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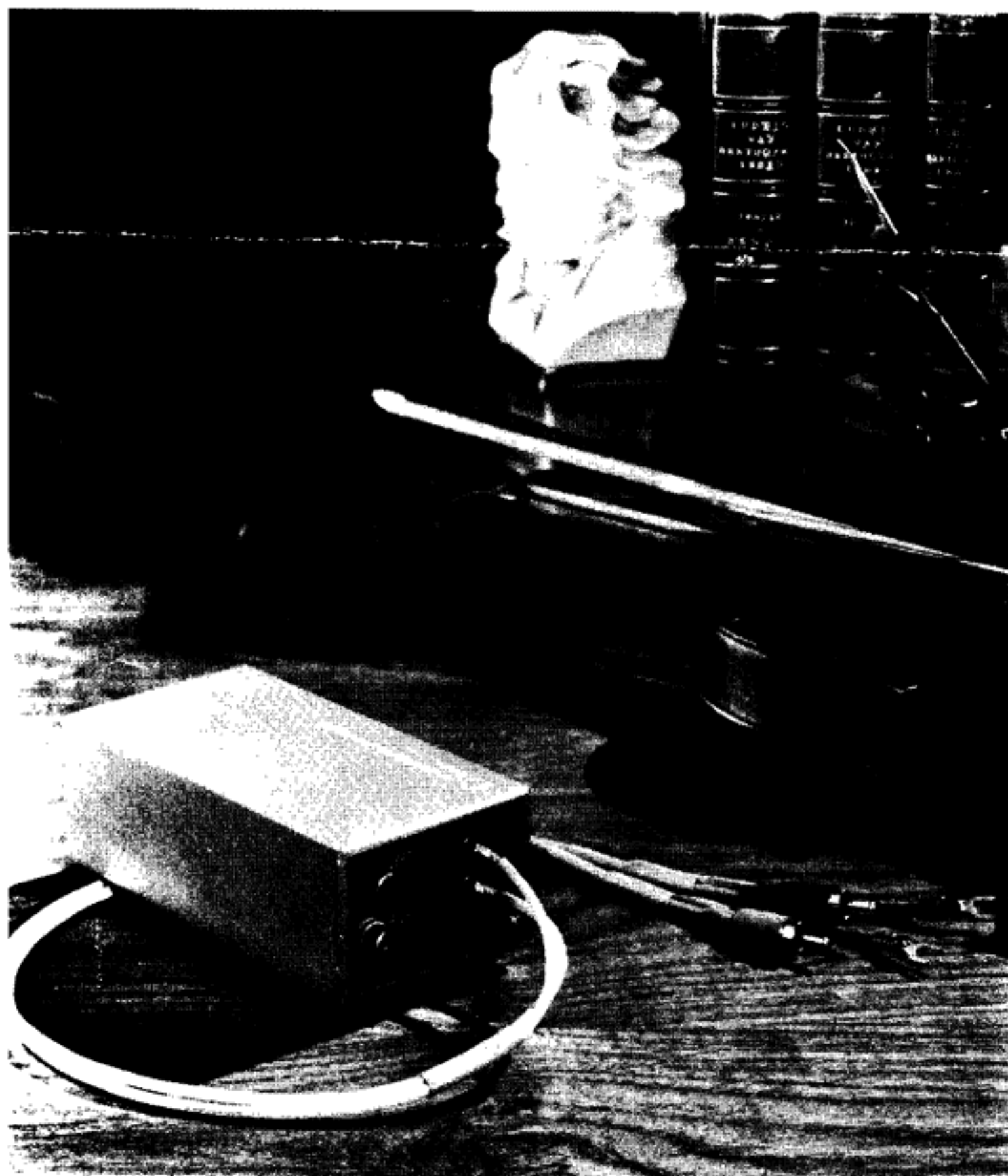
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VERION AUDIO

Verion Stereo Pickup Transformer Mark I



Moving Coil Pickups. Much, Much Better, If...

Audio reproduction at the highest quality level requires the potential superiority of moving coil pickups. All other conditions being equal moving coil pickups have clarity and absence of time-dispersive distortions in disc reproduction that are unmistakable.

The reasons for this superiority of moving coil pickups are complex, involving both physical and electromagnetic properties of the pickup system*. It is important to note, however, that this superiority is **inherent** in the moving coil concept itself. It is intrinsic in the design. The problem in considerable part derives from the effects of friction between stylus and groove. This causes axial pull forces along the stylus cantilever that vary with recorded waveforms. Sensitivity to axial force output effects of the other types and the innate **insensitivity** of moving coil pickups to these effects provides much of the advantages of the moving coil pickup.

The popular misconception of moving coil pickups is that, while superb, they are low-output and noisy devices. **This allegation is simply untrue.** Actually, moving coil pickups have been maligned and misaligned; more about that later.

The moving coil pickup in itself has a grand superiority in signal to noise ratio as compared to common pickups: an advantage, typically, of 10 to 20 dB!

Signal to noise is determined by the ratio of signal **power** to noise **power**. The output signal of moving coil pickups has a low impedance (low-voltage, high-current) form. This must be converted to a high impedance level at the preamplifier input in order to obtain a good signal to noise ratio. **Only** where this is done **properly** can the signal to noise ratio of moving coil pickups be realized.

(As for impedance, as an analogy consider common light bulbs. In imagination connect a 110-volt bulb to a 6-volt battery. The bulb absorbs power but the light radiated is barely perceptible. Now substitute a 6-volt bulb of the same wattage. Light! What happened is that the impedance of the 6-volt bulb was matched to the source, as the 110-volt bulb was not.)

To return. Headamp amplifiers cannot accomplish the **proper** conversion we were just talking about. Gain is of no purpose in terms of signal to noise unless the amplifier noise is significantly less than the generator (pickup) noise. Noise sources otherwise add together; low level amplifier noise is amplified and the problem is worsened by gain from "noisy" amplification.

*For a technical discussion of moving coil pickups as analytically compared to other types, write Verion Audio for Bulletin 711-2.

Removing the If.

It can be shown that the only way — and the ultimately best way — to realize the moving coil pickup's advantages is to transform the pickup's energy to an optimum impedance and to feed the energy into a high quality preamplifier. The transformer must neither contribute losses nor restrict the bandwidth in anyway. Nor must it pick up hum or any other noises. Nor must it distort the signal or the rumble. Verion Mark I SPT's convert the pickup output to the preamplifier input in a way which completely realizes the potential of the moving coil pickup. Full audio frequency response is preserved. The SPT frequency response is far greater than the audio range on both low and high ends of that range. The extended range is necessary on the low end to avoid the distortions which the ever present subsonic rumble from records and turntables would otherwise produce. Because of the wide frequency response, Verion Mark I SPT's are even compatible with quadraphonic CD-4 systems. Because Mark I SPT's are designed to "match" virtually any source impedance to the phono preamplifier impedance, the full high signal to noise ratios of moving coil pickups can be achieved. The SPT's are very tolerant of source characteristics since they are very wideband devices and source (pickup) impedance does not affect frequency response except in ranges far below and above the audible (i.e., at less than 20 Hz and above 30 KHz).

Doing the things previously discussed with a stereo pickup transformer (the **only** way) requires extremely difficult electrical, magnetic and mechanical techniques. To the level of complete transparency and clarity possible this has never been done before. Nothing has ever come close.

Verion does it.

With the Verion Stereo Pickup Transformer Mark I. Actually there are four Mark I Types:

- Mark I Type P:** For very low impedance (2-30 ohms) pickups such as the Nakamichi, Supex, Ortofon, Entre, GAS.
- Mark I Type PP:** For EMT pickups; 20-30 ohms impedance.
- Mark I Type S:** For pickups with impedances of 20 ohms and greater such as the Denon, Satin, and Fidelity Research.
- Mark I Type X:** For special configurations as required.

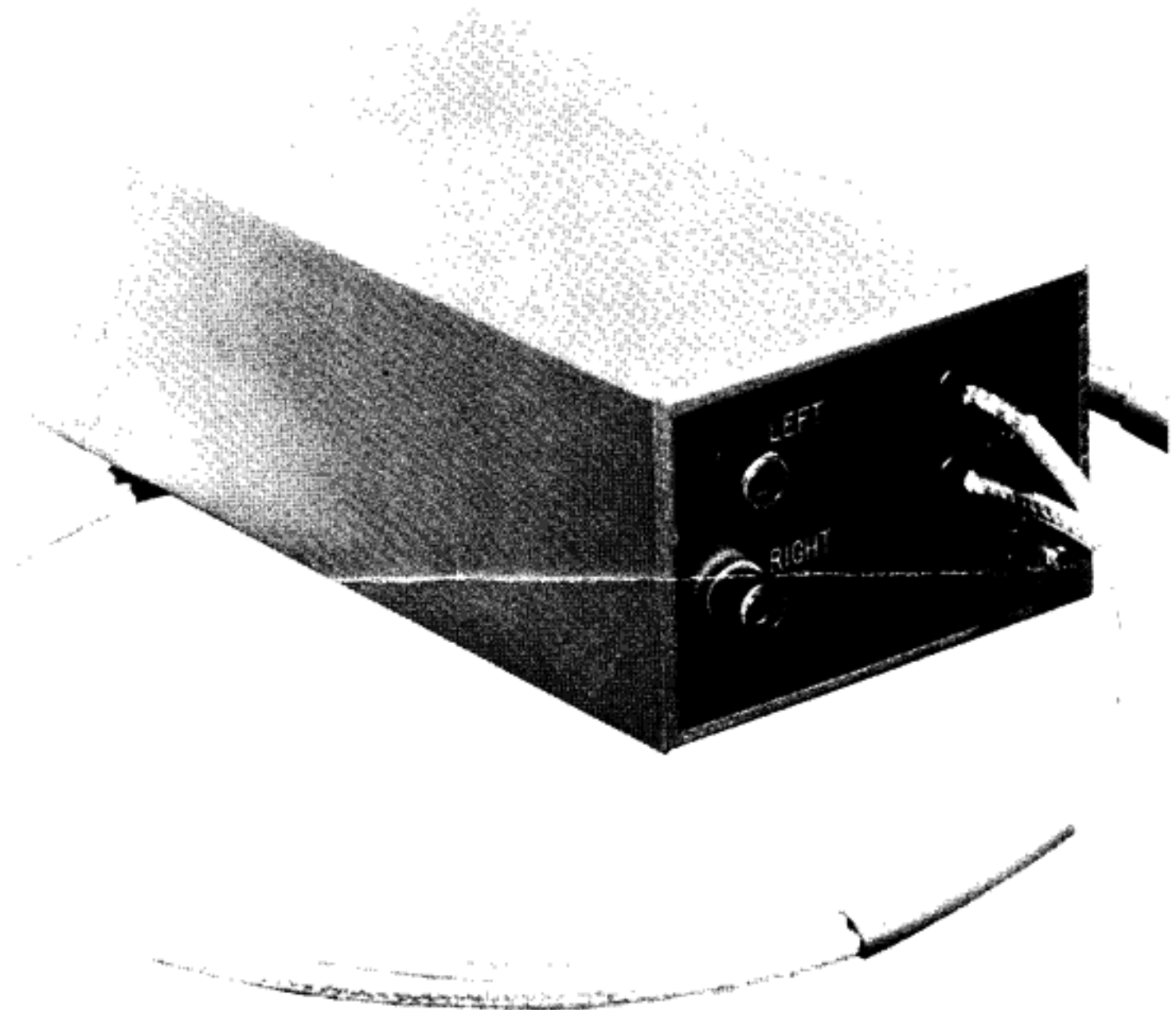
The SPT Types differ only in internal terminal interconnects. Construction, design and most performance characteristics are otherwise identical.

Verion Mark I SPT's have low DC resistance; this is essential to allow the noise figure of the system to be dominated by the (pickup) source impedance. For example, the DC resistance of the series primary winding for use with higher resistance pickups (e.g., Denon, Satin) is less than 10 ohms. The DC resistance of the parallel primary winding for low resistance (2 to 30 ohms) pickups is less than 2.5 ohms. The noise figure (noise added) of the Verion Mark I SPT's is about 1.5 dB with the Denon pickup and the noise figure on the parallel primary with the EMT pickup is only 0.8 dB!

Mark I Contributions to the System

While the principal purpose of the Verion Mark I SPT is to permit full realization of the potential excellence of moving coil pickups, it has such true transparency to the signal and such opacity to noise that it seems to disappear. Except for the ultimate purity of the signal. Even three Verion SPT's in series aren't discernible from a single Verion SPT.

Truly transparent.



Alignment and Misalignment A Note.

Just because the moving coil pickup is capable of the highest quality reproduction possible doesn't mean necessarily that the potential will be realized. The sound quality of even the best system depends very importantly on arm-pickup-stylus alignment (positioning and mounting).

This alignment is often so poorly done that Verion has found it necessary to develop the PAS 1 Verion alignment system, an electronic system used by Verion dealers exclusively to ensure absolutely optimum alignment.

Be sure that your dealer has a PAS 1 and that he uses it to align your system. *No single aspect of high quality audio system performance is so commonly neglected.*

Verion's PAS 1 alignment is absolutely necessary if you are to get all of the sound quality you've paid for.

Absolutely necessary.

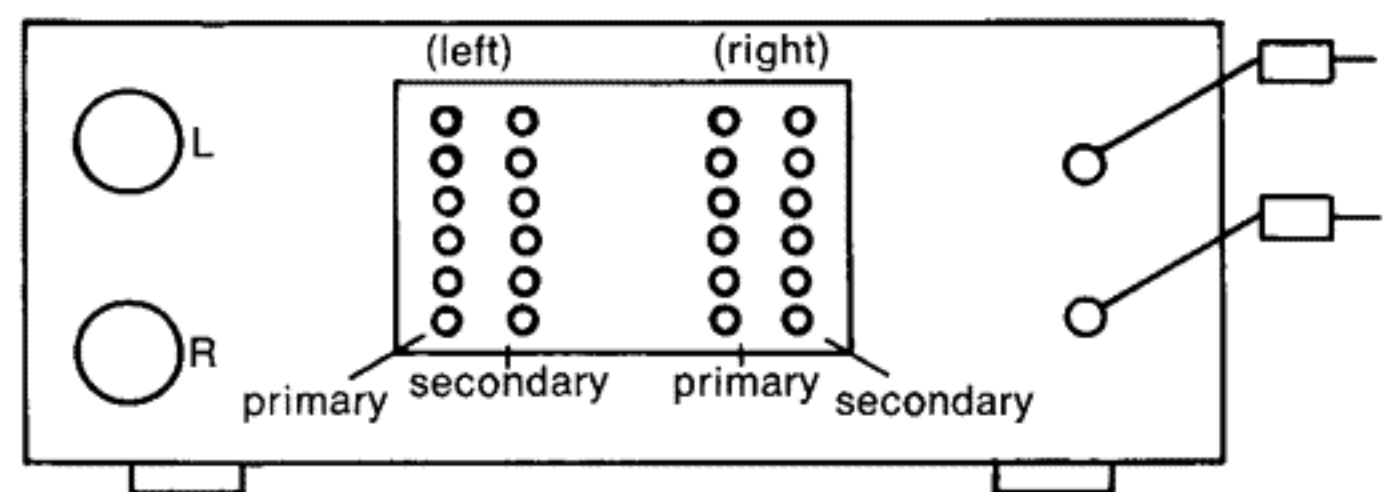


Figure 2. Verion Mark I; End View, Plate Removed*

* Not recommended.

RFI Shielding and Extraneous Noise

To optimize the purity of the moving coil pickup output, Verion Mark I SPT's are virtually immune to undesired signal pickup. In fact, if Verion Triaxial Audio Cables* are used between pickup and transformer, the system preceding the preamplifier can be considered to be totally immunized to RFI and other "outside world" radio frequency noise, e.g., CB interference. The shielding of Mark I units is a quadruple-graded, magnetic lens design. This makes it virtually impossible for the transformer to pick up hum in any real-system installation. Shielding effectiveness is in excess of 100 dB.

*Verion Triaxial Audio Cables (Verion Triaxials) are perhaps the greatest single means of eliminating RFI of all types from audio systems. They are fully described in Verion Bulletin 712-1. Ask your dealer.



Mark I SPT's can be used in "isolated winding" or "autotransformer" modes. The primary and secondary are each composed of two equal windings. These can be series or parallel connected at the terminal board; Figure 2. Note, however that this is a Verion Laboratories operation (rewiring except by Verion Audio voids the warranty) and should not ordinarily be attempted in the field; see "Conversion" below. The basic ratio is 7.64:1 and therefore the following ratios are possible in the autotransformer mode:

Connection		Voltage Ratio
Primary	Secondary	
Series	Parallel	4.82
Series	Series	8.64
Parallel	Parallel	8.64
Parallel	Series	16.28

The SPT may be used with or without the common standard 47 Kohm preamplifier input terminating resistor. Recommended grounding uses the common ground link and the autotransformer mode except in very special (and rare) cases.

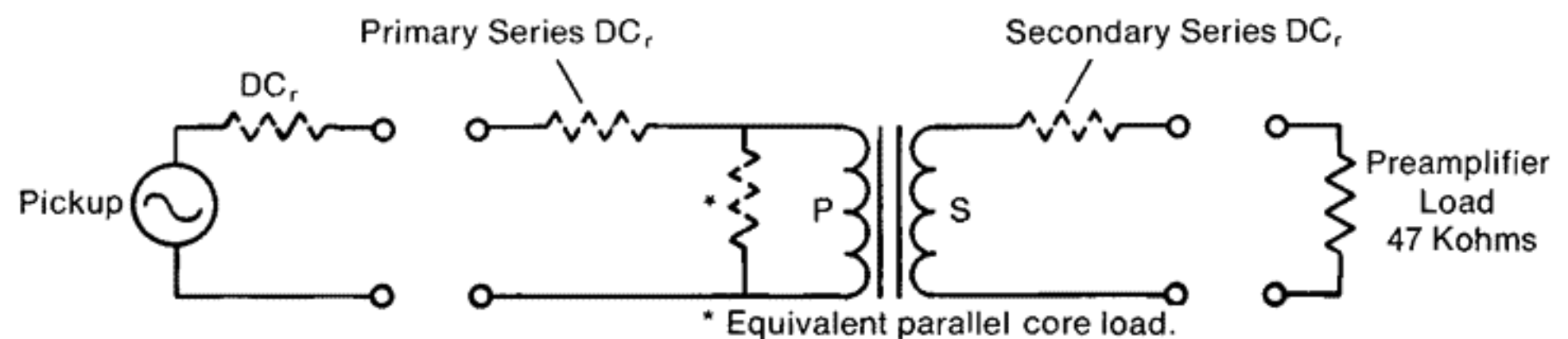


Figure 3. Typical Mark I SPT Connection, Schematic

Mark I SPT—Description

A schematic diagram of the Verion Mark I Stereo Pickup Transformer is shown in Figure 1.

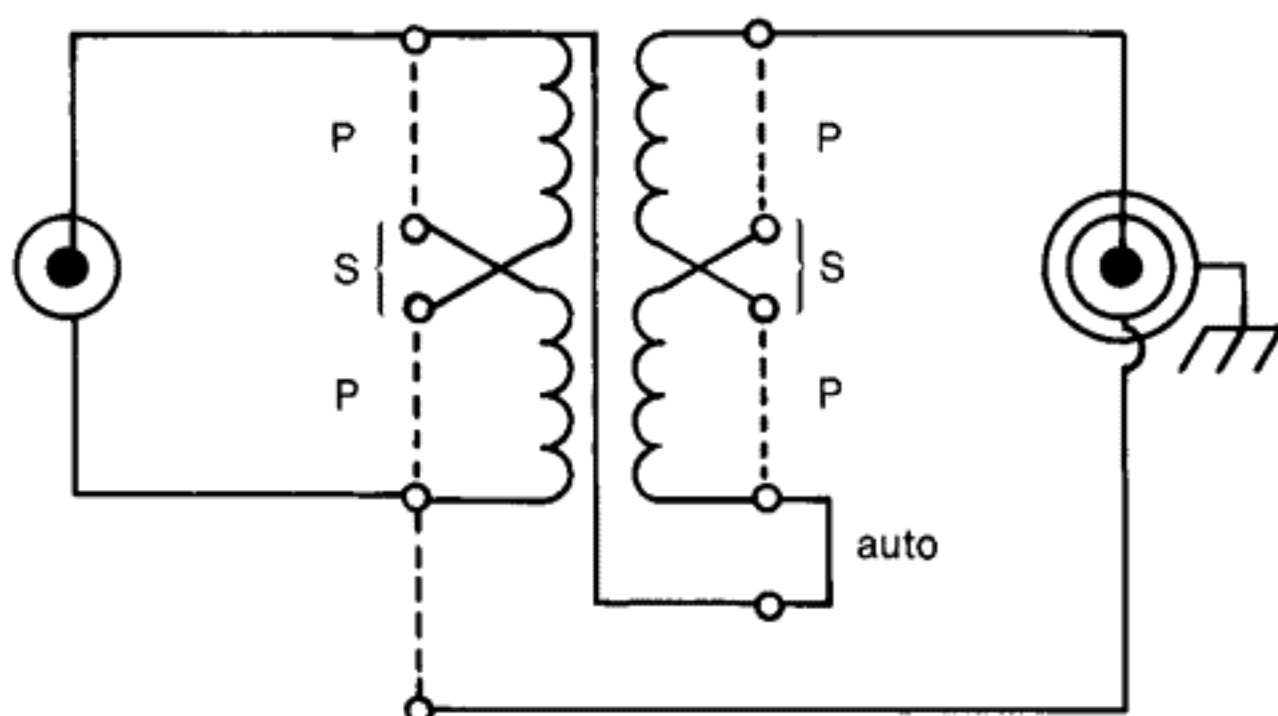


Figure 1. Verion Mark I Schematic

Figure 3 is a schematic drawing of a typical interconnection. In this illustration the primary equivalent load reflected from 47 Kohms is:

Parallel/Series, 16.28:1	183 ohms
Series/Series, 8.64:1	650 ohms
(or Parallel/Parallel)	635 ohms
Series/Parallel, 4.82:1	2035 ohms

And the primary and secondary DC resistances are:

Mark I Type	DC Resistance, typ.
S-Type, Primary	10 ohms
P-Type, Primary	2.5 ohms
S-Type, Secondary	750 ohms
P-Type, Secondary	188 ohms

Verion Mark I—Instructions for Use

The following are general instructions covering the most important operating information for your Verion Stereo Pickup Transformer, Mark I. Since there are no operating controls, once connected properly the Mark I needs no further attention and will provide years of absolutely trouble-free performance without deterioration if the following are observed.

Your Verion dealer has your application for permanent registration of your Mark I. This should be completely filled out by him, properly signed, and mailed to Verion Audio. Upon receipt you will receive a 5-year transferable warranty certificate. Be sure the application for registration is filled out as soon as possible.

DO's and DON'Ts for the Mark I

- DON'T** Use the Mark I without grounding at least one of the lugs on the Verion Triaxial output cables. If lugs are not grounded an annoying hum may appear (and speakers could be damaged).
- DON'T** Ever place the Mark I in a magnetic field, such as that created by speaker magnets. Magnetic fields can cause loss in permeability of the Mark I shields; hum can then possibly penetrate and appear in the audio.
- DON'T** Use a DC ohmmeter to check continuity of the Mark I windings. This is likely to saturate the transformer core and may introduce distortion. Never connect the Mark I SPT to a device with any DC current of more than a few microamps.
- DO** Check with your Verion dealer to make sure that your preamplifier has enough dynamic range to handle the increased output from the pickup via the Mark I. (For example, when used with the Mark I, the Denon 103 and the EMT pickups have dynamic range in the 85-90 dB range; far higher than that of other "magnetic" pickups.)
- DO** Make sure that the binding post on the Mark I input/output panel is well connected to your turntable chassis ground wire.
- DO** Use only a low level (5 mV across 20 ohms) 400 Hz to 1000 Hz test tone to check continuity of Mark I windings, if required.
- DO** Keep the cable between the Mark I output and the preamplifier only as long as provided. If it is necessary to place the preamplifier at some distance from the turntable, it is essential to use a longer cable between the turntable and the Mark I input than between the Mark I and the preamplifier.
- DO** Use Verion Triaxials between the turntable and the Mark I for lowest noise.*

*One of the unique features of the Verion Stereo Pickup Transformer and its Verion Triaxial Audio Cables is the concept of a system ground separate from the audio ground. The shells of the phono jacks and plugs connect to the audio ground, while the lugs (which are connected to the transformer case and the outer shield of the cable) are to be connected to the system ground. This reduces electrostatic and electromagnetic induced noise to negligibility.

Converting the Mark I SPT

Provision is made in the design of the Verion Mark I SPT to match the impedance of virtually any source (pickup) now available or likely to become available to virtually any preamplifier. Should you change your pickup and/or your preamplifier you may wish to convert your Mark I from its present configuration to another. This is readily and inexpensively done.

If change in configuration of your Mark I becomes needed, return it to the Verion Laboratories following this procedure:

Return your warranty transfer card to Verion Audio, with a check or money order for \$35.00. This payment will cover (1) cost of conversion, (2) inspection, (3) test, (4) recertification and (5) reshipment. **Be certain to tell us the manufacturer and model number of your pickup and preamplifier.** You will be supplied with the proper shipping carton. Pack and shipper instructions enclosed with the carton.

This same procedure can be followed in the case of a Mark I somehow being damaged. The charge for repairs, exwarranty, will be submitted to you for your approval before proceeding.

Verion Mark I SPT Warranty Policy

Your Verion Mark I Stereo Pickup Transformer is fully warranted for a five year period (5 years) from date of registration provided that you give it reasonable care against physical and electrical damage (especially see "DO's and DON'Ts") and that it is not damaged by unauthorized changes to the factory connections behind the input/output panel. For such changes see "Converting the Mark I SPT" above.

The Verion SPT warranty is transferable, and a card to permit notifying Verion Audio of transfer or change of address is included with the Warranty Certificate so that you are protected in these events. At the end of each five year period, Verion Audio will, at standard cost, test, evaluate and repair — if necessary — and recertify the warranty for an additional 5 years, at your option.

Unless the Verion Mark I SPT is abused it should provide a lifetime of unexcelled performance.

Data subject to change without notice.

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