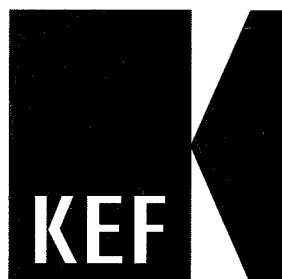
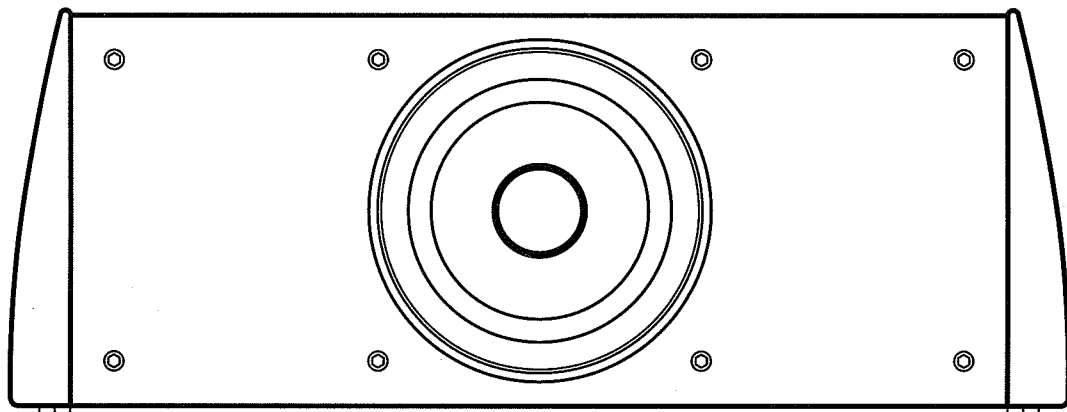


**Reference Series**  
**Model 90, Model 100 & Model 200C**

**INSTALLATION**  
**INSTRUCTIONS**



## Reference Series Model 90, Model 100 & Model 200C

### Contents List

- 1.0 Introduction
  - 1.1 Model 90
  - 1.2 Model 100
  - 1.3 Model 200C
- 2.0 Installation
  - 2.1 Unpacking, Handling and Aftercare
  - 2.2 Speaker Positioning
  - 2.3 Speaker Connections
    - 2.3.1 Model 90 Connections
    - 2.3.2 Model 100/200C Connections
  - 2.4 Amplifier Requirements and Power Handling
  - 2.5 System Fine Tuning
- 3.0 Warranty
  - 3.1 Service Information
- 4.0 Technical Specifications

Thank you for purchasing a KEF Reference Series loudspeaker. It has been designed to faithfully reproduce 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

KEF Reference Series Model 90, 100 and 200C are advanced centre-channel/dialogue loudspeakers for use in high fidelity Home Theatre/surround-sound systems. Incorporating KEF Uni-Q® Technology, these speakers provide unsurpassed dialogue clarity throughout the listening room. Model 90 is specifically balanced to suit other KEF magnetically shielded loudspeakers which use 19 mm ( $\frac{3}{4}$ " ) high frequency drive units, such as the Q Series. Models 100 and 200C, with their 25 mm (1" ) tweeters, match KEF Reference Series range. Thanks to the inherent flexibility provided by Uni-Q, these critically acclaimed speakers are also compatible with a wide range of quality speakers from other manufacturers. However, it is important to stress the need to match the front left and right channel speakers to the centre-channel speaker tonally, so as to provide a consistent spread of sound across the front sound stage.

#### The Uni-Q driver

This is a radical KEF development, which realises the ambition of loudspeaker designers to create a drive unit where the sound appears to radiate from a single point source. The use of a newly discovered magnetic alloy, Neodymium-Iron-Boron (which is ten times more powerful than conventional ferrite magnets) enables a tweeter to be made which is small enough to be placed inside the bass unit voice coil – precisely where the acoustic centres of the two drive units coincide. This creates a full-range coincident drive source, matched in time, space and directivity.

Discontinuities in the cross-over region are eliminated because the matched directivity of the Uni-Q tweeter and woofer provides an improved tonal balance, when compared to non-Uni-Q speakers. This gives the listener the benefit of greater clarity and better localisation of dialogue, relative to the picture on-screen.

Further, whilst most centre speakers are quite directional, and require the speaker to be pointing directly at the listener, the symmetrical nature of the Uni-Q means that its dispersion is equally good in both vertical and horizontal planes. The sound is spread over a broad area and is not confined to a single hotspot. Never before has KEF's Total System Design philosophy – a totally integrated approach, where the critical elements of drive unit, enclosure and filter network are studied and developed together to achieve the intended response – been so thoroughly implemented.

### 1.1 Model 90

Model 90 is a compact centre-channel speaker which uses a 160 mm ( $6\frac{1}{2}$ " ) Uni-Q driver mounted within which is a 19 mm ( $\frac{3}{4}$ " ) fluid-cooled tweeter for smooth, even sound coverage.

The aesthetic design of the Model 90 loudspeaker is particularly appealing and has been chosen to match the vast majority of currently available TV and video equipment. The speaker is magnetically shielded to allow placement directly on or adjacent to TV sets.

### 1.2 Model 100

Model 100 is a larger, more efficient version of the Model 90. The cabinet is the same height and depth but is 64 mm ( $2\frac{1}{2}$ " ) wider. A different and uprated 160 mm ( $6\frac{1}{2}$ " ) Uni-Q driver using a larger voice coil is used, and a 25 mm (1" ) tweeter is fitted. This combination enables greater overall power handling and an even smoother response over the critical human voice spectrum.

The width of the Model 100 makes it particularly suitable for stacking on top of a VCR or laserdisc player although it is equally at home on top of the TV set. Uni-Q Technology means that, either way, the Model 100 will deliver crystal clear sound to the listener.

### 1.3 Model 200C

Model 200C is capable of providing supreme performance when used as part of a State-of-the-Art Home Theatre system of the highest quality. With an ever-widening dynamic range available from both film and music videos, Model 200C provides even more bass output and is capable of higher sound pressure levels. The same Uni-Q driver as used in Model 100 is employed for treble and midrange frequencies whilst low frequencies are handled by a pair of specifically-designed 160mm (6½") Cobex-coned bass drivers working in parallel.

## 2.0 INSTALLATION

### 2.1 Unpacking, Handling and Aftercare

Each of these loudspeakers is packed as one speaker per carton. Unpack the speaker and inspect for any visible sign of damage. Your speaker 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 speaker at a later date.

Your loudspeaker is finished to match the majority of televisions and video components. The surfaces of the cabinet may be cleaned with a slightly damp, soft lint-free cloth. We do not recommend that the cabinet is exposed to direct sunlight or high temperatures. Nor should it be allowed to become wet.

### 2.2 Speaker Positioning

For the best sound reproduction and to accurately locate dialogue sounds as coming from on-screen requires Model 90, Model 100 or Model 200C to be placed as close to the centre of the screen as possible. In practical terms this means positioning the loudspeaker either directly on top of or below the television so that the speaker grille is in roughly the same plane as the screen. (Make sure that your television can support the weight of your new centre speaker.)

The TV set or monitor should first be switched off at the mains socket before placing the speaker in your preferred setting. For locations on top of the TV, the centre speaker should be gently lowered down onto the television. Do not 'slide' the speaker onto the TV either from the front or the side. Alternatively, locate the speaker on a shelf beneath the TV. Only restore power to the television once the loudspeaker is in your chosen position. Each speaker is fitted with anti-slip feet to prevent enclosure movement when playing loud.

#### Important Safety Note

If there are small children in your family, make sure that the speaker cable that connects to the centre channel speaker cannot be pulled, as this could result in the speaker falling and causing injury. Taping the cables, either to the TV itself or to other cables at the rear of the TV set are possible options.

Care should be taken to ensure that the rear firing reflex port is not obscured or blocked as this will result in reduced sound quality.

If the speaker is moved to a different position on or near the TV set, it is recommended that the degaussing procedure is followed each time, according to the TV manufacturer's guidelines.

Each speaker produces exceptionally low levels of external magnetic field, thanks to the type of magnetic shielding employed. However, some televisions are more sensitive to external magnetic fields than others. If yours suffers from colour staining, switch it off overnight at the mains switch. Switch it back on the following day and confirm that the staining has disappeared. If not, then it may be necessary for you to re-locate the centre-channel speaker.

Locating the speaker behind a projection TV screen may give acceptable results but this will depend upon the acoustic transparency of the screen material.

Many factors can affect the way that a speaker sounds in a particular room. Of these, the room itself – its shape, size and furnishings – is very significant. KEF speakers are designed to be 'room-friendly' and interface well with the majority of rooms in which they are located. However, because of the almost infinite range of room shapes, sizes and furnishings, some experimentation with where you locate and how you connect your speakers is always worthwhile and can bring about significant improvements in the way your system performs.

Home Theatre installations involve a TV plus at least 5 speakers and a number of other items of ancillary equipment. Accommodating all this equipment in a domestic environment so as to obtain the best results requires careful planning. A common mistake is to automatically group the equipment around where the TV is placed – often because that is where the aerial or antenna connection is located. This is traditionally in a corner, which creates problems with placing left- and right front channel speakers equal distances either side of the screen and positions the centre-channel speaker in a corner – which all adds up to a less-than-ideal situation (see diagrams below). Consideration should also be given to the positioning of the rear surround-sound speakers. Normally these would be positioned as left rear and right rear, and mounted behind the listener. KEF flush-mounting speakers can be incorporated into a suitable ceiling or wall void and may better suit particular needs, rather than using conventional box speakers, hence obviating the need for speakers stands, wall brackets and trailing speaker wires.

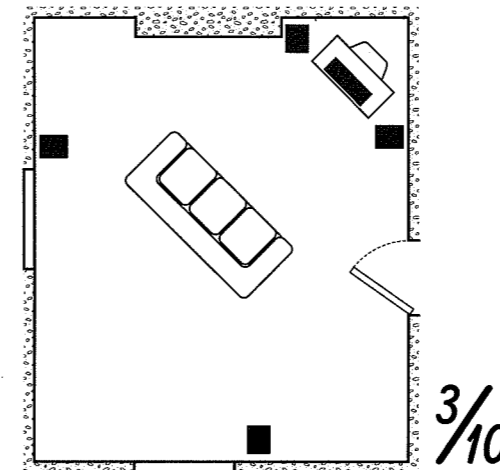


Figure 1

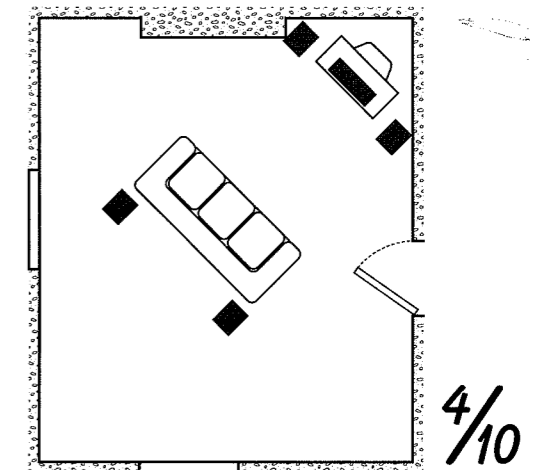


Figure 2

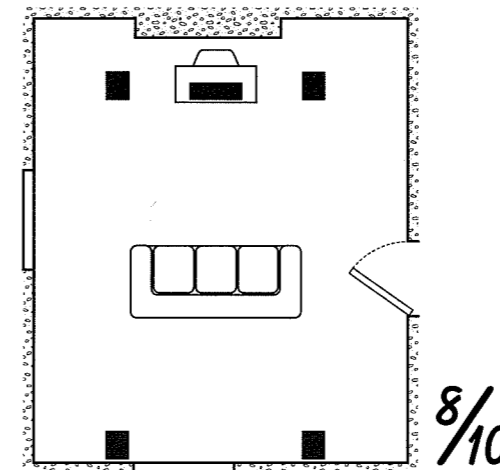


Figure 3

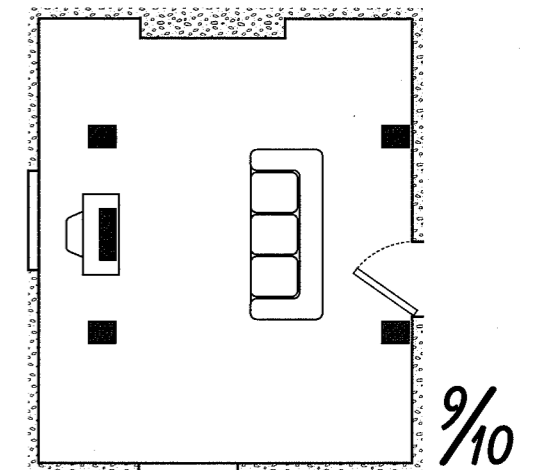


Figure 4

We recommend that you reassess the placement of the equipment and major items of furniture, **at the outset**, with the objective in mind of positioning the TV against a flat wall with left & right speakers equally spaced either side. This is not always possible to achieve and some compromises may need to be made, but it is better to aim for an ideal situation and just fail, than to start out with a bad set of compromises and have to live with less-than-optimum performance thereafter. See diagrams below for our suggestions. Contact your KEF dealer for further advice or write to KEF Customer Services Department.

### 2.3 Speaker Connections

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

To account for the variety of connectors in use today, a number of options are made available. The terminals fitted will accept either bare wire or 6 mm 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'. Most cables will have some indication (e.g. colour-coding, printing or a stripe) on one of the two wires to allow you to trace them accurately. The fitted connectors may be coloured RED or BLACK to aid correct installation.

Bare wire connections are the most popular and involve stripping 12.5 mm ( $\frac{1}{2}$ " ) 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 contact.) Having unscrewed the terminal cap, push the wire through the exposed hole in the terminal body and screw the cap down tightly.

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.

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.

#### 2.3.1 Model 90 Connections

The Model 90 requires one speaker cable, with two separate conductors, connected to the 'Centre-channel' amplifier output terminals. Connect the amplifier output terminal marked '+' or coloured RED to the Model 90 terminal marked '+'. Likewise, the amplifier output terminal marked '-' or coloured BLACK connects to the Model 90 terminal marked '-'. (See Figure 5)

#### 2.3.2 Model 100/200C Connections

Model 100/200C are provided with four input terminals, but for normal operation, they require only one speaker cable, with two separate conductors, connected to the 'Centre-channel' amplifier output terminals (see Figure 6). They should be connected such that the amplifier output terminal marked '+' or coloured RED connects to the 'LF' terminal marked '+'. The amplifier output terminal marked '-' or coloured BLACK connects to the 'LF' terminal marked '-'. When used with the shorting links in place, make sure that all four terminal caps are tightly screwed down to ensure that the shorting links make good contact. Failure to do so could result in the intermittent working of either HF or LF drive units.

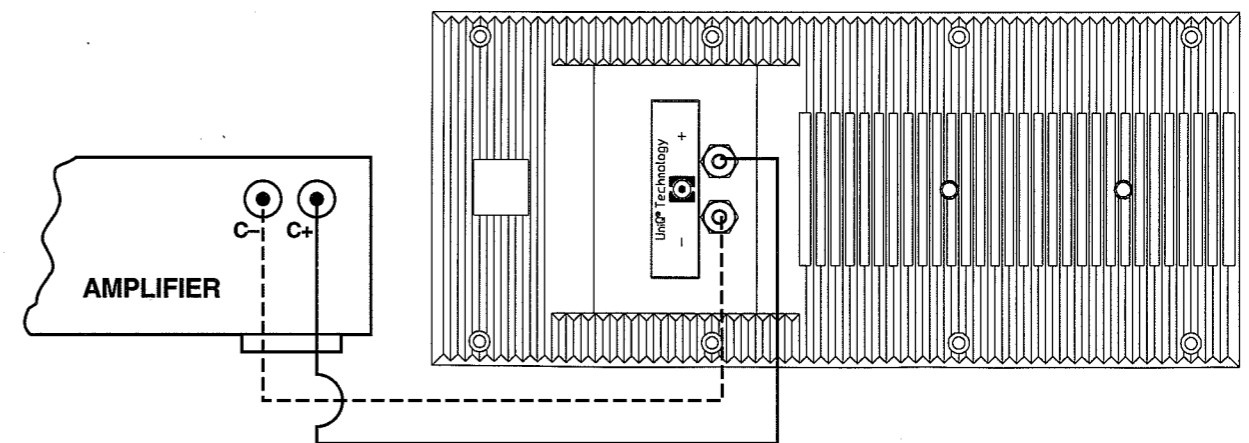


Figure 5 Model 90 Connections

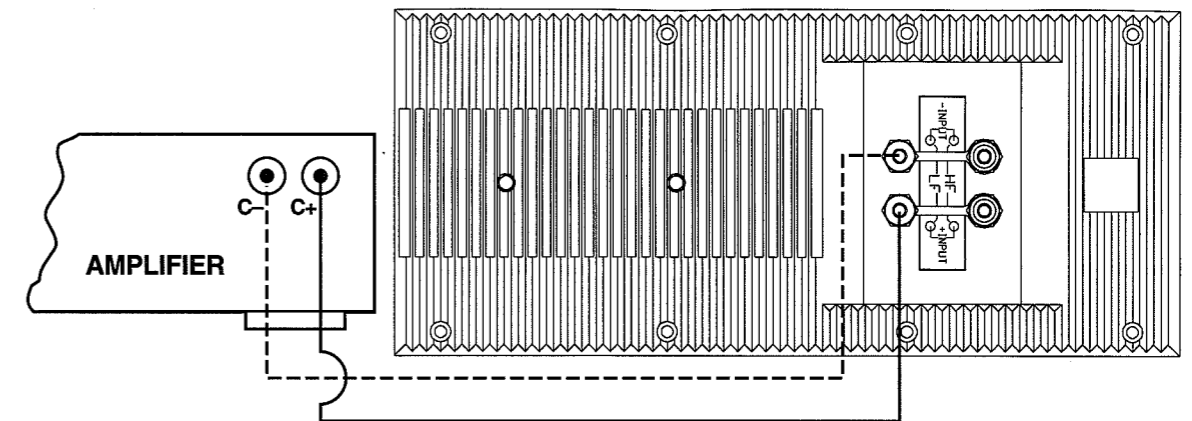


Figure 6 Model 100/200C Single wire connections

The two sets of input terminals are linked by gold-plated shorting links. Removal of these links will allow the 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). An extra twin-core speaker cable will be required to allow either bi-wire or bi-amp operation. In either case, run one cable to the HF terminals and the other cable to the LF terminals, taking care to observe the correct polarity as above (see Figures 7 & 8).

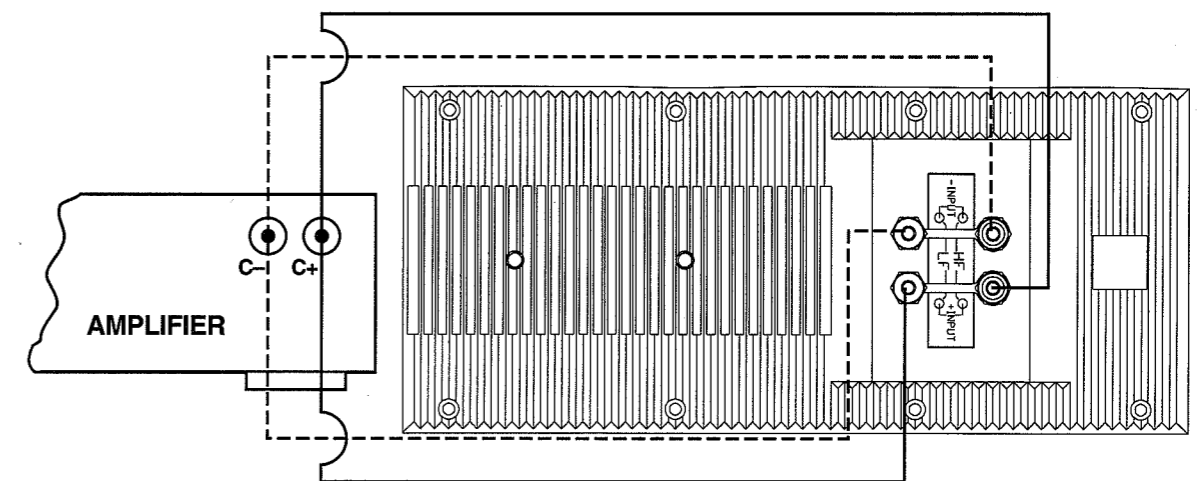


Figure 7 Model 100/200C Bi-wired connections

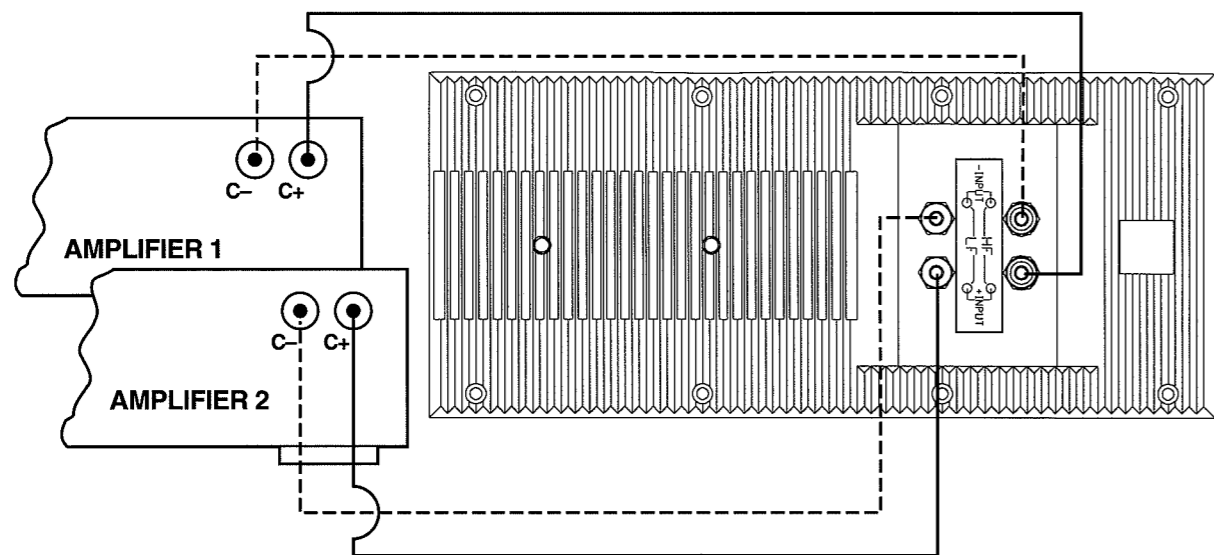


Figure 8 Model 100/200C Bi-amplification connections

#### 2.4 Amplifier Requirements and Power Handling

In KEF literature and within the specification table contained in these instructions are listed a range of amplifier power outputs to match your Reference Series loudspeaker. 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 easier 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.

Should you decide to buy a new amplifier, or upgrade your existing one, always try to audition new equipment through your own type of loudspeakers, ideally in your home, prior to purchase.

#### 2.5 System Fine Tuning

The location of a centre-channel loudspeaker is very much tied to where the TV is positioned. Often, this is in a corner to provide the maximum viewing angle. Unfortunately, corners are not ideal locations for speakers, as corner-placement can over-emphasise some middle frequencies, producing an unnatural effect which is particularly noticeable when listening to human voices. As the centre-channel of a Home Theatre system handles mainly voice (dialogue) signals, corner-placement is far from ideal. Try moving the TV and centre-channel to another position away from a corner, if you suffer from these effects. You may need extension cables for mains and antenna/aerial connections for this exercise.

Your speakers feature 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 the 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 grilles are removable and may be taken off during concentrated listening periods. KEF does recommend, however, that they are left in place at all other times.

#### 3.0 WARRANTY

Your KEF Reference Series loudspeakers are guaranteed against manufacturing defects in both materials and workmanship. For further details of how this guarantee affects you, please read the enclosed Warranty leaflet. It should be noted, however, that 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. The warranty is also void if a serial number has been removed or defaced.

#### 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.

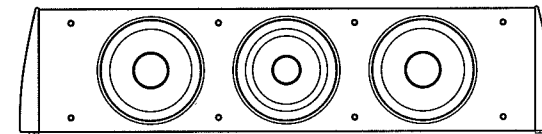
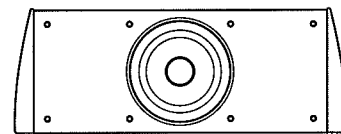
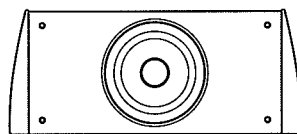
Loudspeakers cannot generate hiss or hum. Spurious noises of this type generally originate in the electronic sections of the equipment or even in the programme source itself. Faults in a loudspeaker will be audible on all programme sources. A fault which is evident only when playing laserdiscs and not, for example, when listening to an off-air broadcast, is unlikely to originate with the loudspeaker.

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

**Customer Services Department**  
**KEF AUDIO (UK) Limited,**  
**Eccleston Road, Tovil,**  
**MAIDSTONE,**  
**Kent, ME15 6QP UK**  
**Telephone No.: +44 (0)1622 672261**  
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**CompuServe: 76702, 2600**

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**Holliston,**  
**MA 01746 USA**  
**Telephone: +1 (508) 429 3600**  
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#### 4.0 TECHNICAL SPECIFICATIONS



<i>Product:</i>	<b>Model 90</b>	<b>Model 100</b>	<b>Model 200C</b>
<i>Description:</i>	2-way Uni-Q centre-channel	2-way Uni-Q centre-channel	3-way Uni-Q centre-channel
<i>Drive Units:</i>			
<i>High Frequency Unit:</i>	19 mm (¾") fluid-cooled tweeter	25 mm (1") fluid-cooled tweeter	25 mm (1") fluid-cooled tweeter
<i>Mid Frequency Unit:</i>	—	—	160 mm (6½") midrange unit
<i>Low Frequency Unit:</i>	160 mm (6½") bass unit	160 mm (6½") bass unit	2 x 160 mm (6½") bass units
<i>Frequency Range</i> <sup>1</sup> :	80 Hz–20 kHz	70 Hz–20 kHz	55 Hz–20 kHz
<i>Maximum Output</i> <sup>2</sup> :	106 dB	111 dB	114 dB
<i>Characteristic Sensitivity Level</i> <sup>3</sup> :	87 dB	90 dB	90 dB
<i>Crossover Frequency:</i>	3 kHz	3 kHz	400 Hz, 2.7 kHz
<i>Amplifier Requirements</i> <sup>4</sup> :	Suitable for use with amplifiers capable of providing between 15 and 150 W into a 4 ohm load	Suitable for use with amplifiers capable of providing between 25 and 175 W into a 4 ohm load	Suitable for use with amplifiers capable of providing between 25 and 200 W into a 4 ohm load
<i>Nominal Impedance:</i>	6 ohms	6 ohms	4 ohms
<i>Enclosure Type:</i>	Reflex	Reflex	Infinite baffle
<i>Internal Volume:</i>	6 litres	7.2 litres	MF: 2 litres LF: 9 litres
<i>Net Weight:</i>	3.9 kg (8.6 lb)	5.2 kg (11.4 lb)	11 kg (24.2 lb)
<i>Dimensions: (h x w x d)</i>	mm 174 x 396 x 169 in. 6.85 x 15.6 x 6.65	174 x 460 x 169 6.85 x 18.1 x 6.65	174 x 760 x 169 6.85 x 29.9 x 6.65

Features and specifications subject to change without notice.

Uni-Q is a trademark of KEF and is protected under UK patent No. 2 236929. World-wide patents pending.

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 (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.



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