CARTRIDGE SET UP INSTRUCTIONS (GENERIC ONLY)

Fit Cartridge

If you're not familiar with fitting cartridges then it may help to first read the more detailed section “Hi-Fi Cartridges explained” found towards the end of this manual as this gives an outline of the terms used.

Knowing how to fit cartridges is well worth it in the long run as it saves time consuming trips to dealers, not to mention the money saved.

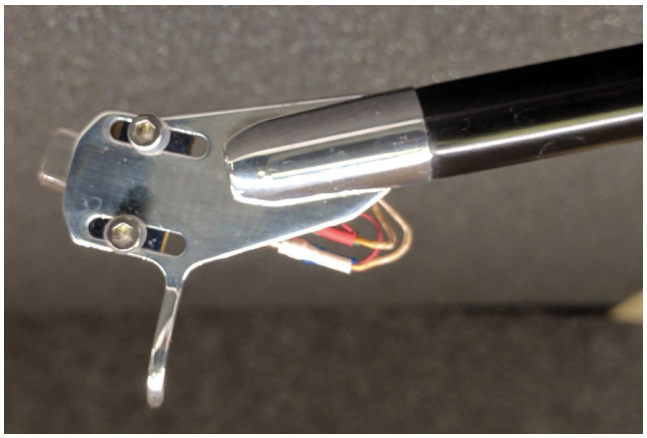
Mounting

Mount the cartridge in the tonearm headshell using mounting screws (usually 2.5mm allen bolts).

At this stage the headshell screws should be just tensioned sufficiently to hold the cartridge against the headshell, but loose enough for the cartridge to be rotated and moved.

Set the initial position of the cartridge with mounting bolts approximately midway along the slots as shown below.

INITIAL POSITION OF CARTRIDGE



Carry out the set up procedure outlined below without deviating from sequence. Each step affects the next — change the order and setup will be wrong.

Notes on cartridge mounting

Stainless steel Allen bolts are best for mounting cartridges – the aluminium or brass ones supplied with some cartridges are OK but not as easy to adjust as Allen heads. Avoid steel bolts as they are magnetic and degrade your cartridge performance (permanently over time due to draining the magnets).

It's safest to fit the cartridge with the stylus guard in place but it may be necessary to remove for phases of installation. If you do so, replace it as soon as possible.

Be especially careful when the stylus guard is off, as many MC cartridges have a strong magnetic field at the base of the cantilever. This can attract the tip of a steel-bladed screwdriver with irresistible force and destroy the stylus! To be safe, use a non-ferrous screwdriver, or keep the stylus guard on when you’re using the screwdriver near it.

Adjust Tracking force

On most arms the tracking force is adjusted by sliding (rotating) the counterweight along the rear stub. Adjust the force to be within 0.5 grams of the force recommended by your cartridge manufacturer.

Set initial tracking force

Set tracking force as specified by manufacturer.

If you find the arm-tube is far from level, it may render tracking force measurements impossible so adjust arm height accordingly. Read how to set arm height in next section.

Measure Tracking Force

To measure tracking force, use a stylus force gauge under the cartridge stylus as shown below.

Notes on Stylus Force gauges

Most stylus force gauges work on the same principle as a set of scales. For example with the Ortofon Stylus Force Gauge, first place the stylus on the inscribed portion of the scales. Then try the stylus at different points until you find the point where the beam “balances” freely in a roughly level position. You then read the force exerted.

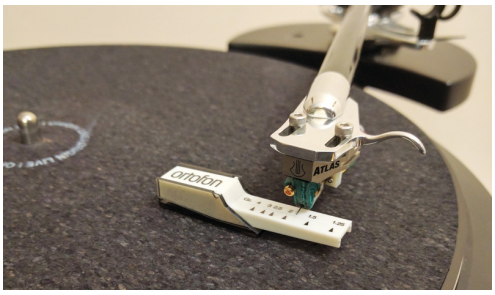


Photo of stylus force gauge to set tracking force

From this number you can assess whether you need to increase the tracking force or vice-versa. Move the tone-arm counterweight accordingly and re-measure the tracking force. Repeat this procedure until the correct reading is obtained.

A digital force gauge works slightly differently so follow the manufacturer’s instructions.

Adjusting tracking Force

Set tracking force by sliding the counterweight to the correct position on the rear stub. Sliding the counterweight towards the cartridge increases tracking force and away decreases it.

Understanding lift lower devices.

The lift lower device needs no adjustment but will only work correctly once the arm-tube is level (see VTA later).

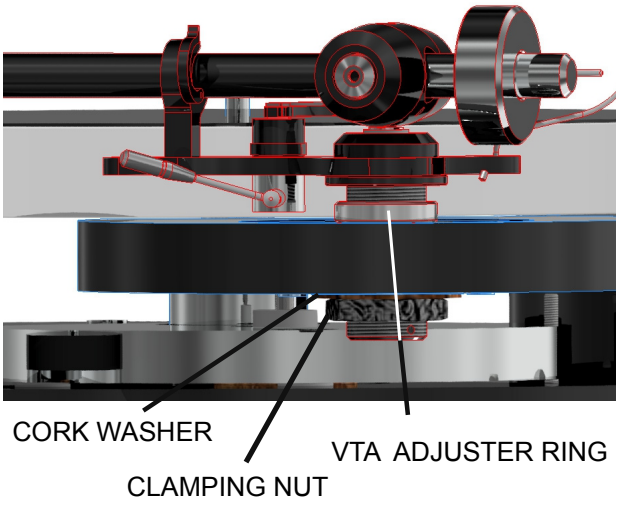
It's a mistake to think variables such as cartridge body height affects the setting of the lift / lower device. Another misunderstanding is that if the platter height changes with the addition of say a platter mat, that the lift lower needs adjustment.

These misconceptions can cause a great deal of frustration. The lift / lower is factory set and works properly once the arm height is set correctly. Correct means the arm tube sits parallel to the surface of the record when the cartridge has been lowered onto the record.

Set arm height

Raise or lower arm base to set VTA

To raise or lower the base of the arm refer to your arm manufacturer's instructions. For Origin Live arms these are available on the website under “Support” > “Owner Manuals”.

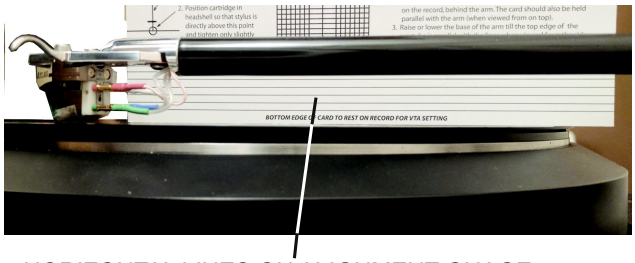


Adjust VTA

Set the arm height so that the arm tube is parallel to the surface of the record. This is fundamental for VTA and for the lift lower to work correctly.

To check arm height, lower the cartridge onto a flat record. Use a track positioned approx midway across the record.

Looking sideways across the arm, see if the arm tube is parallel to the horizontal lines on the alignment gauge. If the arm is down at the rear then raise the base of the arm and visa versa.



To obtain an accurate assessment on parallel you must hold the card parallel to the arm tube in both planes as shown below.

Above photo shows correct orientation of alignment card

Above photo shows incorrect orientation of alignment card

Notes on VTA fine tuning

Cartridge suspensions “bed down” over the first 40 hours. There are also manufacturing variations in stylus angle tolerances.

For these reasons, final VTA tuning is best carried out by ear after this time period. There is a detailed Youtube video on how to do this on our Youtube channnel.

Experimentally set the optimum arm height by listening to different VTA settings. If the arm base is too high, the sound is usually slightly on the bright side and lacking body in the bass – too low and it veers on the dull side.

Align Cartridge

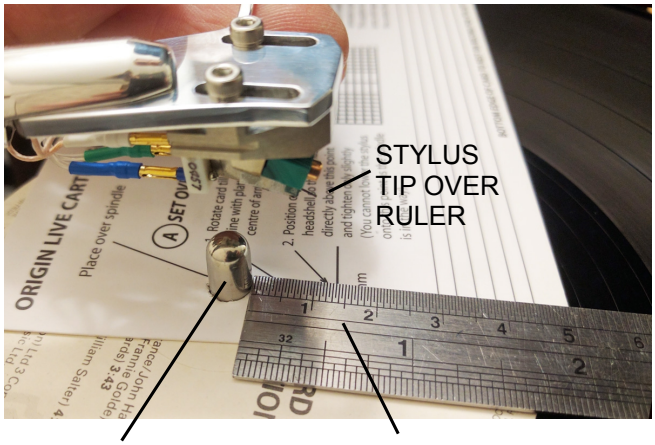
If you have never carried out cartridge alignment, there are numerous Youtube videos which some may find easier than reading.

Set overhang

First set cartridge overhang as specified by your tonearm manufacturer. The following diagram illustrates cartridge overhang.

Overhang is the measurement from centre of platter to tip of stylus (see below). When measuring this ensure the arm-tube is positioned with it’s centre line

directly over the centre of the spindle as shown.



Use the alignment gauge or a ruler to judge this measurement. In the above photo, notice that the ruler is butted against the spindle although it's the centre of the spindle that we need to measure from. To compensate for this simply add 3.5mm (half the diameter of the spindle) to measurement readings. This is easier than trying to align the ruler with the centre of the spindle.

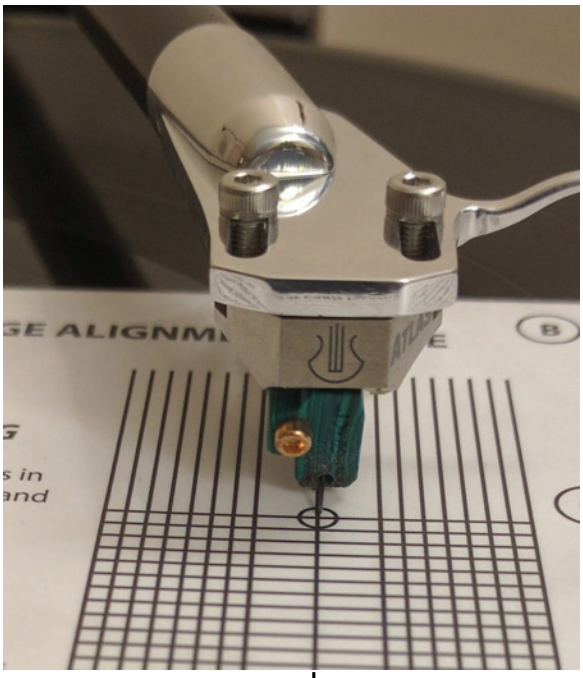
Note that when you later twist the cartridge to align it, the overhang position must be maintained and checked at the end of the whole procedure.

Line up the stylus

Once overhang is set, place the alignment gauge on the platter as shown below.

Gently lower the cartridge onto the alignment gauge and follow the instructions printed on it. Twist the cartridge body in the headshell till body or stylus aligns with grid then re-check overhang. Repeat procedure if necessary till desired result is achieved.

ALIGN STYLUS AS THE PRIORITY



When all adjustments are correct, carefully tighten down the cartridge mounting screws keeping a firm grip on cartridge and headshell together so nothing shifts.

Gradually tighten each screw in turn until tight. Tightening one screw fully before tightening the other is almost certain to move the cartridge out of alignment. However careful you've been, always check the alignment again after tightening.

Ensure the headshell wires are bent so they are clear of the record surface. Align stylus or cartridge body?

Most cartridge bodies have faces that are perfectly aligned with the cantilever so you can align the cartridge body on the gauge.

However this does not apply to all cartridges and some brands do not build their stylus aligned symmetrically with the body.

In these cases align stylus along centreline of the card. This takes precedence over cartridge body alignment in the case of Lyra, Soundsmith and other cartridges.

Reset tracking force if necessary

Now that your cartridge is adjusted you will almost certainly find that your initial tracking force reading has changed.

Re-set the tracking force to it's correct reading using the same procedure as before.

SIDE BIAS

Side bias (sometimes called "Anti-skate") applies an opposing (outward) balancing force, to the natural **inward** drag of a pivoting arm while playing. Left uncontrolled, the stylus would push up against the groove inner wall, causing distortion both from mis-tracking and a cantilever skewed in relation to the cartridge generator.

Methods of setting side bias varies from arm to arm but often come in the form of a dial, slider, falling weight or sliding weight on a lever. You will need to figure out how the device on your arm works (internet searches can help).

Checking side bias

Ideally you need a test record with a track for checking side bias (not all have this, so check before you buy - The Ultimate Analogue Test LP is recommend as it has an Anti-skating test; 315Hz amplitude sweep to +12dbu (Lateral). Also the Hi Fi

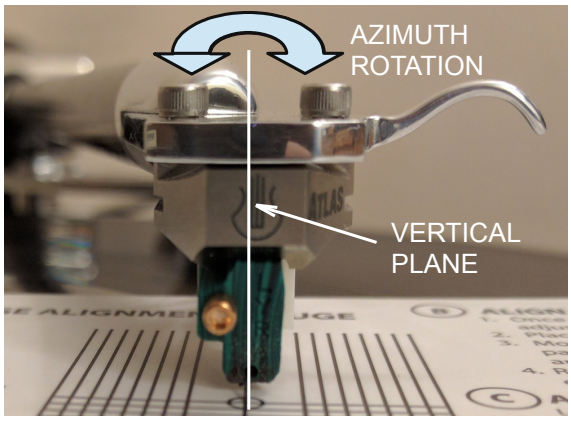
News test record has an Anti-skate/bias setting track.

In the absence of a side bias test track then the following method is better than nothing. Find a test record or a record with approx 10mm of blank vinyl between the end of the lead out groove and the record label. Lower the stylus needle on the blank uncut vinyl and observe whether the needle instantly skates inwards towards the centre of the record or outwards. Increase anti-skate until the arm starts to slowly drift inward towards the label.

Also, watch the stylus when you set it into a groove. Does it move to the right or left relative to the cartridge body? This indicates too much or too little anti-skating.

Azimuth

Azimuth is the vertical alignment of the cartridge / stylus as shown below



This is normally correctly set at factory and is not adjustable.

Setting azimuth correctly is tricky at the best of times and you need a certain amount of expertise to get it right.

If you do wish to change azimuth then the best way is to insert aluminium cooking foil strips between one side of the cartridge and the headshell.

Fine Tuning

You now have three adjustments approximated. Tracking force, VTA, and azimuth. Fine tuning is best carried out by listening. You should experimentally move from one type of adjustment to the next, then to the next, in order to balance the optimization for all three.

Some cartridges like Lyra and Dynavector are very consistent. The manufacturers recommended tracking force is always spot on so all you need adjust is VTA.

Others such as London Decca and Soundsmith benefit from a little experimentation with force but never wander outside the recommended range.

It's helpful to listen to female vocals as you proceed. Firstly try deviating from the cartridge's recommended tracking force by small increments - about 0.2 of a gram deviation above and below the manufacturer's basic recommendations. Don't worry about record damage from heavy tracking as most record damage is actually caused by mis-tracking from too little tracking force rather than with too heavy.

If you're getting mis-tracking at the low (lightest) end of the range and yet the low range is generally sounding the best (and on moderate signals, not heavy passages), then chances are you have either a dirty stylus, a bad record, an accumulation of crud in your cartridge, or a cartridge that's getting old. Changes in tracking force can change the optimal VTA adjustment.

CARTRIDGES EXPLAINED

Optional reading for less experienced users

General Notes

Origin Live offer most makes of hi-fi cartridge so we get asked questions about various issues regarding set up and care. To help newcomers to this area we have published the following notes. These guidelines are of a general nature - we publish them only to be of help and although widely accepted they are not formally authoritative - we cannot accept liability if you choose to use them and neither do we encourage the time consuming occupation of answering queries surrounding the procedures outlined - these are best referred to the manufacturer of your specific hi-fi cartridge. Forums and internet searches also offer help.

For those new or inexperienced to fitting hi-fi cartridges we would state that this is NOT difficult and much of the detail and perfectionism outlined below is for those who like to experiment. We ourselves do not normally check azimuth, or vary tracking forces from the manufacturers recommendations - neither would we worry if the arm was up to 1mm away from the recommended distance from the spindle - although all these details are audible they are generally of a relatively low order, however tracking force and VTA in particular are worth fine tuning should you feel anything is lacking. If things seem complicated we would encourage you not to be put off as it all becomes clear once you get started.

Before fine tuning the set up as described below you should allow the cartridge to "run in" properly - at least 40 hours for some cartridges.

Importance of set up

Hi-Fi cartridges travel like a bobsleigh through the grooves of a record only a few thousandths of an inch wide. You hear groove displacements of the order of a few millionths of an inch. (That's like splitting a hair into one thousand pieces.) Every movement or vibration at this level can be heard enormously amplified through your speakers. For

this reason it's good to set up the turntable and arm correctly so that the audio cartridge can do it’s job properly.

For example a turntable significantly out of level can produce side forces on the pickup cartridge tip that will wear it more on one side than the other as well as have a slightly degrading effect on the wear of your records.

Levelness

When a turntable goes out of level, the platter bearing performance and the arm’s dynamics, specifically anti-skate, are negatively affected. So be sure your turntable platter and tonearm mounting board are level - use a spirit level.

If the platter is out of level, first adjust the surface that the deck stands on. The suspension (in the case of a suspended sub-chassis design) may also need levelling if it's subsided over time.

If the arm board is not level (which means the arm pivot is not vertical), either return it to your dealer for repair or re-level it yourself by shimming between the mounting board and it’s support.

Cartridge alignment

Alignment for hi-fi cartridges needs to be optimised in three different planes. The final authority should always be your ears and preferably over an extended period of listening.

Bear in mind that each record is cut slightly differently so optimise for an overall balance of good sound over a wide range of records.

The three alignment planes are as follows. (Please note that it's the stylus, not the cartridge that is being aligned.)

Lateral tracking angle

Viewed from above, the hi-fi cartridges arcing movement across the record must maintain the stylus in the same relation to the groove as that of the cutting stylus’s straight-line tracking; this is Lateral Tracking Angle, or Tangency. Apart from linear tracking arms this is always a matter of the best compromise.

Azimuth

Viewed from head on, the stylus must be perpendicular in the groove so as not to favour one groove wall, and therefore one channel, over the other wall/channel; this is Azimuth.

Vertical tracking angle (VTA)

Viewed from the side, the stylus must sit correctly in the groove, at the same angle as the original cutter; this is Vertical Tracking/Stylus Rake Angle. This alignment must be set by ear, even more than is the case with the other adjustments.

Note that because record thickness varies, set the VTA on the most commonly used thickness of record.

Cartridge alignment tools

Tools required are an alignment gauge, a ruler, a tracking force gauge, a FLAT record, a screwdriver or Allen keys of the right size (usually 2mm), a good light may also be helpful. Small needle-nose pliers and a magnifying glass all help. A good “test record” such as the Hi Fi News test record is useful.

Bear in mind that the most severe “tracking ability” tests are hopelessly unrealistic and nothing tracks properly on them.

Treat the arm with care as some parts are fragile. To this end ensure that tightening of any bolts is carried out gently and without causing undue strain.

Tonearm Tips for performance

Tonearm wiring uses a standard colour code for channel and polarity identification: White = L Hot, Blue = L Ground, Red = R Hot, and Green = R Ground. If the cartridge pins aren’t colour-coded the same way, they will have letter identifications next to them.

Cartridge tag conduction & fit

Low level signals are unbelievably sensitive, so good conduction is essential and joints can be critical.

Make sure that the arm’s wires, wire clips, and solder joints are in very good condition. At minimum, clean the contact between cartridge pins and wire clips by removing and replacing each clip. Holding the clips with needle-nose pliers can make this easier, but be careful that you don’t strain the wires where they join the clip.

Check the clips for a proper fit on the cartridge pins, and adjust them if necessary. “Proper” means snug but not tight. To check clip size, hold the cartridge tail-up close to the head wires, grasp a clip firmly right behind its tubular part with the tweezers, line it up with the cartridge pin, and press. If it does not slide on with moderate force, the clip needs opening-up. If it slides on easily but flops around when attached, it needs tightening. Re-sizing is the operation most likely to detach a clip.

The trick is to avoid bending the wire at its attachment point or putting too much tension on it. To avoid either, always hold the clip with its wire slightly slack-looped behind it while adjusting. For opening a clip, hold it firmly with the tweezers or needle-noses, right behind its tubular section, and press the tip of the jeweller’s screwdriver into the open end of its longitudinal slot until you see this widen very slightly. (Here’s where you’ll probably need the magnifier or reading glasses.). You’re dealing with thousandths of an inch here, so a barely

visible spreading may be all that's needed.

Try it for fit, and repeat until it does. For tightening a clip, press a toothpick inside it as far as it will go, then use the needle-nose pliers to gently squeeze together the sides of the clip near its free end, while watching the slot for any change. (Attempting to squeeze a clip without the toothpick inside it will flatten its sides.) Try it for size, and re-squeeze if necessary until the fit is correct. When it is, close up the middle section of the tube to match the end.

RECORD & STYLUS CARE

Record and stylus care are big subjects well beyond the brief scope of these instructions. To help on this we've produced Youtube videos which can be found on the Origin Live Youtube channel (use google to find this).

CARE OF CARTRIDGES

Suspension Aging

Replace your cartridge when due. Most hi-fi cartridges have a cantilever suspension lifespan, which age even when not in use. This will vary from manufacturer and type of cartridge but 6 years is common.

Stylus Wear

Styli wear down due to record friction. Cleaning records and stylus properly will dramatically improve the life of both. It also increases performance significantly.

Cleaning Strategies

There are a number of strategies for cleaning styli, each with it's own merits. We recommend a combination of the below. The items concerned are available on the Origin Live website.

Small cartridge cleaning brush

These brushes are usually supplied with your cartridge. If there is a build-up of dust and dirt where the needle enters the cartridge body you should use a small soft brush to brush the debris out. Always brush from the direction of the cantilever to the stylus or you may do damage.

Passion dust Buster (use when visible contamination is present)

This helps remove fluff and particle build up on the stylus.

Cleaning fluid (use infrequently)

Lyra cleaning fluid or similar is helpful to dissolve substance build up. Some fluids dissolve glue so minimal quantity should be used on a cotton bud or brush and only damp to prevent fluid running up the cantilever by capillary action.

Green Stuff paper (use once a week or so)

This is a very fine abrasive paper that will not harm your stylus but will remove baked on substances.

RECORD CARE AND CLEANING

The stylus itself does a pretty good job of cleaning the grooves and should itself therefore be kept very clean.

Proprietary brushes etc. for cleaning records will often do little more than brush dirt deeper into the record grooves and are best avoided if possible.

High Quality Record Sleeves

Keep records in high quality non-scratch record sleeves - preferably good ones.

Record Cleaning Machines

A record cleaning machine is really the only answer for cleaning records properly as they suck out the debris and dust in the record grooves using a powerful vacuum. Tests using a microscope prove that this does the job with 100% success. The performance improvement is also very noticeable when it comes to even new records being played. We offer a number of high grade cleaning machines – see web site for details.

Cleaning Fluids

The most overlooked item in cleaning records is the Cleaning fluid itself and there are many that fail to do the job properly because they have not been developed by trained chemists. For example, Iso-propanol or detergent based cleaners may degrease the record but damage it slowly as well.

We only recommend L'Art du Son cleaning fluid which has consistently outperformed everything else in reviews. Formulated by a trained Chemist and leading turntable designer, this fluid will:.

- Reduce Static charge on the record surface
- Clean grease and other contaminates
- Not damage your records
- Leave no surface residue