



ALPHA PC™

PORCELAIN COMPUTER



Instruction Manual

TABLE OF CONTENTS

Specifications.....	2
Installation.....	3
Introduction.....	4
Front Panel Display and Controls.....	5
Entering Information Programs 1-50.....	6-8
Special ALPHA PC Programs.....	9
How To Select and Start A Program.....	10
Calibration Temperature Instructions.....	11
ALPHA PC Self Diagnostics.....	12-13
Automatic Decontamination.....	14
ALPHA PC Service.....	15
Replacement of Muffle.....	16-17
Replacement of Thermocouple.....	18
Replacement of Parts.....	18

ALPHA PC SPECIFICATIONS

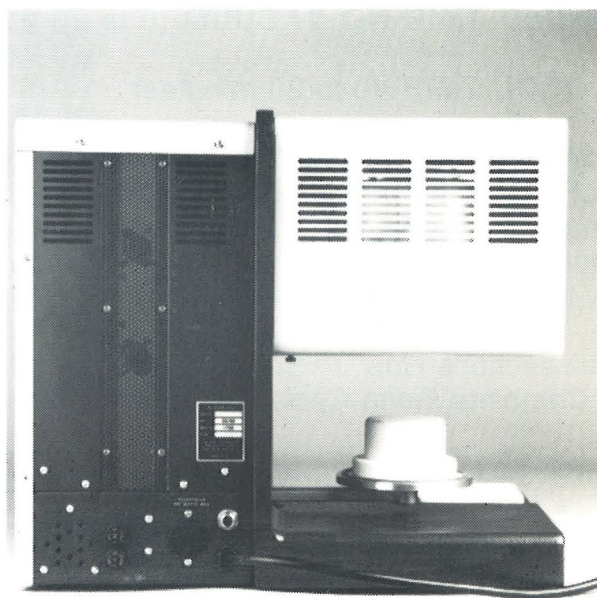
Electrical:	100V 50/60 Hz - 1700W
	110V 50/60 Hz - 1700W
	220V 50/60 Hz - 1700W
	240V 50/60 Hz - 1700W
Muffle:	3.5 in. (8.9 cm) diameter
Dimensions:	20 in. W x 13 1/4 in. D x 17 1/4 in. H
	51 cm. W x 34 cm. D x 44 cm. H
	Requires external vacuum pump that can achieve
	29.0 in. (73.6 cm. of Hg.) in 60 seconds.

PLEASE NOTE:

The Alpha Plus... now has 90 programs.
All references in this manual to programs
1-50, should now be 1-90.

INSTALLATION

1. Remove all packing material from around the furnace.
2. Position the furnace in an area which permits comfortable operation, yet is at least 2 inches (5 cm.) from any combustible surface.
3. Connect the vacuum pump hose from your vacuum pump to the vacuum hose connector on the rear panel of the furnace.
4. Plug the vacuum pump line cord into the vacuum pump receptacle on the rear panel of the furnace. The current rating of the pump must be less than 4.5A.
5. Plug the power cord into a wall receptacle. A separate 15A circuit is recommended for all voltages. Wait 5-10 seconds before turning on the power switch.
6. Press POWER switch ON. Furnace door will open automatically. Place firing block onto furnace door.
7. Your new Jelrus ALPHA PC has been factory- calibrated. It is normally not necessary to recalibrate before use. If you wish to recalibrate, see *Calibration Instructions*, Page 11.
8. Your furnace is now ready for operation.



INTRODUCTION

Your new ALPHA PC Porcelain Furnace brings the power of the modern microcomputer to the dental laboratory. It will remember 50 different programs and perform each of them accurately at your command. In addition, it clearly displays all the program information.

The ALPHA PC is user-programmable. You select all the program variables for each of the programs #1-50.

- * **DRY TIME** (0 to 20 minutes)
- * **LOW TEMPERATURE** (100 to 2148 Deg.F) (38 to 1175 Deg.C)
- * **VACUUM LEVEL** Whether to fire in full vacuum, no vacuum or a selected variable vacuum level (10.00 to 28.00 in Hg) (25.0 to 71.0 cm Hg)
- * **START VACUUM TEMP** The vacuum can be started at a temperature higher than the low temperature.
- * **HEAT RATE** (40 to 400 Deg.F/min) (22 to 222 Deg.C/min)
- * **VACUUM RELEASE TEMP** Vacuum can be released at any temperature higher than the vacuum start temperature.
- * **HIGH TEMPERATURE** (100 to 2200 Deg.F) (38 to 1204 Deg.C)
- * **HOLD TIME AT HIGH TEMPERATURE WITH VACUUM** (0 to 20 minutes)
- * **HOLD TIME NO VACUUM** (0 to 20 minutes)
- * **COOL TIME** (0 to 20 minutes)

After you have installed the furnace, the first thing that you will want to do is to program the ALPHA PC with the different programs that you wish to use for de-gassing, metal conditioning, opaquing, body bakes, stain and glazing. You must assign a different program number (between 1 and 50) to each of your programs. The ALPHA PC will remember your programs by those numbers .

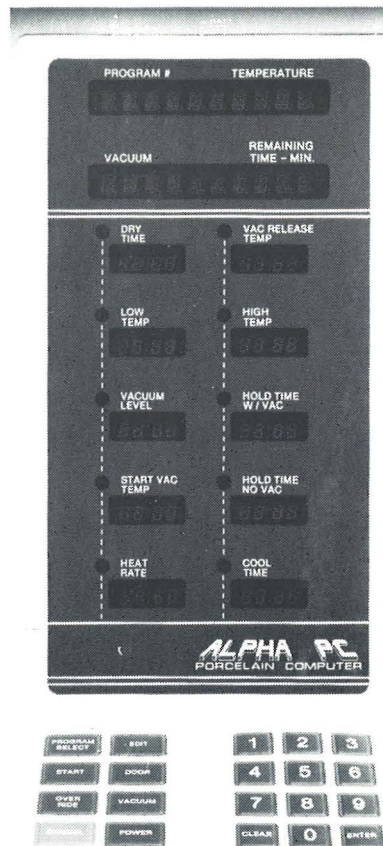
The sections *How to Select a Program*, *How Programs Are Numbered*, and *How to Program a Complete Firing Cycle* tell how to enter your own programs into the ALPHA PC's memory.

Once you have programmed the ALPHA PC you will want to fire a restoration. The section *How to Fire a Restoration* tells you how. The Main Display shows you useful information while you are at idle, running a program or editing a program.

Programming and operating the ALPHA PC are easy. The following sections tell you how. Please take the time to become thoroughly familiar with them.

FRONT PANEL DISPLAY AND CONTROLS

The front panel display and controls are illustrated here for reference purposes. Their specific uses are explained in the text.



1. **MAIN DISPLAY-** Shows Operating Conditions
Program #
Vacuum
Remaining Time in Program
2. **PROGRAM DATA DISPLAY**
Continuously shows all settings in selected program. Status lights indicate where the furnace is in the program.
3. **KEYPAD FOR DATA ENTRY and FUNCTION SELECTION**
For entering desired data into program.

HOW TO ENTER NEW INFORMATION INTO PROGRAMS #1-50

1. Push the **PROGRAM SELECT** button. Then the program number desired followed by pushing the **ENTER** button. The program number will appear on the **MAIN DISPLAY**.
2. Push the **EDIT** button on the keypad. The word **EDIT** will flash on the **MAIN DISPLAY**. In the Edit mode any or all the program information can be changed.
3. The **PROGRAM DATA DISPLAY** will light up all the values in that particular program.
4. **DRY TIME.** The red status light will light along side of **DRY TIME**. If you wish to change the value displayed, enter the value desired by depressing the proper numbers on the **KEYPAD**. After the proper value is displayed , press the **ENTER** button on the **KEYPAD**. This enters this value into the program.

The red status light goes off opposite **DRY TIME** and lights up opposite **LOW TEMP**. This value is now ready to be changed, or if you want to keep the values displayed simply press the **ENTER** button.

NOTES: a. If you make an error when using the keypad press the **CLEAR** button then press the correct values.

b. Time is expressed in minutes and seconds. For example, one minute is pressed as 1 0 0 - which is 1 minute and 00 seconds.

5. **LOW TEMPERATURE.** Now enter your desired **LOW TEMP**. After pushing the **ENTER** button, the status light moves to the **VACUUM LEVEL**.
6. The **VACUUM LEVEL** displayed on the panel, will show either:
 - a. **FULL** - meaning maximum vacuum obtainable by your pump.
 - b. **NO** - no vacuum desired.
 - c. 10.00 to 28.00 in Hg. (25.0-71.0 cm Hg) if a specific vacuum level is desired.

To select the desired vacuum level:

- a. For Full Vacuum, press 1 on keypad, then **ENTER**.
- b. For No Vacuum, press 0 on keypad, then **ENTER**
- c. For specific vacuum, press the numbers for the vacuum you desire between 10" and 28.0" Hg. (25.0 and 71.0 cm Hg), then **ENTER**.

EXAMPLE: To select 28.0 in.Hg, press the numbers 2, 8 and 0. The computer will automatically insert the decimal point and the last zero. When the desired number is shown on the main display, press the **ENTER** button. When using a program with vacuum we recommend **FULL VACUUM**

7. **START VAC TEMPERATURE.** The status light will now move to START VAC TEMP. Your ALPHA PC has a new feature which enables you to start your program without vacuum and have vacuum come on later at a temperature of your choice. If you desire the vacuum to start as soon as the door closes at LOW TEMP, enter the same value for VAC START TEMP as you have entered for LOW TEMP.

If you desire to start the vacuum at a temperature higher than the LOW TEMP, enter this value for VAC START TEMP. After pressing the ENTER button, the status light will move to HEAT RATE selection.

8. **HEAT RATE .** The ALPHA PC can be programmed to operate at any heat rate from 40 Deg.F/Min. to 400Deg.F/Min. (22 to 222 Deg.C/Min.). Enter the HEAT RATE desired on the keypad. The status light will move to VACUUM RELEASE TEMP.

9. **VACUUM RELEASE TEMPERATURE .** The vacuum can be released below the HIGH TEMPERATURE, at the HIGH TEMPERATURE or after holding at the HIGH TEMPERATURE.

10. **HIGH TEMPERATURE .** The status light will now move to the HIGH TEMP. Enter on the keypad any value equal to or above VAC RELEASE TEMP selected in step (9) up to a value of 2150 Deg.F (1176 Deg. C) . Press the ENTER button.

11. When you have selected a VAC RELEASE TEMP equal to the HIGH TEMP, the status light will light opposite the HOLD TIME WITH VACUUM. Enter the time in minutes you want to hold the furnace with vac at HIGH TEMP before releasing the vacuum.

If you have selected a VACUUM RELEASE TEMP lower than the HIGH TEMP, of course, the furnace cannot hold the work at HIGH TEMP WITH VACUUM since the vacuum has already been released. the ALPHA PC COMPUTER knows this and the status light will skip over this setting right to the HOLD TIME W/O VACUUM.

The HOLD TIME WITH VACUUM display will not be lit. Enter the time desired from 0 to 20 minutes, to hold the furnace at HIGH TEMP W/O VACUUM.

12. **COOL TIME .** Press the desired cool time, between 0 and 20 minutes, on the keypad. Press the ENTER button. THE STATUS LIGHT WILL NOW LIGHT OPPOSITE DRY TIME- You have now completed entering the information into your program.

You can review the entire program since it is fully displayed.

If you wish to change any value, you can move the status light to any parameter you want to change by pressing the ENTER button. Pressing the ENTER button again, will move the light to the next parameter. Holding the ENTER button down will automatically move this light rapidly from one parameter to those following it.

To leave the EDIT mode and put the ALPHA PC in operating status, press the EDIT button.

This will put the furnace in IDLE. The MAIN DISPLAY PANEL will display the word IDLE. The ALPHA PC is programmed to IDLE at 1000 Deg.F (538 Deg.C) unless you have selected a low temp below 1000 Deg.F, then the ALPHA PC will idle at your selected low temp.

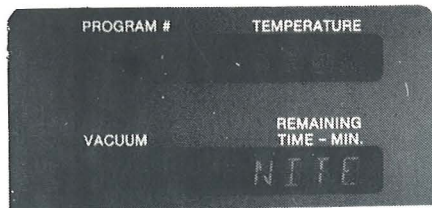
HOW TO USE OVERRIDE

The Override button may be used from 30 seconds to 1 minute after the furnace door first opens. In order to have the ability to use the OVERRIDE button, the cool time must be at least 30 seconds. If your cool time is 30 seconds, you will have up to 30 seconds to determine if you want your work to go back into the hot muffle for additional time or temperature. If your cool time is 40 seconds you will have up to 40 seconds to determine if you want your work to go back into the muffle, etc. This holds true for cool times up to 1 minute. After 1 minute cool time, you have a maximum of 1 minute to determine if you want to use OVERRIDE. The first time you press OVERRIDE your work will return into the muffle for additional time, up to a maximum of one minute. If you want additional temperature, each additional time you press OVERRIDE your vacuum release temperature and high temperature will increase by 1 degree.

To open the furnace door, press the DOOR button. NOTE: if you don't press the DOOR button, the door will open automatically after one minute. When the door opens, the cool time sequence begins again. If necessary, the OVERRIDE button may be used again, as long as the COOL TIME status light flashes.

You can also use OVERRIDE during programs #1 - 50. Each time you press OVERRIDE while the program is running you can increase your vacuum release temperature and high temperature by one degree at a time. Once the program is complete this new increased temperature will not effect your original programmed temperatures for vacuum release temperature and high temperature.

SPECIAL ALPHA PC PROGRAMS



NITE MODE

Program #100

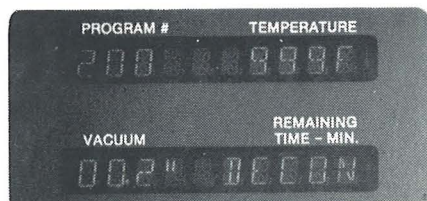
Your ALPHA PC can be put into NITE mode if you desire. Simply press PROG SELECT 100, Enter. The door will close and display will only show the word NITE. Press cancel to get out of nite mode.



AUTOMATIC NITE MODE AT END OF PROGRAM

Program # 101 - 150

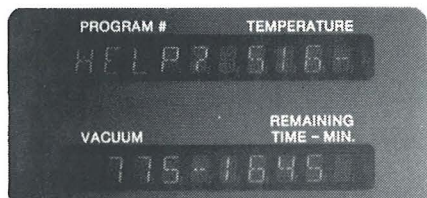
By adding 100 to your program number the ALPHA PC will complete a program, cool down to a low safe temperature and automatically close the door and go into NITE mode. For example, Program 1 plus 100 =101, Program 2 plus 100 =102, etc.



AUTOMATIC DECONTAMINATION

Program #200

Simply place Jelrus Pur-I-Fire decontamination pellets into their tray, place onto the firing block and the ALPHA PC does the rest- automatically.



"HELP"

Program # 300

If you need help there is a technical representative waiting just at the other end of the telephone number displayed.



AUTOMATIC VACUUM CALIBRATION

Program # 900

AUTOMATIC TEMPERATURE
CALIBRATE

Automatic Silver wire calibration
See P.11 for instructions.

Degrees F/English
Degrees C/Metric

Program # 912
Program # 913

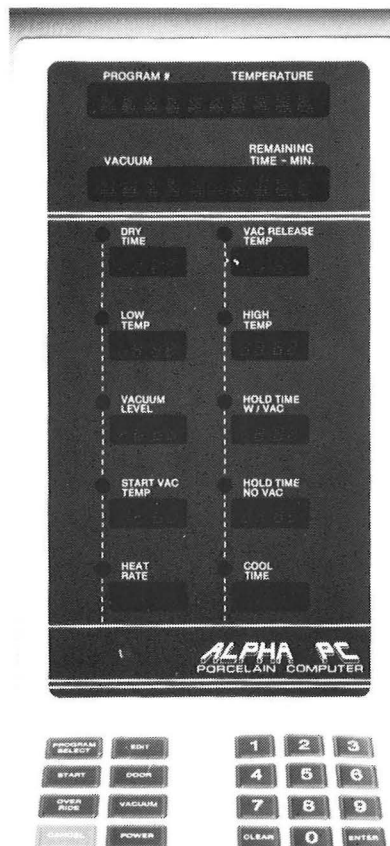
HOW TO START AND SELECT A PROGRAM

To run a program or to change a program, it's necessary to select that program number and have it displayed on the PROGRAM # display.

NOTE: If you make an error when using the keypad, press the CLEAR button and press the correct buttons.

1. Once the furnace has been turned on simply press Program SELECT, the program number you want and ENTER.
2. This program number will now be on the PROGRAM # display.
3. To start a program press START.
4. To stop a program while it is in progress press CANCEL.

NOTE: All programs must run from the beginning. It is not possible to re-start a program in the middle.

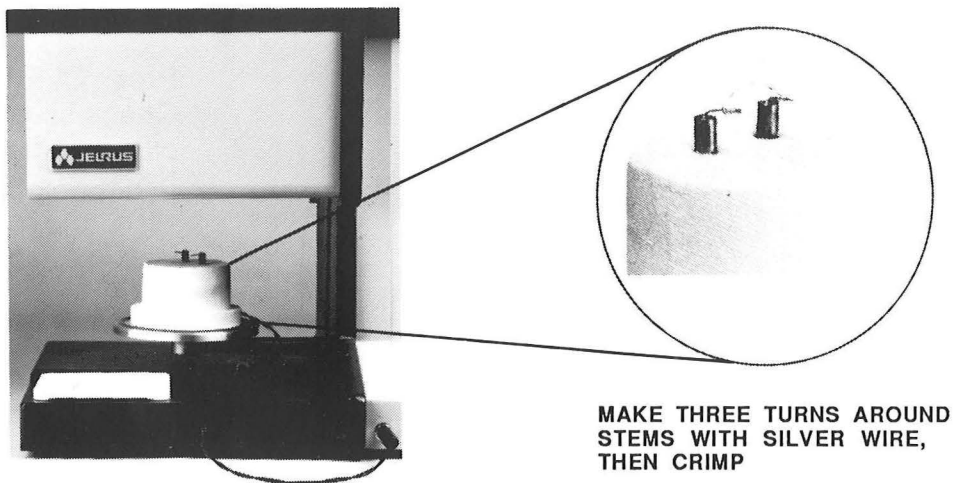


CALIBRATION INSTRUCTIONS

Your ALPHA PC has been factory calibrated. It is not necessary to recalibrate unless you suspect a temperature related problem. Best results are obtained by running one program (High Temperature of 1760 Deg.F) prior to performing temperature calibration.

1. Clean the calibrating instrument electrodes with sandpaper or emery cloth then bridge them with pure silver wire as shown. Wrap the wire tightly around each electrode three times. Crimp in place. Leave a small loop of wire between the electrodes. **DO NOT STRETCH** the wire between the electrodes.
2. Remove the door insulating platform and replace it with the calibration instrument. Guide the wire leads from the calibration instrument out toward the front of the furnace.
3. Insert the plug from the calibration instrument into the CALIBRATE jack. Make sure the plug is completely inserted. Observe that the display reads AUTO SIL CALIBRATE.
4. Press the START button. When the low temperature has been achieved the door will close automatically and the furnace will execute the Calibration Program. There is a ten minute heat soak at 1300 Deg.F (704 Deg.C) before the temperature rise begins. At 1760 Deg.F (960 Deg.C) the silver wire will melt. The ALPHA PC will automatically adjust the temperature shown on the main display to 1760 Deg.F (960 Deg. C). A tone will sound to let you know that this has taken place.
5. After a short time the door will open. Verify that the silver wire has melted. Remove the calibration instrument plug from the CALIBRATION jack.
6. Using tongs or tweezers, remove the calibration instrument and replace it with the regular firing block.

Note: Additional silver wire is available-Reorder #28383



ALPHA PC DIAGNOSTIC MESSAGES

	<u>MESSAGE</u>	<u>CAUSE</u>	<u>COMMENTS</u>
1.	Invalid Entry	Number entered is outside of allowable limits. or Two or more parameters are in conflict.	press CLEAR and enter new number LED's will be flashing where there is a conflict. Press clear and enter new parameter.
2.	Invalid Program Number	Program number entered is outside of allowable limits.	Press CLEAR and enter new program number.
3.	Check Vacuum	Low or no vacuum.	Press CLEAR. Check pump,hoses and connections. Pump must achieve selected vacuum within one minute.
4.	Check Door	Debris on gasket, obstruction or door sensor difficulty.	Press Clear.
5.	Do Silver Calibrate	Temperature calibration has drifted.	Press CLEAR. Perform silver wire calibration.
6.	Check Sil Wire	Silver wire is not properly attached to calibration brick.	Press CLEAR. Check silver wire and crimp onto calibration block.
7.	Do Vac Cal	Vacuum calibration has drifted.	Press CLEAR. Do program 900 Automatic vacuum calibration.

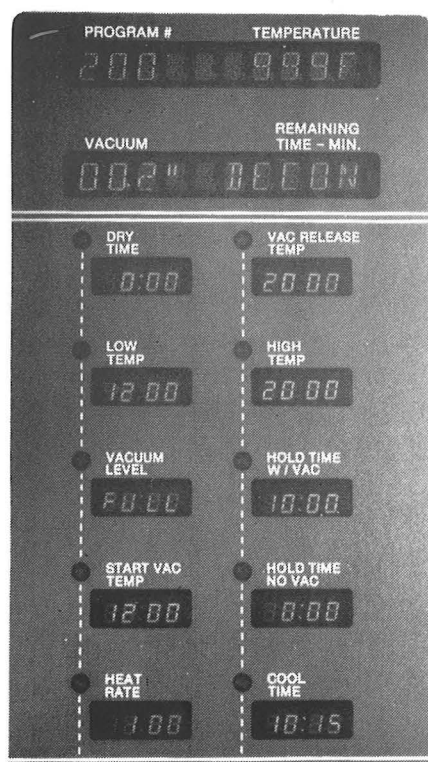
ALPHA PC DIAGNOSTIC MESSAGES

	<u>MESSAGE</u>	<u>CAUSE</u>	<u>COMMENTS</u>
8.	Power Fail	Power Failure.	Can occur during program running or edit. Press clear.
9.	Check set values	Incorrect program parameters.	All LED's will be flashing. Determine which parameter is improper and re-program or press Clear and try again.
10.	Open TC	Open Thermocouple	Needs to be repaired or replaced. PRESS CLEAR.
11.	Muffle / Good	Faulty Muffle	Initiated by muffle test. Program 930 Press CLEAR. Initiated by Program 930 Replace Muffle.
	Muffle / Open		
12.	Triac Shorted	Faulty Triac T/C Reversed	Initiated by triac test Program 931 Press CLEAR.
	Triac Open		Initiated by Program 931 Replace triac.
	Triac Good		Initiated by Program 931 Press CLEAR.
	Replace Triac		Needs to be replaced

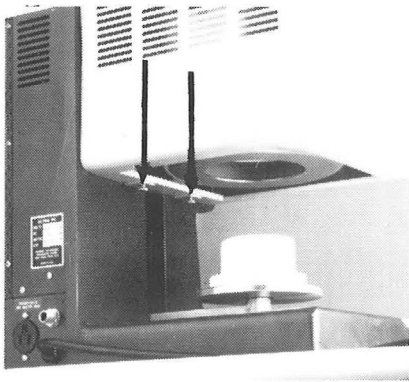
DECONTAMINATION INSTRUCTIONS

It is good practice to decontaminate your furnace at least twice a month. Even if you don't use silver/palladium alloys, contamination can take place simply from the use of steel tweezers or tongs. We recommend the use of Pur-I-Fire Decontaminant (Jelrus Order #7102).

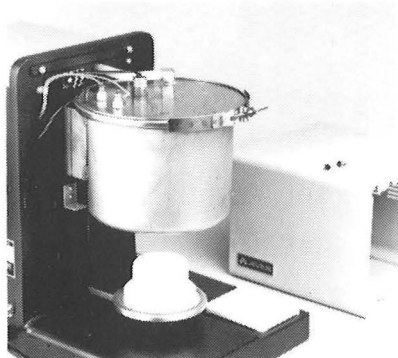
1. Place a single layer of Pur-I-Fire pellets on the ceramic tray provided. Place the ceramic tray on the firing block.
2. Select program number 200.
3. Press the START button. When the low temperature is reached the door will close and the ALPHA PC will automatically perform the proper decontamination program. This will take about 20 to 25 minutes.
4. When the door opens remove the tray and discard the used Pur-I-Fire pellets. Save the tray for reuse.



ALPHA PC SERVICE



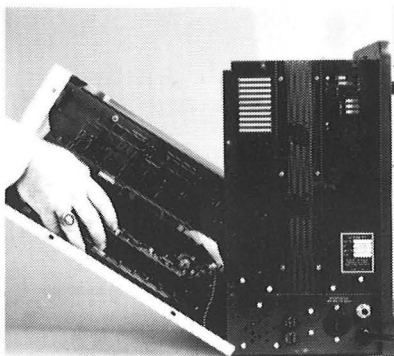
Open door.
SHUT OFF POWER- DISCONNECT PLUG
Remove both thumb screws.



Carefully lift cover up and over muffle.



To service the electrical module:
Unscrew with phillips screwdriver. Then unscrew four screws on back of furnace.
Two are on top of the electrical module and two are on the left side.

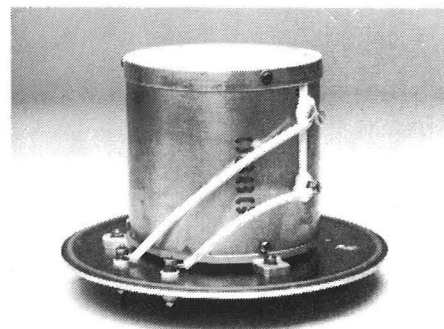


Electrical module now can easily fold open.

MUFFLE REPLACEMENT

1. Be sure that the line cord is disconnected from the power receptacle.
2. Remove the muffle housing (See *Muffle Housing Removal Instructions*, Pg. 15).
3. Remove the two thermocouple leads which are attached to the black terminal strip on the main casting. Note the position and color-coding of the two thermocouple leads so they may be reattached in the same manner.
4. Remove the two orange power leads which are attached to the power terminals on the top plate. Note that the lug on each power lead is secured to the power terminal with a hex nut above and below the lug. DO NOT attempt to loosen the top hex nut without holding the bottom hex nut with a wrench or pliers.
5. Remove the vacuum hose from the barbed fitting on the top plate. Rotating the hose gently in both directions will facilitate its removal from the fitting.
6. Loosen the nut on the clamping ring until the ring can be sprung open far enough so that it falls free of the top plate.
7. Remove the top plate from the vacuum chamber. Turn it over and place it on the top of the vacuum chamber with the muffle side up. This position is recommended in order to prevent damage to the thermocouple lead wires protruding from the thermocouple gland on the top plate. The top plate can also be placed on any level surface if spacers are used to protect the thermocouple gland.
8. Remove the two muffle power leads which are attached to the two power terminals on the exposed (bottom) side of the top plate. Note that the lug on each muffle power lead is secured to the power terminal with a hex nut above and below the lug. DO NOT attempt to loosen the top hex nut without first holding the bottom hex nut with a wrench or pliers. It is not necessary to remove the muffle power leads from the muffle as replacement muffles are supplied with new leads.
9. Remove the three screws which secure the muffle to the muffle base.
10. Carefully lift the muffle straight up from the muffle base. Muffle base will remain attached to the top plate.

Note: DO NOT "ROCK" the muffle from side to side when removing it as this may damage the thermocouple.



INSTALLATION OF NEW MUFFLE

1. Carefully align the thermocouple hole in the replacement muffle with the thermocouple itself protruding from the top plate. Slide the replacement muffle over the muffle base.

NOTE; DO NOT "ROCK" the muffle from side to side when removing it as this may damage the thermocouple.

2. Install the three screws which secure the muffle to the muffle base.
3. Apply a thin uniform coat of vacuum grease to the O-ring and place the O-ring into the O-ring groove in the top plate. Vacuum grease was supplied with your new muffle.
4. Hold the O-ring in place while placing the top plate on the vacuum chamber.
5. Rotate the top plate so that the small depression close to the edge of the plate lines up with the edge of the hole in the casting that is closest to the black terminal block. This corresponds to the "3:00 o'clock " position when looking down at the top plate from the front of the machine.
6. Align the outside diameter of the muffle housing on the top plate and install the "VEE" clamp. Position the clamping screw of the "VEE" clamp so that it is diagonally opposite the depression in the top plate (at the position corresponding to "9:00 o'clock" when looking down at the top plate from the front of the machine.

Tighten the nut until the "VEE" clamp is snug. Then tighten the nut 3 to 4 additional full turns

7. Using two wrenches reconnect the muffle heater wires to the power terminals on the top plate.
8. Observing the color convention, black to red and red to black, reconnect the thermocouple.
9. Reconnect the vacuum hose being careful not to kink the hose.
10. Replace the muffle housing (See *Muffle Housing Instructions*, Pg. 15).
11. Do silver calibration.

THERMOCOUPLE REPLACEMENT

1. Remove Muffle housing (See *Muffle Housing Removing Instrucions*, Pg. 15).
2. Remove the two thermocouple leads which are attached to the terminal strip at the side of the Muffle housing. Note the position and color-coding of the two thermocouple leads so they may be reattached in the same manner.
3. Loosen the thermocouple fitting.
4. Lif the thermocouple out of the thermocouple fitting.
5. Reverse this procedure to install the replacement thermocouple. Observe the color-coding that you noted in Step 2. Tighten the connections securely.
6. Recalibrate the furnace after replacing the thermocouple, as outlined under *Calibration Instructions*, Pg. 11).

NOTE: The thermocouple used in this furnace contains PLATINUM and may be returned for credit against the purchase of a replacement thermocouple.

JELRUS INTERNATIONAL CORP.

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