



REFERENCE SERIES

MODEL 1104

The KEF Reference Series

Sophisticated scientific studies and the application of aerospace research, particularly in materials technology, have fostered a great advance in the general standard of domestic sound reproducing equipment.

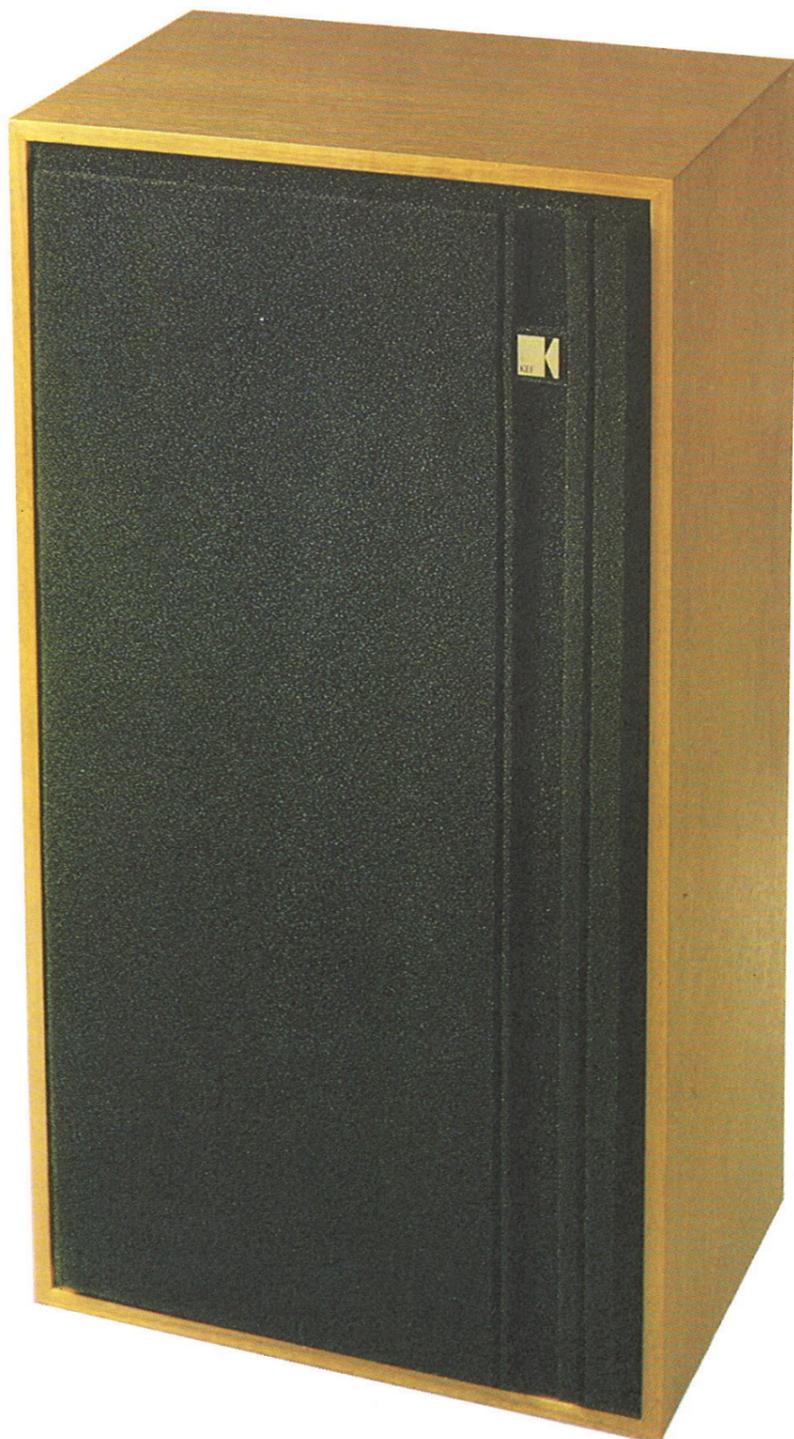
The widespread adoption of transistorised amplifiers has led to a marked increase in available output power and a reduction of all forms of non-linear distortion. Improvement in loudspeaker design has virtually eliminated the problem of colouration. It is now economically possible to combine high powered amplifiers with refined speaker systems capable of high sound pressure levels, low distortion and excellent transient response.

High quality domestic equipment is now able to provide a standard of performance previously associated only with broadcasting studios, hence the current misuse of terms such as *Monitor* and *Professional* in describing high fidelity products. Such usage has rendered these terms meaningless.

The final assessment of a loudspeaker must be by reference to live sound and not by comparison to equipment designed for specific applications, such as studio use.

KEF have introduced a reference series of loudspeakers intended to achieve the finest performance and able to sustain high sound pressure levels without damage.

The advanced research and quality of performance make the Model 104 loudspeaker a reference in its own right.



Model 104

The reference series Model 104 is a three-way speaker system employing synthetic, laminated diaphragms for all three units.

A 320 x 210 mm bass radiator is acoustically coupled to a 200 mm driver at frequencies below 45 Hz. The combination gives clean bass down to 30 Hz with higher efficiency than would be possible using a single large diaphragm with the same motor assembly.

The T27 tweeter extends the range smoothly beyond 30 kHz.

A 6 element filter constructed with close tolerance components accurately controls balance and divides the input signal at 3,000 Hz.

To adapt the speaker response to varying listening room conditions an acoustic contour control, located behind the grille, is adjustable to provide three response shapes in the mid-frequency range (see diagram back page).

The cabinet and grille have been developed with the same care expended on the units. High density structural materials, internal bracing, sound absorbent damping and layered bituminous anti-resonant linings create an unusually resonance-free enclosure. A sculptured micro-cellular grille protects the diaphragms without impairing sound quality. The high frequency attenuation remains less than 1dB up to 20 kHz.

Speaker assessment

KEF design philosophy is founded on the premise that the studied use of plastics and metal alloys can improve sound reproduction, product reliability and consistency beyond the potential of traditional materials.

This concept has been rigorously applied to all the Company's products for more than a decade and KEF is recognised throughout the world as a leading manufacturer of dependable, precision engineered loudspeakers.

To assess the quality of sound reproduction, KEF engineers carried through a valuable programme of fundamental research aimed at correlating objective measurement with subjective assessment. This led to the development of a method of evaluating not only amplitude v frequency response, but also transient behaviour and time delay v frequency. The method is based on Fourier Analysis using a digital computer.¹

The Model 104 is the first loudspeaker system to benefit from the use of these advanced techniques.

¹ LOUDSPEAKER EVALUATION USING A DIGITAL FOURIER ANALYSER - Lecture to Audio Engineering Society by L R Fincham (Research Director, KEF Electronics Limited) and R V Leedham (Acoustics Group, University of Bradford), London 13th February, 1973.

Increased power handling

Research has shown that a common cause of loudspeaker failure is due to overloading. This may be thermal overloading of the voice coil or over-excursion of the speaker diaphragm.

The unrestricted use of large amplifiers rated in excess of 60 watts continuous power can result in the dissipation of mean power of the order of 20 watts, with highly modulated or dynamic pop or hard rock music. The release of this power in the confined space of the voice coil will raise its temperature to over 200°C and may cause permanent mechanical damage to the speaker.

The new KEF drive units in the Model 104 are constructed with spirally wound, heat resistant voice coil formers and short epoxy bonded coils, totally immersed within the steel motor² structure to give adequate cooling. The voice coil assembly will safely withstand short term overload to at least 250°C and continuous operation at 180°C.

An acoustically coupled passive radiator provides the equivalent coupled area of a 320 mm bass unit at frequencies below 70 Hz. It restricts the actual excursion of the 200 mm driver to safe limits at high volume levels, minimising non-linear distortion.

Drive units

LF RADIATOR B200/SP1039

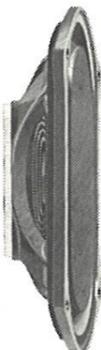
Features a new visco-elastic damped Bextrene diaphragm with high temperature motor² assembly and PVC surround.

Total Flux: 132,500 maxwells
Flux Density: 13,500 oersteds
Nominal pole dia: 33 mm
Fundamental resonance: 25 Hz



SUB LF RADIATOR BD139/SP1042

Developed from the world famous B139 bass unit, this low frequency radiator redirects the low frequency energy from the rear of the B200 to augment bass output. Its effect extends low frequency performance, raises efficiency and reduces distortion. Fitted with precision tuned sandwich type diaphragms in die cast aluminium chassis.



HF RADIATOR T27/SP1032

Pressure formed Melinex dome with integral damped roll surround. The frequency range extends at least one octave above the upper hearing limit.

Total Flux: 24,700 maxwells
Flux Density: 12,500 oersteds
Nominal pole dia: 20 mm
Effective Moving Mass: 350 milligrams
Fundamental Resonance: 1,100 Hz



DIVIDING NETWORK DN15/SP1041

A six element network dividing at 3,000 Hz roll off slope 18dB/8ve on both sections. Selected high stability components and low loss capacitors at all critical points. THD due to filter network remains less than 0.2% at full output of 50 watts.

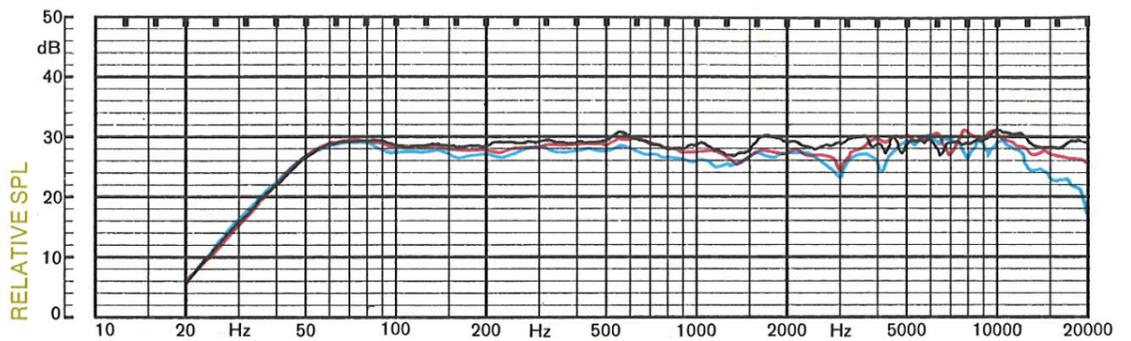
² Motor: defines the electro-mechanical arrangement, comprising the voice coil and magnet assembly.

MODEL 104

Frequency Response

Microphone 1 metre on HF unit axis
with acoustic contour at - position

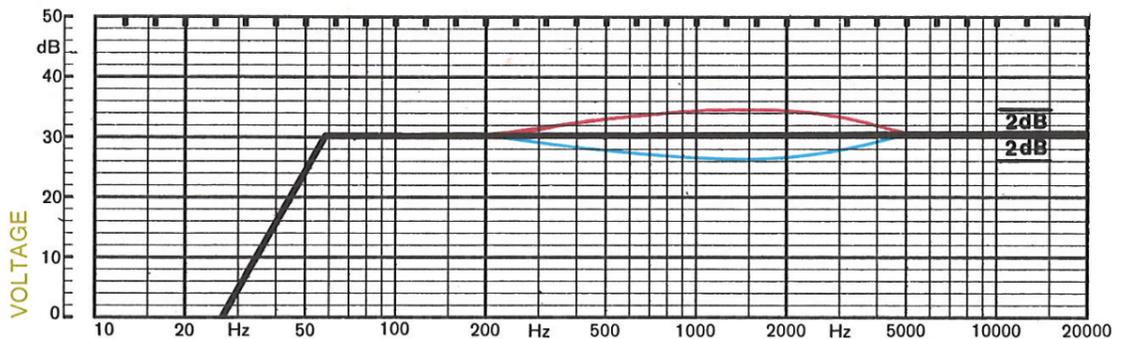
- 0° on axis horizontally
- 30° off axis horizontally
- 45° off axis horizontally



MODEL 104

Acoustic Contour Control

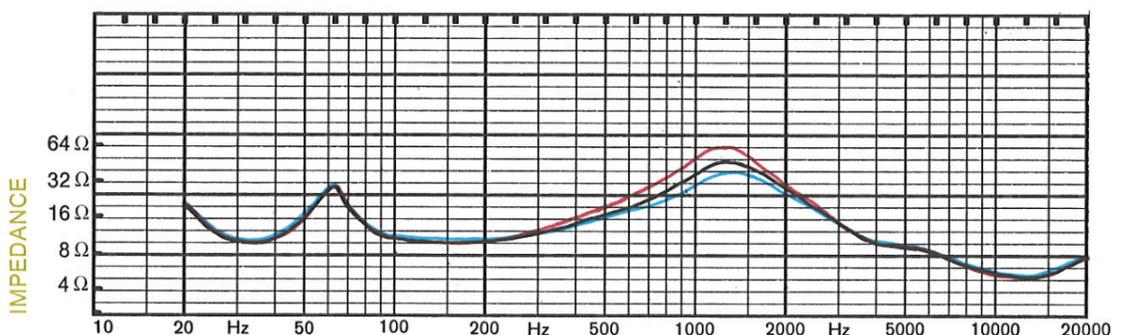
- + setting
- Reference setting
- - setting



MODEL 104

Impedance v Frequency

- - setting
- Reference setting
- + setting



Specification

Dimensions: 630 × 330 × 260 mm
24.8 × 13 × 10.23 in

Internal Volume: 35.5 litres

Weight: 15.8 kg/34.75 lb net
21.0 kg/46.2 lb packed

Nominal Impedance: 8 ohms (see curve)

Rated Max Power: 50 watts programme

Continuous sine wave rating: 20v (50w) 100 – 2,500 Hz
reducing to 8v (8w)
above 3kHz

Nominal Freq Range: 30-40,000 Hz

Specific Freq Response: ±2dB 50-20,000 Hz
measured at 1 metre on axis of the HF unit
in anechoic conditions ±5dB 35-35,000 Hz
-10dB at 30 Hz

Acoustic Contour Control: 3 positions ±2dB
(see diagram) centred on 1.5 kHz

System Resonance: Mechanical reflex 35 Hz

Dividing Frequencies: 45 Hz (acoustically coupled)
3,000 Hz (electrical cut-off
slope 18dB/8ve)

Harmonic Distortion: <1% THD 100-30,000 Hz
rel 96dB SPL at 400 Hz

Sensitivity: 12.5 watts into nominal 8 ohms
produces 96dB at one metre and
400 Hz in anechoic conditions

Amplifier Requirements: 15 to 50 watts into
8 ohms

Room Size: Up to 280 cubic metres (10,000 cu ft)

Finishes: Walnut, Teak, White

Grille: Black Microcellular Foam

Supplied by:

 **KEF Electronics Limited** Tovil Maidstone ME15 6QP ☎ 0622 57258
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KEF reserve the right to incorporate developments and amend the specification without prior notice, in line with continuous research and product improvement.

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KEF®

WANT TO RELAX TO BEAUTIFUL
MUSIC

WELCOME

WE HAVE GOOD HIFI AT YOUR
SERVICE

PLEASE WAIT HERE & A MEMBER
OF OUR TEAM WILL BE WITH
YOU SHORTLY.

Or press finger HERE

