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## INSTRUCTIONS

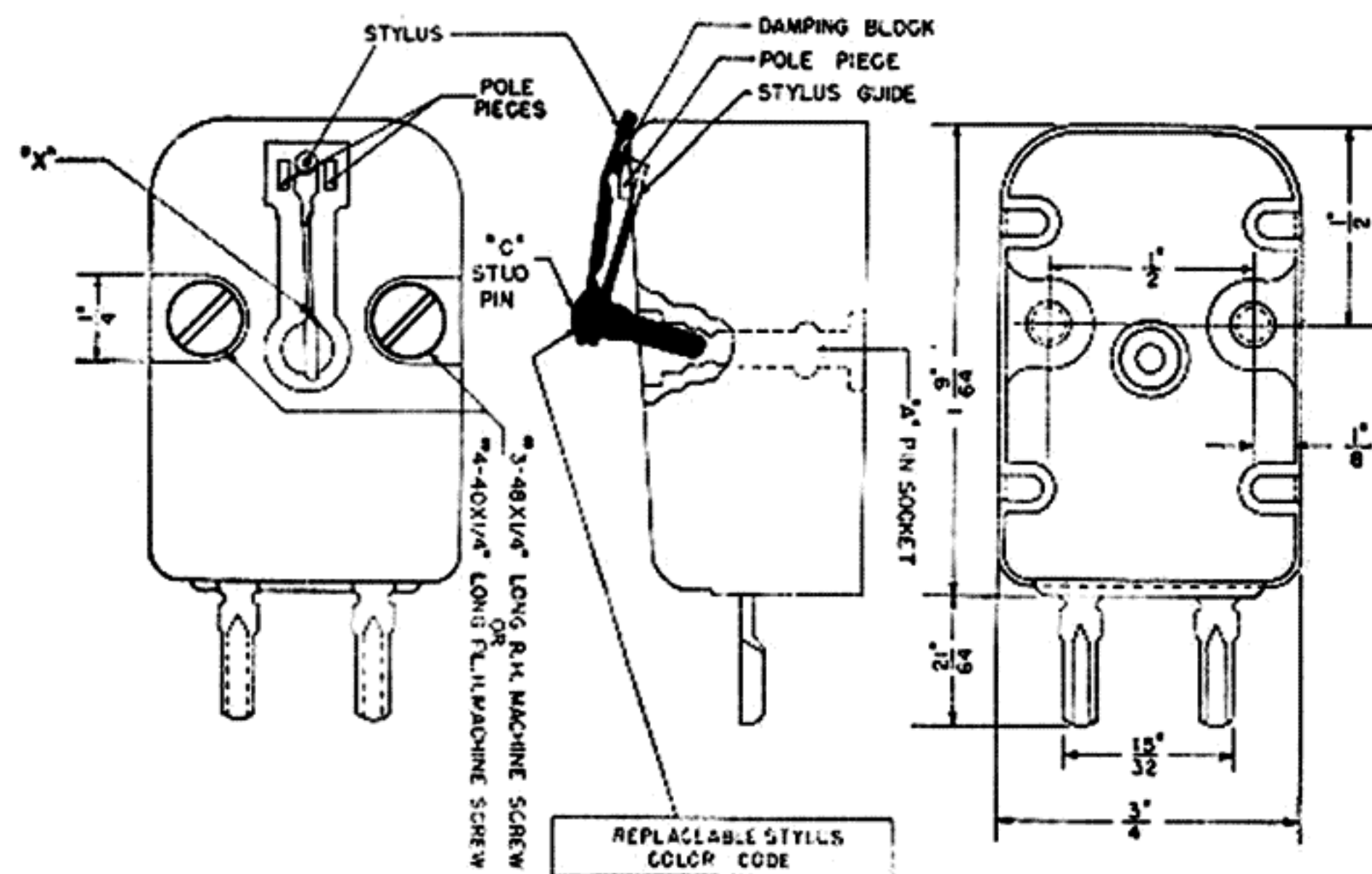
## VARIABLE RELUCTANCE CARTRIDGES RPX-040 AND RPX-041 WITH REPLACEABLE SAPPHIRE STYLUS

## SPECIFICATIONS

Resistance (D-C).....	approximately 340 ohms
Inductance.....	approximately 520 millihenries
Output (average @ 1000 cycles)	
RPX-040 (Columbia 10003M test record).....	approximately 10 millivolts
RPX-041 (Columbia RD90 test record).....	approximately 10 millivolts
Stylus Radius RPX-040 (stylus code, no color).....	.003 inch
Stylus Radius RPX-041 (stylus code, red).....	.001 inch

## GENERAL

The RPX-040 and RPX-041 variable reluctance cartridges have the same characteristics except for stylus assemblies. The stylus assembly in the RPX-041 cartridge has a .001 inch tip radius stylus, and also has a higher compliance stylus arm, assuring faithful tracking of narrow groove recordings for which this size stylus has been designed. The stylus assemblies in the RPX-040 and RPX-041 cartridges are replaceable and interchangeable into either cartridge, making adjustment and service a simple and convenient procedure.



Cartridge Outline Drawing

## AMPLIFIER DESIGN

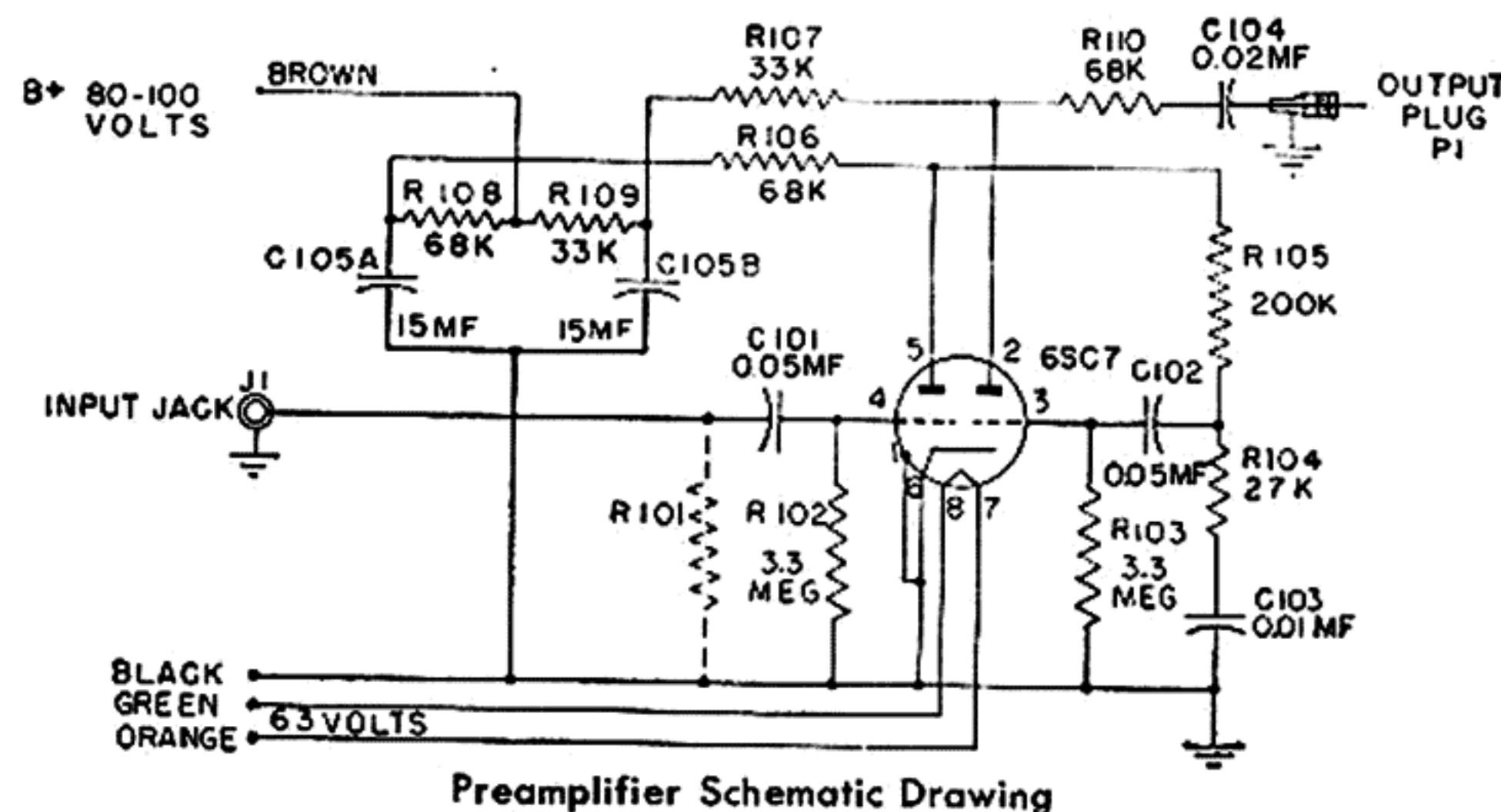
For optimum performance the amplifier should be designed for full output with 10 millivolt input. Circuit equalization must be employed to compensate for recording characteristics of the various record manufacturers to obtain the proper frequency response. This equalization is provided by R105, R104, and C103 in the circuit diagram below. The low frequency cross-over of the combination is approximately 500 cycles, the average of modern recordings. Total equalization is 15 db.

For most applications to conventional radio receivers and sound system amplifiers, the General Electric Cat. No. SPX-001 or UPX-003 Phono Preamplifier is recommended to provide the required preamplification of the reproducer's low level output and the necessary circuit equalization referred to in the previous paragraph. In the receiver or sound apparatus to be used with these units, previously employed circuit compensation for phonograph cartridge frequency response must be removed. A schematic of the General Electric Phono Preamplifier, Cat. No. SPX-001, is shown above.

NOTE: R-101 may be selected in the range of 5000 to 50,000 ohms and added as shown in the schematic diagram. The higher values provide increased high-frequency response but the surface noise will also be increased. For maximum high-frequency response, R-101 may be omitted entirely. The recommended value for general application is 15,000 ohms.

## TONE ARM REQUIREMENTS

It is most important that the RPX-041 cartridge be used in a tone arm designed for low-pressure (6-8 gram) cartridges. Tone arms designed for use with conventional records and pickup cartridges must not be used with the RPX-041 cartridge and the new narrow groove recordings unless the mass (weight) of the arm is very low, and the lateral and vertical bearings are of the low-friction type. If the tone arm has excessive mass and friction in its bearings, the record groove will be overloaded, causing immediate or early breakdown of the record surface material and consequent destruction of the recording. The force required to move the pickup and arm in a lateral direction should not exceed 2 grams. The difference in stylus pressure measured when moving the arm very slowly upward should not exceed the pressure measured moving the arm downward by more than 2 grams. When making measure-



Preamplifier Schematic Drawing

ments the stylus must rest on the weight measuring device as the device is moved, first upward approximately  $\frac{1}{8}$  inch, and then downward approximately  $\frac{1}{8}$  inch.

Additional considerations are required in the choice of the preamplifier and phonograph motor. Due to the lower output of the pickup cartridge playing narrow groove recordings (caused by less groove displacement) the hum-to-signal ratio is increased. For this reason the four-pole phonograph motor is preferred to the two-pole type. In addition, adequate filtering of the sound system power supply is necessary to keep the hum-to-signal ratio at a minimum.

## MOUNTING

Most reproducer arms of current manufacture will accommodate the General Electric Variable Reluctance Cartridges readily, mounting being done by means of the two No. 3-48 x  $\frac{1}{4}$ -inch long Round Head machine screws. Two No. 4-40 x  $\frac{1}{4}$ -inch Phillips Head machine screws are also supplied for use with pickup arms requiring this size screw. In cases where fitting is necessary, pickup arm mounting bosses may be trimmed to accommodate the reproducer. Detailed dimensions are given in the reproducer outline drawing. Any modifications required should be made in the tone arm, never in the cartridge or cartridge case.

For use in automatic record changers, to insure clearance between the topmost of a full stack of records and the cartridge case, the cartridge should be mounted with its top surface parallel to the pickup arm. The stylus pressure rating for the .001 inch stylus assembly is 6 to 8 grams and for the .003 inch assembly,  $\frac{1}{2}$  to 1 ounce. It is suggested the .003 inch assemblies be operated near the  $\frac{1}{2}$  ounce pressure, since the stylus will track perfectly at this pressure and advantage will be taken of the reduced stylus and record wear which the lighter pressure affords.

## REPLACING STYLUS ASSEMBLY

The replaceable stylus assembly is shown in the darker outline of the pickup cartridge drawing.

To remove the stylus assembly, insert a bent paper clip or equivalent tool into the stylus stud pin socket at point "A." Press the assembly out with the tool as shown by the arrow.

To replace the stylus assembly, lay it into the position shown so that the stylus guide and damping block lies within the recess between the magnet pole pieces. Press assembly in firmly by applying pressure only at point "C" and making certain that the stylus guide and damping block remains centered between the pole pieces to avoid damage to the assembly. The space between the stylus spring and each of the two pole pieces should be approximately equal. If it is not, adjust by carefully bending the stylus arm laterally at the point marked "X." Bend only slightly.

## SERVICE

To insure optimum performance from the General Electric Variable Reluctance Cartridge its stylus, magnetic pole pieces, and gaps should be cleaned periodically of foreign particles which accumulate from the record surfaces. To clean, first remove the stylus assembly as described above. A soft bristle brush similar to Cat. No. RQB-001 should be used to clean these parts.

The gap clearance between stylus and each of its pole pieces has been adjusted to be not less than .011 inch. To obtain optimum performance from your cartridge, be careful not to disturb this adjustment during assembly or when cleaning the unit.

The following stylus assemblies are available as cataloged below. These assemblies can be interchanged to mount into the pickup cartridges listed in these instructions.

CAT. NO.	TYPE	COLOR CODE	STYLUS RADIUS
RPJ-001	Sapphire	no code	.003 inch
RPJ-002	Diamond	yellow	.0025 inch
RPJ-003	Diamond	violet	.003 inch
RPJ-004	Diamond	black	.001 inch
RPJ-005	Sapphire	red	.001 inch
RPJ-006	Sapphire	white	.0025 inch