SHURE

PHONOGRAPH PICKUPS

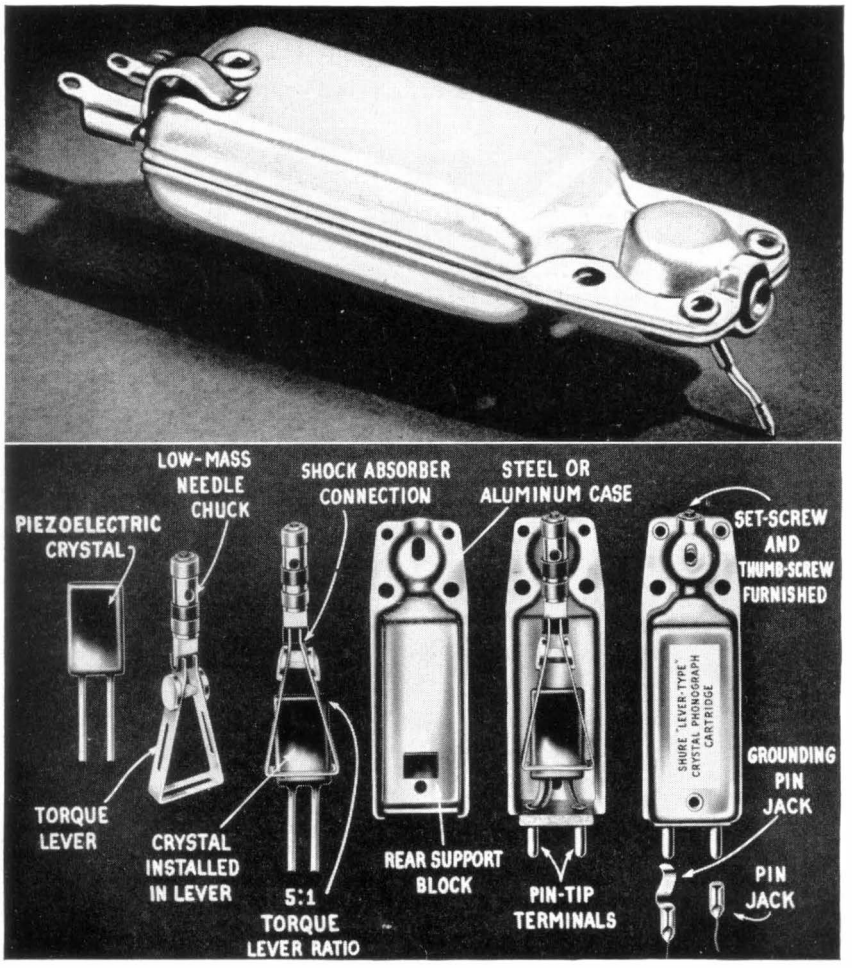
AND

REPLACEMENT CARTRIDGES

CATALOG No. 158

FOR INFORMATION ON SHURE MICROPHONES SEE CATALOG No. 157

SHURE Lever-Type Cartridges



Basic Considerations For Selecting The Proper Replacement Cartridge:

1. Be certain that the mounting dimensions are the same. Most flat-type cartridges have standard mounting and are interchangeable.
2. Be sure that the output voltage of the replacement cartridge is equal to or slightly greater than the output voltage of the cartridge being replaced.
3. Be sure that the minimum needle force required is the same or lower in the cartridge replacing the original one.

General Features: The Shure Lever-Type Cartridges listed here are for replacement of crystal cartridges in current use. They are widely used by leading manufacturers of radios and phonographs in original equipment. They offer extremely low needle-point stiffness with high output voltages. They are available in both steel and aluminum cases and are all furnished with quick, easy-to-use pin tips that eliminate the need of soldering.

How The Lever-Type Cartridge is Constructed: The lever-type cartridge is a patented Shure development. As shown in the illustration, the crystal is mounted in an aluminum lever. The torque transmitted from the needle chuck to the crystal by means of the lever is built up approximately 5 times. This has permitted decreasing the needle-point stiffness without loss of output voltage. The lever also protects the crystal from sudden shock and strain providing a more rugged cartridge for phonograph use. It produces the highest relative output for given needle-point compliance. This provides a distinct advantage for replacing cartridges of other types.

Shure Lever-Type Cartridges will replace most Rochelle Salt standard flat-type cartridges. In addition, they offer the advantages of lower needle-point stiffness and higher output voltage. Where its use is possible, the aluminum case cartridge—W57A—also offers the additional advantage of a reduction in needle force. Its weight is only .43 ounce, making it much lighter than the heavier die-cast cartridges weighing from 1 to 1½ ounces. Installing an aluminum cartridge in a heavy tone arm or record changer arm can reduce the needle force of an existing record changer or phonograph by ½ to 1 ounce. In many cases this converts the heavy-weight pickup into a light-weight pickup and permits the use of permanent-point needles.

When installing aluminum pickup cartridges, be sure that the needle force is not reduced too greatly, as might occur if replacing a heavy cartridge in a counter-balanced arm. If the needle force is reduced to less than one ounce, some record changers might not trip properly. In such cases, the standard steel case—W58A, etc., are recommended.

MODEL	CASE	REPLACES SHURE	OR REPLACES	MIN. NEEDLE FORCE	VOLTAGE	SHPG. WT.	CODE	LIST PRICE
W57A	Almn.	P87, P93, P87B	Any Standard Flat-Type Cartridge of Equal Output	¾ oz.	1.6	¾ oz.	RUGLA	$ 4.45
*W60A	Almn.	P30		1 oz.	1.8	¾ oz.	RUSIS	7.50
W58A	Steel	99-182, P90S, P92B, W42A		¾ oz.	1.6	1 oz.	RUGLU	4.45
W59A	Steel	99-181, 99-180, W40A, W41A		1 oz.	2.5	1 oz.	RUGAT	4.45
W56A	Almn.	P89		1 ⅛ oz.	4.3	¾ oz.	RUGUS	5.45
**W56PN	Almn.	PN88, PN89	‡See below	1 ⅛ oz.	†1.9	¾ oz.	RUTAR	10.00
**W60PN	Almn.	PN30		¾ oz.	†0.7	¾ oz.	RUTAP	13.00

**SPECIAL PN TYPE CARTRIDGE

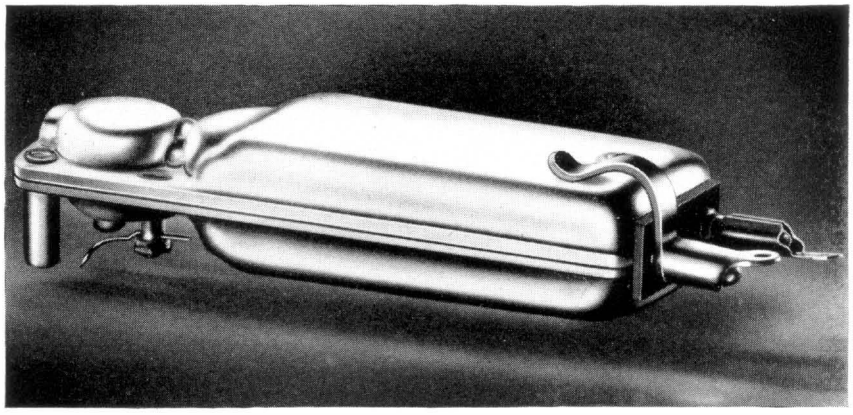
With Sapphire Point Needle

‡Any Standard Flat-Type PN Cartridge of Equal Output.

†5.0 megohm load resistance 100 m.m.f.d. cable capacity

SHURE "Muted Stylus" Cartridge

The "SIXTY"



MODEL W60

General Features: The Shure Model W60 Pickup Cartridge is a lever-type crystal cartridge which has been specially designed to overcome the problems of surface noise and distortion in high-quality home phonographs, coin-operated machines, and in all other applications where shellac pressings are commonly used. It is also ideal for Vinylite records. The frequency response of the "Sixty" was selected after tests in which hundreds of laymen and engineers had participated.

When force of 6 oz. or more is applied to the cartridge during the playing of the record, the needle retracts until the two guard posts touch the record. This protects the needle point. Because the guard posts are rounded, no damage can result to the record grooves. The needle guard is designed in such a way that it will not interfere with operation of automatic phonographs when a full stack of records is played. A special needle protector is provided for shipping and handling purposes.

Special Features: The unique design of the "Sixty" provides the following special features:

1. Low surface noise
2. Low needle talk
3. Low needle hiss
4. High output voltage—1.8 volts
5. Low tracking force
6. Record-Matched frequency response
7. A new type of needle and record protection
8. Replaceable Osmium or Sapphire needle
9. Finger-Tip needle replacement

Installation: The Shure W60 Pickup Cartridges fit all standard flat-type pickup mountings—and directly replace the Shure P30. The location of the needle point is similar to that of the standard cartridge when the latter is provided with a full-tone needle. The high-output voltage permits the use of the "Sixty" as a replacement for many older-type cartridges, with resultant improvement in performance and customer satisfaction.

Model W60A (Sapphire). Code: RUSIS.
List Price $7.50

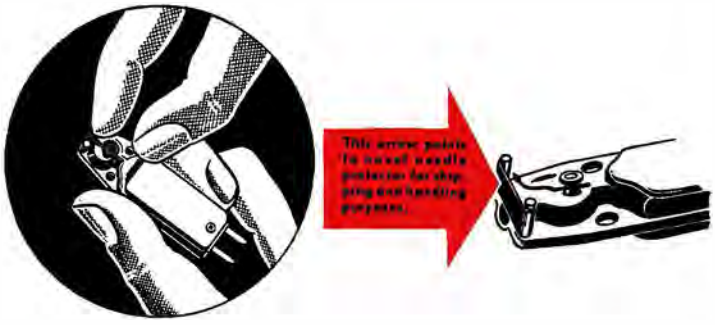
Model W60B (Osmium). Code: RUSID.
List Price $6.50

REMOVING

QUICK, EASY WAY TO REMOVE AND INSERT NEEDLES

1) Simply loosen the thumb nut and pull out needle.

(2) Simply insert the needle, tighten thumbnut.



INSERTING

SHURE Cartridge "Pack"

MODEL W50A

Solves service problems with phonographs and record changers . . . builds new profits! 5 crystal cartridges have been "standardized" to replace 58 different popular types of all makes—a feature made possible by the new Shure Lever System. The "Pack" contains the 5 Shure Lever-Type Cartridges, including Model W60B with the "Muted Stylus." Specific cross-reference chart for exact cartridge replacement is enclosed in carton. The Shure Lever-Type Cartridges offer more than a replacement line—five cartridges that feature low needle force . . . super moisture proofing . . . longer needle and record wear . . . high needle compliance (flexibility) . . . high output . . . crystal shock immunity . . . light-weight cases (aluminum and steel) . . . pin-tip terminals. In short, the Shure standardized line of replacement cartridges means Better Cartridges for Better Service.

Model W50A. Code: RUPAC... List Price $25.30

SHURE STANDARDIZED LINE OF PICKUP REPLACEMENT CARTRIDGES

HANDY REPLACEMENT REFERENCE SHEET

SHURE MODEL NO.	REPLACEMENT FOR: SHURE MODEL NO.	OTHER MODEL NOS.	
W57A	P87; P93; P87B; P93D		
W60B	P30; P87; P93; P87B; P93D	QT-J; LP-6; LP-21; LP-23; MLP-1-J	N-5
W58A	P92B; P90S; W42A; 99-182; P87S; P93S; P94	L-22A; L-25A; L-26A; L-27A; L-32A; L-40A; L-41A; L-70; L-70A; L-70S; L-70AS; L-71; L-71A; L-71S; L-71AS; L-75; L-75A; L-75S; L-75AS; L-76; L-76A; L-76S; L-76AS	E-4; E-9; N-2; N-3; N-4
W59A	99-181; 99-180; P88S; W40A; W41A	L-24A; L-36A; L-50A	
W56A	P89	L-72; L-72A; L-72S; L-72AS; L-46A	

NOTE: While the Shure Pickup Cartridges listed in the left-hand column above are not exact replacements for the models shown, their response characteristics and output voltages are similar enough to furnish good performance. Mechanical fit is assured.

SHURE *Glider* Pickups

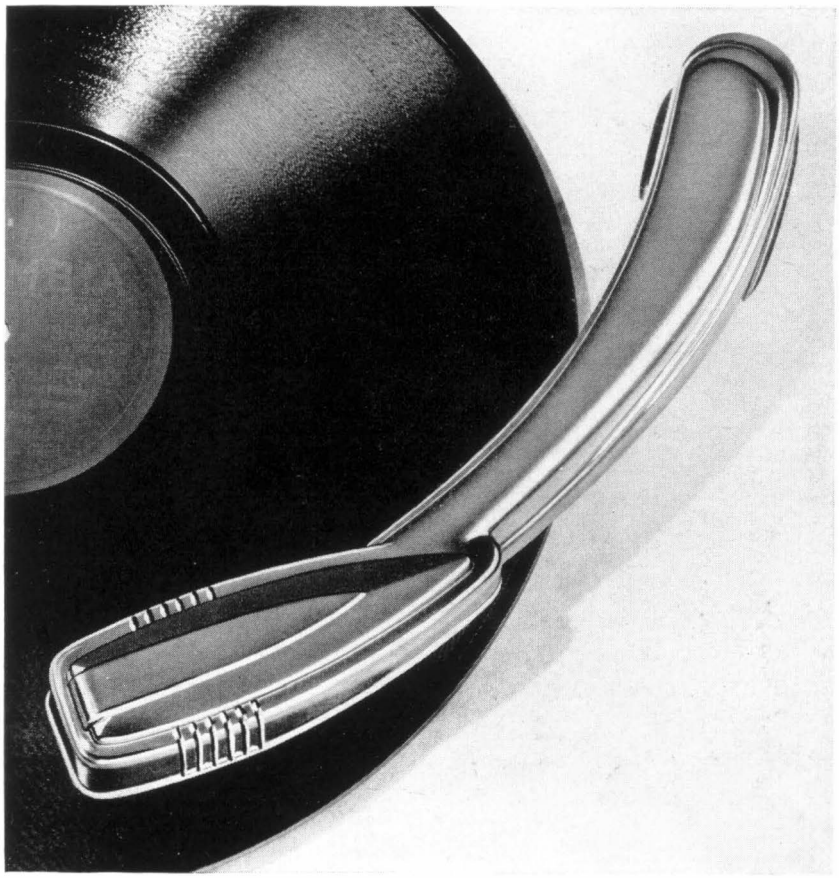
How the "Gliders" are Constructed:

Lever-Type Cartridge. Shure "Gliders" use the Shure lever-type crystal pickup cartridge. The technical story of the lever cartridge is interesting and is given on page 2.

The lever cartridge offers high output and also very high needle-point compliance, making possible the use of an aluminum tone arm. The cartridge case is aluminum, helping to further reduce mass in the pickup. The cartridges ore supplied with pin tips for easy servicing and quick replacement, eliminating the necessity of soldering.

Low Mass Tone Arm:

The high needle-point compliance and low mass of the lever cartridge makes possible the use of an aluminum tone arm for the first time. No springs or counter-weights are used, and an accurate, uniform needle force of 1⅛ ounces is maintained. The arm has been scientifically curved to minimize tracking error and produce the best results. The pickup has standard 7⅛" mounting centers. A new arm rest is employed which is simple to install and easy to use. The new arm rest grips the pickup at the side, between the cartridge and the tone arm. No fussing around with buttons and locating the arm on the rest. The new design of the arm rest permits it to be mounted closer to the turntable, still permitting the use of 12-inch records. It takes the best advantage of minimum space.



General Features: The Shure "Gliders" are lightweight crystal phonograph pickups with a needle force of only 1⅛ ounces. They have extremely low needle-point stiffness but still have sufficient output to replace old-fashioned, heavy-weight arms. Shure "Gliders" save records and needles, have smooth response, reduce surface noise, and reproduce the full tone qualities of the record with natural life-like clarity.

Applications: Due to high output coupled with light weight, Shure "Gliders" are especially suitable for the replacement of heavy-weight pickups on older phonographs as well as for installation on new record players. The low needle-point stiffness is a very important advantage for home recording because it brings out the best in home discs without record wear. The low mass tone arm and light weight are excellent for a public address pickup—because they make the "Gliders" less susceptible to vibrations, jar and shock.

Shure "Glider" Light-Weight Pickups are being used on many of the leading quality phonographs. Their advantages are many. Less needle and record wear . . . lower surface noise . . . the use of a permanent-point needle . . . better tone quality. You can have these same advantages on old phonographs, for the "Glider" is the first pickup with approximately the same output voltage as the old heavy-weight pickups. Therefore, they can be installed without loss of output. They give better tone quality, the opportunity to use permanent-point needles, and they save records. In addition, they also modernize your set. **Whenever a cartridge needs replacement in a manually-operated phonograph, don't bother to change the cartridge—install a new Shure "Glider." It costs so little more . . . and your customer will be so much more satisfied.**

MODEL	OUTPUT at 1000 CPS.	NEEDLE FORCE	RESPONSE	NEEDLE SCREW	SHIPPING WEIGHT	CODE	LIST PRICE
93A	1.6 volts	1⅛ oz.	60-6000 CPS	SET and THUMB	13 oz.	RUGLI	$6.10
96A	4.3 volts	1⅛ oz.	60-6000 CPS	SET and THUMB	13 oz.	RUGAB	$7.10

SHURE "Muted Stylus" Pickups

THE "900"

General Features: The "Muted Stylus" Crystal Phonograph Pickups play with amazing needle quietness. A needle force of only 1 oz., high output, and smooth frequency response give the pickups a quality of record reproduction never before achieved.

The "Muted Stylus" Pickup Cartridge has a specially designed muted sapphire needle for longer record and needle life, faithful tracking (clear, fuller tone qualities), and marked reduction of surface noise.

Applications: Because of its unique features, the "Muted Stylus" Pickups are ideal for high-quality home phonographs, coin-operated machines, and all similar applications where shellac or Vinylite records are used. Because of their high output coupled with light weight, they can be used as direct replacements for many of the old-fashioned heavy-weight crystal pickups. Available with Rochelle Salt or PN crystal.

How the "Muted Stylus" Is Constructed: The Shure "Muted Stylus" Phonograph Pickups use the specially-designed "Sixty" cartridges. The technical story of this silent-tracking cartridge is interesting and can be found on page three. The "Sixty" is a lever-type "Muted Stylus" crystal cartridge that embraces quiet playing, high needle flexibility, and high output. It has unique needle guards, and a special needle protector.

Low Mass Tone Arm: The pickup arm is aluminum, scientifically designed for maximum tracking. Small, round handle is located at pickup head for easy handling of pickup when playing records.

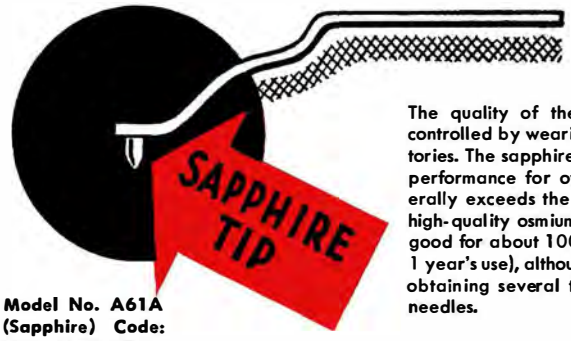
How To Take Advantage of the New Market by The "Muted Stylus": The Shure "Muted Stylus" Pickups are ideal for those applications that call for "something better." Quiet in operation, clear in tone, and rich in color and design, these pickups are a step forward in recording performance. Even so-called "modern" pickups simply can't compare to the soft-riding . . . smooth-working . . . silent-tracking of the "Muted Stylus." For your own information, listen to one of these "peaceful" pickups. Its lack of surface noise and fidelity of tone is something to hear. If your customers expect the best, install a "Muted Stylus."

Model "900". Code: RUZUM. . . . . List Price $10.00
Model "900-PN". Code: RUZUB. . List Price $15.50

SHURE "Muted Stylus" Needles

GENERAL FEATURES

Shure "Muted Stylus" needles can be used only in the Shure "Muted Stylus" Cartridges. They are ideal for high quality phonographs, coin-operated machines, and in all other applications where shellac pressings are commonly used. Both the sapphire-tipped and the osmium-tipped needles were designed exclusively for use with the Shure "Muted Stylus" Cartridges, MODELS W60 and P30. These two needles bring record playing to a new unmatched standard of performance, greatly reducing the noise and distortion caused by ordinary needles. Surface noise, needle talk, and needle hiss are practically eliminated. The needles have been life-tested. These needles are so soft riding, so smooth working, so silent tracking that they permit unhampered fidelity of tone.



Model No. A61A (Sapphire) Code: RUZAN. List Price $2.50

The quality of the needle points is carefully controlled by wearing tests at the Shure Laboratories. The sapphire point has given high-quality performance for over 6000 plays, which generally exceeds the life of the phonograph. The high-quality osmium tipped needle is generally good for about 1000 plays (equivalent to about 1 year's use), although many users have reported obtaining several thousand plays from osmium needles.

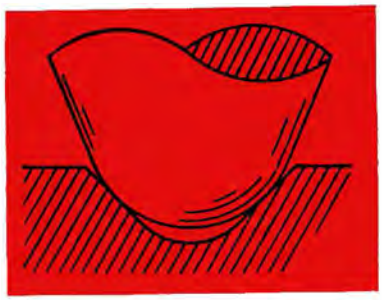
Model No. A62A (Osmium) Code: RUZAP. List Price $1.50

★ ★

Replace the heavy pick-up arms of pre-war designs with the record-saving finer tone quality SHURE *Gliders* and "Muted Stylus"

USING A "GLIDER" OR A "MUTED STYLUS"

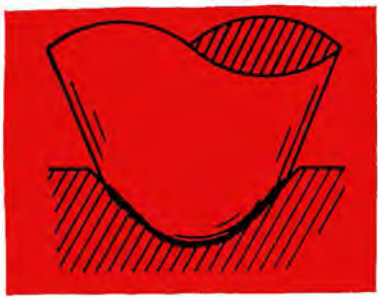
Record and Needle Wear After 200 Plays



Permanent-point needle remains spherical—needle wear is negligible because of low needle forces. Low-mass arm and high lateral compliance have prevented excessive strain of groove walls—groove wear is scarcely noticeable. Faithfulness of reproduction is not impaired.

USING AN ORDINARY PICKUP

Record and Needle Wear After 200 Plays



High mass of arm and large needle force have overstrained the groove. The groove surface is rough and powdery, giving high surface noise. The permanent-point needle has been ground into a chisel-like shape which gives distorted reproduction, even on a new record.

Facts You Should Know About Pickups

Factors influencing results obtained from crystal phonograph pickups are needle-point compliance, tone arm mass, tracking angle, voltage sensitivity, type of needle, and input characteristics of the amplifier.

Needle-Point Compliance: Needle-point compliance refers to the side-to-side resistance of the motion of the needle. The higher the compliance, the lower the side-to-side resistance. It is the needle-point compliance which determines the needle force required for proper tracking. However, as compliance is increased, voltage is also decreased. Therefore a practical limit is soon reached. The patented Shure lever system permits the highest relative needle compliance to output voltage. It permits greater compliance with higher output voltage than ever before obtained. The needle rides through the record grooves with a minimum of thrust and wear on the side walls, thereby reducing record wear and providing faithful tracking for true reproduction.

Tracking Angle: Fidelity of reproduction is enhanced by a curved tone arm which maintains the axis of the needle closely tangential to the record grooves throughout the playing time of the records.

Tone Arm Mass: Performance of a pickup is greatly influenced by the tone arm. The high needle compliance of the "Glider" makes it possible to use a low mass Tone Arm without undesirable low frequency resonances. The "Glider" uses an aluminum arm that has no springs or counterweights. The low mass makes the pickup less susceptible to floor vibrations and improves the playing of warped records.

Voltage Sensitivity: Shure Lever-Type Phonograph Pickups, depending upon the model, have output voltages of 1.5 to 4.3 volts, for an overall groove amplitude of 0.84 mil at 1000 cycles, and 10 to 30 volt peaks on commercial records. The lower voltage ranges are equal to or greater than those produced by heavy, stiff pickups of older design and are sufficient to produce full output from audio stages of modern radio receivers or moderate gain amplifiers. The higher voltage ranges are more than adequate to drive directly the grid of certain pentode output stages.

Type of Needle Used: "Glider" Pickups will work with any of the conventional needles. The low needle-force makes it feasible to use sapphire or precious metal tipped needles without excessive needle or record wear. The high frequency response of the pickup will depend to some extent on the needle chosen. Typical response characteristics with various needles are shown in Figure A. The Phonograph Pickup used in the response characteristics is the Shure 93A "Glider."

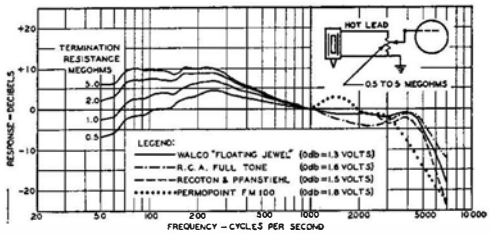


Fig. A. Typical Response Characteristics of the 93A.

Amplifier Input Circuits: In the design of phonograph equipment, quality performance is not automatically assured by choosing better-grade components for the play-back mechanism. The circuit connecting the Pickup to the amplifier plays an important part in the satisfaction which the user obtains from the instrument.

Figure A also shows effect of termination resistance as the response of a Pickup below 500 C.P.S. The user can adjust the low frequency response over wider limits by proper choice of resistance of the input potentiometer or grid resistor. A value of 1.0 megohm will be satisfactory in most cases. The high frequency response is not affected by the value of the terminal resistance.

To reproduce a record in the manner intended by the recording director, the characteristic of the play-back system should match the characteristic of the recording system. For more uniform response at low frequency which conforms to the response of commercial records, the low frequency equalizer circuit of the type shown in Figure B may be employed.

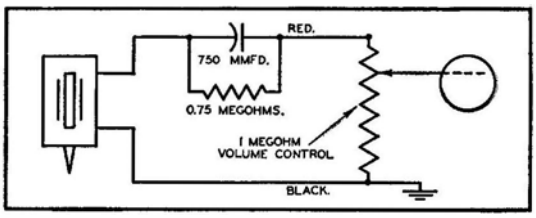


Fig. B. Compensation Circuit.

Surface Noise: Surface noise or "needle scratch" is produced by the passage of the needle over the minute irregularities in the surface of the record grooves. The amount of surface noise noticed will depend upon the overall frequency response of the play-back system and upon the condition of the record. Some needles are designed to decrease record noise by providing attenuation of the high frequency response. Where maximum fidelity is not important it is possible to decrease audible needle-scratch by using the tone control on the amplifier or receiver to attenuate the higher frequencies.

GUARANTEE

Every Shure Pickup is guaranteed to be free from electrical and mechanical defects for one year from date of shipment from the factory, provided all instructions are complied with fully.

SHURE BROTHERS, Inc.

Microphones and Acoustic Devices

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