

THESE THREE NEW DEVELOPMENTS ARE KEEPING ASTATIC OUT IN FRONT IN THE MANUFACTURE OF PICKUP CARTRIDGES

GC CERAMIC CARTRIDGE



FIRST MAJOR engineering stride in phonograph pickup cartridges employing ceramic elements since Astatic pioneered in this type unit last year. The GC is the first cartridge of its kind with replaceable needle. Takes the special new Astatic "Type G" needle—with either one or three-mil tip radius, precious metal or sapphire—which slips from its rubber chuck with a quarter turn sideways. Resistance of the ceramic element to high temperatures and humidity is not the only additional advantage of this new development. Output has been increased over that of any ceramic cartridge available. Its light weight and low minimum needle pressure make it ideal for a great variety of modern applications.

CQ CRYSTAL CARTRIDGE



AN ENTIRELY new Astatic design, featuring miniature size and five-gram weight. Model CQ-J fits standard 1/2" mounting and RCA 45 RPM record changers. Model CQ-1J fits RMA No. 2 Specifications for top mounting .453" mounting centers. Needle pressure five grams. Output 0.7 volts at 1,000 c.p.s. Employs one-mil tip radius, Q-33 needle. Cast aluminum housing.

LQD DOUBLE-NEEDLE CRYSTAL CARTRIDGE



THE LQD CARTRIDGE—for 45, 33-1/3 and 78 RPM Records—quickly became the first choice of many of the nation's largest users, on the basis of comparative listening tests, and is, today, the PROVED TOP PERFORMER for turnover type pickups. Outstanding for excellence of frequency response, particularly at low frequencies. A gentle pry with penknife removes ONE "Q" needle for replacement... without disturbing the other needle, without removing cartridge from tone arm. Gentle pressure snaps new needle into place. Stamped aluminum housing. Model LQD-1J, illustrated, has needle guards and front bracket for turnover knob. LQD-1 not equipped with needle guard or front bracket.

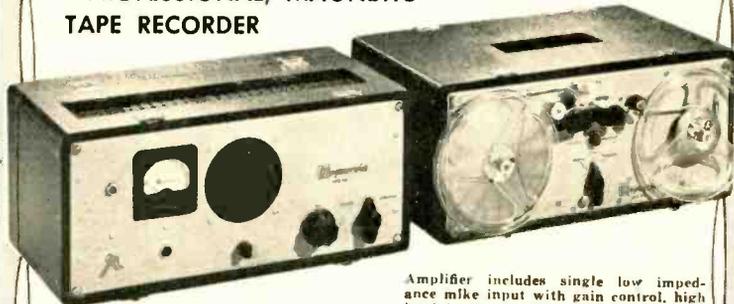
Astatic Crystal Devices manufactured
under Brush Development Co. patents



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PROFESSIONAL, MAGNETIC TAPE RECORDER



Radio and recording studios, schools, and industry acclaim the professional reproduction quality of this new, low priced Magne recorder. It offers a frequency response of 50 to 15,000 cps, ± 2 db with less than 2% harmonic distortion at full modulation, conforming to NAB specifications. For unmatched portability and flexibility, amplifier and recorder are in separate 25 lb. cases and may be operated individually with other Magne recorder equipment. PT6-JA complete \$499.50

Amplifier includes single low impedance mke input with gain control, high level input, monitor speaker, zero level output terminal, VU type meter, and 10-watt monitor amplifier and associate jack for use with an external speaker. Recorder unit features easily interchangeable capstans making possible either 7 1/2" or 15" tape speeds. Three-position switch selects erase, record, playback, or public address operation.

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that a single 500-ohm adjustable "T" attenuator is available and that thermocouple meters are to be used. The necessary fixed pad values are shown in this figure.

In connection with the meters in this figure, it should be noted that when both are indicating .001 watt no meter correction need be added. Further, both can be held to this indication, provided the oscillator output level adjustment is sufficiently fine, the steps on the adjustable attenuator are of the same order of magnitude as the desired gain indication, and the output power is to be held constant. If the input level were to be held constant for the frequency-response measurement, the setting of the adjustable attenuator and the reading of M_1 would be held constant at the reference frequency, for example, 100 cps. Then, as no output adjustable attenuator is available, the variation of gain with frequency could be indicated on M_2 . If the power reading on this meter at reference is termed P_R and is .001 watt, the correction in decibels is obtained for other frequencies by observing the power indicated by M_2 and determining the number of decibels corresponding to that indication referred to P_R . If this power is greater than P_R , then the number of decibels difference must be added to the gain determined for the reference frequency, or, if less, subtracted. It is probable that greater accuracy of indication can be obtained by reading small variations on the thermocouple meter scale than by the use of 0.1-db steps on attenuators.

In this same connection, if the desired input level is equivalent to -50 dbm (2.45 millivolts, rms, in series with 150 ohms), this level is achieved in the illustrative example with .001 watt indicated by M_1 and 39.5 db in the adjustable attenuator. This 39.5 db plus the 10.5 db of the matching network provides the desired equivalent of -50 db referred to .001 watt.

For further illustration, there is shown in Fig. 10 an arrangement using standard volume indicators as the input and output meters. This figure also indicates the necessary corrections because of the use of such meters. In particular it should be noted that the resistance of the output volume indicator in parallel with the terminating resistor must be taken into account for proper output termination.

The illustrative examples of both Figs. 9 and 10 are essentially similar to the general basic circuit of Fig. 2. However, it will be noted that the arrangement of the input meter circuit of Fig. 9 is such that the same input voltage appears across the input terminals of the input adjustable attenuator as that indicated by M_1 , thus