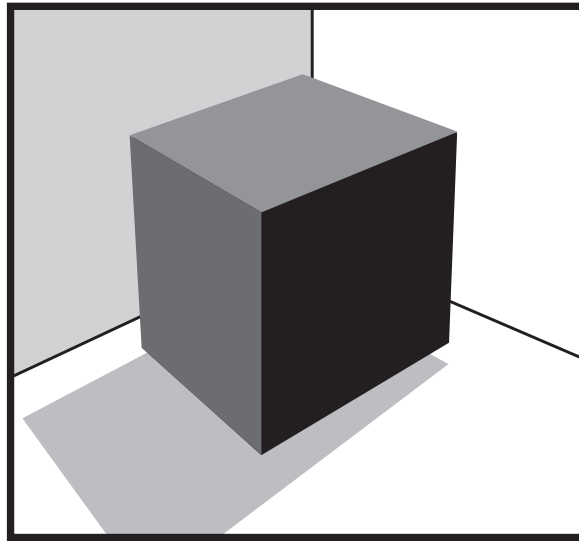


HSU

RESEARCH

***MBM-12* Manual**



Features

Ultra wide dynamics.

The use of an ultra light cone 12-inch woofer, strong magnet, and a large flared port optimized for mid and upper bass response translates into effortless dynamics and a bass line that you can follow and tap your feet to.

Custom built woofers.

For high efficiency and lightning quick acceleration, we custom designed a 12-inch woofer with an ultra light but stiff cone. It is capable of reproducing all micro dynamics so you can tap your feet and follow the music.

Powerful BASH amplifiers.

The high headroom BASH amplifier works in concert with our woofer, protecting the MBM-12 from damage and keeping distortion to a minimum.

Complements our True Subwoofers.

True subwoofers need a heavier cone to work efficiently in the low bass. These woofers do not have very high efficiency in the mid to upper bass. By splitting the bass range into low and mid/high bass, we get the best of both worlds – very tight, dynamic upper bass with micro details, plus awesome deep bass performance. Note too that i.m. distortion is also reduced – the mid and upper bass signals are no longer modulated by the high amplitude low bass signals.

Easy to set up.

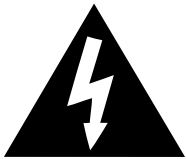
It's very easy to setup. Simply use a Y adapter to split the *subwoofer out* signal to feed both the true subwoofer and the MBM-12.

NO USER SERVICEABLE PARTS ARE INSIDE.



WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE



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.

Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'électrocution.



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 product.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Unplug this apparatus during lightning storms or when unused for long periods of time.

12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

13. **WARNING:** To reduce the risk of fire or electric shock, this apparatus should not be exposed to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.

14. To completely disconnect this equipment from the mains, disconnect the power supply cord plug from the receptacle.

15. The mains plug of the power supply cord shall remain readily operable.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

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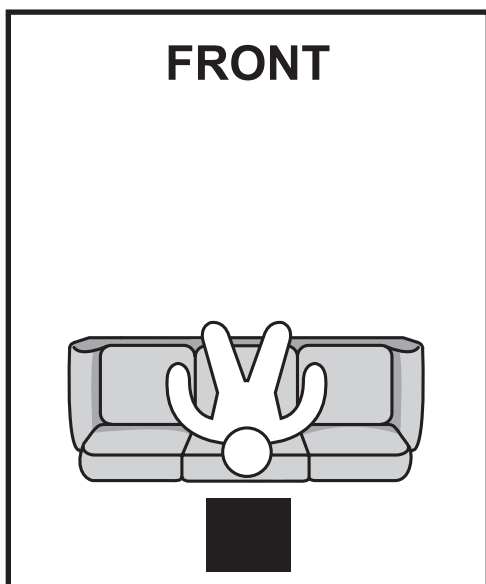
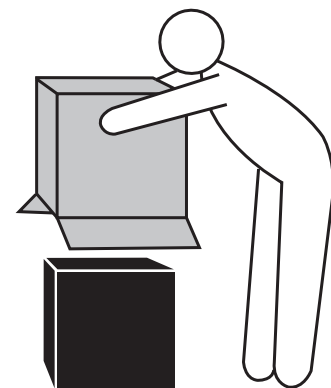
Set-Up

Step 1: Unpacking

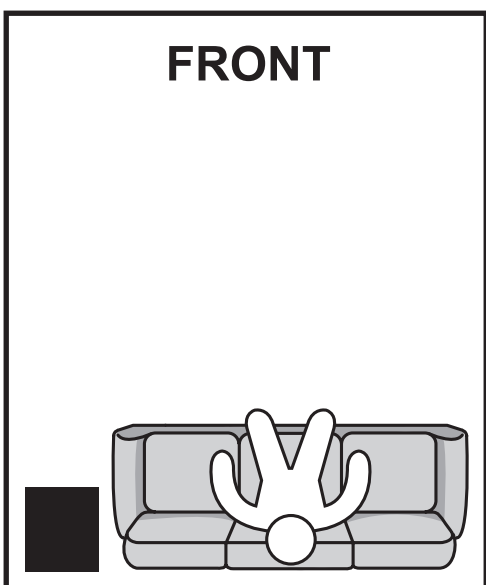
If your room does not have carpeting, unpack the MBM-12 on a throw rug or piece of carpeting to avoid unwanted scuffing or scratching. If the MBM-12 is too heavy, please ask for assistance. Find the top of the box and open it. Holding the flaps open, roll the box over until it is upside-down. Lift the box off.

Stop for a moment to inspect the protective bag for any rips or tears that may have occurred during shipping. If there is damage to the MBM-12 underneath, or if there are missing items, notify HSU Research as soon as possible. We will help you find a solution.

Leave the protective bag on for now because it will protect the MBM-12 when you move it into position.



**Directly behind the listener
is optimal**



**End table or nearest corner
placement is next best**

Step 2: Placement

The MBM-12 is intended to be used with a true subwoofer to provide the best upper bass impact, lowest bass extension, and the highest headroom. Near-field reproduction of the mid to upper bass gives you very high direct versus reflected sound. This minimizes room effects, and gives you the tight mid/upper bass impact headphones give. Close proximity also means high SPL for a given input. This results in lower distortion and higher headroom. The result is effortless, tight, and dynamic mid to upper bass.

MBM-12 Placement

The MBM-12 should be placed as close to the listener as practical. Next-to or directly-behind placements usually are best.

Subwoofer Placement

The low bass subwoofer is generally best placed in a front corner furthest from openings. In normal sized rooms where the length of the room is 10 - 20 feet, deep bass is strongest when the sub is placed in a front corner.

If you have test equipment...

If you have means to do detailed measurements of frequency response, place the mike at the listening chair and measure the response of the MBM-12 at various practical locations near your listening chair. Place the sub in the position that yields the smoothest response at your listening chair over the MBM-12's operating range.

Similarly move the true subwoofer around to determine where the bass below 50 Hz is smoothest and strongest. Place the true subwoofer at that location.

You may purchase some digital delay box to time align the MBM-12 to the true subwoofer. If the MBM-12 is 14 ft closer to you, dial in 14 ms delay.

Step 3: Hookup

We will refer to receivers, integrated amplifiers, and preamps as *controllers*. Take a look at the back of your controller. The output connectors available determine the best method of hooking up your subwoofer.

Method A. Connecting to controllers with a SUBWOOFER or LFE output

Use a Y adapter to split the signal from the sub out to feed both the true subwoofer and the MBM-12. Set the crossover frequency on the subwoofer to 50 Hz, and crossover switch to 'in'. The MBM-12 will then reproduce the range from 50 Hz up to the crossover frequency set on your controller. Your true subwoofer will reproduce the range from 50 Hz down. Set the distance parameter on the controller for the subwoofer to the distance of the MBM-12 to you.

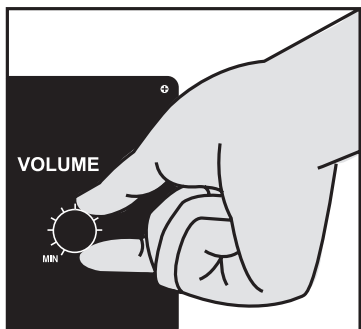
If you wish to time align the MBM-12 with respect to the true subwoofer, you can get an after-market time delay unit to delay the signal to the MBM-12. Dial in 1 ms for each ft difference in distance between the MBM-12 and the true subwoofer. In this case, set the subwoofer distance parameter on the controller to the distance of the true subwoofer, not the MBM-12.

Method B. Connecting to controllers with PRE-OUTS

You will need to get a high pass filter to filter out bass from the main speakers. Split your pre-out into three – one set going to the true subwoofer, one set going to the MBM-12, and the third set going to the high pass filter. Connect the output of the high pass filter to the input of your main amp.

Set the crossover on the MBM-12 to the same frequency as the high pass filter and its crossover switch to 'in'. Set the crossover on the true subwoofer to 50 Hz and crossover switch to 'in'.

With the analog crossovers, the signal to the MBM-12 is already delayed so its reasonably time aligned with the main speakers.



Step 4: Volume Level

If you have test equipment, adjust the level of the MBM-12 and the true subwoofer to match the level of the main speakers. Otherwise, adjust the level of each by playing good recordings and adjusting the level of the MBM-12 to give a tight, non-boomy upper bass, and the true subwoofer for a good low end support without making the upper bass lose its tightness.

Using the Test CD

The test CD provided with the MBM-12 has warble tones from 16 Hz up to 200 Hz. Used with a Radio Shack SPL meter, you can fine tune your system. Use C weighting and slow mode. The meter is down 12 dB at 16 Hz, 7 dB at 20 Hz, 4 dB at 25 Hz, and 2 dB at 31.5 Hz. Add these figures to your meter's readout to get true SPL. Place the SPL meter at the listening chair and play the 63 Hz track. Adjust for 75 dB reading on the SPL meter. Play the tones from the lower limit of your true subwoofer up to 200 Hz and write down the SPL numbers for each frequency. Add the corrections to the appropriate measured results. Take the average of the numbers handled by each of the system – true sub, MBM, and the main speakers. If the subwoofer's average is 5 dB higher than the main speakers, adjust the subwoofer down by 5 dB (you do this by playing a 40 Hz tone, not the SPL reading, and then adjust the volume on the subwoofer to get the meter to read 5 dB less).

Removing buzzes and rattles from the room:

Annoying sounds can be fixed by using adhesives, tape, or felt pads in the area where objects are vibrating against each other.

Equalizing the subwoofer

If you have an equalizer, avoid raising dips in the frequency response. Instead, use the equalizer to remove peaks. This will prevent potential speaker damage.

Troubleshooting

If you think your MBM-12 has a problem, please do everything you can to confirm the problem before contacting us for service, including reading through the troubleshooting section. Many times the problem actually is caused by other items in the system or the MBM-12's interaction with those items. Much of the time, the service department will not be able to reproduce the error.

Problem	Cause	Solution
Humming or buzzing noise	You have an amplifier problem.	<ul style="list-style-type: none"> • Disconnect all interconnects from the amplifier. If still hums, call/e-mail technical support.
	Your speaker wires or interconnects are the cause.	<ul style="list-style-type: none"> • It is possible that some cables have a poor or broken ground due to poor construction, oxidation, or damage. Also, poorly shielded cables can potentially pick up noise. Try another interconnect or speaker wire. Also, move the signal cable away from AC cables, power transformers, or other EMI sources.
	A light dimmer or other triac based (SRC) device is on the same AC circuit.	<ul style="list-style-type: none"> • Use an AC line filter or plug the unit into a different circuit.
	You have a problem with other equipment.	<ul style="list-style-type: none"> • If hum goes away when interconnects are disconnected, the hum is coming from the rest of your equipment. Add them back one piece at a time. The one that causes the system to hum is the source of the hum.
MBM-12 goes into STANDBY mode while material is playing.	The source is not providing enough signal.	<ul style="list-style-type: none"> • The unit is going into STANDBY mode during the quiet passages. Try turning the source signal up. On a Dolby Digital receiver, turn the SUBWOOFER level up in the SPEAKER SET-UP menu. After you turn the signal up, turn down the volume knob on the MBM-12 to compensate. • An alternative is to turn the MBM-12's ON/AUTO/OFF switch to the ON position. It does not use any more power and does not affect reliability.
No output from the MBM-12 (the LED does <u>not</u> light up).	AC power is not getting to the amplifier.	<ul style="list-style-type: none"> • Check that the power cord is plugged in securely at both ends and make sure that the power outlet the MBM-12 is plugged into is working.
	The amplifier's fuse is blown.	<ul style="list-style-type: none"> • Check the fuse. The fuse is located on the amplifier, near the power plug. Unplug the power cord and remove the fuse holder with a flat head screwdriver. If the fuse is blown, the output transistors are probably damaged. Call/e-mail technical support for authorization to send the amplifier back for service.

Problem	Cause	Solution
No output from the MBM-12 (LED lights up red).	The MBM-12 is not receiving a signal.	<ul style="list-style-type: none"> • Recheck the connections between the source and the MBM-12.
	MBM-12 amplifier is faulty.	<ul style="list-style-type: none"> • With the volume on the MBM-12 turned to a low setting, try plugging the MBM-12 directly into a CD player or lightly touching the unplugged end of the input cable. If you hear noise from the MBM-12, the problem is with your connection to the system. If you hear no noise, try turning the volume on the MBM-12 up some more. If you still hear no noise, call/e-mail technical support for authorization to send the amplifier back for service.
No output from the MBM-12 (LED turns green).	Connection between the MBM-12 amplifier and woofer is faulty.	<ul style="list-style-type: none"> • If wire is loose, tighten the connector and reconnect.
	Driver or amplifier is faulty.	<ul style="list-style-type: none"> • Take the driver out of the cabinet and connect to your main amplifier. If it plays fine, then the amp is bad. If it does not play, then the woofer is bad. Call/e-mail technical support for authorization to send non-working part back for service.
Little or no sound from one main speaker..	You used speaker level connections and have mixed up the polarity of the wires, thus shorting one channel of the main amplifier.	<ul style="list-style-type: none"> • Correct the polarity of the speaker wires by matching the +/- from the receiver/amplifier to the +/- of the MBM-12's speaker level input.
	You used speaker level connections and one or both your main amplifier's ' - ' are not true ground.	<ul style="list-style-type: none"> • Connect only to the channel that has a true ground ' - '. If neither channel has a true ground ' - ', e-mail/call technical support.
Bass output from MBM-12 is low.	Level on MBM-12 or receiver's subwoofer output is too low.	<ul style="list-style-type: none"> • Increase the volume of the MBM-12 and the subwoofer level or LFE level on the receiver or other source. It is best to set the level of the MBM-12 relative to the other speakers using a test disk and a Radio Shack SPL meter, or built-in tones on your pre-amp/processor. See "Volume Level" in Step 4.
MBM-12 thumps when the system is being turned on and off.	Noise is being generated by upstream equipment.	<ul style="list-style-type: none"> • When you shut down your equipment, turn off the MBM-12 first. When powering up, turn on the MBM-12 last.

Repair

If your unit needs service, please re-review the troubleshooting section first.

Contact tech support via e-mail (24/7) or call 1-800-554-0150 9am to 5pm Pacific time, Monday through Friday.

We will try and respond to emails sent to techsupport@hsuresearch.com within two business days.

HSU Speaker System Limited Warranty

If the speaker system proves to be defective in materials or workmanship within seven years from the date of the original customer's purchase, or the amplifier within two years, we will, at our option, repair or replace the defective product.

*DISCLAIMER

THE WARRANTY STATED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE AND ALL OTHER LIABILITIES AND OBLIGATIONS OF HSU, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. HSU HAS NOT MADE AND DOES NOT HEREBY MAKE ANY OTHER REPRESENTATION, WARRANTY OR COVENANT WITH RESPECT TO THE CONDITION, QUALITY, DURABILITY, DESIGN, OPERATION, CAPACITY, FITNESS FOR USE OR SUITABILITY OF THE SPEAKER SYSTEMS.

Exclusion of Certain Damages

HSU's liability for any defective product is limited to repair or replacement of the product at our option. HSU shall not be liable for incidental or consequential damages of any kind or character because of product defects. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply.

This Warranty Does Not Cover:

Damage caused by abuse, accident, misuse, negligence, or improper operation.

Products that have been altered or modified.

Any product whose serial number has been altered, defaced, or removed.

Normal wear and maintenance.

Damages caused by shipping. (All claims for shipping damage must be made with the carrier.)

Specifications

	<i>MBM-12</i>
<i>Response</i>	50-150 Hz +/-2 dB
<i>Woofers Size</i>	12 inches
<i>Amplifier Power</i>	350 Watts RMS
<i>Crossover Frequency Range</i>	50-150 Hz, bypassable
<i>Crossover Slope</i>	24 dB/Oct Linkwitz-Riley
<i>Crossover Type</i>	low pass only
<i>Phase</i>	0°/180°
<i>Dimensions</i>	19"(h)/14"(w)/18"(d)
<i>Ship Weight</i>	43 lbs. (19.5 kg)

Warranty Service

Warranty service must be performed by Hsu Research or an authorized repair center.

All warranty repairs must be accompanied by the original bill of sales. No other document is acceptable or is required.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Due to our continual efforts to improve product quality as new technology and techniques become available, HSU reserves the right to revise its Speaker Systems specifications without notice.

HSU
R E S E A R C H

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