KEF REFERENCE SERIES

MODEL 101/3
MODEL 102/2 MS

INSTALLATION MANUAL
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MODEL 101/3 & MODEL 102/2 MS

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Thank you for purchasing KEF Reference Series Model 101/3 or Model 102/2 MS loudspeakers. These loudspeakers have been designed to give high quality sound over many years of use. With a medium to high efficiency rating and good power handling capability, they will produce satisfying listening levels with a wide range of ancillary equipment.

1.0 INTRODUCTION

Since its formation in 1961, KEF has pioneered many innovations in loudspeaker technology and design. Your new Reference Series loudspeakers contain the latest of these advances - the KEF Uni-Q® Driver. This radical new KEF design not only places the woofer and tweeter on the same axis but their acoustic centres are also in the same plane. In addition, the profile of the woofer cone modifies the directivity factor or 'Q' of the tweeter so that both drive units have the same directivity in the critical cross-over region. This unification of woofer and tweeter 'Q' lies behind the new units name: The Uni-Q Driver.

Incorporated in many KEF loudspeakers, the Uni-Q driver yields immediate and readily audible sonic benefits. With no sharp discontinuity in 'Q' in the cross-over region, proper tonal balance is not confined to a single 'sweet spot'. Listening is now extended to cover a far broader area. With sound arriving in phase, the sound source is brought into the sharpest possible focus. With properly recorded material, the KEF Uni-Q reveals the location of each musical voice in the stereo image with pin-point accuracy and with a much smoother response being maintained off-axis, where most people listen, than before.

As both high and low frequency sound sources are coincident, the speakers output is dispersed symmetrically in all planes. Unlike most other coaxial systems, the high frequency drive unit does not obstruct the bass unit in any way. Thus accurate stereo information is maintained over a much wider area than with conventional speaker systems.

1.1 OVERVIEW

KEF Reference Series Model 101/3 and 102/2 MS are compact loudspeaker systems designed to operate near a rear wall, on speaker stands or on a shelf. Both incorporate a 160 mm Uni-Q driver with 19 mm ferro-fluid cooled tweeter. Either may be used close to or beside a television when used as front left and right channel speakers in Surround Sound applications. As with all Reference Series loudspeakers, the 101/3 and 102/2 MS are pair-matched to within 0.5 dB difference in response between speakers in a pair. Both have baffles computer routed from solid MDF, painted grey, with a single 160 mm (6½") Uni-Q drive unit flush rebated into the baffle and fitted with a moulded trim ring. A lightweight moulded grille frame is held in place by high strength magnets. With grille removed there are no fixings visible for grille or drive unit. The badge may be rotated to suit vertical or horizontal placement.

1.2 MODEL 101/3

This is a two-way loudspeaker that uses a single 160 mm (6½"") Uni-Q drive unit and enables the 101/3 to produce an exceptional stereo image. Ideal as a high-quality speaker for a small room where space is limited or as a near-perfect second or 'dialogue' speaker for use in surround sound or multi-room applications. A pair of 102 mm (4") long, 25 mm (1") diameter reflex ports, located on the 101/3's front baffle, correctly load the 160 mm (6½") polypropylene bass unit to ensure full and rich bass output. A ferrofluid cooled 19 mm (¾") dome tweeter, positioned at the centre of the bass drive unit, produces an even high frequency performance above 3 kHz. Bi-wire connectors are fitted to the custom designed moulded terminal assembly at the rear of the speaker cabinet.

1.3 MODEL 102/2 MS

With cabinet width and depth the same as 101/3's the Model 102/2 MS is just 170 mm (6¾") taller. The extra space within the cabinet is taken up by an internally mounted 160 mm (6½") paper cone/foam surround bass unit, mounted in Coupled Cavity band-pass arrangement. Bass frequencies vent through a smoothly contoured port on the front baffle and mid- and high frequencies are produced by a 160 mm Uni-Q drive unit similar to the one used in 101/3. Wide entry, gold-plated bi-wire/bi-amping terminals are fitted to allow use with the many different gauges of speaker cable that are available.

1.4 MAGNETIC SHIELDING

A design feature of both Model 101/3 and 102/2 MS are the magnetically shielded drive units. The magnets of the Uni-Q units (and bass drivers in the Model 102/2 MS) are mounted within steel cans which contain flux cancelling magnets. This arrangement reduces the external magnetic field around the loudspeakers, significantly reducing the picture distortion that can be caused by conventional, unshielded loudspeakers. Some televisions may be more sensitive to the location of external magnetic fields, despite this shielding. If in doubt, please consult your dealer.

2.0 INSTALLATION

2.1 UNPACKING, HANDLING AND AFTERCARE.

The 101/3 and 102/2 MS loudspeakers are packed as one matched pair of loudspeakers per carton. Unpack the speakers carefully and inspect for any visible sign of damage. Your speakers left KEF in perfect condition. If any damage is apparent, notify your dealer immediately. Retain the packaging in case a need arises for you to transport the speakers at a later date.

The cabinets are finished in real wood veneer and should be treated with the same care with which you would treat fine furniture. A good quality wax polish is recommended to maintain the original finish and lustre; The surfaces may also be cleaned with a slightly damp, soft lint-free cloth. It is normal for rosewood to lighten with the passing of time, but locations in direct sunlight should, if possible, be avoided. Furthermore the cabinets should not be allowed to become wet.
2.2 SPEAKER PLACEMENT AND ROOM ACOUSTICS

The listening room is one of the most variable elements in the hi-fi chain and its effect cannot be emphasised too strongly, nor can it be reliably predicted. Also, the distance between the speakers and their distance from the listener is important. Spacing the speakers approximately 2-3 m (6' - 10') apart will allow the stereo images to develop fully. You should sit at a distance at least equal to and preferably greater than the distance between the speakers.

Model 101/3 and 102/2 MS are designed to be used on either a shelf, or on a rigid speaker stand close to the rear wall, although the actual distance must be a matter for experimentation. KEF suggest as a guide that you initially position the speakers 225 mm (9") away from the rear wall.

If the speakers are to be used on stands, these should ideally be stationed at least 1 m (36") from the side walls. The stand should be of rigid construction, heavy and firmly in contact with the floor, preferably using hard feet or spikes. Stability is essential, particularly if placed on thick carpet.

A rigidly-sited speaker performs better than one which can move because it allows the cabinet to remain fixed while the drive units are allowed to move as determined by the signal. Even seemingly insignificant movement can affect the sound. (In a perfect speaker, the drive units are the only moving parts). The audible gains include better control of the positioning of the sounds, with 'images' which occupy a specific space and a reduction in 'smearing', which can affect the quality of musical notes' attack and decay. This is especially noticeable when the notes should have a crisp, sharp beginning and ending.

The height of the shelf or stand should be chosen so as to place the centre of the Uni-Q drive unit at a similar height to the ears of the listener. This height is not critical; 300 mm (12") above or below ear height will normally suffice.

Model 101/3 and 102/2 MS may be placed horizontally if required, without degrading the speakers' sound quality. At any given off-axis angle, the Uni-Q drive unit's response is the same in all directions. Thus the speaker may be used vertically, horizontally, or indeed at any angle in between, yet will sound the same. This greatly increases their versatility and ease of use, particularly if 101/3 is used in a secondary role in a AV surround sound or distributed sound system.

Positioning the speaker in a corner or near to a side wall is not recommended as the significant bass boost caused by this position will muddy the sound and cause the stereo image to deteriorate.

Furthermore, it is wise to place the speakers symmetrically within the room, relative to the walls, ceiling and floor. Be aware also that soft furnishings near to a speaker will deaden the sound - similarly, nearby reflective surfaces may liven up the sound. These influences can alter the character of sound dramatically.

Considerable changes can be made to the sound of the hi-fi system by altering the position of the speakers, sometimes by only a few inches. If required, move the speakers until you are satisfied that the sound is right and that the stereo image is well defined.

In the case of conventional loudspeakers, improvements in stereo imaging can result from 'toeing in' the speakers in towards you. In contrast however, KEF suggest that the 101/3 and 102/2 MS loudspeakers are faced straight forward so as to produce the best balance between direct and reflected sounds.

2.3 SPEAKER CABLES

Poor quality cables can seriously affect the overall sound of your hi-fi system. KEF recommend that high quality speaker cable be used for connecting your 101/3 or 102/2 MS loudspeakers. Increasing the length of the cables can also worsen the sound so it is good practice to keep the cables as short as possible. Needless to say, the left and right channel speaker cables should be the same length otherwise there may be a perceptible change in output level between the speakers. The excess cable should be folded neatly, concertina fashion and secured with a cable tie or elastic band. In a high resolution system, speaker cable differences may be detectable. In short, you should buy the best quality cables that you can afford.

2.4 AMPLIFIER TO SPEAKER CONNECTIONS

All connections should be made with the amplifier switched OFF. Ensure the integrity of connection prior to switching the amplifier ON.

Model 101/3 and 102/2 MS are fitted with a specially designed gold-plated bi-wireable terminal assembly which will accept either bare wire, 4 mm 'banana' plugs, spade connectors or double 4 mm plugs on 19 mm (3/4") centres.

Most good quality speaker cables have some indication, such as colour coding or 'ribbing' on the insulating material, as to which conductor is '+ ' or positive. Connection to the speakers can then be made as follows:

The left channel amplifier output terminal marked '+ ' or coloured RED connects to the left speaker terminal marked '+ '. The left channel amplifier output terminal marked '-' or coloured BLACK connects to the left speaker terminal marked '-' . Similarly, these instructions should be followed for making connections between the right channel amplifier output and the right speaker.

Bare wire connections are the most popular and involve stripping 12.5 mm (1/2") of insulation to expose the speaker wire core. (You should twist together, using clean fingers, the ends of each multi-stranded core prior to the next stage to ensure a better signal contact). Having unscrewed the lower terminal cap, push the wire through the exposed hole in the terminal body and screw the cap down tightly. If 4 mm 'banana' plugs are employed, always select a good quality sprung or expanding type, making sure that the cable is properly connected and that the plugs fit tightly into the sockets. These are simply inserted in the large hole in the terminal cap.

Make sure that no stray strands come into contact with the opposite terminal; this could cause a short circuit between the terminals and may damage your amplifier.
2.5 BI-WIRING/BI-AMPING TERMINALS

The two sets of input terminals are linked by a gold-plated shorting link. Removal of this link will allow the MF/HF and LF sections to be connected separately, either by a parallel connection from one amplifier (known as bi-wiring) or to separate power amplifiers driven from the same pre-amplifier (bi-amping). Please refer to Figure 1 below.

![Figure 1](image.png)

2.6 SPEAKER PHASING

Correct polarity is vital to the proper operation of any hi-fi system. Once you have made the connections described the sound from your speakers should be as we intended them to sound. However, if the stereo image is confused or you feel that the bass sound is weak then you should check the speaker phasing in the following manner:

If the loudspeaker shorting links have already been removed to permit bi-wiring/bi-amping, replace the links and connect the amplifier to the speaker using the lower ‘LF’ terminals. Place the two loudspeakers about 5-7 cm (2-3") apart and facing each other. Play a recording which has plenty of deep bass such as an organ solo. Ensure that both speakers are working correctly (Confirm that the amplifier balance control is in the centre position). When both speakers are connected IN-PHASE, you will perceive that the bass sounds full and deep. If the speakers sound weak and thin, switch off the amplifier and reverse the connections at ONE END ONLY of ONE speaker cable. Repeat the test. Performance should now be correct. No damage will be done to the speaker or amplifier if one speaker is connected out of phase, but performance will noticeably suffer.

2.7 GRILLES

The speaker grille of both loudspeakers is an injection-moulded frame, held in place small powerful magnets. These grilles may be removed by gently prising the top edge away from the cabinet.

Use of the speaker without the grilles in place may, in some cases be preferable to you; however, KEF suggests that the grilles are replaced after use. If you need to clean the grilles, do so with a soft brush, having first removed the grille from the cabinet.

2.8 AMPLIFIER REQUIREMENTS AND POWER HANDLING

In KEF literature and within the specification tables within these instructions are listed a range of amplifier power outputs to match Model 101/3 and 102/2 MS. Conditions of use (room size, type of programme, preferred listening level) and the nature of the loudspeaker/amplifier interface vary so widely that it is not possible to lay down hard and fast rules about amplifiers and the loudspeakers they drive.

KEF loudspeakers are built to rigorous standards of quality and consistency and the upper limits of the amplifier requirements shown are those which the loudspeaker in question should handle without distress or damage when used under normal domestic conditions.

If higher than specified amplifier powers are used, great care should be taken to avoid abnormal conditions such as switch-on surges or gross distortion, either of the amplifier or the speaker, resulting in power peaks greatly in excess of the ratings specified. Care should be taken as the possibility still exists under certain conditions (such as excessive bass or treble boost caused by tone and/or loudness controls, graphic equalisers, etc) that the speakers can be overloaded and damaged. The lower limits of amplifier power are those necessary to give a reasonable sound pressure level under domestic conditions.

Remember it is always just as easy to damage the loudspeaker by using a small amplifier driven into distortion by too much volume possibly with bass and treble boost, than by using a larger amplifier which has power in reserve. If in doubt, ask your dealer.

If you are about to purchase a new amplifier, KEF recommend that you audition your potential purchase with the speakers of your choice before you buy.

3.0 WARRANTY

Your KEF Reference Series Model 101/3 or Model 102/2 MS loudspeakers are guaranteed against manufacturing defects for a period of 5 years from the original date of purchase and in the country of purchase. This warranty is in addition to your statutory rights as a consumer. However, failure of the loudspeaker due to abuse, improper or inappropriate use and/or operation or damage caused by other faults in your system are NOT covered within the terms of the guarantee.

3.1 SERVICE INFORMATION

Loudspeakers are inherently reliable and rarely give trouble. It is important to remember that faults arising in any part of the reproducing system will be heard via the loudspeakers and therefore when faults occur, careful and analytical diagnosis will be required to locate the actual source of trouble.

Loudspeakers cannot generate hiss or hum. Spurious noises of this type generally originate in the electronic sections of the equipment or even in the programme source itself. Faults in a loudspeaker will be audible on all programme sources. A fault which is evident only when playing CD's but not, for example, when using a radio tuner is unlikely to originate with the loudspeakers.
Service problems should be discussed in the first instance with the dealer from whom the speakers were originally purchased. Generally, warranty claims are best handled by your dealer. However, in case of difficulty, please contact:

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### 4.0 SPECIFICATIONS:

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<tr>
<th>Product</th>
<th>Description</th>
<th>Drive Units</th>
<th>Frequency Range 1</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>2-way shelf/stand mount</td>
<td></td>
</tr>
<tr>
<td>Model 101/3</td>
<td></td>
<td>Uni-Q HF/LF driver</td>
<td>60 Hz - 20 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19 mm (3/4&quot;)</td>
<td>50 Hz - 20 kHz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>160 mm (6 1/2&quot;)</td>
<td>38 Hz</td>
</tr>
<tr>
<td>Model 102/2 MS</td>
<td></td>
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<td>3-way shelf/stand mount</td>
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<td>19 mm (3/4&quot;)</td>
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<tr>
<td></td>
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<td>160 mm (6 1/2&quot;)</td>
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</tbody>
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-6 dB  
107 dB  
87 dB  
50 - 150 W  
50 - 200 W

Maximum Output 2  
Characteristic Sensitivity Level 3  
Amplifier Requirements 4  
Nominal Impedance:  
6 ohms  
4 ohms

Enclosure Type:  
Reflex  
Coupled Cavity

Internal Volume:  
LF: 10.3 litres  
MF: 1.25 litres (76 cu in)  
LF: 16.2 litres (986 cu in)

Net Weight:  
7.4 kg (15.8 lb)  
11.0 kg (24.3 lb)

Dimensions:  
300 x 215 x 262 mm  
500 x 215 x 262 mm  
13 x 8.5 x 10.37 in  
19.87 x 8.5 x 10.37 in

**Notes:**  
1. Measured at 2 m on reference axis.
2. Maximum spl on programme peaks under typical listening conditions.
3. Measured at 1 m on reference axis for pink noise input of 2.83 V rms, band limited 50 Hz - 20 kHz (anechoic conditions).
4. Amplifier requirement figures are intended only as a guide. As a general rule buy the biggest amplifier you can afford within the specified range and use it with care. It is easier to damage the loudspeaker by using a small amplifier driven into distortion by too much volume with bass and treble boost, than by using a larger amplifier which has power in reserve. If in doubt, ask your dealer.

Features and specifications subject to change without notice. Uni-Q is a trade mark of KEF and is protected under UK Patent No. 2 236929. World-wide patents pending.