

A HIGH FIDELITY PHONOGRAPH REPRODUCER

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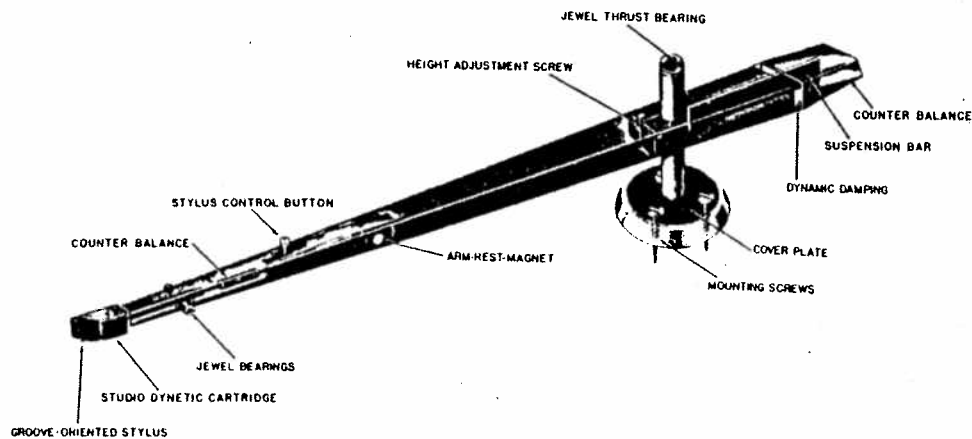


Fig. 1 X-ray view of the Studio Dynetic Reproducer

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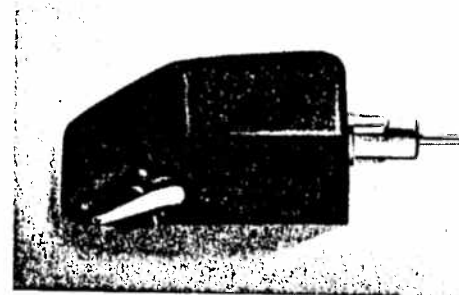


Fig. 2 Bottom view of cartridge showing groove-oriented needle.

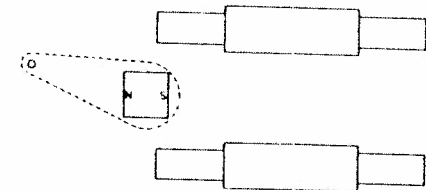


Fig. 3 Schematic view of dynamic cartridge assembly.

feature is shown in Fig. 2. A decorative design at the top of the cartridge directs attention to the needle orientation and helps finding any desired spot on the record.

Dynetic Cartridge

Whereas conventional dynamic transducers employ a stationary magnet and a moving coil, in the Dynetic reproducer, the coil is stationary and the magnet moves. This allows for convenient choice of impedance and eliminates the problem of making connections to a moving coil. The schematic view of the assembly is shown in Fig. 3. Two identical coils are provided and placed symmetrically with respect to a permanent magnet rod, which is part of the needle assembly. Oscillations of the magnet due to groove modulation generate a voltage proportional to velocity. The magnetic configuration is balanced so that magnetic induction due to external fields is reduced to a minimum. To further lower the effects of external hum fields, a high permeability shield is provided. Because the magnet is small and well shielded, there is no appreciable external magnetic field and the reproducer may be operated on steel turntables without being attracted to the turntable.

The needle and magnet assembly is shown in Fig. 4. The effective mass at the needle point is .0015 gram. The assembly is held in elastomer bearings which provide a compliance at the needle point of 7×10^{-6} cm per dyne. Taking into account the modulation maxima encountered on LP records⁽⁴⁾, this cartridge is capable of tracking at 1 gram load. However when used under conditions of inordinate motorboard vibration due to dancing, etc. $1\frac{1}{2}$ gram load may be indicated. The needle and magnet assembly may be readily removed and replaced by the user. Fig. 5 shows the frequency response of the reproducer measured on a Cook 10 LP Record, showing that velocity characteristic is followed throughout the audio range.

Horizontal Suspension

One of the important requirements for stability of a reproducer arm is low mass and balance in the vertical direction of cartridge motion. The mass of the Dynetic cartridge is 4 grams. To avoid complications caused by springs, it was decided to balance this to the desired 1 to 2 gram range by means of a counter-weight. The outline of the assembly is shown in Fig. 6. By using a relatively short balancing arrangement, a light and sturdy suspension was obtained. The counter-weight may be ad-