DITTON 66



sound for perfection

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Celestion Ditton 66 loudspeaker

Choosing your Equipment

Celestion began designing and manufacturing loudspeakers half a century ago. From those early days and the crude but then miraculous equipment to the fine contemporary High Fidelity systems built today there have been innumerable innovations. Decades of research and development culminated in the Ditton 66. Celestion's reputation for building fine loudspeakers is unequalled and we are proud to present this remarkable instrument which will enhance your home and provide endless relaxation and pleasure.

In the specification section you will observe two methods of stating the power handling of this loudspeaker.

1. Maximum input programme watts (without clipping).
2. Maximum continuous RMS sine voltage in specific frequency bands

This practice has been adopted because of the need to establish a closer relationship between loudspeaker power handling and amplifier output capability and, at the same time, publish data which is specific and reproducable.

There is no accepted definition of a programme watt, therefore some clarification of our use of the term and its limitations is needed. Our concept of the programme watt is that of a gauge of the energy content of a hypothetical average music programme, which we believe exhibits certain characteristics in the amplifier and loudspeaker.

Consideration of these characteristics and their influence on the way that equipment is rated will assist our understanding of the problem.

Average music programme has a relatively low average power content; through a sensitive speaker system, such as the Ditton 66, 1 watt of electrical input becomes an appreciable level of sound output. However, superimposed on this low average level are transients, short term bursts of high peak power, e.g. the clash of cymbal, which the equipment must reproduce. The limit of an amplifiers ability to handle peaks without clipping or distorting the wave form occurs at the point at which the signal begins to overload the components of the amplifier. As overloading is specifically related to the amplitude of the signal a continuous sine wave is subject to the same clipping limit as a transient peak, even though the energy content of the former is greater than the latter. A proportion of this energy manifests itself as heat in the amplifier but the equipment is designed to conduct this heat away and so prevent damage. Therefore, the amplifier rating is seen to be directly governed by the peak performance of the equipment, and is usually expressed as the RMS value of the continuous sine wave input whose amplitude is almost at the point of clipping. The relationship between RMS watts and peak watts in this case is 1 : 2 i.e. an amplifier rated at 50 watts RMS is capable of handling and delivering peaks of 100 watts before clipping occurs.

The usual limiting factor in a moving coil loudspeaker is the temperature at which the voice coil begins to degrade. The increase in voice coil temperature arises from heat generated in the coil which cannot be dissipated, (unfortunately, loudspeakers do not have heat sinks) which in its turn is dependant upon the average power content and duration of the signal fed to it. Loudspeakers are therefore rated at the average power level they can handle for sustained periods under closely specified conditions, which has little relationship to the peak performance of the equipment. In order to quantify the average power level which can be handled by our loudspeakers, in a measurable and reproducable manner, we have published figures showing the maximum continuous sine wave voltage input in specific frequency bands, applied at most critical frequencies for 10 minutes.

However, when matching amplifiers to loudspeakers, simply relating an amplifier peak based rating to a loudspeaker average based rating, even though both may be expressed in RMS watts, does not result in a satisfactory match and seriously limits the transient response of the system. To avoid this situation we show a maximum figure quoted in "programme" watts which is a safe estimate of the short duration programme peaks which this loudspeaker should handle without ill effect, and approximates more closely to the amplifier rating. You will observe that this figure is coincidental with the top limit of the amplifier requirments also shown.

It must be borne in mind that programme material with an abnormally high content of high frequency energy renders the loudspeaker vulnerable to tweeter burn out, also that an amplifier overdriven and clipping heavily can generate excess high frequency energy even though the nominal rating of the amplifier is relatively low.

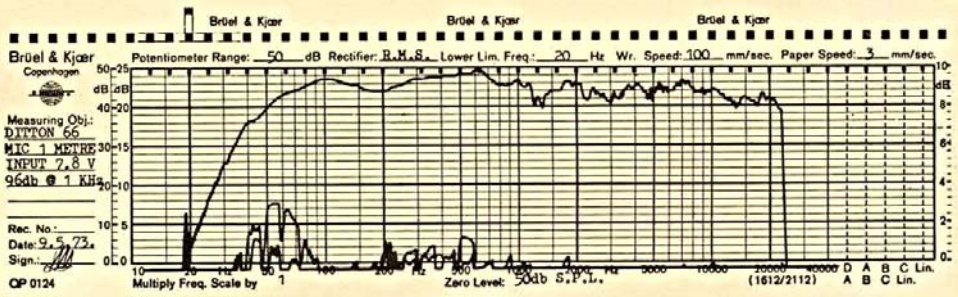
Arranging your loudspeakers for good listening . . .

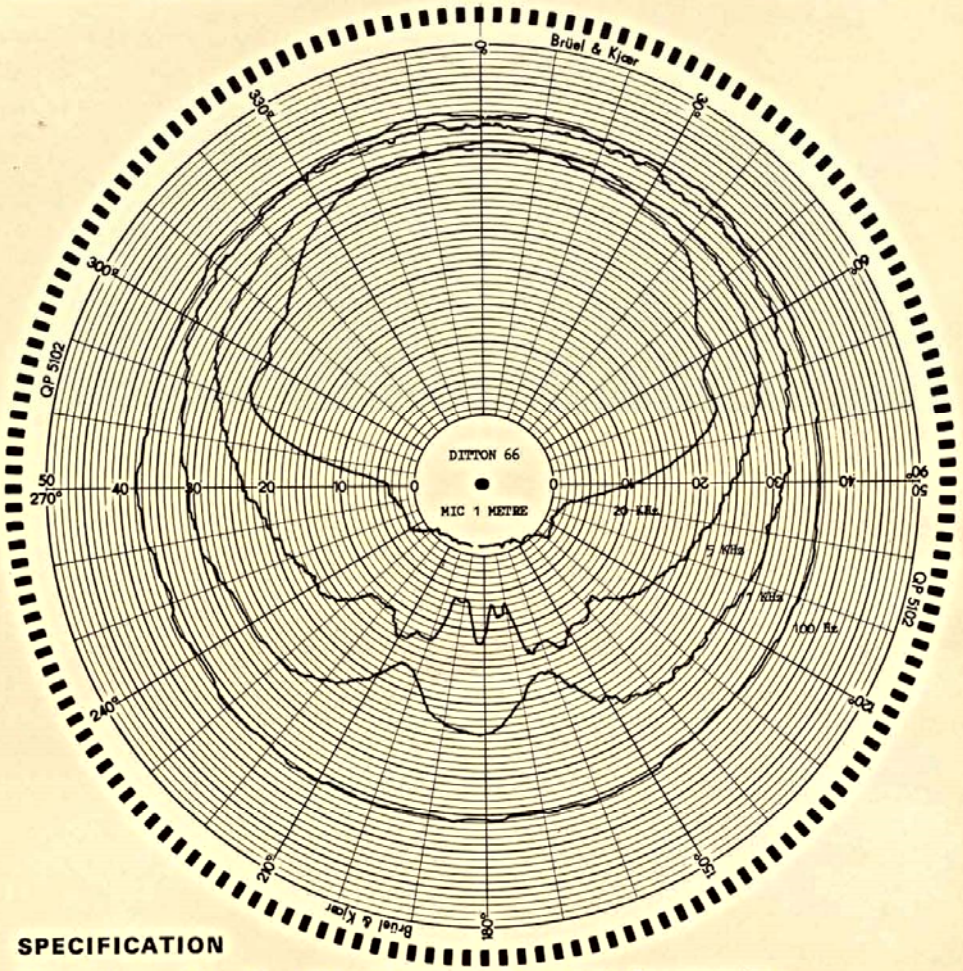
The optimum placement of your loudspeakers is somewhat dependant upon room acoustics and furniture siting. However, the basic arrangement for stereo reproduction is obtained by having the two speakers about three metres apart angled at approximately 45°. If your speakers are placed in the corners of your room this will tend to accentuate the bass notes. If the room acoustics tend to produce a stronger bass than required, a small plinth allowing some space between the underside of the speaker and the floor may be preferred. Quadraphony: a pair of Ditton 15's would be an ideal match for the rear channel or if space is critical the miniature Ditton 11. It is suggested that the rear channel speakers be sited near ceiling height. Enthusiasts report fantastic quadraphony using four '66' Monitors!

Frequency response curve and polar dispersion diagram

These diagrams are reproduced for the interest of the technically minded; the diagram on the right shows frequency response; the upper limit of the trace is of course that of the laboratory equipment; the uniformity of this curve speaks volumes for the excellence of the drive units and of the crossover developed by Celestion engineers. It is hardly surprising that Celestion pressure units are specified by the B.B.C. for both studio and domestic monitors and also incorporated by many manufacturers. The polar diagram below depicts the relative response at selected frequencies through a radius of 360°. obtained by rotating the loudspeaker in an anechoic chamber whilst applying precisely regulated input signals and recording the output from the loudspeaker using a fixed calibrated microphone and automatic curve tracing equipment. It will be noticed that even the highest frequencies are well maintained through an arc of 120°, ensuring an excellent stereo effect over a wide listening area. Meticulous design of the flush-mounted HF 2000 super tweeter and precise integration with the MD 500 midrange unit ensures this exceptional performance.

DITTON 66





SPECIFICATION

Dimensions: 40 × 15 × 11½ inches
100cm × 38cm × 29cm

Internal Volume: 75 litres

Nett Weight: 30 kg. 66 lbs.

Impedance: 4 — 8 ohm amplifier matching

Amplifier Requirements:
10 — 160 watts RMS

Frequency Response:
Overall: 18 Hz. — 40 kHz.
Specific: 50 Hz. — 25 kHz. ± 4 dB
40 Hz. — 35 kHz. + 4 dB
— 10 dB

System Resonance: 20 Hz.

Crossover Frequencies:
500 Hz. and 5 kHz.

Power Ratings:
(1) Maximum Rated Power — 160 watts programme (without clipping)
(2) Continuous Sine Wave Rating
20 volts 20 Hz. — 500 Hz.
16 volts 500 Hz. — 3.8 kHz.
7 volts 3.8 kHz. — 20 kHz.

Sensitivity: 4.8 watts pink noise input produces 90 dB SPL at one metre in anechoic conditions

Harmonic Distortion: at 96 dB SPL
0.6% at 100 Hz. 0.6% at 400 Hz.
0.7% at 1 kHz. 0.7% at 4 kHz.
0.9% at 10 kHz. 1.1% at 15 kHz.

Finishes: Teak or Walnut

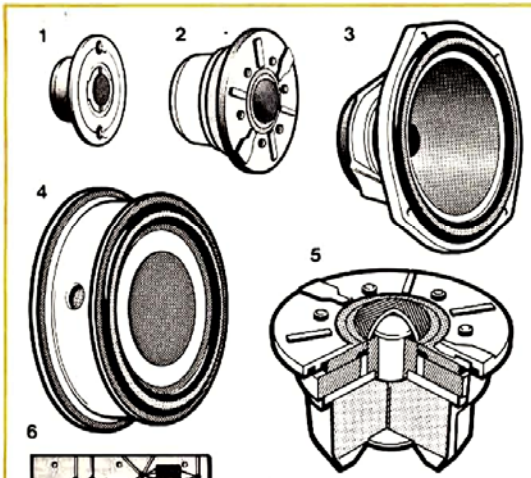
The Celestion policy is one of continuous improvement and the Company reserves the right to modify specifications without notice.

1. The HF 2000 super tweeter reproduces the upper region of the audio spectrum, functioning from 5 kHz to well beyond audibility. Not only does this transducer have an exceptionally smooth and extended response but, equally important, displays outstanding dispersion characteristics as will be seen on examination of the polar response diagram below.

2. The MD500 midrange transducer developed in the Celestion laboratories is recognised as a unique and remarkable instrument. This is a soft $2\frac{1}{4}$in dome "pressure" type unit and deals with the frequency range from 500 Hz to 5000 Hz. The advantages of this unit include very low distortion, exceptional dispersion and correctly maintained phase relationship. The magnetic field is extremely powerful and ensures critical damping and high power handling.

3. The FC 12 bass transducer is capable of exceptional quality bass reproduction. The diaphragm is formed from heavy fibre and plasticised to suppress resonances. The neoprene roll suspension permits considerable cone excursion when very low bass notes are being generated. The whole assembly is mounted in a heavy cast frame, the voice coil being energised and critically damped by the massive Feroba II magnet. Cellular foam material provides optimum acoustic damping at operational frequencies from 500 Hz down to below 30 Hz.

4. The ABR : the highly effective Celestion innovation which ensures correct ultra-low bass reproduction.



A closer view of the Ditton 66 components

1. Celestion's famous super tweeter (HF2000).

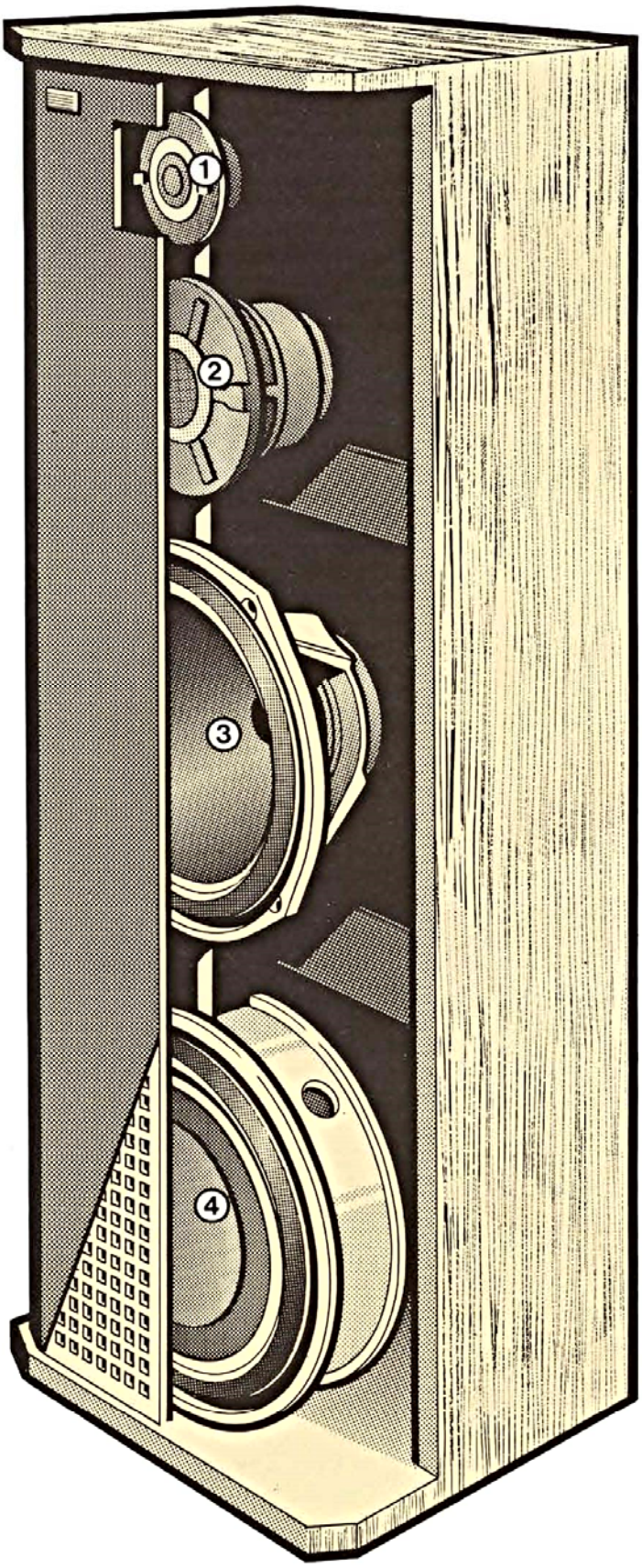
2. Advanced design "pressure" mid-range unit (MD500).

3. 12in Bass drive unit.

4. ABR ensures controlled bass.

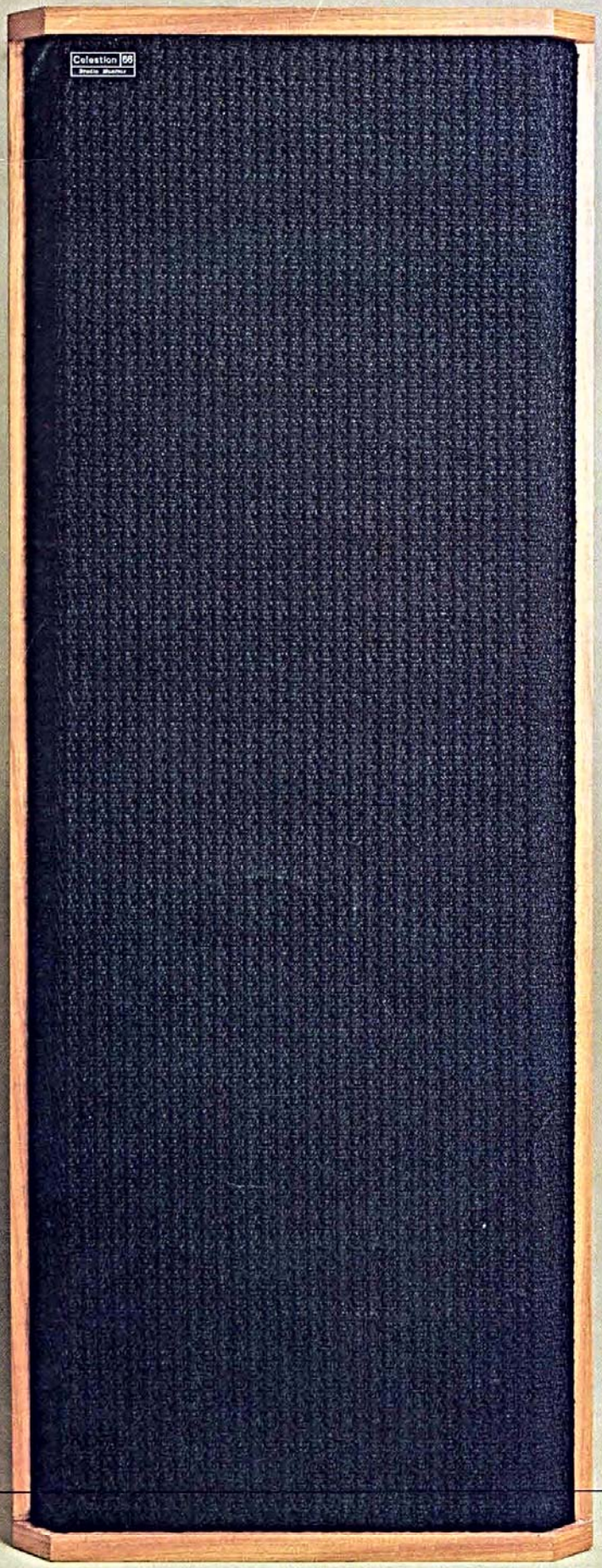
5. Close-up section view of the Celestion MD500 "pressure" dome midrange unit—a major contribution to the superb performance of the 66.

6. Precision crossover for perfect system integration.



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The Press review the Ditton 66 . . .

Hi-Fi Answers—

"The power available proved to be more than adequate to cope with the loudest orchestral climaxes available (or even required), and indeed this power, and the relatively high efficiency of the chosen speakers, was sufficient on one occasion when we wanted to provide concert levels in a large hall 110ft x 55ft with a 25ft high ceiling. A most impressive performance, and on this occasion it was possible just to clip the amplifier into the speakers, which seemed perfectly ready and able to accept more power!

Near perfect

We can say very little to criticise the speakers. They are large, expensive and extremely accurate! Mid-range was typified by an almost complete lack of resonance, distortion or beaming effects, and certainly seemed to vindicate the new $2\frac{1}{4}$in dome radiator. The treble end, from 5 kHz upward, was handled by the HF2000 unit."

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