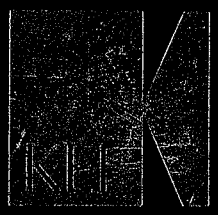
KEF Reference Series

Model LS3/5a

Raymond Cooke
Founder and Life President of KEF



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KEF MODEL LS3/5A CLASS 2 MONITOR

Thank you for purchasing the KEF Reference Series LS3/5a loudspeakers. These loudspeakers have been designed to give high quality sound over many years of use and should provide realistic reproduction of music and speech. Please take a little time to read these instructions prior to use.

1.0 INTRODUCTION

The LS3/5a design was created by the Engineering Department of the British Broadcasting Corporation who were given the task of designing a small, broadcast-quality monitor loudspeaker. The loudspeaker had to be capable of accurately reproducing the human voice, in outside broadcast applications, yet take up the minimum amount of space.

However, to suit the BBC's needs for minimum downtime, the speaker had to be manufactured to a very tight specification, so that in the event of field failure the entire speaker could be replaced by another without affecting the perceived tonal balance, an obvious prerequisite for monitoring purposes.

Since its formation in 1961 by Raymond Cooke (O.B.E.), a former Technical Director of the BBC, KEF has pioneered many innovations in loudspeaker technology and design, and specifically towards improving levels of manufacturing consistency between loudspeakers. The use of synthetic materials, computer-optimised cross-over networks and close tolerance matching of drive units has been common in all KEF Reference Series loudspeakers. So it is only fitting that KEF have produced, perhaps, the definitive version of the BBC LS3/5a, a product that embodies all of the ideals that have made the KEF Reference Series a world standard.

1.1 Overview

Built under licence from the BBC, the KEF Reference Series LS3/5a is a compact loudspeaker system designed to operate in free space on speaker stands or on a bookshelf. Each LS3/5a is pair-matched to within 0.5dB variation between it and the BBC Reference.

Two computer-matched drive units are used: A B110C Type SP1228 110 mm doped bextrene-coned unit covers the low and middle frequencies upto 3 kHz and a T27 SP1032 Mylar tweeter produces the high frequency range. A mesh grille protects the delicate tweeter dome. Both drive units are vertically aligned on a plywood baffle.

A precision-made 26 component computer-optimised cross-over network is used to equalise the drive units to the strict BBC specification and to ensure close adherence to the BBC Reference LS3/5a.

Each cross-over network is then individually matched to the drive units paired with it, by way of factory set links on the printed circuit board. Each link allows fine adjustment of the matching between tweeter and bass unit to better than 0.25 dB.

The speaker cabinets are made of multi-layer birch ply and finished in luxury pair-matched wood veneers.

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.

2.0 INSTALLATION

2.1 Unpacking, Handling and Aftercare.

The LS3/5a 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.

LS3/5a's are designed to be used on either a shelf, or on a rigid speaker stands away from rear and side walls, 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 be approximately 55 cms (20") high and should 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.

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.

Improvements in stereo imaging can also result from toeing the speaker in towards you.

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 LS3/5a 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.

LS3/5a are fitted with purpose designed gold-plated bi-wire/bi-amp terminals which will accept either bare wire, 4 mm 'banana' plugs, spade connectors or double 4 mm plugs on 19 mm (¾") 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 '+' (coloured RED). The left channel amplifier output terminal marked '-' or coloured BLACK connects to the left speaker terminal marked '-' (coloured BLACK). 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 (½") 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.

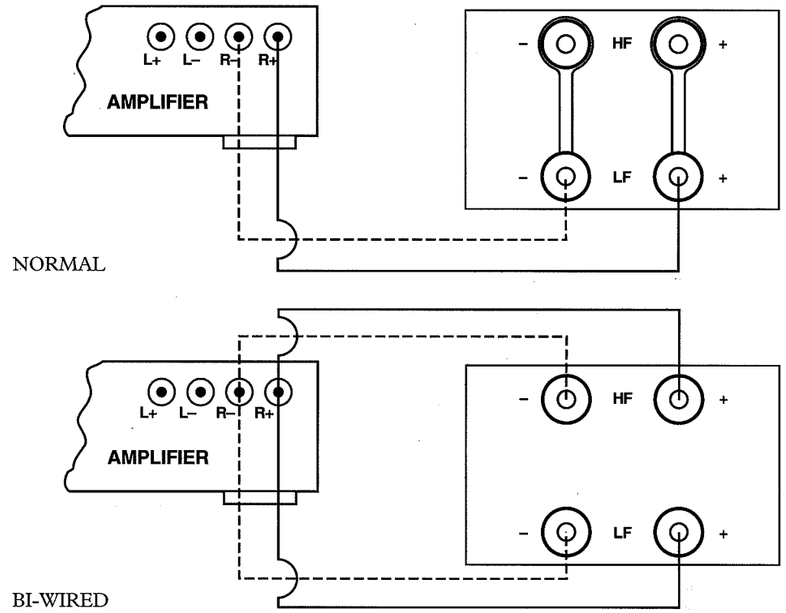

Figure 1 *(One channel only shown)*

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 one amplifier to each 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 grille material of the LS3/5a is made from Tygan and the design of the speaker takes the acoustic properties of this material into account. It is recommended, therefore, that the grilles be left in place during use. However, they may be removed by gently prising the top edge away from the cabinet.

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 table within these instructions is listed a range of amplifier power outputs to match the LS3/5a. 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 rigourous 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 LS3/5a 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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SPECIFICATIONS:

Product:		LS3/5a
Description:		2-way shelf/stand mounted loudspeaker
Drive Units:	*HF Unit:*	T27 19 mm (¾" Mylar dome)
	LF Unit:	B110C 110 mm (5" bextrene-coned bass unit)
Frequency Range [1]:	*+/- 3 dB*	70 Hz – 20 kHz
	-6 dB	59 Hz
Maximum Output [2]:		95 dB
Characteristic Sensitivity Level [3]:		82.5 dB
Amplifier Requirements [4]:		25 – 75 W
Maximum Input Power:		30 W (programme)
Nominal Impedance:		11 ohms
Enclosure Type:		Sealed Box
Internal Volume:		5.5 litres
Net Weight:		5.5 kg (12.1 lb)
Dimensions: (h x w x d)	*mm*	302 x 190 x 162
	in.	11.9 x 7.5 x 6.4

Notes:

1. Measured at 2 m on reference axis.
2. Maximum spl, measured at 2 m, 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.

The experience of sound

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