Celestion Studio Series

Loudspeakers for the Perfectionist

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The name Celestion has been synonymous with loudspeakers since 1924 and is today held in high esteem throughout the world by sound engineers and music lovers alike.

The high fidelity loudspeaker detailed in this brochure is the latest in the famous "Ditton" range and is the result of extensive research and development carried out in the Celestion laboratories.

Celestion quality is evident throughout the new Ditton 120 and the unrivalled and exclusive Celestion features which have made Celestion 'Dittons' world famous are incorporated into this new system.

The upper register from 3 kHz to 15 kHz is reproduced faithfully by the renowned HF 1300 treble unit, many thousands of which have been supplied to manufacturers for inclusion in monitoring systems. This 'pressure' type unit is 1½" (38 mm.) diameter and has an exceptionally smooth response due to careful attention to phase correction and acoustic damping. The very low mass of the diaphragm assembly and the high magnetic flux permit transient response of a high order. The small area of the diaphragm provides an excellent polar radiation pattern and ensures a highly satisfactory stereophonic image.

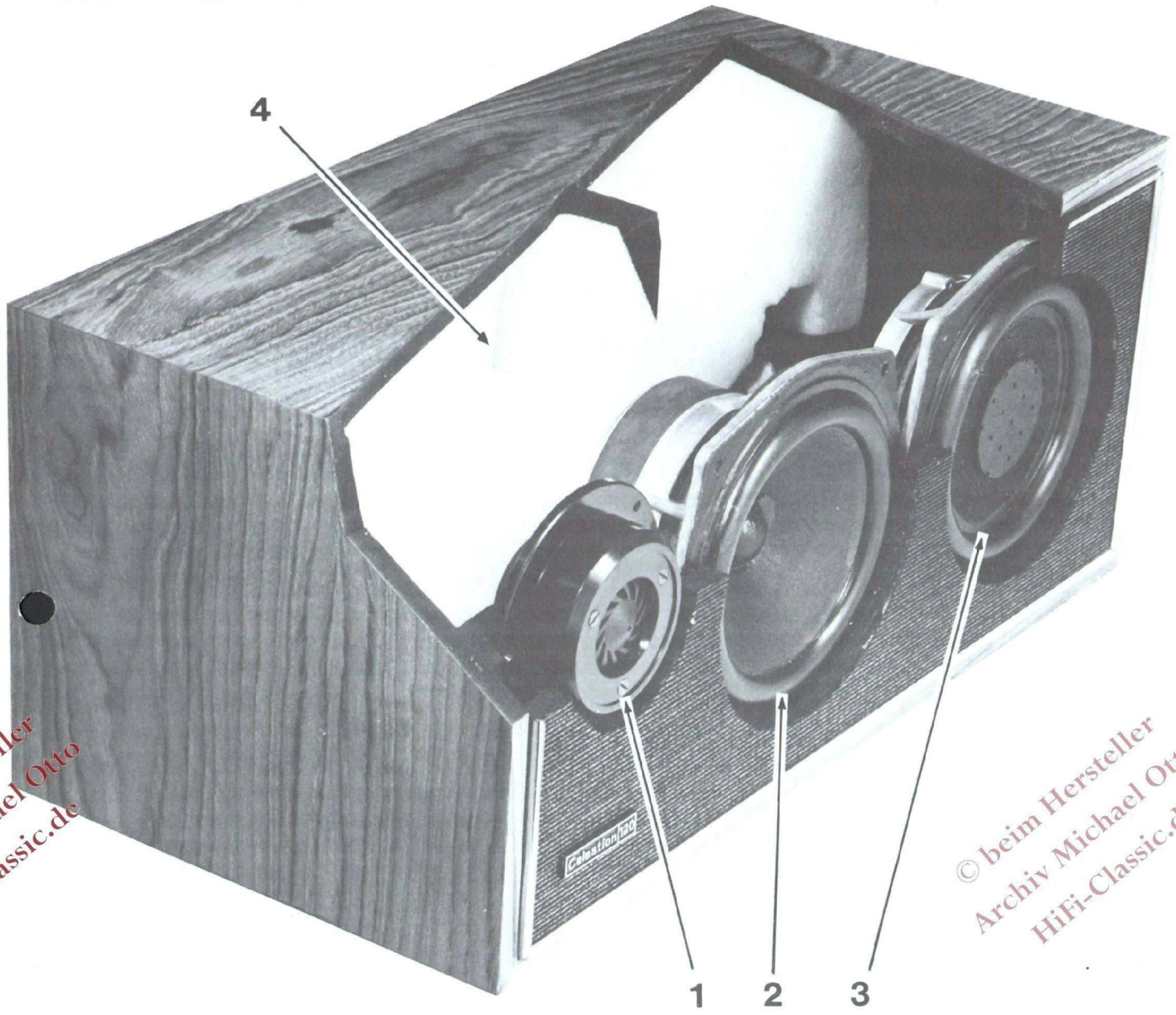
The middle-bass register is reproduced by a sophisticated unit of very high quality. The diameter is 5" (12 cm.) and a linear diaphragm excursion of up to ½" is possible ensuring correct reproduction of bass notes at all volume levels. The diaphragm assembly is controlled by a massive magnet system having a flux of 50,000 Maxwells which ensures high efficiency and optimum damping.

The third radiator is a new version of the exclusive Celestion auxiliary bass radiator now known universally as the ABR. This device ensures improved reproduction of low bass notes even with comparatively small enclosure dimensions. The ABR is operative at the lowest part of the register from 35 Hz to 70 Hz and since the work is shared between the two bass diaphragms efficiency is increased and distortion reduced to a very low order; in short, the ABR ensures true bass.

The electrical system is integrated by an inductance-capacity frequency dividing network which has been meticulously designed to provide a level response.

The Celestion Ditton 120 reproduces the full audible range and is suitable for connection to virtually all high quality amplifiers. These loudspeakers are obtainable in either natural teak or walnut and may be placed horizontally or vertically in your furnishing scheme. Where cost and size figure the Ditton 120 provides outstanding value and performance. The appearance will please the most fastidious and the smooth and effortless sound quality will delight the musician and connoisseur alike.

Celestion Ditton 120 sectional view



1. Treble Unit Type HF 1300, Phase Corrected, Acoustically Damped, Studio Standard ± 2 dB.
2. Mid-Bass Unit, Ultra Compliant Suspension, High Flux (50,000 Maxwell) Magnet.
3. Auxiliary Bass Radiator (known as ABR) maintains output over 35 Hz - 70 Hz Band.
4. Anechoic wedges eliminate standing waves (concealed) Low loss crossover network.

CELESTION DITTON 120 SPECIFICATION

Dimensions	17¼" x 9" x 7¾".
Response	35 Hz to 15 kHz.
Max Input	20 watts (Din 45-500).
Crossover	Low loss L/C Network.
Impedance	4 - 8 ohms.
Treble Unit	1½" (38 mm) Pressure Type.
Mid-Bass Unit	5" (12 cm) Long throw.
Auxiliary Bass	5" (12 cm) 15 Hz Resonance.
Finish	Natural Teak or Walnut.

FREQUENCY RESPONSE CURVE

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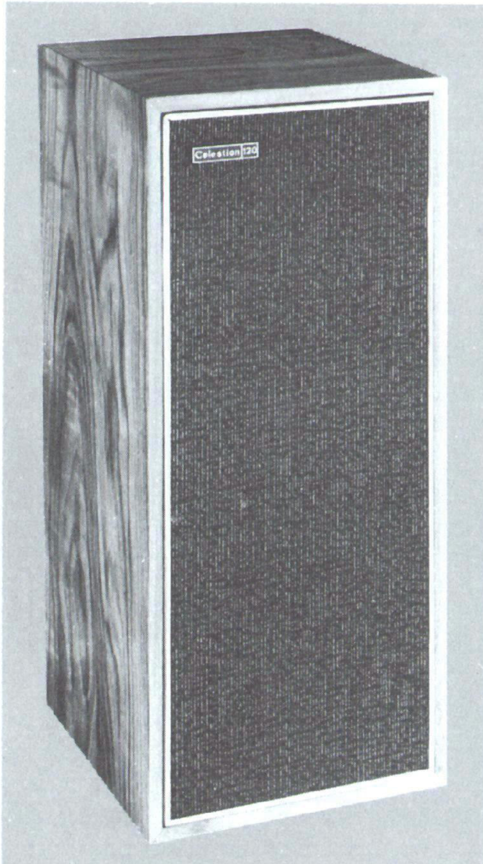
FIRST OF A NEW SERIES EXAMINING LOUDSPEAKER ENCLOSURES

CELESTION MODEL 120



DURING RECENT YEARS the story of the development of loudspeaker enclosures has been a story of smaller sizes, lower costs *and better quality.* Like so many facets of audio nowadays we are presented with a situation that appears to be contradictory – the old-fashioned rule of thumb is "a good big 'un will always sound better than a good little 'un". That is still true. The difficulty lies in defining that elusive word "good". And the truth we have to face is that with modern research a number of firms have produced tiny enclosures at reasonable prices with a sound quality that can be judged to be superior to that obtainable from many larger and more expensive, though less "good", "boxes".

There are three ways of evaluating the performance of loudspeaker systems. One would be to carry out extensive laboratory measurements from which general assumptions could be drawn; another approach would be to confine the tests to subjective listening and merely comment on whether we like or do not like the sound heard. The third method, and the one we propose using, is to combine the two. We shall conduct certain laboratory investigations but will mainly rely on subjective impressions of the sound heard under a variety of listening conditions. As an overall check on audio quality we shall make comparisons between the sounds heard at the loudspeaker and our impression of those same sounds when reproduced via a Koss ESP–9 electrostatic headset.

For the first of this new series we are looking at a completely new model made by Celestion, the Celestion 120. Measuring only 17 x 7¾ x 8¾ inches it is truly of bookshelf dimensions. At a cost of £48 per pair the 120 system could offer a solution to that most difficult of problems – how to compromise economy with audio quality.

Previous Celestion models have achieved a popular reputation amongst audio enthusiasts everywhere. One of their unique features is the use of a passive membrane known as the "Auxiliary Bass Radiator", or ABR for short. The purpose of this device is to improve, or reinforce, the low frequency output under conditions when, due to the smallness of the enclosure, one would expect to find a severe cut-off around or just below 100 Hz. An invention of the Celestion engineers it has proved itself to be successful in their other models such as the Ditton 15 and the Ditton 25. The 120 is a "scaled down" version of these systems using the same HF 1300 treble unit coupled with a sophisticated long throw medium/bass driver with cross-over at 3,000 Hz. The third element within the enclosure is a new version of the ABR. Impedance is stated to be 4 to 8 Ohms, and power handling 20 Watts to the DIN 45 500 specification.

First tests involved checking frequency response with particular attention to the lowest end of the spectrum so that we could confirm the action of the ABR unit. It would be reasonable to assume that an enclosure of this size would give little significant output below about 60 Hz., and yet we found the tiny Celestion 120 producing a measureable and quite useful signal as low as 30 Hz. This is quite remarkable for a bookshelf enclosure

Investigating distortion by reproducing a 400 Hz. tone at 90 dB Sound Pressure Level we measured 1% second harmonic with the third harmonic content down well below 1%. We found that the impedance varies in relation to changes of frequency of the signal being reproduced but at no point does it fall below the stated 4 Ohms. In fact the lowest impedance measured was 4.7 Ohms.

The appearance and finish of the 120 enclosure is excellent. By using a single sheet of veneer to completely enclose the four sides of the cabinet there is a joint running along one edge only; consequently it will look equally good in whatever position it is placed. The rear is neatly finished with connections provided by means of two colour-coded screw terminals.

For our listening tests we used a number of amplifiers and different room acoustics. Under all conditions the one common factor was a feeling of presence and reality worthy of enclosures of much higher price and larger size. Compared to some loudspeakers the effect was almost that of drawing a thick curtain aside to reveal living musicians instead of listening to a pale mechanical reproduction of sounds. There can be no doubt at all that these enclosures are very good indeed.

In spite of the fact that laboratory measurement proved conclusively that a reasonable low frequency output is present we came to the conclusion after listening more critically over long periods that as compared to some of the very large systems the 120 has a "lack of solidity". It is always difficult to express these abstract ideas in concrete terms and it is obvious that we cannot yet expect to get "perfection" at the lowest prices. The 120 *must* lack something, and that something we have called "solidity" for want of a better name. Many loudspeaker systems achieve an effect of solidity through the introduction of false colourations to the sound. One of the outstanding features of the 120 is its surprising *lack* of "boxiness" or other artificial quality, and this is probably the reason why there appears to be a certain "thin-ness" to the sound.

Using the Koss elecrostatic headset as a standard we were able to confirm this general impression, whilst at the same time noting once again the natural "musicality" of the enclosures. On solo instrumental passages they acquit themselves brilliantly; when handling the broad sweep of a full symphony orchestra the comparative lack of depth was apparent but in all other ways the sound was highly acceptable.

Our final opinion of the Celestion 120 enclosures is that they offer extremely good value for money and are ideally suited for those situations where cost and space have to be related to audio quality. It is possible to pay twice the price of the 120s only to find that the sound is in many ways inferior. We feel that these new enclosures will meet with great success amongst those discerning enthusiasts who up to now have been dissatisfied with the quality standard of transducers in this category. Congratulations to Celestion on a valuable addition to the short list of "good" loudspeaker enclosures.

Celestion Studio Series

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