

Austenal 1365 Gas Burnout Furnace

Operations Manual

DENTSPLY
AUSTENAL



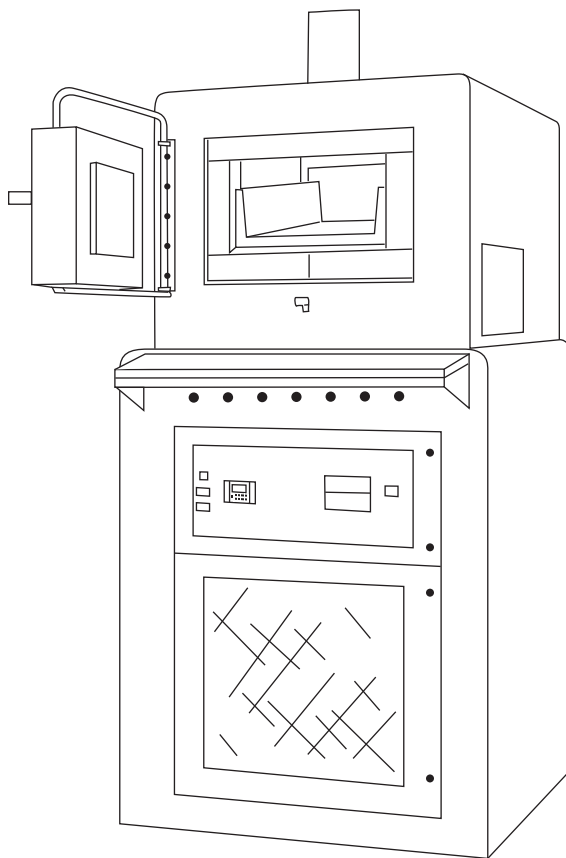
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BURNOUT FURNACE

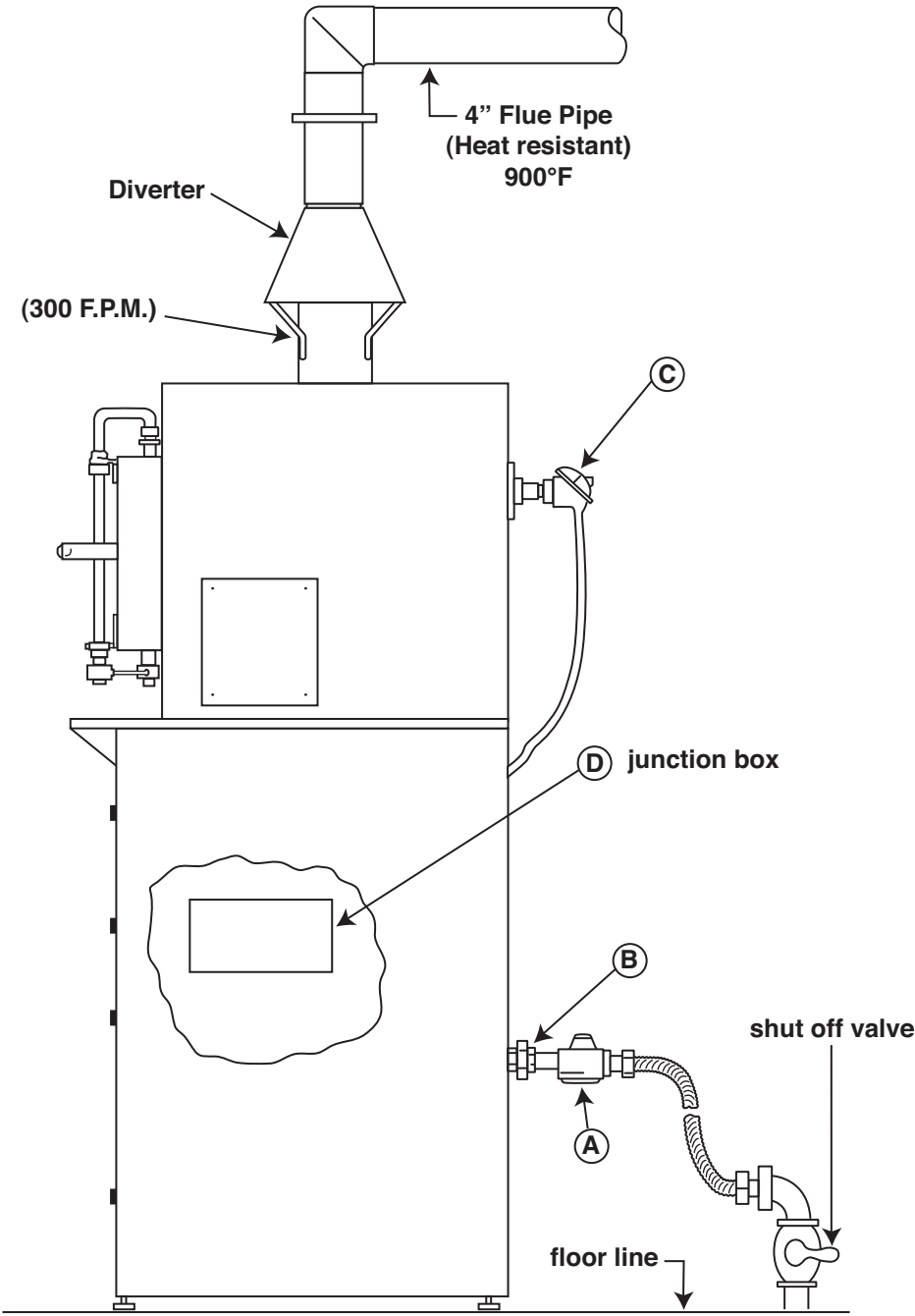
CATALOG NO. N136500

The 1365 Burnout Furnace is designed to consistently burnout all dental laboratory castings. It is capable of a programmed consistent rate of temperature increase. Each programmed burnout cycle is controlled at an exact rate of climb, whether the load is small or large. The furnace programmer will control the furnace temperature minute by minute, always increasing at a fixed rate until final burnout temperature is reached.

The large capacity provides large production capability. It is able to burnout 200 each one inch rings or a mix of different size rings filling a volume of 11 x 14 x 5 inches.

The automatic controls provide the flexibility of choosing any program from memory from a selection of 9 profiles. The temperature controller resets automatically and starts controlling at the temperature inside the chamber. This minimizes the functions of the operator.

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INSTALLATION LAYOUT

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1. INSTRUCTIONS FOR THE INSTALLATION OF BURNOUT FURNACES

1.1 FURNACE REQUIREMENTS

The unit should be installed 8" min. away from any wall in an area which has the following:

- A. Gas fuel supply – Minimum pressure of 4 1/2" H₂O - 3/4" pipe to furnace, max. 120,000 BTU/H gas input.(NATURAL GAS)
(Liquid Propane Gas – 3000 BTU/cu.ft.- 11.88" H₂O.)
(Manufactured Gas – 650 BTU/cu.ft. - 2.38" H₂O.)
- B. Exhaust system – A forced air externally mounted motor is required. An air flow indicator, Item #N136096 is provided with your furnace. This unit will indicate if your laboratory exhaust system will meet the minimum air flow requirements for proper furnace operation. 300 Feet Per Minute at the diverter is required. A properly installed furnace will indicate the following readings at the top of the furnace diverter:
Cold – 300 - 500 FPM Hot – 400 - 500 FPM
- C. Electrical power required, 120 V 50/60 Hz, or 240V, 50 / 60 Hz,-600 Watts.
- D. Place near casting machine for efficient casting routine.

1.2 SERVICE CONNECTIONS

NOTE: Gas and electrical hook-up should be made by qualified personnel only.

- A. Gas Line Connection – The gas line must be sized large enough so that during furnace operation, the gas pressure will not drop below 4 1/2 inches of water. (NAT. GAS) * Refer to page # 3. Loosen the inside union (B) and connect the gas pressure regulator (A) to the 3/4" pipe. To facilitate replacing the thermocouple which is located at rear of furnace, when necessary, we recommend a flexible gas tubing connecting the gas regulator and the shut-off valve. After the flexible tubing has been attached, tighten the union (B).

WARNING: Check for gas leaks before operating the furnace.

NOTE: OBSERVE LOCAL BUILDING CODES.

- B. Exhaust System Connection – Place the diverter or stack over the hole on top of the furnace with view holes toward the front and secure with screws provided. Attach the furnace diverter to the suction system. There should be at least 300 F.P.M. draw at the diverter.

Exhaust Sensor Required – Provision must be made for an exhaust safety switch (supplied by the lab) to be an integral part of the exhaust system which must provide a minimum of 300 FPM (cold) draw when it is attached to the diverter on top of the furnace .

In the event the exhaust system fails to function properly, the safety switch must open its circuit to prevent ignition or combustion from occurring.

The stack must be flexible enough so that when the furnace is in operation, it will allow for two inches of expansion on top (approximate stack temperature 482°C (900°F).

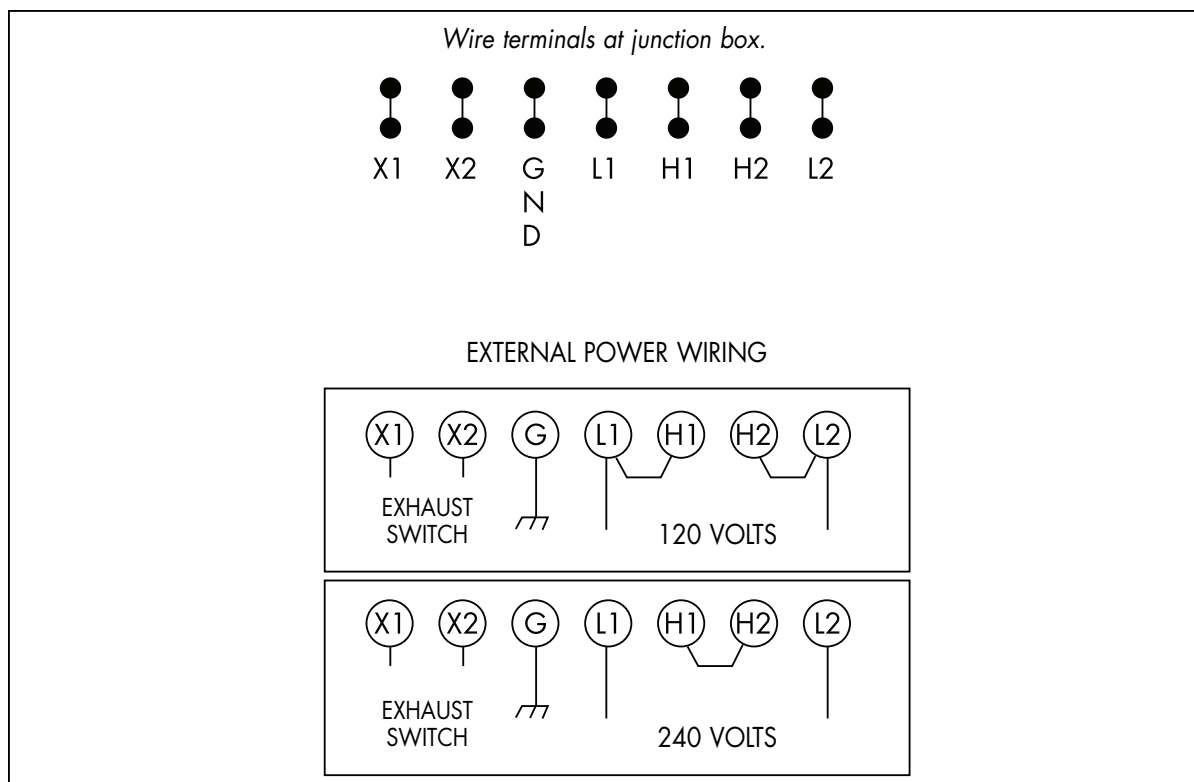
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NOTE: If the furnace is to begin operation automatically before working hours, the exhaust must be left running all night, or be operated with a separate seven (7) day timer, so that it will turn ON at least 15 minutes before the furnace goes into operation. It should also have a manually operated switch to enable the operator to turn the suction ON or OFF at any time.

NOTE: OBSERVE LOCAL BUILDING CODES.

- C. ELECTRICAL CONNECTION – Connect the power line (120V or 240V) and ground wire to the terminals marked L1 , L2, and GND, in the junction box located inside the furnace. Use BX cable leaving enough slack in the line to be able to pull the furnace forward when necessary. Use a jumper wire between the terminals as needed. (See drawing below)

NOTE: OBSERVE LOCAL BUILDING CODES.



1.3 HEARTH TILE INSTALLATION:

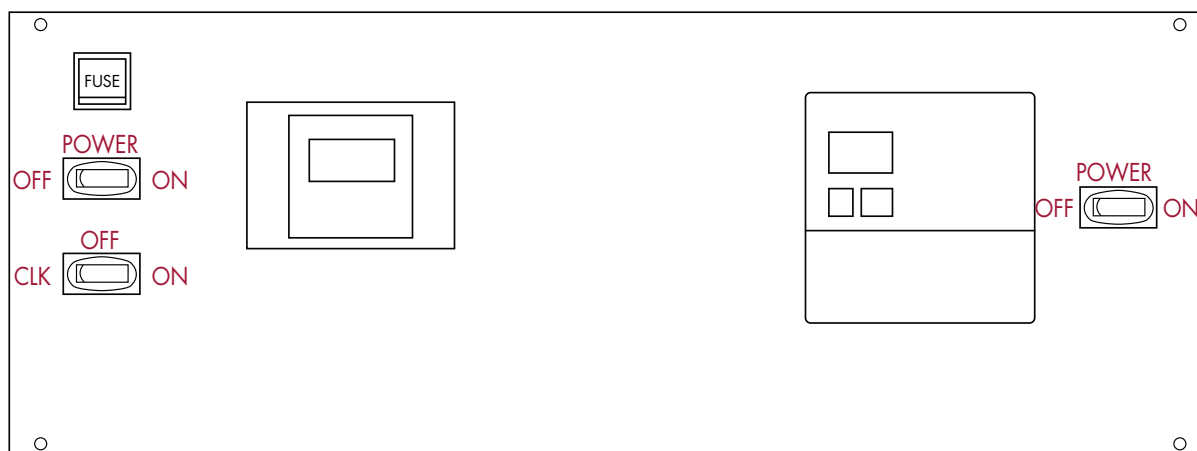
- A. Insert the hearth tile all the way to the back wall support, (there are three supports - front, middle and back) then lower it on the supports. In order to avoid breakage of the hearth tile, it must be supported uniformly on all three supports.

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1.4 THERMOCOUPLE INSTALLATION

- A. Insert the thermocouple (Item C Page 3) into the flange on the back of the furnace pushing it into the furnace as far as it will go.
- B. Tighten the screws on the flange.
- C. Connect the thermocouple extension cable extending from the back of the furnace to the thermocouple housing.
- D. Remove the cover from the thermocouple housing. Connect the "black" wire to the plus (+) terminal and the "red" wire to the minus (-) terminal. Secure the wires.
- E. Replace Cover

2. INSTRUMENT AND CONTROLS DESCRIPTION



TEMPERATURE CONTROL MODULE N134470

2.1 FRONT PANEL SWITCHES

- A. POWER FUSE - 5 Amps 220V, slow blow
This fuse is used to protect the furnace circuits in the event a short circuit or an overcurrent occurs. Access to the fuse is accomplished by pressing down the bottom of the cover plate and withdrawing the cover and fuse from the module.
- B. POWER "ON-OFF"
Turning the power switch to the ON position provides power to the CONTROL MODULE. The switch will illuminate indicating the unit is receiving power.
- C. CONTROL "CLK-OFF-ON"
This control switch turns the furnace ON and OFF depending on the 7 day timer.
To turn the furnace ON manually set the switch to ON.
To use the furnace overnight set the switch to CLK.
When no operation is required, set the control switch to the OFF position.

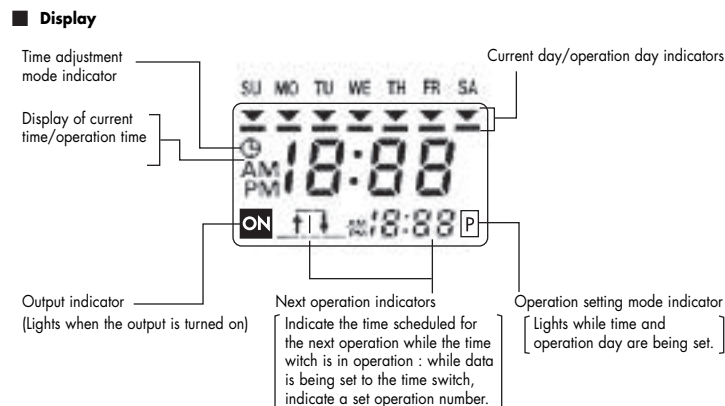
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D. ALARM

If this switch is in the ON position, the alarm will sound immediately after the soaking time has elapsed. If the alarm is not necessary, place the alarm switch to the OFF position.

2.2 SEVEN (7) DAY TIMER

- A. The timer can be programmed to turn the unit ON and OFF automatically on selected days. In order for the furnace to turn ON, the timer switch must be set to AUTO.

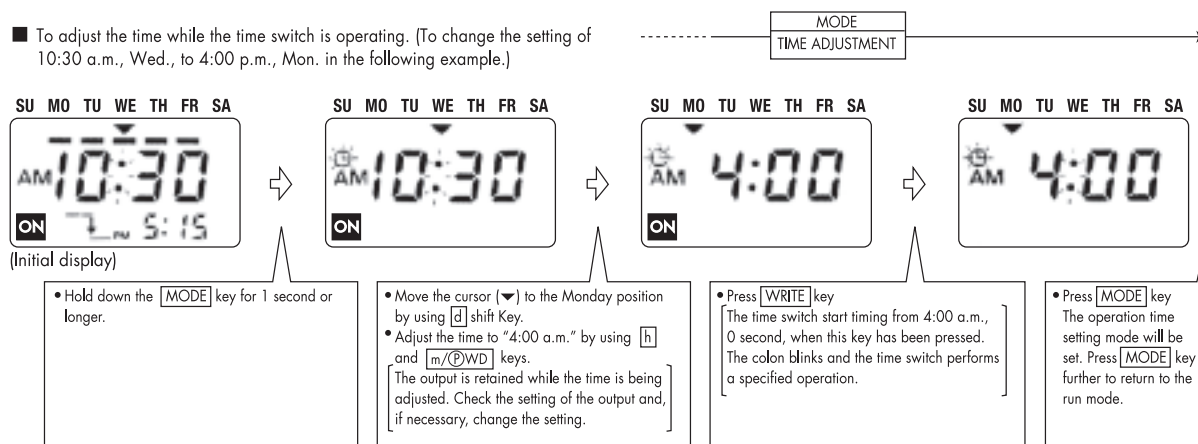


The seven day timer is supplied with a 5 year battery to retain the program in memory. In the event the power fails before the furnace turns ON, the clock will keep the time until the power is restored. After that, the furnace should be able to operate normally.

B. TIME OF DAY

To set the time only the POWER switch should be ON.

- To adjust the time while the time switch is operating. (To change the setting of 10:30 a.m., Wed., to 4:00 p.m., Mon. in the following example.)

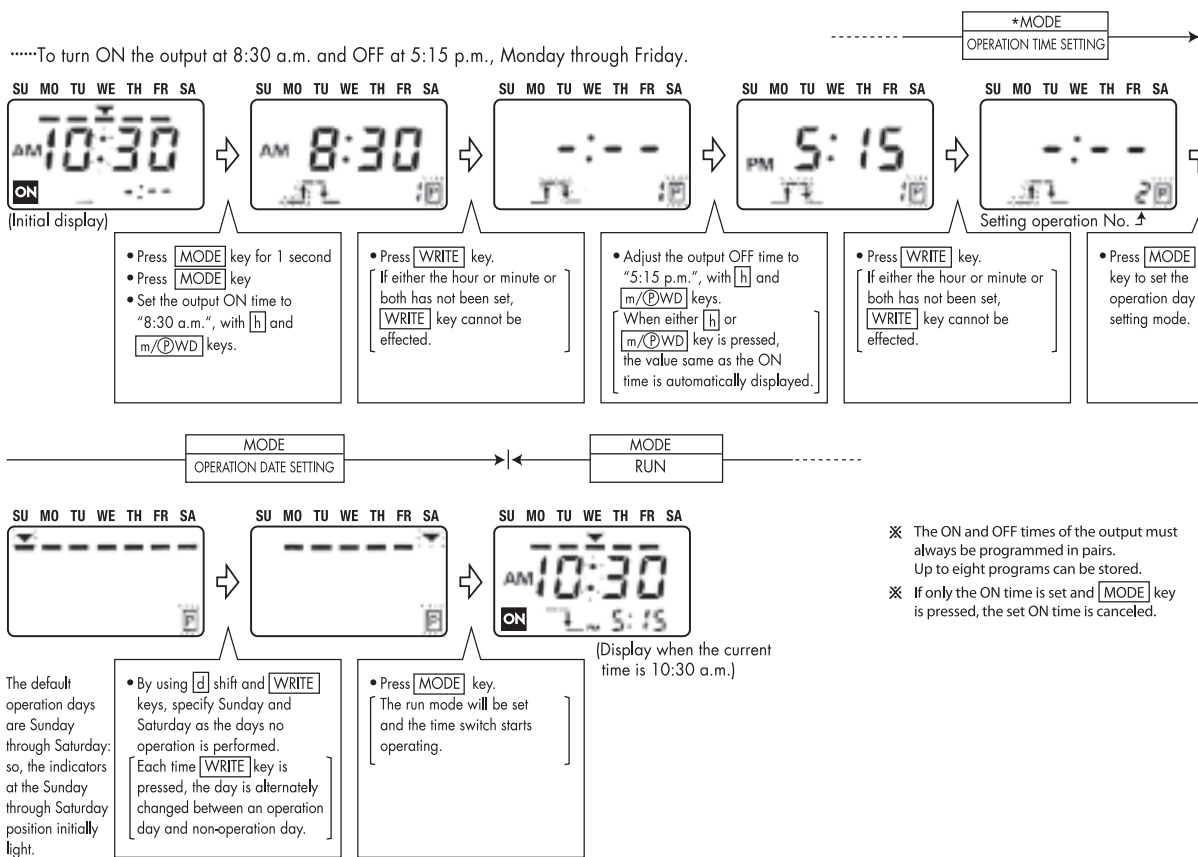


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C. WEEKLY OPERATION

The seven day timer has the capability of storing 8 programs. This gives you the option of turning the furnace ON and OFF at different times every day of the week. We recommend that only the first program is used since this meets the requirements of most laboratories.

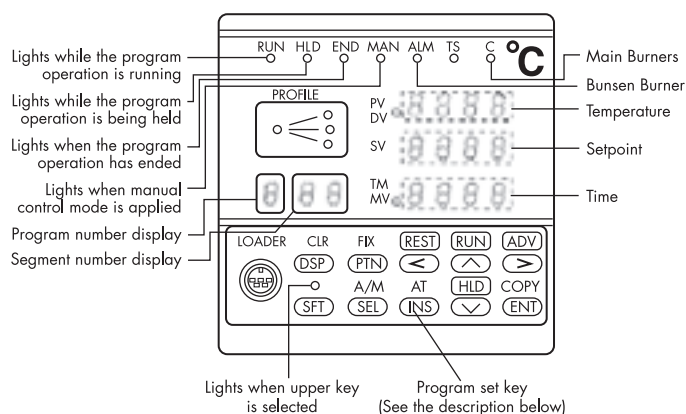
Follow this example to set the first program.



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2.3 TEMPERATURE CONTROLLER

The Profile Controller is a microprocessor based PID (Proportional Integral Derivative) controller, configured for precise ramp and soak temperature control to a maximum of 1300°C (2372°F). Stored in memory are six programs that have been pre-programmed at the factory for your convenience. An additional three programs, 20 segments each, can be programmed by the operator through the front keypad. Each segment can be programmed for ramp or soak time. This flexibility should meet most burnout profile requirements. The controller is equipped with a battery to retain the memory for 5 years. When the battery fails, the controller must be returned to DENTSPLY Austenal to be replaced.



OPERATION OF CONTROLLER:

To turn the controller ON, turn the CONTROL switch and the TIMER "ON". After 9 seconds the furnace should be in operation.

Press the keys (SFT) and then RESET to stop the program.

Press the (PTN) key to select the desired program from a selection of 9.

Press the keys (SFT) and then RUN to start the desired program.

Press the keys (SFT) and then (ADV) to advance to the next segment in a pattern.

(See section #5 for more detailed information.)

3. AIR AND GAS ADJUSTMENTS

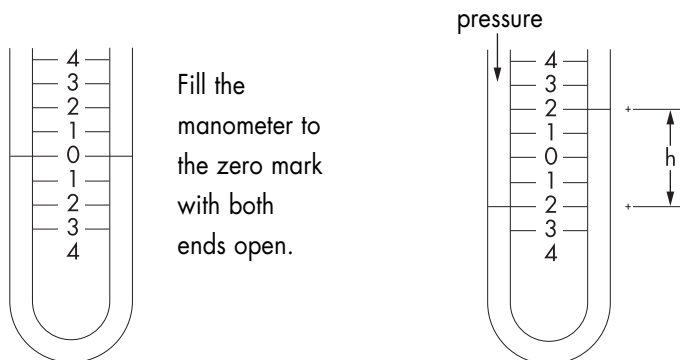
Note: Check for gas leaks before operating this furnace.

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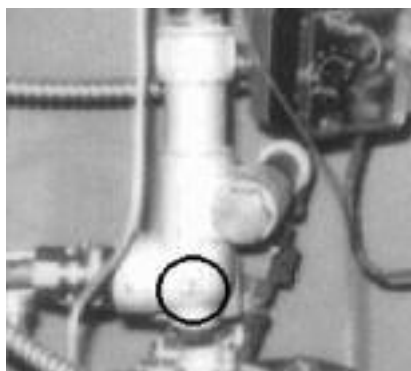
3.1 AIR PRESSURE ADJUSTMENT

- A. Set up the manometer.

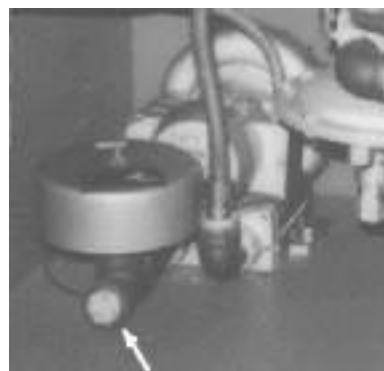
Fill the manometer with a mixture of water and three drops of the provided gage fluid to the zero mark. Connect the rubber hose to one of the legs of the manometer.



When pressure is applied to one side, the liquid is forced to move. The difference in height "h", which is the sum of the readings above and below zero, indicates the total pressure in inches of water.



#1



#2

- B. Connect the rubber hose from the manometer to the bottom of the mixer (circle in picture #1) using the barb connector provided with the furnace.
- C. Turn the controller ON and use program # 1.
- D. Press the keys (SFT) and then RESET to stop the program.
- E. Adjust the screw at the blower (see picture #2) until the pressure at the manometer reads 5 inches of water.

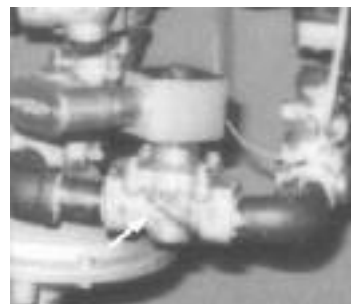
3.2 PILOT IGNITION

- A. Turn the gas ON. Push the red button and hold while you light the pilot burner.
- B. After about one minute, release the knob and the pilot should remain lit. If it goes out, repeat the lighting procedure.

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3.3 GAS PRESSURE ADJUSTMENT

- A. Set up the manometer. Fill the manometer with a mixture of water and three drops of the provided gage fluid to the zero mark. Connect the rubber hose to one of the legs of the manometer.
- B. Connect the rubber hose from the manometer to the barb connector at the pilot solenoid.
- C. Turn the controller ON and use program # 1.
- D. While the program is running, press (SFT) + A/M .
- E. Use the arrow keys and set the TIME display to 0000%.-Press "ENT" key.
- F. Adjust the gas pressure regulator. (Only the bunsen burner should be ON.)



SETTINGS:

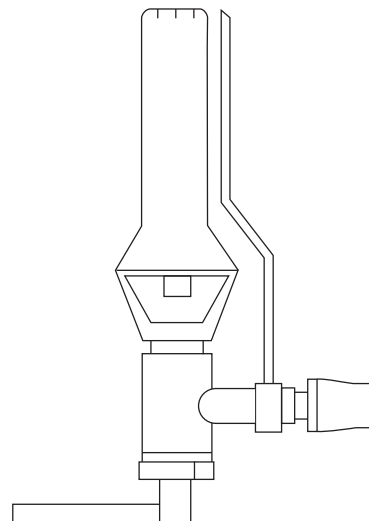
4.5 inches of water for NAT. GAS

11.8 inches of water for PROPANE

- G. If required, adjust the bunsen burner until a 5 inch flame mushroom is visible underneath the hearth tile.
- H. Press the (SFT) + A/M keys
- I. Turn the control switch to OFF.
- J. Disconnect the manometer and replace the plug at the solenoid.

3.4 BUNSEN BURNER ADJUSTMENT

- A. Turn the pilot ON.
- B. Turn the controller ON and use program # 1.
- C. While the program is running, press (SFT) + A/M , and press "ENT"
- D. Use the arrow keys and set the DISPLAY to read 0000% and press "ENT"
- E. Adjust the bunsen burner until a 5 inch flame mushroom is visible underneath the hearth tile.
- F. Press (SFT) + A/M.
- G. Turn the controller OFF.



BUNSEN BURNER

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3.5 AIR-GAS MIXTURE ADJUSTMENT

- A. Open the chamber door.
- B. Remove the plug at the V-PORT valve (indicated by arrow).
With a screwdriver close the valve all the way.
- C. Turn the controller ON and use program # 1.
- D. While the program is running, press (SFT) + A/M. and press "ENT"
- E. Use the arrow keys and change the TIME display to 100 % and press "ENT"
- F. Slowly open the V-PORT valve until the gas ignites and a good steady roaring flame is attained. If the flame starts going above the hearth tile, then turn the gas down.
- G. Use the arrow keys and change the TIME display to 50 % and press "ENT"
- H. The furnace should turn ON and OFF at equal intervals. Make sure the operation is proper, if not then readjust the gas valve.
- I. Press (SFT) + A/M.
- J. Turn the controller OFF.



4. FURNACE SETTING PROCEDURE FOR OVERNIGHT OPERATION

For overnight operation make sure the exhaust suction is turned "ON" 15 minutes before the furnace starts.

4.1 OVERNIGHT OPERATION

- A. Turn the controller ON and select the desired program.
- B. Program the "7 day timer" to turn ON and OFF at the desired times.
- C. Turn the ALARM switch ON.
- D. Turn the control switch to CLK.
- E. The furnace should turn ON automatically in the morning.
- F. After the casting is done, turn the control switch OFF. **(No resetting is needed)**

4.2 FURNACE COOLING

If a second burnout is desired, the furnace must be cooled. The fan inside the furnace could be used to blow cool air into the chamber.

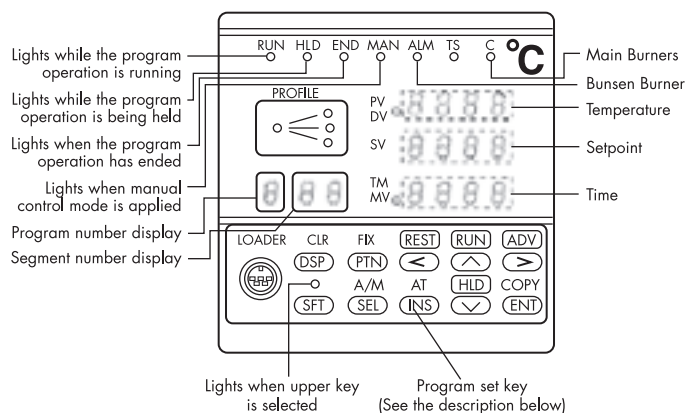
- A. Turn the controller ON.
- B. Press (SFT) + RST to stop the program. At this time only air is going into the chamber.
- C. When the furnace is cold enough, press (SFT) + RUN to start another burnout.

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5. USE AND PROGRAMMING OF PATTERNS

This unit is configured to register nine programs. Every program could be divided into 20 segments. Every segment holds several points of information (such as temperature, time, control outputs, and soak preference) to accommodate any type of operation. Follow the table on page # 17 when programming a new pattern.

A. EXPLANATION OF FRONT PANEL



B. KEYPAD

All pattern programming is performed with the keypad in conjunction with the display. There are no internal jumpers, switches or pots to set or adjust. Each key is provided with two selections. To use the function imprinted on each key, press the appropriate key as it is. To use the function imprinted above each key, press the Shift (SFT) key once and then the desired key.

(DSP) : To be used for changing the display.

(PTN) : To be used for selecting a program pattern.

(SEL) : To be used for selecting a parameter.

(ENT) : To be used for data entry.

(↑) (↓) : Arrow keys to be used for selecting a row and to change a data value.

(←) (→) : Cursor keys to be used for selecting a column.

(SFT) ; To be used when a function above a certain key is to be selected.

(SFT) + RUN : To be used to run a program.

(SFT) + REST : To be used to stop a program

(SFT) + ADV : To be used to advance to a next step in a program.

(SFT) + HLD : To be used to put a program on hold.

(SFT) + CLR : To be used for erasing a program from memory.

(SFT) + A/M : To be used when switching from AUTO to MANUAL operation.

NOTE : "MANUAL" is used to calibrate the furnace only

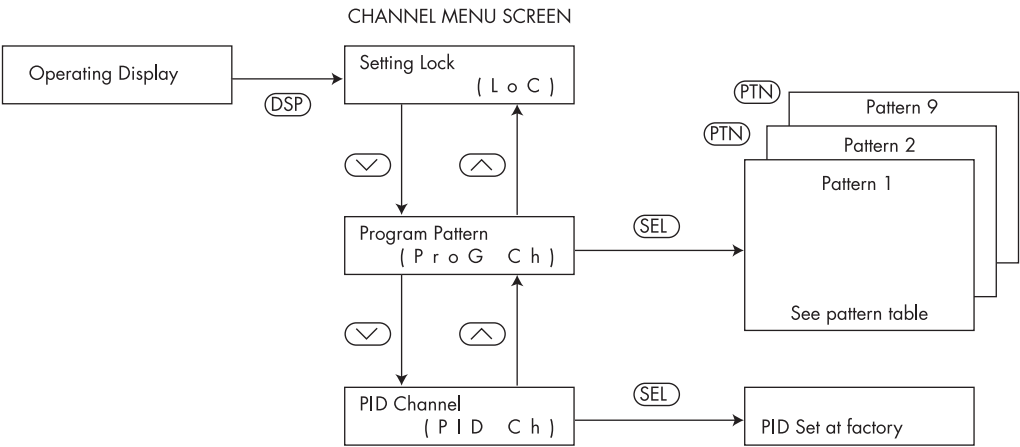
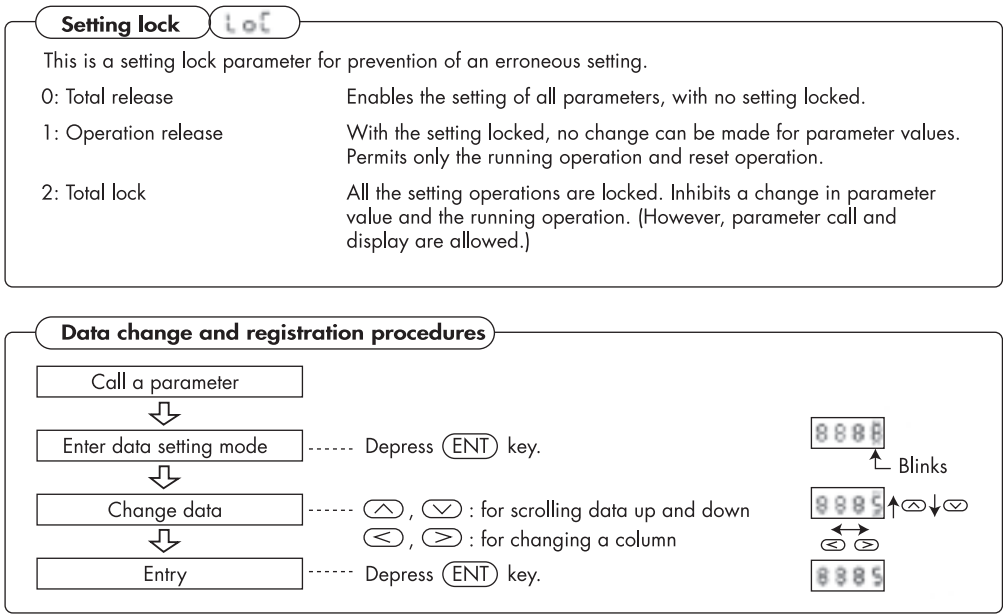
(SFT) + COPY : To be used when copying a program.

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The controller has been configured at the factory to meet the Burnout Furnace specific application. Strict adherence to the parameters setting will insure maximum, safe dependable service. Control profiles are programmed in a security protected mode. A special series of displays inform the operator the condition and operation of the furnace. Before placing a program into memory, the profile should be written down. With a completed program worksheet in hand, proceed as follows:

PROGRAMMING

This programming section is intended for the operator that has experience with this type of furnaces. Please consult the factory for other programming options.



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Pattern setting:

Turn the controller ON and press (SFT) + RST to stop the current program. Press the (PTN) key to select the desired pattern to be programmed. The following example is a step by step table to program pattern # 1.

KEYS	SEG	DISPLAY		EXPLANATION
(SEL)	1-01	LoC	0	Programming lock out
(↓)	1-01	ProG	--Ch	Program pattern section
(SEL)	1-01	----	----	Temperature and time seg # 1
(ENT)	1-01	20	----	Change temp to 20
(ENT)	1-01	20	.05	Change time to 5 minutes
(ENT)	1-01	20	.05	Change segment
(⇒)	1-02	----	----	Temperature and time seg # 2
(ENT)	1-02	200	----	Change temp to 200
(ENT)	1-02	200	.07	Change time to 7 minutes
(ENT)	1-02	200	.07	Change segment
(⇒)	1-03	----	----	Temperature and time seg # 3
(ENT)	1-03	649	----	Change temp to 649
(ENT)	1-03	649	.20	Change time to 20 minutes
(ENT)	1-03	649	.20	Change segment
(⇒)	1-04	----	----	Temperature and time seg # 4
(ENT)	1-04	649	----	Change temp to 649
(ENT)	1-04	649	.20	Change time to 20 minutes soak
(ENT)	1-04	649	.20	Change segment
(⇒)	1-05	----	----	Temperature and time seg # 5
(ENT)	1-05	1177	----	Change temp to 1177
(ENT)	1-05	1177	.45	Change time to 45 minutes
(ENT)	1-05	1177	.45	Change segment
(⇒)	1-06	----	----	Temperature and time seg # 6
(ENT)	1-06	1177	----	Change temp to 1177
(ENT)	1-06	1177	.30	Change time to 30 minutes soak
(ENT)	1-06	1177	.30	Change segment
(⇒)	1-07	----	----	Temperature and time seg # 7
(ENT)	1-07	1177	----	Change temp to 1177
(ENT)	1-07	1177	2.00	Change time to 2 hours (cast time)
(ENT)	1-07	1177	2.00	Change segment

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Program PID

(←)				Hold key until SEG reads 1-01
(↓)	1-01	Pidn	1	Shows PID # 1 (All segments = 1)

Program Alarms (Bunsen Burner and Horn)

(↓)	1-01	Aln1	----	Shows Alarm # 1
(ENT)	1-01	Aln1	000	Change Alarm to 0.
				Change all the segments to 0 by using the keys (→)(←) and (ENT).
(←)				Hold key until SEG reads 1-01
(↓)	1-01	Aln2	----	Shows Alarm # 2. Leave all the segment blank (----) but change the last one to 1. Use the keys (→)(←) and (ENT).

NOTE: To clear (----) a display press (SFT) + CLR while the SEG is flashing.

Skip Time Signal Section

(←)				Hold key until SEG reads 1-01
(↓)	1-01	rlon	----	This option is not used. Press (↓) 7 times until GS YES appears.

Program Guarantee Soak

(ENT)	1-01	GS	YES	Change the first 3 segments to GS NO and the rest of the segments to GS YES. Use the keys (→)(↓) and (ENT).
(←)				Hold key until SEG reads 1-01
(↓)	1-01	PuSr	no	Change all segments to PuSr YES.
(←)				Hold key until SEG reads 1-01
(↓)	1-01	CyCL	oFF	All segments should be CyCL oFF.
(←)				Hold key until SEG reads 1-01
(↓)	1-01	Link	oFF	All segments should be Link oFF.

NOTE: Some steps require Guarantee Soak others do not.

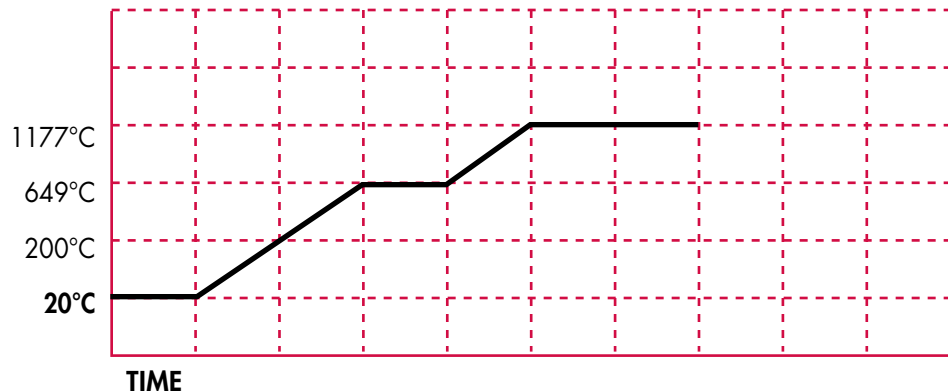
Use the Arrow keys to navigate through the programming map and check all the stored values. Use the table on the next page as reference. To exit press the (DSP) key.

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Programming MAP

PATTERN # 1

VR Investment



SEGMENTS			1\11	2\12	3\13	4\14	5\15	6\16	7\17	8\18	9\19	10\20
	DISPLAY	RANGE										
Temp.	°C	0-1200	20	200	649	649	1177	1177	1177	0		
Time	HR:MIN	0-99	5	7	20	20	45	30	2:00	0		
PID Number	Pidn	0 to 1	1	1	1	1	1	1	1	1	1	1
Alarm 1	Aln1	0 to 1	0	0	0	0	0	0	0	0	0	0
Alarm 2	Aln2	0 to 1	-	-	-	-	-	-	1			

Time 1 ON	r1on	Not used	-	-	-	-	-	-	-	-	-	-
Time 1 OFF	r1oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 ON	r2on	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 OFF	r2oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 ON	r3on	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 OFF	r3oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 ON	r4on	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 OFF	r4oF	Not used	-	-	-	-	-	-	-	-	-	-

Soak	GS	YES/no	NO	NO	NO	YES	YES	YES	YES	YES		
PV start	PuSr	YES/no	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cycles	CYCL	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Link	LinK	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

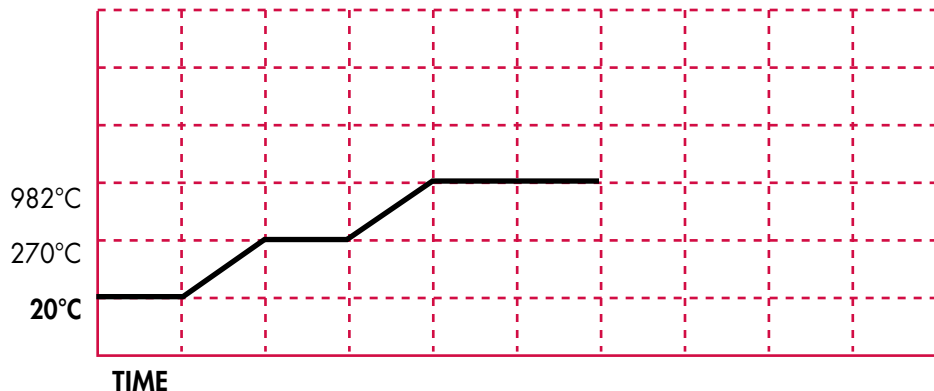
Note: This program is made to obtain the optimum burnout. The actual burnout time will vary between 160 minutes to 200 minutes depending on the load and power output of the furnace.

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Programming MAP

PATTERN # 2

PH3



SEGMENTS			1\11	2\12	3\13	4\14	5\15	6\16	7\17	8\18	9\19	10\20
	DISPLAY	RANGE										
Temp.	°C	0-1200	20	270	270	982	982	982	0			
Time	HR:MIN	0-99	7	36	50	50	30	2:00	0			
PID Number	Pidn	0 to 1	1	1	1	1	1	1	1	1	1	1
Alarm 1	Aln1	0 to 1	0	0	0	0	0	0	0	0	0	0
Alarm 2	Aln2	0 to 1	-	-	-	-	-	1				

Time 1 ON	r1on	Not used	-	-	-	-	-	-	-	-	-	-
Time 1 OFF	r1oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 ON	r2on	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 OFF	r2oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 ON	r3on	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 OFF	r3oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 ON	r4on	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 OFF	r4oF	Not used	-	-	-	-	-	-	-	-	-	-

Soak	GS	YES/no	NO	NO	NO	YES	YES	YES	YES			
PV start	PuSr	YES/no	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cycles	CYCL	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Link	LinK	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

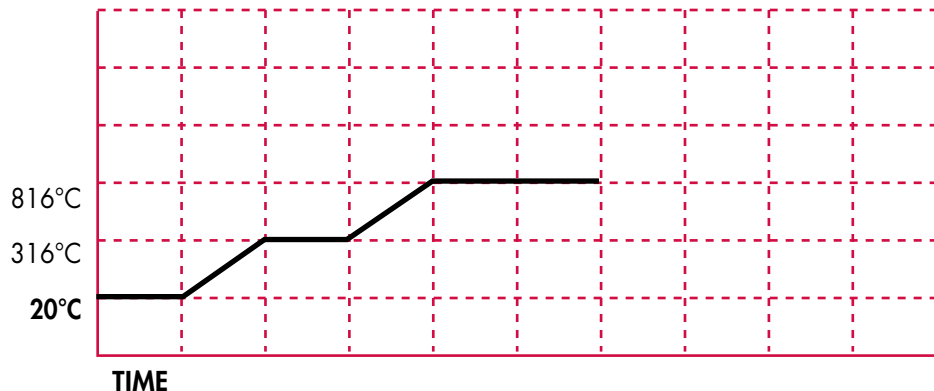
Note: This program is made to obtain the optimum burnout. The actual burnout time will vary depending on the load and power out of the furnace.

Austenal 1365 Gas Burnout Furnace

Programming MAP

PATTERN # 3

C & B



SEGMENTS			1\11	2\12	3\13	4\14	5\15	6\16	7\17	8\18	9\19	10\20
	DISPLAY	RANGE										
Temp.	°C	0-1200	20	316	316	816	816	816	0			
Time	HR:MIN	0-99	7	35	45	36	1:00	2:00	0			
PID Number	Pidn	0 to 1	1	1	1	1	1	1	1	1	1	1
Alarm 1	Aln1	0 to 1	0	0	0	0	0	0	0	0	0	0
Alarm 2	Aln2	0 to 1	-	-	-	-	-	1				

Time 1 ON	r1on	Not used	-	-	-	-	-	-	-	-	-	-
Time 1 OFF	r1oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 ON	r2on	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 OFF	r2oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 ON	r3on	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 OFF	r3oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 ON	r4on	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 OFF	r4oF	Not used	-	-	-	-	-	-	-	-	-	-

Soak	GS	YES/no	NO	NO	NO	YES	YES	YES	YES			
PV start	PuSr	YES/no	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cycles	CYCL	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Link	LinK	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

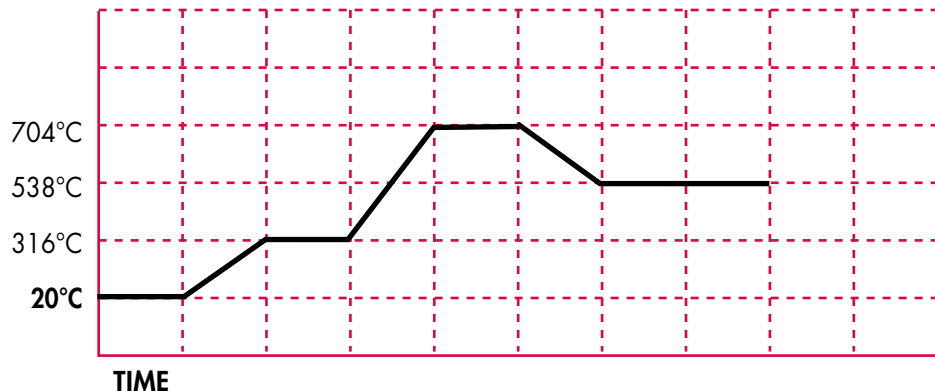
Note: This program is made to obtain the optimum burnout. The actual burnout time will vary depending on the load and power out of the furnace.

Austenal 1365 Gas Burnout Furnace

Programming MAP

PATTERN # 4

GOLD



SEGMENTS			1\11	2\12	3\13	4\14	5\15	6\16	7\17	8\18	9\19	10\20
	DISPLAY	RANGE										
Temp.	°C	0-1200	20	316	316	704	704	538	538	538	0	
Time	HR:MIN	0-99	7	35	45	28	30	12	30	2:00	0	
PID Number	Pidn	0 to 1	1	1	1	1	1	1	1	1	1	1
Alarm 1	Aln1	0 to 1	0	0	0	0	0	0	0	0	0	0
Alarm 2	Aln2	0 to 1	-	-	-	-	-	-	-	1		

Time 1 ON	r1on	Not used	-	-	-	-	-	-	-	-	-	-
Time 1 OFF	r1oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 ON	r2on	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 OFF	r2oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 ON	r3on	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 OFF	r3oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 ON	r4on	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 OFF	r4oF	Not used	-	-	-	-	-	-	-	-	-	-

Soak	GS	YES/no	NO	NO	NO	YES	YES	YES	YES	YES	YES	
PV start	PuSr	YES/no	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cycles	CYCL	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Link	LinK	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

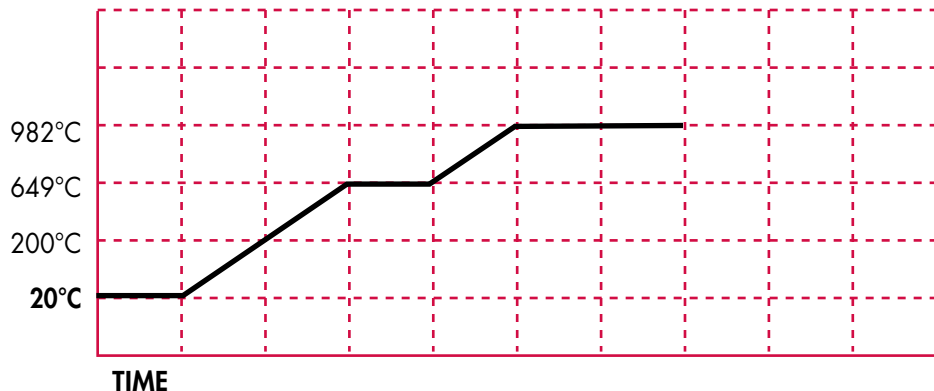
Note: This program is made to obtain the optimum burnout. The actual burnout time will vary depending on the load and power out of the furnace.

Austenal 1365 Gas Burnout Furnace

Programming MAP

PATTERN # 5

SYSTEM 18



SEGMENTS			1\11	2\12	3\13	4\14	5\15	6\16	7\17	8\18	9\19	10\20
	DISPLAY	RANGE										
Temp.	°C	0-1200	20	200	649	649	982	982	982	0		
Time	HR:MIN	0-99	5	7	20	20	30	30	2:00	0		
PID Number	Pidn	0 to 1	1	1	1	1	1	1	1	1	1	1
Alarm 1	Aln1	0 to 1	0	0	0	0	0	0	0	0	0	0
Alarm 2	Aln2	0 to 1	-	-	-	-	-	-	1			

Time 1 ON	r1on	Not used	-	-	-	-	-	-	-	-	-	-
Time 1 OFF	r1oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 ON	r2on	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 OFF	r2oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 ON	r3on	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 OFF	r3oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 ON	r4on	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 OFF	r4oF	Not used	-	-	-	-	-	-	-	-	-	-

Soak	GS	YES/no	NO	NO	NO	YES	YES	YES	YES	YES		
PV start	PuSr	YES/no	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cycles	CYCL	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Link	LinK	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

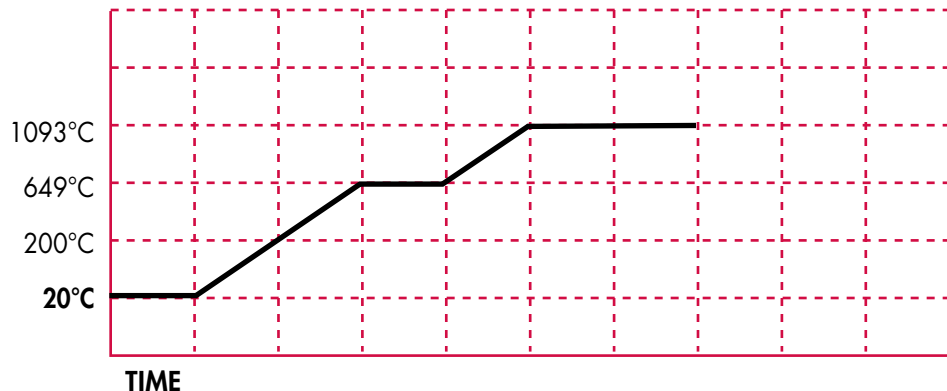
Note: This program is made to obtain the optimum burnout. The actual burnout time will vary depending on the load and power out of the furnace.

Austenal 1365 Gas Burnout Furnace

Programming MAP

PATTERN # 6

SYSTEM 2000



SEGMENTS			1\11	2\12	3\13	4\14	5\15	6\16	7\17	8\18	9\19	10\20
	DISPLAY	RANGE										
Temp.	°C	0-1200	20	200	649	649	1093	1093	1093	0		
Time	HR:MIN	0-99	5	7	20	20	30	30	2:00	0		
PID Number	Pidn	0 to 1	1	1	1	1	1	1	1	1	1	1
Alarm 1	Aln1	0 to 1	0	0	0	0	0	0	0	0	0	0
Alarm 2	Aln2	0 to 1	-	-	-	-	-	-	1			

Time 1 ON	r1on	Not used	-	-	-	-	-	-	-	-	-	-
Time 1 OFF	r1oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 ON	r2on	Not used	-	-	-	-	-	-	-	-	-	-
Time 2 OFF	r2oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 ON	r3on	Not used	-	-	-	-	-	-	-	-	-	-
Time 3 OFF	r3oF	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 ON	r4on	Not used	-	-	-	-	-	-	-	-	-	-
Time 4 OFF	r4oF	Not used	-	-	-	-	-	-	-	-	-	-

Soak	GS	YES/no	NO	NO	NO	YES	YES	YES	YES	YES		
PV start	PuSr	YES/no	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cycles	CYCL	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Link	LinK	oFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Note: This program is made to obtain the optimum burnout. The actual burnout time will vary depending on the load and power out of the furnace.

Austenal 1365 Gas Burnout Furnace

6. SPECIFICATIONS:

SIZE OF UNIT

WEIGHT 900 lbs. (408 Kg)

HEIGHT 58" (1.47 M)

WIDTH 31.5" (79 Cm)

DEPTH 37" (94 Cm)

ELECTRICAL: . . 120/240 VAC 50/60 HZ

GAS SUPPLY: NATURAL GAS at 4.5 " Water pressure

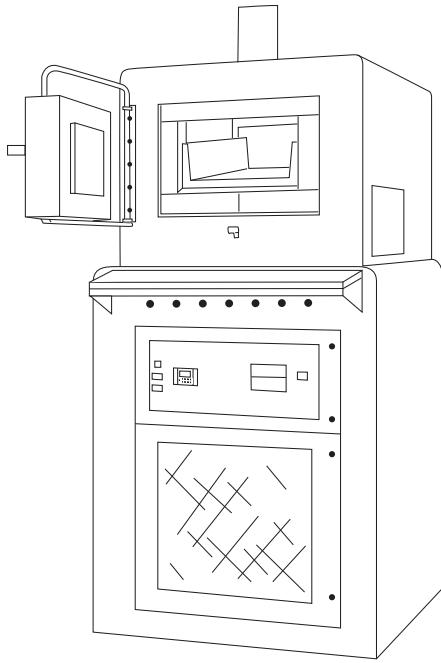
LPG at 11.8 " Water pressure 120,000 BTU/H

EXHAUST: A forced air exhaust system is required.

NOTE: Gas regulator is not included.

Use # N135510 for Natural Gas

Use # N136548 for Liquid Propane Gas



7. MAINTENANCE

A. DAILY: Clean top of hearth tile.

B. MONTHLY: Check the air filter at the blower. Vacuum inside of cabinet and filter.

8. TROUBLESHOOTING

Service of this equipment should be done only by qualified personnel. Failure to comply may result in personnel injury and/or property damage.

PROBLEM	CAUSE	SOLUTION
Power light OFF	Power switch No power Blown fuse	Place power in the ON position. Check line voltage. Check and replace fuse.
No ignition	Safety pilot out Bunsen burner clogged Cracked hearth tile Exhaust switch or air pressure switch bad.	Try to re-light pilot. Possible bad thermocouple. Remove main burner and clean. Replace hearth tile Check and replace safety switches if required.
Excessive burnout time	Air pressure low Clogged filter Clogged burner nozzles Gas pressure low	Increase pressure. Replace filter Vacuum chamber Check gas pressure with manometer.
Combustion erratic	Air and gas mixture Clogged bunsen burner	Reset air and gas mixture. Vacuum main burner.

Austenal 1365 Gas Burnout Furnace

9. REPLACEMENT PARTS

PIPING

N130503	Safety Pilot Thermocouple
N136081	Solenoid Valve 3/4" 120V
N135516	Pilot Burner For LP Gas and Natural Gas.
N135556	Orifice for Bunsen Burner (NATURAL GAS)
N135557	Orifice for Bunsen Burner (LP GAS)
N136538	Air filter element
N135560	Bunsen Burner (MAIN PILOT)
N136393	Air Pressure Switch
N136536	Pilot control valve
N136535	Air blower

FURNACE TOP

N135200	Combustion Chamber Bricks
N135313	Door Brick Assembly
N135323	Door Opening Bricks (SET OF 5)
N135325	Hearth Tile Large
N135400	Insulation Material, Vermiculite
N135326	K28 9" Straight Bricks for spot repair
N135335	Hearth Tile Supports (2)
N135101	Hinge Assembly for Furnace Door
N130826	Stack Diverter
N135215	Burner Nozzle Assembly (NATURAL or LP GAS)
N135225	Burner Nozzle Assembly (MFG. GAS)
N135348	Smooth Set Mortar for Brick Repair

CABINET

N135114	Wooden Handle
N135134	Door Catch
N135148	Door Latch Spring
N135127	Transite Base
N135011	Thermocouple (PLATINUM) with Protection Tube
N135012	Platinum Thermocouple Wire Only
N135016	Protection Tube for N135011
N134461	Thermocouple Wire with Plug Assembly
N136354	Transite Shelf
N136035	Plug Connector 10-Pin

Austenal 1365 Gas Burnout Furnace

N134470 PROPORTIONAL CONTROL MODULE

N134481	Temperature Controller
N134413	Switch (ALARM)
N136036	Socket connector 10-Pin
N245417	Buzzer
N155481	15 Seconds timer
N134475	10 Second timer
N136540	7-Day Timer 50/60 HZ
N245607	Fuse holder
N134463	5-Amp Fuse slow blow
N649539	Switch (POWER)
N134408	Switch (CONTROL)
N134409	3 Contact Plug

ACCESSORIES INCLUDED

N136096	Air Meter
N135569	Manometer
N165700	Amber Tubing for manometer
8 Each (1/4-20 Hex. HD. SS Bolts for Stack Diverter)	

Austenal 1365 Gas Burnout Furnace

LIMITED WARRANTY

1. DENTSPLY Austenal warrants that each of its products will be free from defects in materials and workmanship for a period of one year from the date the product is delivered. During that one year period, if the product fails due to a defect in materials or workmanship, DENTSPLY Austenal shall at its sole and absolute option either repair the defective product at no charge or replace the defective product with the same model or its equivalent model at no charge.

2. This Limited Warranty:

(a) Extends only to the original user or purchaser of the DENTSPLY Austenal product (referred to as "you" or "your").

(b) Covers all products manufactured by or for DENTSPLY Austenal as designated by an DENTSPLY Austenal nameplate or label affixed to the product or its container.

(c) Excludes defects, malfunctions or failures of any product caused by repairs by persons not authorized by DENTSPLY Austenal, use of parts or accessories not authorized by DENTSPLY Austenal, mishandling, improper installation, modification or damages to the product while in your possession, or negligent or unreasonable use (including failure to provide reasonable and necessary maintenance).

3. (a) REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS LIMITED WARRANTY IS THE EXCLUSIVE REMEDY RELATING TO DENTSPLY AUSTENAL'S PRODUCTS AND IS IN LIEU OF ALL OTHER RIGHTS, REMEDIES AND WARRANTIES. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER EXPRESS OR IMPLIED WARRANTIES, ARE HEREBY EXCLUDED. DENTSPLY AUSTENAL SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR (TO THE EXTENT PERMITTED BY LAW) FOR PUNITIVE OR EXEMPLARY DAMAGES, DUE TO BREACH OF ANY EXPRESS OR IMPLIED WARRANTY OR OTHERWISE.

(b) ANY CLAIM UNDER THIS LIMITED WARRANTY MUST BE BROUGHT WITHIN ONE YEAR FROM THE DATE OF DELIVERY OF THE PRODUCT OR IT SHALL BE FOREVER WAIVED (PROVIDED, THAT IF THE EVENT GIVING RISE TO THE CLAIM OCCURS DURING THE LAST 30 DAYS OF THE WARRANTY PERIOD, YOU SHALL HAVE AN ADDITIONAL 30 DAYS THEREAFTER IN WHICH TO MAKE A CLAIM UNDER THIS LIMITED WARRANTY).

4. The following additional provisions apply to any DENTSPLY Austenal product that is a "consumer product" within the meaning of applicable law:

(a) Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

(b) This warranty gives you specific legal rights, and you may have other rights which vary from state to state.

5. DENTSPLY Austenal will determine in its discretion whether any repair work pursuant to this Limited Warranty will be performed at DENTSPLY Austenal's premises or on your premises. You are responsible for pre-paying all shipping charges, if any. If you return the product, you will be responsible for all damage or loss in shipping.

6. Products not manufactured by or for DENTSPLY Austenal (even if distributed by DENTSPLY Austenal) are subject to the manufacturer's warranty. **DENTSPLY AUSTENAL DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO PRODUCTS NOT MANUFACTURED BY OR FOR DENTSPLY AUSTENAL.**

7. This document constitutes the final and exclusive expression of DENTSPLY Austenal's warranty for its products and supersedes any other representation, warranty or agreement (whether written or oral) concerning such warranty (including any inconsistent terms on DENTSPLY Austenal's invoice or other forms and your purchase order or other forms).

Please call 1-800-621-0381 to request warranty information.