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Owner's Manual



signet®

TK5Ea
TK7Ea
TK7LCa

Dual Magnet
stereo phono cartridges
with micro-mass moving system

The information provided in this manual is intended to help you achieve the very highest possible performance from your new Signet phono cartridge. Careful reading of the technical data and instructions will be helpful in installation and maintenance of your Signet cartridge, and will insure correct operation and maximum musical enjoyment.

Signet Dual Magnet™ cartridges are protected world-wide by the following patents:

Canada Nos. 856,351 and 909,683
England Nos. 1,232,210 and 1,283,404
France No. 6,928,056
Japan Nos. 1,083,037 and 883,307
Sweden No. 347,636
Switzerland Nos. 478,502 and 505,437
U.S.A. Nos. 3,720,796; 3,761,647 and 4,075,418
W. Germany Nos. 1,772,685 and 1,941,569

INTRODUCTION

This new Signet phono cartridge represents an innovative approach to cartridge manufacture. The Signet Division does not use the assembly-line approach to construction. Instead, each unit is carefully assembled by hand under laboratory conditions. This technique is required since many of the Signet components are either too small or too delicate to adapt to mass-production techniques.

Without the limitations of large-scale production, Signet can utilize materials and concepts that would be ruled out by other construction methods. Yet Signet can also use the vast facilities of its parent company wherever appropriate in pursuit of higher quality and higher standards. It is a combination that is unparalleled by smaller firms and unduplicated by the largest producers of cartridges.

This concept also permits unusual flexibility in design and construction. As a result, some details of Signet cartridges may differ slightly from published data and specifications. Running changes to improve performance will be introduced whenever advances in technology and research permit. Our goal is to insure that every Signet cartridge is at the forefront of current-design standards when it leaves our laboratory.

While a complete set of specifications is provided elsewhere in this manual, no list of numbers can fully explain and define the actual performance potential of any high fidelity product. It is hoped that many Signet users will carefully assess the performance characteristics of their cartridges and provide us with both subjective and objective reports based on actual installations. To this end, we urge you to return the purchase registration card enclosed, with your comments. While prompt return of the card is desired, a later report after a reasonable interval of service would be very much appreciated. Your cooperation will assist us in continuing to make improvements in Signet cartridges, and assist us in the design and introduction of new products for greater high fidelity enjoyment.

CAUTION

Do not attempt to remove the cartridge from its packaging before reading the following:

The stylus assembly should not be removed unless the integral flip-guard protector is in the "guard" position shown. To remove the cartridge from its packaging, put the flip-guard in the "guard" position. Then, grasping the stylus assembly between thumb and forefinger, pull it gently and directly away from the cartridge body. The stylus assembly comes away at a rearward angle, as indicated by the arrow in Figure 1. Place the stylus assembly in a safe place until installation is completed. The cartridge body can now be removed from the packaging.

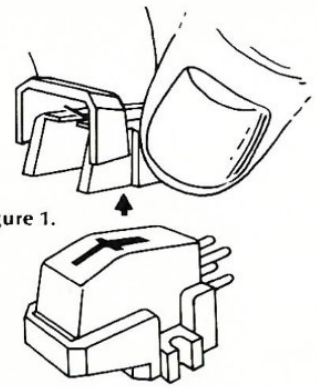


Figure 1.

PRELIMINARY INSTALLATION

Before attempting to mount the Signet cartridge, a careful check of the tone arm is essential. All pivots should move freely without binding; wiring should be in excellent condition; and the tone arm should be mounted exactly according to the manufacturer's instructions. Do not attempt to use a Signet cartridge in a tone arm requiring greater tracking force than the maximum recommended for your model, as harm to the stylus assembly and poor reproduction may result.

Using the mounting hardware supplied either with the car-

tridge or with the tone arm, mount the cartridge body according to the recommendations of the turntable or tone arm manufacturer. It is especially important that the instructions on "overhang" (or distance of the stylus tip to the center of the turntable) and tone arm height be exactly correct. You should be certain that the stylus assembly and cartridge are exactly perpendicular to the record surface, and that the cartridge aligned with the sides of the tone arm head for best performance. For optimum performance, we recommend you consult your Signet dealer for correct tone arm/cartridge alignment.

Hardware should be tightened only so that the cartridge position is stable, avoiding excessive force that might strip delicate threads, or warp parts out of position. After the cartridge body is installed, briefly re-install the stylus assembly to check for interference. The flip-guard must be in the "guard" position, not the play position to re-install the stylus assembly. The assembly should click into place when fully seated on the cartridge body. Excessively long screws should be avoided to minimize mass at the end of the tone arm. After checking, again remove the stylus assembly for safekeeping until the installation is complete.

ELECTRICAL CONNECTIONS

Four terminals are provided at the rear of the cartridge—an output and a ground for each stereo channel. For proper performance of your system, the correct wiring must be provided to the amplifier or preamp inputs. Most tone arms provide .050″ slip-on lugs for attachment to the cartridge. DO NOT APPLY HEAT TO THE CARTRIDGE TERMINALS. Heat applied directly or indirectly to the cartridge terminals will damage the cartridge and void the warranty.

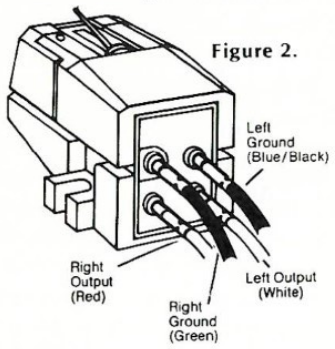


Figure 2.

Note that each cartridge terminal is color-coded to a well-established industry standard (Fig. 2). This should agree with the tone arm wire color code (some manufacturers use black instead of blue for the left ground wire). Carefully install a slip-on lug on each terminal, following the color code for proper stereo operation. For monaural operation, both the left output and right output terminals should be connected to the signal lead, and both left and right ground terminals should be connected

to the ground lead. This connection will cancel vertical output from the cartridge, providing maximum suppression of vertical noise components and maximum signal output.

FINAL INSTALLATION

Being certain flip-guard is in the "guard" position, reinstall stylus assembly. Following the procedure recommended by the tone arm or turntable manufacturer, carefully set tracking force within the range shown for your cartridge in the specifications table. This is a critical adjustment, since tracking force higher or lower than recommended will result in increased distortion and shorter record and stylus life. Similarly, all tone arm adjustments for height, stylus overhang and anti-skating must be exactly correct if maximum performance is to be achieved. Take your time and re-check all settings, as some adjustments interact with others. Unless otherwise stated by the tone arm manufacturer, a Straight Line Contact stylus requires an anti-skating setting approximately 1.2 times the recommended setting for an elliptical stylus. If your tone arm includes any adjustments for cartridge compliance, use the highest available setting.

CAUTION: During the set-up and operation the stylus assembly must be protected by the stylus guard whenever possible. The stylus assembly of Signet cartridges is extremely fragile and can easily be damaged by abuse. If the stylus assembly is dropped or subjected to shock, a careful examination under a microscope is suggested to be certain that no damage has been sustained before an attempt is made to play valuable records. If the stylus cantilever has been bent, do not attempt to straighten it by hand as it will most likely fracture. If the stylus itself has been fractured or damage to the cantilever has resulted, a replacement stylus assembly will be required.

CONNECTION TO SYSTEM

Once the cartridge is properly installed in the tone arm, the turntable may be connected to the rest of the music system. Normally, two shielded audio cables are provided from the tone arm or turntable to the magnetic phono inputs of the amplifier, preamp, or receiver. Make certain to observe the left and right channel codings. If more than one magnetic input is provided, choose the one that most closely matches the cartridge output level with the sensitivity of the amplifier input.

To assure maximum performance, the lowest possible connecting cable losses between cartridge and amplifier are desirable. Keep connecting cables as short as practical.

In addition, a separate ground wire is recommended between the chassis of the turntable and the electronics chassis to prevent hum. Usually this ground wire comes attached to the turntable, ready to connect to a grounding point on the rear of the electronics unit.

Hum problems can usually be traced to a bad audio cable or the omission of the grounding wire mentioned above. Instructions with the turntable and electronics units should be consulted for details of connection.

Problems of unbalanced sound output, loss of separation, distortion, or intermittent operation are often traced to poor wiring at the cartridge. Be certain wires have not been interchanged and are not slightly touching each other, and that they agree exactly with the wiring shown in Fig. 2.

OPERATING SUGGESTIONS

The extremely low tracking force and high compliance of Signet cartridges provide the highest attainable performance, but also make them susceptible to damage if

handled carelessly or improperly. With care, however, your cartridge wil provide excellent service for many years to come.

The stylus and its cantilever are most prone to damage. Operation of the tone arm by hand can give rise to rough treatment. Always place your fingers UNDER the tone arm lift, never above it where downward pressure can put excessive force on the stylus assembly.

The stylus must be set as gently as possible on the record surface, never dropped. Avoid contacting the outer edge or record label areas. A damped cueing device is included with many turntables, and should be used regularly.

Another cause of stylus damage occurs when cleaning or dusting the turntable area. Keep the flip-guard in its "guard" position whenever not actually using the cartridge. If the tone arm has a locking position at rest, it should also be used between sessions. The dust covers available for most turntables represent an excellent investment for preventing this kind of stylus damage as well as keeping the turntable clean and relatively dust-free.

Damage can also easily occur when cleaning the stylus.

Never use your finger or a stiff object to clean this delicate assembly. The brush provided with the cartridge is excellent for this purpose, but we especially recommend Signet Model SK301 stylus cleaner for thorough cleaning with minimum hazard to the stylus. The fluid dissolves waxy build-up and floats surface dirt away without harming cements or materials in the assembly. When brushing the stylus, always brush with a *rear to front* motion, never front to rear or side to side. Because of the unusually small dimensions of Signet styli, frequent cleaning is recommended for best operation.

An accummulation of dirt on the stylus indicates that the records themselves are dirty, a condition that will shorten both record and stylus life and reduce the potential performance of your cartridge. Keep records stored vertically in their protective jackets and sleeves, and clean each side of the record just before playing.

BASIC SIGNET DESIGN FEATURES

A primary reason for the outstanding performance of Signet cartridges is the unique patented Dual Magnet construction used to translate the stylus tip motion into two electrical signals. Unlike other designs, Signet cartridges employ two tiny independent permanent magnets mounted at 45° to the record surface and perpendicular to the walls of the record groove. With its associated pole pieces and electrical coils, each magnet becomes an electrical generator reproducing only the signal from one side of the groove wall. Because each magnetic system is truly independent, stereo separation is maximized.

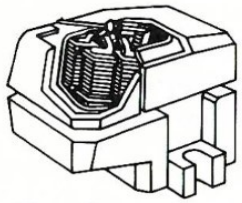


Figure 3.

When just one channel is modulated, only the magnet for that channel is significantly displaced by the stylus. And because each magnet is substantially less than half the mass of typical single magnets used by others, the effective mass moved by the stylus is greatly reduced. The magnets, which are still one of the heaviest parts of the moving system, are mounted

very near the fulcrum point of the stylus assembly. This design feature also reduces effective moving mass, without spurious resonances in the audio spectrum. This reduced mass also contributes to long record life by reducing the force applied to the record groove walls.

To further reduce effective moving mass, Signet cartridges employ specially designed cantilevers. Created from special light-weight aluminum alloys or beryllium, these cantilevers provide greater rigidity and lower effective mass.

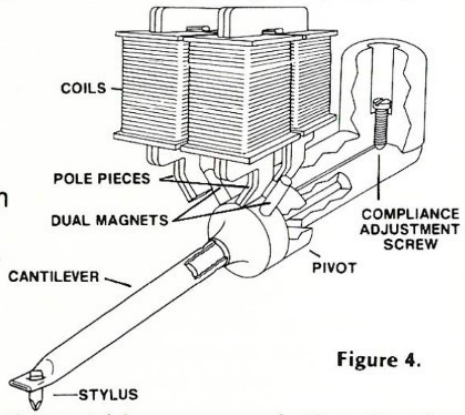
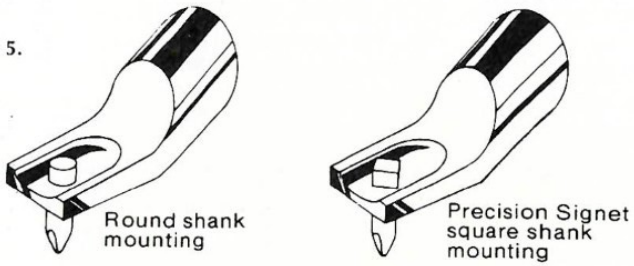


Figure 4.

Styli of these Signet cartridges are of the "nude-mounted" type with no metal holder to add to the moving mass. In addition, most use a square cross-section shank. This insures positive indexing of the facets of the stylus to the record groove, eliminating rotational misalignment that can create distortion and increase record wear. The

square shank fits precisely in a hole through the cantilever tip for secure, accurate mounting of the diamond.

Figure 5.



TYPES OF STYLI

Two types of styli are found on basic Signet cartridges: elliptical and Straight Line Contact. The elliptical stylus presents a smaller radius to the groove wall than conventional spherical types, to better approximate the general shape of the original cutting stylus used to form the record. The smaller radius is designed to trace more accurately the highest frequencies found on stereo records, extending high frequency response beyond the limits of audibility. Elliptical styli, when used in a modern tone arm within recommended settings, provide excellent stereo performance and reasonable record life.

SPECIFICATIONS	TK5Ea	TK7Ea	TK7LCa
Frequency Response	10-30,000 Hz	5-30,000 Hz	5-35,000 Hz
Tracking Force	.8 - 1.6 grams	.8 - 1.6 grams	.8 - 1.6 grams
Channel Balance	0.75 dB	0.75 dB	0.5 dB
Channel Separation at 1kHz at 10kHz	 29 dB 20 dB	 33 dB min. 22 dB	 33 dB min. 23 dB
Output at 5cm/sec.	5.0 mV	5.0 mV	5.0 mV
Stylus Tip	0.2 x 0.7 mil nude elliptical	0.2 x 0.7 mil nude square-shank miniaturized elliptical	Nude square-shank miniaturized Straight Line Contact
Stylus Cantilver	Tapered tube	Beryllium	Beryllium
Magnetic System	Dual Magnet	Dual Magnet	Dual Magnet
Vertical Tracking Angle*	20°	20°	20°
Recommended Load Impedance	47,000 Ohms	47,000 Ohms	47,000 Ohms
Cartridge Inductance	58 mH	58 mH	58 mH
DC Resistance	580 Ohms	580 Ohms	580 Ohms
Cartridge Weight	6.5 grams	6.5 grams	6.5 grams
Dimensions	5/8″H x 7/16″W x 1-1/16″D	5/8″H x 7/16″W x 1-1/16″D	5/8″H x 7/16″W x 1-1/16″D
Mounting	½″ centers	½″ centers	½″ centers
Replacement Stylus Color	Blue-Gray	Brown	Brown
Replacement Stylus Model	TKN5Ea	TKN7Ea	TKN7LCa

*20° is new IEC/DIN standard.

NOTE: The stated standards for all Signet phono cartridges are minimums. Typical units will exceed these figures as a direct result of the high level of hand assembly utilized in the creation of these limited-production units. Performance specifications listed above have been measured using the following test equipment: B&K 2305 or 2306 Graphic Level Recorder, B&K 4416 Response Test Set, B&K 2608 Measuring Amplifier, XK50 Tone Arm, JVC TR1007 Sweep Frequency Test Record, and AT6605 Spot Frequency Test Record. In the interest of industry standardization, full details of the Signet test set-up, equipment adjustment and procedure are available on request.



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