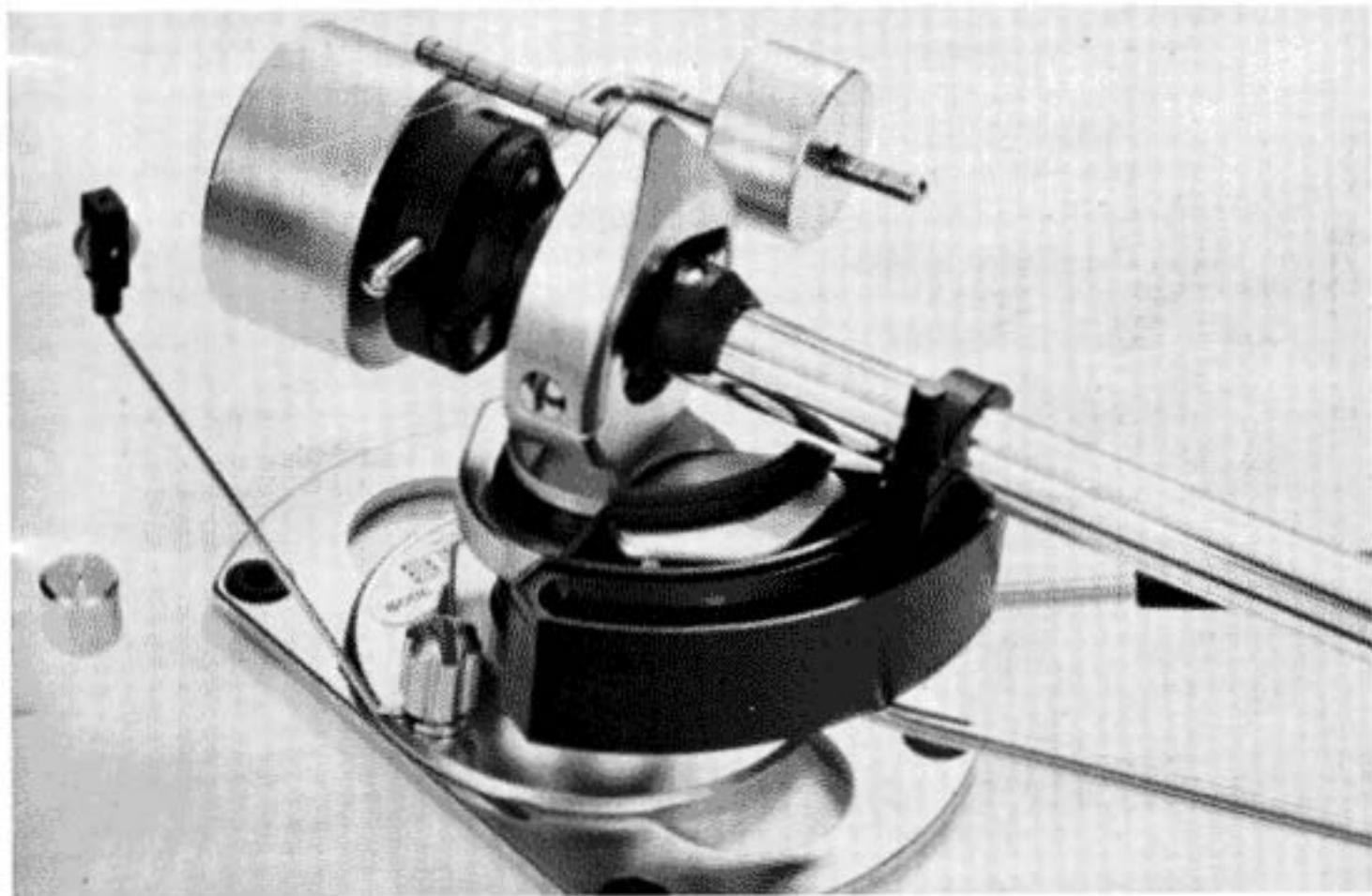


# SME

## FLUID DAMPER F.D.200

FOR SME SERIES II AND SERIES II IMPROVED PRECISION PICK-UP ARMS



## **CONTENTS OF THE PACK**

- 1 – Damper tank and cover**
- 1 – Flask of FD.200 damper fluid**
- 1 – Each paddles, 13 mm. wide (White), 9 mm. wide (Grey),  
7 mm. wide (Black)**
- 1 – Paddle clamp**
- 1 – Paddle retaining screw**
- 1 – Sachet of cartridge seating compound**
- 1 – Cam/lever assembly**
- 1 – Cam circlip**
- 1 – Cam detent pin**
- 1 – Cam extractor**
- 1 – Arm rest assembly**
- 1 – Hexagon wrench**
- 1 – Instruction book**

## **WHAT THE FD.200 DOES**

The FD.200 fluid damper renders the pick-up arm less lively. In this respect it performs a similar function to the shock absorbers of a motor car. The damper does not resist the normal slow passage of the arm across the record, but any influence which would tend to produce rapid arm motion is resisted because of the flow characteristic of the fluid. The benefits of damping in this application have long been known but most designs hitherto have suffered from low efficiency and leakage.

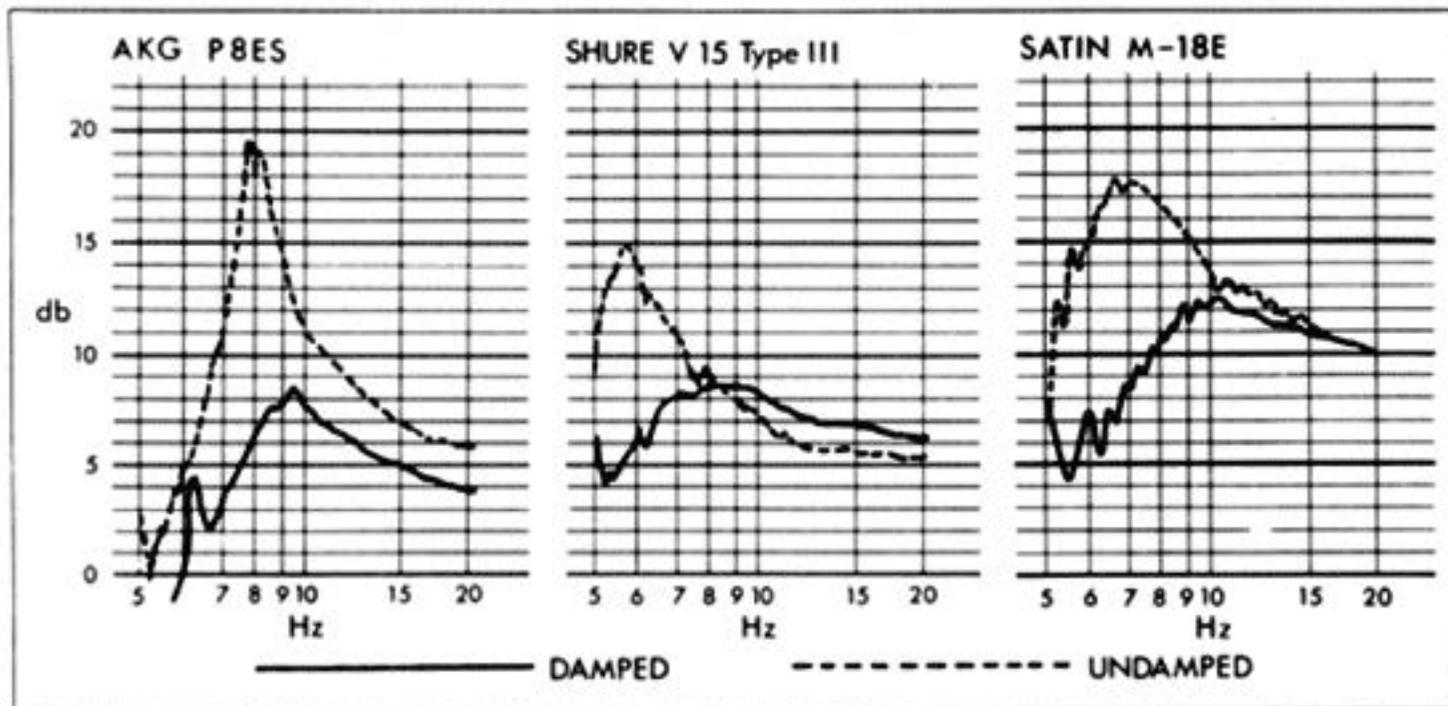
The FD.200 overcomes these problems as it is effective at a radius of 1.45 inches and in the normal operating position the fluid cannot migrate from the tank.

We hope you will find the directions easy to follow and that your system will benefit from the improved bass, resistance to shock and reduction of spurious low frequencies that the damper achieves.

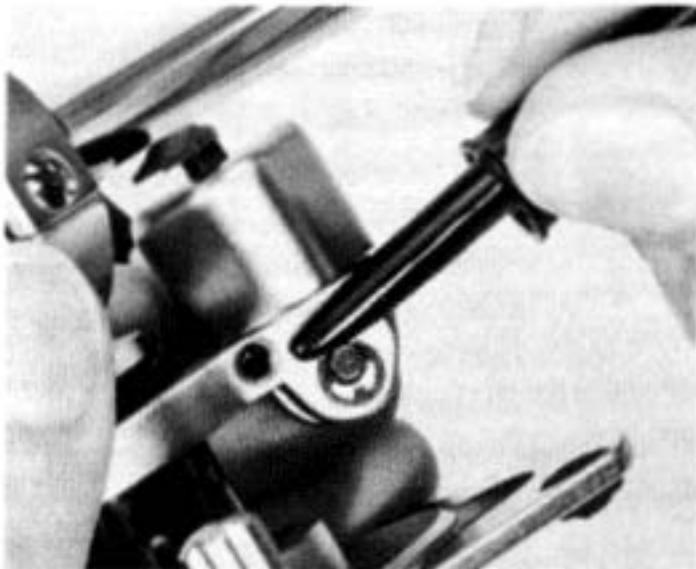
## **FITTING THE FD.200**

The illustrations show the pick-up arm removed from the turntable whilst fitting takes place. This is not essential however and in some cases it may be considered preferable to carry out the work with the arm fitted to the deck.

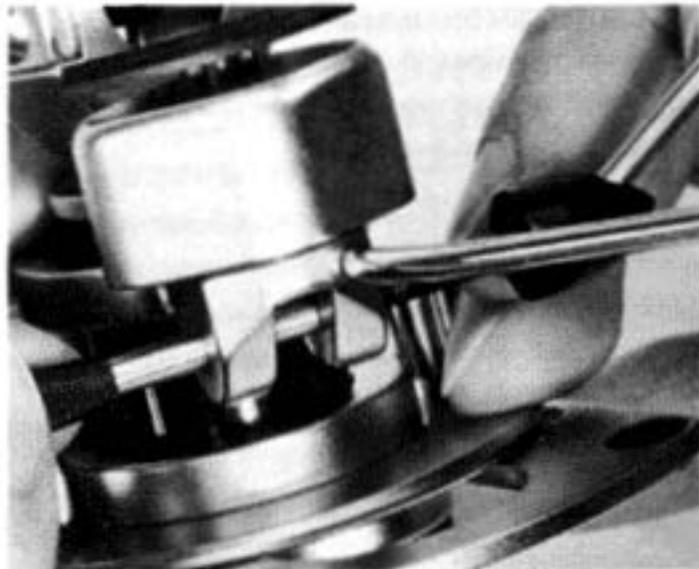
When using the damper it is as important as ever that the cartridge is acoustically bonded to the shell. The point is of particular significance with cartridges of low compliance. A supply of suitable compound is provided. Clean the underside of the shell where the cartridge will lie with lighter fuel. Place a piece of compound about the size of a pea between the top of the cartridge and the underside of the shell and squeeze the two together so that any voids are completely filled. Use only enough compound to achieve this. The screws are then fitted in the usual way. Excess compound can be removed and the holes in the top of the shell tidied up with a cocktail stick to present a neat appearance.



The graphs show typical extreme low frequency response characteristics of three cartridges in the Model 3009 Series II Improved precision pick-up arm. Note the substantial reduction in the 'Q' of the low frequency resonance. Although these frequencies are themselves outside the range of human hearing, they give rise to undesirable side effects which can be audible.



**1a**

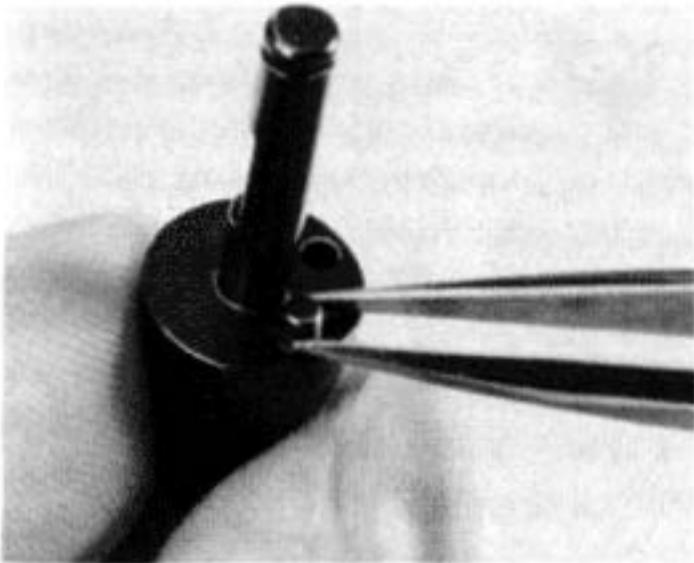


**1b**

**1. REPLACING THE CONTROL LEVER AND CAM**

**1a.** Raise the control lever and remove the circlip.

**1b.** Eject the cam with the tool provided.

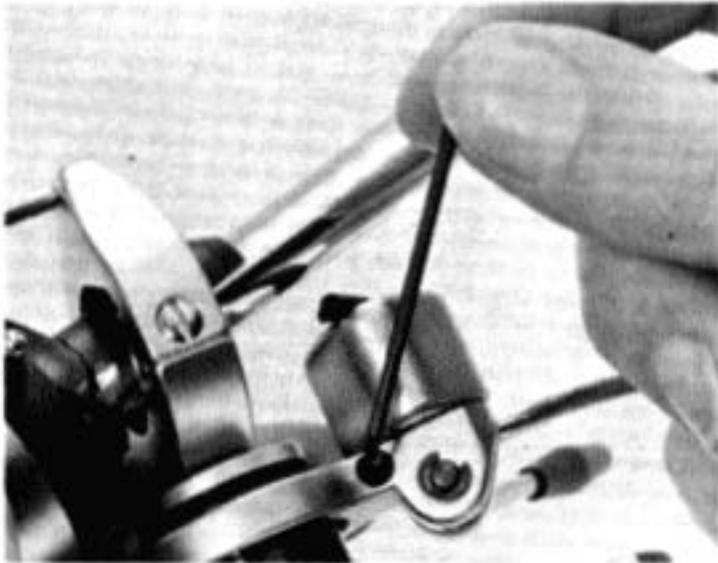


**1c**

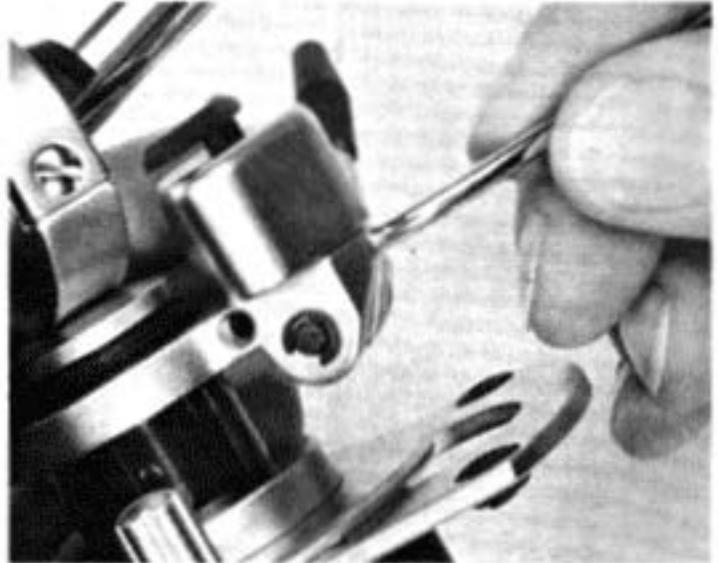


**1d**

- 1c.** The new cam has two holes drilled in its inner face, compare it with the old one and insert the detent pin in the appropriate hole to correspond with it.
- 1d.** Lightly lubricate the new cam with thin oil and pass it back through the control bracket journals, ejecting the tool in the process.
- 1e.** Ensure that the lever works smoothly and drops freely. Re-fit the circlip.



2a



2b

## **2. CHANGING THE ARM REST**

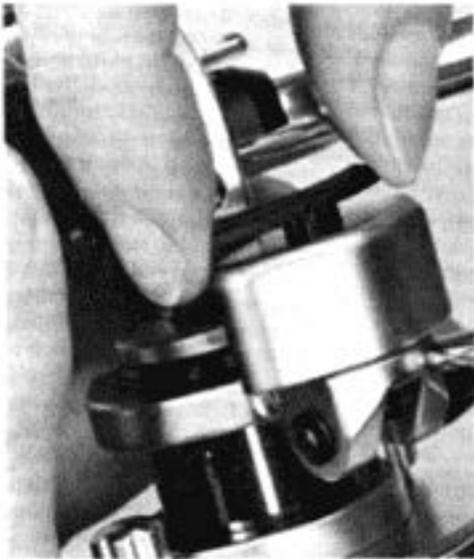
**2a.** Release the setscrew using the hexagon wrench provided.

**2b.** Withdraw the arm-rest bracket.

**2c.** Insert the new arm-rest bracket, ensuring that it is pushed fully home and correctly positioned.

**2d.** Re-lock the setscrew very firmly.

**2e.** Manipulate the bracket with the fingers as required to ensure smooth acceptance of the arm into the rest and a level disposition.



**3a**



**3b**



**3c**

### **3. FITTING THE TANK**

- 3a.** With the type of control illustrated it is necessary to remove the arm lift. Raise the control lever and, grasping the lift between finger and thumb pull it upwards out of the control.
- 3b.** The tank fits down snugly over the dashpot jacket.
- 3c.** For the proper functioning of the damper there must be no play in the jacket. If it is a loose fit, remove it and place two or more strips of adhesive tape as indicated. The tape must be arranged symmetrically so that alignment is preserved when the jacket is re-fitted.
- 3d.** Re-fit the arm lift, pressing it firmly down with one finger.

#### **4. SELECTING THE PADDLE**

Paddles of three widths are provided. Select the paddle to suit the compliance of the cartridge by reference to the literature which accompanied it. If different figures are given for vertical and lateral compliances, consider the higher figure. Our recommendation is as follows:

13 mm. wide (White) for compliances below 20 cu.s

9 mm. wide (Grey) for compliances above 20 cu.s

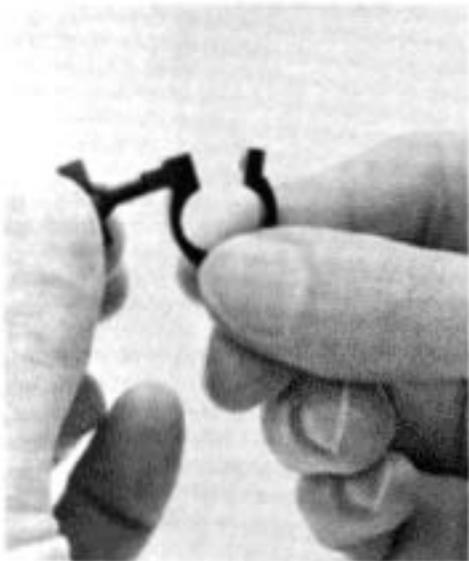
7 mm. wide (Black) for compliances above 30 cu.s

*NOTE:* 1 compliance unit (cu.) =  $1 \times 10^{-6}$  cm/dyne.

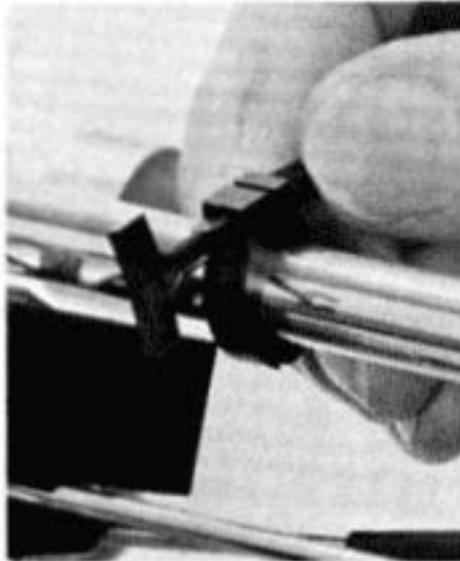
If the compliance is not stated the black paddle can be safely used whilst information is obtained from the cartridge manufacturer.

#### **5. FITTING THE PADDLE**

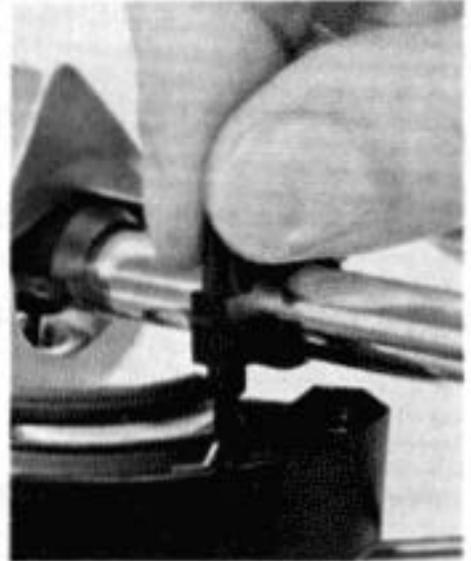
- 5a.** Hold the paddle with its convexed surface towards you. Insert the squared end of the shank into the lower jaw of the paddle clamp. It has a slight taper and should remain in position if pushed firmly home.
- 5b.** Ensure that the tone-arm and paddle clamp are free from dust or foreign matter which might mar the anodic finish of the tone-arm. Place the paddle clamp on the tone-arm and take up excess play with the knurled clamp screw.



**5a**



**5b**



**5c**

- 5c.** Position the clamp on the arm so that the paddle is in the centre of the slot in the tank and rotate it until the shank of the paddle is vertical when viewed from the front.
- 5d.** Lock in position by tightening the knurled clamp screw.
- 5e.** Re-fit the arm to the deck if it has been removed.
- 5f.** Check that there is no interference between the paddle and the tank by moving the arm through its normal operating arc and at a height corresponding to playing conditions.
- 5g.** Check the arm for balance and tracking force as directed in the instruction book which accompanied it.
- See Note overleaf.

## **FITTING THE PADDLE** (*contd.*)

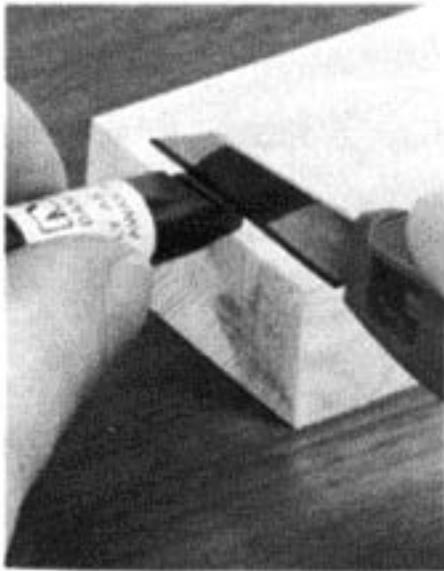
### **NOTE:**

The paddle unit weighs only 820mg. and is fitted at a radius of approximately 1.45 inches. Its addition to the effective mass of the arm as seen at the stylus is therefore less than 21mg.

### **6. FILLING THE TANK**

- 6a.** The flask contains 2 mls. of 200,000 c s viscosity silicone fluid and is a metered amount for one filling of the tank. Slice off the end of the flask with a sharp trimming knife at the point indicated.
- 6b.** Engage the flask in the top of the tank so that it stands upright as shown.
- 6c.** Unscrew the cap from the flask allowing the fluid to flow into the tank and settle. This will take between one and two hours. Carefully remove the flask and put it safely away. Silicone fluid can cause irritation to the eyes and care should be taken to wash any surplus from the hands.

The recommended damping rates are a good compromise to maintain a substantially similar motion pattern of stylus and cartridge, assuming records in normal condition and a realistic tracking force. The damper stores energy on the warp rise to



6a



6b



6c

resist any tendency for the stylus to lose contact at the top of the warp and provide a restoring force on the down warp. The situation however has a number of variables, the degree of warp, the compliance of the particular cartridge etc. In certain cases a small degree of 'tuning' may be necessary for a particularly warped record. Tuning may be achieved in three ways:—

1. Remove some of the damping fluid a little at a time with a matchstick, returning it to the flask for possible re-use. The bottom of the flask will need to be re-sealed and stored with the screw cap downwards.
2. Proceed as 1 above and reduce the viscosity of the remaining

fluid by the addition of REDUCING FLUID, available from SME.

3. Use a smaller paddle, unless the smallest one is already in use. It is only rarely that conditions require alteration of the standard arrangement provided.

## **OPERATION**

It will at once be noticed that the handling characteristics of the arm are changed when it is damped. Freedom of motion is not impaired at very low rates of movement, but rises sharply with velocity. Care must therefore be taken when balancing a damped arm to allow adequate time for adjustments to take effect. In placing the arm in equilibrium for example final adjustment should be made a little at a time, observing the effect over the ensuing five or ten seconds.

Silicone fluid has a high thermal stability and resistance to evaporation. It is therefore an ideal damping medium. The damper should be protected from dust during periods of disuse. This is normally afforded by the cover of the plinth or cabinet in which the equipment is mounted. Failing this a handkerchief or something similar laid over the arm will provide what is required.

## **PLEASE REMEMBER**

- 1. If you are using a number of cartridges and do not wish to change the paddles, use the one appropriate to the highest compliance cartridge in use.**
- 2. Handle the arm slowly and smoothly. Rapid movements temporarily displace the fluid and might cause spillage.**
- 3. Do not attempt to remove surplus fluid from the mouth of the tank. It is designed so that anything there will drain back.**
- 4. Once fitted avoid handling the damper unnecessarily. Silicone fluid is not easy to dispel. It is best removed from the fingers with lighter fuel followed by soap and water.**
- 5. If you are making an occasional change of paddle, support the used one over the edge of the tank and leave it for about an hour so that the fluid drains off.**
- 6. Momentary disturbance of the equipment will not cause leakage provided it is returned to a level position within, say, 15 seconds.**
- 7. If any of the fluid accidentally finds its way onto the arm-lift it will cause it to slip. Wipe clean with a tissue lightly moistened with lighter fuel.**
- 8. Spare parts for the FD.200 are available promptly from the Service Department, SME Limited, Steyning, Sussex, BN4 3GY England.**