

User's Guide

ButtKicker[®] 2
Feel what you've been missing

The Guitammer Company Inc.
Post Office Box 82 - Westerville, Ohio 43086

Thank you for your purchase of the ButtKicker®, the most powerful, musically accurate and long lasting low frequency audio driver available today.

This User's Guide is designed to help you install and use the ButtKicker in order to receive the most possible enjoyment.

If after following these instructions you are not THRILLED with the ButtKicker please contact us. Call, email or fax us. We will do everything possible to make sure you are completely satisfied.

INSTALL • SHAKE • ENJOY!

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Product Description

The ButtKicker utilizes a new type of patented transducer technology, including a magnetic suspension system, which allows the reproduction of very powerful, low frequency sound. With a natural working range of 5-200Hz, it is designed primarily to move structure, not air, and to provide a much more direct method of sound perception. By providing a more effective sense of feeling than that produced by the speaker system, the ButtKicker allows your subwoofer and speaker system to function in their more natural, audible working ranges.

Quick Setup

This section is for those who are more experienced with sound system installation. The ButtKicker is similar to a passive, 4 ohm speaker load, which requires power from an audio power amplifier, which in turn requires an adequate signal feed from your sound system, (Figure 1). Shaking forces are produced in the direction of the axis of the shaker as shown, (Figure 2). A positive voltage at the red terminal wire will produce a "push" by the ButtKicker toward its feet (red terminal is positive). It can be mounted on the topside of a surface or inverted and mounted to the bottom side of a surface. Additional details are provided in the following sections.

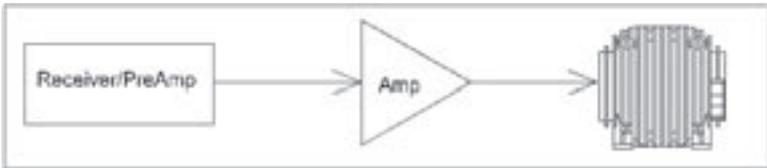


Figure 1. System Integration

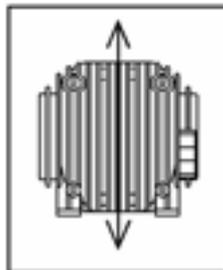


Figure 2. Shake

Integration into Your Sound System

Power

The ButtKicker is a passive load and therefore requires its own, dedicated audio power amplifier. Minimum required power is 400 watts. We recommend 600 - 1000 watts depending upon your specific application. The use of 12-gauge cable between the amplifier and ButtKicker is important, particularly if long cable runs are required. For shorter runs, 16-gauge wire would be minimum; 12-gauge is recommended. 10-gauge wire is recommended for lengths over 25 feet.

Low End Roll Off

When choosing a power amplifier for the ButtKicker, please be aware of the low frequency response of the amplifier. Many manufacturers roll off, or cut frequencies below 20 Hz, usually because anything below 20 Hz has been considered unusable and damaging for speaker systems. Therefore, amplifier manufacturers often include additional circuitry to reduce or eliminate those damaging "unusable" signals before they are amplified and sent to the speaker. This roll off of low frequencies (also called a "Hi Pass Filter") is not best for the ButtKicker, although a shallow roll off can be tolerated (i.e. -1.5 dB to -3 dB at 10 Hz). A full cut at 20 Hz and below is not acceptable because it will severely limit some of the remarkable qualities of the ButtKicker for use as a home theater shaker. You should find frequency response listed among the amplifier manufacturer's specifications.

On the other hand, if you are a musician using the ButtKicker for low frequency monitoring, your main interest may be in the low audible frequency information. So filtering out the confusing, infrasonic signals that can be generated on stage could be a very important aspect to your work.

Source Material

The ButtKicker responds to a broad range of bass frequencies, including those far below what we hear, or way down into the feeling range of sound. Today's digital sound sources are capable of carrying signals down to 5 Hz, but it is the producers who determine the content of a sound track. Therefore, the level and range of bass contained within any given sound track will vary. Even though a video may show the launch of a rocket, the audio track will contain only what the producers chose to include in the audio track. The ButtKicker simply responds with great fidelity to the existing low frequency content, much as a speaker responds to the signal given it.

Source Hookup to Amplifier

Surround Sound System

One signal source for the ButtKicker is the "Subwoofer" output of your surround receiver/processor. This output is controlled by the volume control. If a subwoofer is also a part of the sound system and connected to this signal output, then a "Y" cable maybe needed to split the signal two ways. (Figure 3-C.)

Stereo System

Yes, the ButtKicker also works well in a regular, two channel, stereo system. In a two channel stereo system, the low frequency signals are very seldom only on the left or right channel, so a connection to either left or right channel preamp output would produce satisfying results. (Figure 3-B)

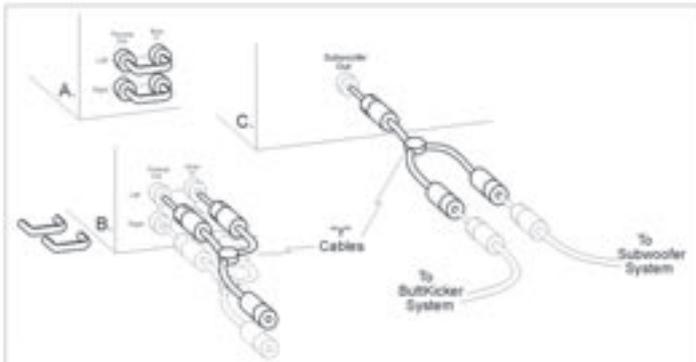


Figure 3.

No "Preamp Output"

If no "Preamp Output" exists on your receiver/preamp, then the only available signal source would be a "record" output in the tape monitor section. While this would supply a signal for the ButtKicker, it is less useful because it is not controlled by the master volume control.

Signal Levels

The amplifier you use to power the ButtKicker will require a specific input signal level from your system's control center (receiver/processor/preamp) in order to deliver full power output to the ButtKicker. The level of input signal required will vary from model to model. There are two standard levels prevailing today. One standard level is 0.15 volt (common in "consumer" equipment) and the other is 1.5 volt (more common in higher power and "professional" equipment). The signal levels reaching the power amp must be able to drive the amplifier to its full power level. If connecting a consumer preamp/processor to a professional amplifier, then a device will be needed to boost the signal level to the level necessary for the power amplifier. Insufficient signal levels from the system control center will not drive the power amplifier to full output power. Please refer to the user manuals of your equipment for specific operating levels. Figure 4 shows a proper system level setup. Please note that if your preamp has **nominal** output levels of 1.5 volts, then no level conversion is necessary; the preamp should drive the amplifier directly.

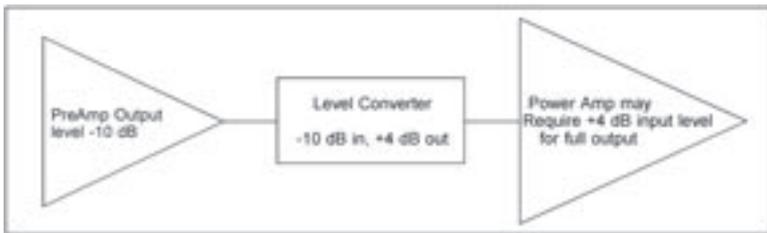


Figure 4. Signal Levels

Physical Mounting and Placement

Some consideration regarding the human sense of feeling:

Our brain is constantly making perceptions of our surroundings: indoors or outdoors, size, shape and material of a room, etc. Your brain and body have been doing this with all of your senses since the day you were born, confirming and associating what it hears with what it sees, feels, tastes and smells.

You probably at some time have become aware of something or someone by seeing a shadow it cast within your view (its affect on your environment) rather than seeing the item itself. Have you ever "sensed" someone enter the room without them making a sound? You were unconsciously aware of a change in the room's sound characteristics associated by your mind with the addition of another person. Your brain and body have "perceived" this many times before, whether you are consciously aware of it or not. Your body also knows more about its surroundings via the sense of feel than you probably realize. The field of entertainment has come great distances to capture your senses of hearing and seeing, and the next major sense to "capture" is your sense of feeling.

Our bodies feel sound through both air (momentary changes in air pressure) and structure (i.e. the ground or floor on which we stand). The speaker system supplies the air vibrations and pressure changes we hear and feel in the air. The ButtKicker Shaker, when properly applied, will supply the structural vibrations.

Mounting Considerations

General

The best way to understand the movement or shaking potential of any structure is to first identify areas that will NOT shake: (see Figure 5)

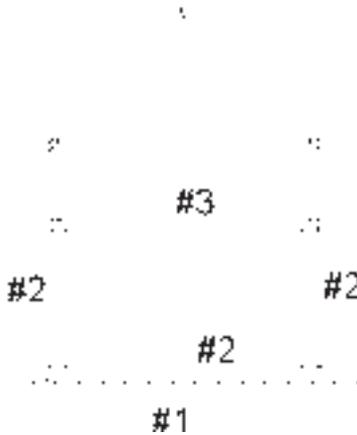


Figure 5

- The earth will not shake. While this is not an absolutely true statement, it is a very practical statement, and for the purposes of this User's Guide it will be considered an absolute. (#1 in Figure 5)
- Any hard support or structure that vertically ties a surface to earth defines a secondary "hard point"; a point not allowed to shake by virtue of its connection to the earth. For example, a supporting wall, concrete slab, building foundation, pier, or column (#2 in Figure 5).

What DOES shake:

- Any horizontal structure suspended between two or more hard points will flex, bend and shake between those hard points, depending on the construction and rigidity of the suspended structure. For example, a wood joist floor or a couch between its legs (#3 in Figure 5).

Example 1

A room with a suspended, joist floor measuring 12' by 14'. The floor is only supported around the edges (at the walls) by a foundation, and is capable of bending and vibrating in the area between its supported hard points. This is similar to a guitar string that can vibrate between its supporting hard points at each end of the string. This floor would be best shaken by a ButtKicker mounted to the floor in the center area of the room away from the dampening action of the walls.

Example 2

A room, similar in size to the room of Example 1, but this construction is different in that the floor has additional support underneath, made up of a pier or foundational wall that runs under the floor about 5 feet from one of the room's walls. The floor is now supported at an additional point, which effectively divides the floor into two suspended sections measuring 12' by 5', and 12' by 9'. This effect would be similar to placing a finger on a guitar string, holding the string against a fret. This floor will vibrate in a different manner than that of Example 1. The 12' by 5' section will not allow as much bending of the floor's materials between its supports (hard points) and would therefore exhibit less low frequency shaking than the 12' by 9' section. (For example, a higher note on a guitar string)

As an additional note, if the wider section of this floor were shaken with the ButtKicker, the narrower section would still exhibit some "sympathetic" and less pronounced vibrations because of its connection to the wider section of the floor.

Example 3

A room with a concrete slab floor, lying directly on the earth. This floor will be practically impossible to shake. In your main listening area, your favorite couch is the best option. The feet at the ends of the couch are pressed and held firm against the concrete slab by its weight and are therefore unmoving hard points of the couch. The horizontal length of the couch between the feet is suspended and will bend

and shake but only to the degree allowed by its materials and construction. As it sets, the furniture may respond to midrange frequencies, but not respond properly at the desired low frequencies. Please see following sections for more information regarding furniture installation.

Floating Wood Floors

The surface below you is your physical connection to your environment. A suspended, joist floor is an ideal mounting surface for the ButtKicker. Best results are obtained by installing two 2" x 6" boards between two floor joists. (See Figure 6). Place them near the center of the room, or near the seating area of the audience, avoiding any supports and bracing that would not allow the floor to move. Then mount the ButtKicker to the two 2" x 6" boards.

An alternative method is shown in Figure 7. Here, a 2" x 6" (or wider) board is attached broadside across the bottom edge of three joists.



Figure 6



Figure 7

Chairs and Couches

IMPORTANT: Only when properly installed will your couch or chair adequately respond to the ButtKicker with excellent low frequency reproduction and without excessive midrange vibrations.

Three primary reasons for shaking furniture rather than the floor are:

1. It is not possible to move the floor. If your floor is a concrete slab, and therefore resting totally on the earth, it will not move. Shaking your entertainment room furniture is the next viable alternative.
2. You choose not to move the floor. If you live in an apartment building with neighbors below you, you will want to enjoy the low frequency shaking of the ButtKicker without disturbing their privacy.
3. Portability. Musicians have made the ButtKicker a part of their portable setups for low frequency monitoring (i.e. bass players, drummers, etc.). A ButtKicker mounted to a small properly built platform allows the user to use many types of furniture and still maintain a broad range of low frequency fidelity and response.

For full low frequency response in any configuration, the furniture on which you sit must be allowed to move with or without the floor. The ButtKicker may be enjoyed by either installing it directly onto your furniture or by adding a properly built platform under the furniture with a forward extension for resting your feet.

Most furniture will not provide adequate low frequency response while resting directly on an unmoving floor. Therefore, some kind of "cushion" isolator needs to be placed between the furniture feet and the floor to isolate the furniture from the floor allowing the furniture to vibrate. With some kind of rubber cushion between the furniture feet and the floor, the furniture is allowed to move without the floor moving. The density and shape of this cushion material are dependent on the mass of the furniture and occupants supported by the material. One simple solution is to use Kinetics brand rubber isolators to isolate the furniture from the floor.

Another effective alternative is to build a simple platform, large enough for the furniture it will be under, and the user's feet. Isolate the platform from the floor with rubber isolators (again, we recommend Kinetics). The ButtKicker may be mounted on top of the platform, either under the couch or chair (remove dust covers) or behind the couch or chair.



Figure 8. Kinetics Rubber Isolator

How to Determine How Many Isolators You Will Need

Kinetics isolators come in different weight capacities. All their isolators are designed to be partially compressed in application and therefore, numerous models are made with varying weight specifications. This specification (RDA-**55**, RDB-**120**, RDB-**220**, RDB-**375**) indicates the amount of weight (in lbs.) that each isolator is designed to support (per isolator) for greatest efficiency.

Calculate the total weight to be carried by the isolator, including platform, chairs and people. Divide this weight by the total number of isolator feet to be used (i.e. a minimum of 3, a usual number of 4, more only when necessary). This will give you the weight per isolator. Pick the isolator model closest to your calculated weight.

More information on Kinetics isolators may be obtained at our website, www.thebuttkicker.com or at Kinetics' site, www.kineticsnoise.com.

Vertical vs. Horizontal

The ButtKicker was designed for optimal performance in the vertical orientation, but will function at any angle. If installed in the horizontal axis, some additional internal friction will result in some distortion, best characterized as similar to “crossover” distortion in an amplifier. Some customers, though, have utilized the ButtKicker in the horizontal orientation with satisfactory results. Movement sensation is very different in the two axis, and one should have specific sensations in mind requiring horizontal motion. Please note: horizontal orientation will not damage the ButtKicker.

Drummers

The following are considerations when using the ButtKicker with your kit:

ButtKicker Mounting

When mounted directly to the throne seat, the ButtKicker will, of course, deliver the most direct kick, but some thrones' seats are too small for direct mounting of the ButtKicker. A small platform isolated from the floor with rubber feet can be constructed on which the ButtKicker is mounted and the throne is set. The ButtKicker2 is smaller making installation easier.

Signal Source

Kick drumhead tuning determines to a large factor what signal is sent to the ButtKicker (loose vs. tight; low vs. high, etc.). You do not need to change your playing habits or drum tuning in order to take advantage of the ButtKicker.

Microphone

A tap off the kick drum mic signal used by the sound system can be taken for the ButtKicker shaker system feed.

Pickups

A popular pickup used seems to be the V-drum pickup. Let us know of others. The pickup's position on the head is a large factor on both the level and frequency content of the output signal.

Mixer

A pre-fader auxiliary send can be used to send a signal to the ButtKicker. This allows a mix of whatever drum mics you want to feel, though most other drums may have little usable program content within the ButtKicker's range.

Signal Processing

No signal processing is necessary to energize the ButtKicker, but some circumstances may warrant extra measures.

Hi-Pass

Your kick drum signal could easily include infrasonic (below the hearing range) signals that are not relevant to your need and could cause excessive excursion within the ButtKicker. This is not damaging, but it could result in lack of control, and the possible missing of complete beats. These infrasonic signals are influenced by head tuning, other sound sources in close proximity, etc. Eliminate the infrasonic signals by passing them through a Hi-Pass filter.

Gate

If the signal contains a lot of "garbage" between beats from other picked up stage noises; you may want to gate the signal.

Troubleshooting

Missing a beat...especially on the hard beats? See "Signal Processing, Hi-Pass".

Thermal Protection

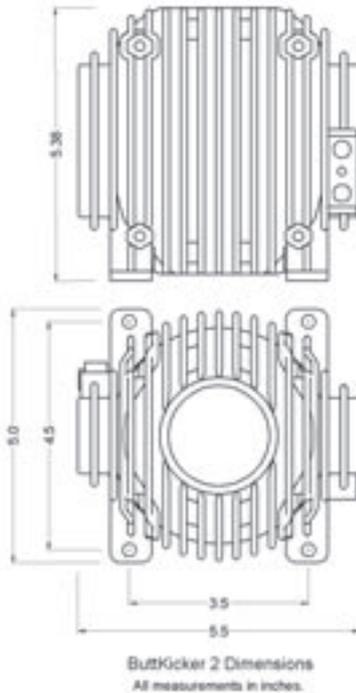
The ButtKicker is basically an electric motor, and as with any type of electric motor, if it is driven too hard (too much power, for too long of a period), it will become overheated. For this reason, each ButtKicker contains a thermal switch. This switch will automatically disconnect the ButtKicker from the amplifier if the internal temperature of the shaker reaches a preset limit. This should happen only rarely, and only when the unit is overdriven. In most situations, the level of "shake" that is produced by the ButtKicker, until it overheats, will be far more than needed. This is also related to the "flexibility" and size of the surface you are endeavoring to shake. However, if tripped, the thermal switch will automatically reset after the unit has cooled sufficiently. Then the ButtKicker will resume normal operation. Cooling off time can be 5 - 20 minutes, depending on ventilation. While in thermal protection mode, the ButtKicker may feel quite warm to the touch, but the cutoff point has been set to avoid damage.

Warranty

Guitammer Company products are warranted against defects in materials and workmanship for a period of two (2) years from date of purchase by the original end-user. Items returned for repair under warranty will be repaired or replaced at the sole discretion of The Guitammer Company without charge for materials or labor, providing such items are returned for inspection, transportation prepaid, to The Guitammer Company or an authorized service center. All repaired or replaced items will be returned freight collect. Warranties do not apply to products that have been subjected to abuse, accident, modifications, improper handling or installation, or repairs made by anyone other than The Guitammer Company or an authorized service center. The Guitammer Company shall be the final authority in the determination of all warranty service claims.

Specifications.

Dimensions:	5.375" h x 5.5" w
Frequency Response:	5 – 200 Hz
Weight:	11 lbs. / 5 kg.
Nominal Impedance:	4 ohms, inductive
Power Handling:	400 watts min. / 1500 watts max.
Wiring polarity:	Red terminal is "Hot"
Thermal Limit (internal):	150 F. (70 C.)

**Contact Information**

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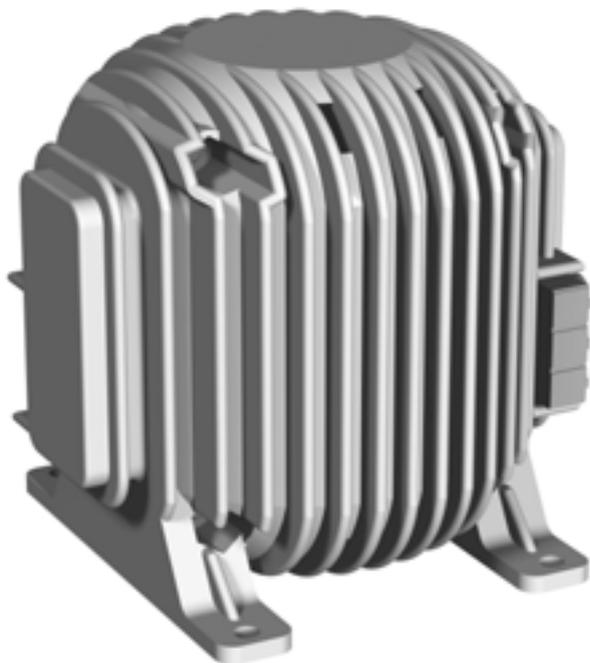
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Please visit our website www.thebuttkicker.com for additional technical information, specifications and FAQs.



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