

BIOSTAR® SCAN WITH LCD DISPLAY

Operation Manual



Biostar® Scan With LCD Display

Achieve flawless adaptation using the most advanced positive pressure thermal-forming technology available. Designed with convenient bar code scanner that automatically enters the correct processing information for your material. The heated side of the material is formed directly over the model using 80psi. Fabricate hard and soft dental appliances in half the time of conventional methods.



Technical Data:

- Voltage 110/120V (AC) - 50/60Hz
- Power 750W
- Pressure 87psi
- L x W x H 18" x 9.75" x 10.25"
- Weight 42lbs / 19.05kg

Installation

Congratulations on the purchase of your Biostar Scan With LCD Display. Before removing the machine and its components from the shipping box, determine the location for the Biostar in the laboratory. The machine's size and weight are outlined above. Make sure sufficient workspace around the machine is available and that nothing will interfere with operation of the heating element.

Reminder: Keep any flammable material away from the heating element.

The shipping box contains:

- Biostar Scan With LCD Display unit
- Pellet drawer
- Clamping frame
- Model platform
- Pellet cup
- High pressure hose with hose clamps and air filter
- Container of pellets
- Pellet brush with magnet
- Replacement air filter

After inspecting the items, remove all packing material, and position the Biostar on the laboratory bench. To prevent machine malfunctions as a result of excessive dust, do not place the unit near etcher catchers, microetchers, or any other dust or water-generating equipment. The air source should be within reach of the machine using the high-pressure hose as a reference guide. The air pressure should be capable of supplying a minimum of 80psi to the unit.

The basic components of the Biostar Scan With LCD Display include:

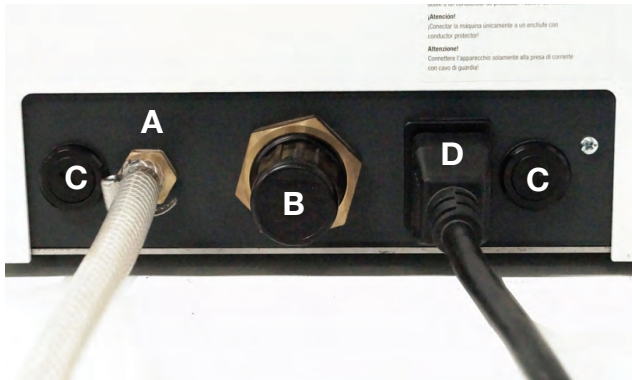


- A On/Off Switch
- B Infrared Heater
- C Control Panel
- D Locking Handle
- E Barcode Scanner
- F Pellet Cup
- G Pellet Drawer
- H Pressure Chamber
- I Locking Ring Clamp
- J Platform*
- K Magnetic Brush**

Front View

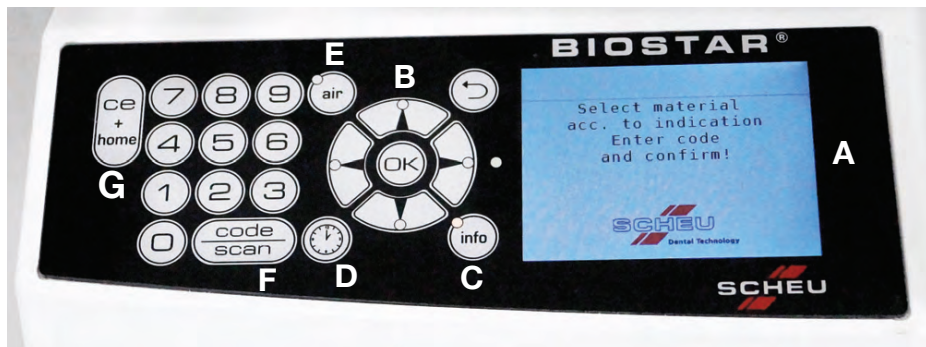
- On/Off Switch:** Supplies electricity to operate the machine.
- Infrared Heater:** Found on left side of unit, swings from back of machine (rest position), forward over thermal plastic held on the chamber.
- Control Panel:** Contains operating controls including keypad operation input buttons, air pressure evacuation button, and digital operating viewing panel.
- Locking Handle:** Locks chamber onto pellet cup/platform and switches air pressure on.
- Barcode Scanner:** Automatically enters the correct processing information for the thermal plastic.
- Pellet Cup:** Used in every pressure-forming process and can be removed from the Biostar table for cleaning. The pellet cup holds the dental model, pellets, and platform.
- Platform*:** Circular plate that is placed on the inner lip of the master pellet cup, to be used in place of pellets.
- Pellet Drawer:** Removable front compartment that holds unused pellets.
- Pressure Chamber:** Thermal plastic is held and air pressure incorporated for molding.
- Locking Ring Clamp:** Circular metal clamp that secures material to the pressure chamber.
- Magnetic Brush**:** Used to control pellet placement and remove the platform from the pellet cup.





Back View

- A Compressed Air Supply:** A ribbed air valve to clamp the air-pressure hose to the machine
- B Pressure Regulator:** Dial to increase or decrease air pressure used in the Biostar
- C Fuse Holders:** Two compartments that house miniature fuses
- D Plug:** Three-prong electrical socket for the detachable power cord



Control Panel

- A** Digital Panel With LCD Display
- B** OK/Menu Navigation Button
- C** Info Button
- D** Time/Clock Button
- E** Air Pressure Evacuation Button
- F** Code/Scan Button
- G** CE+ Home Button

OK/Menu Navigation Button:



← → ↺ ↻ Provides navigation to search through the menu

Ⓞ Selects the menu item

Info Button:

Allows user to view safety information, hints, materials, appliance designs, troubleshooting, foil assortments, and fabrication videos.

Time/Clock Button:

Heating times can be programmed manually on the numeric keypad.

Air Pressure Evacuation Button:

Used for air pressure evacuation of the chamber.

Code/Scan Button:

Activates the barcode scanner and 3-digit operation barcode command. **Code:** programs heating and cooling operating times for materials and pressure forming. **Scan:** provides automatic programming of codes.

CE + Home Button:


Erases information placed in memory, and returns display screen to the main menu.



LCD Display Screen

- CODE:** Three-digit code to identify heating and pressure-molding times
- t (Heating Time):** Total time to heat the material being used
- TEMP:** Actual temperature of the heating lamp
- P (Pressure):** Operating air pressure appears on screen above time and temperature. Measurement is in psi. Suggested operating pressure is 80psi.



- Returns to previous page displayed in the main menu.
- Use the  tabs to navigate through the information menu.
- Press the OK button to select a menu item.
- Info button lists items such as safety, indication, troubleshooting, foils assortment, and videos.

Initial Setup and Use



1. Plug the appropriate end of the electrical cord in the back of the Biostar (**A**) and the opposite end into a three-prong 110v outlet. The fuses are located in the back of the machine to the left of the air hose and to the right of the electrical connection (**B**).
(2 Fuses: 5x20mm 10amp)



2. Connect the Biostar to the air source using the high-pressure hose. Slip one end of the hose onto the air valve (**C**) of the Biostar, and slip the other end over the air pressure line. Secure each end in place with a hose clamp.

Note: Route the electrical cord and pressure hose away from the heating element.



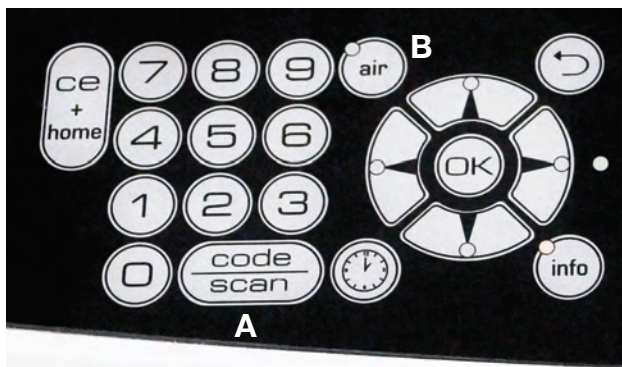
3. Turn the power to 'ON' position. The red power switch (**D**) is located on the lower right corner on the front of the Biostar.

4. Secure the **Clamping Frame (E)** to the pressure chamber by referencing the clamp handle at a 4-5 o'clock position over the chamber. Slip the clips of the clamping frame in to the grooves on the outside of the chamber, and slide the clamping handle to the left (**curved red arrow**).



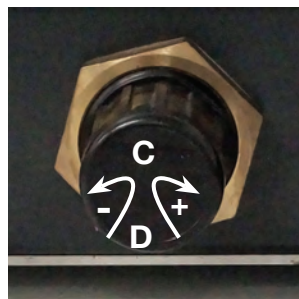
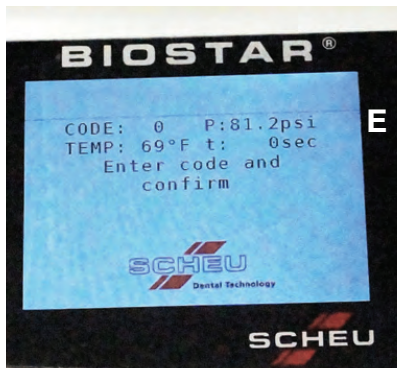
5. With pellets provided, fill cup (E) half full with pellets.
6. Pour remaining pellets in the pellet drawer (F) and close the drawer flush to the machine.
7. Place the platform on the inner lip of the pellet cup (white arrow), with the pellet level half full.

IMPORTANT: Make sure the inner lip of the cup is clear of pellets.



8. Working pressure of 87psi is pre-set in the machine. With the power button in the 'ON' position, press the **CODE/SCAN** button (A). The current pressure will show on the LCD display. Confirm or adjust the Biostar air pressure (B) if needed. Suggested operating pressure is 80psi

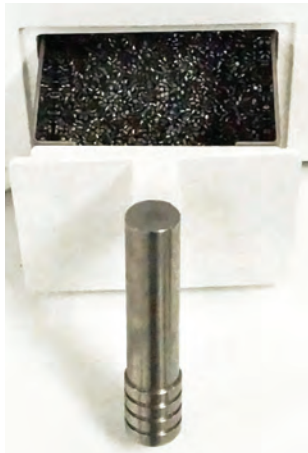
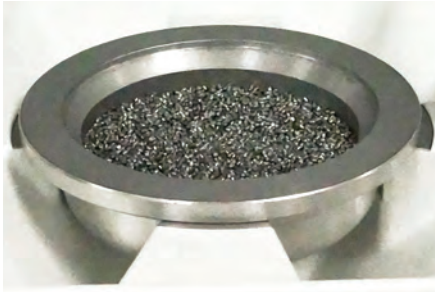
Reach behind the machine and release the locking cap (C) on the regulator by pulling it outward. Set the pressure by turning the regulator dial on the back of the machine clockwise to increase the pressure, counterclockwise to decrease (D). The LCD display will show the change in pressure (E). Once the desired pressure is set, lock the regulator by pushing the cap in towards the machine.



- **Reminder: DO NOT use material thicker than 5mm within the clamping mechanism. This may cause the Biostar to malfunction while pressure is in the chamber, and damage the internal chamber springs.**
- **ALWAYS wear safety glasses when using this machine and during all fabrication procedures.**

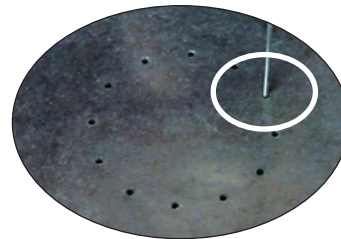
Maintenance

A regular maintenance schedule should be followed. Proper maintenance will assure consistent fabrication results. Refrain from using water in the Biostar machine. Water may cause certain components to rust or corrode. When the machine is not being used, engage the clamping frame to the chamber and position the chamber on the pellet cup. This prevents lab dust from entering the pellet cup and the chamber.



Pellets will become dirty with regular use. Clean the pellets by placing them in a strainer and rinsing with hot water. Spread pellets on a towel and let air dry before placing them back in the Biostar. Check pellets monthly. If necessary, discard and replace dirty pellets in the bottom third of the cup.

Air escape holes are present in the base of the pellet cup and should be checked monthly to ensure that they remain open. Use a 0.036" diameter or smaller wire to open plugged holes.

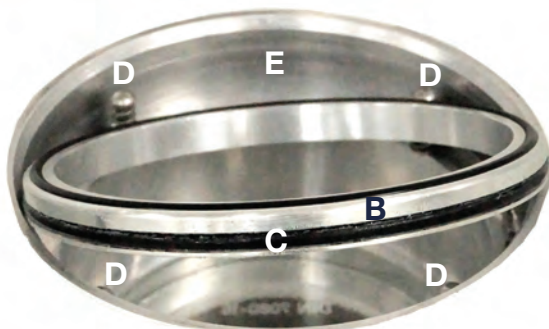


The **Adjusting Ring** is assembled from four components:

- A** Chamber Sealing Gasket
- B** Aluminum Ring
- C** Side Gasket
- D** Spring-loaded Adjusting Pins

Clean and inspect the top and side of the Adjusting Ring every 4-6 months.

- Clean the Side Gasket with a soft cloth
- Check potential gasket cuts or irregularities



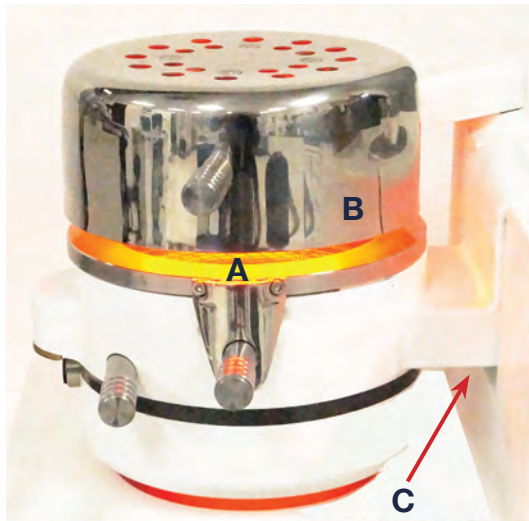
NOTE: The Adjusting Ring (**B**) should move freely in the chamber. If it does not after cleaning, apply a thin coat of Silicone Grease (016-021) to the inner wall of the Chamber (**E**), the 4 Spring-loaded Adjusting Pins (**D**), and the outside edge of the Adjusting Ring Side Gasket (**C**). After applying silicone grease, depress the Adjusting Ring several times to ensure it is moving freely.



Check the air filter clamped to the air line monthly for discoloration and/or moisture.

If replacing the air filter, turn off the air source and bleed the high-pressure hose of air. Loosen the clamps holding the filter and slide it off the hose.

Position the new filter by referencing the arrow on the filter case toward the back of the Biostar.



The heating surface (A) should be parallel to the heating element (B). Adjust the position of the chamber by turning the screw (C) located under the chamber support frame with a small screwdriver.

Clockwise adjustment of the screw lowers the chamber from the heater, counterclockwise raises the chamber closer to the heater.

Always check the position of the chamber when heating materials.

Operation

There are three basic functions to operate the Biostar including:

- Model preparation
- Heating cycle
- Pressure molding process

Model Preparation

Prepare models for the thermal-forming process by removing bubbles or filling voids, whether using the platform or pellets.

- The platform is used when forming soft or thin plastics.
- Pellets are used when forming thick, less flexible materials.

The pellets prevent the plastic from forming to unwanted areas of the dental cast, reducing material thinning.

Platform Use

The platform is used to expose the entire dental mold to the formation of the thermal plastic. This eliminates having to use pellets. Pellets are difficult to remove from softer material (i.e., soft mouth-guard material), and can create a higher occurrence of air leaks during the pressure-forming process when using thinner thermal plastics (i.e., ≤ 1 mm thick).



Empty cup or reduce the pellet line to the half-way level (**white arrow**). Make sure the inner lip of the cup is clean. Place the outer ring of the platform on the inner lip of the pellet cup with the flat platform surface on top (**curved white line**).

To remove the platform, use the Biostar Brush with Magnet (016-021).

Engage the tip and lift up.



Remove model bubbles and detail the oral anatomy with a laboratory knife. Fill holes in the model with a quick-setting stone.

When referencing the model to the platform, make sure the base of the model is reduced flat, parallel to the occlusal surface. In some cases, the base is removed creating a flat horseshoe model to eliminate excessive material thinning.

No undercuts under the model base should be present. This will prevent material from forming beneath the model base causing potential air leaks and poor material forming. For some materials, a liquid separating foil is applied to allow for easy removal of the formed material.



Position the model on the platform, referencing the heel toward the material in the pressure chamber, and incisor segment near the center area of the platform. Placing the model to the left side of the platform provides better material forming along the incisor region.

Apply a liquid model-separating medium, such as Great Lakes Separator (175-034) or Bioplast Insulator (175-068) to the dental casts before the material is formed.

Pellet Use

A 2.5 pound container of zinc pellets (010-125) is supplied with each Biostar. Pellets are used to prevent the thermal-plastic materials from stretching over areas of the model that are not part of the appliance design. Stainless steel pellets (010-099) are also available. The pellets will prevent sealing the chamber to the cup, and inhibit the pressure-molding process if left on the pellet cup rim.

Note: The use of pellets other than what the manufacturer recommends may result in machine malfunction and could void the warranty.

Work models are placed in cylindrical pellets to:

- Support the base of the model so that the occlusal-incisal plane is parallel to the rim of the cup
- Prevent the material from forming to the facial surfaces of the teeth, making it hard to remove the appliance from the work model, and overstretch of the thermal plastic
- Prevent heated material from melting wax used to support the appliance wires on facial areas



Place an adequate amount of pellets in the pellet cup to elevate the model at the proper level. Material termination areas, located on the facial surface of the model, should be referenced at the same height as the top ledge of the pellet cup.

Note: Mounted models may be referenced slightly higher than indicated.



Remove the pellet drawer (A) from the machine by pulling the drawer out using the handle.

To replace the pellet drawer, line up the drawer with the opening and close the drawer flush to the machine.



Pour pellets between the model and the inner wall of the cup (red arrow). Apply additional pellets in this area as needed.



Use a Biostar Brush with Magnet (016-021), to remove excess pellets, and level the pellet line from the occlusal-incisal plane to the top rim of the cup.

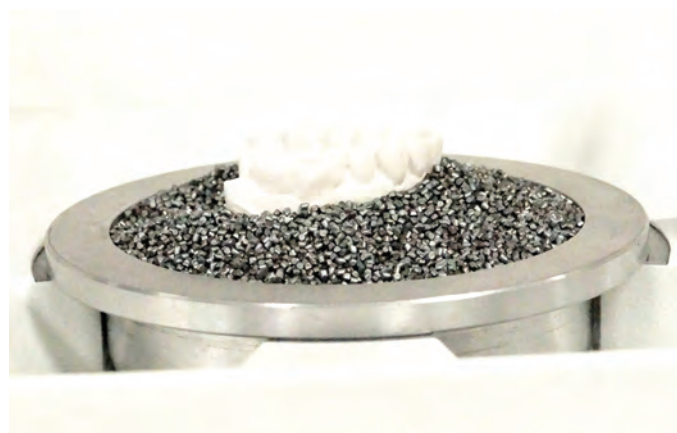
Hold the brush at an angle to sweep excess pellets from the rim of the cup and the palatal area of the model. Sweep excess pellets around the outside of the cup to fall in to the pellet drawer (**red arrows**).

Note: The pellet level should always be to the top of the cup. The height of the model in the pellets will change with various applications.



When constructing an orthodontic retainer (i.e., a Hawley), the pellets placed against the occlusal-incisal margin cover the wax holding the wires facially, and act as an insulator when the heated material is formed.

Improper packing of a model can cause a blowout, air leak, or machine malfunction. It is important that there is no sudden drop of the pellet margin at the inner cup wall, or that the model is not positioned too high or too low within the cup. This allows the material to be overstretched, thinning it to where a hole is created and air blows through. In some instances, a large air leak could cause inferior material adaptation that can result in a loose-fitting appliance.



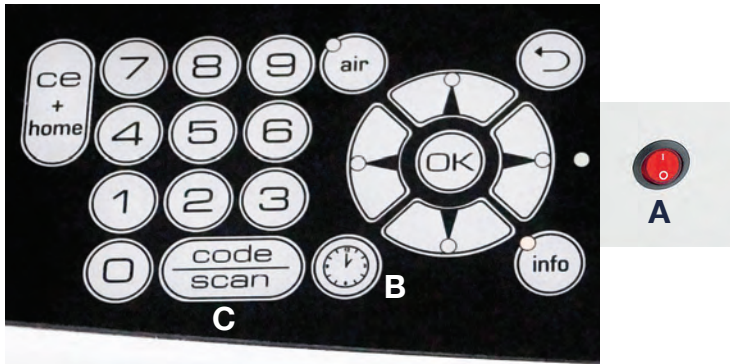
Models attached to articulator mountings may be referenced slightly higher than indicated.

Mounted models should be split cast. If the model cannot be removed from the mounting, the pellet level will need to be at a slight incline to appliance termination areas.

Note: Make sure the top rim of the cup remains pellet free. This will provide proper closure and lockdown of the pressure chamber.

Heating Cycle

There are two options to program the heating times:



Note:

- During long heating cycles or continual use, the lamp can become extremely hot.
- Caution is advised to prevent skin burns.

1. Manual Entry:

- Press the **Power Switch (A)** of the Biostar to activate the machine.
- Press the **Time** button (**B**) to manually set the time. Using the keypad, input the appropriate heating time (following manufacturer's suggested heating time) for the material to be thermal formed. Then press the **Time** button again to enter. A default cooling time will automatically appear during the pressure-forming process.

-OR-

- Press the **Code/Scan** button (**C**) to manually set both the heating and cooling times. The codes indicate the length of time for the heating and cooling phases (See code chart at the end of this operation manual). To program, press the **Code/Scan** button and input the desired 3-digit code on the keypad. Then press the **Code/Scan** button again to enter.
- You are now ready to heat the material. The Biostar provides instructions on the LCD display throughout the process. The programmed cooling time will automatically appear once the material is pressure formed.

2. Barcode Scan:

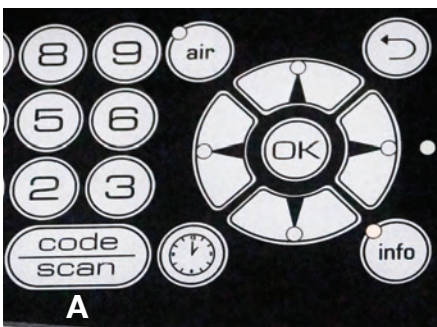
The Barcode Scanner automatically enters the correct processing information for your material. Press the **Code/Scan** button (**A**) to activate the scanner.

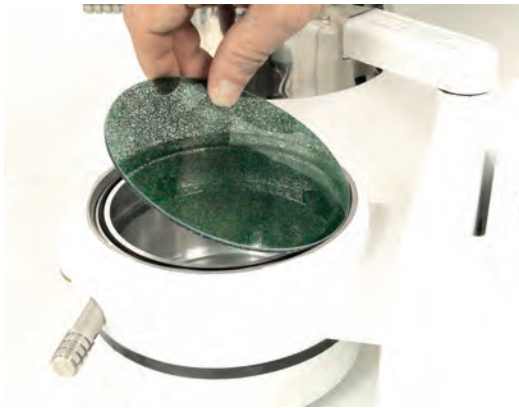
For Great Lakes Material:

The barcode is located on an easy-to-scan barcode strip (**B**) inside each box of material. Hold the barcode strip under the scanner tilted upward, against the bottom plate until you hear a 'beep' indicating the barcode has been read. The heating time will automatically show on the LCD display (**C**).

For Scheu Material:

The barcode is printed directly on the material (**D**). Hold the material under the scanner tilted upward, against the bottom plate until you hear a 'beep' indicating the barcode has been read. The heating time will automatically show on the LCD display (**C**).





Position a 125mm diameter round disc on the spring-loaded adjusting ring of the pressure chamber.



Align the clamping frame over the material so that the three clips slip under the bevel of the locking device on the sides of the chamber.



Tighten by turning the handle clockwise, so that the chamber and clamping handles are parallel (**curved red arrow**).

Note: To ensure a tight seal between the pressure chamber and the cup, pellets should be completely removed from around the rim.

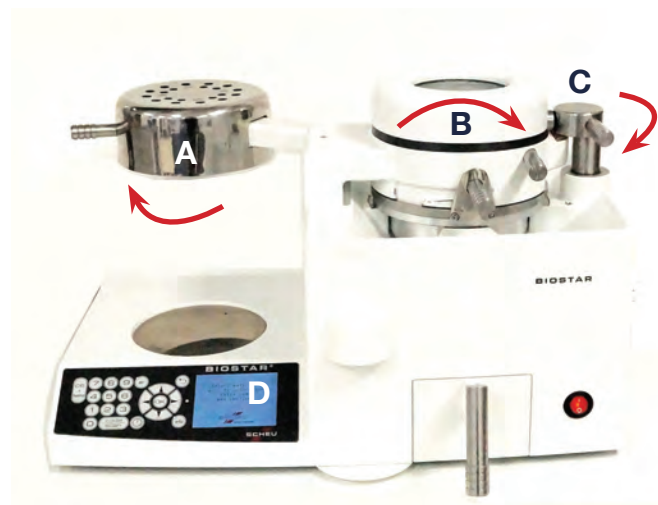


Swing the heating element from its rest position over the material (**curved red arrow**) on the pressure chamber. When the heater is placed over the material, the heating element illuminates and the set heating time begins.

With **5** seconds remaining in the heating phase, warning beeps will sound. Once the heating time has elapsed, the beeping will be continuous until the heater is removed from the material.

Material heating times will vary based on compound, color, and thickness. Recommended heating times are identified on an easy-to-scan barcode strip inside each box of Great Lakes material, and printed directly on Scheu material. If the proper adaptation is not obtained, it may be necessary to extend or decrease the recommended heating times by 5-15 seconds.

Pressure Molding Process

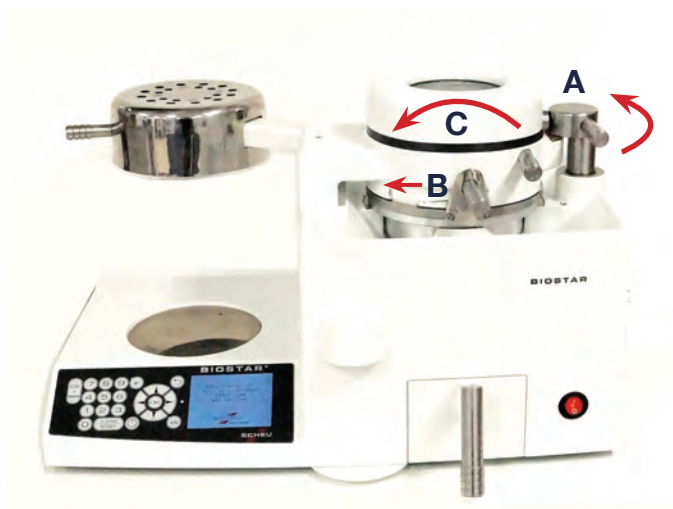


After the recommended time is reached, swing the heating element (**A**) back to the rest position (**left curved red arrow**) and gently flip the pressure chamber (**B**) onto the cup (**center curved red arrow**). Turn the locking handle (**C**) from the straight back rest position 180° toward the front of the machine (**right curved red arrow**) until it locks. This secures the chamber over the cup and allows air pressure to enter the chamber. The pressure chamber will not lock in place if pellets, interference, or improper cup/platform alignment is not obtained.

Once the air pressure is turned on, the digital clock on the LCD display panel (**D**) will automatically initiate a cool-down time. At this point, the material has been formed over the model and is cooling under pressure.

At the end of the cooling time, short beeps will sound. Press the **Air** button (**E**) on the control panel to release the air pressure from the chamber. Short beeps will sound indicating full pressure evacuation. If a shorter cooling cycle is required, the programmed time can be erased and chamber evacuated by turning off the power switch.





To unlock the chamber, swing the locking handle (A) 180° toward the back of the machine (right curved red arrow) to the straight back rest position.

Unlock the material held on the chamber by sliding the clamping frame arm (B) to the left (straight red arrow). Lift the pressure chamber (C) off the platform or pellet cup (center curved red arrow) and remove the model with the formed plastic. The appliance is now cool to the touch and ready to be trimmed and finished.

If material was pressure formed in the pellet cup, some pellets may stick to the formed material surface. Remove as many pellets as possible with a lab knife.

Note: Not all pellets can be removed.

Important Troubleshooting Advice

Performing a Cold Test:

- A. Turn the Biostar on. Make sure the platform is in place. Clamp a sheet of 2mm (or thicker) hard material onto the pressure chamber. Secure the clamping frame.
- B. Enter 5 seconds of heating time. Swing the heating element over the material to activate the heat. Immediately return the heating element to the rest position.
- C. Swing the pressure chamber over the model platform. Activate the air pressure.
- D. If you hear a constant rush of air during pressurization (air leak), contact your Great Lakes Customer Support Specialist immediately.

For fabrication videos, tips, and techniques, visit our website:

GreatLakesDentalTech.com/techniques

Biostar With LCD Display Codes

Understanding 3-Digit Codes:

- The first two digits represent the operating temperature of the heating element, and the length of heating time required prior to the thermal-forming process.
- The third digit represents the cooling phase and the length of time that the thermal-formed material should be held under pressure.
- All heating and cooling times are in seconds.

Chart 1: Heating Phase

Codes →

220°C 427°F Standard	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Heating Time Seconds	20	25	30	35	40	45	50	55	60	65	70	75	80	90	100	110	120	140	150	160

Chart 2: Cooling Phase

Code	Time (seconds)
0	0
1	20
2	60
3	120
4	150
5	180
6	240
7	300
8	360
9	420

Example: **CODE #244** = 220°C | 427°F Temperature
24 = 100 seconds Heating Time
4 = 150 seconds Cooling Time

Reference Notes



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