

MECHANICAL PRESSES

T A B L E O F C O N T E N T S

INTRODUCTION	2
MODEL IDENTIFICATION	3
THEORY OF OPERATION	4
REQUIRED PERIODIC MAINTENANCE	5
TECHNICAL SERVICE	6
TROUBLESHOOTING	7
REPAIR PROCEDURES	8
THERMOSTAT REPLACEMENT	8
THERMOSTAT CALIBRATION	10
TRIAC (RELAY) REMOVAL	11
PRESSURE ADJUSTMENT	13
INSTALLATION OF PRESSURE ADJUSTING PARTS	15
HEATER REPLACEMENT	16
PLATEN REPLACEMENT	19
ON/OFF SWITCH REPLACEMENT	21
INDICATOR LIGHT REPLACEMENT	23
REPLACEMENT OF THE BELL TIMER	25

INTRODUCTION

Your Seal mounting and laminating press is a precision tool that will provide years of service when maintained properly.

This guide will help you perform routine user operating adjustments, determine when and how to conduct routine maintenance, and perform simple repairs.

MODEL IDENTIFICATION

Over the many years that Seal has manufactured quality dry mounting/laminating presses, minor changes have been incorporated into our products. These changes have helped keep the cost of our units down and reliability up. As each change took place, presses were identified as a new generation.

Mechanical Seal press models reviewed in this guide are:

Generation Three Presses: 360M
 210M
 160M
 110 and 110S

These presses are identified by the white housings, black arms and cantilevers, and toggle plate pin and clip fastenings. They have a temperature range of 50°F to 350°F (10° - 177°C).

Generation Four Presses: 500T
 210M
 160M

While similar in appearance to the presses listed above, these presses list the model identification on the front control panel, and have nut and bolt toggle plate fastenings (not pins and clips). They have a temperature range of 150° to 350°F (66° - 177°C).

THEORY OF OPERATION

Successful use of Seal presses and material is based on the control of four basic elements: Temperature, Pressure, Time and Humidity. Seal Mechanical presses are designed to regulate heat and pressure within the proper range.

Pressure is controlled in two ways: it is kept uniform by the sponge pad in the press base, and adequate by the pressure adjustment knobs (see Pressure Adjustment instructions). With proper adjustment, the presses can accept material up to 1" thick, but must be adjusted for each significant change in material thickness.

Heat is controlled by the temperature control knob located on the control panel. As this knob is turned, it bends the bi-metallic thermostat toward and away from its closed position. When the bi-metallic thermostat cools, it closes and provides current to the heater and heater indicator light. In some cases, a triac is used. Here the thermostat closes and trips the triac which in turn provides current to the heat indicator light and heater. The heater is simply a wire coil sandwiched between two flexible thermally-conductive plates. It is similar in appearance and function to an electric blanket. As the platen (which is against the heater) heats, the thermostat (which is also fastened to the platen) monitors its temperature. When the platen temperature reaches the temperature which is dictated by the knob on the control panel, the heater is shut off and remains off until the bi-metallic thermostat cools enough to close and reactivate the heating cycle.

REQUIRED PERIODIC MAINTENANCE

Seal presses are designed to require a minimal amount of maintenance. By adhering to the schedule below, consistent performance and minimal down-time are assured. This schedule assumes daily use of 2-3 hours. In very heavy or constant usage applications, more frequent maintenance may be required.

<u>What to Check</u>	<u>How Often</u>
1. Platen cleaning	As needed
2. Pressure adjustment	As needed
3. Spongepad - uniformity	3 years
4. Lubrication - stress joints	6 months
5. Look for loose screws, worn pivot points or burned out lights. Check power cord for cracks.	1 year
6. Thermostat contacts.	1 year

Platen Cleaning: Use a Seal platen cleaner kit whenever possible. Clean platen and wipe clean. After and between cleanings, periodic applications of silicone spray will facilitate easier removal of adhesive residue. For very dirty platens, commercial solvents, such as Seal's UnSeal, may be required. Never use abrasives on a platen. Always unplug the unit before cleaning with flammable solvents. Platens with a dark gray (teflon) color can be roughly cleaned by inserting kraft paper into the heated press, closing and locking the press, and turning the press off to allow it to cool. After cooling, peel the kraft paper away, removing most of the residual adhesive from the platen.

Pressure Adjustment: See "Pressure Adjustment" under Repair Procedures.

Sponge Pad: Feel the sponge pad for uniform resiliency. Pads with soft or dead spots or pads that lack a springy feel should be replaced.

Lubrication: A single drop of light machine oil or dry lubricant on all stress points will reduce wear. Wipe off excess.

Thermostat Contacts: The thermostat is a delicate unit and should not be disturbed if the press temperature corresponds to the setting on the control panel and the temperature does not wander by more than $\pm 50^{\circ}\text{F}$. Access to the contacts is gained by unscrewing and removing the control panel (see also "Triac (Relay) Removal", under Repair Procedures). The contacts can be cleaned by sliding a clean piece of paper between them. Grade 400 or finer emery cloth or sandpaper may also be used. Do not remove too much material from the contacts - they are made of a very soft metal and once scraped will need to be changed more often.

TECHNICAL SERVICE

Your Seal unit should provide many years of trouble-free operation if properly maintained. If your unit fails to perform satisfactorily, refer to the following Troubleshooting Chart or consult Seal Technical Service. Before contacting Seal, please record:

- The nature of the problem (and all of the variables involved).
- Your press model and serial numbers.
- If under warranty, note the date of purchase, date of warranty receipt and distributor's name, address and phone number.

Seal presses are simple mechanical/electrical devices that are easily repaired. The following troubleshooting chart is a helpful guide to self-repair.

First, consult the troubleshooting chart to clarify the problem, then follow the appropriate step-by-step repair procedures referred to in the chart. Always read repair procedures completely before beginning services. Always unplug the press before starting repair work. For press heating problems, a thermometer (or temperature strips) and an ohmmeter are helpful diagnostic tools.

TROUBLESHOOTING

Symptoms

Repair Procedure

Press temperature wanders and does not hold the setting on the temperature knob.

See "Thermostat Replacement"

Press temperature holds steady but does not correspond to setting on the temperature knob.

See "Thermostat Calibration"

Press heats to maximum temperature regardless of temperature setting.

1. See Triac Removal and Bypass (where applicable)
2. See Thermostat Replacement
3. Check for loose/shorting wires.

Press does not heat at all, or will not reach upper temperature range, but yellow heater light illuminates.

1. Check for charred wires, switches, thermostat contacts.
2. See Heater Element Replacement

Press does not heat at all and yellow heater light does not illuminate but red "On/Off" light does illuminate.

1. See Triac Removal and Bypass (where applicable)
2. See Thermostat Replacement

Press does not heat and red "On/Off" light does not illuminate

1. Is the unit plugged in?
2. Check power source circuit breaker.
3. See "On/Off" switch replacement.

Press heats but yellow heater light does not illuminate.

See Indicator light replacement

Platen heats unevenly and heater light goes on and off in normal cycle time when press is closed.

1. See "Pressure Adjustment"
2. See Heater Element Replacement

Platen heats unevenly and heater light stays on (does not cycle) when press is closed.

1. Check for charred wires, thermostat contacts, on/off switch.
2. See "Heater Replacement"

Bobble-like formation in same location on all finished works.

1. Replace spongepad

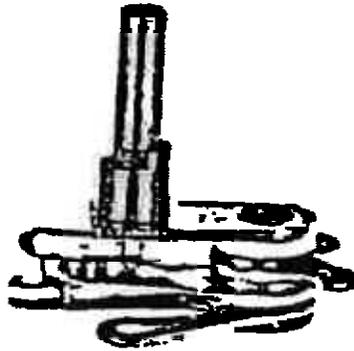
REPAIR PROCEDURES

THERMOSTAT REPLACEMENT

Tools Required:

- 1 medium-sized straight blade screwdriver
- 1 small-sized straight blade screwdriver
- 1 pair of needle-nose pliers.
- 1 phillips head screwdriver

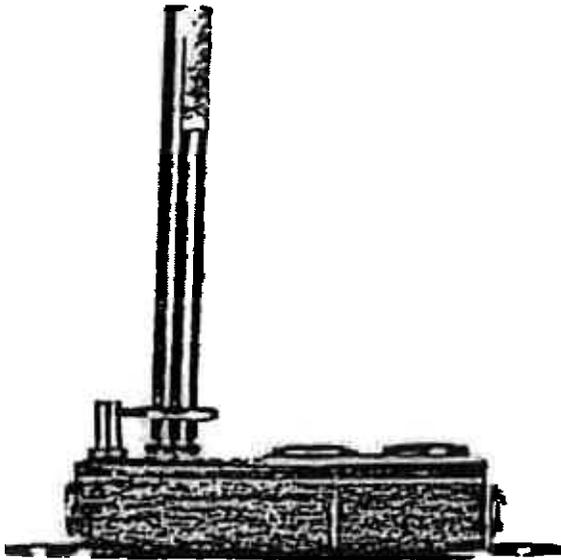
1. Disconnect the power source.
2. Using a small straight-blade screwdriver, remove the thermostat control knob and the knob spring (if any).
3. Remove the screws holding the nameplate in place. Carefully lift off the nameplate, exposing the thermostat cavity.
4. The thermostat has two connection points on it where wires are fastened. Note where these wires are attached; it may be useful to mark these wires for future identification when reconnecting.
5. On some models, the wires are attached to the thermostat with clips. Use needle-nose pliers to pull off these connections. On the other models the wires are attached with small screws.
6. With the wires removed, remove the screw(s) holding the thermostat to the aluminum platen. Note the number and order of the washers used under the screw heads; they must be replaced in the same order.
7. Place the new thermostat into position and reattach it to the platen. Do not overtighten the screws!
8. Reattach the thermostat wires to their proper connection points. Be sure that all connections are secure, and not touching each other.
9. Replace the nameplate. On models equipped with a thermometer, make sure that the heat sensing shoe is in proper contact with the aluminum platen. You may notice a small amount of white thermal grease under the thermometer heat sensing shoe. Do not wipe this off.
10. Replace the screws holding the nameplate and tighten securely.
11. Turn the thermostat stem as far clockwise as it will turn. Replace the spring and thermostat knob. Set the thermostat knob on the stem with the knob set at 3500F. Tighten the set screw securing the thermostat knob to the thermostat stem.
12. To calibrate the new thermostat, see "Thermostat Calibration".



PART NO: MFM-80

PRESS MODELS: 350, 200, 150, 120

WIRE ENDS; RING TERMINALS.

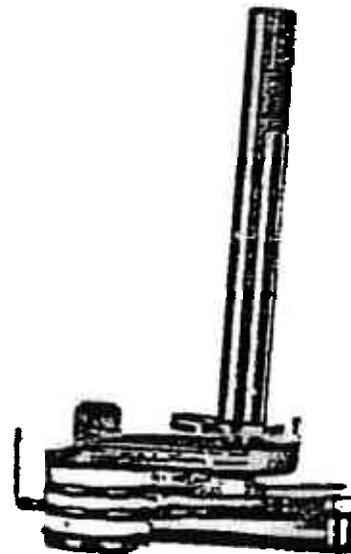


PART NO: 100897

PRESS MODELS: GENERATION FOUR PRESSES

WIRE ENDS; RING TERMINALS

500T/210M/160M



PART NO: 133108

PRESS MODELS: GENERATION THREE PRESS

WIRE ENDS; SLIP-ON

360/210/160

THERMOSTAT CALIBRATION

Tools Required:

1 small straight-blade screwdriver

If your press is not equipped with a thermometer, a device to measure the platen temperature will be needed. If a pyrometer with thermocouple is used, the thermocouple should be placed under the platen, near the thermostat. Temperature indicator strips are available from Seal or your local distributor. Calibration is accomplished as follows:

1. Set the thermostat knob at 200°F and allow the press to heat up and stabilize, approximately 15 minutes. This should be done with the press top resting on the sponge pad.
2. Remove the thermostat knob without turning the shaft, by loosening the set screw in the side of the knob.
3. Noting that the shaft is hollow, insert a small straight-blade screwdriver down the shaft and turn slightly, feeling for the screw. Do not turn the screw.
4. If the temperature of the press is below 200°F, wait for the amber heater indicator light to go out. Immediately, upon its shutting off, turn the screw until the light turns back on, and then turn the screw 1/8 of a turn further. (See chart at end of instructions for proper direction of turn according to type of thermostat.)
Note: Be certain that the shaft does not turn while turning the adjustment screw.

When the amber light comes on, this means the heater is on. Allow the press to stabilize once again. If it is still below 200°F, repeat the above instructions.

If the actual temperature is above 200°F, wait for the light to turn on. Immediately turn the screw (again making certain that the shaft does not turn) until the light goes out. Repeat the process until the thermostat is calibrated.

See Diagram Page 9

MPM80	Turn screw counter-clockwise to increase temperature.
133108	Turn screw counter-clockwise to increase temperature.
100897	Turn screw clockwise (right) to increase temperature.

TRIAC (RELAY) REMOVAL

Tools Required:

- 1 regular sized straight-blade screwdriver
- 1 very small straight-blade screwdriver
- 1 7/16" socket, open or adjustable wrench
- 1 pair wire cutters
- 1 wire stripper

Remove Crossbeam Access Plate

1. Disconnect press from power source.
2. Close and lock the press.
3. Unscrew and remove the pressure adjustment locking nuts (see "Pressure Adjustment" instructions.) Raise the handle to unlock the press. Now lower the pressure adjusting bolts by turning them counter-clockwise. Move the handle to the full open position. The crossbeam is now free to pivot providing more access to the coverplate.
4. Remove the screws holding the coverplate to the crossbeam.

Remove Thermostat Access Plate:

5. Using a very small straight-blade screwdriver, loosen the set screw holding the thermostat knob on to the thermostat stem. Remove the knob (and the spring under the knob), after noting its position so that the thermostat need not be recalibrated. Do not rotate the thermostat stem.
6. Remove the screws from the corners of the nameplate. Remove the nameplate.

Bypass Relay

7. Using the 7/16" socket/wrench, remove the triac nut from the back of the crossbeam. Pull the small black triac through the underside of the crossbeam.
8. Note that there are three wires converging at the triac. Identify these wires as "A", "B" and "C". Wire "A" is the wire connected to the On/Off switch. Wire "B" is connected to the thermostat terminal to which the heater and heater light wires are connected. Wire "C" is connected to the other thermostat terminal by itself. Identify each of these wires.
9. Cut all relay wires near the triac. Remove and discard the triac.
10. Remove and discard Wire "C".
11. Disconnect Wire B from the thermostat and reconnect it to the thermostat where Wire C was.

12. Strip about one inch (2.5cm) of the wire insulation off each of wires "A" and "B". Twist these wires together and secure with a wire nut and tape.

Reassembly

13. Replace the nameplate with four screws.

14. Replace the spring and thermostat knob on the thermostat stem with the knob set to exactly where it was prior to removal. Do not turn the thermostat stem. Secure the knob by tightening the set screw.

15. Place the coverplate in position and secure with the screws used to hold it in place.

16. Close the press so that the crossbeam sits on the pressure adjustment bolts. It may be necessary to center the top casting by setting it squarely on the sponge pad. Lock the press.

17. With the press locked, replace the pressure locking nuts loosely.

18. Adjust the pressure as shown in the section "Pressure Adjustment".

PRESSURE ADJUSTMENT

Use a Seal Pressure Template if available.

Tools Required:

1 pair of pliers may be required to loosen the locking adjustment nuts.

To check the pressure of your Seal dry mounting/laminating press, place materials similar to work to be mounted/laminated inside the press and close (but do not lock) the press. Be sure to include the 1/4" masonite under the sponge pad.

For models 210, 210M, 160, 160M

A side view of the press should look like Figure A, where the lower edge of the lever arm is in direct line with the upper front edge of the crossbeam (where applicable). This will apply approximately 2-3 PSI pressure. For special applications, more or less pressure can be applied by adjusting the lever arm higher or lower (see Figure B and C). Remember to check the pressure with the materials in the press - the thickness of the mounting board will affect the pressure setting.

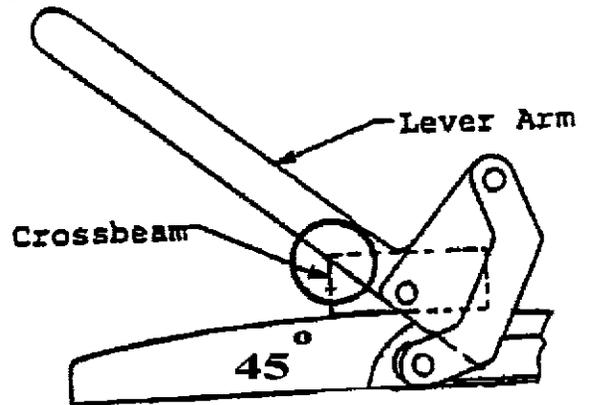


FIGURE A
CORRECT PRESSURE

To adjust the pressure on all models, follow these steps:

1. Close and lock the press.
2. Loosen the knurled locking nuts. (see Figure D)
3. Open the press, place the material to be mounted/laminated inside, and return the press to the closed (but not locked) position.

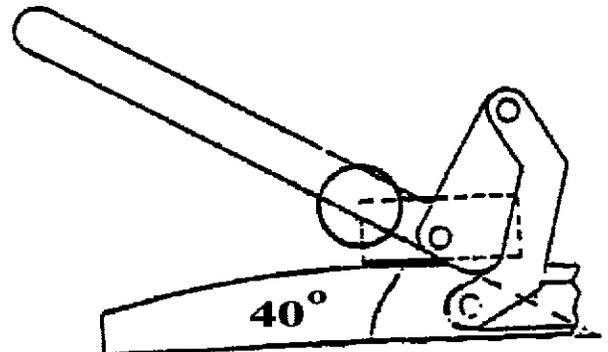


FIGURE B
LOW PRESSURE

4. Check the angle of the lever arm. If a side view is not as shown in Figure (approximately 45° to the table surface); turn the adjusting bolts as follows:
 - (a) clockwise to lower the lever arm (decrease pressure).
 - (b) Counter-clockwise to raise the lever arm (increase pressure).

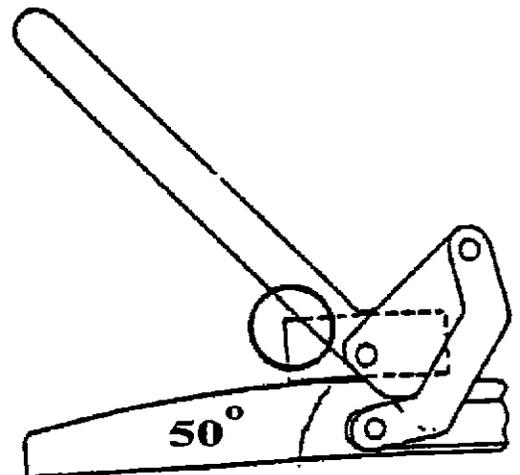


FIGURE C
HIGH PRESSURE

5. On Commercial and Masterpiece presses, make sure that both lever arms are adjusted equally.

6. Return press to locked position and tighten the locking nuts.

7. Open and close the press once or twice and all suspension items will seat themselves automatically.

INSTALLATION OF PRESSURE ADJUSTING PARTS

Instructions for installing pressure adjusting parts for:
Jumbo 160-160m; Commercial 210-210M; Masterpiece 360-360M;
Masterpiece 500T

Tools Required:

- 1 straight-blade screwdriver
- 1 pair of pliers
- 1 pair of retaining ring pliers (if not available, a pair of needle-nose pliers may suffice.)

Remove Existing Parts

1. Disconnect press from electrical supply.
2. Lock press handle.
3. Completely remove locking nut by turning counterclockwise. See Drawing A (two pieces on Commercial press).
4. Return press handle to open position.
5. Reaching beneath Crossbeam, turn Adjusting Bolt clockwise until it clears the beam. See Drawing A (two pieces on Commercial and Masterpiece presses).
6. Slide entire top assembly forward on sponge pad as far as it will go.
7. Remove Spring Washer.
8. Completely remove Adjusting bolt by turning it counter-clockwise, (two pieces on Commercial and Masterpiece presses).

NOTE: Adjusting stud can also be removed if necessary at this time by removing the fastening screws.

Install New Parts

9. Follow above steps in reverse order to install new parts.

Pressure Adjustment

10. Using the Seal Pressure Template, adjust press to correct pressure setting.

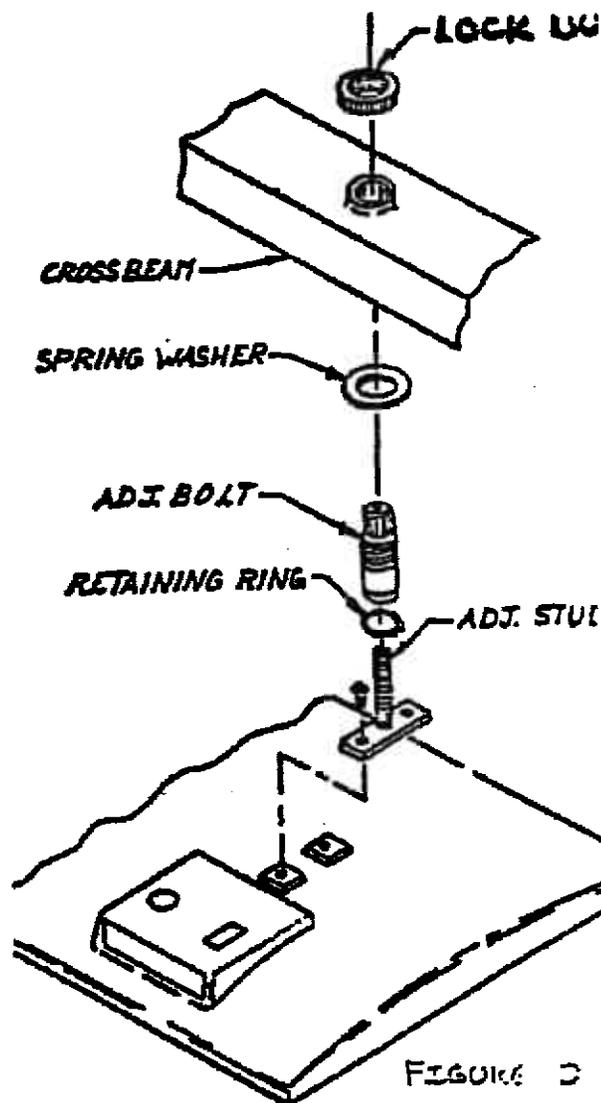


FIGURE 2

HEATER REPLACEMENT

For Models 160, 210, 360, 500T, 110S

Tools Required:

- 1 Phillips head screwdriver
- 1 small straight-blade screwdriver
- 1 medium-sized straight-blade screwdriver
- 1 adjustable wrench or pair of pliers
- 12" heat resistant electrical tape.
- Flashlight

Note: It is recommended that leather or rubber gloves be worn when handling the fiberglass insulation.

1. Turn the power switch to the "Off" position. Disconnect the press from the power supply. If the press is hot, let it cool until safe to touch without burning fingers.
2. Using the small, straight-bladed screwdriver, loosen the set screw in the thermostat knob. Pull the thermostat knob OFF and remove the spring which is under the knob. Set them aside.
3. Close and lock the press with nothing on the sponge pad.
4. Using a phillips head screwdriver, remove all of the screws located around the perimeter of the top, noting the washers under the head of each screw. It is important that these screws be put back into their original locations using the same number of washers upon reassembly.
5. Using a phillips head screwdriver, remove the screws at the four corners of the nameplate. Remove the nameplate and place it aside with the four screws.
6. Remove the piece of fiberglass insulation (if so equipped), located under the nameplate and set it aside. The wires to the heater and the thermostat are now exposed in the connection box.
7. Disconnect the two heating element wires.

Note: If an ohmmeter is available, check the resistance of the heating element. If it is within the range ($\pm 15\%$) of the chart following this procedure, the heating element is probably not the faulty component of your press.

8. Note that there are 3 wires connected to the thermostat. One wire is connected to one side and the other wires are all connected to the same point on the other side. Identify the wires and disconnect them from the thermostat.

9. Depending upon the type of press, the thermostat will be fastened to the platen (aluminum plate) with either one or two screws. Remove the screw(s) holding the thermostat in place. Lift out thermostat and place it aside with the other parts.
10. Located in the connection box is a white-wrapped electrical insulating tape connection. Unwrap this connection exposing the ceramic wire nut used to make the connection. Remove the wire nut and place it aside. If using pliers, be careful not to crush the ceramic wire nut. Important: If a new wire nut is to be used upon reassembly, it must be ceramic as it is subject to extreme temperatures.
11. Mark the wires and then separate.
12. Open the press. The lid will rise but the aluminum platen, the heater, and the insulating material will stay on the pad.
13. Lift off the insulating material, exposing the heater. Remove the heater. (Note: the replacement heater may appear more flexible and lighter in color than the original one in your press. If this is true, please check that you did not receive an incorrect part. The flexible heater is the latest version used in the current presses and replaces the old style.) The platen is now exposed with a piece of white paper-like material covering it. Leave this in place.
14. Place the new heater on the platen, making sure that the electrical leads are on the exposed face. Position the heater to match the edges of the platen. Be sure that the paper-like insulation between the heater and the aluminum platen does not shift and cover the screw holes in the platen.
15. Place the fiberglass wool insulation on top of the new heater and feed the heater wires upwards through the slot in the insulation. Be sure that the position of the fiberglass insulation is such that no platen screw holes will be covered.
16. Feed the two wires from the new heater into the connection box as the press is gently closed. Do not lock the press.
17. Align the top casting and the aluminum plate.
Important: The wires entering the connection box should be centered in the notch provided in the top casting. The wires should not be caught under the inside edges of the box.
18. Using a flashlight, check to be sure that all platen screw holes are in correct alignment with the holes in the top casting. Failure to do so will result in difficulty in replacing the mounting screws around the perimeter of the top.
19. Lock down press handle and recheck all alignment.
20. Insert the screws with lockwashers into the holes along the edges of the lid, making sure that the same screws and washers that came out of a particular hole go back into it. Starting with a front screw, turn

it slowly until the threads begin to engage; do not tighten. Work around the edges until all the screws are started properly. Tighten all of the screws. Be sure not to overtighten the screws. Doing so may strip the threaded holes in the platen.

21. Refasten the ceramic wire nut to the proper wires and wrap the wire nut with heat resistant electrical tape.

22. Fasten the thermostat to the aluminum plate using the same number of washers that were under the screw(s) heads upon removal. Reconnect the wires to the thermostat in the same positions as was noted when you removed them.

23. Turn the thermostat shaft left and right to check that it works freely and that there is no interference with the wire terminals that have just been refastened. Adjust the terminal angles if necessary.

24. Reposition the cover plate on the connection box. If the press is equipped with a thermometer, align the heat sensing shoe in the hole in the heater, being certain that the shoe is in direct contact with the aluminum platen. Replace the four phillips head screws and tighten down the nameplate.

25. Replace the thermostat knob spring and then the knob, making sure that the knob is in its original position. Tighten the set screw in the thermostat knob.

26. Plug in power cord and turn on press. Turn thermostat knob to 200°F. Let press heat for five minutes after which time turn the thermostat knob counter-clockwise. The amber (yellow) light should go out. Turn the knob clockwise; the amber light should turn back on. This indicates that the press is operating properly. If the amber light fails to turn On or Off, the wiring may be improper. If this occurs, recheck all wire connection points.

27. If necessary, calibrate the heating system as described in "Thermostat Calibration".

Heating Element Resistance

Press Model	Ohm Rating (± 15%)
110, 110S	6.0
160 non-rigid, 160 rigid	7.5
210 non-rigid, 210 rigid	9.8
360 non-rigid, 500T	13.0

PLATEN REPLACEMENT
(110S, 160, 210, 360, 500T series)

Tools Required:

- 1 Phillips head screwdriver
- 1 Small straight-blade screwdriver
- 1 straight-blade screwdriver

When attempting to replace the aluminum platen, follow steps 1 through 6 as outlined in the instructions for "Heater Replacement", then proceed as follows:

1. Disconnect thermostat from platen.
2. Lift off the old platen and replace with the new one. Be sure that the holes in the new platen match the holes in the old. Depending upon the model of press you own, 160, 210, etc., the new platen may have different hole spacing for the thermostat mounting holes. These different hole patterns will be in the approximate center of either edge of the new platen, corresponding to the front and rear edges of the press. Be sure that the correct hole pattern for your thermostat is along the front edge of the press.
3. Replace the paper-like insulation material (on some models), being sure not to cover the platen mounting holes.
4. Reconnect the thermostat.
5. Place the heater on the platen, aligning it with the platen holes.
6. Close the top casting onto the new platen, carefully aligning the platen holes with top casting holes. Do not lock the press.
7. Align the top casting and the aluminum plate. Important: The wires entering the connection box should be centered in the notch provided in the top casting. The wires should not be caught under the inside edges of the box.
8. Using a flashlight, check to ensure that all platen screw holes are in correct alignment with the holes in the top casting. Failure to do so will result in difficulty in replacing the mounting screws around the perimeter of the top.
9. Lock down press handle and recheck all alignment.
10. Insert the screws with lockwashers into the holes along the edges of the lid, making sure that the same screws and washers that came out of a particular hole go back into it. Starting with a front screw, turn it slowly until the threads begin to engage; do not tighten. Work around the edges until all the screws are started properly. Tighten all of the screws. Be sure not to overtighten the screws. Doing so may strip the threaded holes in the platen.

11. Reposition the cover plate on the connection box. If the press is equipped with a thermometer, align the heat sensing shoe in the hole in the heater, being certain that the shoe is in direct contact with the aluminum platen. Replace the four phillips head screws and tighten down the nameplate.

12. Replace the thermostat knob spring and then the knob, making sure that the knob is in its original position. Tighten the set screw in the thermostat knob.

13. Plug in power cord and turn on press. Turn thermostat knob to 200°F. Let press heat for five minutes after which time turn the thermostat knob counter-clockwise. The amber (yellow) light should go out. Turn the knob clockwise. The amber light should turn back on. This indicates that the press is operating properly. If the amber light fails to turn ON, or OFF, the wiring may be improper. If this occurs, recheck all wire connection points.

ON/OFF SWITCH REPLACEMENT

Tools Required:

- 1 Pair of Needle-nose pliers
- 1 Straight-blade screwdriver

110S

1. Disconnect power supply.
 2. Remove the cover plate on the inside of the press base, located beneath the ON/OFF switch.
 3. Using needle-nose pliers, or similar tool, carefully pull the terminals from the switch after noting their positions.
 4. Pop the switch out of its opening from beneath while squeezing the locking lugs on the switch.
 5. Push the new switch into its opening and reattach the terminals to their proper positions.
- Note: It is very important that the terminal connections be tight. A loose connection will cause the switch to burn out prematurely.

160, 210, 360, early 500T (approx. 1974 - 1981)

NOTE: Early Model 160 Jumbo - The early model 160's had the ON/OFF switch mounted on the nameplate. Removal of the nameplate will offer easy access to the wiring and removal of the switch.

On these presses, the switch is generally located in the crossbeam, although the very early 160 presses had the switch in the name plate, next to the thermostat control knob. This was later changed slightly to a system that utilized a plate into which the switch was mounted. This plate was in turn fastened to the crossbeam by four screws. The procedure for switch replacement in a press where it is mounted directly in the crossbeam (no plate) is as follows:

1. Disconnect power supply.
2. Close and lock press.
3. Remove the adjusting nuts by hand (refer to page 10, section of "Instructions for Installing Pressure Adjusting Parts" for diagram).
4. Fully open the press. The top will remain on the sponge pad, the crossbeam will rise up. You now have access to the underside of the crossbeam.
5. Remove the screws which hold the cover plate to the underside of the crossbeam.

6. Using needle-nose pliers, disconnect the terminals attached to the bottom of the switch.
7. The switch can now be removed by compressing the retaining portion of the switch and pushing it out or by breaking the spacer which is snapped underneath the crossbeam (a new switch spacer will be needed if this is done). Breaking the spacer is easily accomplished by using a small screwdriver and prying the spacer with a twisting motion.
8. Remove the switch from the top of the crossbeam.
9. Snap the new switch in place. Slide the spacer over the switch until it bottoms out on the underside of the crossbeam.
10. Reattach the wire terminals to their correct positions using needlenose pliers.
11. Make sure all connections are tight. If any connections are loose, solder the connection securely or replace the terminals. Loose connections will cause the switch to burn out prematurely.
12. Replace the cover plate.
13. Bring the crossbeam back down over the adjusting stud to a closed but unlocked position.
14. Align top assembly so that it will not rub on the hinge assembly when back in operation. Then lock down the handle.
15. Screw the lock nut back down and tighten only finger tight. Your press is now ready for operation.

INDICATOR LIGHT REPLACEMENT

Tools Required:

1 Phillips or straight blade screwdriver (depending on unit being serviced). 1 pair of pliers, preferably needle-nosed.

110S, AM4

1. Disconnect power.
2. Access to the indicator lights can be gained by removing the protective metal cover plate, located on the underside of the machine. The indicator lights are held in place by push-on spring connectors. These connectors are difficult to remove intact, and therefore it is advised that new ones be used when installing new lights.

160, 210, 360 - Early Models Type I

1. Disconnect power.
2. On the early model machines the amber light is attached to the nameplate panel. Access is gained by removal of this panel. It is held in place by the phillips head screws (4) located at each corner of the plate. Do not remove the two screws (if provided) that are located towards the center of this panel.
3. Note wire locations and disconnect leads.
4. Reattach all wire leads to the identical points of attachment upon replacement.

160, 210, 500T - Early Models Type II

On the later versions of the 160, 210 and 500T, the indicator lights were located in the crossbeam. These lights were mounted in holes that were placed directly in the crossbeam. Access to these lights is as follows:

1. Disconnect power source.
2. Lock the press down.
3. Remove the pressure adjustment locking rings. (This can only be done when the press is fully locked.) If the locking rings remain tight after the press is locked down, unlock the unit, place a couple of sheets of mount board in the press to increase the pressure slightly. Lock down the press and remove the rings.
4. The lights are secured from beneath with push-on clips. Upon removal, these will break, new clips will be needed for installation of new lights.

160, 210, 500T - Current Version

On the current generation of presses, the lights are attached to a metal plate. This plate is fastened to the crossbeam by means of four screws. Access is gained as follows:

1. Disconnect power source.
2. Remove the screws holding the metal plate to the crossbeam.
3. Twist off "push-on" light retainers.
4. Replace light using a new push-on retainer.

**REPLACEMENT OF THE BELL TIMER
PT80, PT90, PT95, TS100**

Tools Required:

1. Close and lock the press with nothing on the sponge pad.
2. Remove the knurled locking nut, which is located in the center of the crossbeam over the adjusting stud bolt. (Refer to illustration found in instructions for installing pressure adjusting parts, Page 10.)
3. Raise the handle to unlock the press, and move the handle to the full open position. Access to the underside of the crossbeam is now possible.
4. Pull off the plastic timer knob and remove the locking nut holding the timer in place. Remove old timer.
5. Place the new timer into the hole in the crossbeam. Note that the word "top" is printed on the timer. This word faces the rear of the press for proper installation. There are also two aligning projections which should fit into the respective holes in the crossbeam.
6. With the dial in proper alignment, replace the locking nut from the outside and tighten.
7. Push the timer knob into place on the timer stem.
8. Realign the top on the sponge pad and slowly close the press, feeding the adjusting bolt through the hole in the crossbeam. Readjust the pressure if needed by turning the adjusting bolt clockwise (decreasing pressure) or counter-clockwise (increasing pressure).
9. Lock down press handle.
10. Replace locking nut and tighten finger tight only. The locking nut need not be any tighter than finger tight because unlocking the press self-tightens the adjusting bolt-nut assembly.

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