thermocouple hole all the way.

**5** The thermocouple should protrude into the firing chamber 1" or more. To adjust the thermocouple length, change the gap between the thermocouple and ceramic block. Then securely tighten the four screws in the ceramic block. (See photo 7, left.)

**6** Slide the thermocouple all the way into its hole. Fasten the ceramic block to the heat shield with the two screws supplied with the new thermocouple. (See photos 8 & 9, left.)

**7** Remove the controller faceplate from the front of the switch box. Remove the old thermocouple wires attached to the back of the controller. (See photo 11, above.)

**8** Attach the new thermocouple lead wires to the correct controller terminals. Reinstall the faceplate to the switch box.

**9** Position the thermocouple lead wires so they are away from the hot sides of the kiln case and electrical wiring. (Placing thermocouple wires next to or looped around other wires could cause erratic controller readings.)

**10** Check that no wires or wire nuts touch the kiln case or element connectors. Wires touching element connectors or kiln case will burn. Reinstall switch box.