

KEF REFERENCE SERIES
MODEL 104/2.



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Model 104/2 is a genuine high output, high sensitivity speaker system possessing exceptional dynamic capability. It can reproduce a very wide dynamic range at high output levels. The optional KEF KUBE 104/2 equaliser extends the low-frequency down to 20Hz (-6dB, Q=0.5).

Since its launch, this elegant loudspeaker has won awards worldwide for technical innovation and acoustic performance. Model 104/2 incorporates conjugate load matching, twin coupled cavity bass loading, twin chassis-less midrange units and a performance level astonishing for its size and price.

Coupled cavity bass loading places maximum power handling and control where the demands of music are greatest. Conjugate load matching ensures optimum performance from any partnering amplifier.

CONJUGATE LOAD MATCHING

The reproduction of a wide dynamic range at high output levels has traditionally meant using a large amplifier with large loudspeakers, making heavy demands on both.

Advanced computer design techniques, pioneered by KEF more than a decade ago, enable Model 104/2 to be built with a dividing network that includes load matching elements which make the input impedance flat and resistive over the range 20Hz to 20kHz. This purely resistive characteristic enables the loudspeaker's impedance to be reduced, over the whole audio band, to 4 ohms and yet demand no more peak current from an amplifier.

The result is that the sensitivity and maximum output level are effectively doubled, without any need for a more powerful amplifier.

COUPLED CAVITY BASS LOADING

In conventional loudspeakers, bass output and extension is directly related to cabinet size.

The coupled cavity system used in the Model 104/2 is the result of some nine years research by KEF engineers.

Such a system gives very low distortion with very high power handling capability. Transient performance is superior to that of a reflex system and the tuning frequency can be placed where the musical demands are greatest, while a lower frequency than usual can be used for crossover to the midrange.

All these benefits are conferred where the mechanical demands of music reproduction are at their highest.

In Model 104/2 two bass units are used in 'balanced' mode, facing vertically upwards, coupled together by a non-ferrous alloy bar bolted rigidly between their magnet structures. This arrangement doubles low frequency output, and reduces distortion whilst cancelling the forces set up in the units themselves thereby eliminating the delayed resonances which give rise to 'boxy' colouration.

THE INTEGRATED MIDRANGE

The main sources of colouration in the crucial midrange region are structural resonances in the midrange chassis and the enclosure.

In the KEF 104/2, chassis resonance is eliminated by dispensing with the chassis altogether! The two midrange diaphragm assemblies are fixed directly to a separate high frequency and midrange enclosure which incorporates a centrally located ferrofluid cooled tweeter to ensure maximum power handling capability.

The combination of this heavily damped assembly, with the non-resonant coupled cavity bass configuration, produces a full-range system of high efficiency, capable of astonishingly high sound pressure levels.

CONTROLLED DIRECTIVITY

KEF Reference Series design and production philo-

sophy using computer-controlled drive unit matching within 0.5dB, and component tolerance matching in the dividing network, result in the very close pair matching essential for accurate stereo reproduction.

The special midrange/high frequency enclosure mentioned above is carefully contoured to minimise disturbances caused by diffraction, resulting in response being maintained well off axis.

The use of two identical midrange units, in addition to improving power handling, allows them to operate over an unusually wide bandwidth (nearly a full octave lower than is usual).

This means that, in conjunction with the bandpass bass loading method employed, a low crossover point at 150Hz can be used, achieving a smoother distribution of energy through the important 200-400Hz region, with reduced voice colouration and improved imaging.

The 104/2's entire low-frequency output is radiated by a smoothly contoured duct placed below the mid/high frequency enclosure. This duct, effectively a 5" air diaphragm of very low mass, (approx 3gm!) is of similar diameter to the midrange units. Directional characteristics therefore match, ensuring an exceptionally smooth acoustical integration which further enhances the 104/2's imaging capabilities.

FLEXIBILITY, COMPATIBILITY AND PLEASING APPEARANCE

Speakers capable of the performance level of 104/2 are often big and ugly. The relatively compact dimensions (it takes up less than 1 sq ft of floor space) and elegant appearance of the 104/2 have been a part of the design brief since its inception.

Screw-in feet allow the speaker to be set perfectly upright to avoid the stability problems often encountered with tall, slim enclosures.

Conjugate load-matching ensures compatibility with a very

wide range of associated equipment by presenting the kindest possible load to the driving amplifier.

The 104/2 allows great flexibility of positioning particularly when partnered with the optional KUBE 104/2 equaliser. This increases the LF extension by 1½ octaves to 20Hz (-6dB, Q=0.5), and improves stereo perspective and the naturalness of voices and strings.



Frequency Range:	35Hz-20kHz ± 2dB at 2m on reference axis (-6dB at 20Hz, Q = 0.5)*
Directional Characteristics:	Within 2dB of response on reference axis, up to 15kHz for ±10° vertically; up to 10kHz for ±30° horizontally; up to 6kHz for ±45° horizontally
Maximum Output:	112dB spl on programme peaks under typical listening conditions
Characteristic Sensitivity Level:	92dB spl at 1m on reference axis for pink noise input of 2.83V rms (anechoic conditions)
Distortion:	Second harmonic: less than 0.5% from 20-20,000Hz. Third harmonic: less than 0.5% from 20-20,000Hz. Measured at 1m on reference axis at mean spl of 94dB (anechoic conditions)
Enclosures:	Low frequency enclosure: 50 litres MF/HF enclosure: 3 litres
Amplifier Requirements:	Suitable for use with amplifiers capable of providing between 25 and 200W into 4 ohms resistive load
Nominal Impedance:	4 ohms resistive from 20-20,000Hz
Weight:	32kg (70½lb)
Dimensions:	900 (h) x 280 (w) x 415 (d) mm, 35½ (h) x 11 (w) x 16¾ (d) in

*When used with KUBE 104/2.
KEF reserve the right to incorporate developments and amend specifications without prior notice in line with continuous research and product improvement.



KEF ELECTRONICS LTD., Tovil, Maidstone, Kent ME15 6QP. Telephone: (0622) 672261. Telex: 96140. Fax: (0622) 50653.
Distributed in the U.S.A. by: KEF Electronics of America Inc, 14120-K Sullyfield Circle, Chantilly VA 22021.
Telephone: (703) 631 8810. Telex: (510) 100 2304. Fax: (703) 830 7625.

Part No. PL 599EN01.