

GENERAL ELECTRIC

VARIABLE RELUCTANCE PICKUP

Designed for high fidelity reproduction



MODEL DL 1RM 6C, variable reluctance type phono record reproducer, was developed by G-E sound engineers to fulfill the latest requirements for high quality reproduction of lateral records in commercial, studio, and home recording.

Reduced hum pickup, unusually low mechanical impedance, and smooth high frequency are just a few of the outstanding characteristics of the General Electric Reproducer.

This new reproducer, utilizing the advantages of a built-in permanent natural sapphire stylus, insures convenient, economical operation and increased record life.

Extremely rugged mechanically, this unit can take abuse and is not affected by temperature or humidity - - giving top performance anywhere.

CHARACTERISTICS AND DESIGN SPECIFICATIONS

FREQUENCY CHARACTERISTIC—This reproducer has practically no frequency characteristic, since the voltage output is proportional to the stylus velocity. Hence, measurements on frequency records indicate more nearly the characteristics of the records rather than those of the reproducer. The open circuit voltage output, tracing the Columbia 10003-M record, corresponds very closely to the envelope of the "Christmas Tree" pattern obtained optically from this record.

ELECTRICAL OUTPUT—Open circuit voltage of 11 millivolts under stimulation of 4.8 cm/sec. This is approximate velocity of the 1000 cycle band on the Columbia 10003-M frequency record.

ELECTRICAL IMPEDANCE—The d-c resistance of the windings is approximately 300 ohms, and the inductance is approximately 100 millihenries. The equivalent circuit is the open circuit voltage in series with this resistance and inductance.

STYLUS—Natural sapphire tip having an included angle of 45° to 50° and a tip radius of .003" ± .0002". Natural sapphire has superior wearing qualities to presently available synthetic sapphire, and both are greatly superior to the metal alloy tips which are now widely used.

MECHANICAL IMPEDANCE—

Dynamic mass of stylus— 8×10^{-3} gm

Suspension compliance— $.87 \times 10^{-6}$ $\frac{\text{cm}}{\text{dyne}}$

Impedance at arm resonance—This will vary with various arm designs, but with well designed spring counter-balanced arms it will be well below $10,000 \frac{\text{dyne sec.}}{\text{cm}}$.

Since the bearing weight upon the record is dependent upon this impedance, this, too, will vary with arm designs. In most cases $\frac{3}{4}$ to $1\frac{1}{4}$ oz. is adequate.

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Characteristics and Design Specifications (Continued)

HUM PICKUP—Hum pickup is reduced to a very small level due to the shielding of the case and the balance provided by the double coil construction. This balance is not perfect for skew fields, however, and the cartridge should not be operated near power transformers or chokes.

MOUNTING DIMENSIONS—The cartridge is designed to mount on two $\frac{3}{16}$ in. diameter bosses $\frac{1}{4}$ in. long on $\frac{1}{2}$ in. mounting centres, and tapped for No. 3-48 machine screws. Two screws are held in position within the cartridge and may be driven through holes provided in the case. See outline dimensions below.

LOW NEEDLE TALK—Soft spring mounting of the jewel tip permits the tip to follow the record groove intimately and without chattering. Needle talk is further restricted by the very light and small stylus assembly.

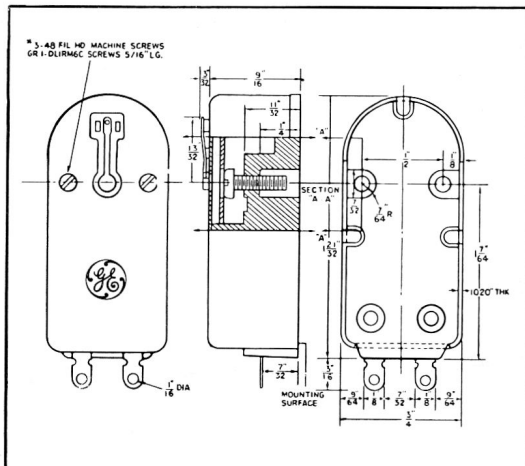
LOW NEEDLE SCRATCH—Unlike other pickups which respond to vibrations in all directions, the General

Electric Variable Reluctance Pickup responds only to vibrations in the lateral direction and no voltage is generated by vibrations in the vertical direction. The elimination of vertical response discriminates against noise caused by roughness, or scratches on the record surface.

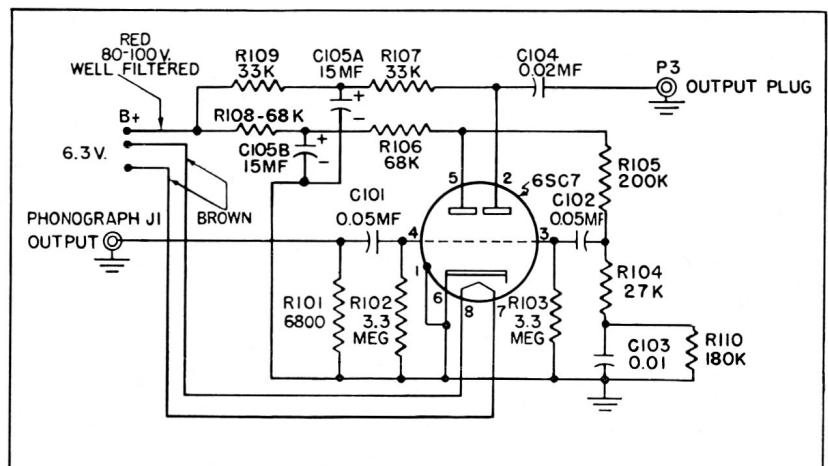
LOW DISTORTION—Elimination of resonant response makes possible the reproduction of overtones in their proper and true proportions. Tracking of the stylus in the record groove is facilitated by the soft spring jewel mounting—this further reduces distortion since the jewel never loses contact with the record groove.

LOW RECORD WEAR—Soft needle suspension plus low record pressure results in negligible record wear.

PERMANENT CHARACTERISTICS — The General Electric Variable Reluctance Pickup is unaffected by changes in temperature or humidity.



A dimensional outline drawing of the DL 1RM 6C is shown above. Attachment to the tone arm is provided for with $\frac{1}{2}$ in. mounting centres. The unit comes complete with two No. 3-48 machine screws.



As is the case with extremely high quality, high fidelity microphones, this reproducer's output voltage is low. For best results it is suggested that a pre-amplification and equalization circuit, as shown above, be used in conjunction with the DL 1RM 6C Reproducer.

ELECTRONICS DIVISION

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