



QUAKE

MSE-118 Subwoofer
User Manual – v2.0



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INTRODUCTION

Thank you

Thank you for purchasing the awesome MSE-118 Quake subwoofer from EM Acoustics. The MSE-118 Quake has been carefully designed and rigorously tested to ensure years of flawless operation and unprecedented sonic quality. The EM Acoustics MSE-118 Quake is designed to provide a smooth and coherent frequency and phase response, whilst having phenomenal power and SPL to enable the Quake to be used in a variety of applications ranging from large nightclubs to full-scale arena tours.

Quake is not a "plug and play" product – please ensure that you read this manual carefully before use, and that you keep it to hand should you need it for further reference. Furthermore, should you have any difficulties please do not hesitate in contacting your EM Acoustics dealer, or email info@emacoustics.co.uk for further assistance.

Unpacking

Every EM Acoustics product is built to the highest standard and thoroughly tested before it leaves our factory. After unpacking your loudspeaker, please inspect it carefully for any signs of transit damage. If such damage is found, please notify the carrier at once to instigate a claim. It is suggested that you retain all packaging for future re-shipment.

DECLARATION OF CONFORMITY



The products contained within this manual conform to the requirements of the EMC Directive 89/336/EEC, amended by 92/31/EEC and to the requirements of the Low Voltage Directive 73/23/EEC amended by 93/68/EEC.

Standards Applied:	EMC Emission	EN55103-1:1996
	Immunity	EN55103-2:1996
	Electrical Safety	EN60065:1993

RECYCLING



This product and its packaging constitute the applicable product according to the WEEE directive. Please ensure that at the end of the working life of this product, it is disposed of sensibly in accordance with local and national recycling regulations. The packaging supplied with this product is recyclable. Please retain all packaging, however if disposing of this packaging please ensure that you comply with local recycling regulations. These products also all comply to the RoHS Directive 2002/95/EC.

PRODUCT OVERVIEW



The MSE-118 Quake is a high power, true horn-loaded subwoofer, designed for the ultimate in low frequency performance. By matching the utmost in drive unit technology with tireless research into the development of horn technology, Quake produces phenomenal performance from an enclosure housing only a single 18" drive unit.

The substantial enclosure houses a single proprietary 18" (457mm) drive unit with a 5" (127mm) voice coil. A radically shaped dustcap adds to the cone's structural integrity, whilst a dual-suspension system ensures that the moving structure maintains in pure-piston motion even whilst experiencing the high pressure levels found in the horn throat. This drive unit is loaded onto a horn nearly 9' (2743mm) in length, to provide unprecedented depth and power from a single drive unit enclosure.

Quake was designed to be equally at home either installed or on the road, and as such has been optimally sized for truck packing in both height and width. Interlocking nylon feet on the sides of the enclosure prevent stacks of Quakes from moving around, as well as protecting the paint finish. Eight heavy-duty steel bar handles allow ease of movement in any orientation, and the addition of four tour-grade castors on the rear make load in simpler and easier.

SYSTEM SETUP

Professional loudspeaker systems are potentially dangerous objects if used incorrectly. Please ensure that you read this section fully, and contact EM Acoustics or your local dealer should you be in any doubt over correct operation procedures.

Professional loudspeaker systems are capable of producing damage-inducing sound pressure levels, and hence care should be taken when setting your system up, particularly when it comes to loudspeaker placement within a venue. Damage to the ear can result from levels above 90dB under prolonged exposure.

Cabling and Amplifier Selection

The MSE-118 Quake subwoofer is designed to be used with professional power amplifiers providing the following power outputs:

MSE-118 1600W/channel **into eight ohms**

A small power amplifier working too hard is more likely to damage a loudspeaker than a large power amplifier working within its operating range!

It is good practice to use an amplifier equal to the program power rating of the loudspeaker – so as to retain sufficient headroom and good dynamic range. Care should be taken during operation to avoid amplifier clipping – as this can cause serious damage to your loudspeakers. If in doubt, please contact your dealer who will be happy to assist you in correct amplifier choice and setup.

Cabling

Quake enclosures are supplied with Neutrik Speakon™ NL4 connectors (unless otherwise specified), wired pin 1+/1-. It is recommended that the resistance of your cable is less than one tenth of the nominal system impedance. Given below are the recommended maximum cable lengths for different cross-sections and impedances.

Conductor Cross Sectional Area	Maximum Recommended Cable Length		
	<i>4 ohms</i>	<i>8 ohms</i>	<i>16 ohms</i>
1.0mm ²	11m	22m	44m
1.5mm ²	17m	34m	68m
2.0mm ²	22m	44m	88m
2.5mm ²	29m	58m	116m
4.0mm ²	44m	88m	176m
6.0mm ²	66m	132m	264m

QUAKE SUBWOOFERS IN USE

The Quake subwoofer is designed to be a high performance, world class subwoofer product. You can achieve excellent results with your Quakes, however this section of the manual is vital to ensure you get the best out of them. Please read it carefully, and should you have any questions please do not hesitate to contact either your local EM Acoustics representative or contact us directly at info@emacoustics.co.uk.

Stacking

There are two basic possibilities when it comes to stacking Quakes – which one you choose depends on stage space, how many Quakes you are using and what you want out of them.

Fig.1 shows the traditional, "butterfly" method of stacking. In this way, you have a very stable platform – the locking feet on the Quake assist with this – with a large area for arraying mid/high enclosures. Obviously, two people are required to array Quakes in this way. With the horns close-coupled in this manner, a four-stack of Quakes provides surprisingly strong pattern control characteristics, with good front-to-back rejection. This format also offers maximum SPL from four Quakes.

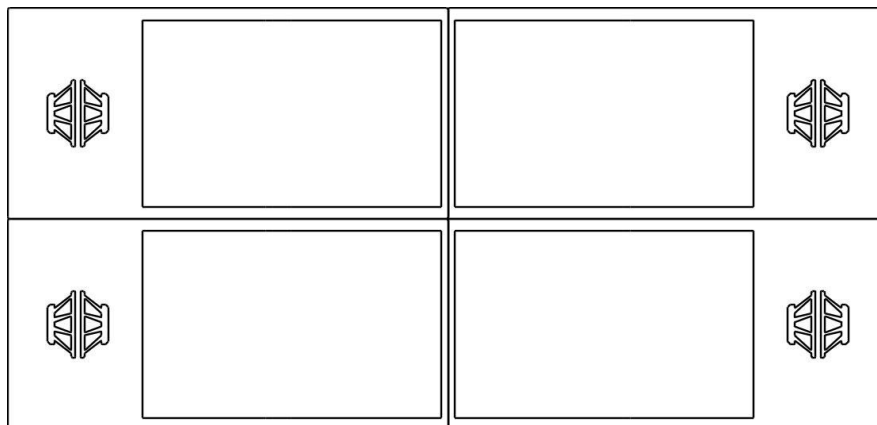


Fig.1 - The "butterfly" method

Fig.2 shows the "end-up" approach, which provides a different sonic performance and footprint. Stacking Quakes in this way gives slightly less maximum SPL than the "butterfly" method, but the dispersion is wider and the response slightly smoother. If you don't require the Quake's maximum output, this method will give a more "hi-fi" response. It is also considerably easier to set up with few crew – one person can easily array Quakes in this way.

Whichever method you choose for arraying your Quakes, it is strongly advised that you sit them on a solid floor rather than a raised stage. Although the enclosure is extremely rigid, the pressure inside the horn is such that the enclosure will vibrate. On a flexible stage, some of this energy will get dissipated by the stage. Placing them on a solid concrete floor will ensure that as much power as possible goes to your audience.

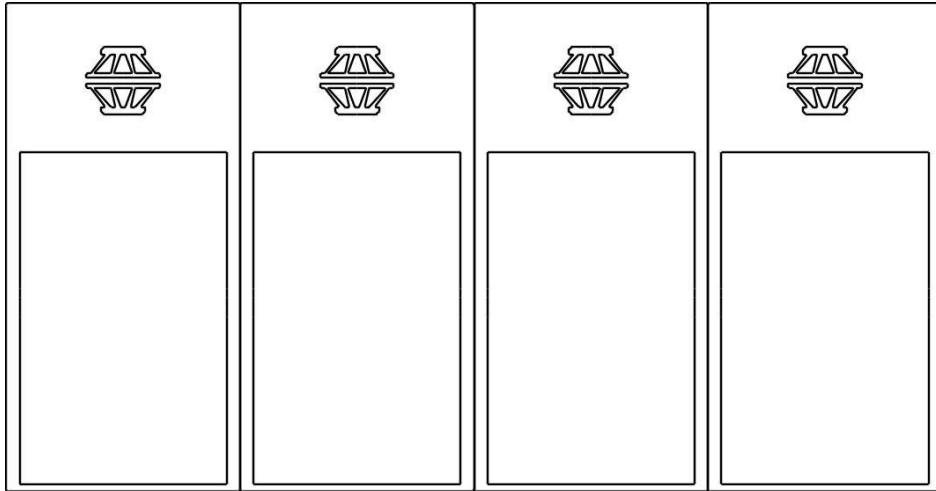


Fig.2 - The "end-up" method

Stack Placement

In order to reduce the classic "bowling alley" effects when stacks are used in a traditional left/right format, some users prefer to array their Quakes as a single line across the front of the stage. Not only does this method give extra horn area in one place, but will provide an even dispersion rather than a strong +6dB boost on the centreline as with L/R systems. The photo in Fig.3 shows USA rental company Big Mo Productions using 16 Quakes in a central mono block for the LibertyJAM festival in 2006.



Fig.3 – Central Mono Block

Delay Times

Quake is a long horn subwoofer, and as such the drive unit is effectively sitting some distance behind the enclosure when thinking in time. To compensate for this, your system delays should delay your mid/high enclosures back to line up with the Quakes, otherwise the response from the system will be muddy and incoherent.

Exact delay times will vary depending on the product being used with the Quakes, and the physical orientation. Time alignment is relatively easy to check using your ears, however for exact alignment a software package such as SMAART or RoomTools will show whether the Quakes are properly aligned with your mid/high enclosures.

The physical delay time for a Quake due to the horn length is 7.97 milliseconds. This time needs to be applied to your system controller, and if using a bi or tri-amplified mid/high system, it will need to be added to the delay times for the mid high that are already in place if such times exist. Please note that the actual delay time required to line Quakes up with your chosen mid/high system will vary depending on the low pass filter frequency and slope used with the Quake. A frequency generator can help to line your system up properly at the crossover point.

Testing in various configurations and using your ears is the key aspect here – as Quake is so flexible and has so much headroom you can experiment with delay to create the sound **you** want.

MAINTENANCE

Your EM Acoustics loudspeakers have been rigorously tested before they leave our factory, to ensure that they give you a lifetime of flawless operation. Should any of your drive units fail and need replacing, please follow the guidelines below.

MSE-118: Low Frequency Drive Unit

1. Using a 4mm Allen key, remove the 20 screws holding the access door in place.
2. Using a 6mm Allen key, remove the six M8 socket-head bolts holding the drive unit in place, and keep them safe – ensuring you have collected both the shake-proof and flat washers for each bolt. Carefully disconnect the cables from the drive unit, observing the polarity.
3. Gently lift the drive unit up and clear of its locating hole – please take care as it is **extremely** heavy!
4. To reinstate the driver, simply reverse the above procedure. Please observe the correct polarity – the black-striped cable to negative terminal.
5. Before reinstating the access door, check the condition of the sealing gasket around the door. Replacement gasket can be obtained from your EM Acoustics representative if required. Position the door in place and retighten the screws.

MSE-118: Grille replacement

1. Using a PZ2 screwdriver, remove the screws holding the grille in place.
2. Use a flat blade screwdriver to ease the grille out of one side slot, and then lift the grille clear.
3. To reinstate the grille, insert it into one side slot, gently curve the grille to ease into the other side. Replace and retighten all screws.

MSE-118: Regular Service

Under high-SPL use, the drive unit in the MSE-118 is so powerful it can cause the bolts securing it in place to work loose. It is suggested that a regular check of bolt tightness **every six months** will ensure your MSE-118 subwoofers perform to the best of their ability at all times.

WARRANTY

Limited Warranty

This EM Acoustics loudspeaker product is warranted to the original end-user purchaser and all subsequent owners for a period of **three years** from the original date of purchase.

Warranty Coverage

This warranty covers defects in materials and workmanship. It does not include:

- Damage or failure caused by accident, misuse, neglect, abuse or modification by any person other than an authorised EM Acoustics representative.
- Damage or failure caused by operating the loudspeaker product contrary to the instructions contained within this manual.
- Damage caused during shipment.
- Claims based on any misrepresentation by the seller.
- Products which contain anything other than the original components (or EM Acoustics factory supplied spare parts).
- Products on which the serial number has been removed, altered or defaced.

Returning your EM Acoustics loudspeaker

Should your EM Acoustics loudspeaker develop a fault, please return it (freight prepaid) in its original packaging, along with proof of purchase to your local dealer or to:

EM Acoustics (Returns Department), Building 74, Dunsfold Park, Cranleigh, Surrey, GU6 8TB, UK

including a description of the suspected fault. Serial numbers must be quoted in all correspondence relating to the claim. EM Acoustics or its representatives are in no way liable for any loss or damage in transit, and hence it is recommended that the sender insure the shipment. EM Acoustics will pay for return freight should the repair be covered under warranty.

EM Acoustics' liability is to the replacement or repair (at our discretion) of any defective components, and as such are not liable for any incidental and consequential damages including (without limitation) injury to persons, damage to property or loss of use.

This warranty is exclusive and no other warranty is expressed or implied. This warranty is also in addition to – and in no way detracts from – your statutory rights as a consumer.

APPENDIX A – TECHNICAL SPECIFICATIONS

EM Acoustics operates a continuous process of research and development, and as such reserves the right to alter specifications without notice.

MSE-118 Quake

Enclosure Type:	exponential/hyperbolic folded horn
Dimensions (HxWxD, mm/ins):	1200/47.2 x 574/22.6 x 950/37.4
Net Weight:	109kg
Frequency Response (+/- 3dB):	35Hz – 200Hz (single enclosure) 27Hz – 200Hz (four enclosure stack)
Sensitivity:	106dB, 1W/1m (single enclosure) 110dB, 1W/1m (four enclosure stack)
Dispersion:	Omnidirectional (single enclosure)
Drive Units:	18" (457mm) LF cone drive unit
Power Handling:	800W RMS, 1600W Program
Maximum SPL:	134dB continuous, 140dB peak (single enclosure)
Nominal Impedance:	8 ohms
Crossover:	Active, recommended below 150Hz (24dB/Octave Linkwitz-Riley)
Connectors:	2 x Neutrik Speakon™ NL4MPR
Enclosure:	18mm (3/4") Finnish Birch plywood
Grille:	Foam backed hex-punched steel
Options:	Colours Connectors
Spares & Accessories:	DU-1801 replacement LF drive unit RK-1801 re-cone kit for DU-1801 RFG-118 replacement foam/grille TC118 padded transit cover for MSE-118