

SPECIFICATIONS

Sensitivity: Output at 1000 cycles — 14 millivolts \pm 1% for 10 centimeters per second.

Response Frequency Characteristic: From 20 to 20,000 c.p.s. \pm 2db (See Fig. C). There is considerable response down to 10 cycles and up to 30,000 cycles per second.

STYLUS M1 CARTRIDGE

Needle tip materialDiamond

Needle tip radius0.7 mil (0.018 mm.) \pm 0.1 mil

Needle tip

compliance9.0 x 10⁻⁶ centimeters per dyne

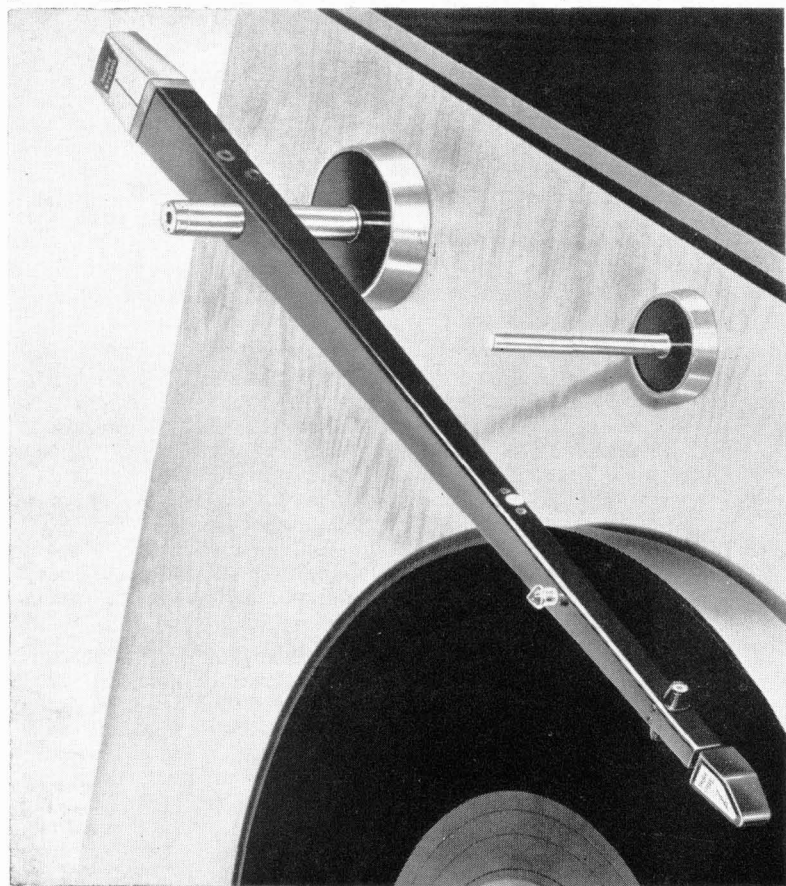
Needle tip mass1.25 milligram

Tracking force1 to 2 grams — adjustable

Recommended Load Impedance: 10,000 ohms. Higher values of load impedance will produce a slight increase in high frequency response. See Fig. C.

Inductance130 millihenries

D. C. Resistance180 ohms



Dimensions	Model M16		Model M12	
	in.	mm.	in.	mm.
Overall length	14 ³ / ₄	374	11 ⁵ / ₁₆	287
Stylus to center of base ..	11	279	8 ¹ / ₂	216
Base diameter	2	50.8	2	50.8
Range of height of adjustment	1 ⁵ / ₈	41.3	1 ⁵ / ₈	41.3
Arm pivot to turntable center	10 ¹⁹ / ₃₂	269	8 ³ / ₄	210

Weight M1611.1 ounces (315 g.)

Weight M1210.6 ounces (300 g.)

Packaged Weight1 pound, 3 ounces (538 g.)

Replacement Styli:

M1 Cartridge —
Shure N1 Stylus .7 mil radius (0.018 mm.)

M2 Cartridge —
Shure N2 Stylus 2.7 mil radius (0.07 mm.)

SHURE

STUDIO

Synetic

P H O N O R E P R O D U C E R

M 1 6 / M 1 2 / M 1 / M 2 / N 1 / N 2

222 HARTREY AVE • EVANSTON, ILL • CABLE SHUREMICRO

SHURE

MICROPHONES AND ELECTRONIC COMPONENTS

EVANSTON PHONE DA-8-9000 • CHICAGO PHONE SH 3-1600

General:

Model M16 Studio Dynetic Reproducer is of the highest quality, employing a new electromagnetic transducer for playing lateral phonograph records. It is intended to reproduce LP Recordings with needle forces of 1 to 2 grams with practical elimination of record and needle wear. The Model M16 Studio Dynetic is intended for studio and professional use and is capable of reproducing records up to 16" (40 cm.) in diameter. The M12 Studio Dynetic is similar to the Model M16, but is intended for use with equipment where space is limited. It is designed to reproduce records up to 12" (30 cm.) in diameter.

The cartridges in the Studio Dynetic reproducers are of the plug-in type and can be readily removed and replaced. The standard cartridge furnished with the Studio Dynetic reproducers is Model M1 which has a replaceable .7 mil (0.018 mm.) radius stylus bearing the Model Number N1. For 78 rpm records and for broadcast use, the M2 cartridge is available which has a replaceable 2.7 mil (0.07 mm.) stylus which bears the Model Number N2. The M2 cartridge is ½ gram heavier than the M1 cartridge and it allows the playing of 78 rpm records with a needle load of 2 to 3 grams.

The needle load in the Studio Dynetic reproducers is readily adjustable by turning a counter-balance (See Fig. A) visible from underneath the arm. With a high grade turntable and motorboard free of vibrations, the counter-balance may be adjusted as far from cartridge as possible resulting in a 1 gram needle load. Under unsatisfactory conditions of motorboard vibration or when playing records with extremely high modulation, the counter-balance may be set all the way towards the cartridge, resulting in a 2 gram needle load. Even with this adjustment, the needle load will be less than one half that which is normally found in conventional high fidelity reproducers, with consequent substantial improvement in record and needle life. The Studio Dynetic reproducer is available with diamond styli only. To prevent damage, the diamond stylus is packaged in a separate plastic container and should only be installed after mounting the arm.

A magnetic type arm rest designed to harmonize with the appearance of the Studio Dynetic reproducer, is furnished in the package.

Features:

The Studio Dynetic reproducers embody exclusive improvements which represent a break-through in the art of phonograph reproduction.

1. *The Dynetic Principle employs a moving magnet transducer which provides extreme linearity and freedom from distortion. The stylus assembly is readily removable and can be replaced by the user.*

2. *Since the magnet turns on its vertical axis, it is possible to place the diamond tip at the end of a light magnesium beam providing a needle tip mass of 1¼ milligrams. The stylus assembly is held in a durable elastomer composition which provides a needle compliance of 7×10^{-6} cm. per dyne. Vertical compliance at the needle tip is excellent. Because of these factors, needle talk is practically non-existent.*

3. *The tone arm is made of light high-strength aluminum in the form of a column tapering toward the front and reinforced at midpoint for greater strength. Because of this construction, the arm is devoid of resonance. A new groove-oriented stylus assembly provides the correct offset angle for proper tracking.*

4. *All of the load bearing pivots are jewelled. The cartridge is mounted on a balance beam which has a cross shaft pivoting in a sleeve-and-cap ruby bearing at either end. The main arm bearing is a convex ruby thrust bearing. These bearings are extremely sturdy, durable, and provide an almost frictionless pivot designed to provide a lifetime of trouble-free service.*

5. *The arm is brought into position to play a record by means of a stylus control button (See Fig. A). The cartridge is lifted by pressing the control button. With the finger pressed down on the button, the arm may be brought into any desired position on the record. When the button is released, the stylus contacts the grooves with a force of 1 to 2 grams (depending on counter-balance adjustment). In the normal operation of the arm, the cartridge never needs to be touched. By using the control button, it is next to impossible to damage the record or the needle.*

6. *The Studio Dynetic reproducer is fully balanced around the vertical axis and this provides maximum stability to the reproducer. The need for leveling of the motorboard is entirely eliminated.*

7. *A newly developed dynamic damping system is employed in the Studio Dynetic reproducer. The counter-balance is floated on a suspension bar imbedded in special elastomer damping material (See Fig. A). Any tendency of the arm to resonate is damped by this member, helping to keep rumble and "boom" to a minimum.*

8. *The extremely low needle force of the Studio Dynetic reproducer permits the use of a .7 (0.018 mm.) tip needle in the M1 cartridge, instead of the conventional 1 mil (0.025 mm.) tip needle. The smaller radius improves tracking on heavily modulated passages and on the inside grooves of a record, providing an improvement in fidelity.*

Application:

The Models M12 and M16 reproducers are recommended for the highest quality applications where a lateral reproducer is required, such as playing back master records, broadcasting, highest fidelity home systems, etc.

The M12 and M16 reproducers have adequate output to operate all modern preamplifiers. Because of the relatively low impedance of these reproducers, they may be used in installations which require up to 20 ft. (6.1 m.) or so of cable between the pickup and the preamplifier. The total cable capacity should not exceed 1500 micro-microfarad.

Installation:

The M12 or M16 reproducer may be mounted on any convenient place on the motorboard. For optimum tracking angle reduction, the M16 reproducer is mounted with the needle tip passing $1\frac{3}{32}$ " (10.3 mm.) beyond the center pin of the turntable. The M12 reproducer is mounted with the needle tip passing $\frac{1}{4}$ " (6.4 mm.) beyond the center of the turntable.

A template is included with the reproducer to facilitate correct installation of the reproducer and the arm rest with respect to the turntable.

When properly mounted the Studio Dynetic reproducers are less subject to the effects of floor vibration than conventional high-fidelity pickups and they will not be unduly affected by walking, dancing, etc. in the vicinity of the reproducer. To achieve this type of performance, both the reproducer and the turntable should be rigidly attached to the motorboard. In this manner any vibration reaching the motorboard will act equally upon the turntable and the reproducer, thus cancelling the effect of vibration. It is recommended that the motorboard itself be at least $\frac{3}{4}$ " (19.1 mm.) thick and be mounted on a sponge rubber strip to minimize the possibility of being set into motion by vibrations.

The following steps are recommended in installing Studio Dynetic reproducer (See Fig. A):

1. *Remove the cartridge by gently pulling it lengthwise away from the arm. This is to avoid the possibility of damage during installation.*

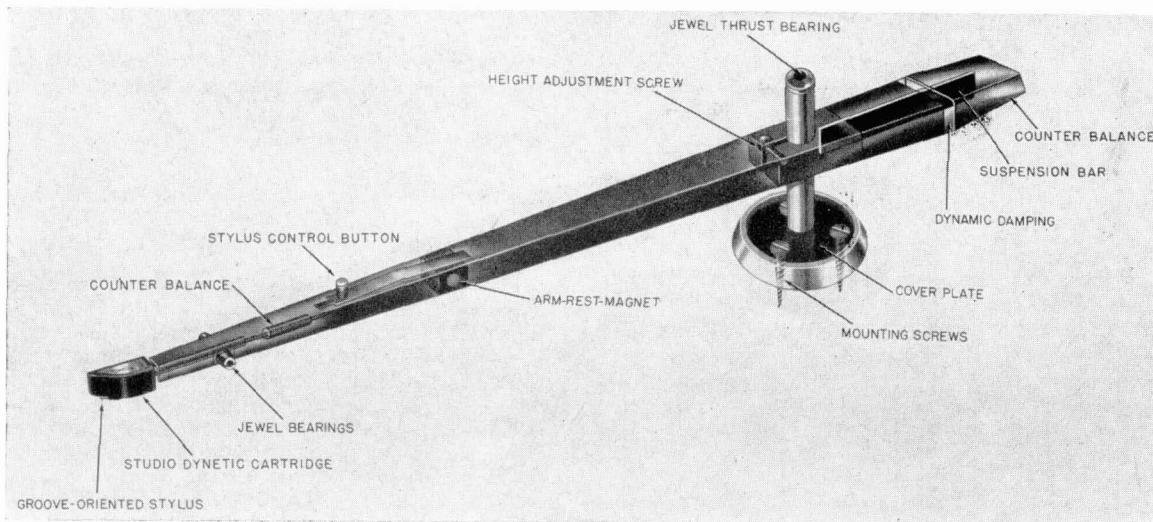


FIGURE A

2. Using the template, drill three starting holes for the mounting screws which fasten the base against the motorboard (if the motorboard is made of metal, drill three through holes of suitable size).

3. Drill through hole for the leads, as indicated on the template.

4. Fasten stand-off terminal strip at any convenient place underneath the motorboard, near the location of the arm base.

5. Fasten the base in place securely using the three larger wood screws furnished. (For mounting to metal turntable base, using the three larger machine screws furnished.) Slip over the arm pivot post the black ornamental disc so that it is seated in the larger recess at the top of the base, with a slot aligned with lead hole in the base.

6. Slip the template on the base and pivot it to any convenient place on the motorboard. Locate and drill the holes for the arm rest and fasten arm rest in place with the three small wood screws furnished. (For mounting to metal turntable base, use the three smaller machine screws furnished.) Slip the black ornamental disc on the arm rest.

CAUTION: Screws should not protrude through and interfere with the functioning of the turntable mechanism.

7. Slide the arm on the post and tighten height adjustment screw gently so that the bottom edge of the front of the arm is approximately 9/32" (7.1 mm) from the surface upon which record rests. (Caution: The cartridge should be removed from the arm during this adjustment). The height adjustment screw should be tightened only sufficiently to hold the arm firmly in place. Excessive tightening will deform the vertical bearing and prevent free motion of the arm.

The circuit diagram of recommended connections for single channel reproduction of monophonic or stereophonic discs is shown in Fig. B.

NOTE: The Models M12 and M16 Studio Dynetic Reproducer as now supplied is equipped with the proper cartridge socket and the proper wiring to be used with the Shure M21 Studio STEREO Cartridge for stereophonic disc reproduction.

Connections for the Model M21 Studio STEREO Cartridge should be made as indicated on the Studio STEREO Dynetic Cartridge Reproducer Data Sheet.

8. Thread the pickup lead through the slot in the black disc and through the hole in the base and connect to the terminal strip. Make sure the leads are sufficiently slack to permit the arm to move freely. The red lead from the pickup should be connected to terminal 1 of the terminal strip; the black lead should be connected to terminal 2; the white lead should be connected to terminal 4; the shield from the pickup should be connected to terminal 3.

A single conductor shielded cable may be used to connect the Studio Dynetic Reproducer to the preamplifier input. The conductor should be connected to terminal 8 of the terminal strip; the shield should be connected to terminal 7; a "jumper" lead should be connected between terminals 8 and 5; an ordinary piece of hook-up wire or "bell" wire should be connected between terminal 6 and the preamplifier chassis.

The Studio Dynetic Reproducer is intended for operation into a resistance of 6,700 to 10,000 ohms. As most preamplifiers have an impedance of 27,000 ohms or more, a 10,000 ohm resistor is included in the package and it should be connected across terminals 5 and 7 of the terminal strip.

9. Install the needle in the cartridge in accordance with instructions (see "stylus installation and replacement"). Handle the needle with care, but be sure that needle is firmly seated in socket. Use gentle and sufficient pressure to accomplish this. A poorly set needle will affect tracking and cause distortion.

10. Replace the cartridge in the arm socket. Check height of arm by gently and carefully swinging the arm over the turntable pad. In some installations, it may be desirable to raise or lower the arm to insure proper record contact or turntable clearance. The tip of the stylus must clear the pad to prevent damage to the stylus.

When mounting the M12 Studio Dynetic Reproducer on the Rondine Rek-O-Kut B12 Series turntables, the Shure A29R Adapter Plate is an available accessory, designed to mount on the turntable chassis, using the pre-drilled and tapped holes in the upper right hand corner of the chassis. (See information provided with the turntable.) The adapter mounts with three 8-32 screws.

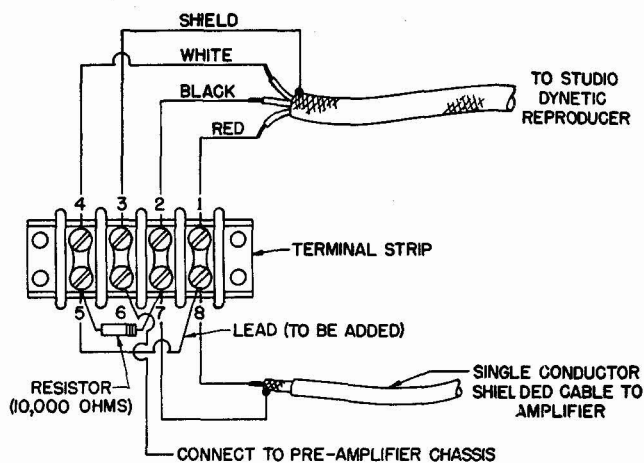


FIGURE B

The M12 reproducer can now be installed on the adapter plate using the 8-32 screws provided with the A29R Adapter. (See instructions for mounting reproducer under "Installation.")

Operation:

Place a record on the turntable, press the stylus control button, and move the arm so that the stylus tip is over the desired place on the record. Release the control button and the tip will fall gently into the groove. The ornamental name plate at the top of the cartridge has a line which indicates the location of the stylus. In this manner, it is very simple to find any desired selection on a record.

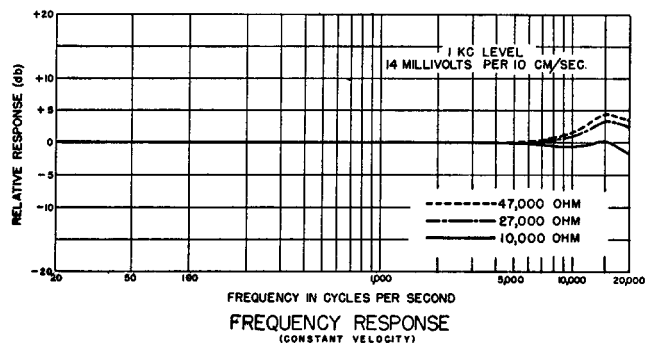


FIGURE C

The records should be kept clean and free from dust and scratches. In playing dusty records, it will be found that dust accumulates on the tip of the stylus. This can seriously affect tracking of any high fidelity reproducer.

The stylus tip should be cleaned periodically with a soft camel's hair brush. This can be done without removing the needle or cartridge from its socket.

A satisfactory means to insure constant cleaning of the needle is to mount a small soft brush on the motorboard so that the needle tip barely touches the brush as the arm swings to the rest position. Several satisfactory brushes are available and may be obtained from the same dealer who sells this reproducer.

No special precautions are necessary beyond ordinary care. The reproducer will operate dependably in hot or cold climates.

Stylus Installation and Replacement:

Special Note: Because the stylus-magnet assembly plays such an extremely important part in the overall performance of the Studio Dynetic Phono Reproducer, be certain that any replacement stylus is a genuine Shure "Studio Dynetic" stylus.

The N1 stylus has a diamond tip, 0.7 mil (0.02 mm.) radius for use in the Model M1 Studio Dynetic cartridge. This needle is color coded with an orange dot.

The N2 stylus has a diamond tip, 2.7 mil (0.07 mm.) radius for use in the Model M2 Studio Dynetic cartridges. This needle is color coded with a white dot.

Caution:

The stylus assembly, when installed in the cartridge practically immune to damage during normal usage. However, care should be taken to avoid bending or distorting the stylus assembly when it is installed or removed.

Stylus replacement is exceptionally simple and fast. See Figure D. No tools are required. To replace (Step 1) — Insert fingernail under the lip at the REAR of stylus shank. (NOT AT THE TIP.) Start to withdraw stylus by pulling with fingernail straight out of cartridge. (Step 2) — Lift completely out with thumb and forefinger. (Step 3) — Grasp new stylus between thumb and forefinger and insert into stylus socket in the cartridge with the stylus tip pointing forward in approximate playing position. (Step 4) — Press stylus into socket until it is firmly seated. Apply pressure at rear portion of the shank. (NOT AT THE TIP.) The cartridge bearings establish the proper orientation of the needle when inserted in the above manner.

Guarantee:

Each Studio Dynetic reproducer is guaranteed to be free from electrical and mechanical defects for one year from date of shipment from factory, provided all instructions are complied with fully. The guarantee does not cover needle wear nor does it cover damage to the needle from abuse or mishandling.

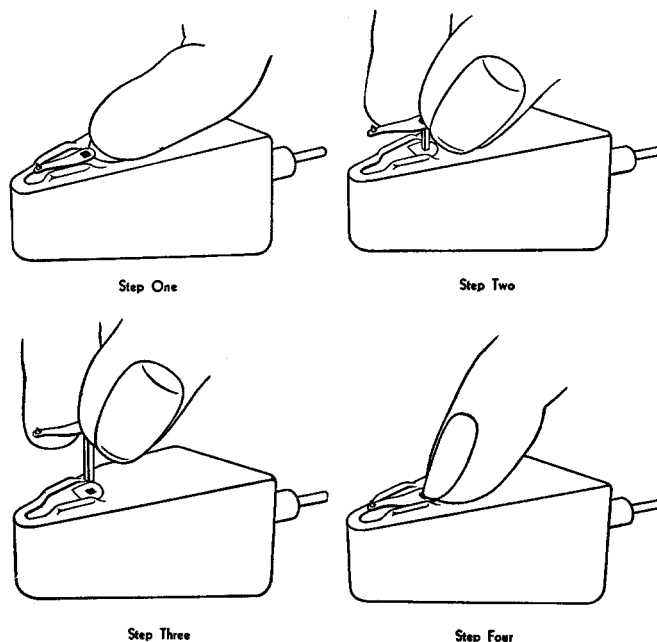


FIGURE D

SHURE

The Mark of Quality