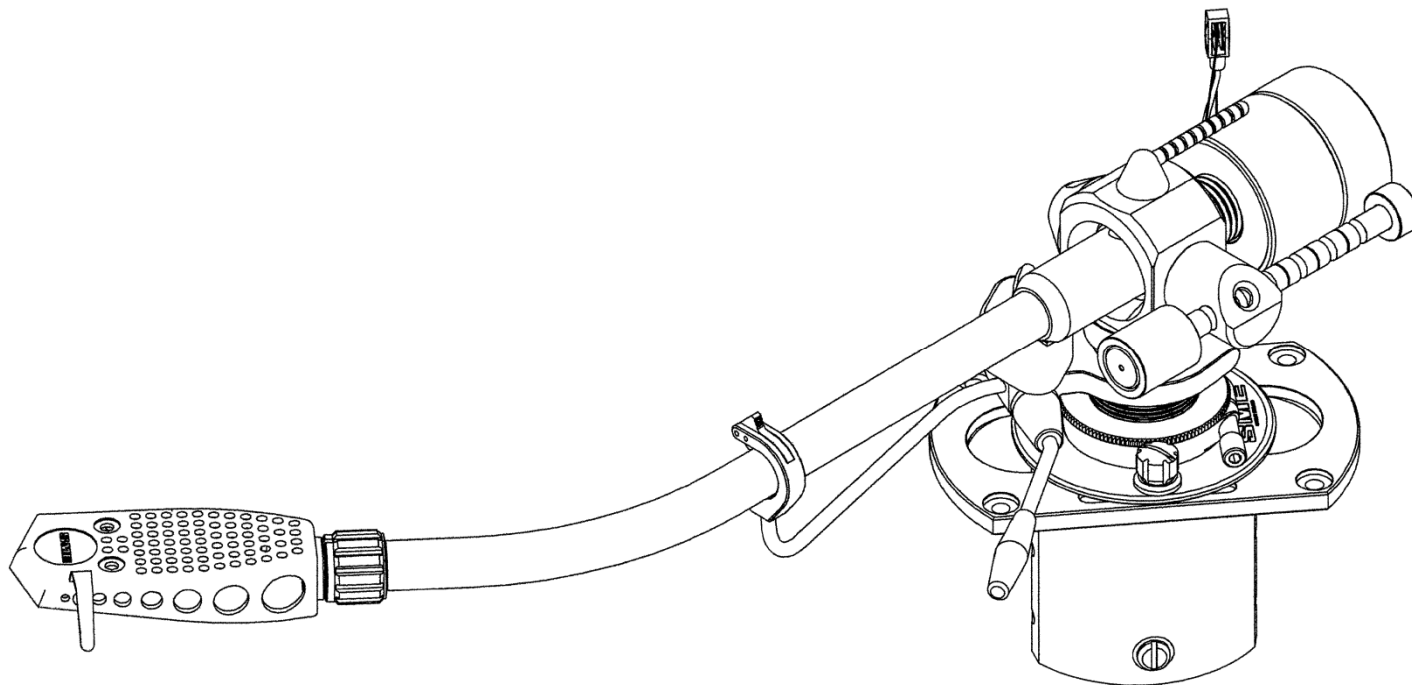


# SME

*The best pick-up arm in the world*



## INSTRUCTIONS

SERIES M2-9R & M2-12R

## Introduction

SME is an iconic brand founded in 1946 by audio legend Alastair Robertson-Aikman in West Sussex, England. Today SME is recognised as makers of the finest precision turntables and tonearms in the world. Entirely made in-house by state of the art manufacturing processes, complemented by traditional craftsmanship methods.

SME audio has evolved from 75 years of engineering excellence, innovation and perfection delivering precise and pure audio reproduction.

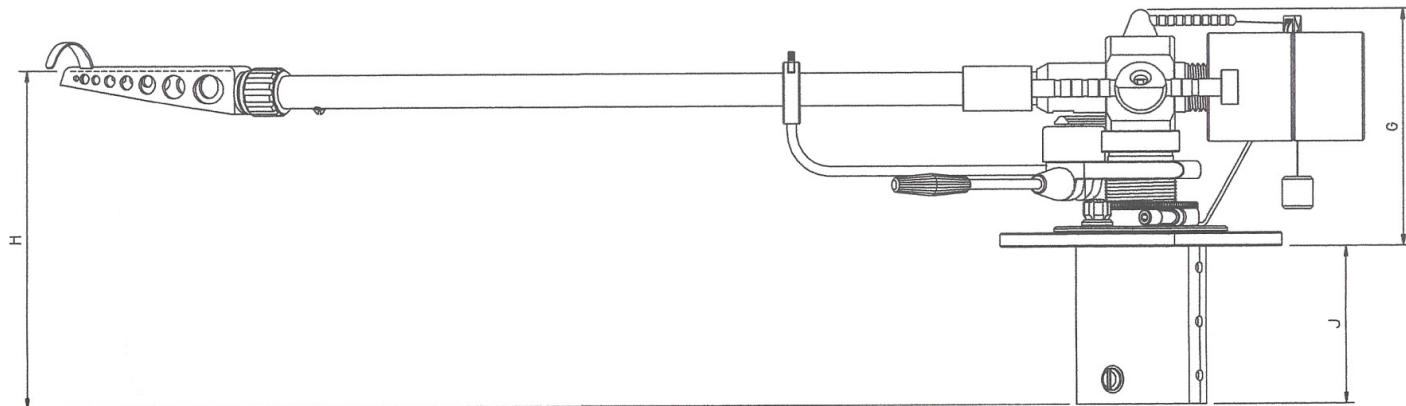
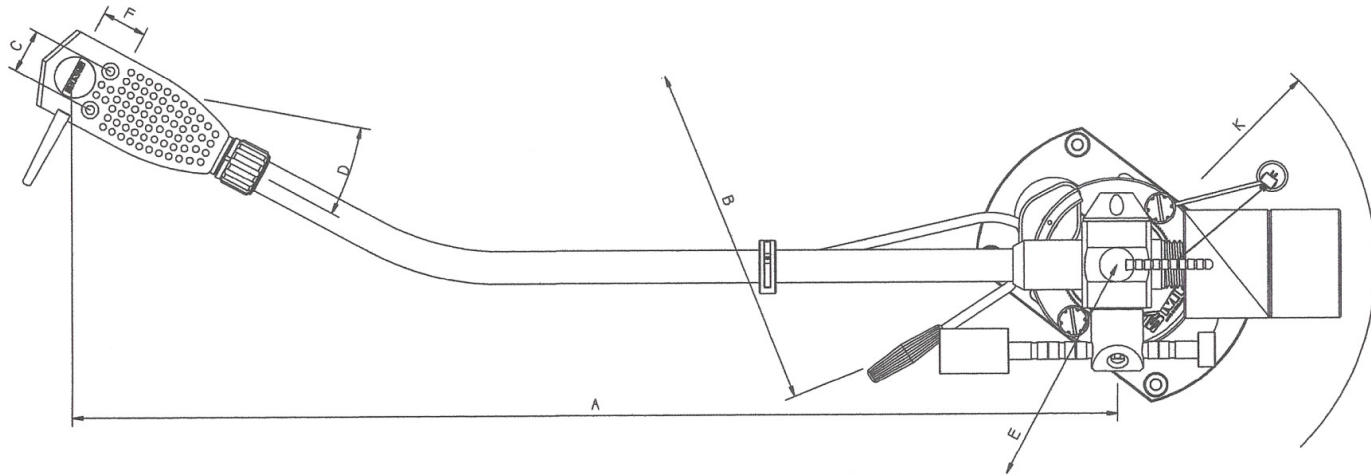
The SME M2-9R and M2-12R tonearms are of meticulous build quality with all the most important features including lightweight stainless steel tonearm tube, detachable aluminium headshell with double draw pins for extra rigidity and azimuth adjustment, tungsten balance weight, high quality ball race bearings in all planes and a level of stiffness to suit a wide range of cartridges.

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# General Arrangement



## Dimensions

	<b>M2-9R</b>	<b>M2-12R</b>
A - Pivot to Stylus	233.20	308.81
B - Pivot to Turntable Centre	215.40	295.60
C - Cartridge Fixing Centres	12.70	12.70
D - Offset Angle	23.63°	17.62°
E - Linear Offset	93.47	93.47
F - Overhang	17.80	13.21
G - Height above Mounting Surface	87.00 max 63.00 min	87.00 max 63.00 min
H - Mounting Surface to Underside of Headshell	67.40 max 43.40 min	67.40 max 43.40 min
J - Depth below Mounting Surface	46.00	46.00
K - Balance Weight Radial Clearance	79.00	85.00

## Specifications

	<b>M2-9R</b>	<b>M2-12R</b>
Effective Mass	9.5g	18g
Cartridge Balance Range		
Headshell: up to	38g	38g
Plug-heads: up to	46g	46g
Vertical Tracking Force (VTF)	5g	5g
Maximum Tracking Error (degree/mm)	0.013mm	0.010mm
Null Points: Inner (mm radii)	66.04mm	66.04mm
Outer (mm radii)	120.9mm	120.90mm
Weight, net (g)	735mm	834mm
Audio Lead:	1.2m long balanced hybrid cable with gold plated phono plug connections to amplifier and independent ground system	
Internal Wiring:	Silver Litz	
Output:	RCA Phono	

## Packing List

Series M2-9R or M2-12R Precision Tonearm

Detachable Headshell

Instruction Book

Mounting Template

Alignment Protractor

Headshell Hardware..... Cartridge Screws/Nuts (alloy)  
2mm Hex Wrench  
0.89mm Hex Wrench

Mounting Hardware..... Set of M3 x 20mm Button Head Screws  
4 Nuts and 4 Washers  
4 Tonearm Mounting Washers  
2.5mm Hex Wrench

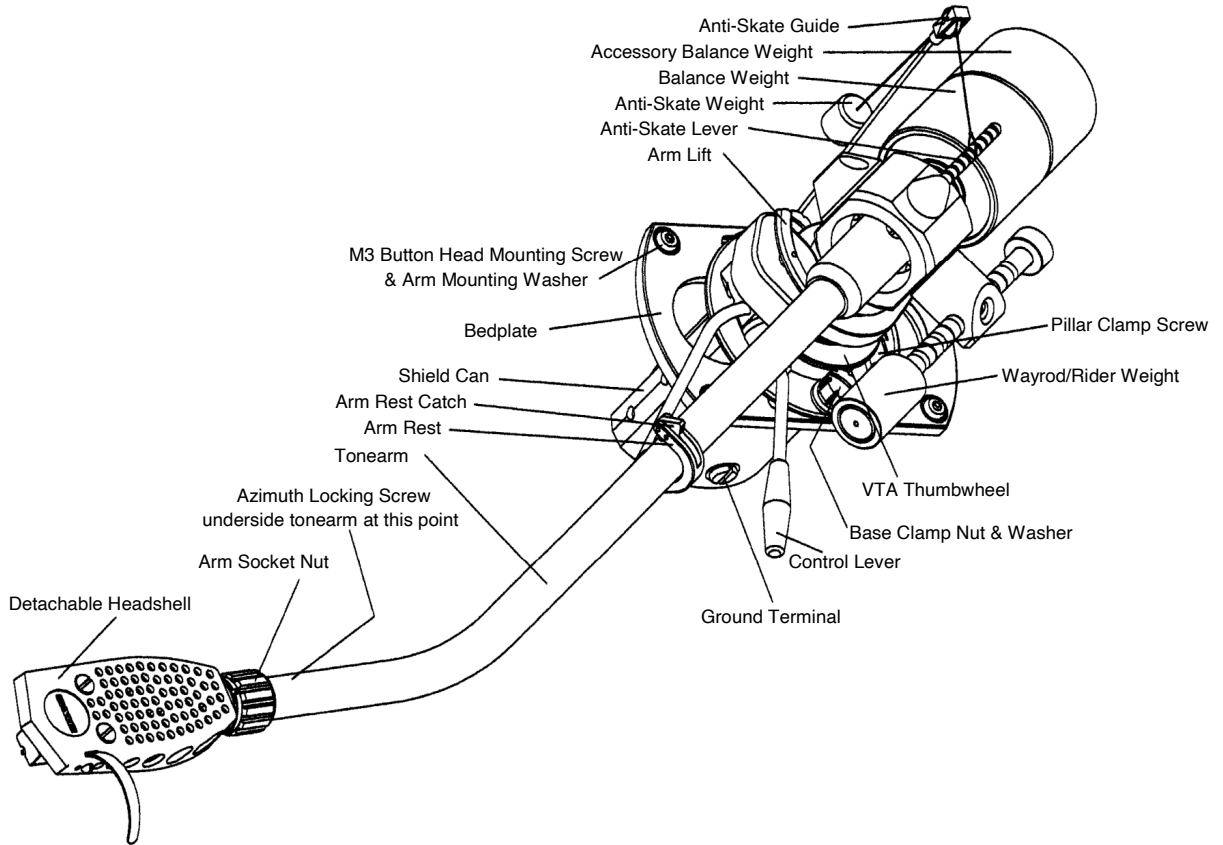
Audio Lead

Bias Weight

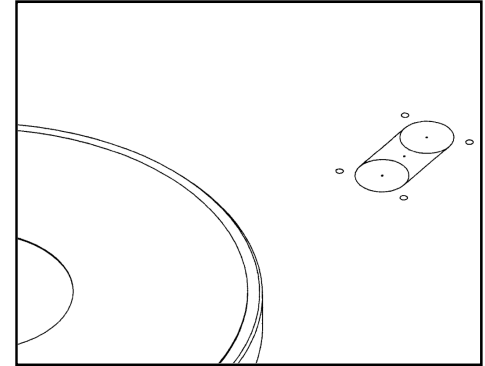
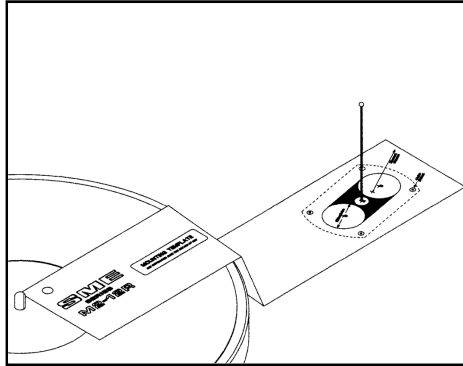
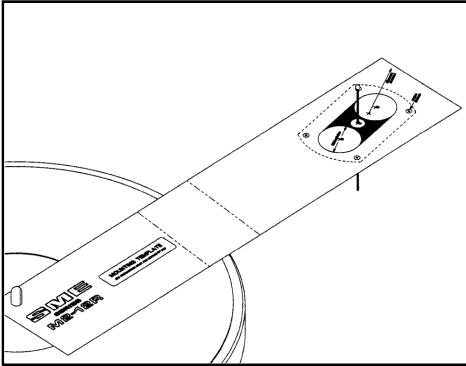
Bias Guide

Guarantee Card

# Parts Identification







## Preparing the Mounting Board

Where the deck is not already cut to accept an SME tonearm, it will need to be prepared as follows:

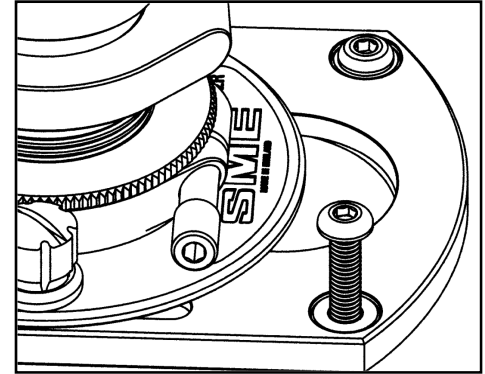
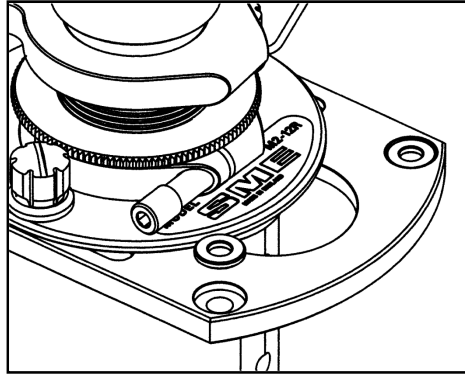
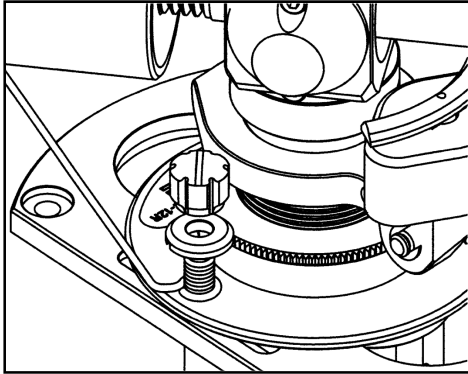
Pierce the centre point A of the mounting template to accept a pin or needle about 50mm long. Place the template on the record spindle and keeping it parallel with the surface on which the arm will be mounted pass the pin vertically through the centre point A and spike it into the tonearm mounting board.

Disengage the template from the spindle and maintaining the same alignment slide it down the pin and onto the mounting board. This will position the base for maximum effective movement when adjusting the horizontal tracking angle (HTA). Anti-clockwise rotation from this position up to approximately 40° can be made to meet individual needs but is not critical provided that the requirements of the alignment protractor can be satisfied. Note that the rear overhang requires a 51mm radial clearance from the point shown on the template.

Using a scribe or a compass point, spike through the centre points B and centres of the four fixing holes. Remove the template and mark two Ø28mm circles about the points B already centred. Join these together tangentially with two parallel lines to complete marking out.

Drill four Ø4mm fixing holes and two Ø28mm holes. Cut away the remaining area to form a slot and finish the edges with a file and glasspaper. If a hole saw is not available chain drill a series of small holes around the inside of the line, saw and file out.

With suitable tools and technique the procedure is similar for materials other than wood.

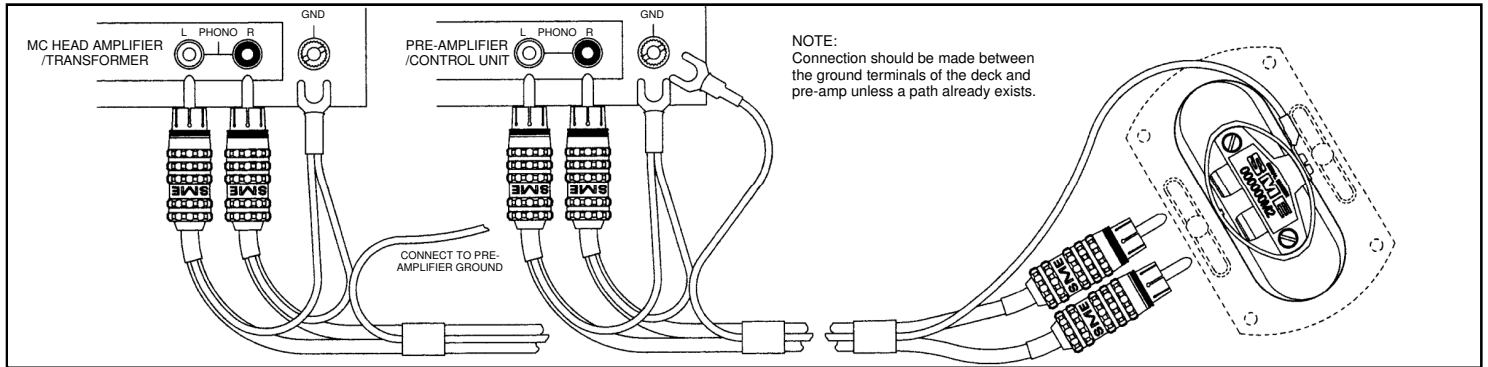


### Fitting the Tonearm

Remove the inner base clamp nut and base clamp washer. Pass the loop at the lower end of the anti-skate guide over the base clamp bolt and fit the base clamp washer. Ensure that the loop on the anti-skate guide is fitted into the counterbore in the underside of the washer and the slot is aligned with the anti-skate guide. Replace the base clamp nut and tighten, lightly.

Fit a mounting washer to each of the four counterbores in the upper surface of the bedplate.

Position the tonearm on the mounting board and insert the M3 button head screws into the holes. If the holes are not tapped M3 to accept the screws directly, it will be necessary to fit the nuts and washers under the board. Tighten fully using the 2mm wrench.



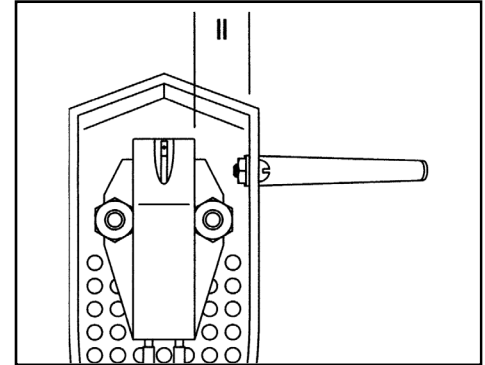
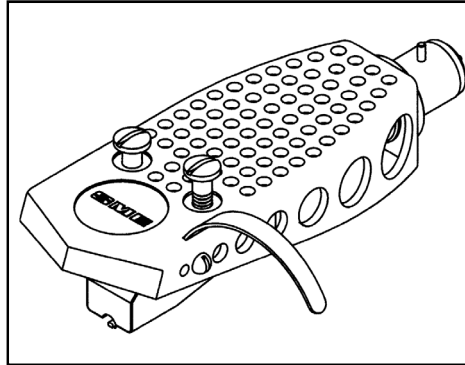
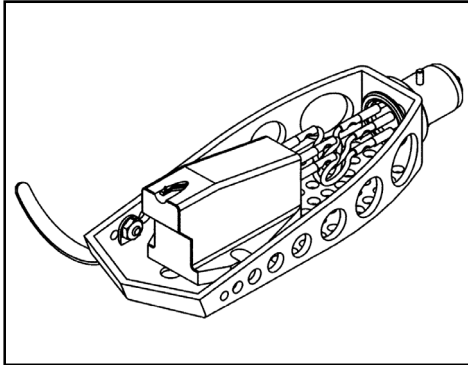
## Audio Leads

The illustration shows use with and without a head amp/transformer and phono plug connections should be made accordingly.

Connect the ground wire serving the tonearm to the pre-amp ground and those from the rear of the phono plugs to the ground terminal on the piece of equipment to which these plugs are connected.

If the turntable has a ground terminal, it too should be connected to the pre-amp ground, provided it is not already grounded by another path.

The system has been designed for a high signal to noise ratio and if this is not achieved multiple ground paths or the over proximity of mains equipment will be likely causes. Some cartridges have an external foil tag connecting the right channel ground terminal to the cartridge body. For use in a metal shell it will be necessary to remove this with a small pair of tweezers or the point of a blade, lifting the tag off over the terminal pin. If this is not done a ground loop may be formed, causing hum on the right channel.



## Fitting the Cartridge

Before fitting the cartridge see that the stylus guard (*not illustrated*) is in position as a precaution against accidental damage.

The cartridge leads have  $\text{Ø}1.2\text{mm}$  receptacles to suit the cartridge.

The coding is as follows:

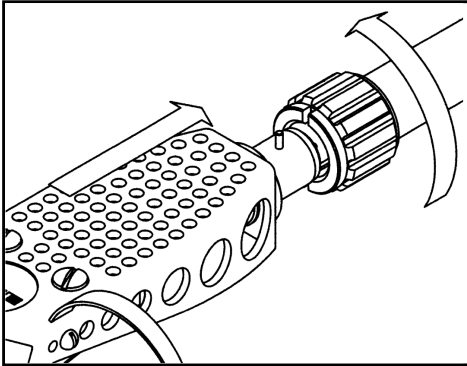
- Red - Right Channel Signal
- Green - Right Channel Signal Ground
- White - Left Channel Signal
- Blue - Left Channel Signal Ground

Most cartridges are supplied with their own screws. We provide one pair #3-48 UNC x 11mm with nuts and washers, other lengths are available from SME.

Examine the top of the cartridge. It is important that it presents a good flat face to the underside of the headshell. Before final tightening check that the cartridge is lying parallel to the reference edge of the headshell, as shown.

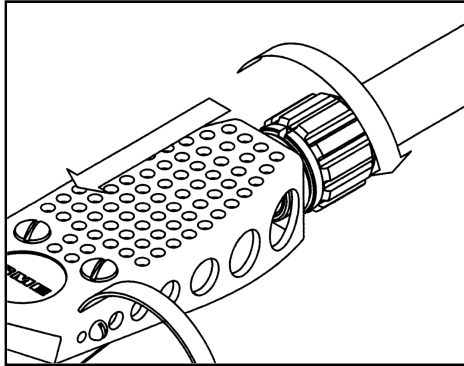
Tighten the fixing screws securely using a screwdriver, which must be a good fit in the screw slots to avoid damage. Hold the nut if necessary to prevent rotation.

The screws are non-magnetic. Damage can be caused if a screw is snatched by magnetic attraction whilst being offered up to the cartridge. For the same reason do not lay down tools nearby.



### Fitting the Headshell

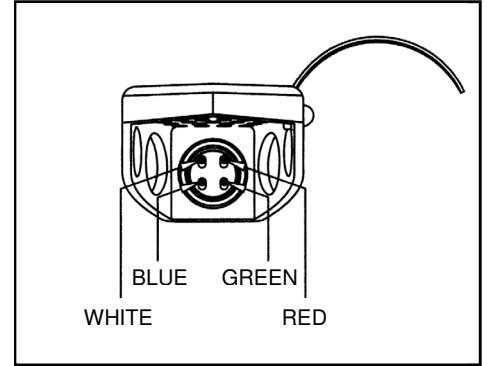
Insert the headshell into the tonearm socket and press firmly inwards until the draw pins contact the thread of the socket nut. Maintaining pressure, turn the socket nut anti-clockwise viewed from the front to draw the headshell home. It should be tightened firmly but not to the point of strain.



### Removing the Headshell

Removal is the reverse of fitting. Holding the headshell firmly to prevent rotation turn the socket nut, clockwise when viewed from the front, until the headshell is completely released.

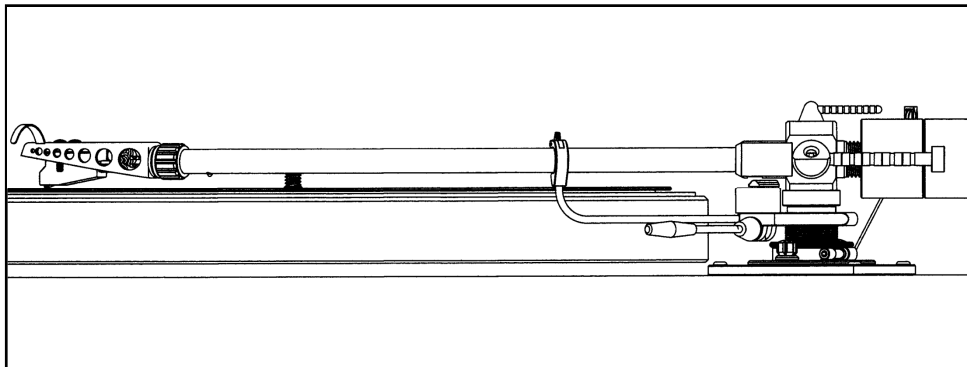
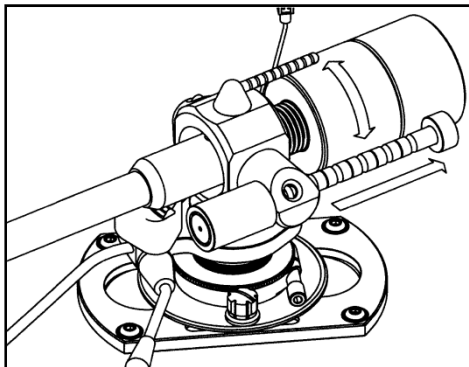
Take care to avoid damaging the cartridge during this operation.



### Cartridge Lead Replacement

The cartridge leads can be replaced and are available from SME.

They should be fitted according to the colour coding shown looking onto the headshell from the front.



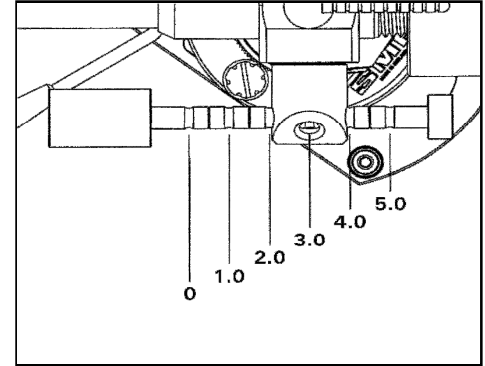
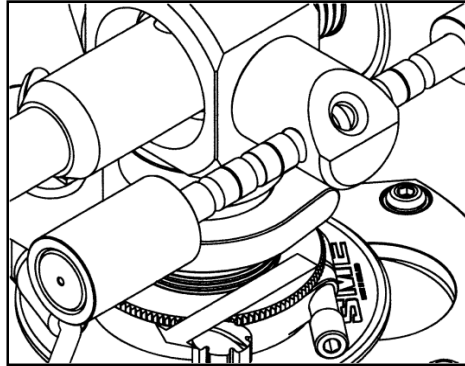
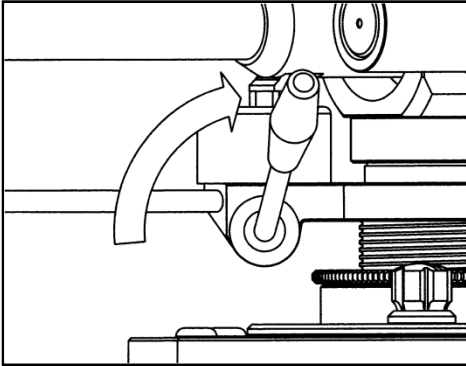
## Longitudinal Balance

With only the main balance weight fitted, cartridges up to 16g may be balanced. However by removing the balance weight end cap and coupling the accessory balance weight (as illustrated) cartridges up to 38g, mounted in the headshell or plug in heads up to 46g can be catered for.

Slide the wayrod/rider weight into the rearmost zero position and balance the arm by rotating the balance weight in the required direction.

Remove the accessory balance weight, when needed, by unscrewing anti-clockwise from the balance weight. Replace the balance weight end cap.

Adjust until the tonearm, with the cartridge fitted, is either level or slightly low at the front end.



### Vertical Tracking Force (VTF) Adjustment

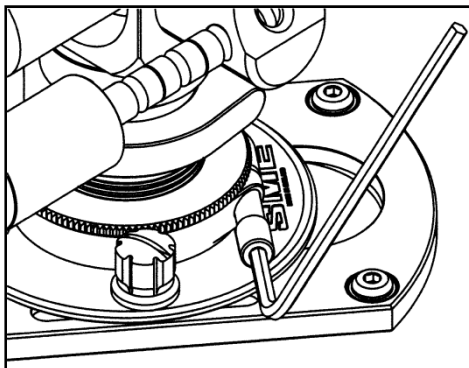
For safety the lever of the lowering control should now be moved into the raised position.

VTF is set after longitudinal balancing has been completed.

It is applied by moving the complete wayrod assembly forward as indicated. The assembly is calibrated to provide a maximum of 5.0g VTF in 1.0g increments between the indent positions.

Position shown is the setting for 3.0g VTF.

Half gram settings are indicated by the shallow grooves alternating with the indent positions.

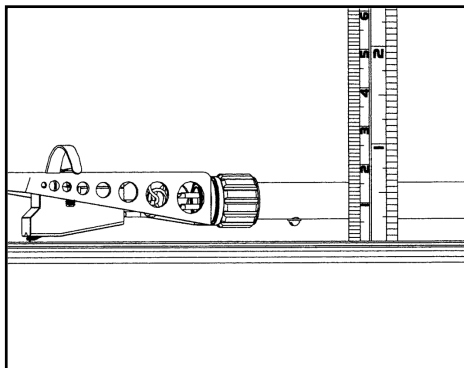


### Arm Height (VTA) Adjustment

Release the pillar clamp screw, using the 2mm wrench, by one turn only.

Rotate the VTA thumbwheel clockwise to increase the height of the tonearm relative to the base.

To lower the tonearm turn the VTA thumbwheel anti-clockwise. Finger pressure may be required to move the arm downwards until it stops on the arm base, at which point further movement in either direction can be made as necessary.

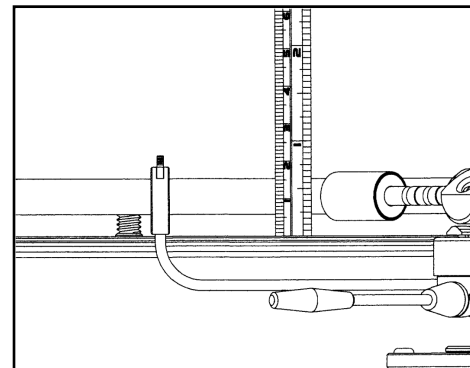


Use an old but unwarped record for the following procedures in case of accidental damage.

Place the arm about halfway across the record and move the control lever forward to lower it into the playing position.

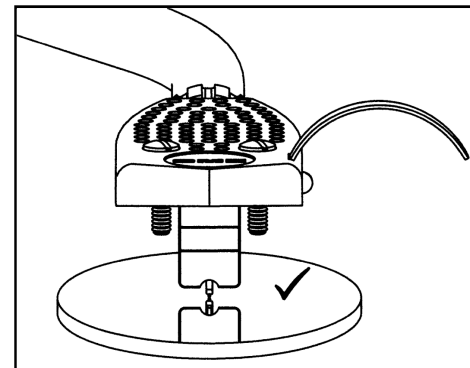
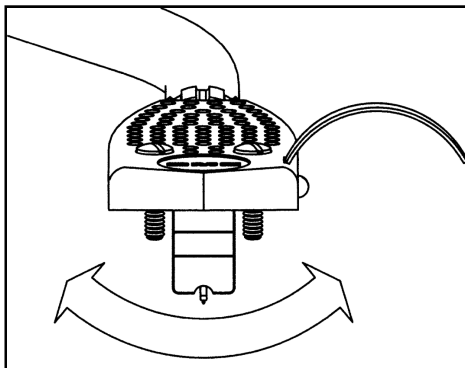
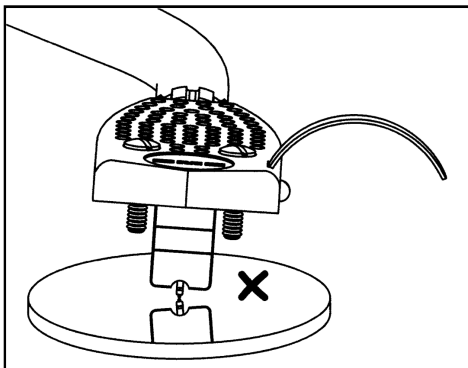
The top of the cartridge is normally the horizontal datum; correctly fitted it will be parallel with the tonearm.

Measure the distance from the surface of the record to the top of the tonearm tube at the front end using a small non-metallic ruler.



Repeat the measurement towards the rear of the tonearm tube and compare it with first one. Adjust the tonearm height with the VTA thumbwheel until similar readings are obtained indicating that the tonearm is level with the surface of the record. Re-lock the pillar clamp screw, view the tonearm in the playing position and re-adjust as necessary.





## Azimuth Adjustment

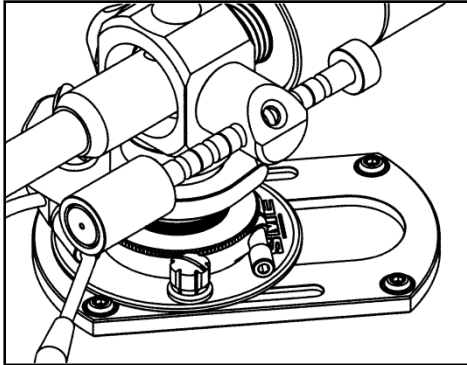
Place a small mirror on the turntable and rest the stylus on it. Viewed in this way any departure from vertical is accentuated and easily visible.

Release the azimuth locking screw underneath the tonearm, just to the rear of the tonearm socket nut. The stylus must be kept clear of the mirror whilst this is done.

Hold the headshell firmly close to the tonearm with one hand and twist it in the required direction holding the tonearm firmly with the other. The stylus must remain clear of the mirror at all times during this operation.

Movement of the socket in the end of the tonearm is limited by the locking screw.

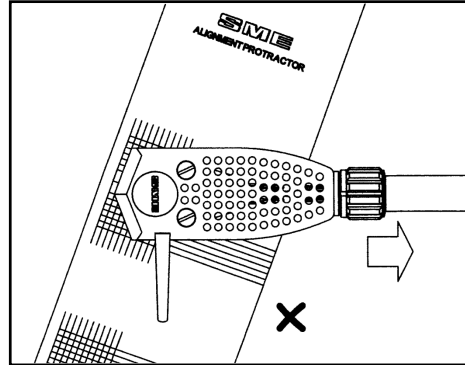
Re-check with the mirror and when satisfied lightly re-lock the screw underneath the tonearm.



### Horizontal Tracking Angle (HTA) Adjustment

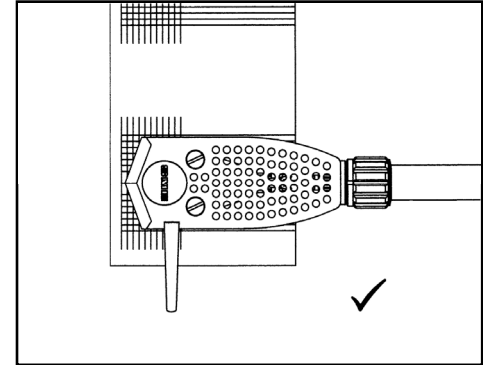
Place the tonearm into the armrest and release the two base clamp nuts, using a snugly fitting screwdriver.

Move the base on the bedplate as far forward as it will go.



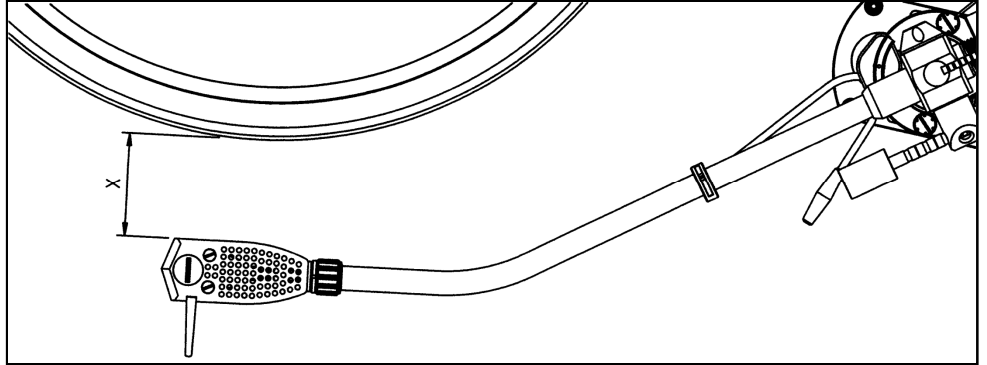
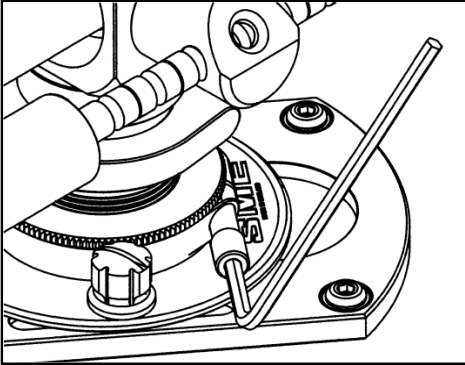
With a record on the turntable and having pierced the alignment protractor for the stylus, place it on the turntable spindle. Check that the VTF has been set to suit the cartridge in use. Move the tonearm out of the armrest and place it so that the stylus enters the point where the alignment protractor has been pierced. The protractor provides two null points, the inner at 66mm and the outer at 121mm radius. Move the base on the bedplate until the cartridge and headshell appear symmetrical with the lines on the protractor at the inner point.

Inaccuracy is shown and the arrow indicates the direction of movement required to correct it.



Similarly check the outer point and adjust the tonearm until the conditions shown in the illustration above are met.

Firmly re-lock the outer base clamp nut only.



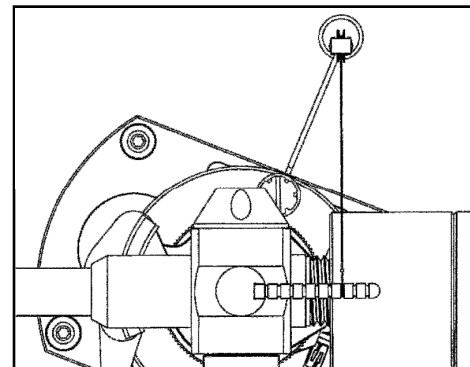
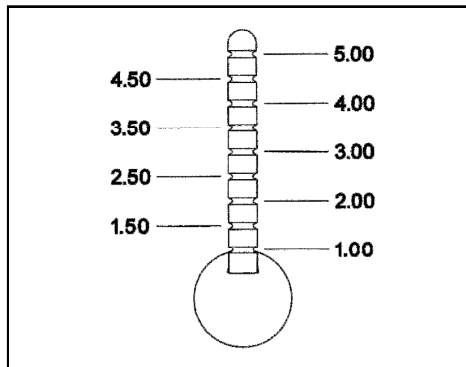
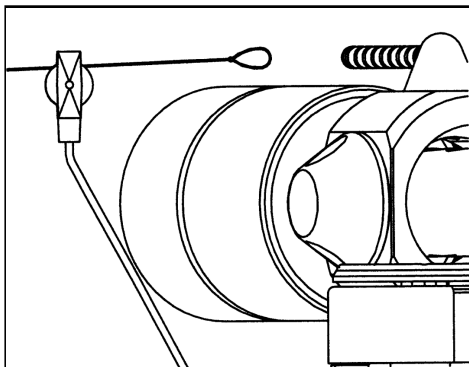
### Positioning the Armrest

Release the pillar clamp screw, using the 2mm wrench.

Height adjustment will be maintained by the VTF thumbwheel.

Rotate the pillar to position the armrest conveniently in relation to the turntable. The dimension 'X' should not be more than 110mm or less than 50mm.

Tighten the pillar clamp screw firmly, avoiding excessive force.



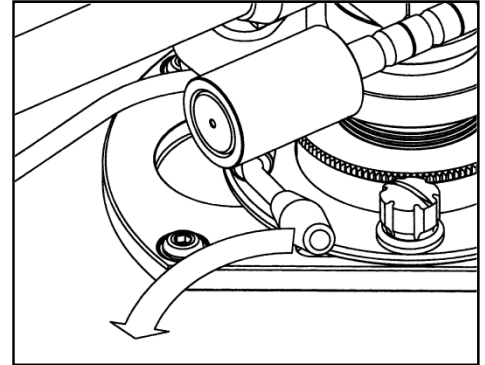
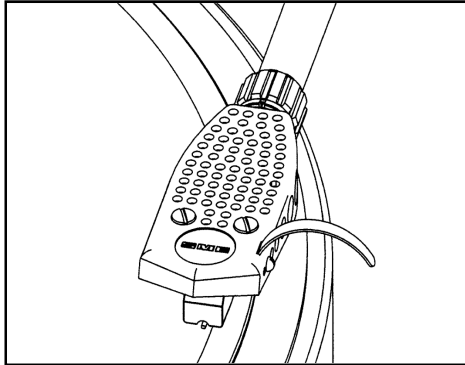
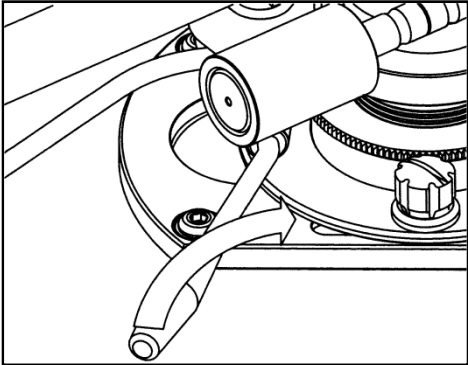
### Anti-skate Adjustment

Thread the filament through guide pulley housing and pass the loop over the anti-skate lever.

Drop the loop into the groove corresponding to the vertical tracking force being used.

Anti-skating is always a matter of compromise. The values indicated are a good starting point. Note how the stylus enters the run-in groove. 'Snatch' would indicate the need for a lower value.

Loosen the inner base clamp nut enough to allow movement of the anti-skate guide. Position the guide so that the filament is approximately 90° to the anti-skate lever when the stylus is over the outer groove of a twelve inch record. Firmly relock the base clamp nut. Rotate the guide pulley housing to align it with the filament, which must lie in the groove of the pulley.



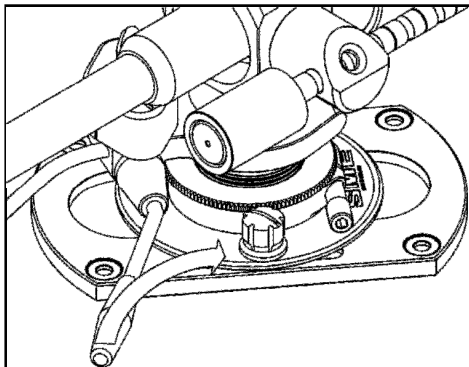
## Operation

Rotate the control lever fully, in the direction of the arrow, and move the tonearm out from the armrest.

Position the tonearm so that the stylus is over the selected track of the record.

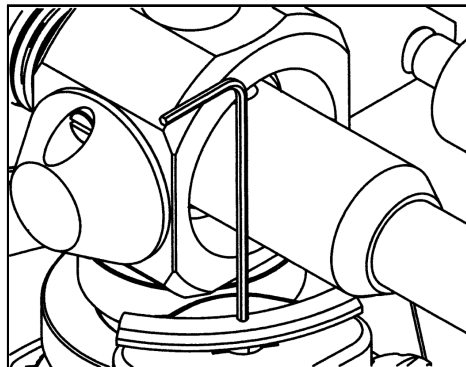
To lower the stylus onto the record move the control lever forwards, in direction of the arrow, just past top dead centre. This will set the control lever in motion, at which point it will take over the movement of the lever, giving a smooth controlled descent.

Note: For the correct descent times the control lever must be operated exactly as above. The descent speed will be increased considerably if the lever is pushed down instead of being allowed to fall of its own accord.



### Operation (continued)

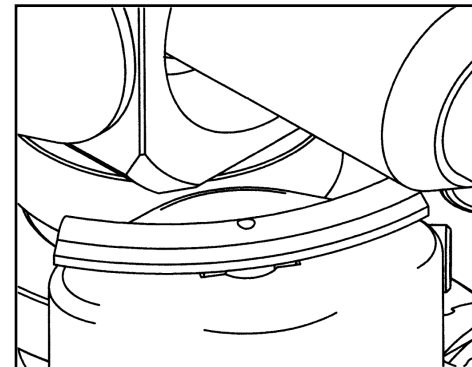
To raise the stylus from the record move the control lever back to its original position. When the tonearm is not in use it should always be returned to the armrest for safety.



### Adjusting the Height of Lift

The raising and lowering control is set to suit the majority of cartridges but the height raised above the record can be changed to meet individual needs. The small hole in the centre of the arm lift provides access to the adjustment screw. Insert the long leg of the 0.89mm wrench to engage the screw. Clockwise rotation will decrease the height lifted; anti-clockwise rotation will increase the height.

The adjustment is sensitive so the wrench should only be turned a few degrees at a time. Apply firm downward pressure to the arm lift after each clockwise rotation of the adjustment screw.



### Cleaning the Arm Lift

If the tonearm drifts outwards during raising or lowering it indicates contaminant on the rubber pad. To restore positive working, wipe the pad with a damp cloth and repeat with a paper tissue until dry. Clean the underside of the tonearm in the same manner where it contacts the rubber pad.

## Appendix

We hope these instructions have made the installation of your Series M2-9R/12R precision tonearm straightforward. Care for it as you would a camera. Do not apply oil or any other lubricant to any part of it. Do not attempt to take to pieces or interfere with any of the screws except as directed in the instructions; to do so will invalidate the guarantee and may induce costly repairs.

If you have a problem concerning operation or service, contact SME at the address overleaf in the first instance, quoting the unit's model and serial number. **Do not** send the tonearm to SME unless requested to do so. We provide a quick, efficient service through our dealers or direct from the factory to any part of the world.

SME LIMITED • MILL ROAD • STEYNING • WEST SUSSEX • BN44 3GY • ENGLAND  
T: +44 (0) 1903 814321 • E: [service@sme.ltd.uk](mailto:service@sme.ltd.uk) • W: [www.sme.ltd.uk](http://www.sme.ltd.uk)

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