

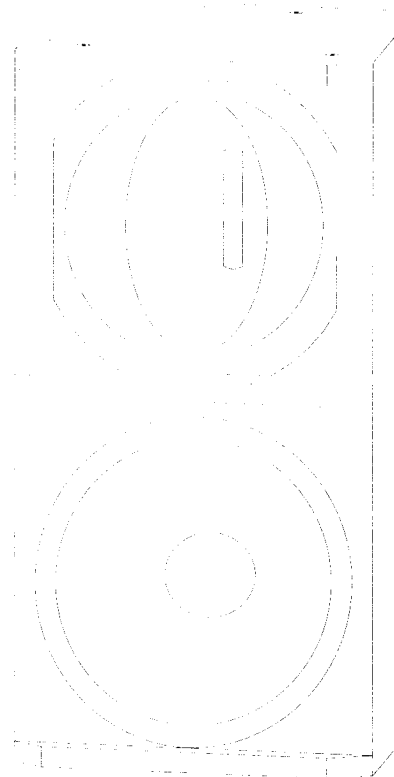


**RENKUS-HEINZ**

*BUILDING A BETTER SOUNDING WORLD*

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# ***Loudspeaker User's Manual***



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**INTRODUCTION**

Congratulations on your purchase of a Renkus-Heinz loudspeaker. This manual will help you install and use your Renkus-Heinz loudspeaker properly, so that it delivers years of trouble-free operation and superior performance, as it was designed to.

**UNPACKING & CHECKING FOR SHIPPING DAMAGE**

Your Renkus-Heinz loudspeaker was completely tested and inspected before leaving the factory. Carefully inspect the shipping carton before opening it, and then immediately inspect your new loudspeaker. If you find any damage notify the shipping company immediately. Only the consignee may institute a claim for damages incurred in shipping. Be sure to save the shipping carton and all packing materials.

**CONNECTING TO AN AMPLIFIER**

Renkus-Heinz loudspeakers are available with four types of connectors; four- or eight-pole Neutrik SpeakOn connectors, terminal barrier strip, or rubber-jacketed wire pig-tail. The model/serial number label lists the connections for proper hook-up. We use the same numbering conventions for SpeakOn and terminal strip connectors: See Table 1 for proper wiring instructions. Pig-tail connections are color coded: the proper wiring is shown on the model number plate. Always use crimp-on terminals with the terminal strip connections – do not connect bare wire.

It's possible that your speaker was specially ordered with a different type of connector, so always be sure to check the model number plate on your loudspeaker and follow the wiring diagram and instructions it displays.

**SELECTING A POWER AMPLIFIER**

Renkus-Heinz loudspeakers have three power specifications: RMS, Program and Peak. The RMS rating is an AES/EBU rating, the Program rating is 3dB higher than the RMS and the Peak rating is 6dB higher than RMS. The Program rating is printed on the model number sticker on the back of the loudspeaker.

When selecting a power amplifier for your loudspeaker you should consider the needs of your specific application. To provide the full output capability of your loudspeaker, you should choose an amplifier whose RMS output rating falls between the RMS and Program ratings of the loudspeaker. This means the amplifier's peak output may exceed the capacity of the loudspeaker. Factory-calibrated Loudspeaker Specific Processing in a Renkus-Heinz rack-mount controller or in a Renkus-Heinz amplifier's plug-in card will always deliver the most reliable protection for your loudspeaker along with the best possible sound.

**LIMITER CALIBRATION**

You can use other signal processors with Renkus-Heinz loudspeakers, but in order to protect them from damage, you must do your best to re-create the process Renkus-Heinz Engineering uses to set up the limiters. The following procedure is as close as you can get without access to the specialized equipment we use at the factory.

Speaker Type	Terminal or Speakon connection			
	1+, 1-	2+, 2-	3+, 3-	4+, 4-
Fully Passive	Full Range	Not Used		
Bi-Amp, Two-way	Low	High		
Bi-Amp, Three-way	Low	Mid/High		
Tri-amp, Three-way	Low	Low*	Mid	High
Subwoofer	Woofers 1	Woofers 2 *		
Passive Mid-High		Mid/High	Mid/High ***	
Active Mid-High	Mid **	High **	Mid ***	High ***
Notes: Standard connections shown, check model plate for your specific connection				
* When woofers wired separately				
** Terminal strip or Speakon NL4 connection				
*** Speakon NL8 connection (Touring Products)				

**TABLE 1**

Loudspeaker Program Power Rating	Maximum Amplifier Output				Loudspeaker Program Power Rating	Maximum Amplifier Output			
	Max. VRMS 8 ohms	Max. VRMS 4 ohms	Max. P - P Voltage 8 ohms	Max. P - P Voltage 4 ohms		Max. VRMS 8 ohms	Max. VRMS 4 ohms	Max. P - P Voltage 8 ohms	Max. P - P Voltage 4 ohms
40	13	9	51	36	400	40	28	160	113
60	15	11	62	44	500	45	32	179	126
120	22	15	88	62	520	46	32	182	129
140	24	17	95	67	600	49	35	196	139
160	25	18	101	72	700	53	37	212	150
200	28	20	113	80	800	57	40	226	160
260	32	23	129	91	1040	64	46	258	182
300	35	24	139	98	1400	75	53	299	212
350	37	26	150	106	1600	80	57	320	226

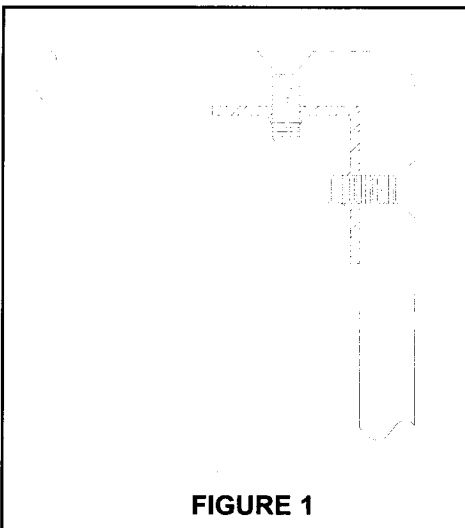
**FOR OTHER POWERS: VRMS = SQRT((PROGRAM POWER/2) x Z)**

**TABLE 2**

You will need a sine wave generator (or a test CD with sine waves of various frequencies) and a volt meter.

- 1) Set up your system's gain structure.
- 2) Disconnect the loudspeakers from the amplifier. **Do not set the limiters with the loudspeakers connected – you will damage the loudspeakers. This damage is not covered by our warranty!**
- 3) Feed a sine wave signal into the amplifier. Use a frequency in the lower part of the driver's pass band: 60 Hz for sub-woofers, 200 Hz for lows and fully passive speakers, 1 kHz for mid-ranges or mid-highs and 2.5 kHz for compression drivers.
- 4) Connect the volt meter to the amplifier outputs.
- 5) Check Table 2 for the maximum RMS voltage that should reach the loudspeaker based on its Program power rating. Raise the level of the signal generator until the volt meter reads two or three volts above the specified voltage.
- 6) Reduce the threshold control of the limiter until the voltmeter reading is at or below the maximum from Table 2.

Following the above procedure will provide some protection against overpowering and damaging your loudspeakers. *It is important to note that if your amplifier is capable of peak-to-peak voltages in excess of those in the table, you also need to provide fast acting peak limiters for your system.* Renkus-Heinz controllers have all these functions incorporated into their design and only Loudspeaker Specific Processing calibrated at the Renkus-Heinz factory satisfies the terms of our warranty. If you use third party processing that is calibrated in the field, you will not be able to obtain warranty replacements for blown speaker components.



**FIGURE 1**

If you do not need the full output of the loudspeaker for your application you can save money by using a smaller amplifier. You will still get the best performance with Renkus-Heinz Loudspeaker Specific Processing.

**USING THE UNIVERSAL MOUNTING HARDWARE ATTACHMENT POINTS**

**WARNING!** *Hanging loudspeakers is a serious undertaking that should be performed only by qualified and experienced personnel. An architect or structural engineer should verify any building attachment points. Renkus-Heinz is not responsible for any non-Renkus-Heinz products or for any misuse of Renkus-Heinz products. This publication gives general information only and is not a manual for rigging or overhead suspension.*

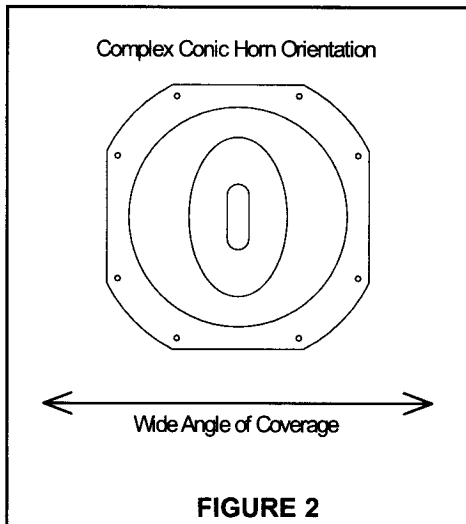
Installation versions of Renkus-Heinz loudspeakers typically have 12 threaded UMH attachment points. You can install forged, load-rated eye bolts (available from Renkus-Heinz) into these points for use in hanging the loudspeaker. Never suspend a loudspeaker from unrated hardware.

Figure 1 shows a sectional view of a UMH attachment bracket. While the UMH brackets are glued in at the factory, we still recommend that you remove adjacent bolts one at a time so that there is no danger of pushing the bracket into the cabinet accidentally.

Renkus-Heinz recommends the following maximum working loads per loudspeaker cabinet when using Renkus-Heinz supplied eye bolts: 1/4-20 or M6 thread - 270lbs/122kg, 3/8-16 or M10 thread - 450lbs/204kg. You should use a minimum of two of the UMH points to suspend any Renkus-Heinz loudspeaker. Always use thread locking compound for any eye bolts or other fasteners used to suspend loudspeakers.

### U-BRACKET AND LOUDSPEAKER MOUNTING HARDWARE

If you ordered your loudspeaker with optional u-bracket or speaker mounting hardware, your loudspeaker will ship with flat head bolts installed in the attachment points. These flat head bolts are installed as place holders and are not intended for use with the brackets. Use the bolts that come with the u-bracket assembly to attach the loudspeaker. See the instruction sheet enclosed with the brackets for details.



If your loudspeaker was shipped with a compatible nut plate for use with the OmniMount or Allen Products MultiMount, you can use the bolts installed in the nut plate to attach the loudspeaker to the mount.

### COMPLEX CONIC HORN ORIENTATION

Most of Renkus-Heinz's Complex Conic horns are physically symmetrical and designed to allow rotation within the enclosure. Figure 2 shows the Complex Conic horn orientation. For wide horizontal dispersion, the diffraction slot in the throat should be vertical.

Our unique TRue Array Principle design requires that Complex Conic horns be oriented with the narrow angle of coverage horizontal. When you order a Reference Point Array, we ship the loudspeakers with the horns in this orientation (diffraction slot horizontal). If you ordered single loudspeakers, the horns will be installed for conventional cabinet vertical/horn horizontal installation. If you wish to use a "tight-packed" array, or install the enclosures in a horizontal position while maintaining wide horizontal coverage, you can easily rotate the horns.

Rotating a Complex Conic horn is easy. First remove the grill. Then remove the eight flat head bolts securing the horn to the cabinet. Gently pull the horn out of the cabinet just enough to clear the cut-out, rotate the horn 90 degrees and replace it in the cutout. Finally, reinstall the bolts and the grill.

### LOUDSPEAKERS WITH TRANSFORMERS INSTALLED

Renkus-Heinz loudspeakers are available with transformers installed for use with 70.7v and 100v constant voltage systems. The power rating on the model number plate will list the wattage tap and voltage for the factory installed transformer.

### ADDITIONAL INFORMATION

Renkus-Heinz is dedicated to working with you to solve sound reinforcement problems, whenever and wherever they arise. If you have any questions not answered by this manual, please contact the factory at the numbers or addresses below.



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