

ACR II Hot Bonder Instruction Manual



BriskHeat
BH Thermal Corporation

ACR II Hot Bonder

Advanced Composite Repair System (ACR Series)

Instruction Manual

Version 2.0

This instruction manual is subject to change. Please contact us for the most recent version



Read and understand this material before operating or servicing this advanced composite repair hot bonder. Failure to understand how to safely operate this hot bonder could result in an accident causing serious injury or death. This hot bonder should only be operated by qualified personnel.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

TABLE OF CONTENTS

Safety Alert Symbol.....	2
Important Safety Instructions.....	3
Introduction.....	4
Specifications.....	4
System Setup.....	5
Power Input.....	5
Starting Up.....	5
Zone Heater Cord Attachment.....	5
Sensor Attachment.....	6
Vacuum System.....	6
Electric Pump.....	6
Venturi Pump.....	6
External Vacuum.....	6
Programming Instructions.....	7
Writing a New Program/Recipe.....	7
Changing a Program/Recipe.....	9
Changing a Program/Recipe while Running.....	10
Deleting a Program/Recipe.....	11
System Menu Instructions.....	11
Uploading/Downloading Programs.....	11
Setting the Date and Time.....	12
Calibrate Inputs.....	12
Accessing Administrator Functions.....	12
Changing Administrator Password.....	13
Save Log Files to USB Drive.....	13
Operating Instructions.....	14
Starting a Program.....	14
Zone Displays.....	14
Vacuum.....	14
Control Temperature.....	15
Thermocouple Readings.....	15
Buttons.....	15
Alarms.....	16
Graphical Display.....	16
Shutting Down.....	16
Warranty.....	17



SAFETY ALERT SYMBOL

The symbol above is used to call your attention to instructions concerning your personal safety. It points out important safety precautions. It means **"ATTENTION! Become Alert! Your Personal Safety is involved!"** Read the message that follows and be alert to the possibility of personal injury or death.



Immediate hazards which WILL result in severe personal injury or death



Hazards or unsafe practices which COULD result in severe personal injury or death



Hazards or unsafe practices which COULD result in minor personal injury or property damage.



SAVE THESE INSTRUCTIONS!

Additional copies of this manual are available upon request.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

IMPORTANT SAFETY INSTRUCTIONS



⚠ DANGER

A person who has not read and understood all operating instructions is not qualified to operate this product.

⚠ DANGER

- Do not immerse or spray hot bonder with liquid.
- Use Hot Bonder ONLY in proper rated location
- Keep sharp metal objects away from hot bonder.

Failure to observe these warnings may result in electric shock, risk of fire, and personal injury.

⚠ CAUTION

- Inspect hot bonder before use.
- Do not use hot bonder if damaged.
- Do not repair damaged or faulty hot bonders.
- Do not crush or apply severe physical stress on hot bonder or cord assembly.
- Unplug hot bonder when not in use.
- Only use power cords provided by BriskHeat®

Failure to observe these warnings may result in personal injury or damage to the hot bonder.

⚠ WARNING

End User Must Comply to the Following:

- Only qualified personnel are allowed to connect the electrical wiring.
- All electrical wiring must follow local electrical codes
- The end-user is responsible for providing a suitable disconnecting device.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

INTRODUCTION

BriskHeat® ACR II Hot Bonders are Advanced Composite Repair systems that are portable and self-contained. For successful operation of this system, read and understand these instructions prior to use.

AN ACR II HOT BONDER SYSTEM INCLUDES:

- 1 ACR II Hot Bonder
- 1 CD-Rom with BriskHeat® Hot Bonder Recipe Data Editor Software and Instruction Manual
- 1 Printed Instruction Manual
- 2 10' Vacuum Hoses per Zone
- 1 Input Power Cord per Zone
- 1 Zone Heater Cord per Zone
- 10 ea. J-Type Thermocouples per Zone
- 2 Vacuum Bag Feed-Throughs per Zone
- 1 Printer Ribbon
- 1 Roll of Printer Paper

SPECIFICATIONS

USB for Easy Data Transfer	1400°F (760°C) Maximum Temperature Control
Case Weight w/ Lid: Single Zone: 32lb - 45lb (15kg - 20kg) Dual Zone: 43lb - 58lb (20kg - 26kg)	Case Size w/ Lid: Single Zone: 20" x 16" x 12.5" (508mm x 406mm x 318mm) Dual Zone: 24" x 19" x 12.5" (610mm x 483mm x 318mm)
Internal Electric Vacuum Pump or Venturi Pump	Programmable to Either °F or °C
Accurate ± Least Significant Digit	Ramp Rates of 1-36°F/minute (1-20°C)
Soak Times of 0-99.9 Hours	Input GFI Breaker Protected
Non-Volatile Memory to Retain Program During Power Failure	10 Thermocouples Sensor Inputs per Zone
Vacuum Units Measurable by Inches HG, Millimeters HG, and Millibars	Up to 30 Cure Program Storage
All Units Can Be Utilized for 90-264V	Programmable Alarm Functions includes: High/Low Limit Alarm, High/Low Limit Shutdown, and High/Low Vacuum
Maximum Storage Exposure Temperature: 140°F (60°C)	Minimum Storage Exposure Temperature: -4°F (-20°C)
Maximum Usage Exposure Temperature: 113°F (45°C)	Minimum Usage Exposure Temperature: 32°F (0°C)
Ambient Humidity: 90%RH or below (no condensation)	Frequency: 50-60Hz

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

⚠ WARNING

Read and understand this entire manual before operating this ACR II Hot Bonder.

VOLTAGE:
90-264VAC

SYSTEM SETUP

Power Input

The ACR-II hot bonder can be powered by 90-264 volts AC. Therefore it is important to supply the correct voltage for the heater being used. A built in safety device prevents the application of the incorrect voltage to a heat blanket. If the incorrect voltage is applied to the Hot Bonder, the safety circuit prevents the heater from being powered.

For the ACR-II to operate, power must be supplied to Zone 1. Power only needs to be applied to Zone 2 if that zone will be used for a cure.

Locate the surface mount connector labeled POWER INPUT on the front panel of the ACR-II. Align the power cord connector with the surface mount connector and insert. The power input cord connectors are keyed to prevent improper connections. The locking ring must then be turned to the right 1/2 turn to lock the cord into place. As the locking ring is turned, the cord will insert an additional amount. The power cord must be fully inserted and locked for proper operation.

With the power cord attached to the hot bonder, connect the power input cord to the properly rated power supply.

Starting Up

Assure that the circuit breakers are turned on. With power supplied to the hot bonder, turn on the red main power switch. The main power switch will illuminate. The alarm horn will sound. The system will then go through a normal boot up cycle. At the end of the boot up cycle, you will see the main hot bonder screen and the printer will print out the message "PRINTER READY".

Zone Heater Cord Attachment

Locate the surface mount connector labeled HEATER POWER on the front panel of the ACR-II. Align the zone heater cord connector with the heater power surface mount connector and insert. The zone heater cord connectors are keyed to prevent improper connections. The locking ring must then be turned to the right 1/2 turn to lock the cord into place. As the locking ring is turned, the cord will insert an additional amount. The zone heater cord must be fully inserted and locked for proper operation.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

Sensor Attachment

The ACR-II Hot Bonder uses J-style thermocouples for temperature input. The unique thermocouple jacks of the ACR-II allow for the use of both mini and standard style thermocouple plugs.

Both style thermocouple plugs are polarized to prevent improper connections.

Connect thermocouple sensors as required. The program to be run will determine the number of sensors necessary.

Vacuum System

The ACR-II requires two vacuum hoses per zone for proper vacuum operation. One hose is for the vacuum source. The second hose is for vacuum monitoring. To assure proper vacuum levels, the two hoses should be attached to the vacuum bag/repair area as far apart as possible.

The vacuum connectors are self-sealing and designed for quick disconnect allowing it to be operated by one hand. Attach the female end of the vacuum source hose to the port marked VACUUM CONNECT and the other to one of the vacuum ports on the repair. Attach the female end of the vacuum monitor hose to the port marked VACUUM MONITOR and the male end to the second vacuum feed through on the repair.

The vacuum level can be adjusted independently for each zone. Turn the VACUUM ADJUST valve counter clockwise to decrease that vacuum level and clockwise to increase the vacuum level.

Electric Pump

To turn on the electric vacuum pump (if equipped), press the ON/OFF RESET button marked PUMP ON/OFF. The button must be fully depressed until a click can be heard and felt to start the pump. To turn the pump off, fully depress the PUMP ON/OFF switch until a click can be heard and felt.

The PUMP ON/OFF switch is also a circuit breaker. If the breaker is tripped, fully depress the switch until a click can be heard and felt to reset the breaker.

Venturi Pump

The venturi vacuum pump converts compressed air to vacuum.

Attach a compressed air source to the AIR INLET port. To avoid problems with the venturi system, the compressed air should be clean and dry. Adjust the inlet air pressure so that it is between 60 & 120 PSI.

External Vacuum

Both the electric pump and the venturi pump systems have the option of using an external vacuum source. To use, connect an external vacuum source to the EXTERNAL VACUUM port.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

PROGRAMMING INSTRUCTIONS

Writing a New Program/Recipe

Programs, also known as Cure Cycles or Recipes, can either be written directly at the Hot Bonder or on any PC with a USB port using the BriskHeat® Hot Bonder Recipe Data Editor software. The Recipe Data Editor software is free with the purchase of a Hot Bonder.

Programs can be written or changed at any time even when the program is running. Changes to an active program do not take place until the active zone is restarted. For additional information, see **Changing A Program/Recipe While Running**.

The ACR-II hot bonder is touch screen operated. The touch screen can be operated either by a finger or by a stylus. To change a parameter, simply touch its value on the screen and the parameter entry screen will appear. Changes can only be made in the program screen.

CAUTION

DO NOT use the tip of an ink pen or other sharp object on the touch screen.

1. Enter the program screen by touching the PROGRAM tab at the top of the screen.
2. Enter the new program mode by pressing the NEW button at the right of the screen.
3. Enter the program name. Touch the program name field and the program name entry screen will open. The program name can be any combination from 1 to 48 characters.

Note: If a duplicate name is entered, a warning will display and a default name will be given using the current date and time.

4. With the name typed-in the program name field, press the ENTER button.
5. If the program is to be password protected press the YES button at the end of the question "Do you want to password protect the program?" After pressing YES the password entry field will appear.
6. To enter a password: touch the password field, enter the password, and then press enter.
7. Select the desired temperature profile: FIXED, SINGLE, DUAL, TRIPLE, or MONITOR.
 - **FIXED:** The hot bonder will ramp to this point as quickly as possible and hold there until changed by the operator.
 - **SINGLE:** The hot bonder will ramp once to a single set point, hold for

7

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

the programmed length of time then ramp down.

- **DUAL:** The hot bonder will ramp once to a first set point, hold for the programmed length of time, ramp to a second set point, hold for the programmed length of time, then ramp down.
 - **TRIPLE:** The hot bonder will ramp once to a first set point, hold for the programmed length of time, ramp to a second set point, hold for the programmed length of time, ramp to a third set point, hold for the programmed length of time, then ramp down.
 - **MONITOR:** The hot bonder will record input readings.
8. Select the temperature measurement source. The source can be AVERAGE, LOWEST, HIGHEST, or any specific thermocouple.
 - **AVERAGE:** This mode will use a true mathematical average of all active temperature inputs as the control temperature.
 - **LOWEST:** This mode will use the lowest active thermocouple as the control temperature.
 - **HIGHEST:** This mode will use the highest active thermocouple as the control temperature.
 - **Specific:** Any active thermocouple, T/C 1 to T/C 10, can be selected as the control sensor.
 9. Select the temperature units by touching either Deg F or Deg C.
 10. Select the vacuum pressure units by touching inHg for inches of mercury, mmHg for millimeters of mercury, or mBar for millibars.
 11. Set printer mode to ON or OFF as required.
 12. Set data logging interval from 1 to 99 minutes. The data logging interval applies to both the printer output and to the file saved in the internal memory of the ACR-II.
 13. Continue to the next step by touching the CONTINUE TO STEP 2 button.
 14. Enter the desired deviation alarm tolerance. The deviation alarm is an alarm point that changes with the temperature set point. If this alarm point is exceeded, the alarm horn will sound and ALARM will be displayed in the zone screen.
 15. Enter the desired shutdown alarm tolerance. The shutdown alarm is an alarm point that changes with the temperature set point. If this alarm point is exceeded, the alarm horn will sound and the controller will abort the cure cycle. A notification of the cycle abort will be displayed in the zone screen.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

16. Enter the vacuum high and low alarm set points. The alarm will sound and ALARM will be displayed in the zone screen if either of these points are exceeded. Exceeding either of the vacuum alarm points will not cause the controller to abort the cure cycle.
17. Set Zone 2 Slave Mode to ON or OFF (dual zone units only). Setting the slave mode to ON assigns all 20 thermocouples to Zone 1.
18. Specify active and inactive thermocouples. Active thermocouples are indicated by a check mark in the check box next the corresponding thermocouple number. Touch the check boxes to remove the check mark from the thermocouples that will be inactive.
19. Continue to the next step by touching the CONTINUE TO STEP 3 button.
20. Fill in all fields to desired setting. Touch FINISH.
21. Enter the following information in the Ramp/Soak Cycles section found at the bottom right side of the screen:
 - **Ramp Rate:** the heat up rate in degrees per minute from starting temperature to Dwell Temperature.
 - **Dwell Temp:** the temperature the program is to hold for the programmed length of time
 - **Dwell Time:** the length of time to hold at the programmed Dwell Temperature.
 - **Cool Down Rate:** the rate in degrees per minute from the last dwell temperature to the End of Cycle Temp.

Note: Because the Hot Bonder cannot force an object to cool down faster than the physical conditions will allow both high temperature alarms are disabled during the cool down phase.

- **End of Cycle Temp:** the temperature at which the cure is considered complete.

Note: The end of cycle temperature must be above the ambient temperature for it to complete.

- **High Temperature Limit:** allows the administrator to set a limit which any user will not be able to exceed while writing programs. This safety feature is used to protect the facilities equipment and the items being repaired. This variable can only be changed in the program screen. Upon completing the high temperature limit change, clear out the administrator password before rebooting. **Requires administrator password.**

Note: This feature will change the high temperature limit in ALL programs/recipes.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

Changing a Program/Recipe

The only parameter of a program that cannot be changed is the program name.

Programs can be written or changed at any time even when the program is running. Changes to an active program do not take place until the active zone is restarted. For additional information see **Changing a Program/Recipe While Running**.

To change an existing program:

1. Enter the program screen by touching the PROGRAM tab at the top of the screen.
2. Select the program to be changed by touching the name on the stored program name drop down list
3. Touch the variable to be changed and the program variable entry screen will be displayed.
4. Erase the current value by touching the DEL (Delete) key,
5. Enter the new value and touch ENTER.
6. Once all variables have been changed, touch the SAVE key.
7. A "Programmed Saved" message will then be displayed. Press OK on the message window.

Changing a Program/Recipe While Running

Programs can be written or changed at any time even when the program is running. Changes to an active program do not take place until the active zone is restarted.

Changes to completed portions of a running program will not take effect until the next time the program is ran. For instance, if changes are being made to step one of a two-step program and the program has already started into the second step, the changes will not take place until the next time the program is ran.

1. To change a program while the program is running, follow the same steps in **Changing a Program/Recipe**.
2. With the necessary changes made, select the zone to be reset by touching the ZONE tab.
3. In the Zone screen, touch the HOLD button. The cure step field will change to indicate hold.
4. Press the RUN button. The cure step field will then return to the previous active step of the program and the printer, if active, will print out the new program/recipe.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

Deleting A Program/Recipe

To delete an existing program:

1. Enter the program screen by touching the PROGRAM tab at the top of the screen.
2. Select the program to be deleted by touching the name on the stored program name drop down list
3. Touch the DELETE key and the program will be deleted.

SYSTEM MENU INSTRUCTIONS

Uploading/Downloading Programs

Programs can be saved to a flash disk via the USB port.

To save programs from the Hot Bonder to the USB drive:

1. Touch the SYSTEM tab at the top of the screen.
2. Touch the SAVE PROGRAMS TO USB DRIVE button.
3. To save individual programs, select the program to be saved from the drop down list and touch the SAVE SELECTED PROGRAM TO USB DRIVE button.
4. To save all loaded programs, touch the SAVE ALL PROGRAMS TO USB DRIVE button.
5. Insert a flash disk when prompted to do so and touch OK.
6. When done, touch the EXIT button.

To save programs to the Hot Bonder from the USB drive:

1. Touch the System tab at the top of the screen.
2. Touch the LOAD PROGRAM FROM USB DRIVE button.
3. Insert a flash disk containing programs when prompted to do so and touch OK.
4. To load individual programs, select the program to be loaded from the drop down list and touch the LOAD SELECTED PROGRAM FROM USB DRIVE button.
5. To load all programs from USB flash disk, touch the LOAD ALL PROGRAMS FROM USB DRIVE button.
6. When done, touch the EXIT button.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

Setting The Date And Time

1. Touch the SYSTEM tab at the top of the screen.
2. Touch the Date or Time field to be changed and the variable entry screen will be displayed.
3. Erase the current value by touching the DEL (Delete) key.
4. Enter the new value and touch ENTER.
5. Once all variables have been changed, touch the LOAD NEW DATE/TIME button.

Calibrate Inputs

This allows the administrator to calibrate the analog inputs. **Use this feature only if the ACR-II has been determined to be out of tolerance.** The process requires the following items: 5V and 500mV voltage references, 380 ohm resistance reference. **Requires administrator password.**

To calibrate the analog inputs:

1. Touch the SYSTEM tab at the top of the screen.
2. Touch the CALIBRATE INPUTS button.
3. Follow the step-by-step instructions.

Accessing Administrator Functions

Some areas of the software can not be accessed without an administrator password.

To access administrator functions:

1. Touch the SYSTEM tab at the top of the screen.
2. Touch the PASSWORD ADMINISTRATION button.
3. Touch the ENTER ADMINISTRATOR PASSWORD field. The current password data entry screen will appear.
4. Type your administrator password. Touch the ENTER button when done.
Note: Factory default password is "BHT".
5. Touch the OK button at the bottom right of the screen.
6. Now you can set **high-limit temperature settings, clear all program/recipe passwords, calibrate analog inputs, and change the administrator password.**

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

Changing Administrator Password

To change the administrator password: **Requires administrator password.**

1. Touch the SYSTEM tab at the top of the screen.
2. Touch the PASSWORD ADMINISTRATION button.
3. Touch the ENTER NEW PASSWORD field. The new password data entry screen will appear.
4. Type your new administrator password. Touch the ENTER button when done.
5. Touch the RE-ENTER NEW PASSWORD field. The new password re-enter data entry screen will appear.
6. Re-type your new administrator password. Touch the ENTER button when done.
7. Touch the UPDATE ADMIN PASSWORD button.
8. Enter the new password into ENTER ADMINISTRATOR PASSWORD field to access administrator functions. See **Accessing Administrator Functions** for further details.

Save Log Files to USB Drive

Log files can be saved to a flash disk via the USB port.

To save programs from the Hot Bonder to the USB drive:

1. Touch the SYSTEM tab at the top of the screen.
2. Touch the SAVE LOG FILES TO USB DRIVE button.
3. To save individual log files to the USB drive, select the log file to be saved from the drop down list and touch the COPY SELECTED FILES TO USB DRIVE button.
4. To save all log files to the USB drive, touch the COPY ALL FILES TO USB DRIVE button.
5. To delete individual log files, select the log file to be deleted from the drop down list and touch the DELETE SELECTED LOG FILE button.
6. Insert a flash disk when prompted to do so and touch OK.
7. When done, touch the EXIT button.

Note: The ACR-II Hot Bonder is capable of saving up to the 12 most recent log files with its internal memory.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

OPERATING INSTRUCTIONS

Starting A Program

1. Attach the necessary cords, sensors and hoses as described in **System Setup**.
2. Enter the zone screen by touching either ZONE 1 or ZONE 2 tab at the top of the screen.
3. Select the program from the drop down list.
4. Touch the RUN button and the Repair Data screen will be displayed.
5. Enter the necessary repair data or skip by pressing ENTER.
6. To enter the repair data, touch the data field to be entered and the data entry screen will be displayed.
7. Using the keyboard on the data entry screen, enter the required data and touch ENTER.
8. When all necessary data has been entered, press the ENTER button and the program will automatically start.

Zone Displays

Stored Program Name:

Displays the name of the current running program

Temperature Profile:

Displays the current running program profile Fixed, Single, Dual, Triple, or Monitor

Temperature Source:

Displays the current running program temperature source Average, Highest, Lowest, or specific

Cure Step:

Displays the current active step of the running program

Step Time Remaining:

Calculated length of time remaining for the current running program

Heater ON/OFF

Displays the heater output status

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

Vacuum

Vacuum High Alarm:

Displays the high vacuum alarm setpoint

Vacuum Pressure:

Displays the actual vacuum measured

Vacuum Low Alarm:

Displays the low vacuum alarm setpoint

Control Temperature

High Shutdown:

Displays the high temperature shutdown set-point

High Alarm:

Displays the high alarm setpoint

Setpoint:

Displays the current system setpoint

Actual:

Displays the current actual control temperature as measured or calculated

Low Alarm:

Displays the low alarm setpoint

Low Shutdown:

Displays the low temperature shutdown setpoint

Thermocouple Readings

Displays the actual temperature of each individual sensor. A yellow field indicates a disabled sensor. A red field indicates a faulty input: i.e. open, high temp, or low temp.

Buttons:

Run:

Starts the selected program

Hold:

Pauses the current program and discontinues output power to the heater

Print:

Prints an instant snapshot of current input readings

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

Fall:

Forces the current running program to skip forward to the cool down cycle for a controlled shut down

Abort:

Stops the current running program

Display Plot:

Switches the display mode to a graphical plot

Alarms

If all conditions are inside the programmed limits while a zone is running, the zone tab is green. If while running, any condition exceeds programmed limits, the zone tab will turn red.

If a variable exceeds a programmed limit, the display field of the variable will turn red and a flashing red alarm box will appear in the zone screen. Touching the red alarm box will silence the audible alarm. The red alarm box and the red variable field will remain red until the alarm condition is corrected.

Graphical Display

The graphical display shows a graph of the actual temperature, target temperature, high and low alarms. To switch between normal and zoomed view, touch the SWITCH PLOT MODE button.

Shutting Down

Turn off the red main power switch at any point when you are done using the ACR II Hot Bonder. Make sure the floppy disk is removed prior to starting system.

ACR II Hot Bonder Instruction Manual

ACR II Hot Bonder (ACR Series)

WARRANTY INFORMATION

The BH Thermal Corporation (hereinafter referred as "BH Thermal") warrants to the original purchaser for the **period of eighteen (18) months from date of shipment or twelve (12) months from date of installation**, whichever comes first, that the products manufactured by BH Thermal: (A) conform to the description and specifications as set forth in BH Thermal's current catalogue or in the quotation and drawings submitted by BH Thermal; and (B) are free from defects in materials and workmanship under prescribed use and service.

Remedy. BH Thermal's obligation and the exclusive remedy under this warranty shall be limited to the repair or replacement, at BH Thermal's option, of any parts of the product which may prove defective under prescribed use and service within eighteen (18) months from date of shipment or twelve (12) months from date of installation, whichever comes first, and which, following BH Thermal's examination, is determined by BH Thermal to be defective under conditions described herein: provided, BH Thermal has, at its option, a representative of BH Thermal present at start-up. BH Thermal shall not be liable for any incidental, consequential or special damages arising from any breach of warranty, breach of contract, negligence, or any other legal theory, including but not limited to, loss of use of parts or equipment or any associated equipment, cost of capital, cost of any substitute equipment, facilities or services, overhead, downtime costs, or claims of customer of purchaser for such damages. This remedy does not include labor costs for installation or removal of the equipment or parts covered by this warranty, and BH Thermal shall not be responsible for such labor costs.

Limitation. This warranty shall not apply to any product or part thereof which has been subject to accident, negligence, alteration, damage during shipment, improper service, abuse, or misuse, including but not limited to use beyond rated capacity. BH Thermal makes no warranty whatsoever with respect to accessories or parts not supplied or manufactured by BH Thermal. BH Thermal's obligation under this warranty shall be conditioned upon BH Thermal's receiving written notice of any defect within fifteen (15) days after its discovery, and, at BH Thermal's option, return of such equipment or parts prepaid to its factory at 1055 Gibbard Ave., Columbus, Ohio 43201.

Disclaimer. **BH THERMAL MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, EXCEPT AS IS EXPRESSLY SET FORTH ABOVE. NO AGENT, EMPLOYEE OR REPRESENTATIVE OF BH THERMAL HAS ANY AUTHORITY TO BIND BH THERMAL TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY COVERING THE SALE OF ANY PRODUCT, AND UNLESS SUCH AFFIRMATION, REPRESENTATION OR WARRANTY MADE BY AN AGENT, EMPLOYEE OR REPRESENTATIVE IS SPECIFICALLY ENDORSED IN WRITING BY BH THERMAL, IT SHALL NOT BE ENFORCEABLE BY ANY BUYER. BH THERMAL MAKES NO EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY AND NO EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE, EXCEPT AS IS EXPRESSLY SET FORTH ABOVE. BH THERMAL SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES.**

This warranty allocates risk between the purchaser and BH Thermal as authorized by the Uniform Commercial Code and other applicable law.

ACR II Hot Bonder Instruction Manual

Other Composite Curing Products From BriskHeat®

Composite Curing Blankets

"Ultimate Flexibility and Durability"

Full line of composite curing blankets. Includes vacuum curing blankets that eliminates consumables such as vacuum bags and tacky tape.



Vacuum Curing/Debulking Tables

"Industry's Best Vacuum Table"



Visit www.BriskHeat.com or Call 1-800-848-7673
for More Details