

LT246X1

OPERATING INSTRUCTIONS

and

PARTS LIST

for

NOVA CONTROL UNIT

WITH PYROMETER

Model CP-21024

Series 246

100 Volt

Model CP-21025

Series 246

120 Volt

Model CP-21020

Series 246

240 Volt

Your Stepless Input Controller is for operation on alternating current only, and one voltage only. Check the specifications on the dial plate for the proper power supply.

CAUTION: Handle this instrument with care . . . dropping it or a hard blow may injure the indicator or the control mechanism. Connect your controller only to loads of the proper voltage, and not exceeding the amperage rating specified.

WARNING!! THE CONTROLLER DOES NOT INCLUDE AN AUTOMATIC SHUT-OFF BUT INSTEAD HOLDS CHAMBER TEMPERATURE AT WHATEVER LEVEL THE OPERATOR SETS THE CONTROL.

This control operates by rhythmically making and breaking the circuit to the kiln so that for any given setting of the knob, the average power input remains constant. The control will compensate for voltage fluctuations of + or - 10% of the rated voltage.

The dial markings are reference markings only and **DO NOT** correspond to any specific temperature. Depending on the setting of the control, plus the load within the kiln, will determine the temperature the kiln will reach at any one setting. For ease in operating your new control, a chart is provided which gives reference setting with corresponding kiln temperatures.

NOTE: Because of slight variations in controls, loads placed in the kiln and line voltages throughout the country, slight variations from the chart could occur.

OPERATION: When the control knob is set at the "LOW" position, the heating elements of the kiln draw current only a small portion of the time and the lowest possible temperature will be maintained. When set at the "HI" position, the heating elements draw current all of the time and the kiln will heat rapidly to its maximum temperature.

NOTE: Caution should be exercised when the setting of "HI" is used because at this setting the control is full on and does not regulate the input. The operator should observe the temperature indicator so that overfiring does not occur. Readjust the control to the lower setting desired at about 150°F before desired temperature.

Intermediate settings will result in corresponding intermediate temperatures. Normally, for fast heatup the knob is set at a high or the "HI" position and as the temperature approaches the desired point the knob is turned back so that the temperature will level off and

hold where it is wanted. After a little experience, the operator will be able to "spot" the knob positions for temperatures he frequently uses and he may even want to make a note of them or mark them on the control knob itself.

NOTE: The white neon pilot light glows continually when the control unit is plugged into a wall outlet and the control knob is not in the "OFF" position. The red neon pilot light turns on and off as power is applied to the kiln.

NOTE: To operate, plug each NOVA kiln section, or China Painter Kiln, into the receptacle at the rear of the control unit. Plug the control unit power cord into any 15-amp, 120V outlet. Turn the control knob to the desired setting. The white power light should be on, the cycle light should begin to turn on and off, except on position "HI" indicating power is being applied to the kiln.

This control is furnished with a 3-wire cord and 3-prong plug for use where grounded installations are required by local electrical codes.

PYROMETER

The pyrometer used in the NOVA control is calibrated for use with a 4' long, 14 GA. Chromel/Alumel thermocouple (included with unit).

OPERATION OF PYROMETER:

Remove the bare shunt wire from the terminals at the rear of the controller. Connect thermocouple leads to the thermocouple connectors at the rear of the unit. The red thermocouple lead to red terminal. The yellow thermocouple lead to the black terminal. Place the thermocouple probe (porcelain tip section) through the thermocouple holes provided in the wall of the kiln. The thermocouple probe may also be placed between the two sections of the NOVA kiln. Remove the top section, place the probe so that at least 1" is inserted into the chamber. Replace the soft gasket and top section. The soft gasket will provide a sufficient heat barrier. When using the controller with the China Kiln (KL-22325), you may insert the thermocouple through the peephole in front or through the hole provided in the rear leg. Drilling a hole through the chamber insulation will be necessary for this use. Holes are provided however through both inside and outside cases already.

The large scale on the pyrometer allows easy readings in two scale ranges, 32-2500°F and 0-1371°C. A handy cross reference chart is included which gives all normally used pyrometric cone numbers and their corresponding melting temperatures in °F and °C.

TABLE OF
ORTON PYROMETRIC CONE
TEMPERATURE EQUIVALENTS

QUICK REFERENCE CHART

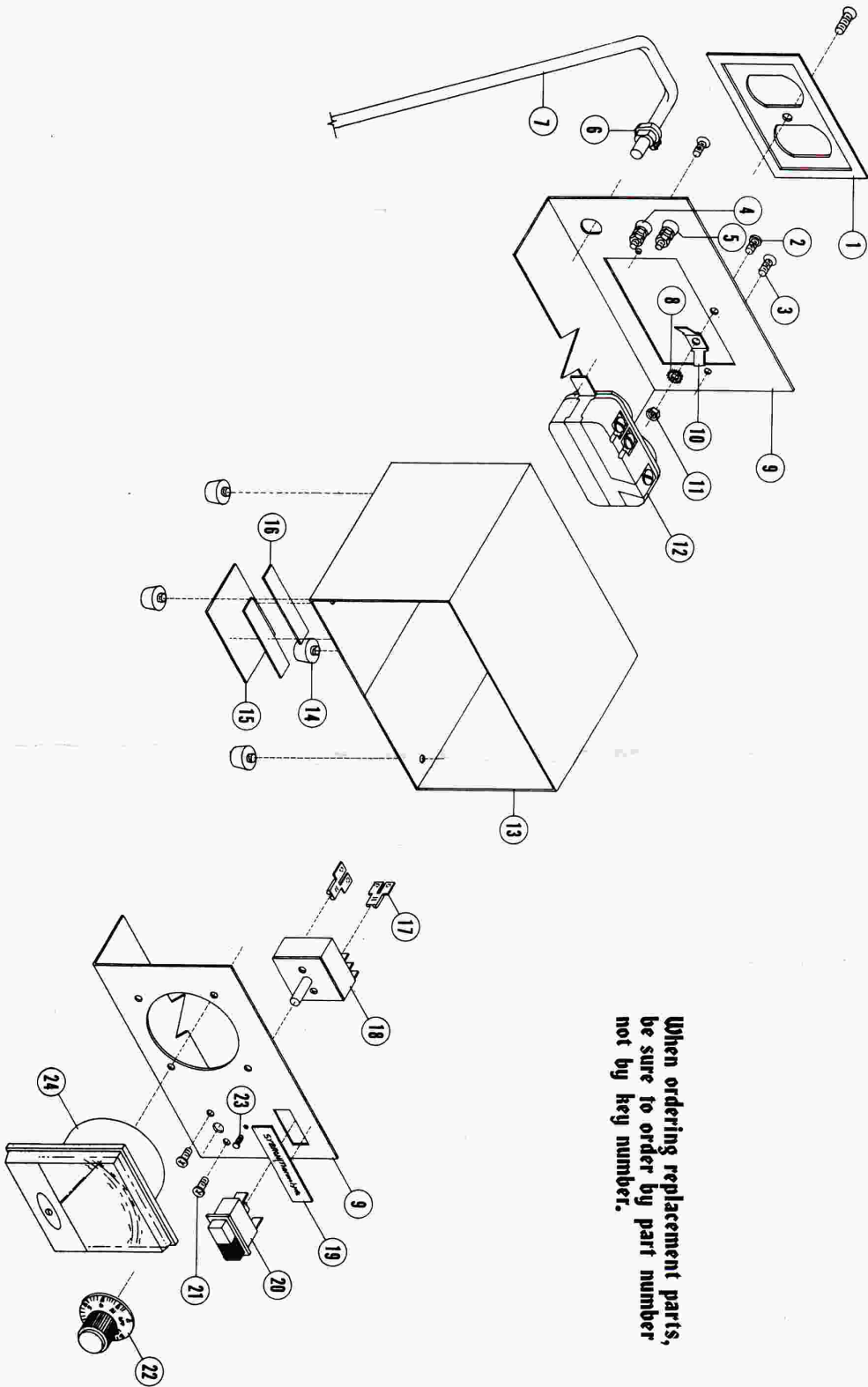
CONE NUMBER	SENIOR CONES 270°F*	JUNIOR CONES 540°F
022	1112°F	1121°F
021	1137	1189
020	1175	1231
019	1261	1333
018	1323	1386
017	1377	1443
016	1458	1517
015	1479	1549
014	1540	1526
013	1566	1580
012	1623	1607
011	1641	1661
010	1641	1686
09	1693	1751
08	1751	1801
07	1803	1846
06	1830	1873
05	1915	1944
04	1940	2008
03	2014	2068
02	2048	2098
01	2079	2152
1	2109	2154
2	2124	2154
3	2134	2185
4	2167	2208
5	2185	2230
6	2232	2291
7	2264	2307
8	2305	2372

*TEMP. RISE PER HOUR

NOTES:

1. The temperature equivalents in this table apply only to Orton Standard Pyrometric Cones, when heated at the rates indicated, in an air atmosphere.
2. Temperature Equivalents are given in degrees Centigrade (°C) and the corresponding degrees Fahrenheit (°F). The rates of heating shown at the head of each column of temperature equivalents were maintained during the last several hundred degrees of temperature rise.
3. The temperature equivalents were determined at the National Bureau of Standards by H.P. Beerman (See Journal of the American Ceramic Society, Vol. 39, 1956) with the exception of those marked (*).
4. The temperature equivalents are not necessarily those at which cones will deform under firing conditions different from those under which the calibrating determinations were made. For more detailed technical data, please write the Orton Foundation.

EDWARD ORTON JR. CERAMIC FOUNDATION, 1445 SUMMIT ST., COLUMBUS, OHIO



**When ordering replacement parts,
be sure to order by part number,
not by key number.**

Exploded View of CP-21020/25 Nova Control
(Order by Part Number not by Key Number above)

PARTS LIST

KEY REF. NO.	PART NUMBER	DESCRIPTION
1	CV210X1A	Cover Assembly
2	FSX47	Fastner, Screw
3	FSX149	Fastner, Screw (2 required)
4	TRX41	Terminal
5	TRX42	Terminal
6	SRX16	Strain Relief
7	CR210X1	Cord Set (For CP-21025, 120V & CP-21024, 100V)
	CR210X2	Cord Set (For CP-21020, 240V)
8	FWX11	Fastner, Washer
9	CS210X1A	Case Assembly
10	TRX80	Terminal
11	FNX2	Fastner, Nut
12	CEX78	Connector (For CP-21025, 120V & CP-21024, 100V)
	CEX79	Connector (For CP-21020, 240V)
13	CS210X2A	Case Assembly
14	FTX1A	Foot (4 required)
15	DL246X1	Dial (For CP-21025, 120V)
	DL246X3	Dial (For CP-21024, 100V)
	DL246X2	Dial (For CP-21020, 240V)
16	TA205X1	Tape (2 required)
17	TRX78	Terminal (2 required)
18	CNX60	Control (For CP-21024, 100V)
	CNX72	Control (For CP-21025, 120V)
	CNX73	Control (For CP-21020, 240V)
19	DLX31	Dial
20	PLX38	Pilot Light (For CP-21025, 120V & CP-21024, 100V)
	PLX59	Pilot Light (For CP-21020, 240V)
21	FSX30	Fastner, Screw (2 required)
22	KBX23	Knob
23	FSX5	Fastner, Screw
24	MEX141	Meter
	*TC246X1A	Thermocouple, complete
	*TC246X2A	Thermocouple Tip Section
	*WT246X1A	Thermocouple Extension Wire w/Connector

*These are not shown on exploded view.

F.O.B. SHIPPING POINT, SUBJECT TO CHANGE WITHOUT NOTICE.

MINIMUM ORDER: \$10.00

CHART BELOW FOR NOVA, SR. KILN WITH LOAD IN KILN

<u>Control Knob Settings</u>	<u>Degrees Fahrenheit</u>	<u>Approximate Cone No.</u>
LO	1050°F	Cone 024
20	1275°F	Cone 019
30	1520°F	Cone 014
40	1700°F	Cone 010
50	1900°F	Cone 06
56	1950°F	Cone 05
60	2050°F	Cone 03
HI - Full On (No cycling)	2250°F	Cone 6

CHART BELOW FOR CHINA PAINTER KILN WITH LOAD IN KILN

		(Junior-540°F)
LO	750°F	-----
20	925°F	-----
30	1125°F	Cone 021
40	1325°F	Cone 019
50	1665°F	Cone 010
60	1875°F	Cone 06
HI	2000°F	Cone 04

NOTE: BECAUSE OF THE SLIGHT VARIATIONS IN CONTROLS, LOADS PLACED IN THE KILN AND LINE VOLTAGES THROUGHOUT THE COUNTRY, SLIGHT VARIATIONS FROM THE CHART COULD OCCUR.



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