# TABLE OF CONTENTS

**Section 1** Installation Instructions .......................................................................4  
1.1 Furnace Requirements .......................................................................4  
1.2 Service Connections ...........................................................................4  
1.3 Hearth Tile Installation .......................................................................5  
1.4 Thermocouple Installation ...................................................................6  

**Section 2** Instrument and Controls Description ................................................6  
2.1 Front Panel Switches ..........................................................................6  
2.2 Seven Day Timer ................................................................................7  
2.3 Temperature Controller ......................................................................9  

**Section 3** Air and Gas Adjustments ..................................................................9  
3.1 Air Pressure Adjustment ..................................................................10  
3.2 Pilot Ignition ...................................................................................10  
3.3 Gas Pressure Adjustment ................................................................11  
3.4 Bunsen Burner Adjustment ................................................................11  
3.5 Air-Gas Mixture Adjustment ..........................................................12  

**Section 4** Overnight Operation of Furnace ...................................................12  
4.1 Overnight Operation .......................................................................12  
4.2 Furnace Cooling ..............................................................................12  

**Section 5** Use and Programming of Patterns..................................................13  

**Section 6** Specifications ...................................................................................23  

**Section 7** Maintenance .....................................................................................23  

**Section 8** Troubleshooting ................................................................................23  

**Section 9** Replacement Parts ............................................................................24
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.
Austenal 1365 Gas Burnout Furnace

INSTALLATION LAYOUT

4" Flue Pipe (Heat resistant) 900°F
Diverter
(300 F.P.M.)

junction box

shut off valve

floor line

A
B
C
D
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)).
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.
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

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.
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.
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.

To turn ON the output at 8:30 a.m. and OFF at 5:15 p.m., Monday through Friday.

1. **Press MODE key for 1 second**
2. **Press MODE key**
3. **Set the output ON time to “8:30 a.m.” with H and M keys.**
4. **Press WRITE key. If either the hour or minute or both has not been set, WRITE key cannot be affected.**
5. **Adjust the output OFF time to “5:15 p.m.” with H and M keys.**
6. **When either H or M key is pressed, the value same as the ON time is automatically displayed.**
7. **Press WRITE key. If either the hour or minute or both has not been set, WRITE key cannot be affected.**
8. **Press MODE key to set the operation day setting mode.**

The default operation days are Sunday through Saturday, so the indicators at the Sunday through Saturday position initially light.

By using and WRITE keys, specify Sunday and Saturday as the days no operation is performed. Each time WRITE key is pressed, the day is alternately changed between an operation day and non-operation day.

Press MODE key. The run mode will be set and the time switch starts operating.

Note:
- The ON and OFF times of the output must always be programmed in pairs.
- Up to eight programs can be stored.
- If only the ON time is set and MODE key is pressed, the set ON time is cancelled.
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.
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.

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.
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.
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.
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.
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.
**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.

<table>
<thead>
<tr>
<th>KEYS</th>
<th>SEG</th>
<th>DISPLAY</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(SEL)</td>
<td>1-01</td>
<td>LoC 0</td>
<td>Programming lock out</td>
</tr>
<tr>
<td>(⇓ )</td>
<td>1-01</td>
<td>ProG --Ch</td>
<td>Program pattern section</td>
</tr>
<tr>
<td>(SEL)</td>
<td>1-01</td>
<td>---- ----</td>
<td>Temperature and time seg # 1</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-01</td>
<td>20 ----</td>
<td>Change temp to 20</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-01</td>
<td>20 .05</td>
<td>Change time to 5 minutes</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-01</td>
<td>20 .05</td>
<td>Change segment</td>
</tr>
<tr>
<td>(⇒ )</td>
<td>1-02</td>
<td>---- ----</td>
<td>Temperature and time seg # 2</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-02</td>
<td>200 ----</td>
<td>Change temp to 200</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-02</td>
<td>200 .07</td>
<td>Change time to 7 minutes</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-02</td>
<td>200 .07</td>
<td>Change segment</td>
</tr>
<tr>
<td>(⇒ )</td>
<td>1-03</td>
<td>---- ----</td>
<td>Temperature and time seg # 3</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-03</td>
<td>649 ----</td>
<td>Change temp to 649</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-03</td>
<td>649 .20</td>
<td>Change time to 20 minutes</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-03</td>
<td>649 .20</td>
<td>Change segment</td>
</tr>
<tr>
<td>(⇒ )</td>
<td>1-04</td>
<td>---- ----</td>
<td>Temperature and time seg # 4</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-04</td>
<td>649 ----</td>
<td>Change temp to 649</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-04</td>
<td>649 .20</td>
<td>Change time to 20 minutes soak</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-04</td>
<td>649 .20</td>
<td>Change segment</td>
</tr>
<tr>
<td>(⇒ )</td>
<td>1-05</td>
<td>---- ----</td>
<td>Temperature and time seg # 5</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-05</td>
<td>1177 ----</td>
<td>Change temp to 1177</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-05</td>
<td>1177 .45</td>
<td>Change time to 45 minutes</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-05</td>
<td>1177 .45</td>
<td>Change segment</td>
</tr>
<tr>
<td>(⇒ )</td>
<td>1-06</td>
<td>---- ----</td>
<td>Temperature and time seg # 6</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-06</td>
<td>1177 ----</td>
<td>Change temp to 1177</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-06</td>
<td>1177 .30</td>
<td>Change time to 30 minutes soak</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-06</td>
<td>1177 .30</td>
<td>Change segment</td>
</tr>
<tr>
<td>(⇒ )</td>
<td>1-07</td>
<td>---- ----</td>
<td>Temperature and time seg # 7</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-07</td>
<td>1177 ----</td>
<td>Change temp to 1177</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-07</td>
<td>1177 2.00</td>
<td>Change time to 2 hours (cast time)</td>
</tr>
<tr>
<td>(ENT)</td>
<td>1-07</td>
<td>1177 2.00</td>
<td>Change segment</td>
</tr>
</tbody>
</table>
Austenal 1365 Gas Burnout Furnace

Program PID

{ (⇐ )} 1-01

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

(⇐ ) 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.
Austenal 1365 Gas Burnout Furnace

Programming MAP

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.
### Austenal 1365 Gas Burnout Furnace

#### Programming MAP

**Pattern # 2**

<table>
<thead>
<tr>
<th>SEGMENTS</th>
<th>DISPLAY</th>
<th>RANGE</th>
<th>1\11</th>
<th>2\12</th>
<th>3\13</th>
<th>4\14</th>
<th>5\15</th>
<th>6\16</th>
<th>7\17</th>
<th>8\18</th>
<th>9\19</th>
<th>10\20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp.</td>
<td>°C</td>
<td>0-1200</td>
<td>20</td>
<td>270</td>
<td>270</td>
<td>982</td>
<td>982</td>
<td>982</td>
<td>982</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>HR:MIN</td>
<td>0-99</td>
<td>7</td>
<td>36</td>
<td>50</td>
<td>50</td>
<td>30</td>
<td>2:00</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PID Number</td>
<td>Pidn</td>
<td>0 to 1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Alarm 1</td>
<td>Aln1</td>
<td>0 to 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Alarm 2</td>
<td>Aln2</td>
<td>0 to 1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 ON</td>
<td>r1on</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Time 1 OFF</td>
<td>r1OF</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Time 2 ON</td>
<td>r2on</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Time 2 OFF</td>
<td>r2OF</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Time 3 ON</td>
<td>r3on</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Time 3 OFF</td>
<td>r3OF</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Time 4 ON</td>
<td>r4on</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Time 4 OFF</td>
<td>r4OF</td>
<td>Not used</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Soak</td>
<td>GS</td>
<td>YES/no</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>PV start</td>
<td>PuSr</td>
<td>YES/no</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Cycles</td>
<td>CYCL</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>Link</td>
<td>LinK</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

**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.
Programmable MAP

Pattern #3

\[\begin{array}{c|c|c|c|c|c|c|c|c|c|c}
\text{Segments} & 1\text{\textbackslash 11} & 2\text{\textbackslash 12} & 3\text{\textbackslash 13} & 4\text{\textbackslash 14} & 5\text{\textbackslash 15} & 6\text{\textbackslash 16} & 7\text{\textbackslash 17} & 8\text{\textbackslash 18} & 9\text{\textbackslash 19} & 10\text{\textbackslash 20} \\
\hline
\text{Display} & & & & & & & & & & \\
\text{Range} & & & & & & & & & & \\
\hline
\text{Temp. °C} & 0-1200 & 20 & 316 & 316 & 816 & 816 & 816 & 0 & & \\
\hline
\text{Time HR:MIN} & 0-99 & 7 & 35 & 45 & 36 & 1:00 & 2:00 & 0 & & \\
\hline
\text{PID Number} & Pidn & 0 to 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 \\
\hline
\text{Alarm 1 Aln1} & 0 to 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\hline
\text{Alarm 2 Aln2} & 0 to 1 & - & - & - & - & - & - & - & 1 & \\
\hline
\text{Time 1 ON} & r1on & Not used & - & - & - & - & - & - & - & - \\
\text{Time 1 OFF} & r1oF & Not used & - & - & - & - & - & - & - & - \\
\text{Time 2 ON} & r2on & Not used & - & - & - & - & - & - & - & - \\
\text{Time 2 OFF} & r2oF & Not used & - & - & - & - & - & - & - & - \\
\text{Time 3 ON} & r3on & Not used & - & - & - & - & - & - & - & - \\
\text{Time 3 OFF} & r3oF & Not used & - & - & - & - & - & - & - & - \\
\text{Time 4 ON} & r4on & Not used & - & - & - & - & - & - & - & - \\
\text{Time 4 OFF} & r4oF & Not used & - & - & - & - & - & - & - & - \\
\hline
\text{Soak GS} & YES/no & NO & NO & NO & YES & YES & YES & YES & YES & YES \\
\text{PV start PuSr} & YES/no & YES & YES & YES & YES & YES & YES & YES & YES & YES \\
\text{Cycles CYCL} & OFF & OFF & OFF & OFF & OFF & OFF & OFF & OFF & OFF & OFF \\
\text{Link LinK} & OFF & OFF & OFF & OFF & OFF & OFF & OFF & OFF & OFF & OFF \\
\hline
\end{array}\]

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**

<table>
<thead>
<tr>
<th>TIME</th>
<th>20°C</th>
<th>316°C</th>
<th>538°C</th>
<th>704°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV start</td>
<td>Yes/no</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cycles</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
<tr>
<td>Link</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

**SEGMENTS**

<table>
<thead>
<tr>
<th>Display</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp. °C</td>
<td>0-1200</td>
</tr>
<tr>
<td>Time HR:MIN</td>
<td>0-99</td>
</tr>
<tr>
<td>PID Number Pidn</td>
<td>0 to 1</td>
</tr>
<tr>
<td>Alarm 1 Aln1</td>
<td>0 to 1</td>
</tr>
<tr>
<td>Alarm 2 Aln2</td>
<td>0 to 1</td>
</tr>
</tbody>
</table>

**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

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

- **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
- **PV start PuSr** YES/no
- **Cycles CYCL** off
- **Link LinK** 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

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.
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.*

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power light OFF</td>
<td>Power switch</td>
<td>Place power in the ON position.</td>
</tr>
<tr>
<td></td>
<td>No power</td>
<td>Check line voltage.</td>
</tr>
<tr>
<td></td>
<td>Blown fuse</td>
<td>Check and replace fuse.</td>
</tr>
<tr>
<td>No ignition</td>
<td>Safety pilot out</td>
<td>Try to re-light pilot.</td>
</tr>
<tr>
<td></td>
<td>Bunsen burner clogged</td>
<td>Possible bad thermocouple.</td>
</tr>
<tr>
<td></td>
<td>Cracked hearth tile</td>
<td>Remove main burner and clean.</td>
</tr>
<tr>
<td></td>
<td>Exhaust switch or air pressure switch bad.</td>
<td>Replace hearth tile</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check and replace safety switches if required.</td>
</tr>
<tr>
<td>Excessive burnout time</td>
<td>Air pressure low</td>
<td>Increase pressure.</td>
</tr>
<tr>
<td></td>
<td>Clogged filter</td>
<td>Replace filter</td>
</tr>
<tr>
<td></td>
<td>Clogged burner nozzles</td>
<td>Vacuum chamber</td>
</tr>
<tr>
<td></td>
<td>Gas pressure low</td>
<td>Check gas pressure with manometer.</td>
</tr>
<tr>
<td>Combustion erratic</td>
<td>Air and gas mixture</td>
<td>Reset air and gas mixture.</td>
</tr>
<tr>
<td></td>
<td>Clogged bunsen burner</td>
<td>Vacuum main burner.</td>
</tr>
</tbody>
</table>
## Austenal 1365 Gas Burnout Furnace

### 9. Replacement Parts

#### Piping

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N130503</td>
<td>Safety Pilot Thermocouple</td>
</tr>
<tr>
<td>N136081</td>
<td>Solenoid Valve 3/4&quot; 120V</td>
</tr>
<tr>
<td>N135516</td>
<td>Pilot Burner For LP Gas and Natural Gas.</td>
</tr>
<tr>
<td>N135556</td>
<td>Orifice for Bunsen Burner (NATURAL GAS)</td>
</tr>
<tr>
<td>N135557</td>
<td>Orifice for Bunsen Burner (LP GAS)</td>
</tr>
<tr>
<td>N136538</td>
<td>Air filter element</td>
</tr>
<tr>
<td>N135560</td>
<td>Bunsen Burner (MAIN PILOT)</td>
</tr>
<tr>
<td>N136393</td>
<td>Air Pressure Switch</td>
</tr>
<tr>
<td>N136536</td>
<td>Pilot control valve</td>
</tr>
<tr>
<td>N136535</td>
<td>Air blower</td>
</tr>
</tbody>
</table>

#### Furnace Top

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N135200</td>
<td>Combustion Chamber Bricks</td>
</tr>
<tr>
<td>N135313</td>
<td>Door Brick Assembly</td>
</tr>
<tr>
<td>N135323</td>
<td>Door Opening Bricks (SET OF 5)</td>
</tr>
<tr>
<td>N135325</td>
<td>Hearth Tile Large</td>
</tr>
<tr>
<td>N135400</td>
<td>Insulation Material, Vermiculite</td>
</tr>
<tr>
<td>N135326</td>
<td>K28 9&quot; Straight Bricks for spot repair</td>
</tr>
<tr>
<td>N135335</td>
<td>Hearth Tile Supports (2)</td>
</tr>
<tr>
<td>N135101</td>
<td>Hinge Assembly for Furnace Door</td>
</tr>
<tr>
<td>N130826</td>
<td>Stack Diverter</td>
</tr>
<tr>
<td>N135215</td>
<td>Burner Nozzle Assembly (NATURAL or LP GAS)</td>
</tr>
<tr>
<td>N135225</td>
<td>Burner Nozzle Assembly (MFG. GAS)</td>
</tr>
<tr>
<td>N135348</td>
<td>Smooth Set Mortar for Brick Repair</td>
</tr>
</tbody>
</table>

#### Cabinet

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N135114</td>
<td>Wooden Handle</td>
</tr>
<tr>
<td>N135134</td>
<td>Door Catch</td>
</tr>
<tr>
<td>N135148</td>
<td>Door Latch Spring</td>
</tr>
<tr>
<td>N135127</td>
<td>Transite Base</td>
</tr>
<tr>
<td>N135011</td>
<td>Thermocouple (PLATINUM) with Protection Tube</td>
</tr>
<tr>
<td>N135012</td>
<td>Platinum Thermocouple Wire Only</td>
</tr>
<tr>
<td>N135016</td>
<td>Protection Tube for N135011</td>
</tr>
<tr>
<td>N134461</td>
<td>Thermocouple Wire with Plug Assembly</td>
</tr>
<tr>
<td>N136354</td>
<td>Transite Shelf</td>
</tr>
<tr>
<td>N136035</td>
<td>Plug Connector 10-Pin</td>
</tr>
</tbody>
</table>
### PROPORTIONAL CONTROL MODULE

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

### ACCESSORIES INCLUDED

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N136096</td>
<td>Air Meter</td>
</tr>
<tr>
<td>N135569</td>
<td>Manometer</td>
</tr>
<tr>
<td>N165700</td>
<td>Amber Tubing for manometer</td>
</tr>
</tbody>
</table>

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.