

# GENZ·BENZ



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## OWNERS MANUAL

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**PRODUCT DESCRIPTION** – The **Shenandoah™ Acoustic 100** is configured as a 2 channel – 4 input 100 watt acoustic instrument amplifier. Each channel is equipped with both a 1/4" unbalanced line input and an XLR balanced microphone input (with phantom power). The 2 inputs on each channel are summed (mixed) together at a 1:1 ratio. Each channel then passes through independent 3 band equalizers with a sweepable midrange frequency. Equalization centers were carefully selected for use with acoustic instruments. Each channel also contains individual send controls to the on-board Alesis® 15 program digital effects circuit. The channel signals are then summed together, mixed with the digital effects return and passed on to the internal 100 watt power amplifier. The back panel contains 3 direct balanced outputs with ground lift switch, 3 unbalanced line outputs, an effects loop, effects cancel jack, fan on/off switch and 2-1/4" speaker jacks.



## FRONT PANEL

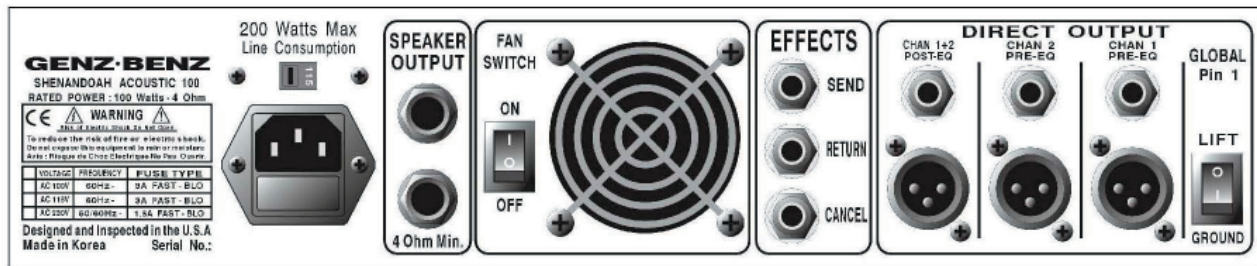
**INPUTS** – The Shenandoah™ Acoustic 100 is equipped with 2 types of input jacks. The ¼” input is unbalanced and “line level” with a useable sensitivity from 100 mV to 1 volt. The input impedance is 150 k ohms. The ¼” input will also accept most active balanced line sources, automatically unbalancing them by recognizing the tip portion of the balanced signal. Additionally, the precision input scaling preamp contains a 50 Hz, 12 dB/octave high pass filter (more effective and less intrusive than the more common 6 dB filters) and an “RFI” filter (radio frequency interference) to eliminate unwanted noise. The XLR input jack is balanced and “microphone level”, with a useable sensitivity from –60dBv to –30 dBv. It contains a precision full range differential microphone preamp with phantom power.

**COMBINING XLR & ¼” INPUTS** – A unique feature of the Shenandoah™ Acoustic 100 is the ability to mix the XLR balanced and ¼” unbalanced inputs on each channel. In many situations, this effectively makes the amplifier function as a 4 channel amplifier. The most effective way to use this feature is to set the volume on the channel using the XLR microphone input and then adjusting the level control on the instrument itself (assuming that it has one) to blend levels between the 2 inputs. Equalization will be common to both inputs on the channel.

**PHANTOM POWER** – An internal phantom power source (13.6 volts) is provided for use with condenser mics. This power source is on at all times and does not affect the standard operation of the amp, even when a condenser mic is not used. We use the DIN 45-596-P12 volt standard which will operate virtually all of the live sound reinforcement condenser microphones on the market. Some “boutique” externally biased condenser mics will not be compatible and will require 48 volt phantom power. We suggest live sound condenser mics by: AKG (C4500B, 4000B , etc.), Audio Technica (AT3035, 3032, Pro Series ,etc.), CAD, Shure and Crown.

**ON-BOARD ALESIS® DIGITAL EFFECTS** – The Shenandoah™ Acoustic 100 contains a genuine Alesis® 15 program digital effects processor. Unlike other amplifier manufacturer’s built-in digital effect units, we chose to use an industry leader in processing with an undisputed reputation for realistic, high quality effects algorithms. Level differences are normal when switching between different effects; just adjust the send and master levels accordingly. The effects level control on each channel adjusts the send level to both the digital effects processor and the ¼” effects send jack on the back panel. The digital effects level in the master section only controls the effects return level from the on-board processor.

Name	Description
Hall 1	Bright hall reverb
Hall 2	Warm hall reverb
Room 1	Hardwood studio reverb
Room 2	Ambient room reverb
Room 3	Warm room reverb for guitars and rhythm instruments.
Plate 1	Classic plate reverb for lead vocals and instruments.
Plate 2	Sizzling bright plate reverb for vocals.
Plate 3	Short "vintage" plate reverb
Chorus	Chorus (Tonal variations in pitch and volume)
Flange	Flanger for jet wash effects.
Delay 1	125ms slapback delay
Delay 2	190ms slapback delay
Chorus/Plate	Chorus with reverb plate
Chorus/Room	Auto-wah guitar effect with reverb
Bypass	No effect
Rotary Speaker	Rotary speaker emulation



## BACK PANEL

**EFFECTS LOOP**—A parallel effects loop is provided so an out-board effects processor can be used with or in place of the on-board ALESIS® DSP unit. The return level from an external processor into the ¼” effects return jack should be adjusted using the controls of the external processor. A ¼” effects cancel jack is provided on the back panel to mute both internal and external effects via footswitch. Any standard single button latching footswitch (with shielded cable) may be used. Signal is muted when the switch is closed. The on-board effects can be turned off by using the program labeled “bypass”. All other on-board effects on the Shenandoah™ Acoustic 100 can be used in conjunction with an out-board effects unit plugged into the effects loop.

**ACTIVE EQUALIZATION** – Each channel of the Shenandoah™ Acoustic 100 contains a separate 3 band (with sweep mid) active equalizer. These equalizers, similar to those found on professional sound consoles, are very useful tools when used correctly. The corner frequency of the low frequency section is 125 Hz, shelving curve. This frequency is particularly handy when dealing with low frequency feedback from a big dreadnaught guitar. A combination of volume reduction and turning down the low frequency control will generally get good results. Become familiar with the action of the controls since their effective gain range is quite large. The low frequency control is also handy for adding some “bottom” to a baritone sax and “chunk” to a mandolin or mando-cello. The corner frequency of the high frequency section is 8 kHz, shelving curve. This frequency is especially useful for taming the bright harshness of some mandolins, violins, brass and reeds. It can also be used to help acoustic guitars, cellos and flutes cut through other players in loud club situations. The “sweep mid” section features 12 dB of cut or boost with a bandwidth approximately 1 octave wide. The center frequency of this filter is continuously user adjustable from 250 Hz to 5 kHz with a single control. This filter is typically (but not always) used to reduce or remove offending frequencies in the instrument’s pick-up response. Removing only the minimum amount necessary will yield the most acoustically rewarding results. The easiest and most repeatable way to determine the offending frequency range is to boost the mid level somewhat (but not to the point of feedback) and while playing, sweep the frequency control slowly across its range. You may need a third hand until it becomes second nature, but soon you will find out just how quick it can be. You will hear a clear and obvious accentuation of the ugliness you want to remove. The ear is a most sensitive and discriminating piece of test equipment when used in this manner, another good reason to protect them! This is the way many touring sound engineers equalize, since it is quick, accurate and repeatable. Occasionally, you will find need to use the mid section in “boost” mode, particularly common when adding higher mids (bite) to an otherwise dull instrument, or adding low mid “body” to an otherwise thin sound. Spend some time experimenting so that the process becomes creative as well as corrective.

**MASTER VOLUME** – The master volume control adjusts the overall volume of channel 1, channel 2 and the effects return (either on-board or digital). Typically, best results are obtained when this control is operated between the 9:00 o’clock and 3:00 o’clock positions.

**DIRECT OUTPUTS** – The Shenandoah™ Acoustic 100 contains the most comprehensive direct output section available on any acoustic instrument amplifier. Both XLR balanced and ¼” unbalanced outputs make “real world sense” when connecting with other equipment. The ¼” unbalanced outputs are true professional line level (+4 dBv) with an output impedance of 1k ohm, and can drive virtually any line level input, including power amplifiers. The XLR balanced output is “hot” mic level, rated at –30 dBv. This configuration allows the Shenandoah™ Acoustic 100 to drive very long cable lengths (250+ feet) without problems or added noise. The XLR balanced direct outputs can be “ground lifted” with the global ground lift switch. This switch lifts pin 1 on all of the XLR balanced outputs to break ground any loops between the Shenandoah™ Acoustic 100 and a PA system. Separate Channel 1 and Channel 2 outputs are post channel volume/pre effects (to take advantage of the dual inputs on each channel) while the Channel 1+2 output is post master volume/post eq/post effects to aid in sending a “finished” mixed signal to a PA system or external power amplifier.

**POWER AMPLIFIER** – The Shenandoah™ Acoustic 100 contains an advanced monolithic power amplifier



circuit that is completely protected against overloads, short circuits and thermal faults. Output is rated at 100 watts into 4 ohms, with excellent overload recovery characteristics. A unique feature of this amplifier is the “on silicon” temperature sensor that automatically tracks and adjusts the amplifier’s operating and protection parameters, a very cool feature that increases product reliability 10-fold over conventional designs.

**FAN COOLING** – A rear mounted fan is provided for exceptional thermal cooling of the power amp. A fan switch is provided to disengage the fan if desired. It is recommended, but not necessary, to use the fan when only operating the Shen-100 combo. Using the fan is recommended when powering an 8 ohm extension cabinet with the combo or when operating the combo in a hot environment.

**TWEETER LEVEL CONTROL** – The “rocker switch” tweeter level control provides three positions for additional acoustic flexibility. The positions are: On, Off and –6db.

**SPEAKER OUTPUT JACKS** – The Shenandoah™ Acoustic 100 provides 2 parallel ¼” speaker output jacks. Minimum total load is 4 ohms (2 x 8 ohm speaker cabinet or 1 x 4 ohm speaker cabinet). Combo versions of the Shenandoah™ Acoustic 100 are factory equipped with our GBE 1230, 12” speaker and a compression bullet tweeter presenting an 8 ohm load to the amplifier.

**POWER INPUT** – The Shenandoah™ Acoustic 100 is shipped from the factory with a standard IEC type power inlet connector and the appropriate power cable for the market the amplifier was shipped to. The power transformer is a universal input (115/230 volt, 50/60 Hz) with a voltage selector switch located above the inlet connector. Be sure that this switch is in the correct position (matching your local power system) BEFORE connecting the Shenandoah to the power source. There is an AC mains fuse (with a spare fuse included!) located in the small slide out tray on the IEC power inlet connector. Always replace with the correct value fuse as indicated on the fuse chart located on the back of the amplifier.

**BOTTOM MOUNTED TILT-BACK HANDLE** – This feature allows the cabinet to be tipped up towards the performer. This also can change the tone of the amp and reduce boomy low frequencies.

**SPEAKER STAND MOUNT** – A 1 1/2” speaker stand mount is provided for use with a speaker stand.

### **CAUTION!**

- Never set an amplifier on anything that will tip over or collapse under its weight.
- These amplifiers are capable of producing sound pressure levels that may cause hearing loss.
- There are no user serviceable parts inside these units. Always consult a qualified repair facility for service.

### **WARNING!**

- The use and operation of this device constitutes an agreement of full release of any and all liability connected with its use. Only persons familiar with the operation of high-powered audio equipment should attempt to operate this device.
- In addition, by use of this device, the user agrees to hold Genz Benz Enclosures, Inc. and its designers, sales agents and all other affiliates and related parties harmless in the event of any accident, injury, damage or loss resulting from such use.
- Manufacturer’s sole responsibility is to provide a warranty on the specified performance of the product under normal operating conditions for a period of 3 years.

### **WARRANTY:**

- Genz Benz Enclosures, Inc. warrants the model Shenandoah™ Acoustic 100 to be free from defects in materials and workmanship for a period of 3 years from the date of purchase, when purchased from an authorized Genz Benz dealer.
- This warranty does not cover normal wear and tear incurred from the normally designed use of the product.
- This warranty is effective only if a copy of the original sales receipt is presented at the time of warranty service
- This limited warranty is completely transferable to any subsequent buyer as long as the original sales receipt is also transferred to such subsequent buyer.
- All warranty service must be performed by a Genz Benz authorized service center.
- Before returning any unit for service, a returned merchandise authorization number (RMA#) must be obtained by calling 480-941-0705.

# SHENANDOAH™ ACOUSTIC 100 ENGINEERING SPECIFICATIONS

## INPUTS

XLR Balanced input impedance:	2.2 k ohms
XLR Balanced input sensitivity:	-60 to -30 dBV
¼" Unbalanced input impedance:	150 k ohms
¼" Unbalanced input sensitivity:	-30 to +4 dBV

## AMPLIFIER OUTPUT

Power at 8 ohm load:	70 watts RMS
Power at 4 ohm load:	100 watts RMS
THD + N (preamp):	<0.02%
THD + N (power amp):	<0.05%
Frequency response:	20 Hz – 20 kHz +/- 1dB

## CHANNEL EQUALIZATION

Low frequency:	125 Hz shelving, +/-15dB
Mid frequency (sweep):	250 Hz – 5 kHz , peaking, +/-12dB
High frequency:	8 kHz shelving, +/-15dB

## DIRECT OUTPUTS

XLR balanced output level:	-30 dBV nominal
XLR balanced output impedance:	150 ohms
¼" unbalanced output level:	+4 dBV nominal
¼" unbalanced output impedance:	1 k ohm

## EFFECTS LOOP

¼" unbalanced output level:	-10 dBV
¼" unbalanced output impedance:	1 k ohm
¼" unbalanced input level:	-10 dBV
¼" unbalanced input impedance:	47 k ohm
¼" effects cancel jack:	short T-S cancels return

## DIGITAL EFFECTS

Processor type:	Alesis® DSP engine
Internal processing:	24 bit
A/D converter:	24 bit – 64X oversampling
D/A converter:	24 bit – 128X oversampling
Dynamic Range:	80 dB
THD + N (1 kHz):	<0.01%
Sampling rate:	48 kHz

## INTERNAL PRESET EFFECTS PROGRAMS:

- 3 – Plate Reverbs
- 3 – Room Reverbs
- 2 – Hall Reverbs
- 1 – Rotary Effect
- 1 – Chorus/Room
- 1 – Chorus/Plate
- 1 – Chorus
- 1 – Flange
- 2 – Delays (long and short)
- 1 – Bypass

Due to continuing product improvements and changes, all specifications are subject to change without notice

## Declaration of Conformity (89/336 EEC-EMC Directive)

**Manufacturer's Name:** Genz Benz, a division of Kaman Music  
**Manufacturer's Address:** 7811 East Pierce Street  
Scottsdale, AZ 85287, U.S.A.

**Product Type:** Audio Amplifier  
**Model Number:** Shenandoah 100 (all versions)  
**Operating Power Condition:** 115/230 V, 50/60 Hz  
**Effective Date:** 01-01-2006

**Conforms to the Following Standards:**

- EN 55013: 2001 + A1: 2003
- EN 55020: 2002 + A1: 2003
- EN 60065
- IEC 61000-3.2: 2000
- IEC 61000-3.3: 1994 + A1: 2001
- IEC 61000-4.2
- IEC 61000-4.3
- IEC 61000-4.4
- FCC 47CFR Part 15-B, Class B
- RoHS Directive 2002/95/EC
- WEEE Directive 2002/96/EC
- CE Mark LV Directive 73/23 EEC

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