Series Five arms

Unpacking the arm

The arm is packed fixed onto the centre partition of the box. To release it, loosen the brass locking nut and slide the arm upwards. Counterweights and the antiskate assembly are supplied separately and should be added after the arm is mounted.

Mounting the arm

The arm is a direct replacement for arms using the 23mm Rega mounting hole at 222mm mounting distance.

It can also be fitted to armboards designed for the new Rega 3-point mounting because the original mounting hole remains. The mounting screw holes can be blanked off for appearance.

Mount the arm onto the turntable before adding the counterweight. The fixing nut only needs to be tight enough to stop the arm from rotating. The arm lift quadrant may need to be opened out to the right position. The antiskate arm will also need to be turned in to its correct position at the side of the arm and the antiskate quadrant and weight added (see page 6).

NOTE: Non-micrometer arms easy mounting procedure:
Loosen the VTA lock on the base and the outer base can be completely detached from the arm. Mount the outer base onto your arm board, then drop the arm into place. You can use the reverse procedure to remove the arm at any time for cartridge mounting etc. DON'T attempt this with micrometer arms, they are assembled as a unit. There is a small copper piston inside the vta lock. Make sure this does not fall out. There are replacements in the "spare parts" bag.

With the arm mounted, the ground wire should be connected to the grounding post of your phono preamplifier or step-up transformer. It is likely your turntable will also have a separate grounding wire and you may get the best results when each ground is connected together. Make sure that all your equipment is properly connected to building (supply) earth. The arm is wired in a "balanced" configuration - none of the signal wires are connected to the screen, arm or grounding wire - so it is very important that the arm is properly grounded to the system or you may get hum. In the case of a few all-metal turntables (eg Acoustic Solid) the arm will be connected to ground through the arm board and you may get the best results with the ground wire disconnected.

> **Take care not to pull the signal wires at the headshell when mounting the cartridge. Never pull the phono sockets by the cable, always hold the body of the socket. Never attempt to remove or change the phono sockets, the wiring loom will be damaged and fail.**

Mounting the cartridge

Follow the instructions that came with your cartridge for suitable mounting screws etc. The headshell takes the standard 12.7mm (1/2 inch) mounting with screws of M2.5 size. Some cartridges may be sensitive to the tightness of the mounting screws.

Loosen the lock nut to slide the arm out

Contents

Treat the signal wires carefully. Each wire is made from seven strands of individually insulated silver, and they are easily damaged. Hold the cartridge tag lightly with tweezers by the coloured insulation. **NEVER pull the tag by the wire**. The cartridge tags should slide easily onto the contact pins and make a firm contact. A few cartridges use pins of smaller diameter than normal and in that case it might be necessary to squeeze the contacts of the tags together slightly before fitting them to the cartridge.

Once the cartridge is mounted, follow the setup procedure on page 3 to align it correctly.

Audiomods tonearm setup

Cartridge mounting

If you are replacing an arm with Rega geometry then the mounting distance should already be correct and you only need to set up the cartridge.

If you have an old cartridge, use it for a first setup and test. Cartridges are expensive and very easily damaged!

Pivoted arms don't hold a cartridge tangentially to the record. By setting up the arm to a calculated set of measurements we can reduce the geometrical errors to a minimum to extract the best performance. Accurate setup will make a very big difference to the results from your turntable.

The measurements we want are:
Arm Mounting (pivot to spindle) distance: 222mm
Stylus to arm pivot point (the "effective length"): 239mm

And the following settings which it is not normally necessary to measure. They should be right when the setup is complete:

Overhang: 17.25mm When the arm is over the record spindle, this is the distance from the spindle centre to the stylus tip.
Cartridge offset angle: 23° The angle of the cartridge in the headshell.

If you can't achieve the exact mounting distance, don't despair! There is a good range of adjustment available in the headshell and it can accommodate a variation of a couple of mm. If you can get the cartridge properly square at the two null points, the setup isn't far wrong!

222.25 mounting centres

66/121 null points
239.5mm effective length
17.25mm overhang
23° offset

Set the stylus tip on each of these two points in turn and align the cartridge square to the guide lines.

Spindle

Fit over spindle

Our setup procedure is based on analysis by BV Pisha and MD Kessler and will produce very reliable results. Using the two-point setup gauge compensates for small errors in mounting and effective length but there are many commercial setup systems available that can offer high-precision alignment to achieve the ultimate performance.
If you are happy with the technicalities of tonearm setup, you may choose to use different settings. For example, very good results can be had from Stevenson Geometry where higher maximum distortion is traded against better inner groove performance.
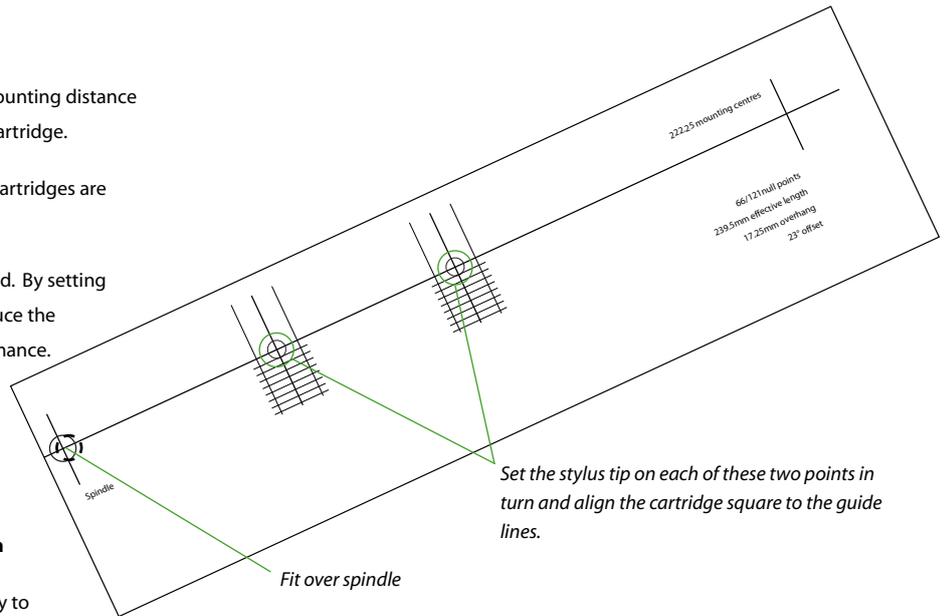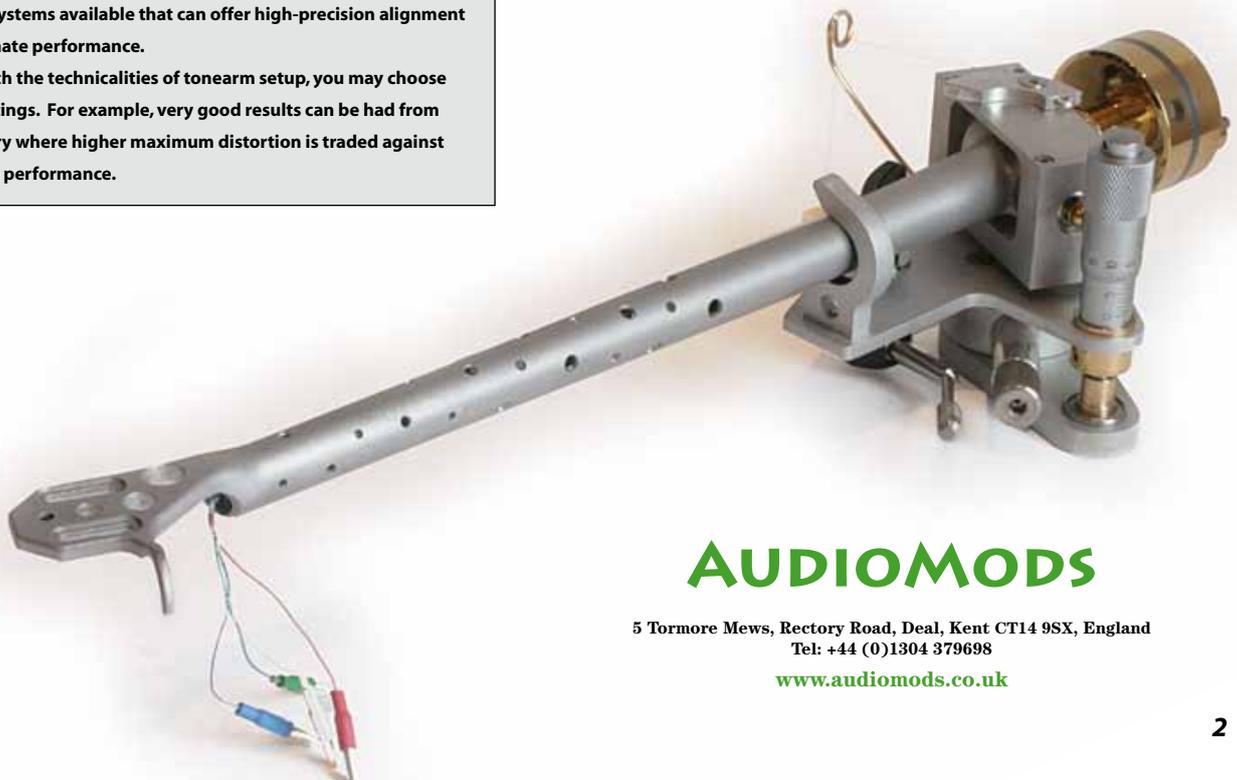
Cartridge setup

1 Mount the cartridge. It should look nicely square in the headshell and the stylus tip should be vertically below the front end of the headshell.

2 Set a light tracking force to stabilise the arm when the cartridge is resting on the gauge. Adjust the VTA to an approximate setting.

3 Test the cartridge setup using the 66/221 null template on top of a scrap record. Rotate the platter so that the stylus can be lowered onto each null point in turn. (Don't move the platter with the stylus touching the paper) The cartridge should be dead square when the stylus is on each null point. You may need to slide the cartridge back or forward in the headshell or twist it slightly to achieve this.

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Audiomods tonearm setup

Cartridge vertical (azimuth) alignment.

The cartridge should be aligned so that the stylus is vertical in the groove looking from the front. You can check this either by aligning the body against the gauge supplied or using a small piece of mirror under it.

Cartridge mounting surfaces – especially plastic or wooden ones – sometimes aren't perfect and generators and cantilevers aren't always perfectly aligned within the cartridge body so using a mirror to set up to the cantilever, rather than the cartridge body, is the best method. Adjust the setting with tiny paper slips under one mounting screw.

VTA adjustment

Though normally referred to as "vertical tracking angle" what we really want to be correct is the "stylus rake angle", or when the diamond is vertical in the groove*. To make sure you are setting this correctly, set the tracking force first, adjust the VTA, then re-check the tracking force. You should make a final adjustment to the VTA by listening tests, but the best starting point and, in most cases, the correct setting is when the top of the cartridge is parallel to the record surface. Rely on the cartridge manufacturer to set the stylus correct with the cartridge level.

Non-micrometer arms:
Loosen the VTA lock in the base and slide the arm up/down to get the required height. Gently tighten the screw.

Micrometer arms:
loosen the vta lock and rotate the micrometer clockwise to raise the arm, anticlockwise to lower it. The micrometer arm can be played with the locking screw loosened, or it can be tightened once the ideal VTA is reached. Our preference for the best sound is to tighten the VTA screw.

Don't try to continue to unscrew the micrometer once the arm reaches the lowest setting.
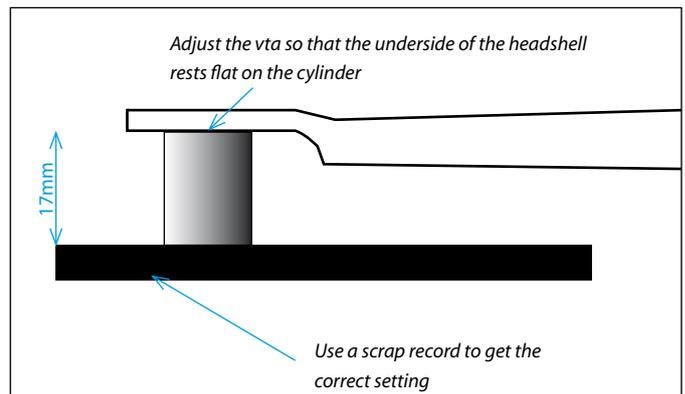
IMPORTANT: In both cases, the VTA lock should not be over-tightened, just enough to keep the arm in place.

With both types, if you find that you are playing the arm raised by more than 5-6mm it would be best to add a spacer beneath the base. We can supply spacers to match the base of both arm types or custom mounting plates to match your turntable.

There should be plenty of vertical adjustment to get the cartridge aligned. Depending on your cartridge, it should be set up correctly when either the front face is vertical or the underside of the headshell is parallel to a scrap record. Both tone and stereo imaging are affected by the VTA setting. Record thicknesses vary and the cutting angle changed from label to label, lathe to lathe, so it may never be perfect. You can do a final fine adjustment by ear.

The micrometer arms give 0.5mm adjustment per revolution. Five turns (2.5mm) equals about 1° of adjustment. Before altering the VTA the locking screw in the base must be slackened off. You can use the arm with the screw unlocked and adjust VTA for the best performance. If you prefer, lock the VTA with the screw. Don't try to adjust VTA with the screw locked.

There is complex technical argument to suggest that the perfect SRA is 1-2 ° off vertical, but that may be designed in to your stylus profile .

Adjust the vta so that the underside of the headshell rests flat on the cylinder

17mm

Use a scrap record to get the correct setting

Setting the arm height - micrometer arms

A vta setting gauge is supplied with the micrometer arms to help with the initial setup.

The white plastic cylinder is 17mm high, a common measurement for many cartridges so, before you mount a cartridge, place vta cylinder on top of a scrap record and adjust the arm vta so that the underside of the headshell rests flat on the top of the cylinder. Make a note of the micrometer setting and it will give you accurate alignment with the headshell parallel for a cartridge 17mm high.

If you are using a cartridge of different height or using headshell shims, add or take off the difference on the micrometer, it is 0.5mm per complete turn.

Once the cartridge is mounted, you can do the final adjustment by ear, but you will have a reference setting to come back to.

UP

VTA lock

Audiomods tonearm setup

Tracking weight (VTF)

Use stylus scales to set the tracking weight. Digital scales (jeweller's scales) are the best choice. You should always aim to measure the VTF with the stylus at the same height as when it is playing a record. The safest starting point is to set VTF at the manufacturer's highest setting. Records are many times more likely to be damaged by too low rather than too high a force. For critical setups, the VTF can be reduced by 5-10% in very warm conditions.

To move the counterweight, loosen the inset nylon tipped lock screw. Roughly set the tracking force with the main weight, lightly tighten the lock screw, then adjust to the final setting by rotating the small fine adjustment weight.

Mass loading

You should match the effective mass of the arm to the cartridge that you are using. This is calculated as bare arm effective mass + cartridge and fixing screw weight. The mass you want to achieve is determined by the compliance of your cartridge.

There are a number of online calculators that will give you the right figure if you input your cartridge compliance and the desired resonant frequency (usually about 10Hz). A resonant frequency of between 9 and 12Hz should work in almost all applications.

The bare Audiomods arm will have an effective mass of between 9 and 11 grams, depending on the counterweight configuration and its position on the stub. The effective mass goes up as the counterweight moves back. A difference of 2-3g in the total effective mass will have very little effect on the resonant frequency. but can effect the tonal presentation.

A good indicator of when extra mass is needed is the bass performance. If bass seems light, try adding one of the headshell shims.

With most cartridges you will achieve a correct effective mass without any adjustment because cartridge bodies tend to be heavier as the compliance goes down, so a high-compliance Grado at 6g and a medium-compliance Ortofon with a 10g body can both be fitted without any adjustment.

Counterweight

The counterweight will slide easily onto the shaft and is locked by tightening the inset screw using the allen key supplied with the antiskate quadrant. If the counterweight has been dropped or knocked the elements may shift and it may not fit the shaft. **Do not force it onto the shaft**. It can be remedied by loosening the three screws (2.5mm allen key), fitting the weight to the shaft, then tightening the screws again. See p5 for counterweight mass adjustment.

Headshell shims

A set of headshell shims is included with each series Five arm to add mass to the arm when using cartridges of low compliance. These fit between cartridge and headshell.

To make a small adjustment for cartridges such as the Lyra Argo, add one of the aluminium shims. Moving coil cartridges with a light body like the ZYX, or ones where the maker's advice is for a medium to high mass arm, eg Benz, will benefit from the thinner copper shim. For more extreme examples (standard-bodied Denon 103, Shelter etc) the heavy shim may work best. You should not need the shims for moving magnet cartridges.

Lock the main counterweight by gently tightening the inset lock screw with the allen key supplied in the "antiskate quadrant" pack. Only tighten this screw with the very lightest pressure.

The fine adjustment weight goes at the bottom. Approximately set the tracking weight (VTF) by moving the large weight, then adjust it to the final setting with the small weight.

Use the headshell shims to achieve the correct effective mass for your cartridge and also to fine tune the sound to suit your system and personal preference,

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Audiomods tonearm setup

Variable mass counterweight

Series Five arms from serial number 700 are supplied with a variable mass counterweight that can be configured from 110 to 145g to achieve the optimum performance from a very wide range of cartridges.

The weight is supplied set to 130g, which is an average mass to suit many cartridges in the 8-11g range.

If you can't achieve the correct tracking force with the weight as supplied, the mass can be increased/decreased by adding or removing the copper discs.

Changing the mass

With the counterweight off the arm, remove the three screws using the allen key supplied (2.5mm hex). The weight will now come apart and one or both of the copper discs can be removed or added. For very light cartridge (around 5g) one of the lead discs might need to be removed. To "unstick" one of these, gently prise it off using a small screwdriver or sharp point inserted into the edge of one of the screw holes. Don't prise it from the outside edge of the counterweight to avoid marking the weight and discs.

To test the mass before finally re-assembling the weight, fit the loose components onto the shaft without screwing them together and you will be able to test for balance and weight position.

Use the allen key supplied to remove/replace the three counterweight screws

To re-assemble the weight

Slide each of the parts onto the assembly stub supplied and rotate them into the right position so that the holes align. Add the rear disc of the weight so that the small fine adjustment weight is at the bottom when the lock screw hole of the front disc is at the 10 o'clock position.

Three different lengths of screw are supplied for the different configurations:

Long screws: both copper discs, (can be used with 1 copper disc)
Medium screws: 1 copper disc, no copper discs
Short screws: Single lead disc

With the counterweight on the assembly stub, add the screws and tighten each in turn. Check that the weight will slide on the stub. If it is tight, loosen the screws a turn or two and adjust the position of the elements until the screws can be tightened with the counterweight a slide fit on the assembly stub.

You can now fit the weight to the arm.

The weight is locked with the inset allen-head screw. The allen key supplied with the antiskate arm fits this (1.5mm hex key). Only **tighten the screw with the lightest pressure**, just enough to hold the weight in place.

Never force the counterweight on or off the arm, loosen the three screws to centre the elements until the weight slides easily on/off the arm.

> The position of the counterweight on the stub will have an effect on the effective mass of the arm. A light weight set right back will raise the effective mass compared to a heavier weight close to the pivot, even though they can identically balance the cartridge.
> If you have a choice, using a heavier weight close to the pivot will suit moving magnet cartridges best, for moving coil cartridges, choose a mass that sets the counterweight towards the middle or rear of the shaft.

Make sure the locking screw is in the right position

The standard configuration with one copper disc will suit most Moving coil cartridges, for cartridges less than 8g, remove the copper disc and use the short screws

Put the counterweight parts on the assembly stub to add or remove discs

Select the correct length of screw for your configuration

Add the extra copper disc to balance the heaviest cartridges
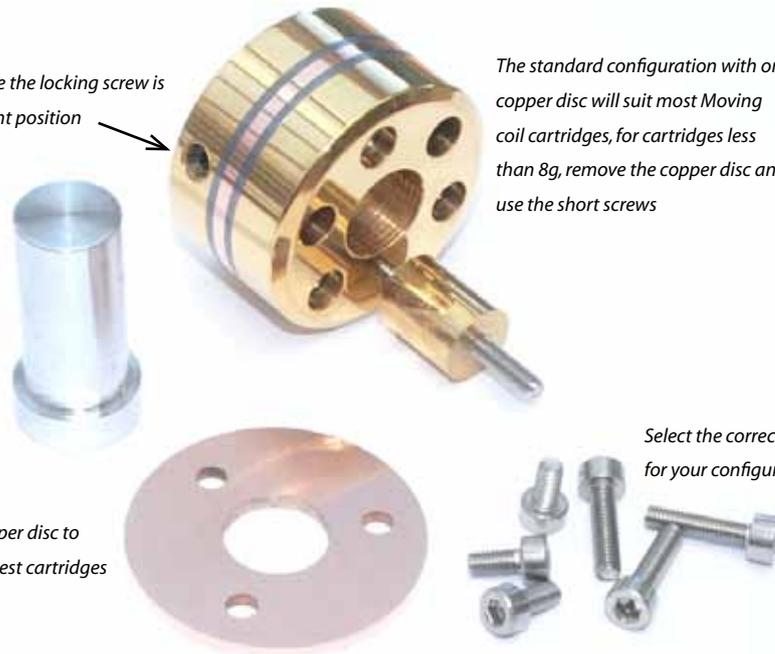
Setting antiskate

As the record rotates the arm is pulled towards the centre by groove friction. This is because the cartridge is at an offset angle and the drag pulls sideways, not straight down the arm tube. The amount of antiskating force we need to apply is affected by many things: groove friction, tracking error, groove modulation, stylus profile etc.

So we have a force constantly varying as the record is played that we must counteract without knowing its exact value. Setting up on a blank disc is not accurate because it doesn't reflect the real drag value of the cartridge in the groove or an average value of the dynamic drag. Setting up with a test record is better but here it's important to set up at a number of points across the record. Avoid the highly modulated grooves of test records, these will return an antiskate value far higher than most music. Careful listening with known records is the best test. Listen carefully at outer and inner grooves, around the null points and halfway between them. Distortion from bias setup can be identified because it appears on one channel: right channel, underbiased, left channel, overbiased. A slight mismatch might be heard by the stereo image moving to left (under) or right (over).

Our quadrant antiskate does help you to optimise the force across the record, weighting it at the outer and/or inner grooves. The setting arrived at will be influenced by your cartridge and the kind of music you play.
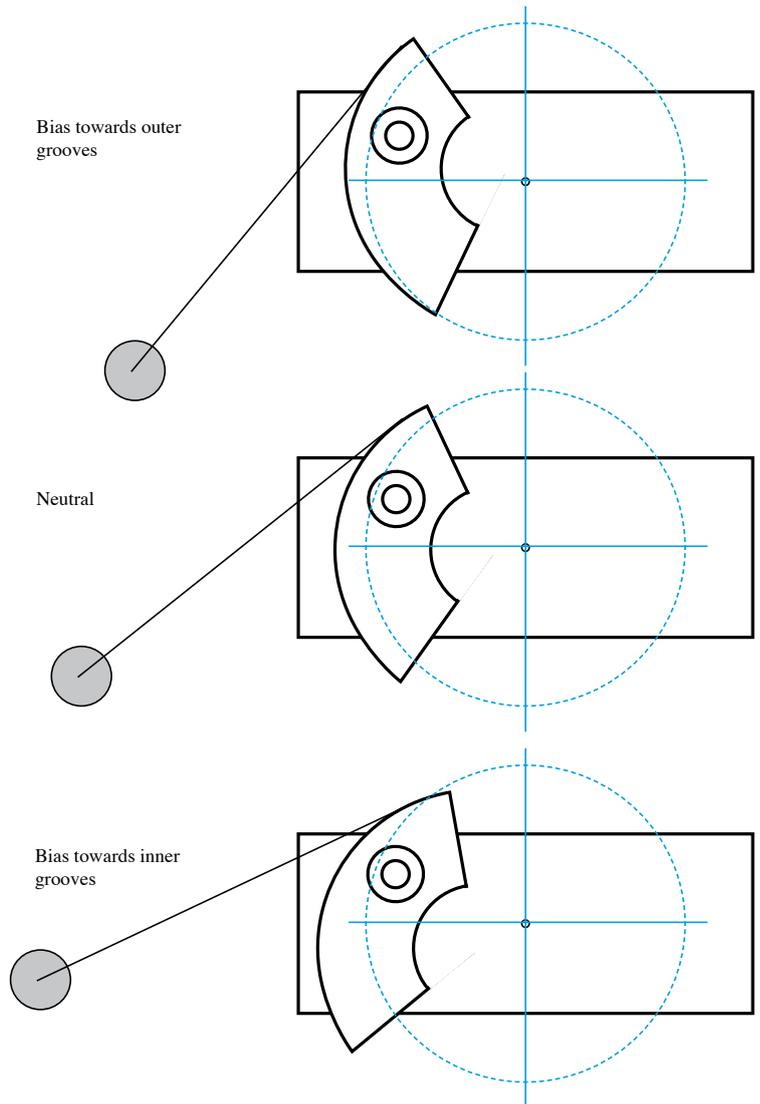
Depending upon the stylus profile, simple acoustic music will probably be more neutrally biased, whilst orchestral or opera that tends towards crescendo on the inner grooves might need a bias weighted towards the record's centre. A high-compliance cartridge might need a bias slightly weighted towards the outer grooves. Only listening will tell.

Bias towards outer grooves

Neutral

Bias towards inner grooves
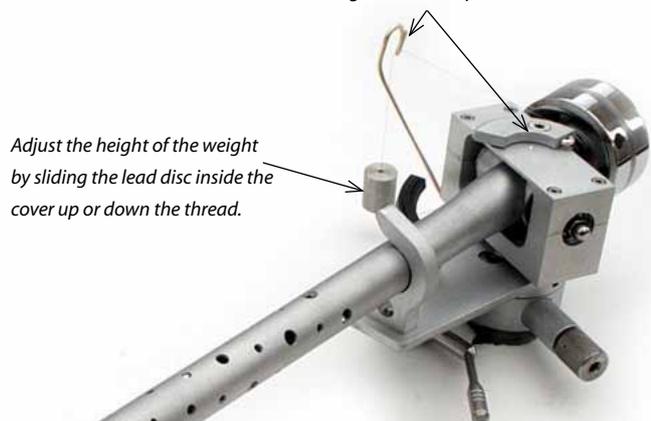
Setting up the antiskate weight

The weight and quadrant are supplied separately together with the quadrant mounting screw. Add the quadrant and hook the thread through the eye of the antiskate arm. Fit a nylon washer under the quadrant to avoid scratching the arm yoke. Turn the antiskate arm so that the thread sits in the groove of the quadrant. If the antiskate weight appears too high or low the position can be adjusted by sliding the little lead disk inside it up or down the thread.

There are two mounting holes for the antiskate quadrant which allows a choice of ranges of force. As a general rule, choose the outer one for low-compliance cartridges and the inner one for high compliance ones. If you need more bias, add an extra lead disc from the "Spare parts" pack

The best starting point for fine-tuning the antiskate is to set the quadrant centred on the centre point of the arm tube. To increase the force, rotate it clockwise, rotate anticlockwise to decrease it.

Turn the antiskate arm to a position where the thread sits in the groove of the quadrant.

Adjust the height of the weight by sliding the lead disc inside the cover up or down the thread.

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Audiomods tonearm setup

Service notes

Cleaning

Finger marks can be cleaned using liquid lighter fluid (note: inflammable). Brass and stainless steel counterweights can be polished using commercial metal polish. Don't use abrasives on gold plated counterweights.

Counterweights

The counterweight is secured by the inset nylon-tipped screw. Use the allen key supplied with the antiskate quadrant to tighten it. Only tighten the screw very gently. Very little pressure is needed to hold the counterweight in place.

Counterweight won't fit onto shaft.

NEVER force the counterweight if it is not free on the shaft.
NEVER twist the counterweight on the shaft.

1 Check that the locking screw is loosened.

2 The counterweight is made up of several layers. If the weight has been dropped or knocked they may be out of alignment.

To rectify, loosen the three cap head screws holding the counterweight together by 2-3 turns (2.5mm allen key), then slide the counterweight onto the shaft to align the elements and tighten the screws.

Arm lift

The height of the arm lift can be adjusted by loosening the grub screw inset into the black plastic lift platform. (1.3mm allen key). Check the vta setting carefully before adjusting the arm lift, it is set correctly when the vta is right.

Wiring

NEVER twist the signal wires together at the headshell.
Only add/remove the tags from the cartridge by holding the tags, never pull the wires.
NEVER pull the interconnect cable, only the plugs. If the plug moves on the cable, the loom will fail.

Silver looms

NEVER attempt to disturb or change the RCA plugs. The signal wires are in one run from the cartridge tags and the wire dressing is critical to within 1-2mm. Any attempt to disturb the plugs will result in a failed loom inside the arm.

Arm mounting

Tightness of the securing nut is not critical. It is generally only necessary to tighten it enough to stop the am from turning.

Threaded arm mountings

Some turntable mountings (usually with built-in vtas) have a threaded collar to match the arm base. Take extreme care with threaded aluminium or anodised bases. **You MUST lubricate the threads** of these before mounting the arm or the two may lock solidly together. Test-assemble and if the thread appears tight, stop immediately.

VTA locks

The stainless steel vta locks have a small copper piston inside. This can drop out if the arm is removed from the base, or can be crushed if the lock is tightened too much. There is a spare in the "spare parts" kit included with the arm. **Only use the lightest pressure to lock the vta.**

To remove a crushed vta lock piston:

Standard arms: slide the arm out of the base and push the lock out using a pin 3mm or smaller. This can be done with the arm in place on the arm board.

Micrometer arms: Remove the arm from the arm board. Remove the screw from the tip of the micrometer (the 2mm allen key in the antiskate arm pack). The arm can now be slid out of the base and the piston removed as above.

Antiskate weight

The weight is secured by a small, split lead disc inside. Slide the disc up or down the thread to adjust the height of the weight. If the disc slips on the thread, squeeze it gently with small pliers to tighten it. There are extra discs in the "spare parts" pack.

It is not necessary to cut the thread short, having it touch the arm board will stop it swinging.

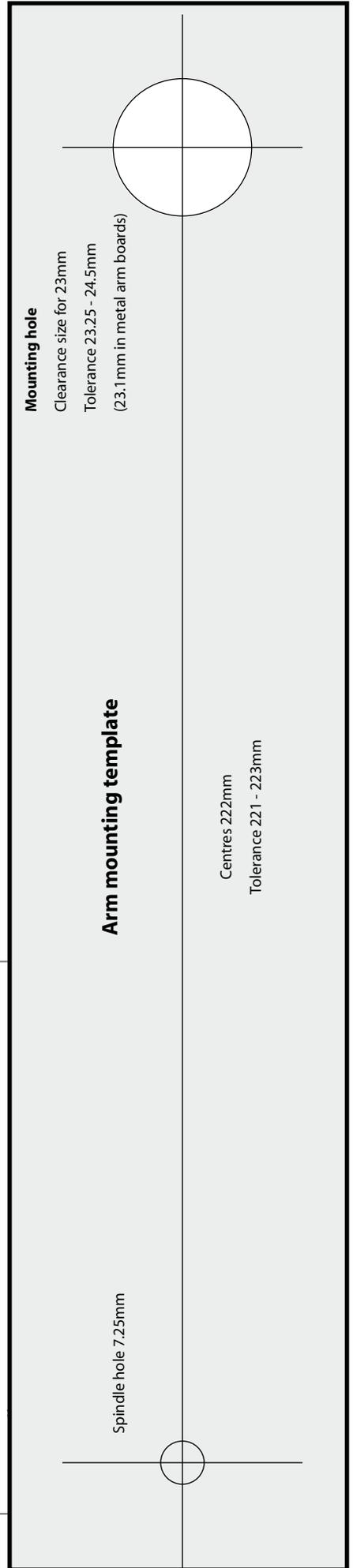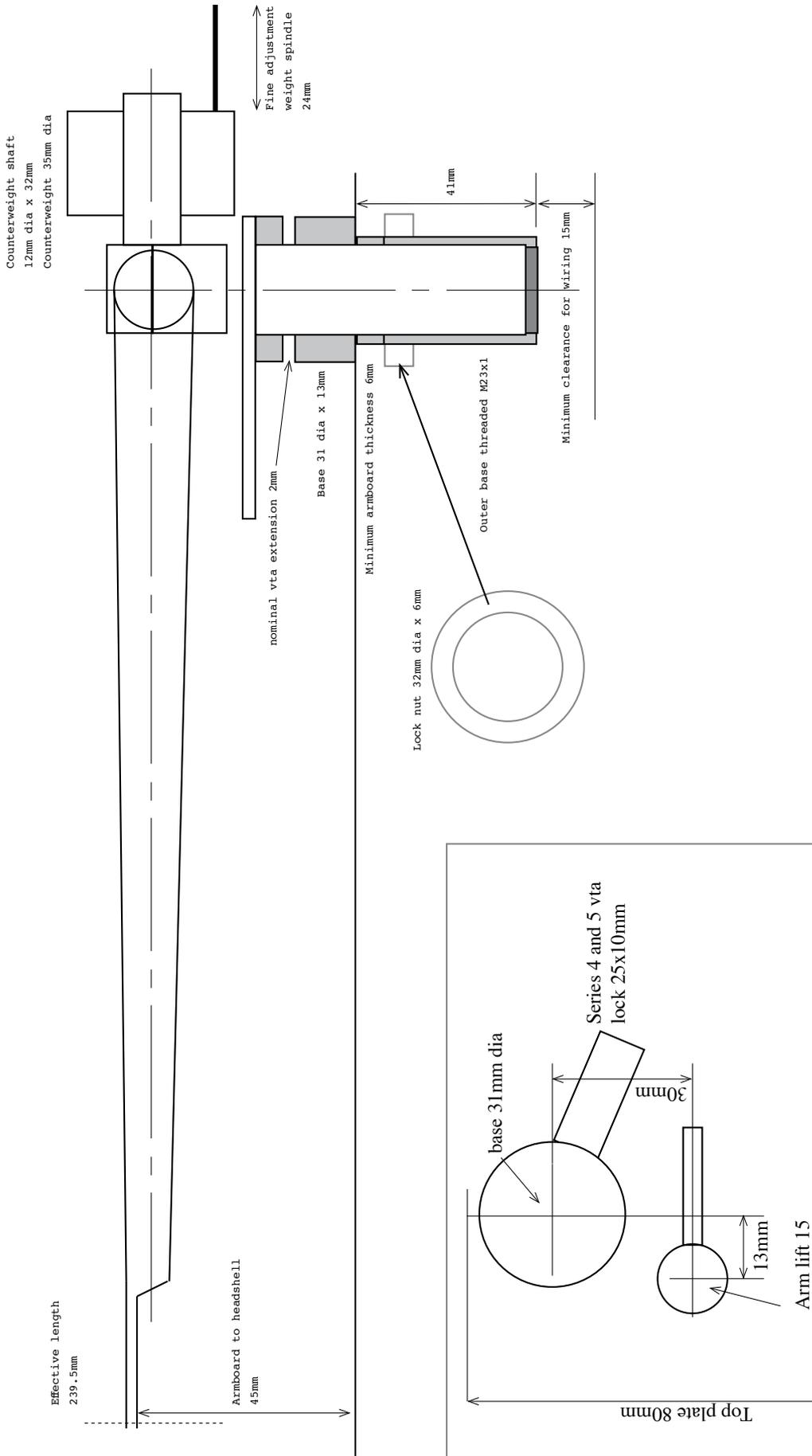### Headshell shims

To test the effect of a headshell shim, attach it temporarily to the top of the headshell with a spot of "Blu-Tak" (reset the tracking force) to do quick A/B comparisons. When the correct shim is found, fit it permanently between headshell and cartridge.

The owner manual is updated from time to time.
A PDF copy of the latest version is available for download at www.audiomods.co.uk

Audiomods tonearm setup

Dimensions

Counterweight shaft
12mm dia x 32mm
Counterweight 35mm dia

Fine adjustment
weight spindle
24mm

41mm

nominal vta extension 2mm

Base 31 dia x 13mm

Minimum armboard thickness 6mm

Outer base threaded M23x1

Minimum clearance for wiring 15mm

Lock nut 32mm dia x 6mm

Effective length
239.5mm

Armboard to headshell
45mm

base 31mm dia

Series 4 and 5 vta
lock 25x10mm

30mm

Arm lift 15

13mm

Top plate 80mm

Arm mounting template

Mounting hole

Clearance size for 23mm

Tolerance 23.25 - 24.5mm

(23.1mm in metal arm boards)

Centres 222mm
Tolerance 221 - 223mm

Spindle hole 7.25mm

Micrometer arm dimensions

35mm

Minimum clearance for wiring 15mm

Micrometer 65mm to arm board

Base 31 dia x 11mm

Base plate 6mm deep

Minimum armboard thickness 6mm, Maximum 25mm

Outer base threaded M23x1

Lock nut 32mm dia x 6mm

board surface

45mm from centre of mounting hole

13mm dia

23mm dia

Effective length 239.5mm

Armboard to headshell 47mm
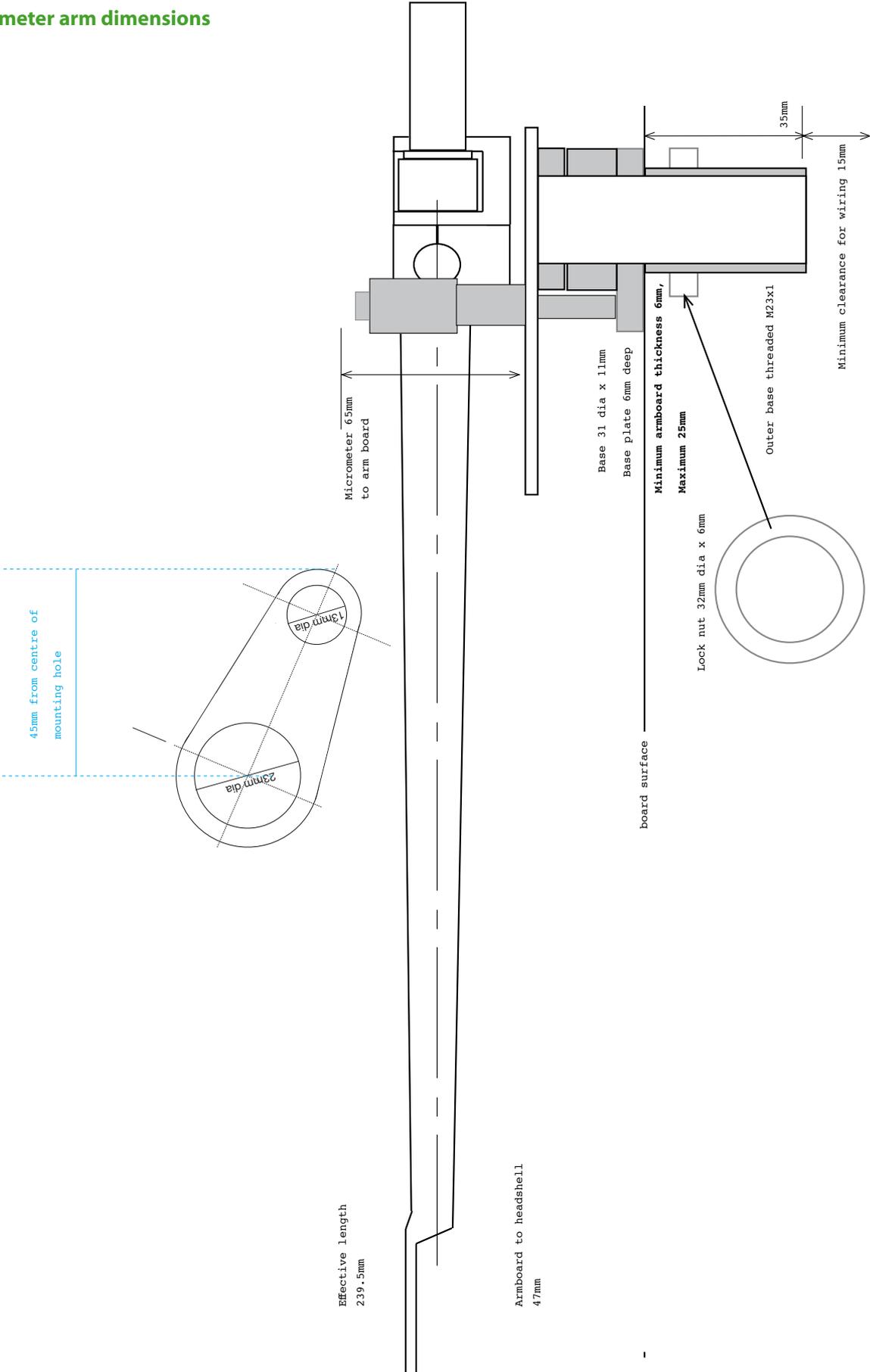
Audiomods tonearm setup

Warranty and servicing

Your Audiomods arm is supported for the life of the product. If repair or service is needed, return it, preferably in the original box, to:

Audiomods, 5 Tormore mews, Rectory Road, Deal, Kent CT14 9SX, UK

Support and advice

jeff@audiomods.co.uk

or call +44 (0)1304 379698

Modifications and updates

We offer an update service for all our products. Arms can be brought up to the latest specification or exchanged for a different model.

Satisfaction guarantee

We are confident that the arm will perform to standards comparable with the very best. If you are not completely happy with the performance or compatibility with your turntable or cartridge you can return it within 30 days for a full refund.

Changing cartridges

The series 5 arms are supplied with a variable mass counterweight which will suit a very wide range of cartridges. If you change to a cartridge either very light or heavy outside the range, send details and we can advise a suitable weight.

Returns outside the EC

If you are returning an arm for service from outside the EC you must ensure that the documentation is correct for an inbound customs clearance.
Please contact us before sending as we cannot take responsibility for customs duty or clearance charges.

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