NOTE: *Do not plug the power supply into an electrical outlet until all other connections have been made.*

ELECTRICAL CONNECTIONS

The standard cable supplied with a Sonics press is 10 feet. Optional extension cables are available up to 15 feet without modification.

When making the initial electrical connections, make sure the power is disconnected and follow these precautions.

1. Do not strain or kink the cables. When going around corners, allow as wide a bend as possible. Do not run the cables parallel to any power line within a distance of less than 1 foot (305 mm).
2. To prevent the possibility of an electrical shock, ensure that the power supply line cord is properly grounded. Also make sure that the voltage rating of the electrical power source matches the power supply requirement (refer to the “Power Specifications” table on preceding page).
3. Check with your electrician if you have any wiring questions.

NOTE: *Detailed wiring diagrams are supplied in the Appendix at the back of this manual.*

CABLE CONNECTIONS – For Models with 700 to 2200 Watts Power:

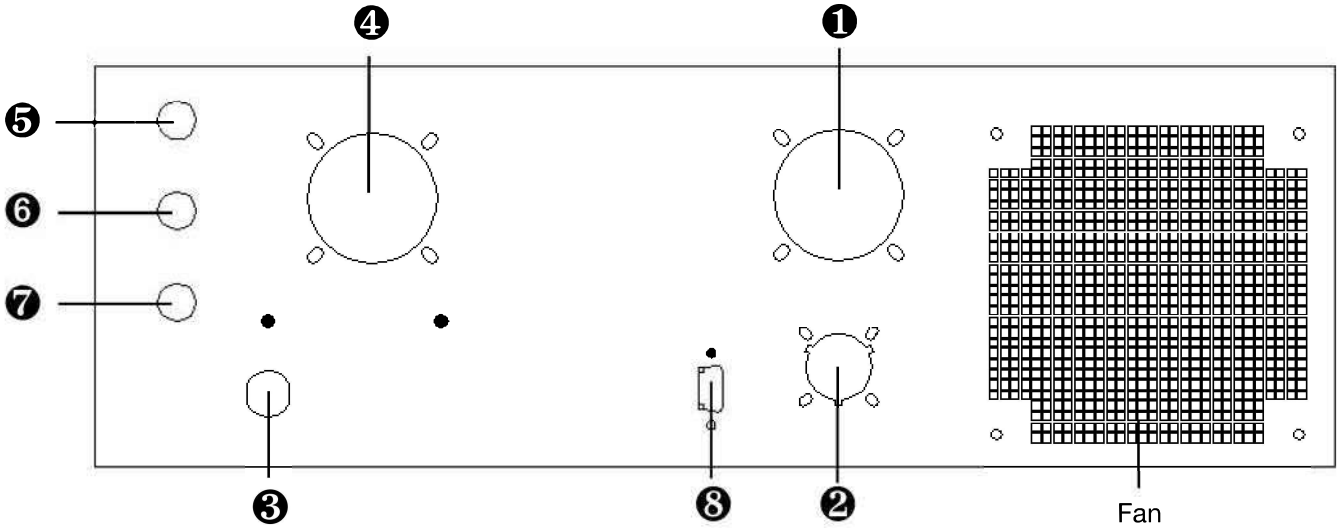
Located at the rear of the power supply are the cable connections as illustrated below. (The interconnecting cables will be supplied with your system.)

❶ J1, a round, 12-pin RF cable that connects the welding press or converter to the power supply.

❷ J2, an actuation cable that connects the power supply to a trigger source (press cable or external trigger source.) Refer to wiring diagrams in *Appendix.*

❸ The power line cord that plugs into the appropriate electrical outlet.

Once these connections have been made, the power supply is ready for operation. If applicable, be sure to consult your welding press instruction manual to insure that all connections on the press side are correct, and



NOTE: *To see a list of converters that can be connected to the power supply, see the table on the following page.*

that the press is ready for operation.

Also located at the rear of the power supply are the following:

❹ J5 External I/O

❺ Fuse (0.5 amp - internal low voltage)

❻ Line fuse (based on requirements listed in “Power Specifications” table, page 9),

❼ Line fuse (based on requirements listed in “Power Specifications” table, page 9),

❽ J4 Serial Output

NOTE: *Detailed wiring diagrams are supplied in the Appendix at the back of this manual.*

CABLE CONNECTIONS – For Models with 3000 or 4000 Watts Power:

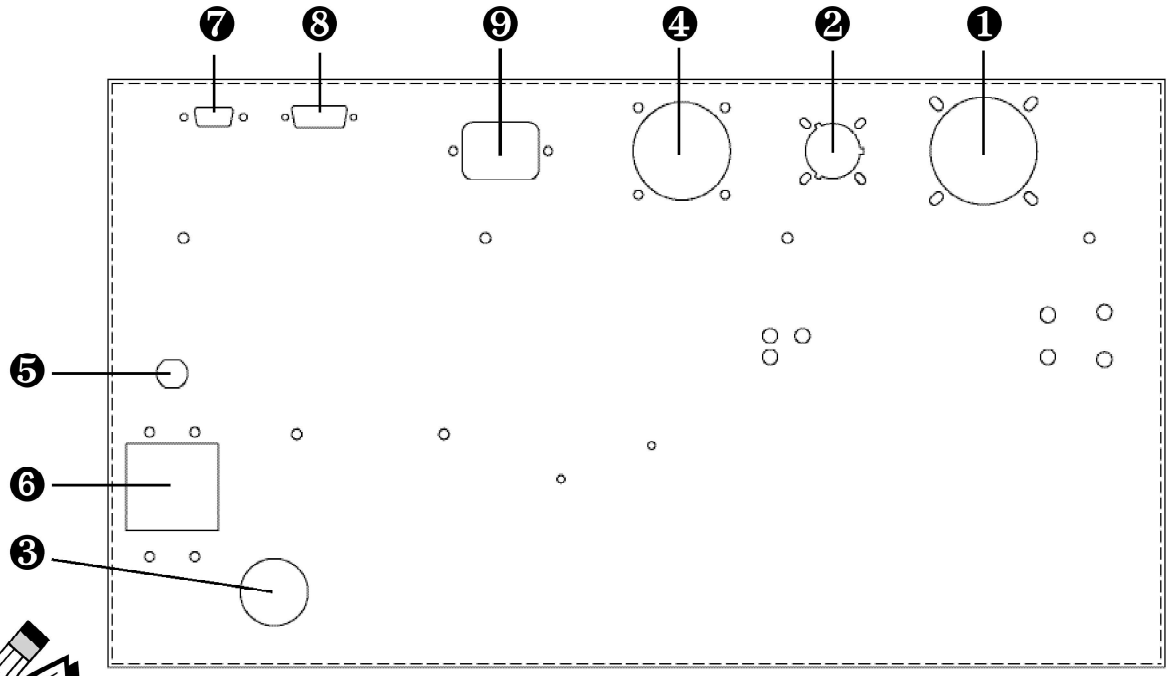
Located at the rear of the power supply are the cable connections as illustrated below. (The interconnecting cables will be supplied with your system.)

❶ J1, a round, 12-pin RF cable that connects the welding press or converter to the power supply.

❷ J2, an actuation cable that connects the power supply to a trigger source (press cable or external trigger source.) Refer to wiring diagrams in *Appendix.*

❸ The power line cord that plugs into the appropriate electrical outlet.

Once these connections have been made, the power supply is ready for operation. If applicable, be sure to consult your welding press instruction manual to insure that all connections on the press side are correct, and that the press is ready for operation.



NOTE: *To see a list of converters that can be connected to the power supply, see the table on the following page.*

Also located at the rear of the power supply are the following:

❹ J5 External I/O

❺ Fuse (0.5 amp - internal low voltage)

❻ Circuit breaker

❼ J4 Serial Output

❽ J3 Linear Encoder

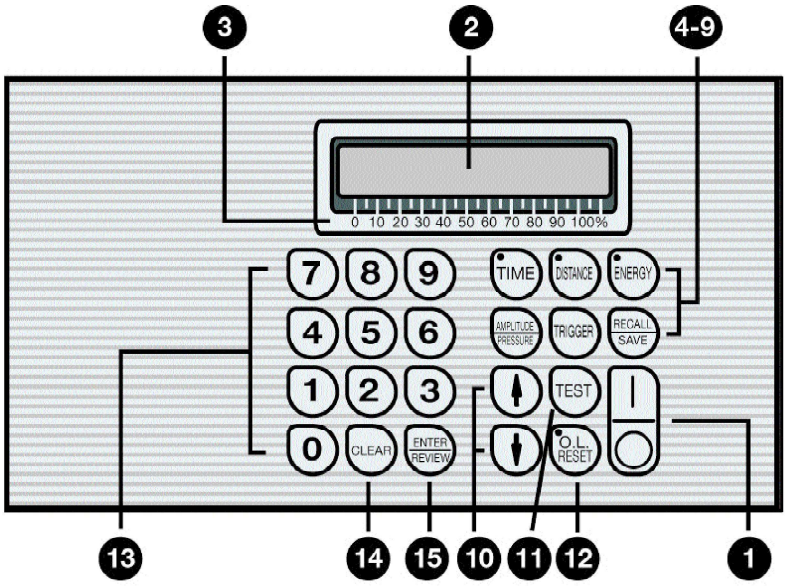
❾ J6 on 15 kHz models only. Press motor connector.

AVAILABLE CONVERTERS FOR POWER SUPPLIES

Item No.	Description
CV00016	15 kHz with Button connector (O-ring mount)
CV00161	15 kHz with Lemo connector (O-ring mount)
CV00034	15 kHz with Button connector (O-ring mount) rated up to 4500 watts
CV00341	15 kHz with Lemo connector (O-ring mount) rated up to 4500 watts
CV00015	20 kHz with Button connector (O-ring mount)
CVR0015	20 kHz with Button connector (rigid mount)
CV00151	20 kHz with Lemo connector (O-ring mount)
CVR0151	20 kHz with Lemo connector (rigid mount)
CV00154	20 kHz with Lemo connector and fitting for air cooling (O-ring mount)
CVR0154	20 kHz with Lemo connector and fitting for air cooling (rigid mount)
CV00157	20 kHz with Button connector and fitting for air cooling (O-ring mount)
CVR0157	20 kHz with Button connector and fitting for air cooling (rigid mount)
CV00158	20 kHz Hand Gun with handles and cables (O-ring mount)
CVR0158	20 kHz Hand Gun with handles and cables (rigid mount)
CV00331	20 kHz with Fischer connector
CV00334	20 kHz with Fischer connector and fitting for air cooling
CVR0023	40 kHz with Button connector (rigid mount)
CVR0231	40 kHz with Lemo connector (rigid mount)
CVR0233	40 kHz with SHV connector side mounted (rigid mount)
CVR0234	40 kHz with Lemo connector and fitting for air cooling (rigid mount)

FRONT PANEL CONTROLS AND INDICATORS

Located on the front panel of the power supply are the following controls and indicators:



1. **ON/OFF** keys which turn the unit on and off.
2. **LCD SCREEN** which displays various settings, parameters and prompts as detailed in the following pages. In addition, during the weld process it displays a load meter indicator showing the power level of ultrasonics that is being delivered to the welding press (see #3 below).
3. **LOAD METER SCALE** from 0 to 100% which (in conjunction with vertical line indicators on LCD display) shows the running power (bar graph at bottom of display) and peak power (single vertical line at top of display) during the weld. Peak power is reported as %Pmax after the cycle (see page 16).
4. **TIME** key allows selection and display of time settings and permits adjustment of time duration in .01 second increments (from 00.00 to 99.99 seconds) for five time parameters as follows:

   a. Weld time

   b. Hold Time

   c. Delay time

   d. Afterburst Time

   e. Time Limit Low

   f. Time Limit High

For a complete explanation of these parameters, refer to page 19.

5. **DISTANCE** key. Option not available with Model GXT.
6. **ENERGY** key. Option not available with Model GXT.
7. **AMPLITUDE/PRESSURE** key which controls adjustment of the following amplitude and pressure settings of the system's high-frequency vibrations over the full operating range. (Major adjustments of amplitude can be made through the use of different boosters – consult your press manual for further information.)
   a. Amplitude Setting
   b. Amplitude Ramp (only on systems configured for more than 2200 watts)
   c. Trigger Force (Press)
8. **TRIGGER** key which displays and permits selection of the trigger mode from the following options –
   a. Delay Timer
   b Force/Pressure
   c. Pretrigger - Top
9. **RECALL/SAVE** key which allows up to 15 different jobs to be stored (saved) and recalled or changed upon demand.
10. **ARROW** keys (Up/Down) which allow scrolling through some menus and also serve as a toggle for displayed parameter options in some menus.
11. **TEST** key which can be used to test ultrasonic operation and displays idle losses of converter/booster/horn as a percentage of maximum power when key is depressed. Also functions as a frequency display.
12. **O.L. RESET** key which resets the power supply following an overload condition. Red LED in upper left corner indicates an overload condition exists.
13. **0-9 NUMERIC KEY PAD** which allows input of numeric data or numeric selection options by pressing the keys.
14. **CLEAR** key which cancels a prior parameter value when a new value is to be entered.
15. **ENTER/REVIEW** key which Enters data into the system as keyed in with the numerical keys and displayed on the LCD screen. In Review function, displays the alarm, mode and cycle information.

KEYING IN PARAMETERS

To make numeric entries into a cursor location that is displayed on a screen menu, use the numeric keypad. When the desired entry is displayed on the LCD screen, use the ENTER key to register the new value. Entries are made left to right.

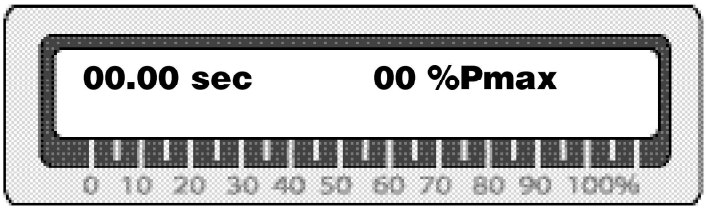
The CLEAR key will clear an existing value to 0, displayed as a series of dashes, and relocate the cursor to the extreme left-hand entry position ready to accept entries again. As soon as a desired value is keyed in and displayed, pressing the ENTER key makes the system accept that entry. If a number value is not "Entered," then it will not be accepted by the system and the parameter value will return to its former setting (before any numerical values were changed).

OPERATIONAL FEATURES

- Adjustable Afterburst Timer to separate parts from horn.
- Adjustable tolerance limits in time (sec) with visual alarms.
- Information displays including: number of assemblies, number of rejects, and number of cycles.
- Fault displays.
- Keypad security.
- Self-diagnostic input test.
- Storage capabilities of up to 15 jobs.
- RS-232 Printer monitor interface permits connection to a printer or computer.
- External job selection when the keyboard is “locked.”

STARTING UP THE POWER SUPPLY

Press the ON/OFF key to turn the power supply on. The LCD screen will briefly display “Start Sequence” and show wattage and frequency information. Then the LCD screen will show the following “ready” display:



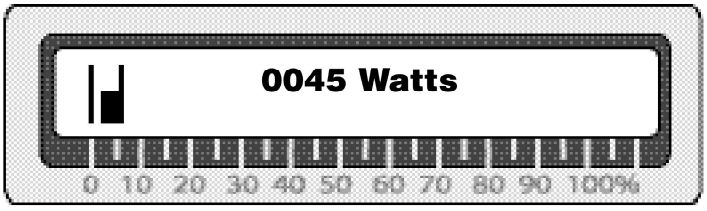
This display shows the last weld information for weld time and power. (After power down and subsequent power up, values are cleared to zero.)

INITIAL OPERATION

After the power supply is turned on (as described on previous page), follow these steps:

1. Make sure that all necessary preparations have been made with regard to the ultrasonic system and tooling, and that the items to be welded are in position.

2. Press and hold the **TEST** button. While depressing the **TEST** button, check the LCD display. Make sure the bar graph indicator on the LCD display (a series of vertical lines that register to the 0 to 100% load meter scale – see example below) does not exceed 20%.



NOTE: *The TEST and Load Meter check should always be done for all cold start-ups, and for any start-up after the system has been idle for 20 minutes or more.*

During the testing process, keep in mind that the ultrasonics are only activated as long as the TEST button is depressed – once you release the TEST button, ultrasonics is terminated.

A bar graph indicator reading of above 20%, signals that there may be a problem with the stack. Check your assembly and re-test.

3. The power supply is now ready for operation.

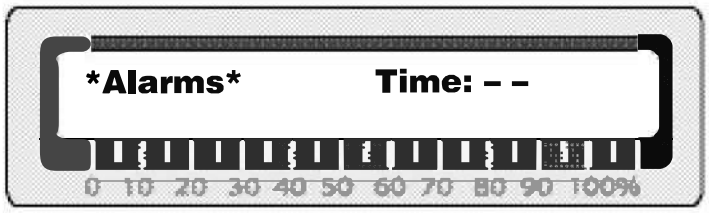
Frequency Display

The TEST key can also be used to display the running ultrasonic frequency being used by the system. Refer to page 22 for more information.

READY SCREENS

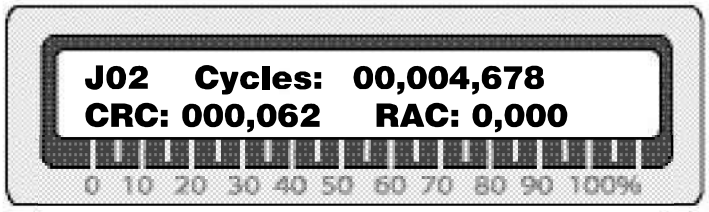
In addition to the start-up ready screen (shown on page 16), there are 2 other "ready" screens. The system must be displaying one of the 3 ready screens in order for welding to commence. Welding cannot be initiated from any other display. The other 2 ready screens are as follows:

Alarm Screen



The Alarm screen displays information about the alarm(s) that have been triggered by the system encountering parameters outside of the specified tolerance limits. The screen will indicate an alarm that occurs in Time. If there are no alarms, dashes will display. If there are alarms, an L (for Low limit, indicating that the low limit was violated) and/or an H (for High limit, indicating that the high limit was violated) will display. When a new cycle begins, the system will automatically clear the current alarm.

Counter Screen



The Counter screen displays information about the job number, the number of cycles run to date, the customer resettable counter (CRC) and the resettable alarm counter (RAC). The 2 resettable counters can be reset whenever desired by pressing the Clear key when the counter screen is displayed (the keypad must be unlocked).