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THE VINYL ENGINE®

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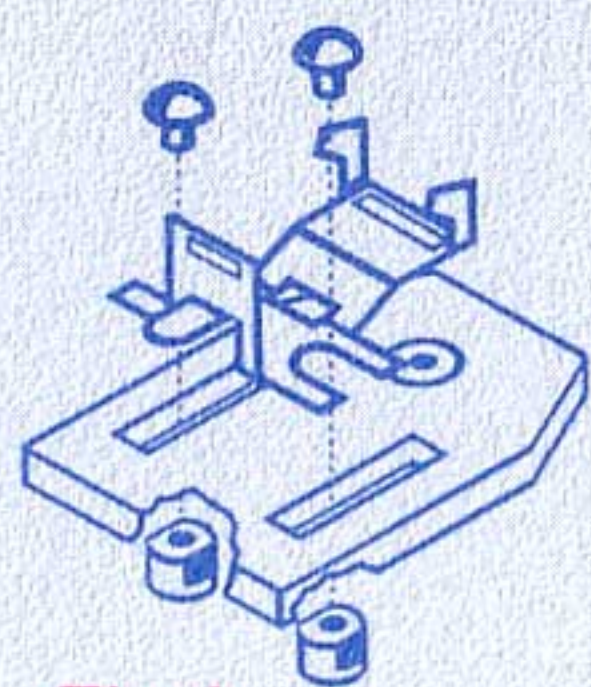


Fig. I

QUICK MOUNT FOR EMPIRE CARTRIDGES

1. Attach cartridge clip and mounting bracket with nuts and screws supplied with record player (Fig. I).
2. Secure Cartridge to clip by snapping into metal retainer. (Fig. II).
3. Attach wire clips to terminal pins of cartridge.

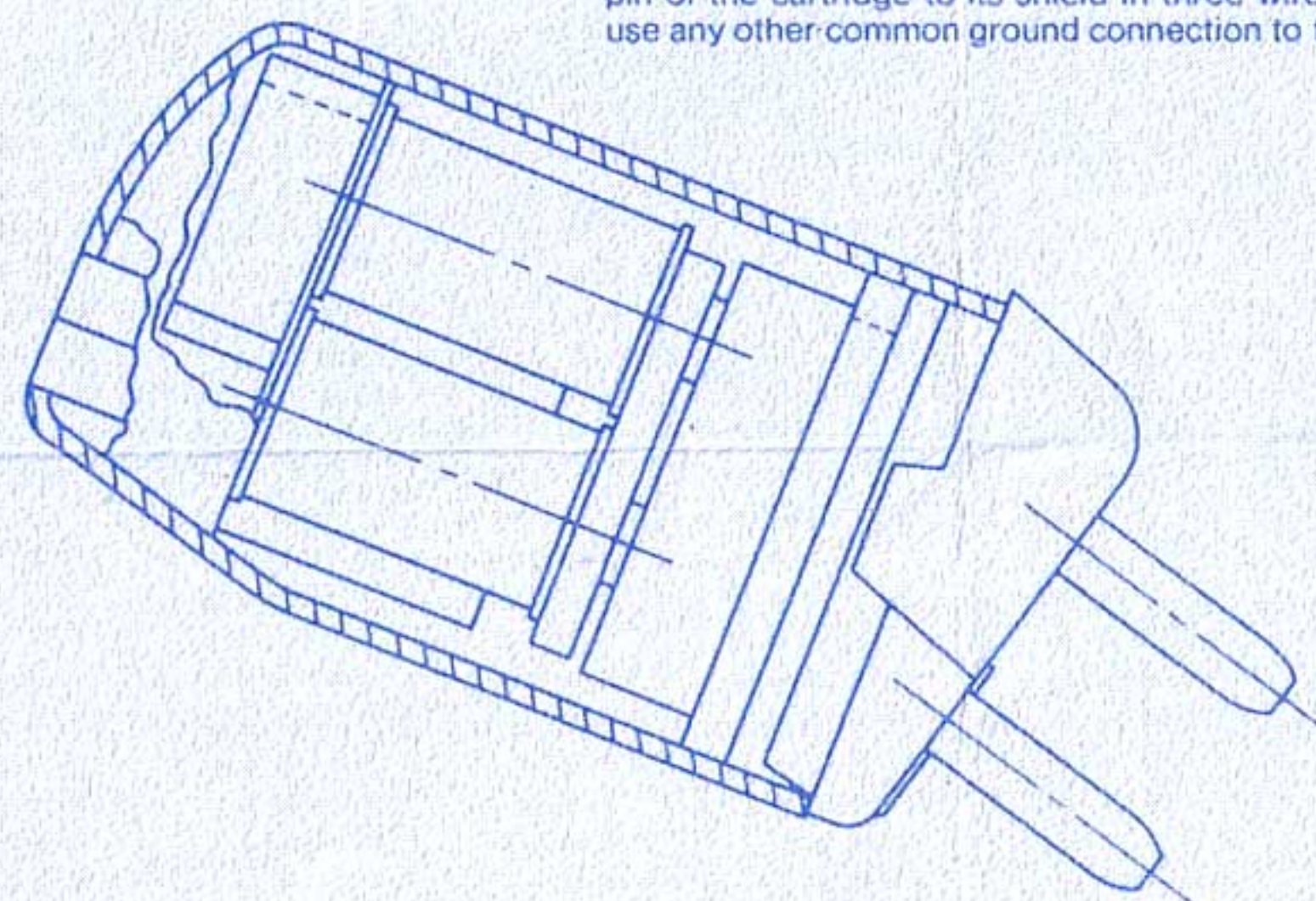
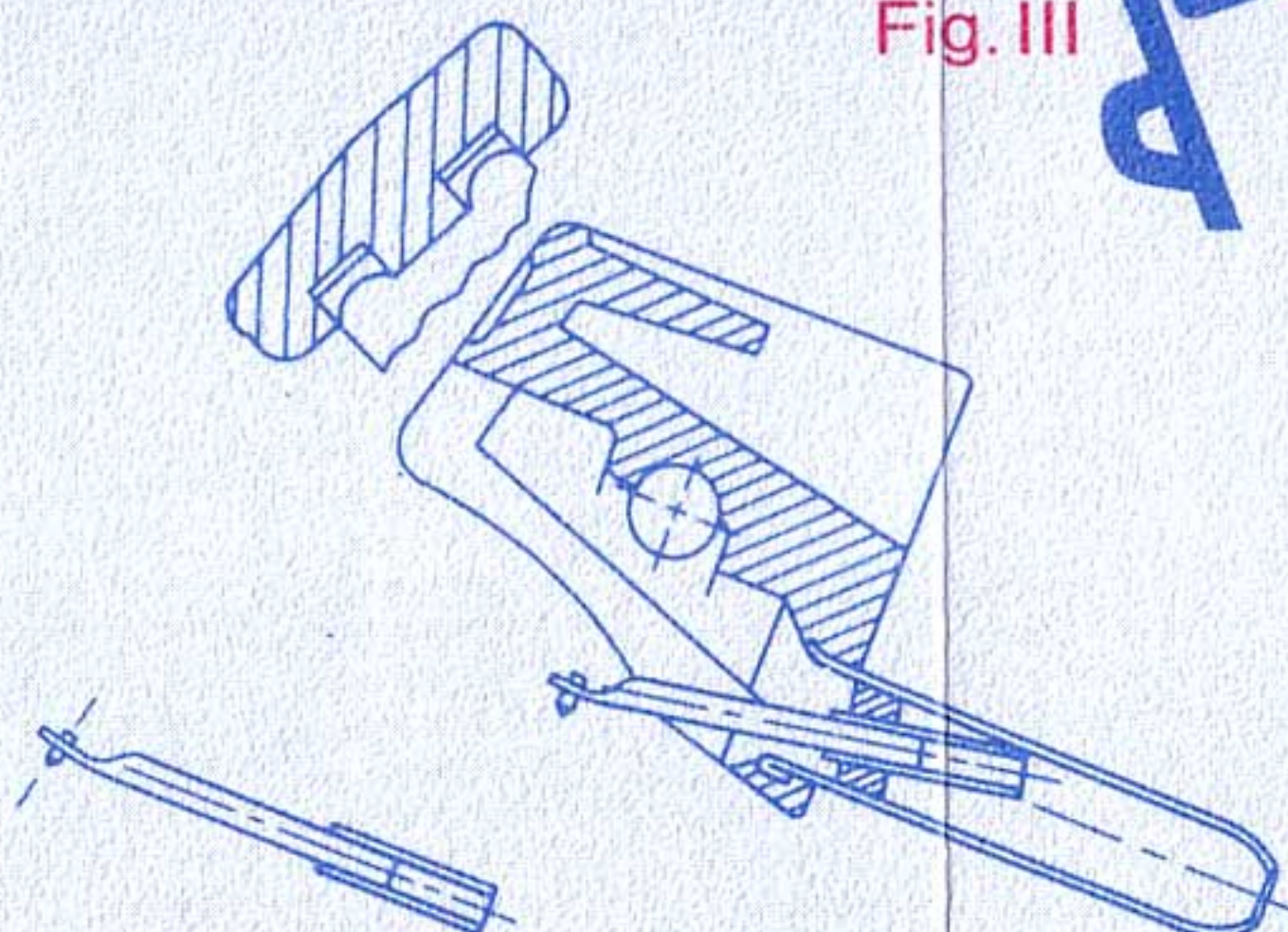
Note: When replacing stylus assembly, hold stylus as shown. Insert tube straight into body. Avoid contact with stylus lever. (Fig. III).



Fig. II



Fig. III



INSTALLATION

The Empire cartridge has a four terminal output arrangement (see Fig. IV). Pin R and its complementary G pin (ground) produce output from the right channel (outside groove wall of the record). Pin L and its complementary G terminal produce output from the left channel (inside groove wall of the record).

The leads from your arm shell are to be pushed onto the terminals of the cartridge. Do NOT solder the arm shell leads directly to the terminals of the cartridge. The Empire cartridge is designed to mount in shells with either 1/2 inch or 7/16 inch in mounting hole spacing. Mounting hardware is located in the hardware compartment under the interior box pad.

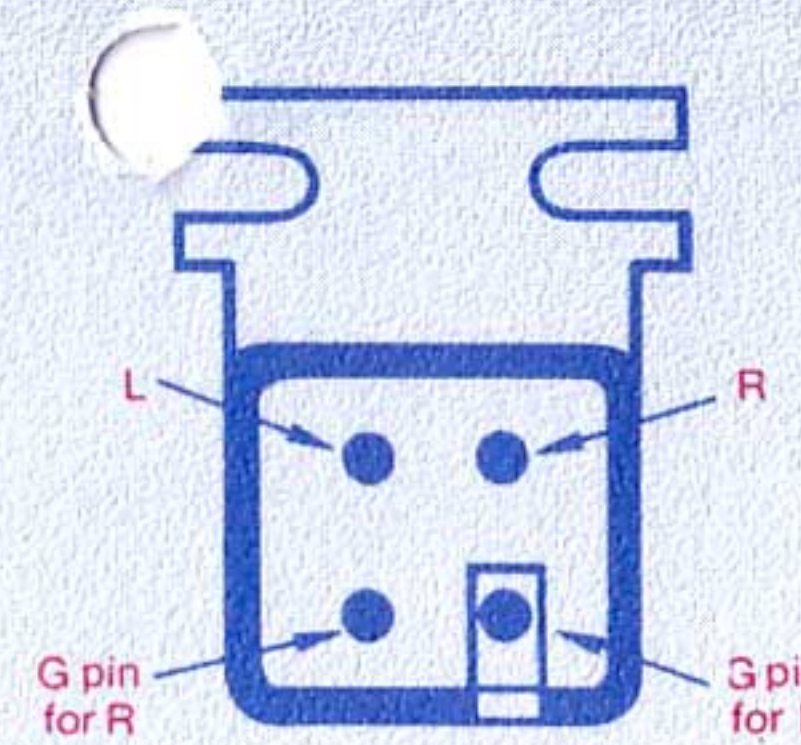


Fig. IV

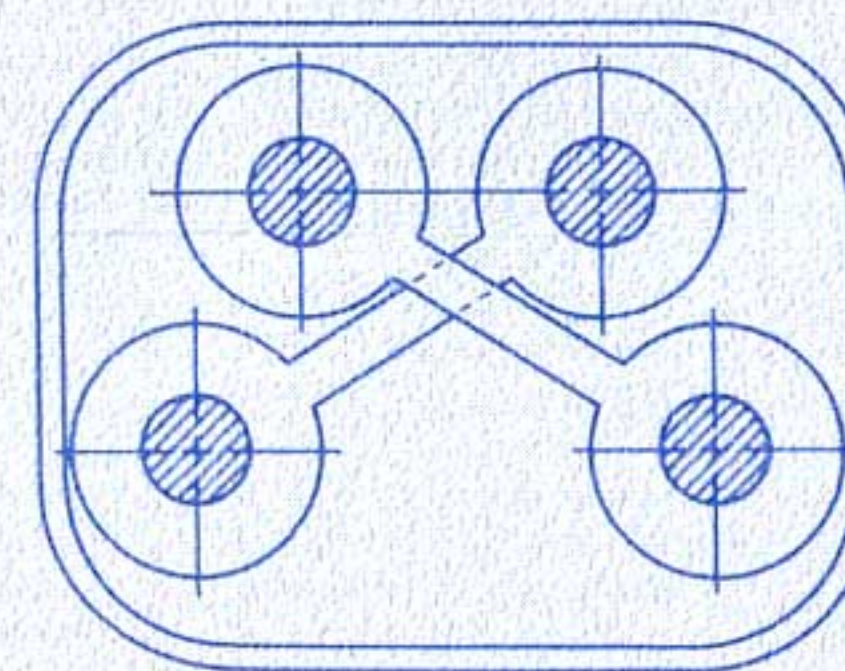
HUM PREVENTION

The Empire cartridge incorporates a hum bucked four-coil structure as well as a complete shield to prevent stray hum in the cartridge. Should any excessive hum exist in your system, it will most likely be because of errors in wiring the rest of the high fidelity system.

Observe the following precautions:

1. Twist audio cables from pickup arm or changer to amplifier. Often, moving the cables slightly will greatly reduce hum.
2. Connect one point on the amplifier chassis to a good ground connection, like a cold water pipe.
3. Try reversing the AC power plugs for each piece of equipment in the system, one at a time.
4. Keep audio cables from pickups or tuners as far from power transformers as possible.

To prevent ground loops from causing hum in your system, it is advisable where possible to use a four wire system. Where three wire arrangements must be used, connect the common lead to both ground terminals at the cartridge. It may be necessary to remove the ground strap connecting the LG pin of the cartridge to its shield in three wire systems or if the arm is separately grounded. Do not use any other common ground connection to the pickup in the three wire system.



Technical Specifications

Frequency Response—20 Hz to 20K Hz ± 1 db using CBS 100 test record

Recommended Tracking Force— $\frac{3}{4}$ to 1 $\frac{1}{4}$ grams (specification given using 1 gram VTF)

Separation—20 db 20 Hz to 500 Hz
30 db 500 Hz to 15K Hz
25 db 15K Hz to 20K Hz

I.M. Distortion—(RCA 12-5-105) less than 0.08%
2K Hz to 20K Hz @ 3.54 cm/sec

Stylus—0.2 x 0.7 mil diamond

Effective Tip Mass—0.2 mg.

Compliance—lateral 30×10^{-6} cm/dyne
vertical 30×10^{-6} cm/dyne

Tracking Ability—0.9 grams for 38 cm per sec @ 1000 Hz
0.8 grams for 30 cm per sec @ 400 Hz.

Channel Balance—within $\frac{1}{4}$ db @ 1 kHz

Tracking Angle—20°

Recommended Load—47 K Ohms

Nominal Total System Capacitance required 300 pF

Output—3mv @ 3.5 cm per sec using CBS 100 test record

D.C. Resistance—1100 Ohms

Inductance—675 mH

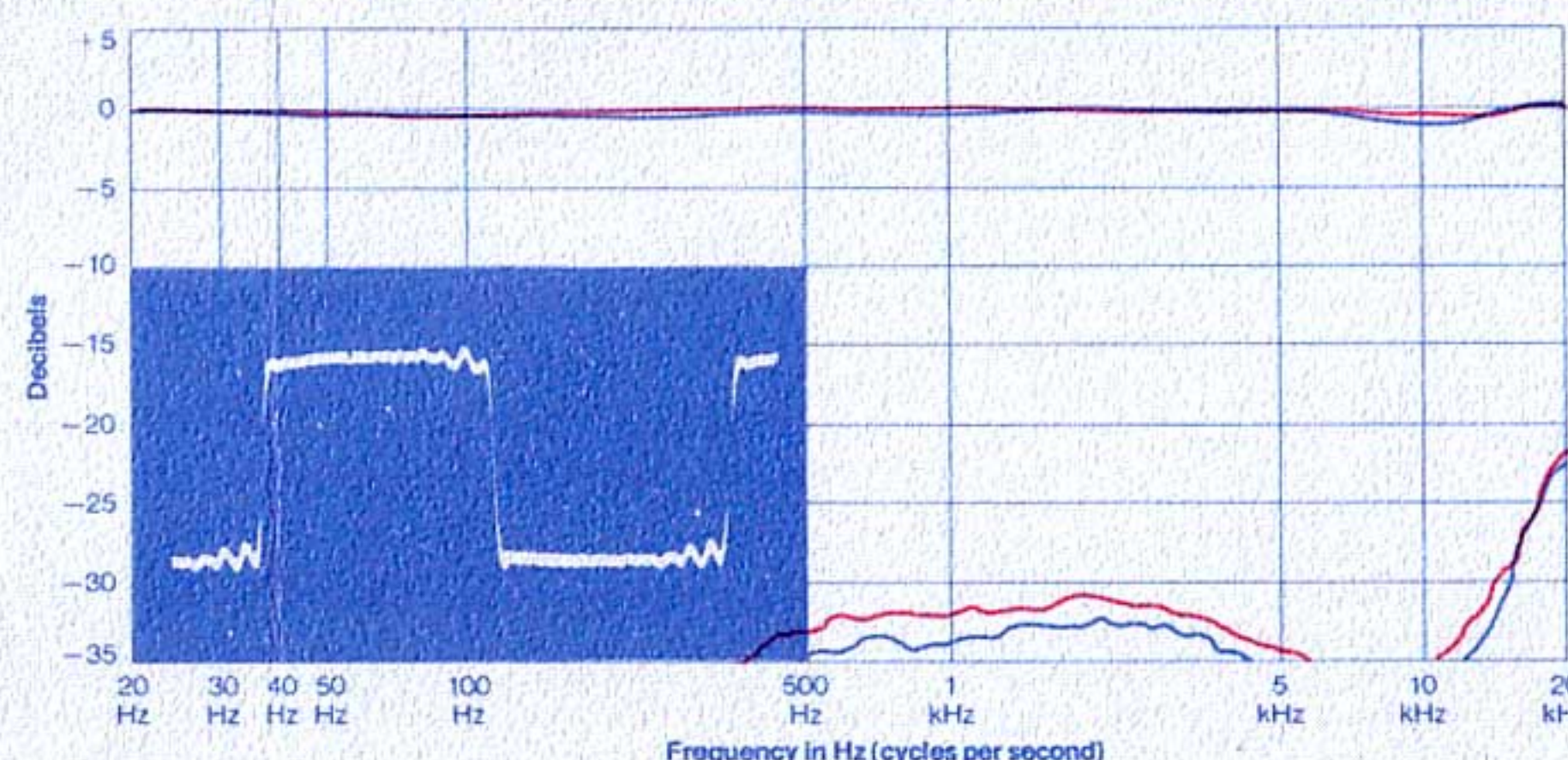
Number and Type of Poles—16 Laminations in a 4 pole configuration

Number of Coils—4 (1 pair/channel—hum cancelling)

Number of Magnets—3 positioned to eliminate microphonics

Type of Cartridge—Fully shielded, moving iron

In the graph below, frequency response was measured using the CBS 100 Test Record, which sweeps from 20-20,000 Hz. The vertical tracking force was set at one gram. Nominal system capacitance was calibrated to be 300 picofarads and the standard 47K ohm resistance was maintained throughout testing. The upper curves represent the frequency response of the right (red) and left (blue) channels. The distance between the upper and lower curves represents separation between the channels in decibels. The inset oscilloscope photo exhibits the cartridge's response to a recorded 1000 Hz square wave indicating its resonant and transient response.



WARRANTY

MODEL NO.

DATE PURCHASED

YOUR NAME

ADDRESS

CITY

STATE

ZIP

DEALER'S NAME

All Empire products are guaranteed against defects in material and workmanship for a period of one year from the date of purchase and will be repaired or replaced at Empire's option within that period. Please retain proof of purchase date.

This guarantee does not include stylus wear.

Congratulations! You've just acquired the most responsive stereo cartridge ever built, the Empire 2000Z.

The extreme accuracy of its reproduction will soon allow you the luxury of fine tuning your audio system the way you want it. You can exaggerate highs, accentuate lows or leave it flat. You can make your own adjustments without being tied to the dips and peaks characteristic of most other cartridges.

All that's left to do to obtain maximum performance is to follow the installation instructions carefully.



Form 951-B-417

Covered by one or more of the following U.S. Patent Nos. 2875282 and 3441688. Other patents pending.

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EMPIRE