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OWNERS MANUAL
MODEL 100
STEREO POWER AMPLIFIER

SERIAL NO. _____

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- IMPORTANT -

PLEASE READ THIS PAGE BEFORE OPERATING

YOUR

BGW MODEL 100 POWER AMPLIFIER

Your new BGW power amplifier is designed to provide years of trouble free performance. Observing these few precautions will insure proper operation.

Never connect the output of one channel with that of another.

Never connect a direct short from the output of any channel to ground.

Connect the power cord to the proper voltage mains as indicated on the rear panel switch. Conversion to another voltage requires the replacement of the fuse.

Connections should be made to the power amplifier with the power OFF.

SECTION 1: DESCRIPTION

The BGW Model 100 is the most advanced dual solid state power amplifier available. The basic design criteria used are those which are applied to present day computers and other related equipment.

The mechanical construction of the Model 100 features an all steel, welded chassis for maximum strength and rigidity.

The on-off switch, headphone jack, gain controls and the solid state (L.E.D.) pilot lamp and clipping indicators are mounted on the front panel for ready access.

The unit has an internal slide switch which instantly converts it from a two channel stereo amplifier to a bridge-connected monaural amplifier.

Only the finest components have been qualified for use in BGW power amplifiers. For example, all resistors used in signal circuits are low noise 5% tolerance carbon film types, all harness wiring is insulated with Teflon, and all circuit boards are made of flame retardant epoxy glass. All transistors used in the signal path are hermetically sealed metal cans--no plastic packages are used.

The packaging inside your 100 is unlike ordinary power amplifiers. The unit features an 4-3/4 x 9-7/8 x 1-5/16 aluminum extrusion. The total radiating surface area of the heat sink is 330 square inches. Each unit's wiring is identical with the next as the circuits are photo etched.

The output stage of your amplifier uses the most powerful type of transistors available. Each channel uses 2, 150-watt dissipation, single-diffused power transistors. The tremendous Safe Operating Area and high degree of redundancy inherent in this arrangement makes the output stage extremely rugged and able to dissipate the total output of the power supply. In this way the need for current limiting circuits has been eliminated along with their associated problems. Load impedances as low as 4-ohms are handled with ease. Electrostatic and other highly reactive speaker systems present no difficulties for the Model 100.

All the semiconductors in the output stage are in intimate contact with the heat sink.

The voltage gain circuits are also mounted on the same module. A true operational amplifier integrated circuit, hermetically sealed in a metal can, acts as the front end. The op amp (as they are called) is a special unit featuring high speed (15 MHz) and a high slew rate (50 volts/microsecond) yet still having very low noise due to its darlington input stage and careful design. The op amp stage is followed by a discrete complementary pair acting as an active current source/sink which also provides additional voltage gain. The current source is the ideal way to drive the output stage which is basically a voltage follower.

This sophisticated circuit design makes for an extremely accurate amplifier. The open loop gain is higher than found in the competitors' products. The accuracy of an amplifier is a function of the difference between the open loop gain and the closed loop gain. In this case, the closed loop gain is 26 dB (a voltage gain of only 20) while the open loop gain is about 1,000,000. The accuracy of the 100 is so great that conventional audio test equipment is unable to provide meaningful measurements. Harmonic distortion measurements are simply the residual level of the distortion analyzer. This extremely accurate signal processing enables the Model 100 to drive speakers at very high levels while adding absolutely no coloration of its own. Even at milliwatt levels the output wave-form exhibits no sign of crossover distortion. The dynamic range capability of a typical 100 is 115 dB.

Two red L.E.D. clipping indicators on the front panel utilize an exclusive new BGW circuit. Whenever either channel of the Model 100 is driven into clipping, a corresponding indicator lights and remains lit for .25 seconds. These indicators, which tell the operator that the amplifier is being overdriven, can be invaluable to the engineer or audiophile who must be sure that every component in his system is producing a clean, distortion-free signal. An inadvertent short circuited output will cause the L.E.D. to remain on until the short is removed. The L.E.D. is actually a loss of feedback indicator.

SECTION 2. SPECIFICATIONS

30-watts minimum sine wave continuous average power output per channel with both channels driving 8-ohm loads over a power band from 20 Hz to 20 kHz. The maximum total harmonic distortion at any power level from 250-milliwatts to 30-watts shall be no more than 0.1%.

1 kHz Power: 33-watts into 8-ohms per channel, both channels operating, 0.1% total harmonic distortion.

40-watts minimum sine wave continuous average power output per channel with both channels driving 4-ohm loads over a power band from 20 Hz to 20 kHz. The maximum total harmonic distortion at any power level from 250-milliwatts to 40-watts shall be no more than 0.1%.

1 kHz Power: 44-watts into 4-ohm per channel, both channels operating, 0.1% total harmonic distortion.

80-watts minimum sine wave continuous average power output monoaural driving an 8-ohm load over a power band from 20 Hz to 20 kHz. The maximum total harmonic distortion at any power level from 250-milliwatts to 80-watts shall be no more than 0.1%.

1 kHz Power: 88-watts into 8-ohms, 0.1% total harmonic distortion.

Small Signal Frequency Response:

+0, -3 dB, 1-Hz to 65-kHz.

+0, -0.25 dB, 20-Hz to 20-kHz.

Noise and Hum Level:

Better than 106 below rated output into 8-ohms.

Input Sensitivity:

.78-volts for 15.6-volts out (full power at 8-ohms). Voltage gain 26 dB (20 times).

Input Impedance:

10,000-ohms.

Damping Factor:

Greater than 200 to 1 reference to 8-ohms.

Output Impedance:

Designed for any load impedance equal to or greater than 4-ohms.

Power Requirements:

Switchable between 120-volts @ 3-Amps and 240-volts @ 1.5-Amps.
Changing the mains voltage requires replacement of the mains fuse.

Semiconductor Complement:

2 Op Amp IC's (equivalent to 44 transistors each), 20 transistors,
4 zener diodes, and 4 diodes.

Dimensions:

1.75-inch by 19-inch standard rack front panel by 12-inches deep.

Weight:

18 lbs. net, 22 lbs. shipping.

SECTION 3: INSTALLATION

3.1 Preliminary

DO NOT PLUG THE AMPLIFIER IN YET!

SAVE THE CARTON AND PACKING MATERIALS

The container should be saved in event the unit is moved or shipped at some future date.

Inspect the unit for damage in transit immediately upon receipt. If damage is found, notify the transportation company immediately. Only the consignee may institute a claim with the carrier for shipping damage. BGW will cooperate fully in such event. Be sure to save the container as evidence of damage for the shipper to inspect.

The Mains (AC line) voltage is indicated by the switch on the rear of the amplifier. Amplifiers supplied for use in the United States are shipped for 120 volts. Only the indicated mains voltage should be used. If the mains voltage must be changed, the fuse must be changed; see Section 3.5.

All connections should be made before power is applied!

DO NOT PLUG THE AMPLIFIER IN YET!

3.2 Mounting and Set-Up

Position the amplifier in its normal operating location. If it is to be rack mounted, the four feet on the bottom of the unit may be removed (there will be no loose hardware inside the amplifier if the feet are removed). Any installation must provide enough air circulation to cool the amplifier.

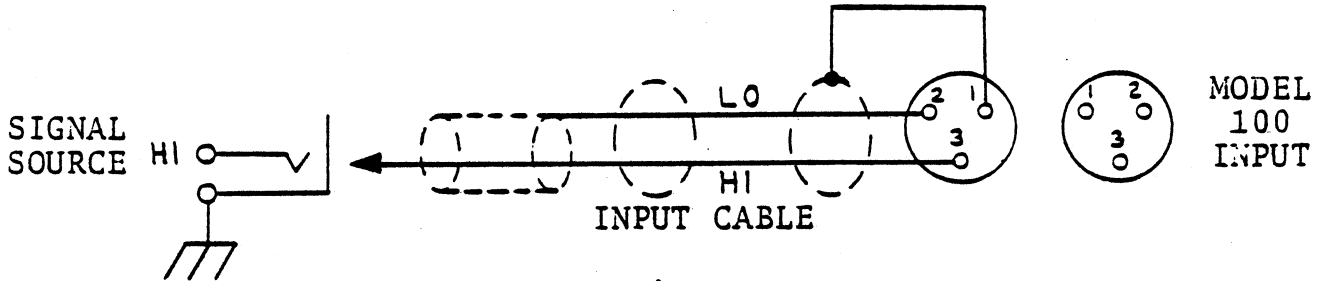
The amplifier is designed to operate in either the Stereo (2-channel) mode or Monaural (bridged) mode. A slide switch located inside the unit switches from one mode to the other. The unit is shipped in stereo mode. To convert to mono mode, simply remove the four top cover screws on the sides of the amplifier with a Phillips head screwdriver, lift off the cover, and slide the switch inside towards the rear panel for mono operation. Now replace the cover and screws.

3.3 Connecting Input Lines

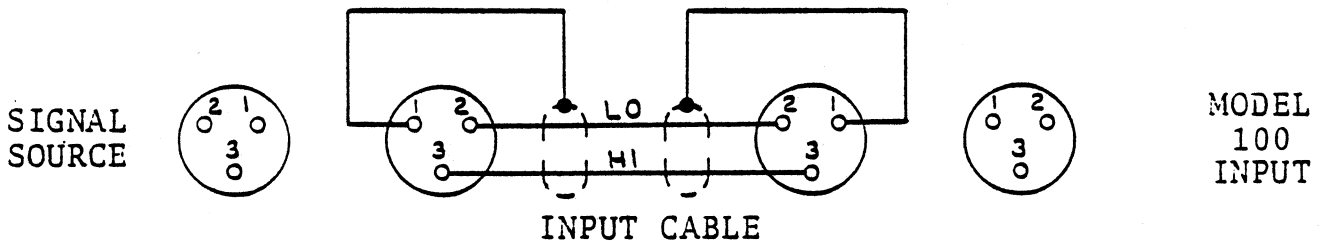
INPUT CONNECTIONS - STEREO MODE

Shielded output cables from the preamplifier should be connected to the two input jacks on the amplifier. On the standard Model 100, the input jacks require standard 1/4" diameter phone plugs; the input lines should be unbalanced. Adapters are required if the shielded cables have RCA-type phone plugs.

On the Model 100 with Option 01, the input jacks require professional, three-pin, male audio connectors (such as the Cannon XL Series, or Switchcraft A3 Series). To use the Model 100-01 with high impedance, unbalanced input lines, use the jumper plug provided in the transformer socket and connect the input cables as follows:



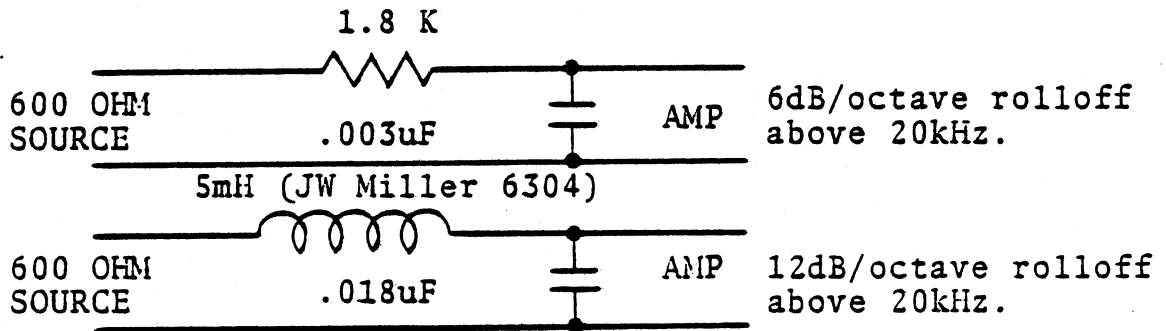
To use the Model 100-01 with balanced input lines, remove the jumper plugs from the transformer sockets and replace them with transformers of the desired impedance. Connect the input cables as follows:



Input connections should be as short and direct as possible. Shielded cables must be used and both should originate from the same source (i.e., if both channels do not come from the same preamps, ground loop problems may arise).

The source must be capable of delivering 1.25 volts for full output from the amplifier.

For maximum signal to noise ratio, the driving source impedance should be less than 5,000 ohms. Radio frequency interference (RFI), when it occurs, can be reduced or eliminated by employing one of the filters shown below. They should be built in shielded enclosures such as 35mm. aluminum film cans.



INPUT CONNECTIONS - BRIDGE MODE

Follow the same procedure as outlined for Stereo mode but use only one shielded cable plugged into the left channel input. Do not connect anything to the right channel input.

3.4 OUTPUT CONNECTIONS - STEREO MODE

Connect the left speaker to the binding posts marked Left Ch. and the right speakers to the binding posts marked Right Ch. Observe the phasing of the speakers. Most connectors on speaker cabinets are either color coded or marked +, -. Connect the black or minus (-) terminal on the speaker cabinet to the black binding posts on the amplifier. Connect the other speaker terminal to the red binding post.

Ideally, the output leads should be connected to the amplifier with standard banana plugs; however, the five-way action of the binding posts permit the use of tinned wires or spade lugs. Remember, of course, to put a fuse in series with the load.

OUTPUT CONNECTIONS - BRIDGE MODE

Follow the same procedure as outlined for Stereo mode but connect the single output across the two red binding posts of the left and right channels. Do not connect anything to the left or right channel ground binding posts.

3.5 CONNECTING POWER MAINS

The Model 100 is furnished with a three wire cord and a grounding plug. Defeating the grounding provision may create hazardous conditions.

The amplifier should only be plugged in when it has been established that it is wired for the correct power mains voltage and after all other connections to the amplifier have been made.

The mains (AC line) voltage is indicated by the switch on the rear of the amplifier. For use in the United States, the switch should read "115", and the fuse in the rear panel fuse holder should be a 2 ampere type 3AG fuse. This allows normal operation with line voltages ranging from 90-130 VAC; however, output power will be reduced if the power mains voltage falls below 120 VAC. For use with line voltages ranging from 220-240 VAC, simply slide the plastic insert in the switch with a ballpoint pen so it reads "230", and replace the fuse in the rear panel fuse holder with a 1 ampere type 3AG fuse.

SECTION 4. OPERATION

4.1 Precautions

1. Speaker destruction is often due to improper equipment operation. This often occurs when someone without the proper appreciation for the components of a high power, high quality music system has the opportunity to change records or adjust levels. The best protection here is caution. Keep the equipment out of the reach of untrained adults and children.
2. Never parallel the two amplifier output together; instead, connect the amplifier for bridge mode operation (see Sections 3.3 and 3.4).
3. Do not connect an input ground lead to an output ground lead; to do so may cause a ground loop and oscillations.
4. Do not operate the amplifier from power mains which exceed the indicated mains voltage by more than 10%.
5. Never connect the output of the amplifier to another power source such as a battery or power main.
6. Do not expose the amplifier to corrosive chemicals such as lye, soft drinks, salt water, etc. Also never immerse the amplifier in any liquid.
7. Neither the amplifier nor any of its leads should be exposed to areas likely to be struck by lightning.

4.2 Turn-on Procedure

Often, turn-on transients, which can be dangerous to speakers, originate in the pre-amp or tuner. This is especially true of tube-type units. If this situation arises, turn the amplifier on after the other units have had adequate time to stabilize.

SECTION 5. CIRCUIT DESCRIPTION

5.1 Amplifier

The signal from J1 is applied to potentiometer R1 which adjusts the amplitude of the amplifier input signal. This signal is applied to the inverting input (pin 2) of the operational amplifier (op amp) IC1 through the coupling network C1, C2, R2, and R3. This network provides a high input impedance to the amplifier and prevents any DC from appearing at the op amp input. It also serves as a filter for radio frequency interference.

The output of the op amp is divided by networks C11/R13 and C12/R14, and is applied to the bases of Q1 and Q2. Q1 and Q2 provide the voltage gain necessary to drive the driver (buffer) transistors Q4 and Q5. Q4 and Q5 are operated in a quasi-complementary configuration with their power transistors, Q6 and Q7. Q6 and Q7 provide a push-pull output which is applied to filters L1/R24 and C17/R25 and then appears at J2. The headphone output passes through R26 and then appears at J4.

To maintain overall amplifier stability and linearity, degenerative feedback is utilized throughout the amplifier. This feedback is also necessary to reduce distortion to within specified limits. R/C networks R10/C10 and R7/C9 condition the feedback signal for application to the non-inverting input (pin 3) of the op amp, IC1.

Except for the input, the amplifier uses direct coupling throughout.

A biasing voltage is applied to the bases of driver transistors Q4 and Q5 by Q3 in a Vbe multiplier configuration. Q3 is attached thermally to the heatsink and, together with R19, provides a variable base bias for Q6 and Q7 that automatically maintains the proper bias voltage with temperature change. The value of R19 is selected to produce a drop of 370 millivolts across R20 and R21 with no signal applied.

Stereo-Monaural operation selection is performed by Switch S1. When S1 is in the "mono" position, it connects the left channel output to the right channel non-inverting input and shorts out the right channel inverting input.

5.2 Clipping Indicator

The output of the op amp IC1 is coupled to the base of Q8 through network R27/C19. A voltage of sufficient magnitude to turn on Q8 appears at pin 6 of IC1 whenever the amplifier is driven into clipping because the clipped feedback signal does not match the unclipped input signal. When Q8 turns on, the base of Q10 is driven positive through R29, so Q10 turns on. This turns on the LED, CR3, and pulls the base of Q9 negative, through C18 and R33, which shuts Q9 off. As long as Q9 is off, R31 is no longer held

negative by Q9, so Q10 is held on. As C18 charges through R34, the base of Q9 becomes positive until Q9 turns on, which shuts off Q10 and the LED. Thus, the length of time that the LED is held on is determined by R34 and C18.

5.3 Power Supply

A transformer operated power supply furnishes the required + volts. The transformer, T1, has dual primary and secondary windings and may be operated on 100-120 VAC or 200-240 VAC by appropriately positioning Switch S2. Fuses F1 and F2 provide protection to the primary winding. The two secondary windings are connected in parallel and deliver power to a full wave bridge, CR4. The secondary centertap may be grounded to the chassis through TB2. Since neither side of the bridge is grounded, the output appears as +32V and -32V referenced to circuit ground. Each supply is filtered by a 7300 microfarad capacitor, C23 and C24. The filtered outputs are applied directly to all but the operational amplifier circuits, which receive plus 10 volts from R5, CR1 and C5, and minus 10 volts from R6, CR2 and C6.

SECTION 6. SERVICE PROCEDURES

6.1

Warranty

BGW Systems warrants all units for a period of three years from date of sale. This warranty covers both defects in workmanship and materials. If malfunction does occur, the product will be replaced or repaired, at our option, without charge for materials or labor; if returned prepaid to BGW Systems. This warranty does not cover equipment damaged due to negligence, misuse, shipping damage or accident, or if the serial number is defaced, altered or removed, or if the factory lead seal has been broken, or if the equipment has been altered or modified. Please fill out the warranty registration form on the last page and return it to the factory within 2 weeks of purchase.

6.2 Service Options

6.2.1 Factory Service

Should service be required, contact the dealer from whom the unit was purchased. Chances are that he will be able to service the unit himself by changing one of the unit's modules. If he is unable to service the unit, he will direct you to return the unit either to the nearest authorized factory service station or the factory itself.

Whenever service is required, the Service Authorization Form should be filled out and sent to whomever will be servicing the amplifier.

If the dealer directs you to return the unit to the factory for service, follow this procedure:

1. Fill out the Service Authorization Form and mail it to BGW Systems.
2. Repack the unit in the factory supplied shipping container. All units to be returned for factory service must be shipped in this container in order to prevent damage in transit. Replacement containers are available from BGW Systems.
3. Ship the unit prepaid to BGW Systems. Units will be returned by freight collect.

Service performed on units which are covered by warranty will be performed with no charge for parts and labor. If the unit is no longer covered by warranty a nominal charge will be made for parts and labor.

6.2.2 User Service

The service information included in this manual is intended for those who wish to service their own units with full understanding that in doing so they render their units ineligible for warranty service; units which are not covered by the warranty will not be repaired without charge.

There is nothing within the amplifier that is user serviceable; service by anyone other than factory instructed personnel is not recommended.

The BGW Model 100 is a state-of-the-art amplifier, and, as such, is fairly complex. Without the proper equipment and knowledge of the amplifier's operation, one risks both unnecessary loss of warranty service privileges and damage to the amplifier.

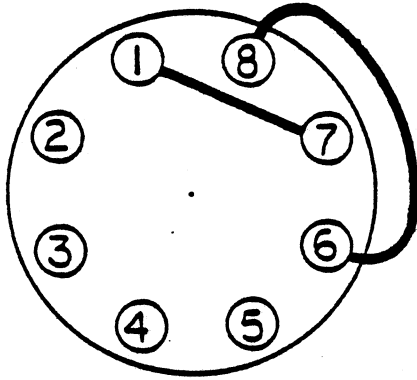
6.3 General Disassembly for Servicing

1. Remove the eight screws securing the top and bottom covers on the sides of the unit and remove the covers. With these covers removed, all parts of the amplifier circuitry are accessible for measurement or replacement.

2. The main PC board may be removed from the unit and replaced as a module as follows:

- a. Using a pair of long nose pliers, unplug the twelve molex connectors located on the component side of the PC board from their respective pins.
- b. Using a solder removal implement such as a solder-vacuum or capillary action braid, unsolder the six potentiometer leads and the four LED leads near the front edge of the PC board.
- c. Using a 5/32" allen driver, remove the four allen head cap screws securing the heatsink to the chassis. The PC board with the heatsink attached may now be removed through the bottom of the chassis.
- d. Insert the potentiometer and LED leads into their respective holes on the new PC board while tightening down the four allen cap screws securing the heatsink to the chassis. Solder the potentiometer and LED leads to the PC board.
- e. Using the diagram provided (Figure 6-1), push the molex connectors firmly on to their respective pins on the PC board.

Should the jumper plugs originally shipped with the Model 100-01 become lost or destroyed, new ones may be made from standard octal plugs. Follow the schematic below.



NOTE: Rear of plug shown.

MODEL 100 PARTS LIST

QTY.

REFERENCE NUMBER(S)

I. MAIN PC BOARD

DESCRIPTION

PART NO.

2		0090-0240	Cap 240PF 500V Mica	2
7	C8	0100-0020	Cap 20PF 1KV Disc	4
10		0100-0047	Cap 47PF 1KV Disc	2
15	C16	0100-1000	Cap 1000PF 1KV Disc	4
5	C6	0129-0047	Cap .047UF 25V Disc	4
13		0129-0100	Cap .1UF 25V Disc	2
11	C12	0216-0010	Cap 10UF 35V Tant	2
19		0236-0005	Cap 4.7 UF 50V Tant	4
3	C4, C17	0369-0015	Cap .015UF 100V Mylar	2
18		0369-0100	Cap .1UF 100V Mylar	4
9		0369-0470	Cap .47UF 100V Mylar	2
14		0456-0050	Cap 50UF 12V TE1133	2
1		0486-0030	Cap 30UF 100V TE1411	2
		0620-0050	Switch Slide DPDT SS50	1
		0723-0031	Insulator Mica Transistor SM	2
		0723-0321	Insulator Mica Transistor LG	2
		0723-3347	Insulator Shoulder Transistor	6
		1000-0250	IIS 2500	16
		1349-9312	Pin Molex R93-12A	1
		1853-4250	2N4250 Transistor PNP	12
		1853-6467	2N6467 Transistor PNP	2
		1854-0409	40409 Transistor NPN (65544)	2
		1854-0410	40410 Transistor NPN (65545)	2
		1854-0636	40636 Transistor NPN	4
	Q7	1854-1005	1B05 Transistor 65728EQUIV	2
		1854-3053	40309 Transistor NPN	2
		1854-4010	SE4010 Transistor NPN	4
	Q10	1885-0318	LM318H Op Amp	2
	CR1, CR2	1900-4740	1N4740A Diode	4
	CR3	1990-5053	Lite Ind MV5053	2
		2111-3625	6-32X5/8 PH MS Phil Blk	16
	R26	4020-2701	Res 270R 2W 10%	2
	R20, R21	4025-1001	Res 10R 2W 5%	4
	R24	4025-2070	Res 2.7R 2W 5%	2

I. MAIN PC BOARD, Cont'd.

R22, R23	4050-0200R	Res .2R 5W 10% Rockwood	4
R25	4050-3001	Res 30R 5W 10% Rockwood	2
R7	5001-2491	Res 2.49KR 1/2W 1%	2
R10, R37	5001-4752	Res 47.5KR 1/2W 1%	3
R9, R18	5005-1002C	Res 100R 1/2W 5% C&F	4
R3-R6, R35	5005-1003C	Res 1KR 1/2W 5% C&F	10
R32	5005-1004C	Res 10KR 1/2W 5% C&F	2
R29, R30, R34	5005-1005	Res 100KR 1/2W 5%	6
R13, R14	5005-1503C	Res 15KR 1/2W 5% C&F	4
R8, R33	5005-4702C	Res 4.7KR 1/2W 5% C&F	4
R2, R27, R28, R31	5005-4703C	Res 47KR 1/2W 5% C&F	8
R36	5005-5010	Res 5.1R 1/2W 5%	1
R15, R16	5005-6800C	Res 68R 1/2W 5% C&F	4
R11, R12, R17	5005-6801	Res 680R 1/2W 5%	6
	8014-0400	AWG 14 Nyleze	.034 lb
	8020-0190	AWG 20 Solid Teflon White	.500'
	8133-0000	#6 ETL Washer	16
	8530-0250	6-32X1/4 Hex Nut	16
	9007-0100	PCB HS Model 100	1
L1	9999-2440	.5000 Coil Form AWG 16 Lead	2

II. CHASSIS

0722-2174	Grommet Smith 2174 Model 100 PSH	1
1231-1102	Lug Molex 02-08-1102	3
1231-1105	Lug Molex 02-05-1105	1
1231-1112	Lug Molex 02-04-1112	1
1313-3457	Lug Crimp #10 12-10 Wire Taped	5
1313-4123	Lug Crimp #10 16-14 Wire Taped	1
8010-0600	AWG 10 Solid TW Blk	.1'
8010-1100	AWG 18 19 Str Teflon Blk E	2.8'
8018-1120	AWG 18 19 Str Teflon Red E	1'
8018-1180	AWG 18 19 Str Teflon Gray E	1'
8022-1100	AWG 22 19 Str Teflon Blk E	1'
8901-0093	Tubing Heat Shrink Clear 3/32	.1'
9999-0550	Tie Wrap 5 1/2" WRN 5 1/2	4
1231-0008	Connector Binding Post Red	2
1231-0009	Connector Binding Post Blk	2

REFERENCE
NUMBER (S)

PART NO.

DESCRIPTION

QTY.

II.

CHASSIS, Cont'd.

	1231-1102	Lug Molex 02-08-1102	2
	1235-0002	Clamp Cap Model 100	2
C22	0199-0100	Cap .1UF 500V Disc	1
C23, C24	0533-0007	Cap 7300 UF 400V Comp GR	2
S2	0620-6206	Switch Slide 115/230V	1
	1231-1102	Lug Molex 02-08-1102	3
	8022-1100	AWG 22 19 Str Teflon Blk E	.2'
	8022-3102	AWG 22 19 Str 2 Cond Blk/Red E	1.7'
	1235-6034	Clamp Strain Relief SR6-P3-4	1
	1313-4123	Lug Crimp #10 16-14 Wire Taped	2
	1331-1416	Lug Solder #6 Stud	1
	1886-0002	Bridge Rectifier KBPC02 Model 100	1
CR4	1990-5053	Lite Ind MV5053	1
CR6	2111-3312	6-32X5/16 PH MS Phil Blk	13
	2111-3500	6-32X1/2 PH MS Phil Blk	1
	2331-5375	10-32X3/8 FH MS Allen Blk	4
	2431-5375	10-32X3/8 Fil H MS Phil Blk	4
	3111-3312	6X3/8 PH SMS Phil Blk	4
	7008-1004	Res 10KR 1/4W for Model 100	2
	8018-1150	AWG 18 19 Str Teflon Grn E	.75'
	8022-0500	AWG 22 Solid Tinned Buss	.05'
	8022-1190	AWG 22 19 Str Teflon Wht E	.08'
	8132-0000	#6 ITL Washer	7
	8133-0000	#6 ETL Washer	4
	8152-0000	#10 ITL Washer	4
	8154-0000	#10 Split Washer	4
	8168-0000	Flat Washer .25X15/32X.005	8
	8530-0250	6-32X1/4 Hex Nut	1
	8530-0312	6-32X5/16 Hex Nut	8
	0129-0100	Cap .1UF 25V Disc	4
	1231-1102	Lug Molex 02-08-1102	2
	8022-1290	AWG 22 19 Str Shield Wht	4
	8902-0018	Tubing Teflon #18 White	2.8'
			.4'

C20

R1

CR4
CR6

C22
C23, C24
S2

DESCRIPTION

PART NO.

II. CHASSIS, Cont.d

REFERENCE NUMBER(S)	PART NO.	DESCRIPTION	QTY.
J1	9010-1100	Adapter Plate Model 100	1
	9999-0111	Jack Input N111	2
T1	9999-0550	Tie Wrap 5 1/2" WRN 5 1/2	5
	0900-0100	Transformer P1440	1
	1231-1105	Lug Molex 02-05-1105	1
	1231-1112	Lug Molex 02-04-1112	1
CR5	1900-4004	1N4004 Diode	1
	2111-3312	6-32X5/16 PH MS Phi1 Blk	2
R38	6010-5601	Res 560R 1W 10% AB	1
	8022-1120	AWG 22 19 Str Teflon Red E	.7'
	8132-0000	#6 ITL Washer	2
	8530-0250	6-32X1/4 Hex Nut	2
	8901-0093	Tubing Heat Shrink Clear 3/32	.08'
TB1	9004-1130	Bracket XFMR Mtg Model 100	1
J4	1231-3007	Connector Terminal Strip 7 Lug	1
F2	9999-0112	Jack Input N112B	1
F1	9999-2000	Fuse 3AG2A	1
	9999-2500	Fuse 3AG2.5A	1
For F1	9999-4406	Fuse Holder	1
For F2	9999-4500	Fuse Holder 450R NTT	1
	9999-5003	Feet Rubber ADH 3M	4
S3	0640-0106	Switch Toggle MTF106D Model 100	1
	8020-1100	AWG 20 19 Str Teflon Blk E	1.9'
	0700-1050	Knob 2903-ILL Model 50 and 100	2
TB2	0720-6992	Barrier Strip 2 Lug 1699-2	1
	0721-0100	Barrier Fish Paper 2.50X11.25	1
	0721-0110	Barrier Fish Paper 4.75X11.25	1
	0721-0120	Barrier Fish Paper .88X11.25	1
	1313-4123	Lug Crimp #10 16-14 Wire Taped	1
	8020-1100	AWG 20 19 Str Teflon Blk E	3.5'
P1	8706-0183	Cable Pwr 18/3 Blk	1
	9000-1100	Panel Fr Finished Model 100	1
	9002-1100	Chassis Model 100	1
	9006-1100	Bottom CVR Model 100	1
	3111-3312	6X3/8 PH SMS Phi1 Blk	4
	9005-1100	Top Cover Model 100	1

REFERENCE
NUMBER (S)

PART NO. DESCRIPTION

QTY.

III. PACKING CONTAINER

9700-1100 Manual Model 100
9851-1100 Ctn 19 3/4X14 5/8X5 1/4 PRD
9854-0024 Bubble Pac 24"
9860-0002 Tape 3" Eggshe11 MH 61M03P

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2 RL.
.001 R1.

LIMITED ONE YEAR WARRANTY

BGW SYSTEMS, INC., (BGW), 13130 South Yukon Avenue, Hawthorne, California, 90250, warrants to the original owner all parts, except front panels, knobs, cases and cabinets, of every new BGW product to be free from defects in materials or workmanship, as hereinafter provided, for one (1) year from the original date of purchase.

BGW will at its option, repair or replace any equipment covered by this warranty which becomes defective, malfunctions or otherwise fails to conform with this warranty under normal use and service during the term of this warranty, at no charge for parts or labor.

In order to obtain warranty service, the equipment, together with the original or a machine reproduction of the Bill of Sale or other dates, proof-of-purchase document describing the equipment, must be delivered to an Authorized BGW Dealer/Service Center in the continental United States, or to BGW at the above address, at the owners expense. Any evidence of alteration, erasing or forgery of proof-of-purchase documents will be cause to void the warranty. Collect shipments to BGW will be refused unless previously authorized. The names and addresses of Authorized BGW Service Stations may be obtained by writing to BGW Warranty Department at the above address.

This warranty does not cover defects, malfunctions or failures resulti ; from shipping or transit accidents, abuse, misuse, operation contrary to furnished instructions, operation on incorrect power supplies, operation with faulty associated equipment, modification, alteration, improper servicing, tampering or normal wear and tear. Equipment on which the serial number has been defaced or removed shall not be eligible for warranty service. Should any equipment submitted for warranty service be found ineligible therefore, an estimate of repair cost will be furnished and the repair will be accomplished if requested by the owner upon receipt of payment or acceptable arrangements for payment.

ANY IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL BE LIMITED IN DURATION TO THE PERIOD OF TIME SET FORTH ABOVE. BGW SHALL NOT BE RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES. SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSION MAY NOT APPLY TO YOU. This warranty gives you specific legal rights and you may also have other rights which vary from state to state. This is the only expressed warranty applicable to BGW products. BGW neither assumes nor authorizes anyone to assume for it any other expressed warranty.

Completion and return of the owner registration card enclosed with the equipment is requested, but is not a condition for obtaining warranty service.

BGW reserves the right to make changes or improvements in design or manufacturing without incurring any obligation to change or improve products manufactured prior thereto.