

for Audio Perfection



The famous British

QUAD AMPLIFIER

Precision Built to Exacting Standards

- Remote Corrective Control of Program Signal
- Room Acoustics Compensation
- Filter Slope Control of Program Variation
- 4 Push Button Controls Select 8 Equalizing Combinations
- 2 Separate Push Button Controlled Inputs
- Comes Complete, Ready For Immediate Use
- Response: 20 to 20,000 cps within 0.3 db
15 to 30,000 cps within 2 db
- Pre-amplifier provides for all types of pick-ups

ATTRACTIVELY STYLED CONTROL UNIT INCORPORATING MANY TECHNICAL INNOVATIONS
SEPARATELY AVAILABLE.

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BEAM INSTRUMENTS CORP.

350 FIFTH AVENUE, NEW YORK, N. Y.

The QUAD Low Distortion Wide Range Amplifier

For the high fidelity enthusiast the QUAD amplifier with push button control and choice of eight pre-set equalizing circuits is a must! This amplifier has been designed to achieve the ultimate in authenticity of reproduction. By new control techniques embodied in the amplifier, the quality of the program signal is made a factor in determining the setting of the treble and bass controls, so that they fulfill their true function of correction rather than compromise.

Based on the original design of the Acoustical Manufacturing Company, Limited, of England, this latest QUAD amplifier system has potted transformers, five input circuits, a quality control unit consisting of a die-cast aluminum panel housing all the controls, and a heavy steel chassis with all steel parts bonderized, rust proofed and painted.

The QUAD sound reproducing system is divided into two parts, the main amplifier and the quality control unit. The latter is coupled to the main chassis with a four foot cable for convenient installation. On the die-cast aluminum panel are five control knobs and six push buttons. The five control knobs have the following functions: master volume control and on-off switch; treble and bass controls (these are used to compensate for room acoustics and once set, rarely require further change); control switch to provide a choice of filters according to program conditions; filter slope control to compensate for individual program variations. Two push buttons provide a choice of radio inputs. By combining the remaining four buttons, eight equalizing circuits can be selected. Three phonograph inputs accept signals from low output velocity pick-ups, high output velocity pick-ups and crystal pick-ups.

THE MAIN AMPLIFIER

The main amplifier is mounted on a separate chassis and can also be supplied with a case to make it into a separate portable unit.

Circuit Description

The heart of the circuit is the output stage and transformer. The output transformer is wound in thirteen sections which are very tightly coupled and connected so that portions of the load are applied to cathode, screen, and anode circuits. In this circuit the KT66 tubes appear as triodes but have less than half the non-linearity of the conventional push-pull triode circuit. Increased efficiency, and decreased unbalance as tubes depreciate, are other valuable design features.

A self-balancing push-pull signal is developed in the EF37 push-pull stage which is RC coupled to the output stage. Because of the very low intermodulation, more than 12 db feedback is not required; although as much as 30 db could be applied if desired. However, in all feedback circuits, frequencies well beyond the operating range are not attenuated by feedback and may appear at a level greatly in excess of their original value at the input. Thus the QUAD is superior to other amplifiers using large amounts of feedback. These overtone frequencies are significant in normal musical reproduction, but their presence is undesirable at high levels.

Complete freedom from intermodulation and modulation distortion on very low beats produced by choral singing, strong unison playing, etc., is eliminated by the special QUAD feedback circuits.

Technical Data

Under input conditions of the maximum source impedance of 20,000 ohms, a minimum input of five millivolts produces an output of 10 watts into a resistive load. Under these conditions the following dynamic specifications apply:

Within 0.3 db., 20 to 20,000 cps.

Within 2 db., 15 to 30,000 cps.

In the range 20 to 20,000 cps, the volume control setting does not affect response more than 1 db. The filter frequencies of 6 and 8 kc., respectively, are accurate within plus or minus 500 cps., and slope is 10 db to 100 db per octave. A signal of 50 mv. into the 50,000 ohm input produces 12 watts output with 6 db per octave additional rise below 300 cps, plus or minus 2 db, with 15 db maximum rise.

Distortion

Total distortion max. 0.25% (-52db.)

Total higher order distortion max. 0.05% (-66 db.)

Total harmonic max. 0.2% (-54 db.)

Second harmonic max. 0.1% (-60 db.)

The Quality Control Unit

(Incorporating Pre-amplifier)

AVAILABLE SEPARATELY OR WITH COMPLETE AMPLIFIER SYSTEM.

The low pass filter slope can be continually varied from 10 db per octave to 100 db per octave. Since distortion in any program normally increases with frequency this development makes it possible to obtain optimum reproduction conditions from any program. This slope control covers all requirements due to tracing distortion from disc, tape or film. The ancillary control circuits are ideal for whistle suppression, discontinuity and the other severe distortions often encountered.

Since the QUAD amplifier bass and treble controls do not have to contend with harmonic and similar program distortions, they have been designed to fulfill their ideal purpose of compensating for room characteristics. Small amounts of boost at very low frequencies do not result in increased low and middle frequency output. The treble control comes into operation at 700 cps., but once in operation the slope does not increase with the frequency. Switch positions on the filter control enable the filters to be cut in and out, and compared with the bass and treble compensation without upsetting the settings of the latter controls. Two stages of amplification with fixed negative feedback are incorporated in the control unit, and the volume control is in the feedback circuit of the second stage.

The quality control unit is simply fitted to cabinet panels of any thickness from 1/4" to 3/4". The cut-out required is a 10" by 3" rectangle with 1/4" radius corners.

Operating Information

The QUAD amplifier operates on 110 volts alternating current and consumes 80 watts.

An additional power supply of 300 volts at 25 milliamperes, and 6.3 volts at 2 amps-center tapped, is available from the amplifier chassis.

Output impedances of 7 ohms and 15 ohms are available. Tubes used are the easily obtainable EC35, EF37, KT66 and 6U4G. These, together with all component parts are stocked in the U.S.A.

Net weights: main amplifier, 14 lbs.; quality control unit, 5 lbs.

The QUAD high fidelity sound reproduction system includes the main amplifier, quality control unit and coupling cable, and comes complete and ready for immediate use.