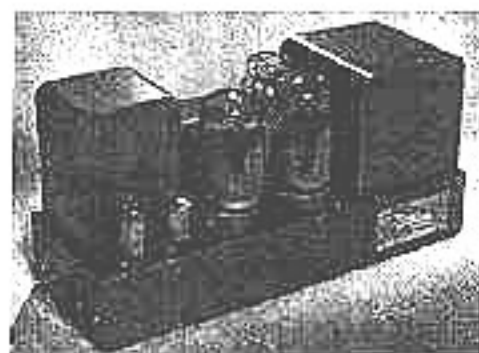


EQUIPMENT REVIEWED



Quad II amplifier.



ALTHOUGH the impeccable workmanship, fine styling and impressive performance of the Quad II have all contributed to its reputation of being one of the world's best high-fidelity amplifiers, I feel that its most notable feature is its extreme versatility. No fewer than 7 plug-in pickup matching units are available, enabling any type of pickup to be quickly and accurately matched. Push buttons not only give a direct choice of 4 equalising positions, but 3 others are available by depressing two or more buttons simultaneously. The filter system, too, is exceptionally flexible. A variable slope control enables the selected cut-off to be varied from a level position, through a gentle curve, right up to a steep slope of some 50dB per octave. A further refinement is the provision of a cancel position, in which all filters and tone controls are switched out of circuit, thus allowing the user to judge quickly the effect of the applied compensation. To the engineer, the main amplifier is noteworthy as incorporating an example of a distributed load output stage, in which the cathodes are taken to a tertiary winding on the output transformer. This method, diffidently called by Peter Walker "Super Ultra Linear", has the advantage that negative feedback (voltage not current, be it noted) is applied directly and in the most efficient way possible.

Circuit Details

One EF86 pentode and one ECC83 double triode is used in the preamplifier, equalising and input sensitivity being controlled by a feedback loop around the first stage. This is followed by the volume control, and the ECC83 which has a feed back loop connected from the anode of the second triode to the cathode of

the first via the tone control system. A double tuned inductance is used as a switched low pass filter. The main amplifier uses two EF86s in a paraphase arrangement, coupled to the distributed load output stage using KT66s. Negative feedback is applied by means of the tertiary winding mentioned above, and also from a tapping on the output transformer to the cathodes of the EF86s.

Power Output: This is rated at 12-15 watts but measured just over 20 watts r.m.s. from 40 to 15,000 c.p.s. falling to 13.5 watts at 25 c.p.s. and 10 watts at 25,000 c.p.s.

Stability: The main feedback loop measured just over 19dB and could be increased by some 10dB before instability became apparent.

Frequency Response: Within 1dB from 20 to 50,000 c.p.s., thence rolling off gradually.

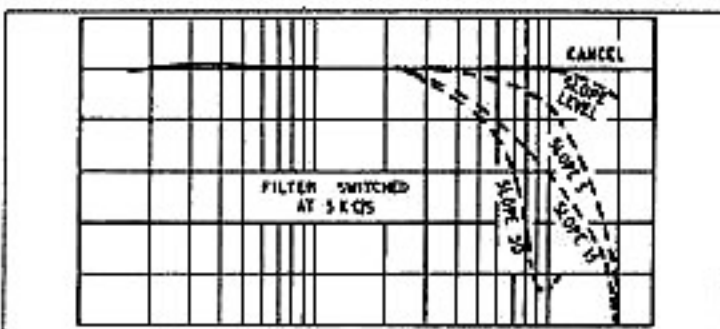
Hum and noise measured - 85dB ref. 20 watts.

Preamplifier

In addition to the 4 equalising positions as shown in the diagram 3, others are obtained by depressing 2 or more buttons; and a chart listing the correct equalisation for more than 60 makes and types of record is supplied with each amplifier.

Tone controls: These are continuously variable, giving a lift of 15.5dB and cut of 14dB at 10,000 c.p.s. and a lift and cut of 10.5dB at 60 c.p.s.

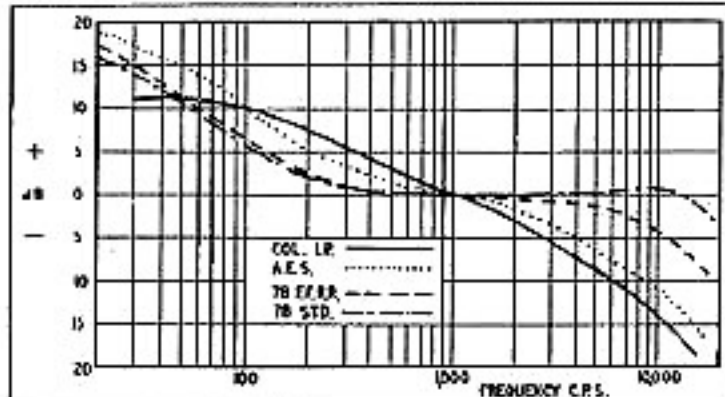
Filters: A choice of 3 cut-off frequencies - 5, 7 and 10 kc/s is available together with a variable slope control which controls



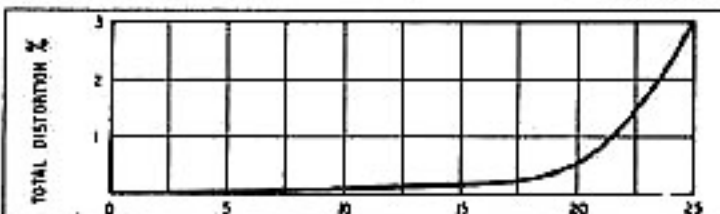
Effects of filter slope control.

the rate of cut-off. A "Cancel" position on this control switches out of circuit the tone controls, and also a 20 kc/s filter, thus giving an essentially flat response. No high-pass filter is incorporated. This means that great care must be used when selecting a gramophone turntable for use with this equipment; but this is not really a serious criticism, as most people would naturally want to use a first class transcription type with an amplifier such as this, anyway. A rumble filter is much more necessary on a cheap amplifier which may be used—initially at least, with an automatic record changer or cheap 3-speed player—although curiously enough this filter refinement is nearly always reserved for the more expensive amplifier!

There is a tendency on the part of some manufacturers to omit the slope control, as being either too expensive, or because they believe it adds needlessly to the complications of a modern high fidelity installation. It is true that the slope control does introduce another knob, but it is amazing how the use of this—and the rest of the controls for that matter—becomes almost automatic once one has become accustomed to them. I personally find a slope control invaluable when dealing with bad FM transmissions



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—it does allow a satisfactory compromise to be achieved. The filter control is normally set to 7kc/s or 10kc/s, and the slope control left in the level position or turned to a setting of between 5 and 20dB per octave when necessary.

For older 78 recordings it is recommended that the filter be set at the 5kc/s position, and the slope control adjusted for a sharper cut-off—say 30 to 50dB. Sometimes it may be found useful to introduce a "trough" in the response, by means of the slope control plus some judicious treble lift. It is instructive in these cases to switch to the "cancel" position in order to learn just what the tone controls are doing; as far as I know this is the only amplifier with such a facility.

Since the basic sensitivity is of the order of 4mv., pickups such as the Tannoy, Connoisseur, and the Goldring 500 (and the new 600) can be used directly without further matching transformers—using of course the appropriate plug-in matching unit.

Various speaker systems were used with the amplifier (it is a well to remember that the finest amplifier in the world will only sound indifferent on an indifferent speaker system) and first class results were obtained with the Tannoy GRF, Wharfedale 3-speaker system and the Goodmans 2- and 3-speaker combinations. All-in-all this is an amplifier likely to satisfy the most fastidious and can be highly recommended. The styling might be described as functional and contemporary, yet the design is such that it is also extremely attractive and will harmonise with almost any type of wood.

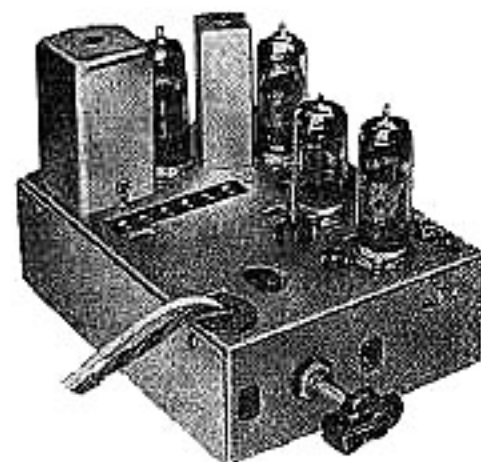
Brief Specification: (Makers figures). Power output: 15 watts from 20-20,000 c.p.s. Frequency response: within 0.5dB 10-50,000 c.p.s. Distortion at 12 watts—less than 0.1% total harmonic measured at 700 c/s. Sensitivity: 1.4v for 15 watts output. Hum and noise —80dB ref. to 15 watts. Output impedances: 15 ohms and 7 ohms. Damping factor 15. Power supply for tuner: 330v 40ma and 6.3v 3.5a. Mains input: 200-250v A.C. or 100-130v A.C. 40-80 c/s.

Control unit

Inputs: Radio and Tape 100k 100mv, microphone 100k 1.5mv, pickup from 4mv according to matching unit used. Distortion (least favourable arrangement of controls): less than 0.1%. **Controls:** Bass, Treble, 6 push buttons for input selection and equalising, Volume on/off, Filter: 5, 7 10 kc/s level, slope control; level to 50dB per octave (combined with cancel switch) Hum and noise —70 dB.

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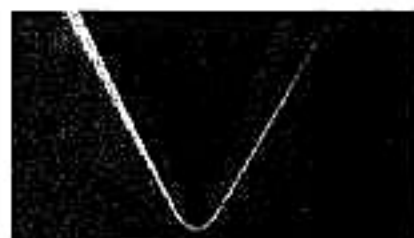
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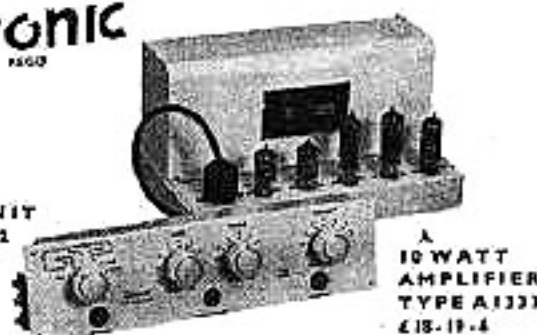
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