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SME



INSTRUCTIONS FOR SERIES II PRECISION PICK-UP ARMS

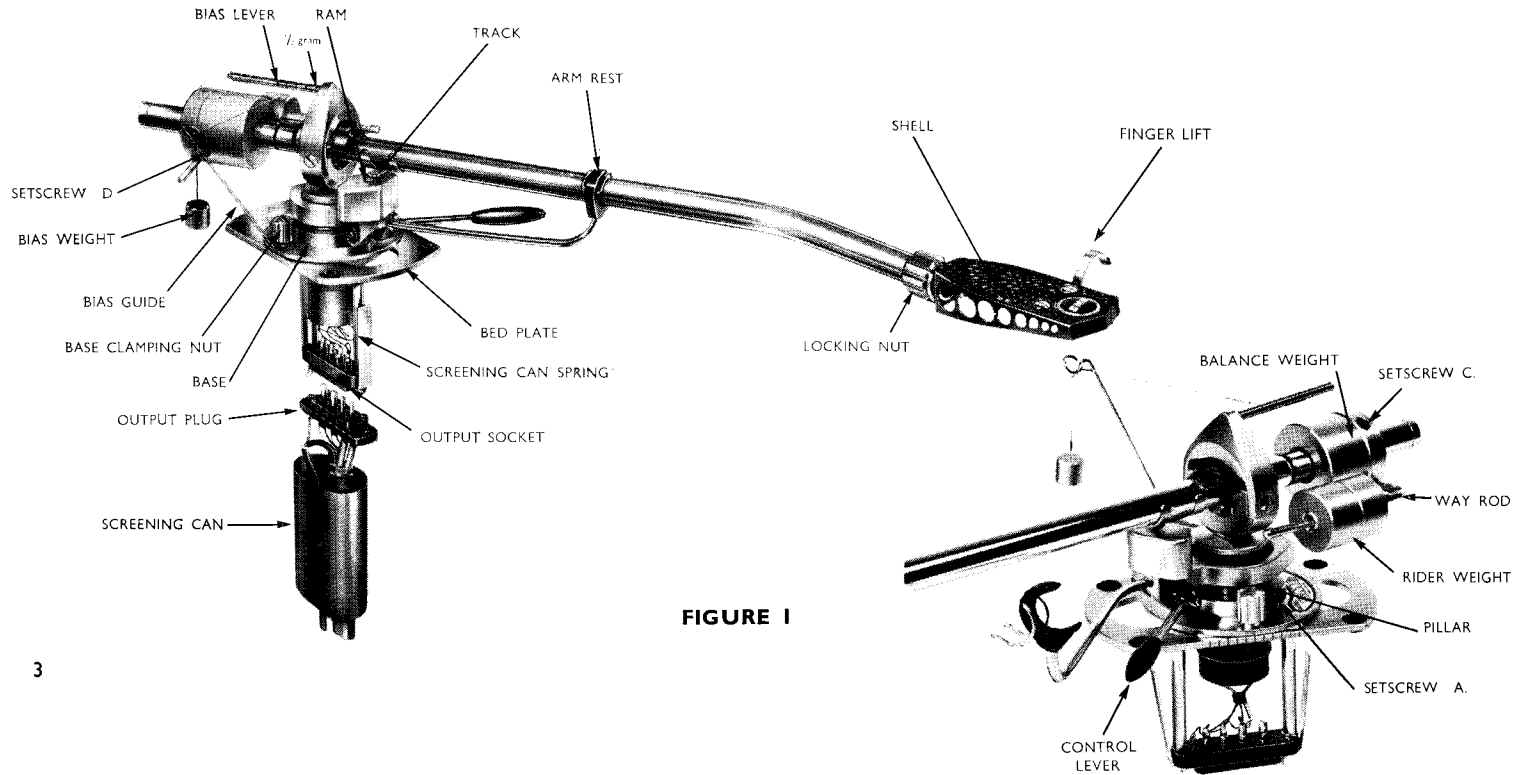


FIGURE I

INTRODUCTION

This pick-up arm is built to precision engineering standards and deserves careful handling and installation.

Study the illustrations on page 3 for easy identification of the parts referred to in the text.

All setscrew adjustments are made using the hexagon wrench supplied. Usually it is more convenient to insert the longer leg of the wrench in the setscrew.

MOUNTING

Instructions for preparing the turntable mounting board appear on the mounting template.

The length of the SME arm, pivot to cartridge mounting centres, is 9" for the Model 3009 and 12" for the Model 3012. As currently available cartridges vary considerably in the distance between stylus and the mounting centres, the SME arm has a sliding *base* to compensate and graduations on the *bedplate* facilitate tracking adjustment and quick resetting when several different cartridges are used. Positioned

normally with the mounting template, the centre line of the cut-out is on a radial line from the turntable centre. There is then an effective range of movement of $\pm\frac{1}{2}$ ". Where space is restricted it is sometimes necessary to re-position the cut-out off the radial line. For use in this way, locate the more distant of the two $1\frac{1}{8}$ " holes relative to the turntable centre according to the space available. Spike through centre "A" and swing the template until the other $1\frac{1}{8}$ " circle is as close as possible to the turntable, but with sufficient room on the mounting board to accommodate the four $3/64$ " diameter holes.

Mark all holes, remove the template and drill. Cut away between the holes as indicated by the shading to form a slot, which must be large enough to ensure clearance all round the *screening can*.

Place the unit into the slot. Secure the *bed-plate* to the mounting board with the four woodscrews. Tighten them until the rubber grommets are lightly compressed.

Unlock setscrew A. Swing the *arm rest* away from the turntable into a position where the tone arm will clear it when playing a 12" disc. Also set it approximately for height. Relock setscrew.

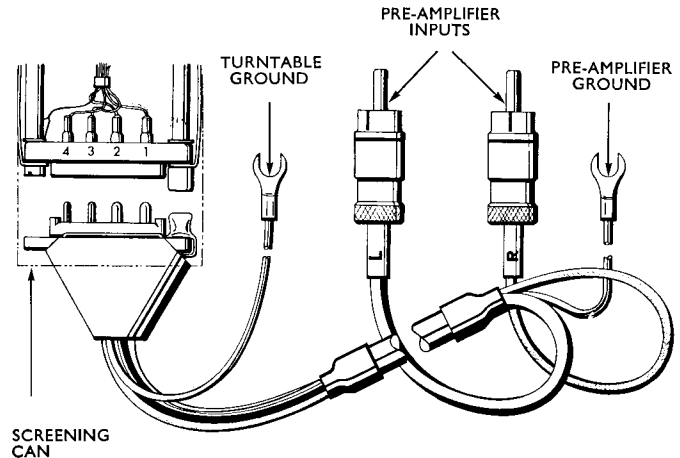
CONNECTION TO AMPLIFIER

The five-wire amplifier connecting lead is illustrated in Figure 2. This has separate screens for each channel and an independent ground wire for the turntable and pick-up arm.

Insert the white plug into the left channel input of the pre-amplifier and the red plug into the right. The spade terminal at either end of the ground wire is connected to the appropriate point on the turntable unit and pre-amplifier. The amplifier system should be connected to a direct ground. No other ground connections must exist or a loop will be formed causing hum.

Place the *screening can* over the *output plug*. Insert the plug into its socket. It will only enter one way. Slide the can up over the *screening can springs*.

On pick-up arms type HE, with horizontal cable entry, the screening can is not detachable.



- 1 WHITE LEFT CHANNEL
- 2 RED RIGHT CHANNEL

- 3 BLUE LEFT SCREEN
- 4 GREEN RIGHT SCREEN

FIGURE 2

CARTRIDGE INSTALLATION

The mounting centres of the *shell* are $\frac{1}{2}$ " apart and suit the majority of cartridges. Screws and spacing sleeves should be selected to give minimum clearance between the top of the cartridge and the underside of the *shell*. Align the screw slots for a neat appearance before finally locking the nuts.

The finger lift has been made as light as possible and its use is optional. If it is used it should be fitted between the cartridge and the *shell*.

Fit the pin-jacks to the cartridge terminals as follows

WHITE to LEFT channel

RED to RIGHT channel

BLUE to LEFT ground

GREEN to RIGHT ground

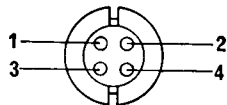


FIGURE 3

A mono cartridge should be connected to the left channel and ground as stereo pre-amplifiers with facilities for reproducing a mono source on both channels do so by switching the left input to both outputs. Figure 3 shows the contacts of the arm socket when viewed from the front. The numbers correspond to those at the output socket (1 white, 2 red, 3 blue, 4 green).

FITTING THE SHELL

Insert the shell plug into the arm socket with the locating pin in the slot and rotate the *locking nut* to draw it into place.

Check that the cartridge is upright when viewed from the front. If it is not the socket can be rotated. To do this remove the *shell* and insert a knife blade or steel rule so that it engages both slots. Turn as required, at the same time holding the tone arm firmly. Move a little at a time then refit the shell. Lowering the stylus on to a record helps when re-checking. Careful veiwing is all that is necessary to attain the required accuracy.

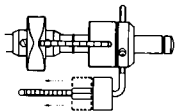
BALANCING

With the *shell* and cartridge fitted, lower the *control lever*. Remove the stylus guard from the cartridge. Its weight would cause an error in adjustment. Some cartridges have a pivoted guard to which this does not apply. However it is still preferable to remove if it possible to reduce unnecessary mass.

Longitudinal Balance

The front portion of the *rider-weight* is detachable. It is carried on a shank and can be pulled off. Remove it unless the cartridge requires a tracking force in excess of $2\frac{1}{2}$ grams or is unusually heavy.

The front of the *rider-weight* shank is the reference point and must be set to coincide with the rearmost graduation of the *wayrod* before proceeding to balance. This is illustrated in figure 4a.



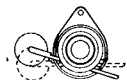
Release setscrew D. Adjust the position of the *balance weight* until the arm balances. Relock the setscrew.

FIGURE 4a

Lateral Balance Figure 4.

Slightly release setscrew C. With the arm in its rest, lift it from behind the pivot with a screwdriver, taking care to keep the blade horizontal. The knife edges should rise together and remain level. If they fall over one way or the other move the *way rod* in or out of the *balance weight* until the required condition is obtained. Relock setscrew.

This adjustment is not unduly critical and satisfactory results will be obtained with only an approximate setting.



It is sometimes necessary to rotate the *balance weight* slightly to ensure that the *way rod* clears the *control lever*.

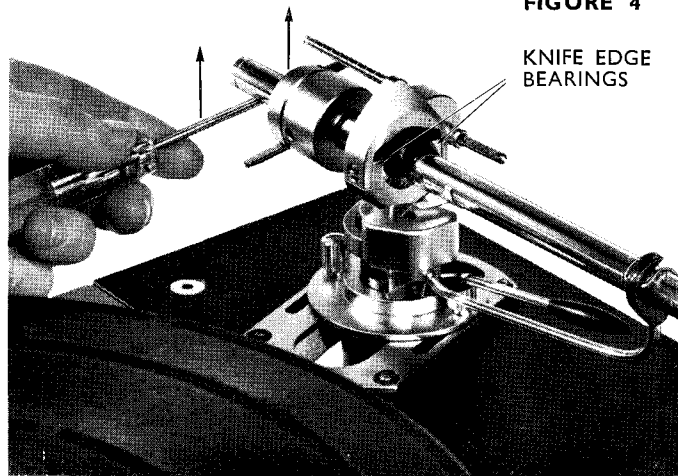


FIGURE 4

KNIFE EDGE BEARINGS

TRACKING FORCE

After balancing, tracking force is applied by moving the *rider weight* forward along the *way rod*. With the whole rider weight each graduation represents $\frac{1}{2}$ gram at the stylus. 5 grams full scale. With the front removed each is $\frac{1}{4}$ gram, $2\frac{1}{2}$ grams full scale.

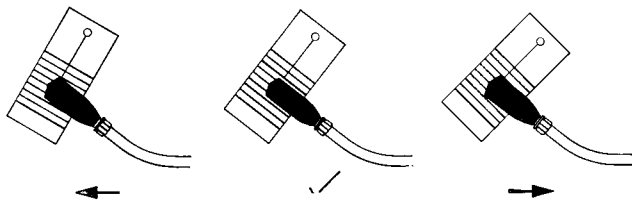
ARM HEIGHT

Unlock setscrew A. With the *control lever* lowered and the stylus resting on a disc set the *pillar* height so that the arm and turntable are parallel when viewed from the side. At the same time check the clearance between the *track* and *ram*.

A piece of paper should pass freely between the two. If it does not the *pillar* has been set too high. Also the control must be positioned so that the *ram* can engage the *track* throughout the playing of a 12" disc. If not, unlock setscrew A and rotate the *pillar* as required, maintaining the correct height. Relock setscrew.

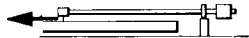
TRACKING ALIGNMENT

Slacken the *base clamping nuts* so that the *base* can slide on the *bedplate*. Place the alignment protractor on the turntable spindle. Insert the stylus into the pinhole. Keeping it in place move the *base* until the sides of the *shell* appear parallel with the black lines on the protractor when viewed from above. Relock the nuts.

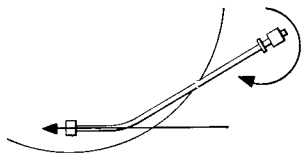


BIAS ADJUSTER

This is an important feature and explanation of its function will not be out of place. Friction between the stylus and disc produces a force which tries to pull the arm forward. It varies with tracking force, but not significantly with disc speed.



Because the arm is offset, a turning moment is produced about the vertical pivot. The arm tries to swing to the turntable centre. The resulting side pressure is particularly undesirable for stereo, causing the stylus to favour one channel and assume a non-central position. The bias adjuster restores balance by an opposing force proportional to the tracking force. It is fitted as follows:



Remove the off-side *base clamping nut*. Place the angled end of the *bias guide* over the protruding screw and replace the nut.

Thread the loop of the *bias weight* over the *bias lever* and drop the nylon into the *bias guide* so that the weight hangs freely. Position the loop in the groove corresponding to the tracking force being used. Each represents $\frac{1}{2}$ gram and remains so with either the whole or half *rider weight*. Use the first one closest to the arm pivot for $\frac{1}{2}$ gram, the third for $1\frac{1}{2}$ grams etc. For $\frac{1}{4}$ grams use the next higher setting. Adjust the position of the *bias guide* so that, with the stylus on the outer groove of a 12" record the thread is at a right angle to the bias lever.

ARM CONTROL

To play a record, raise the *control lever*, move the arm out of its rest and sight the stylus over the groove selected. Lower the lever and the arm will set the stylus down gently. Since it is under hydraulic control the lever can be dropped quickly without affecting the rate of descent. The operator's hand should be well clear before the stylus touches the disc.

MAINTENANCE

If the instructions have been followed the arm will function correctly.

No maintenance other than periodic cleaning is necessary.

Do not lubricate.

Do not attempt to readjust the pillar bearings.

Do not allow the wiring to become wound up by full rotation of the arm.

Do not remove the lowering control cover. The fluid can only be replaced at the factory. Clean the rubber mushroom in the top of the raising and lowering ram with a rag lightly moistened with lighter fuel.

Keep the unit free of dust accumulations. A small dusting brush is useful for the purpose. Apply silicone polish to the black parts.

Retain the pack for possible re-use.