

# Graphic Equalizer User Guide and Reference Manual

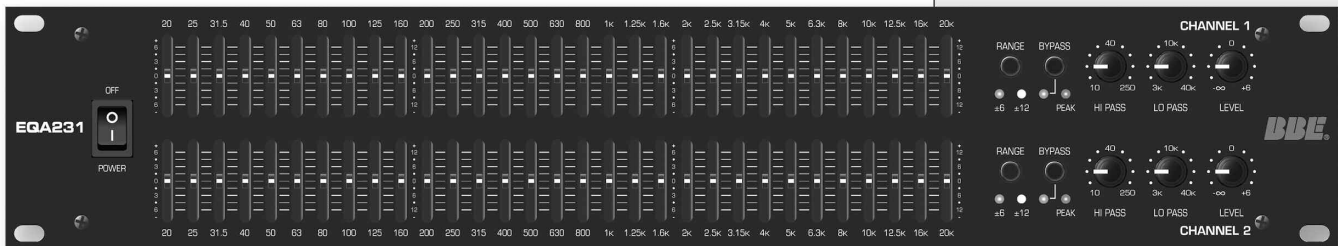
## EQA215



## EQA131

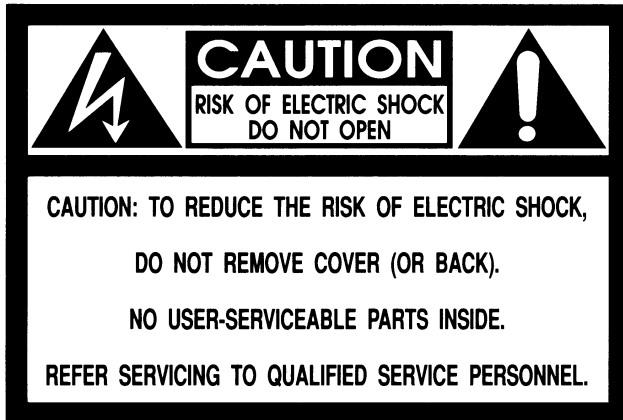


## EQA231



**BBE**<sup>®</sup>  
**Sound Inc.**

# Important Safeguards



## WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

**ATTENTION: RISQUE DE CHOC ELECTRIC- NE PAS OUVRIR.**



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point, within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**For your protection, please read these safety instructions completely before operating the appliance, and keep this manual for future reference.**

**Carefully observe all warnings, precautions and instructions on the appliance and described in the operating instructions supplied with the appliance.**

## INSTALLATION

**Water and Moisture** - Do not install the appliance near water: for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

**Heat** - Do not install the appliance near sources of heat such as radiators, heat registers, stoves, or other appliances that produce heat.

**Ventilation** - Situate the product so its location or position does not interfere with its proper ventilation. For example, you should not place the product on a bed, sofa, rug, or similar surface that might block the vent openings, or placed in a built-in installation, such as a bookcase or cabinet that might impede the flow of air through the ventilation openings.

**Wall or Ceiling Mounting** - If your appliance can be mounted to a wall or ceiling, mount it only as recommended.

## USE

**Power Source** - Connect the appliance to a power supply only of the type described in the operating instructions or as marked on the appliance.

**Power-Cord Protection** - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the appliance.

**Grounding or Polarization** - Do not defeat the grounding or polarization feature of the AC power cord. If your AC receptacle will not accept the power cord plug, contact your electrician to install a proper AC receptacle.

**When not in use** - Unplug the power cord of the appliance from the outlet when left unused for a long period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the plug out by the cord.

**AC Receptacle** - Check to make sure that the AC receptacle holds the power cord plug firmly and securely. If the power cord plug is loose, contact your electrician to replace the defective and unsafe AC

**Foreign Objects** - Be careful that foreign objects and liquids do not enter the enclosure through openings.

## SERVICE

Unplug the appliance from the wall outlet and consult qualified service personnel when:

- the power cord or the plug has been damaged.
- a solid object or liquid has fallen into the cabinet.

- the appliance has been exposed to rain or moisture.
- the appliance does not appear to operate normally or exhibits a marked change in performance.
- the appliance has been dropped, or the enclosure damaged.

Do not attempt to service the appliance beyond that described in the operating instructions. For all other servicing, refer to qualified service personnel **only**.

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*Congratulations on your purchase of the BBE Graphic Equalizer!*

## **IMPORTANT**

Before you begin, please check the contents within this box to insure that included are:

1. The BBE EQA215, EQA131 or EQA231 Graphic Equalizer.
2. The Graphic Equalizer User's manual.
3. Power cord.
4. Warranty Registration card.

If any of these items are found to be missing, immediately contact the BBE dealer from whom the unit was purchased.

***WARNING!*** To prevent possible speaker or amplifier damage, always power-up peripheral devices first, wait 10 seconds, and then turn on the power amplifier. Turn off power amplifier first, then power-down peripheral devices.

# **GENERAL DESCRIPTION**

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**EQA231** is a two channel 31 band 1/3 octave graphic equalizer. The EQA231 incorporates Constant-Q circuitry with a 5% center frequency accuracy. Special features include variable Low and High pass filters, selectable range  $\pm 6\text{dB}$  or  $\pm 12\text{dB}$ , balanced and unbalanced input/output connectors, RFI filters, variable level control, passive bypass switch, PEAK LED, ground lift switch.

**EQA131** is a single channel 31 band 1/3 octave graphic equalizer. The EQA131 incorporates Constant-Q circuitry with a 5% center frequency accuracy. Special features include variable Low and High pass filters, selectable range  $\pm 6\text{dB}$  or  $\pm 12\text{dB}$ , balanced and unbalanced input/output connectors, RFI filters, variable level control, passive bypass switch, PEAK LED, ground lift switch.

**EQA215** is a two channel 15 band 2/3 octave graphic equalizer. The EQA215 incorporates Constant-Q circuitry with a 5% center frequency accuracy. Special features include selectable range  $\pm 6\text{dB}$  or  $\pm 12\text{dB}$ , balanced and unbalanced input / output connectors, RFI filters, variable level control, passive bypass switch, PEAK LED, ground lift switch.

## **FEATURES**

- Constant-Q performance
- LPF/HPF filters (EQA231 and EQA131)
- Boost/Cut range switchable 6dB or 12dB
- Balanced and unbalanced input/output connectors
- RFI filters
- Variable Level control
- Passive bypass switch
- Ground lift switch

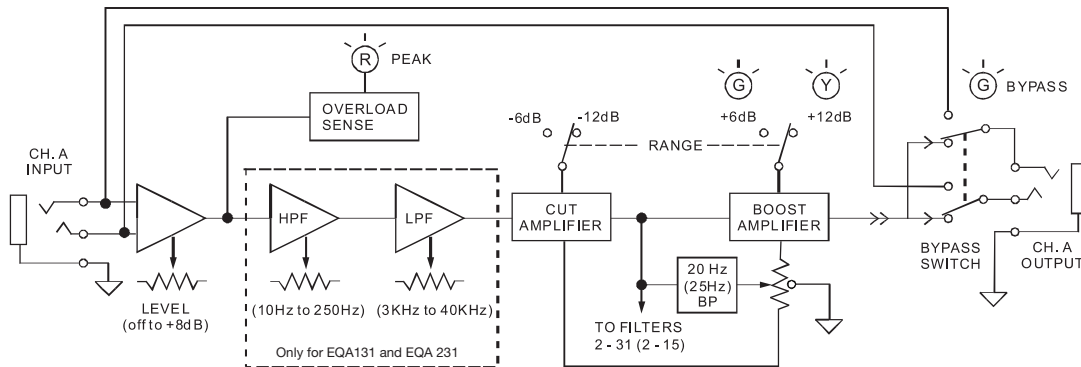
## **APPLICATIONS**

- Cinema sound systems
- Live sound systems
- Night clubs
- Churches
- Auditoriums
- Sports arenas
- Theaters
- Hotels
- Convention centers
- Karaoke sounds
- Recording studios
- Home sound systems

# GENERAL DESCRIPTION

The EQA231, EQA131 and EQA215 all offer the same high quality Constant-Q performance.

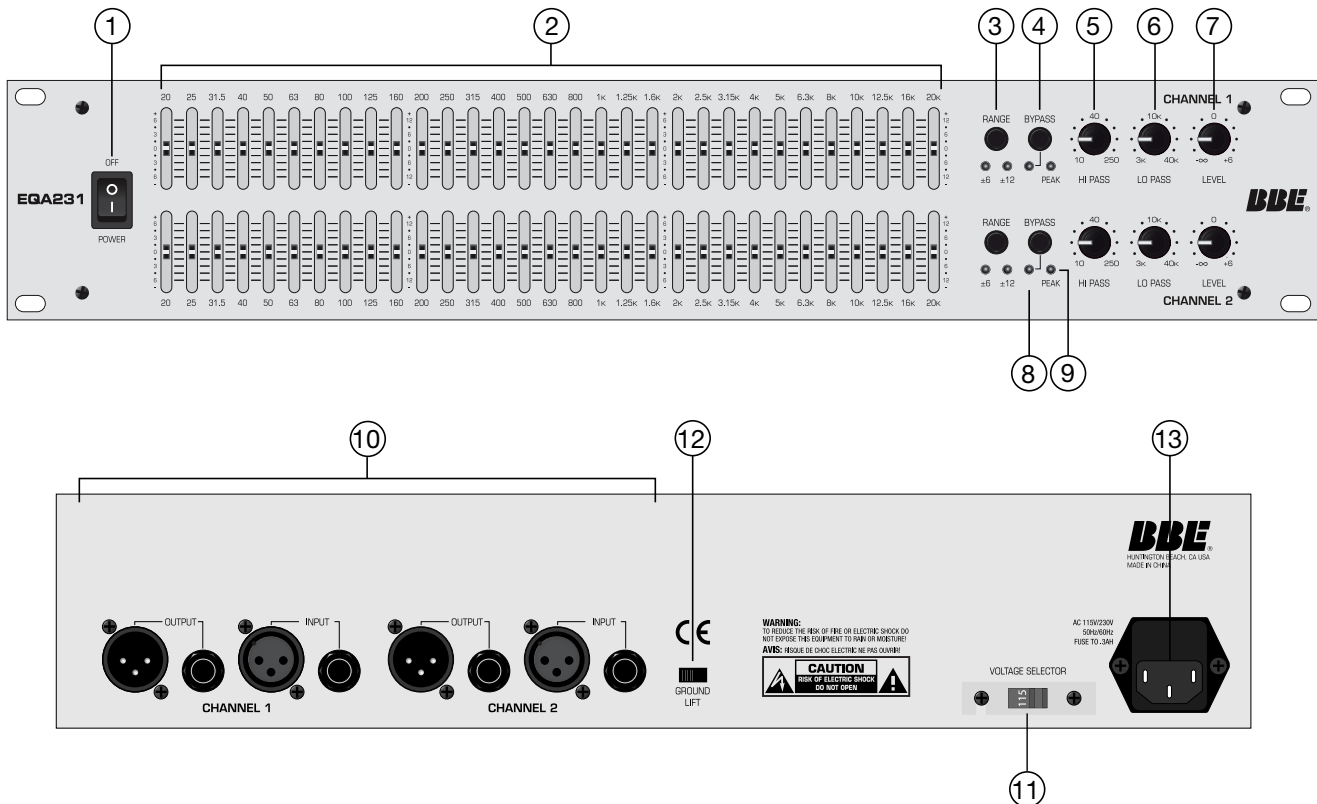
Constant-Q graphic equalizers were developed to fill the sound professional's need for greater control over sound shaping with less interaction between sliders. Truth in slider position became a requirement. The curve traced out by the slider positions on Constant-Q designs indeed represent the actual change to the frequency response. On conventional designs they do not.



( Ch. A Shown, Ch. B Identical )

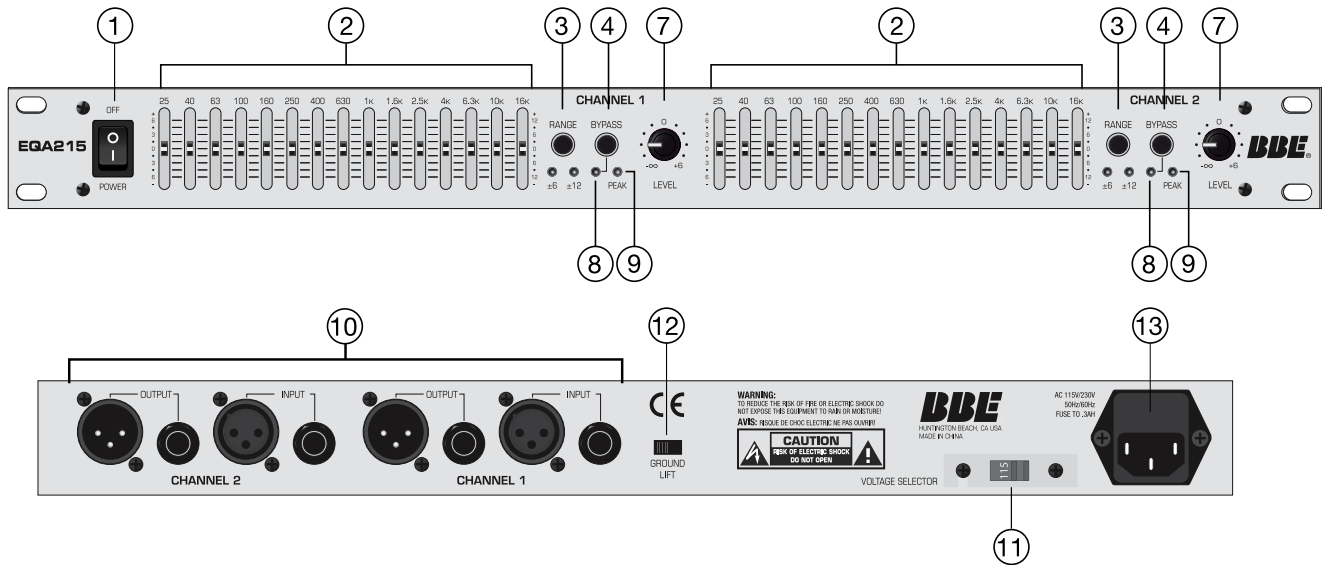
# FRONT AND REAR PANELS

## EQA231

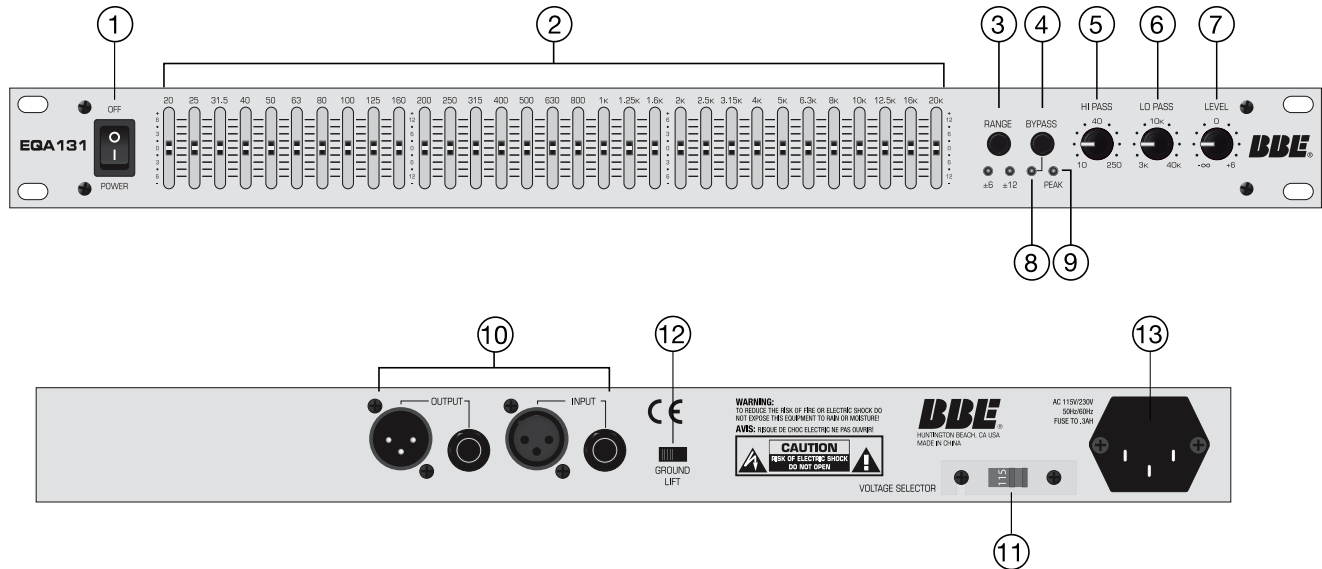


# FRONT AND REAR PANELS

## EQA215



## EQA131



- |                                     |                               |
|-------------------------------------|-------------------------------|
| 1. Power Switch                     | 8. Bypass Indicator           |
| 2. Filter Level Controls            | 9. Peak Indicator             |
| 3. Filter Range Switch & Indicators | 10. Input & Output Connectors |
| 4. Bypass Switch                    | 11. Voltage selector          |
| 5. HPF Frequency Control            | 12. Ground-Lift Switch        |
| 6. LPF Frequency Control            | 13. Socket with fuse holder   |
| 7. Level Control                    |                               |

# ***FRONT AND REAR PANEL CONTROLS***

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## **1. Power Switch**

This switch is pressed to turn power ON, pressing the switch again turns the power off.

Always turn on your equalizer BEFORE your power amplifiers are turned on, and always turn off equalizer AFTER your power amplifiers have been turned off.

## **2. Filter Level Controls**

Each of these sliders control the output level of each of the 31 (or 15) bandpass filters.

Center detent position is grounded for guaranteed flat response.

## **3. Filter Range Switch & Indicators**

The gain range of the filter sliders is switchable (as a group) from +/-6dB to +/-12dB for maximum boost/cut capability. When this switch is in the "OUT MOST" position, at 6dB, the green LED will illuminate. When it is in the "IN MOST" position, at 12dB, the yellow LED will illuminate.

## **4. Bypass Switch**

When it is the "IN MOST" position, equalizer is bypassed. Its associated LED indicates status. (See 8. Bypass indicator)

## **5. HPF Frequency Control (EQA 231 and EQA131)**

To cut down unwanted signal, this control determines the roll-off frequency of the High-Pass Filter. The roll-off frequency can be adjusted from 10Hz to 250Hz by turning this knob. Because of its high roll-off slope, the HPF can be efficiently used to cut down the "HUM" from preceding instruments, or to prevent low-frequency resonance.

## **6. LPF Frequency Control (EQA 231 and EQA131)**

To cut down unwanted signal this control determines the roll-off frequency of the Low-pass filter. The roll-off frequency can be adjusted from 3KHz to 40KHz by turning the knob. Because of its high roll-off slope, this LPF can be efficiently used to cut down the high-frequency noise from preceding instruments, or especially used to roll-off high-frequency sound to obtain a more natural sound in acoustic situations.

## **7. Level Control**

This controls the level of the incoming signal. Turn this control down if the PEAK LED illuminates steadily. Unity gain can be set by turning this knob its center detent position.

## **8. Bypass Indicator**

When the green LED is illuminated this indicates that the unit or channel is in the bypass mode. Signal is routed directly from the input to the output without passing through any circuit (often referred to as "hard-wire bypass").

# Specifications

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## Equalizer:

EQA231 .....	1/3-Octave ISO Spacing From 20Hz to 20KHz
EQA131 .....	1/3-Octave ISO Spacing From 20Hz to 20KHz
EQA215 .....	2/3-Octave ISO Spacing From 25Hz to 16KHz
Type .....	Constant Q (Accuracy 5% Center Frequency)
Range .....	±6dB or ±12dB (Switch Selectable)

## Inputs:

Connectors .....	XLR 3Pin, 1/4" TRS
Impedance .....	20K Ohms Bal; 15K Ohms
Maximum Level .....	+24dBu (Bal) +18dBu (Unbal)

## Outputs:

Connectors .....	XLR-3Pin, 1/4" TRS
Impedance .....	Typ. <150 Ohms
Maximum Level .....	+24dB Bal; +18dB Unbal (2K Ohms) +18dB Bal; +12dB Unbal (600 Ohms)
Overall Gain Range .....	Off to 3dB ( Unbal Out ) Sliders Centered Off to 9dB ( Bal Out ) Sliders Centered

PEAK LED .....	Threshold 5dB ( Below Clipping)
Frequency Response .....	20~20KHz +0, -2dB
HPF Filter .....	10~250Hz, 12dB/Oct
LPF Filter .....	3K~40KHz, 12dB/Oct
THD + Noise .....	0.05% (1KHz +3dB)
Signal-to-Noise Ratio .....	96dB below Max. Level (A weighting)
Equivalent Input Noise .....	-81dB (0dB=0.775V)
Line Voltage .....	95~130VAC, 50/60Hz 190~250VAC, 50Hz EQA231— Input AC Power: 12W EQA131— Input AC Power: 7W EQA215— Input AC Power: 7W

## Unit:

Construction .....	All Steel
Size: .....	EQA231 .....3.5"H x 19"W x 8.5"D ( 2U ) ( 8.9cm x 48.3cm x 21.6cm) EQA131/EQA215 .....1.75"H x 19"W x 8.5"D ( 1U ) ( 4.45cm 48.3cm x 21.6cm)
Weight: EQA231 .....	9 lbs ( 4.1Kg)
EQA131/EQA215 .....	4.5 lbs( 2.05Kg)



## ***Service***

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We recommend that if at all possible, a BBE GRAPHIC EQUALIZER which requires service be sent to our facility in Huntington Beach, California. We request that a "RETURN AUTHORIZATION" be issued by the dealer from whom you purchased the unit. If this is not possible, call BBE Sound, Inc. directly at (714) 897-6766, extension 116 to obtain a "RETURN AUTHORIZATION". Include a copy of the bill of sale with the unit when it is shipped to BBE Sound, Inc. so that the service can be expedited.

As the repair turnaround time is minimal, we request that the unit be sent to BBE Sound, Inc. We also need to add reliability data to our files so that future revisions may be undertaken, if necessary, to improve the product. **If unit has been purchased outside the US, please contact your national distributor.**

## ***Warranty***

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Warranty registration of the unit to BBE Sound, Inc. is not necessary. It is strongly recommended that you retain a copy of the bill of sale for future reference.

**IT IS THE SOLE RESPONSIBILITY OF THE END USER TO PROVIDE THE BILL OF SALE OR OTHER MEANS OF PROOF OF PURCHASE TO VALIDATE THE WARRANTY IF WARRANTY SERVICE IS REQUESTED.**

The BBE GRAPHIC EQUALIZER is warranted against defects in material and workmanship for a period of two (2) years from date of purchase from BBE Sound Inc. or from an authorized dealer. During this period, we will repair units free of charge providing that they are shipped prepaid to BBE Sound, Inc., 5381 Production Drive, Huntington Beach, CA 92649. We will pay return UPS shipping charges within the USA. All charges related to non-UPS shipping, including customs clearance, will be billed. The warranty will be honored for the longer of either 90 days from the date of any service or the remainder of the original 2 Year factory warranty.

This warranty will be consider null and void by BBE Sound, Inc. if any of the following is found:

1. The equipment has been physically damaged.
2. The equipment shows signs of abuse.
3. The equipment has been electrically damaged by improper connection or attempted repair by the customer or a third party.
4. The equipment has been modified without authorization.
5. The bill of sales indicates that the purchase date of the equipment is not within the warranty period.

All non-warranty repairs are warranted for a period of 90 days from the date of service.

BBE Sound, Inc. is NOT LIABLE FOR CONSEQUENTIAL DAMAGES. Should the unit fail to operate for any reason, our sole obligation is to repair it as described above.

**DO NOT RETURN ANY PRODUCT TO THE ABOVE ADDRESS WITHOUT INSTRUCTIONS AND AUTHORIZATION ISSUED BY THE ABOVE LOCATION.**

## ***Maintenance***

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Maintenance of the BBE GRAPHIC EQUALIZER is limited to proper cleaning of the unit with mild household cleaner such as Formula 409™ or Windex™. The chassis and cover are steel finished with a durable polyurethane paint, while the front panel is an anodized aluminum extrusion.

There are no user replaceable parts and the unit should not be opened for any reason unless you are a qualified technician. Calibration should be performed if parts are replaced or if a performance check-out indicates a problem with calibration. Long term use has shown that over the life of this unit there is little or no drift of the components in the BBE GRAPHIC EQUALIZER which would cause a change in calibration. A very conservative design philosophy has resulted in a piece of equipment which runs very cool and should give years of trouble-free service.

**BBE<sup>®</sup>**  
**Sound Inc.**

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**[www.bbesound.com](http://www.bbesound.com)**

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rev. 1 5/2005

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