

KEF REFERENCE SERIES MODEL 105/3

INSTALLATION MANUAL



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MODEL 105/3

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1.0 INTRODUCTION

KEF REFERENCE SERIES MODEL 105/3

Model 105/3 is a floor standing loudspeaker system of the highest quality. It is a 4-way system employing six drive units and has very high sensitivity, high output capability and outstanding power handling capacity.

Combining all of KEF's recent research in moving coil loudspeaker technology with the established KEF Reference Series features of consistency, reliability and innovation, Model 105/3 presents a formidable array of features dedicated solely to the accurate reproduction of music and stereo images.

The midrange and high frequency assembly is contained in an independent specially profiled module, precision machined from solid MDF 75mm (3") thick. This houses a symmetrical vertical array of three separate die-cast aluminium sealed enclosures. The upper and lower enclosures house polypropylene diaphragm units of 160mm (6.5") nominal diameter which cover the lower midrange. The centre unit is a coincident-source 2-way Uni-Q drive unit incorporating a 25mm neodymium-magnet tweeter placed in the neck of the main driver, precisely at the point where the acoustic centres of the two units coincide. The use of two 160mm low/mid units gives the equivalent power handling of a much larger unit but allows the narrow frontal area so essential for good stereo imaging to be retained. The symmetrical layout gives improved vertical integration, with the acoustic sources of all four units appearing at the same point in space. The use of Uni-Q for the upper-mid and high frequencies resolves the directivity problems associated with conventional systems using separated mid and high frequency units. Uni-Q coincident-source technology eliminates the discontinuities that occur around the crossover point, resulting in greatly improved reproduction, particularly of voices and strings.

The low frequency section incorporates two 200mm (8") units mounted in double coupled-cavity configuration and linked with a force-cancelling rod. This arrangement gives tight control where the sonic demands are greatest. Linking the two drivers reduces distortion whilst cancelling the forces set up in the units themselves, thereby preventing the transfer of energy to the main enclosure to cause the delayed resonances which give rise to 'boxy' colouration. Model 105/3's entire low frequency output is radiated by a smoothly contoured duct placed immediately below the mid/high-frequency section. This acts as an air diaphragm of very low mass and of similar diameter to the midrange units. Thus directional characteristics match, ensuring exceptionally smooth acoustic integration throughout the entire frequency range. In addition to the bracing provided by the construction of the two internal sealed enclosures, further bracing is incorporated to prevent resonances in the main cabinet structure, which is constructed of 22mm balance-veneered high-density particle board throughout.

KEF Conjugate Load Matching ensures that the speaker presents the driving amplifier with the simplest of all loads - pure resistance, enabling it to give of its best particularly when handling complex programme at high levels. Two pairs of heavy duty gold-plated input terminals are provided allowing the system to be bi-wired or bi-amped, the low-frequency and mid/high-frequency sections being driven by separate amplifiers.

2.0 INSTALLATION

2.1 UNPACKING, HANDLING AND AFTERCARE

NOTE: Model 105/3 is a large and fairly heavy loudspeaker. It is advisable when unpacking and moving during installation to enlist the aid of another person to avoid any likelihood of accidental damage to cabinet or drive units. Model 105/3 may be handled by one person however, using the following procedure. Unpack the speaker as suggested below. Once the speaker is upright, remove the grille assembly. This is secured by four magnetic fasteners and can be detached by pulling it forward horizontally. Lift the loudspeaker by placing one hand at the top of the back of the cabinet and the other hand under the midrange assembly. Test the weight and lift carefully by bending your knees and keeping your back straight. We suggest that the caps be left on the spiked feet during all movements to prevent possible damage to floor or carpet. Remove them, if you wish, once the speaker's final position is established.

To unpack, lay the carton on its long side on the floor and spread the two long flaps and the two shorter ones at the end. Turn the carton over and lift it off the loudspeaker. We suggest you retain all packing at this stage in case you need to transport the speakers at a later date. Identify the top of the loudspeaker and, with the polystyrene end caps still in place, stand it upright so that the bottom is uppermost. Remove the end cap, open up the polythene bag and slide it halfway down the speaker. Make sure the feet are screwed tightly into place then turn the speaker over to stand on its feet. Remove the top end cap and the polythene bag, replacing them inside the main carton. Remove all the packing for storage. Place the speakers in their intended listening position and read on.

2.2 SPEAKER POSITIONING AND LISTENING WINDOW

The Model 105/3 departs from standard speaker design practice in that it has been conceived from the outset to work well in a wide range of environments. Its 'room friendliness' begins with the enclosure, a floor-standing structure which requires no aftermarket stands or accessories to aid in its support and whose 'footprint' is small - less than 1 square foot - compared to its performance capability.

KEF provides screw-in spiked feet with protective caps for the Model 105/3. If your floor is wooden or tiled, use the feet with the caps in place. In addition to providing the desired contact, the feet will also prevent damage to the floor surface.

In carpeted rooms, KEF recommends the use of spikes, accessed by removing the caps. In this situation, the use of spikes will increase the physical stability of the Model 105/3. In either case, place the speaker in its chosen position and level it by screwing the rear feet in fully, adjusting the speaker via the front feet. When necessary, additional washers can be used to accomplish the levelling. (Only in cases of very uneven floors should levelling require the re-adjustment of front and back feet).

A rigidly-sited speaker performs better than one which can wobble 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 drivers 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 the musical notes' attack and decay. This is especially noticeable when the notes should have a crisp, sharp beginning and ending.

Where the speakers are located is just as important as how they make contact with the floor. The tonal quality and the clarity of the sound, as well as the sharpness of the image, is determined as much by the sound which reaches the listener indirectly, as it is by the sounds which emanate in a forward pattern. The indirect sounds reach your ears by reflecting off walls, the floor and the ceiling; these reflections are the sounds which give different concert halls their individual characteristics, and make every listening room sound different. It is also why there are no hard-and-fast rules for speaker positioning, only guidelines for the user to adapt to his or her set of circumstances.

In Model 105/3 KEF has addressed this question in a number of ways, including the size and shape of the front panel, the cabinet dimensions, the physical construction and other methods which shape the performance in ideal conditions. To allow Model 105/3 to perform optimally in the 'real world' environment of the domestic living room, KEF recommends that the speakers be situated at least 1m from the side walls and 50cm from the back wall. Model 105/3 will also work best if nothing is placed between it and the listener.

Also important are two other positioning considerations, the distance between the speakers and the distance between the listener and the speakers. Stereo imaging is created by reproducing two separate signals in a space in front of the listener. If the speakers are too close together, the stereo 'width' cannot be reproduced faithfully; in extreme conditions, it can result in a sound virtually indistinguishable from single-channel ('mono') sound. How far apart the speakers are placed is determined by room size, but as a guide, KEF recommends a spacing of between 2m and 4m apart. At the other extreme, speakers placed too far apart will yield sound with a 'hole in the middle' instead of a coherent, wall-to-wall spread of music.

The listener's distance from the loudspeaker should be equal to or greater than the distance between the speakers, creating an equilateral triangle. You can test this quite simply with both music and speech by moving your chair closer to or away from the speakers until the sound best suits your tastes. When doing this, make certain that the playback levels are the same as you would use for normal listening.

2.3 SPEAKER CONNECTIONS

(NOTE: All connections should be made with the equipment switched OFF. Only switch ON once the connections have been made and are secure.)

To account for the variety of connectors in use today, a number of options are made available to the Model 105/3 owner for connecting the speaker to the amplifier. The terminals fitted to the Model 105/3 will accept either bare wire, 4mm 'banana plugs' or 6mm spade connectors. Each type of termination has its own virtues; the fitting of a universal terminal allows you to use your existing leads without the need to fit a different connector.

Common to all types of connector is the need to make certain that the correct wire is connected to the correct terminal to maintain 'polarity'. Each speaker takes two wires from the amplifier, with one marked '+' or 'positive' or coloured RED, while the second is marked '-' or 'negative' or BLACK. For both left and right speakers, make certain that you always connect amplifier '+/positive/RED' to loudspeaker '+/positive/RED' and amplifier '-/negative/BLACK' to speaker '-/negative/BLACK'. Most cables will have some indication (eg colour-coding, printing or a stripe) on one of the two wires to allow you to trace them accurately; additionally, fitted connectors may be coloured RED or BLACK to aid in correct installation.

Bare wire connections are the most popular and involve stripping 12.5mm (1/2") of insulation to expose the speaker wire core. If your wire is a 'multi strand' type, twist the strands tightly together with clean fingers to prevent oils from affecting the contact. Having unscrewed the terminal cap, push the wire through the exposed hole in the terminal and screw the cap down tightly. Make sure that no stray strands make contact with the other terminal; this could cause a short circuit between the two terminals.

If 4mm 'banana plugs' are employed, always select a good quality sprung or expanding type. This will ensure that the plugs fit tightly into the sockets. These are simply inserted in the large hole at the top of the terminal. Spade (U-shaped) connectors should be placed around the exposed pillar seen when the cap is unscrewed. As with bare wire connections, screw the cap tightly in place.

The importance of clean, tight connections cannot be overemphasised, as this affects both sonic quality and actual operation. A loose connection can eventually lead to disconnection, while dirty contacts can impair the signal quality. It is therefore recommended that you occasionally remake all connections to check for their integrity. In the case of bare wire connections, cut off the old, exposed wire and strip back the insulation to reveal fresh wire. Twist the newly-exposed strands and re-connect the cables to the terminals.

The Model 105/3 also features extra terminals to allow the speaker to be operated in two other modes. In both cases, the gold strip linking the two sets of terminals should be removed.

The first mode, BI-WIRING, involves the connecting of two sets of wires from the amplifier to the speakers. (Your amplifier may include either single terminals, in which case both wires are connected to the same terminal at the amplifier, or it may offer two sets of terminals, one for each set of wires.) This separates the mid and high frequency sections of the loudspeaker from the low frequency section for gains in clarity and quality.

The other mode, BI-AMPLIFICATION, allows the user to employ two separate amplifiers, one for the mid and treble frequencies and one for the low frequencies. This imparts even greater control as it provides a 'dedicated' amplifier for each section of the speaker. One set of cables runs from each amplifier to each pair of terminals on the Model 105/3. Again, make certain that the polarity has been maintained as above. (NOTE: It is recommended that, when BI-AMPLIFYING, you use the same make and model of amplifiers for mid/high frequency and low frequency to ensure consistency in terms of playback levels and polarity. If you wish to mix amplifier types, please consult your dealer concerning their suitability.)

To check the polarity of your system, even if you have taken care to ensure that the positive and negative connections have been maintained, place the two speakers together, facing each other about 5 - 7.5cm (2 - 3") apart. Play a recording which has plenty of deep bass, such as an organ solo. Operate both speakers with your amplifier switched to 'mono'. Reverse the connections on ONE SPEAKER ONLY and repeat the test. Correct polarity is indicated by firm, full bass, while incorrect polarity will create weaker bass.

KEF also suggests the following when connecting your Model 105/3 loudspeakers:

Always try to keep the length of cable from amplifier to speakers as short as possible to minimise power and frequency losses. Although the choice of speaker cable is not critical with the Model 105/3 because of its resistive nature, you may wish to investigate the specialist cables available from your KEF dealer. Many listeners feel that such cables can be used to 'fine-tune' the sound. Your dealer will be able to recommend suitable cables.

Always use cables of equal lengths to both speakers even if the actual distance from your amplifier to the loudspeakers differs from one side to the other. Excess cable can be folded neatly in concertina fashion and secured with a cable tie or elastic band.

2.4 AMPLIFIER REQUIREMENTS AND POWER HANDLING

To ensure that the KEF Model 105/3 will work well with a wide range of hi-fi components, it has been designed to deliver adequate listening levels with medium amounts of power. As a minimum recommendation, KEF suggests that you operate your Model 105/3 with amplifiers rated at 50 watts per channel into a 4 ohm resistive load. Model 105/3, however, is also capable of achieving very high volume levels cleanly and without damage. For use in large rooms or for sustained high level playback, Model 105/3 will operate safely with amplifiers rated up to 300 watts per channel into 4 ohms resistive (typically 150 - 200 watts into 8 ohms).

If you are about to purchase a new amplifier, KEF recommends that you audition your potential purchase with the Model 105/3 to ensure the suitability of your selection.

2.5 SYSTEM FINE-TUNING

Although the KEF Model 105/3 has been designed for easy general installation and system matching, its performance can be finely tailored to an individual room. Experienced listeners are able to detect small sonic changes which can affect the overall performance; these small changes can be introduced by seemingly insignificant adjustments in the speakers' positioning, changing types of cables, removing the speaker grille cloths during listening sessions and so on. Far from being 'black magic', such attention to details can enhance the performance of a hi-fi system in known, audible ways.

The secret to successful fine tuning is knowing how to listen. As with any pursuit, experience is the best qualification. You will soon find that your own listening habits and abilities improve as you grow more and more familiar with the sound of your hi-fi. Your favourite recordings hold the key to successful fine-tuning.

Once you have installed your speakers according to the instructions in Sections 2.2 and 2.3, you can go a stage further by repositioning the speakers by small increments. One known phenomenon related to speaker positioning is the way that bass can be augmented by placing it closer to the back or side walls. The adverse effects resulting from positioning too close to the boundaries include an imbalance created by having too much bass relative to the rest of the sound spectrum, as well as a possible reduction in the sense of 'space' and imaging possible from the loudspeaker. As you can see, such fine-tuning is a case of making an adjustment, listening, making another adjustment and so on, until you reach a point where the sound 'snaps into focus'. As you continue, you may notice a point where the sound starts to lose its quality; you then simply move back to the previous adjustment.

Stereo imaging is also affected by aiming the speakers toward the listener, pointing inward; this is called 'toe-in'. In most situations, and especially in large rooms, the Model 105/3 will be placed with the back of the speaker parallel to the back wall, firing forward. Slight toe-in may improve focus, but it will also restrict the area for ideal listening. In some instances, this creates what is referred to as a 'hot seat', which means that the best sound is available to only one or two listeners sitting at a precise location in front of the speakers.

The Model 105/3 features a carefully designed grille covering which serves two primary functions. On a most basic level, grille cloths protect the drive units from dust and damage, while on an aesthetic level they soften the look of loudspeakers. Some listeners, however, believe that the presence of a

grille cloth between the drive units and the listener will act as a 'filter' on the sound, possibly affecting the upper frequencies and 'openness'. The grille cloths of the Model 105/3 are removable and may be taken off during concentrated listening periods. KEF does recommend, however, that they be left in place at all other times.

In section 2.3, mention is made of the use of specialist cables. The Model 105/3 has been designed deliberately to minimise the effects of cables to aid in easier systems matching. However, many critical listeners may find that gains are to be made by selecting a specialist cable which can optimise the relationship between the amplifier and the Model 105/3. General recommendations are not possible in the pages of this manual, other than to advise that you treat the purchase of cables as you would any hi-fi component. You should audition the cables with the components used in your own system; some specialist dealers are equipped to provide a 'loan' set of leads for home auditioning.

3.0 SPECIFICATION

Model	105/3
Frequency range	49Hz - 20kHz ± 2.5 dB at 2m on reference axis
Directional Characteristics	Flat within 2dB from 50Hz to 17kHz up to 30° off reference axis in any direction
Maximum output	115dB spl on programme peaks under typical listening conditions
Characteristic Sensitivity Level	93dB spl at 1m on reference axis for pink noise input of 2.83V rms, band limited 50Hz - 20kHz (anechoic conditions)
Amplifier Requirements	Suitable for use with amplifiers capable of providing between 50 and 300W into 4 ohm resistive load.
Nominal impedance	4 ohms resistive 20Hz to 20kHz
Weight	42Kg 92½lb
Dimensions	1104(h) x 280(w) x 405(d)mm 43½" x 11" x 16"

4.0 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 discs but not, for example, when using the radio tuner, is not likely to originate with the loudspeakers.

Service problems should be discussed in the first place with the dealer from whom the goods were originally purchased. Generally warranty claims are best handled by your dealer. However, in case of difficulty, contact:

Customer Service Department, KEF Electronics Limited, Tovil, Maidstone, Kent, ME15 6QP. Telephone 0622 672261 Telex 96140

This precision engineered KEF product is guaranteed against faulty material and workmanship for a period of five years from the date of original purchase subject to the following restrictions:

1. This warranty is only valid in the country of purchase.
2. That the equipment has not been disassembled, modified or tampered with by any person other than an expressly authorised representative of KEF Electronics Limited.
3. That the equipment has not been abused or operated in conjunction with unsuitable or faulty apparatus.
4. That the equipment has not suffered mechanical damage or derangement in transit.

Should service be required, notify the dealer from whom you purchased the equipment and have him arrange onward shipment to KEF ELECTRONICS LIMITED or an authorised agent if he confirms the need for factory attention. Do not despatch goods without prior agreement of KEF or other authorised agents.

If asked to return products for inspection and/or repair, pack carefully, preferably in the original cartons and return prepaid.

Insurance is recommended as goods are returned at owner's risk. KEF or their authorised agents cannot be held liable for loss or damage in transit. Packing and insurance and freight on the return journey will be paid by KEF if warranty work proves to be necessary.

Failure to register in no way limits or invalidates the warranty, but in the event of service being required, delay may result since our Service Department cannot begin warranty work until the original sale has been verified.

FOR THE USA

This KEF loudspeaker is warranted to the original purchaser against factory defects in material or workmanship for a PERIOD OF FIVE YEARS FROM THE DATE OF ORIGINAL PURCHASE.

WHAT WE WILL DO

If asked to return products for inspection and/or repair, pack carefully, preferably in the original cartons and return prepaid.

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FOR THE USA

This KEF loudspeaker is warranted to the original purchaser against factory defects in material or workmanship for a PERIOD OF FIVE YEARS FROM THE DATE OF ORIGINAL PURCHASE.

WHAT WE WILL DO

Should your KEF loudspeaker fail to function properly because of a manufacturing defect, KEF will repair or replace it free of charge. If the product is still defective after a reasonable number of attempts by the warranty or to remedy the defect, you may elect a refund of the purchase price or replacement without charge.

Before a refund or replacement can be made, the product must be free of all liens and other encumbrances.

HOW TO OBTAIN SERVICE

Should service be required, contact the dealer from whom you purchased the equipment and have him arrange onward shipment to KEF Electronics Limited or an authorised agent. Ship the product prepaid, only after receiving written authorisation and instructions from the dealer. Include a written description of the claimed defect, and your original sales slip or other proof of ownership and date of purchase.

We strongly recommend that speakers be packed in their original cartons and packing material and that all shipments be insured (KEF cannot be responsible for loss or damage in shipment). Packing, insurance and return freight will be paid for by KEF if work covered under the warranty is necessary.

WHAT IS NOT COVERED

This warranty does not cover a loudspeaker system which has been:

1. damaged while in your possession
2. overloaded, abused, misused or operated with faulty or unsuitable equipment

IN NO EVENT SHALL THE WARRANTOR BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, whether damages result from breach of express or implied warranties, tort, negligence or otherwise. Some states do not allow exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

If you have any questions about this warranty and your dealer has not been able to assist you, please contact:

KEF Electronics of America Inc., 14120-K Sullyfield Circle, Chantilly, VA22021. Telephone (703) 631 8810 Telex 510 100 2304.

OWNER REGISTRATION INFORMATION

Please complete and return the product safety registration card within 14 days of purchase. Failure to register does not invalidate your warranty, but in the remote event any safety hazard develops with this product, your registration card will facilitate our notifying you promptly.

KEF reserves the right to incorporate developments and amend the specifications without prior notice in line with continuous research and product improvement.

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