Setting up your LP12 - a Brief Overview

Volume III

Written by Peter Swain, Cymbiosis.

Setting up your LP12 A Brief Overview – Volume III

I started a thread on the LP12 Section of the Linn Forum when it was in existence some years ago in response to a growing number of requests from owners, who perhaps live a long way from their Linn Specialist Turntable Retailers or wish to learn more about setting up and ensuring they were getting great results with their LP12. The set-up guide proved very popular there and the thread was promoted to a sticky status at the top of the first page on the Forum by Linn themselves!

Many readers asked if I could make a downloadable version of the thread postings I made at that time. So, in response to these requests the guide was produced back in 2014.

Since then, there have been a number of new products launched by Linn for the LP12 and so I have attempted to incorporate these in this new 2020 version of the guide.

It is my opinion that it is better for you to have your Linn Retailer set up your LP12 whenever possible, as there is no substitute for good hands-on training and a lot of set-up experience.

It follows that I do not accept any liability whatsoever for works attempted following your reading of any information contained here. As I said, hopefully you will see this as a useful, general guide, and you will gain a better understanding of the setting up process, consequently a better idea of why retailers need to charge a little for the time and expertise they use while setting up your LP12 and also why they are the best people to set-up and get the best sounds from your LP12.

Care, experience, expertise and attention to detail are paramount.

With this guide, I've tried to keep it to the point and as possible and used photographs to illustrate the points made wherever I can, as I hope this will make it more readable for anyone interested in using it as a guide for reference in future. However, it's not completely all encompassing, so if having read it, you have any questions, please just email me at peter@cymbiosis.com

Kind regards,

Peter Swain

Setting the bounce!

Much is written about the importance of setting the bounce. In a nutshell, one wishes for it to be pistonic in motion. Having the ability to gently bounce the platter at the centre of gravity, when the deck (plinth) is level, and for it then to continue to bounce cleanly and evenly up and down vertically with no sideways pulls, shudders, shakes, wobbles or the like for a time, is desirable.

A longer decay of the bounce suggests there is less restraint, less friction in the suspension system and this is good, as a rapid decay over just a few seconds suggests the suspension is stiff for some reason, something is dragging and the suspension movement is being impeded in some way. If you have followed the set-up advice here to this point, then really the only likely reason is spring alignment and I'll cover this shortly.

One also wants the suspension to be quiet within a normal range of test bouncing, as a knocking suspension spells problems when trying to achieve the best sonic results.

All this suspension freedom must remain when the arm cable is finally dressed and attached (covered later), as we just cannot allow it to impede (mechanically ground) suspension movement. One also must always set up the bounce with the drive belt fitted, as it is an integral part of the system of course!

However, please don't think the bounce is the be all and end all of LP12 performance, because it's not. The overall performance of your deck will be greatly determined by the efforts you have put in already by getting to this point in your LP12 set up.

My point is, that a nicely bouncing LP12 might not sound as good as it could, even though this is the test that nearly all of us apply when checking one out! Remember, rattling top-plates, loose screws, alignment etc. etc. This is where all your preparation should now come together and make a significant performance difference, but all this time and effort can be wasted if your suspension is not correctly set!

So, before you do anything, just as detailed before in this guide, check that the LP12 plinth is level in your jig.

Inspect your larger bushes (grommets), ensure they are in good condition and without any lubricant like talc or Fairy liquid on them anywhere. Then you can locate them into your sub-chassis. They should be a nice tight fit, as you don't want them to move (rotate) easily, as bushes that rotate easily because they have had lubricant applied to the junction with the sub-chassis is one of the major reasons why the LP12 had a reputation for going out of tune, through no fault of its own... Lubrication here, to make rotation easier is bad, so please don't do it.

Next, one needs to select three springs to use. I find it useful to have between 6 and 12 springs available as I grade their compliance as mentioned previously. If you gently hold a few different springs between thumb and forefingers and just gently squeeze them (compress them) you will soon appreciate that they can feel different, and their stiffness varies. This is within the normal range of production tolerance, and we can make this small difference work in our favour to allow for a hopefully better and easier time when setting the bounce!

Just line the springs up as you grade them, with the stiffest at one end and the softest at the other. Use one of the springs at the stiff end of the line at the position underneath the arm where it will be supporting the greater weight of the suspension. Place one of the soft springs at the left-hand side nearest the motor, as this spring will carry the least weight. For the spring that is closest to the front of the deck and the front of the arm board, which will carry a load between the other two, select an intermediate spring from the centre of the line. Differences may be perceived as small, but every little helps.

*N.B. Keep the line in order (somewhere where you won't knock them over), as you may wish to replace one or more springs with near equivalents as setting the bounce proceeds.

At this point, I would like you to take a spring and a larger bush and locate the conical end of the bush onto the spring. Now take a close look as to how much clearance there is between the bush and the spring? Not much, as you will see! Indeed, the spring will be almost touching the conical part of the bush while uncompressed. It is only when the spring is being compressed by the suspension Turret lock nut and the washer, once correctly fitted, that sufficient clearance from the spring to the larger bush is achieved!

However, it is useful to see for yourself how little clearance exists and consequently how important correct assembly is, along with vertical alignment of the spring bolts, to ensure free movement without the spring touching (binding on) the spring anywhere.

So, place and locate the spring onto the large bush in the sub-chassis, immediately followed by the small bush (grommet) and a mudguard washer and then by a turret lock nut. Wind the nut up a couple of turns on the thread to hold everything in position and repeat for the other two springs.

Once all three springs are located, one can gently wind up the nuts a little on the threads. How far you need to do this will vary due to which spring is being adjusted and also the mass of the arm being mounted, so here is a general rule of thumb that will put you close before placing the platter onto the suspension.

For the left spring near the motor, fully engage the lock nut and have one complete thread showing through the head of the nut. For the spring nearest the arm and the one carrying the most weight, wind the nut up the thread so as an amount of thread roughly equal to two nut thicknesses is showing beneath the lock nut. For the spring nearest the front, just allow one full nut thickness of thread to be showing beneath the nut. This is a rough adjustment and allows you to get started.

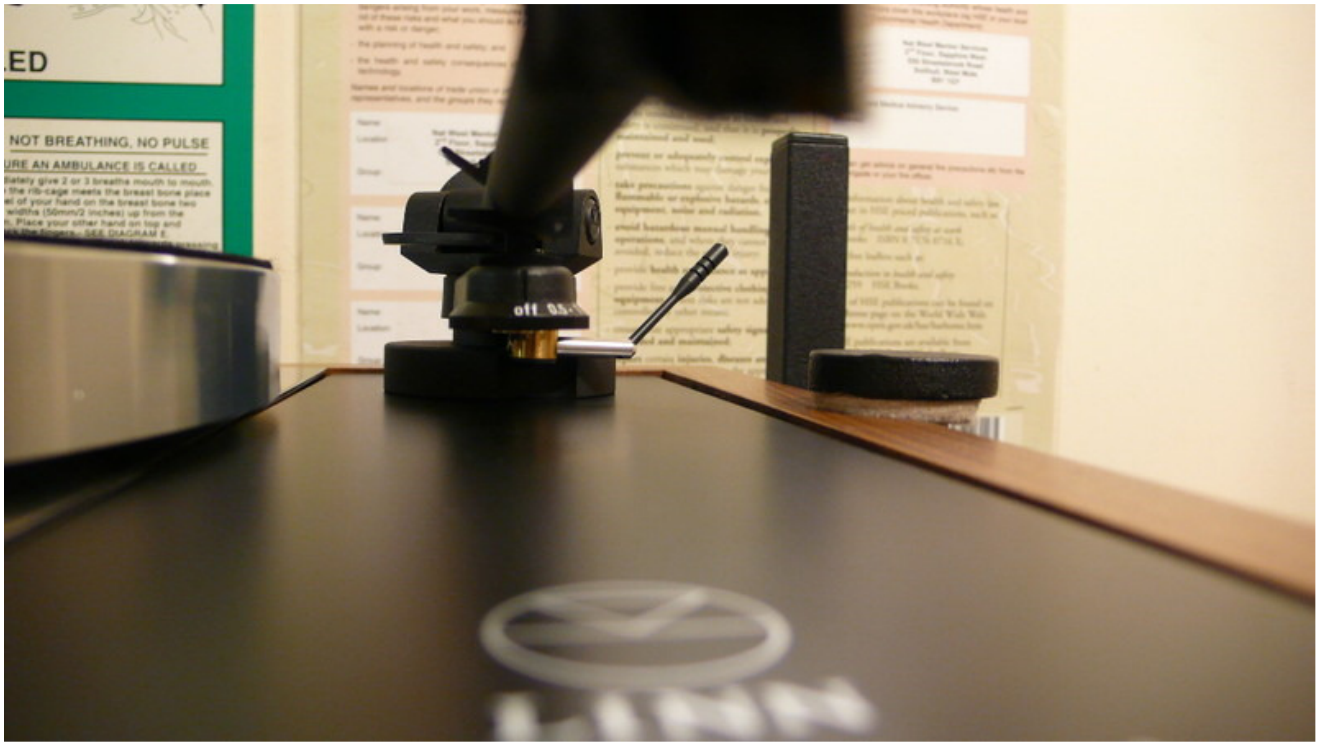

Figure 85 - This image shows the armboard set too low

Place the belt on the pulley and sub-platter. Personally, at this time, I place the platter on the sub-platter inverted, yes upside down! As I mentioned earlier in the guide by doing this, there is no risk of damaging the top plate by having the edge of the platter hit it, if the suspension compresses more you than expected.

One can now adjust the nuts on the threads until the arm board is flush (level) with the plinth at the front and the back. Adjusting the left spring near the motor allows one to adjust the left to right tip on the suspension so as you can level the arm board left to right with respect to the plinth.

Having done this, I then remove the platter and replace it again on the sub-platter the right way up. I then start the motor and allow it to run up to speed, so as to allow the belt to achieve a normal position with respect to pulley and sub-platter, as when one initially puts a belt on, it can be slightly mis-aligned and this will affect the suspension bounce.

Disconnect the power again for safety. Now, finally one can set about getting the springs aligned correctly working together, in order to achieve that much talked about pistonic bounce.

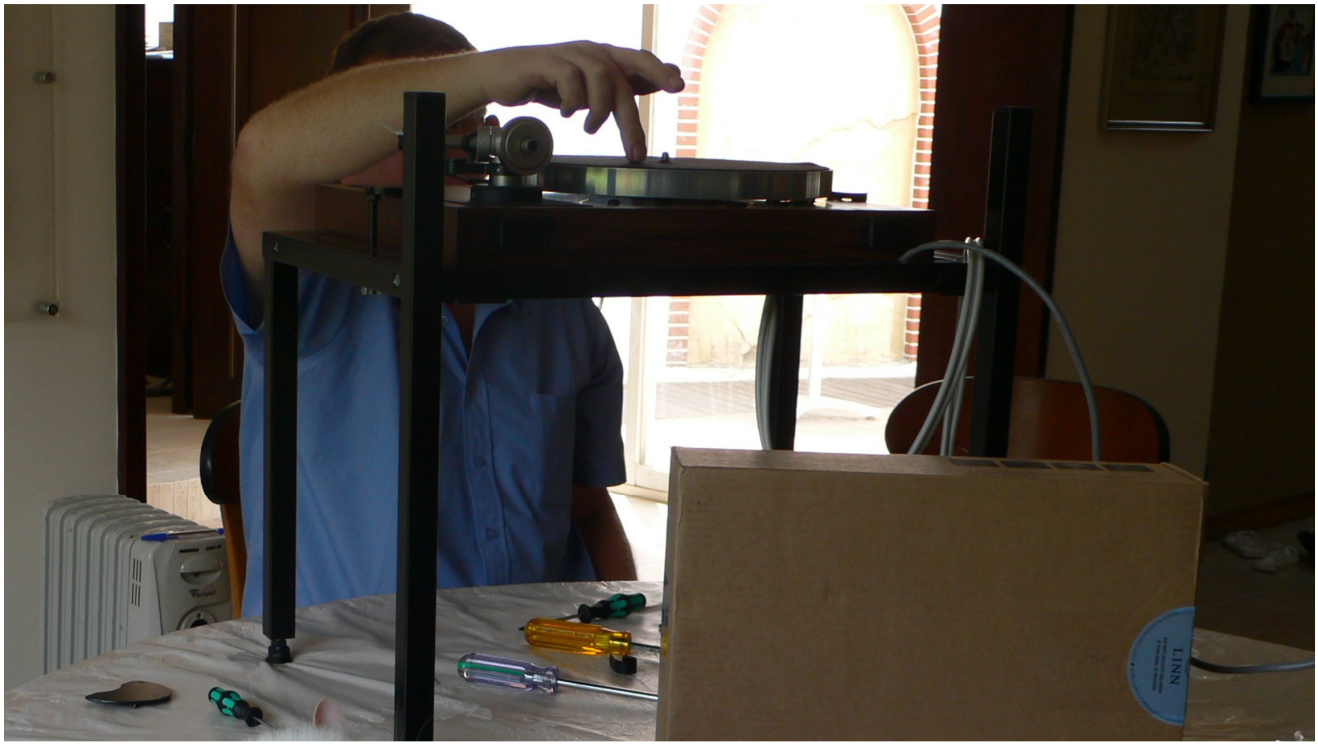

Figure 86 – Checking for an even bounce

Tapping the platter to bounce the suspension is a bit of an acquired skill anyway as you may have found out already. The best way to put energy into the suspension, in order to check if it bounces evenly, is to do this at its centre of gravity.

You can broadly work this out by following a line from the centre spindle to the arm bearing. When mounting a light arm, like a Rega or Roksan Nima, it will mean the suspension has a centre of gravity on this line nearer the centre spindle and with these two, you can tap the platter just a little beyond where the inner meets the outer and find the best place to bounce.

With an Akito, you will find the centre of gravity is just a little further out, and one will find the best place to tap is now about halfway across the platter. With the heavier Ittok, again the centre of gravity is yet further away from the centre spindle and nearer the arm bearing itself. The Ekos and Ekos SE and SE/1 are pretty much the heaviest arms but also, they are the most popular modern arms for use with the LP12.

You will find that the most even input of energy (bounce) is at a point roughly two thirds the way across the platter towards the bearing assembly. Ensure all arms are retained in their restraining clips when doing this, as you don't want the arm bouncing about on its rest!

Additionally, this creates noise which you don't want when trying to listen for suspension knocks. I use Blutak or a thin elastic band to secure arms with no restraining clip, such as the Aro.

Figure 87 - A nice flush and level arm board complete with pink Blutak restraint for the Aro

So, having done all the above, is the deck bouncing freely or not? Well, often probably not at this stage!

The first thing to ascertain is where (which spring or springs) there is binding occurring. This is where one needs to start careful rotation of the springs but not the spring by itself! Reach up and rotate the larger (top) bush with respect to the sub-chassis using your thumb and index finger (see picture).

If you do this, the spring will rotate with the smaller (bottom) bush rotating at the same time, which is exactly what you want. N.B. Rotating the spring by itself with the sharp end of the spring in contact with the bush, will very likely cause damage (cuts) in the flat spring facing surface of the bush. This is the very surface that the spring is pushing against and needs to be in good condition, damage free and most importantly flat so that the spring has the best vertical alignment.

Grabbing hold of the top bush so as to rotate it, is actually quite hard work, or it should be, as the bush should be reluctant to rotate. This means it won't rotate by itself during transportation for example and sending the suspension out of tune!

This is precisely why there must be no lubricants, whether oil, fairy liquid or talc used here. Here lays the reason for the LP12's unfair reputation for going out of tune. Short-cuts (poor set-up practice), so as to give one's fingers an easy time of it during set-up, are the real reason!

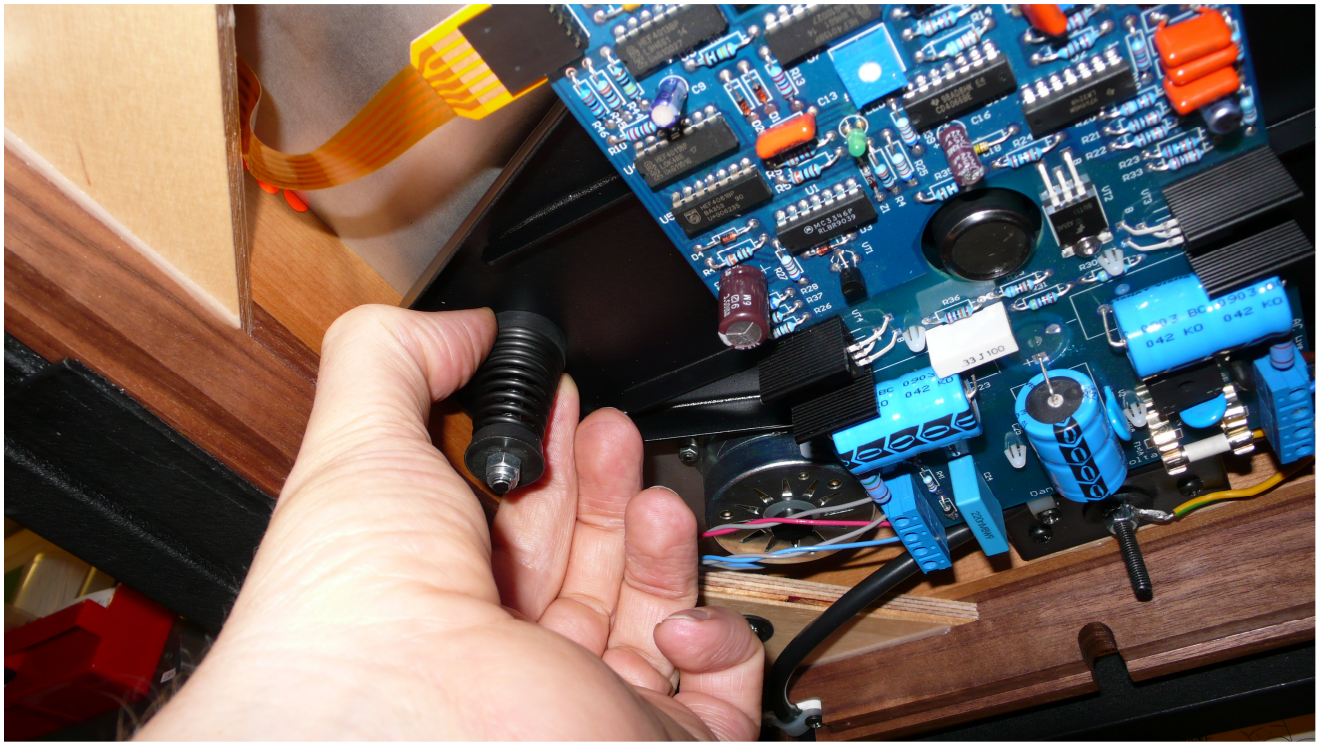

Figure 88 – Rotating the top bush and not the spring as to rotate the spring against the bush would damage it

Small, incremental rotations to the top bush supporting the binding spring, can be clockwise or anti-clockwise, it is really down to you, and what feels easiest (best) for you. Large rotations all in one go, often don't get you anywhere, or tell you anything. So, it really is a gently, gently (catchy monkey) approach that works best!

Work round all three springs, observing how the bounce is changing/developing with each small rotation, and try and find the best initial free/even bounce. Then, I suggest you stop and just run the deck up to speed again and switch off. Disconnect the power again. This just realigns the belt again so as to ensure its not acting to impede spring movement.

So, following the first round of spring rotation and alignment. How's the suspension looking and sounding? How's the bounce and are there any knocks? Remember gentle bouncing is best to start with as freedom of movement a little either side of the resting suspension position is fine for starters, as when the deck is playing music, will you be bouncing it? No, not normally!

Later, as your confidence and experience improve, you can gradually increase the energy you use to bounce the platter, to see how far you can take it before you get knocks or lose free suspension movement if you wish, but remember it's an LP12 and not a Trampoline!

If the suspension is not what you'd hoped for at this point, don't be surprised! I wish all decks would set up this easily, but the reality is that quite often one needs to do a little more rotation of the bushes and springs.

Before you launch into this second phase of bush rotation, have a look at where the rear spring bolt is actually passing through the top bush nearest the arm (the one supporting the greatest proportion of the sprung mass). Is it central or does the spring look a little off-centre? If it's off centre, rotate the bush and spring until the spring bolt passes through the top bush centrally.

Then re-adjust the other two springs, rotating them a little at a time and re-checking the bounce again, as you go. Re-start the motor, run it to speed and then disconnect the power again. How is the bounce looking now?

If the bounce is now good and even and free from knocks, well done! We can move on to checking how the arm board is sitting in the cut-out between top-plate and plinth (as detailed below). If the bounce is unsatisfactory, then we should repeat the process above again.

After a few cycles/repetitions of the above and things are still not working out as well as you'd like. Stop, walk away for a few minutes and let the deck run again. Have a break, make some tea! You know the routine! Free yourself from the inevitable frustration that will build.

Even I have to sometimes!

On returning to the deck, switch off, un-plug and let the platter come to a rest by itself. You then know the belt is sitting pretty neutrally again and not influencing the bounce. If the bounce is still poor at this stage, you have two choices: 1) Rotate the bushes again. 2) Identify if you can, which of the three springs is causing most trouble?

Remove the outer platter. Remove and replace this spring with an appropriate one from your pre-graded line of springs as noted above*. Re-attach the spring, bush, washer, and nut again, and then re-adjust the suspension to near level again.

Replace the outer platter again. Complete any minor levelling adjustments (check the arm board is flush with the plinth again), then run the deck up to speed and disconnect the power again. You are once again ready to gently rotate the springs, again as required, testing the bounce as you go, until you are happy with the resulting bounce.

If you are unable to achieve a good and pistonic bounce having replaced one spring, consider replacing another and then another and so on! Look at which spring appears to be causing the problem and replace as above. Hopefully, then you will achieve the bounce you are looking for eventually!

However, if this just isn't happening, alarm bells should ring for you, and you need to check other possible causes. The easiest and most obvious one to check is the spring bolt with a T-Bar. Is it hanging vertically or was it one you missed during the earlier part of the set-up process? Very occasionally, one may come across a misshapen or poorly finished larger bush. If in doubt, replace it and re-assemble again, re-level and re-check everything again. At this point, I really do feel your pain! I've been there a few times myself.

However, once you are finally happy that the bounce is even, pistonic, nice and free and free from knocks, you can congratulate yourself on the fact that you have nearly finished setting up your LP12.

However, don't let the excitement get the better of you just yet! Is the arm board straight/parallel in the cut-out? With a standard arm board on the steel and also to a lesser extent the Majik sub-chassis, it is now possible to slacken the three fixing screws (platter off please and also for the Majik, slacken the three arm collar bolts) and then adjust the board position again for being straight (platter on again to check).

Once it is, tighten up again fully (platter off) and check again for being straight and parallel (platter on). If now parallel, just tighten the three small screws initially. As this action may have thrown the position of the arm collar and hence arm, out a little with respect to the main bearing! So, again one should remove the arm (and platter off again please) by slackening off the pillar locking Allen screw (Linn arms) and re- checking alignment of the collar with the Kinki again, and adjusting where necessary, tightening up the three collar bolts again when you are happy. Now re-assemble, re-set the VTA as before and re-check everything again!

With a Keel of course and also the Kore, there is no such possibility for adjustment of the board to the sub-chassis/bearing as it is one solid unit. So, as you are setting the bounce, please take a note on how the board is sitting. If it bounces well, but the board is wonky (not parallel in the cut-out), would you want to live with it like this? Probably not, so this is another thing to get right when setting the bounce.

Finally, when replacing springs, if you feel like the turret locknuts are no longer gripping well and doing their job, even if new, replace them. The last thing you want are loose nuts beneath your springs!

Once you are happy with the suspension and arm set up, now is the time for the fine speed adjustment of the 110v AC motor if you have one. If you have a Lingo 4 or Radikal then you can skip this section.

As indicated back on page 10 in volume 1 of the setup guide, in my opinion it's necessary to have everything pretty much assembled and the suspension tuned nicely before making final adjustments to the motor, so as to achieve the best and most accurate setting off the speed for your LP 12. You will be needing a strobe disk for checking the accuracy of your speed adjustments of course.

Referring to *Figure 89*, you can see the two black button headed hexagonal motor mounting bolts set diagonally in the top plate slots and to the left and right of the motor you can see the two silver headed M3 Pozi speed adjustment screws.

Both of silver headed Pozi screws should be in contact with the body of the motor sitting directly beneath the top plate.

It is essential when carefully adjusting the screws, that you always loosen the first screw before tightening the second and make sure that both screws are still in contact with the motor body beneath. Tightening screws at the same time will cause the motor flange to bend and will damage your motor!

Small adjustments are best, and personally I would never rotate either of the screws more than half a turn 180° at a time before re-checking the speed. Indeed I would expect screw adjustments of 10° to 15° towards the end of the speed adjustment procedure, as hardly any movement of these two screws tilting the motor will affect the speed and you will see it on your strobe.

Figure 89 – shows the hexagonal motor mounting bolts and the silver Pozi speed adjustment screws

So, by initially checking the speed of your LP 12 using your strobe, if you find the speed is slow, remove the outer platter and then carefully unscrew the outer Pozi screw (closer to the plinth) a little. Compensate this with the equivalent tightening of the inner Pozi screw closest to the inner platter ensuring that both speed adjustment screws are still in contact with the motor before replacing the outer platter again so as you can check the speed. Hopefully, the speed will have increased a little. If the LP 12 is still running slow, repeat the process again, unscrewing the outer speed adjustment screw nearer the plinth a little and compensating with the equivalent tightening of the inner screw closest the inner platter.

As you get closer to achieving the perfect 33 1/3 speed the amount of screw rotation for both screws as you would expect becomes increasingly smaller.

If you find the LP 12 is running fast, then you merely reverse the procedure. In other words, initially release the screw nearest the inner platter a little, compensating by tightening the outer screw nearer the plinth, this will reduce the speed.

Once you are happy that you have got the speed as close as you can to the ideal 33 1/3 please doublecheck that both speed adjuster screws are in contact with the motor, as if either screw is loose, it will rattle. This will degrade sound quality and the motor won't run to speed for long following your adjustments!

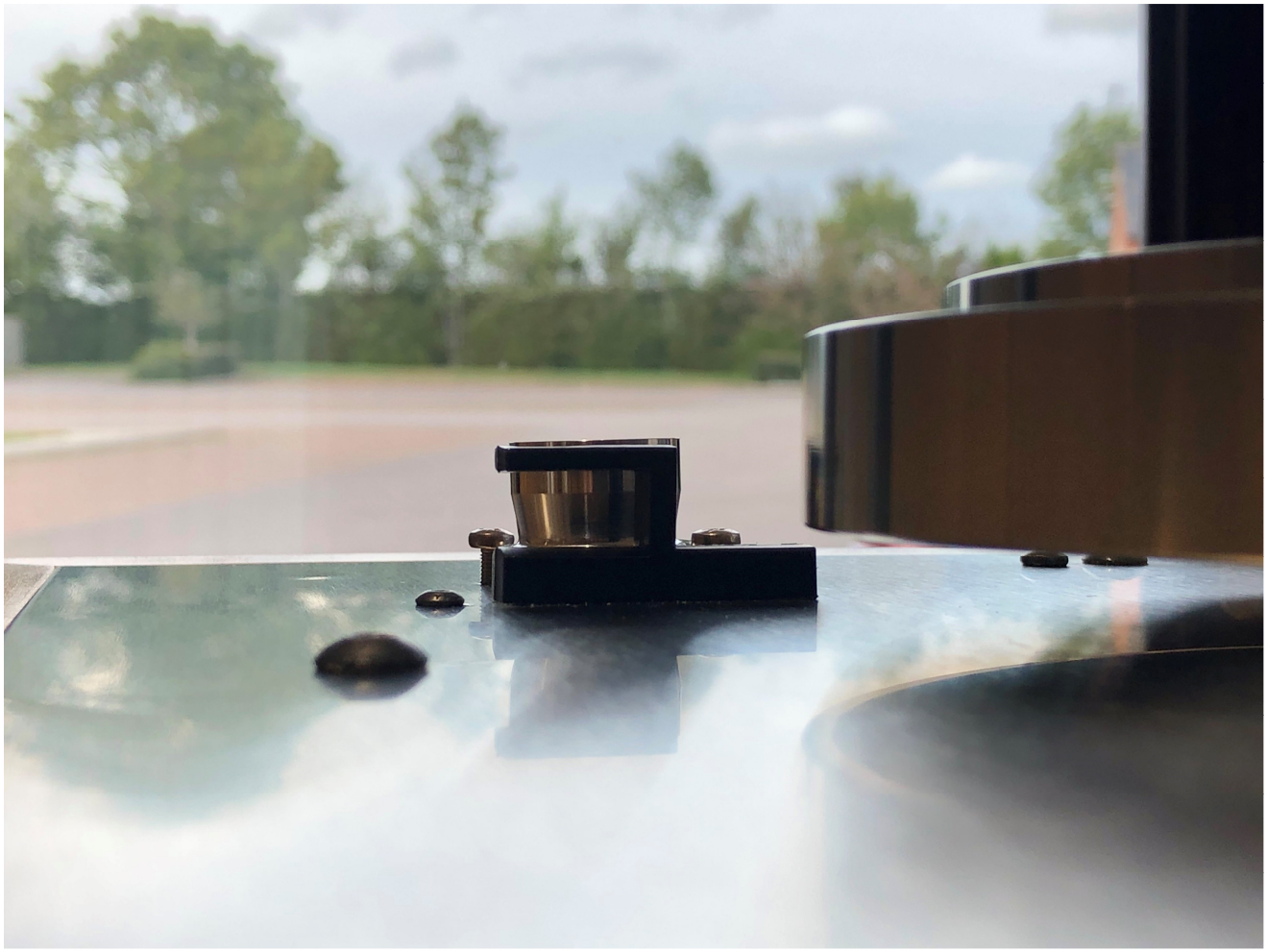

Figure 90 – showing the motor pulley relative to the belt guide when speed is correctly set

I've included *Figure 90*, as I thought it would be useful for you to see the motor pulley from a different angle and relative to the belt guide. This LP 12 is running at exactly 33 1/3 rpm when the belt and outer platter are fitted. You will see there is a very small lean of the pulley outwards and away from the inner platter. This is a typical pulley position when the LP 12 speed is set correctly, and it is a good idea to try and duplicate this as a start point when setting the speed of your LP 12.

Remember, take your time, give your LP12 a minute or so to get to a stable speed before checking, and small adjustments of these screws are best.

All you need to do now is dress and attach the arm-lead and attach the LP12's base

But what about arms that don't have a plug and their wires are permanently attached to the arm during installation and set-up?

These issues will be in the next section:

Dressing the arm lead/cable

I think it is a good idea from the outset of this section to describe what we are aiming for in the cable dressing:

Basically, we are aiming for the arm lead to have no effect on the bounce or the positioning of the arm-board within the cut-out. We also don't want the cable touching anything en route to the p-clip, no mechanical grounding. So, look out for contact with any earth wires however small, or more often, the baseboard!!

This might sound easy and it is with the Urika 1 and Urika 2 as their arm connecting cables are the perfect length and very easy to dress, but often and particularly with non-Linn arms where you may not be able to un-plug the arm lead from the base of the arm like with the fixed cable on a Rega for example, or where indeed there is a plug, but the direction of cable exit may be un-helpful when fitting it to a Sondek, as with SME and Roksan for example. So good cable dressing can be difficult to achieve!

Additionally, the cable attachment at the p-clip wants to be very secure indeed in my opinion, so as to avoid any unwanted movement of the dressed part of the arm-lead within the deck, additionally the dressing/positioning of this cable should be so it causes no resistance to suspension movement at all, and hence no effect on suspension movement whatsoever, and we want to keep it that way!

An insecure arm-lead by contrast, will cause problems as if it moves, it will very likely seriously affect the cable dressing and bounce/suspension movement and hence the set-up. So, your choice of p-clip to minimise the chances of movement/slippage of the cable clamping, is key to your success. It is detailed further at the end of this section.

An arm like the Naim Aro, sits in the middle of the ease of dressing scale, being easier than the Regas for example, as it's best to mount the collar carrying the cable on to the base of the arm first, tighten the clamp screw and then leave it there, with the cable just hanging down, as tightening this clamp screw later, when in its correct position, can be difficult, due to the limited access under the LP12.This collar carrying the cable exit can rotate, even once the clamp is tightened, so you can rotate it to point towards the cable exit directly at the P-clip mounting point when you are ready. A huge benefit!

In a perfect world, a cable plug that exits at a right angle to the base of the arm and also in the direction of the P-clip, with minimum fuss and bother is best, and this is of course exactly what is found with the Linn arms. All have been designed to make this cable exit to the P-clip as easy and as trouble free, as possible.

Additionally, because the arm cable route is pretty straight, the cable need not be curved, twisted or bent, this is better too, and so is less likely to cause any unwanted sideways movements being fed into the suspension once plugged in. The one exception is when dressing the old black arm lead (pre-T-Kable). Please see below where dressing of the different arm leads is covered in detail:

The sheer fact that the Linn arm leads/cables can be plugged in and then un-plugged again means that arm cable effects can be immediately noticed, and any deterioration of bounce quality and board position following the attachment of the arm lead, can then be acted on by a readjustment of the arm cable.

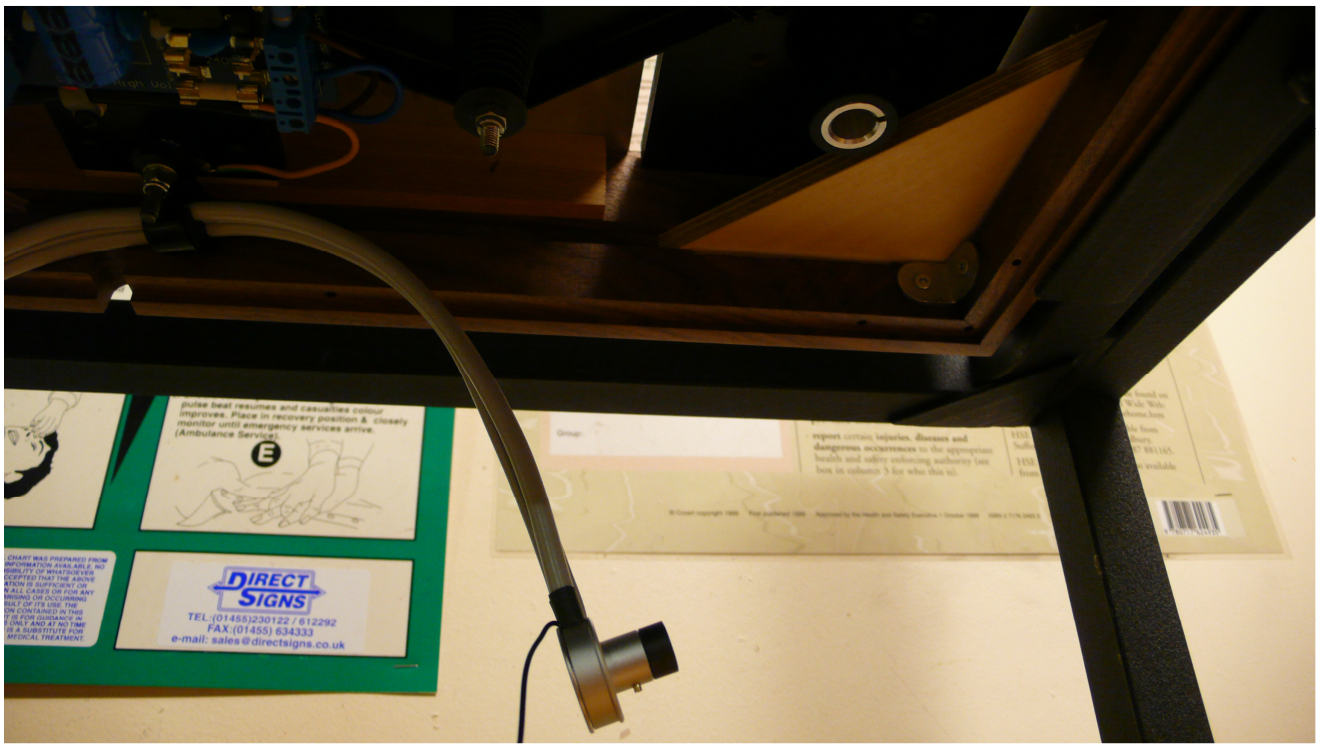

Figure 91 – Shows how easy to plug in and then un-plug when checking any influence on the quality of the suspension bounce

However, do remember that a proportion of the mass of the arm lead will have an effect on the suspension once it's connected and so some small suspension height adjustments will be necessary to bring the board up and flush with the plinth again.

Once you are happy with the positioning and lack of effect the arm lead is having on the suspension movement, then you can then lightly nip up the Allen grub screw near the base of the arm pillar so as to hold the plug firmly.

There are two commonly used sizes for the Allen grub-screws; 1.27mm on earlier arms and 1.5mm on more recent arms.

Beware over-tightening this grub screw when retaining the plastic arm lead plugs, as it's very common to see holes punched into their sides and in extreme cases, the grub-screw can be tightened into the plug body so far, as it shorts out the internal pins and wiring!

With the metal bodied plugs as appeared with the Ekos 1 there is no such problem and the grub-screw comes to a more abrupt and easily felt stop when tight.

Figure 92 – Shows an old plastic plug (right) and an early metal plug (left) showing grub screw contact

It is always worth nipping up the plug grub-screw, as if left loose, it can move/vibrate in the arm base socket, even fall out, and will certainly not sound as good as it could.

Arm cables and p-clips

With the arm cable plugs now discussed/brief overview given, we need to return to consider the several different types of arm cable that have been used over the years by Linn. Consequent to this is the important decision of which p-clips should be used, to get the best and most secure tethering of the arm cable before the plinth exit. This will also help you decide which clip is best for use with a variety of other manufacturers arm leads if you are using one.

The original old black Linn arm cable, as originally supplied with Basik and Basik Plus, Ittoks, Akito 1s and early Akito 2s is best dressed with a single 90 degree twist of the cable at the point of exit from the right-angled plug. This is permissible (even though it may appear contradictory to the general advice given earlier). This is because a single 90 degree twist of this cable allows for a better entry into the original white (ratchet) P-clip at the tethering point on the cross-member, and allows one to keep the cable pretty much straight as possible, which IMHO is a good thing.

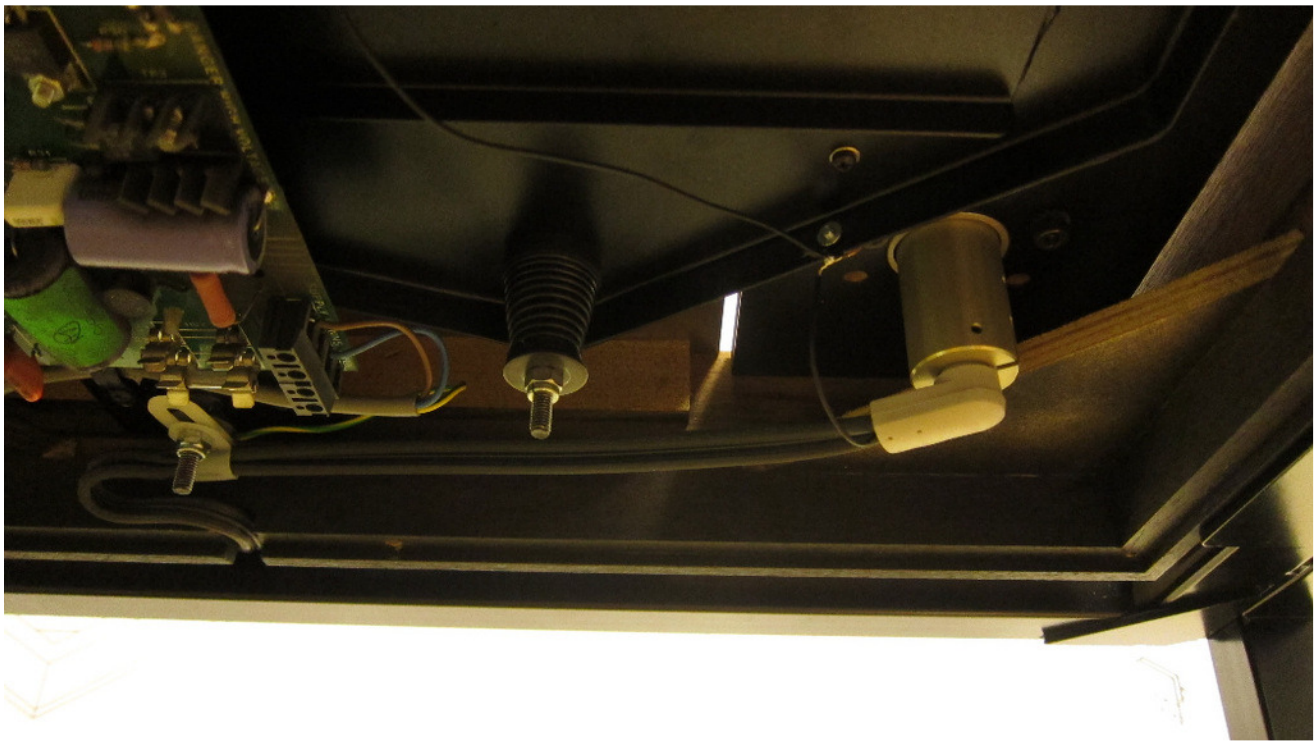

Figure 93 – Original arm lead dressing with a 90 degree twist of the cable adjacent to the arm plug

Deciding where to attach the p-clip to the cable is critical and so I generally plug in the arm plug first, and then position the p-clip at a distance along the cable where it wants to naturally sit, if the p-clip was already tethered into the cross-member stud.

I tighten the securing nut up to be very nearly in contact with the plastic of the p-clip. I then insert/position a small plain bladed screwdriver to lever against the mudguard washer attached to the cross-member beneath the p-clip and the bottom part of the p-clip itself, hence tensioning it to grip the arm cable whilst tightening the nut to secure it in place.

Always position the p-clip or clip with a mudguard washer directly beneath it, in order to provide additional support for the plastic as it's about to be compressed by the securing nut! It's best to take a look at the picture here (*Figure 94*).

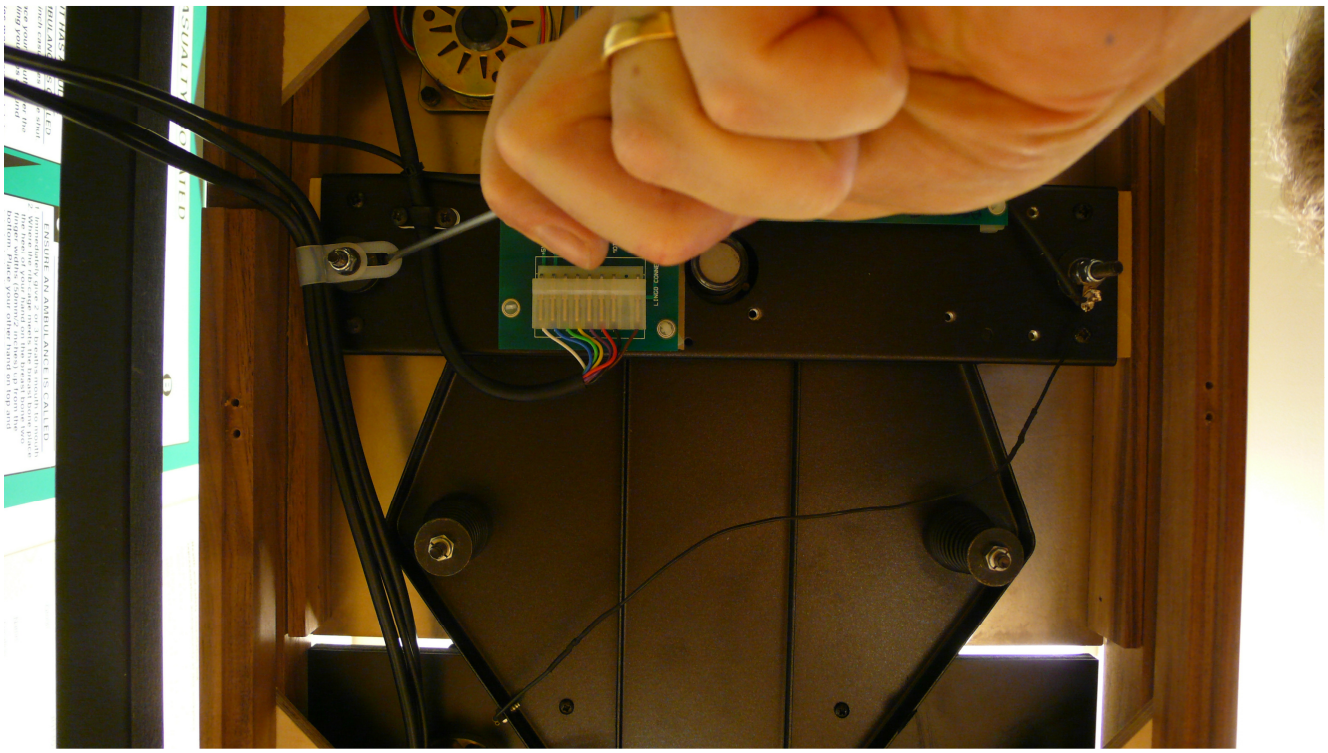

Figure 94 – Shows the use of a screwdriver levering against the washer to pull the white ratchet p-clip tight

If you have a small M5 spread washer available to put beneath the securing nut so it tightens against metal rather than direct onto the plastic of the p-clip, you will find adjustments easier to make, but it's not absolutely essential.

Once the p-clip ratchet (has locking teeth) is sufficiently locked up, remove the arm plug and then see how it offers up to the arm plug socket if you were to plug it in again. One wants a perfect slide-in/slide-out fit, without having to move the base of the arm.

If the plug lead is too long or too short, adjust its position at the p-clip until it plugs in and out of the socket perfectly and with no sideways effect on the arm.

Once you are happy, tighten the nut securing the p-clip properly, ensuring there is no movement of the cable whilst doing this. Check the fit of the plug into the base of the arm again to ensure it is still good.

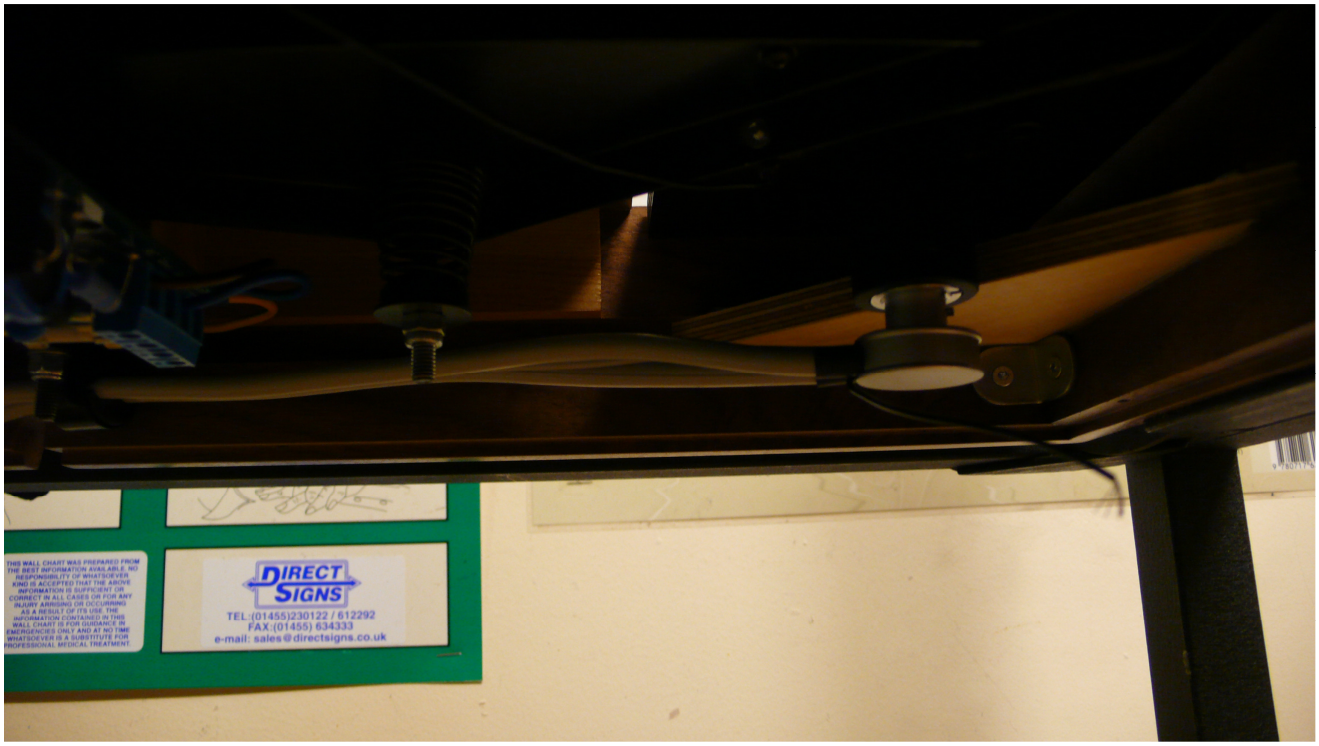

Figure 95 – Checking the quality of plug fit and cable dressing with the T-Kable

Here is the process with a Grey T-Kable:

With T-Kables, there have been three iterations of the p-clip! Personally, I would only consider using the latest one with the two “O” rings on the insert.

The earlier two ones: A white one with two-part insert was too big to be positioned between the cross-member stud and plinth, and so to use it, one had to position it on other (inwards) side of the cross-member stud, and this meant a significant bending of the arm lead – not desirable in my opinion.

A smaller black one but the insert was one piece, and there also were no “O” rings, consequently the insert could rotate easily within the p-clip outer! Totally useless unless one wrapped tape around the insert – it was improved, but still not good in my opinion.

The final and best p-clip, the Mk3 is the same colour and size as the Mk2 version, but now the insert has two circular groves moulded into it which allows for the location of the two “O” rings which now crush up when the p-clip is tightened and stop the insert rotating.

I enclose a picture of the best two p-clip solutions used over the years; the original ratchet one and the Mk3 and as you see, even with the modern insert with “O” rings, I choose to divide the insert into two, so as I get a more even grip on both left and right cables! (*Figure 96*)

If you wish to try this, ensure that you rotate one of the two halves, so the newly cut ends are not positioned together for an even tighter fit to the cable hence less chance of movement.

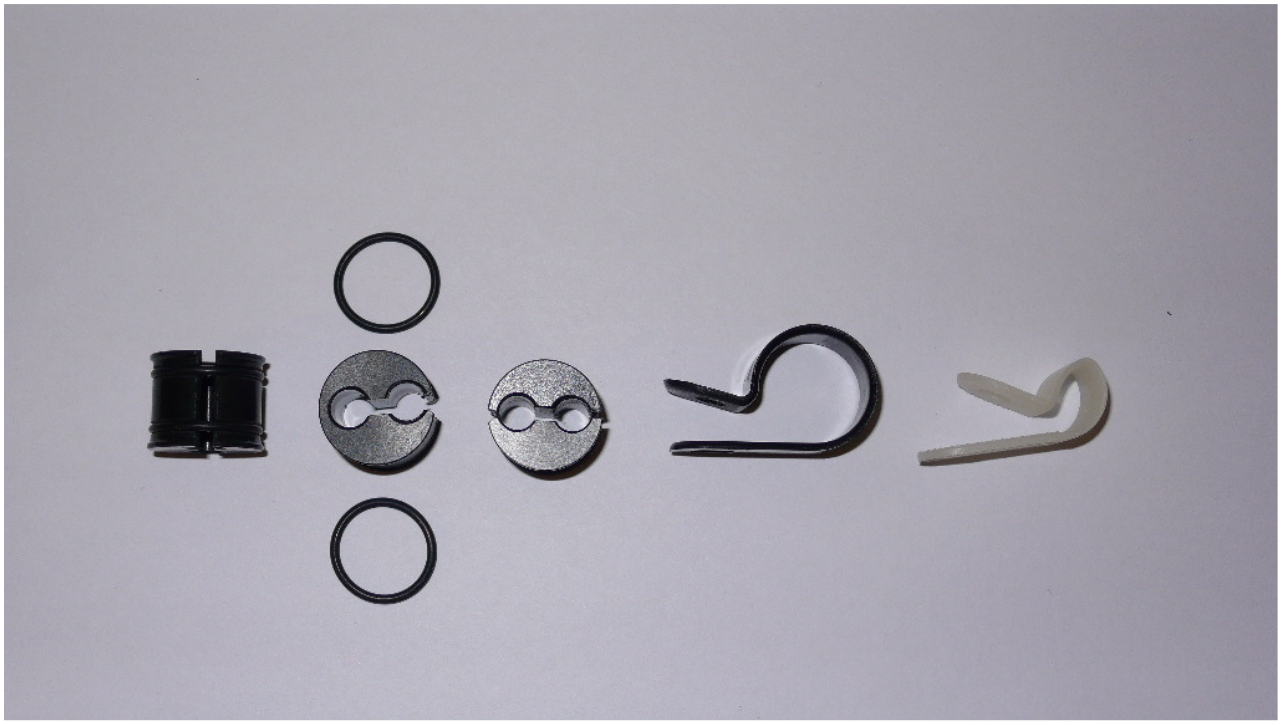

Figure 96 – Shows the 2 best clip solutions for standard arm cables and T-Kables

When fitting this p-clip again and as above; plug the cable plug into the arm socket, so as you can calculate the position where the p-clip will attach along the cable (*Figure 97*).

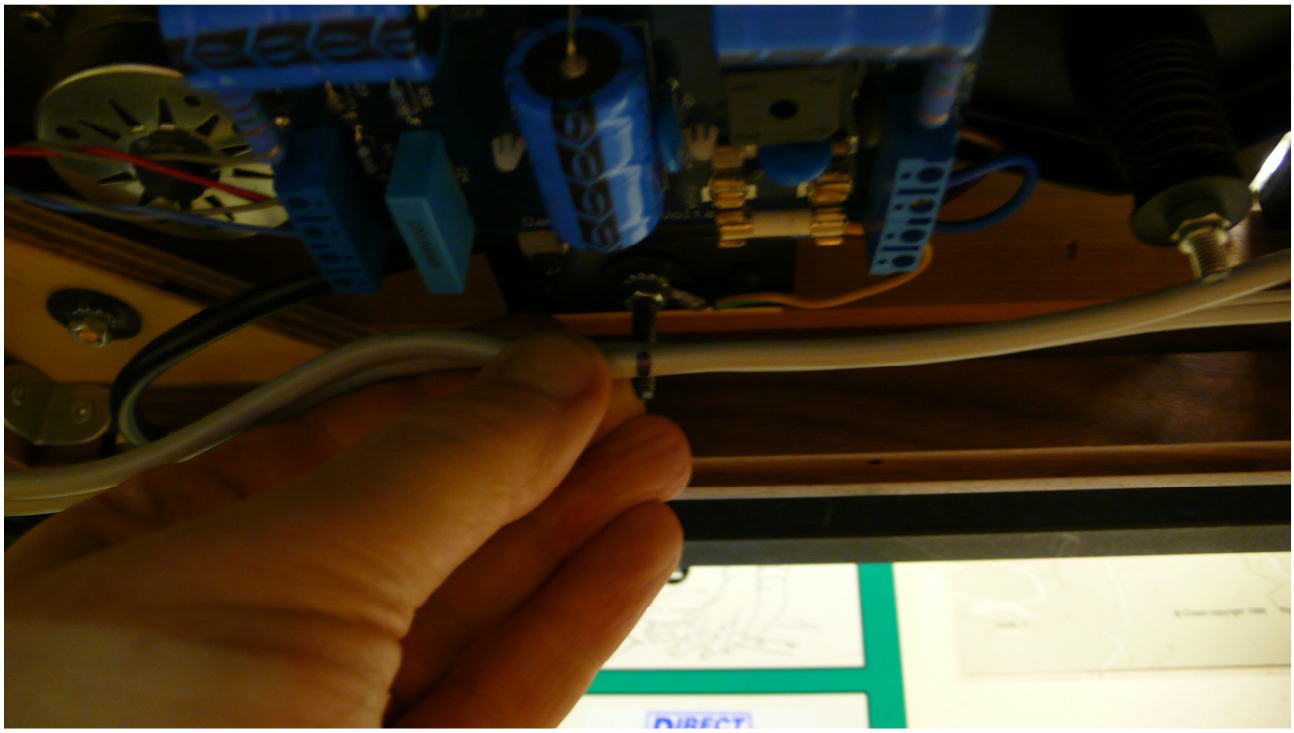

Figure 97 – Measuring and marking with a marker pen where to fit the p-clip insert along the T-Kable

Then the cable needs to be removed completely so as to attach the “O” rings and then the insert, so I mark the position of attachment with a marker pen on the T-Kable (*Figure 98*).

This means I can attach the insert and “O” rings, clip on the outer part of the p-clip and attach this to the cross-member stud with a mudguard washer beneath it and the spread washer supplied with the p-clip for attachment/tethering, knowing the marked distance along the arm lead for their attachment is correct!

A mark just makes life easier.

Figure 98 –Shows p-clip insert fitted to the marked point on the T-Kable

I can then just tighten up the locknut against the M5 spread washer and p-clip and ensure the arm lead’s and plug’s relative position has not changed during the tightening process, by offering up the T-Kable plug into the arm socket, just the same as above with the original p-clip.

The T-Kable should be dressed flat and straight as possible, again ensure there is no suspension interference once the plug is inserted into the arm socket, and that you still maintain that nice pistonic bounce. Likewise, please check for any movement in the arm board position as this will be an indicator of some suspension interference.

If there are no effects on the suspension movement, you can now adjust the suspension height to allow for the mass off the cable and secure the plug into the bottom of the arm with the small Allen grub screw (1.27 or 1.5mm).

The end result, as viewed from underneath. As straight and as flat as is practically possible (*Figure 99*).

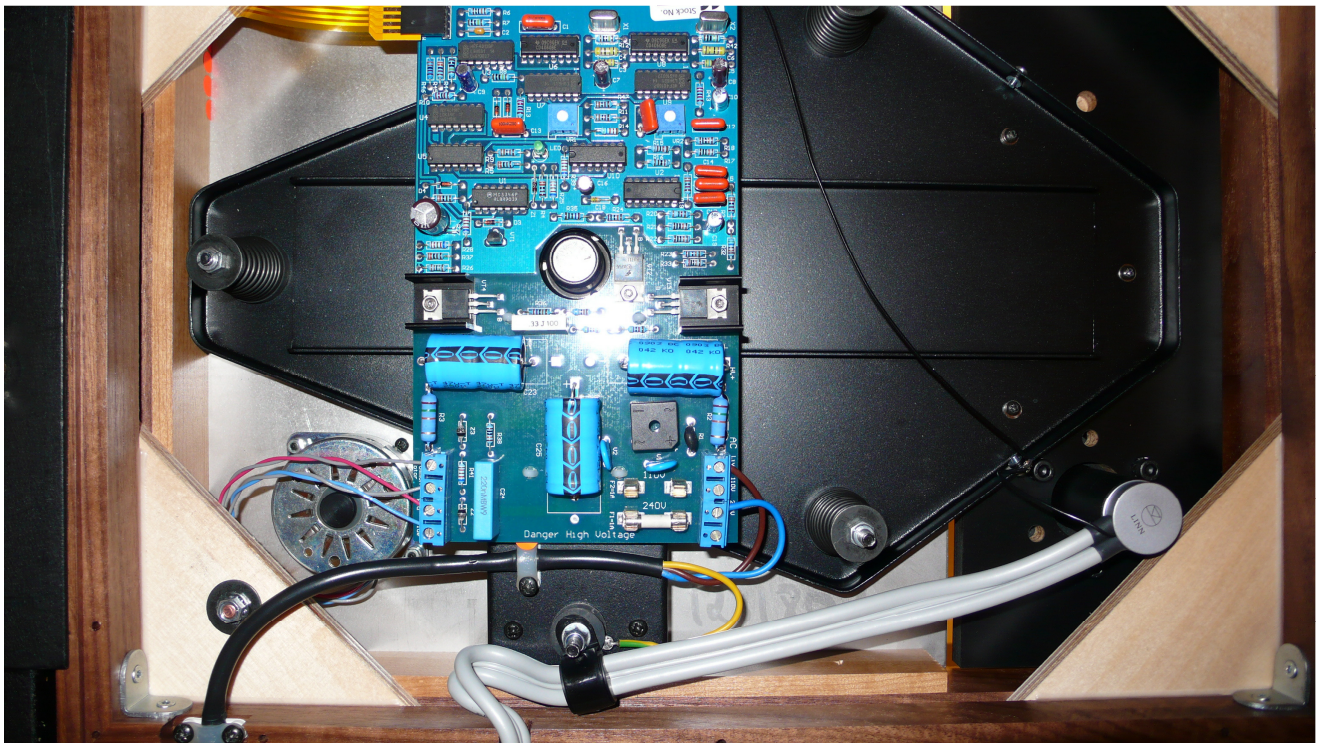

Figure 99 – Try to keep your T-Kable as flat and as straight as is practically possible for minimum interference

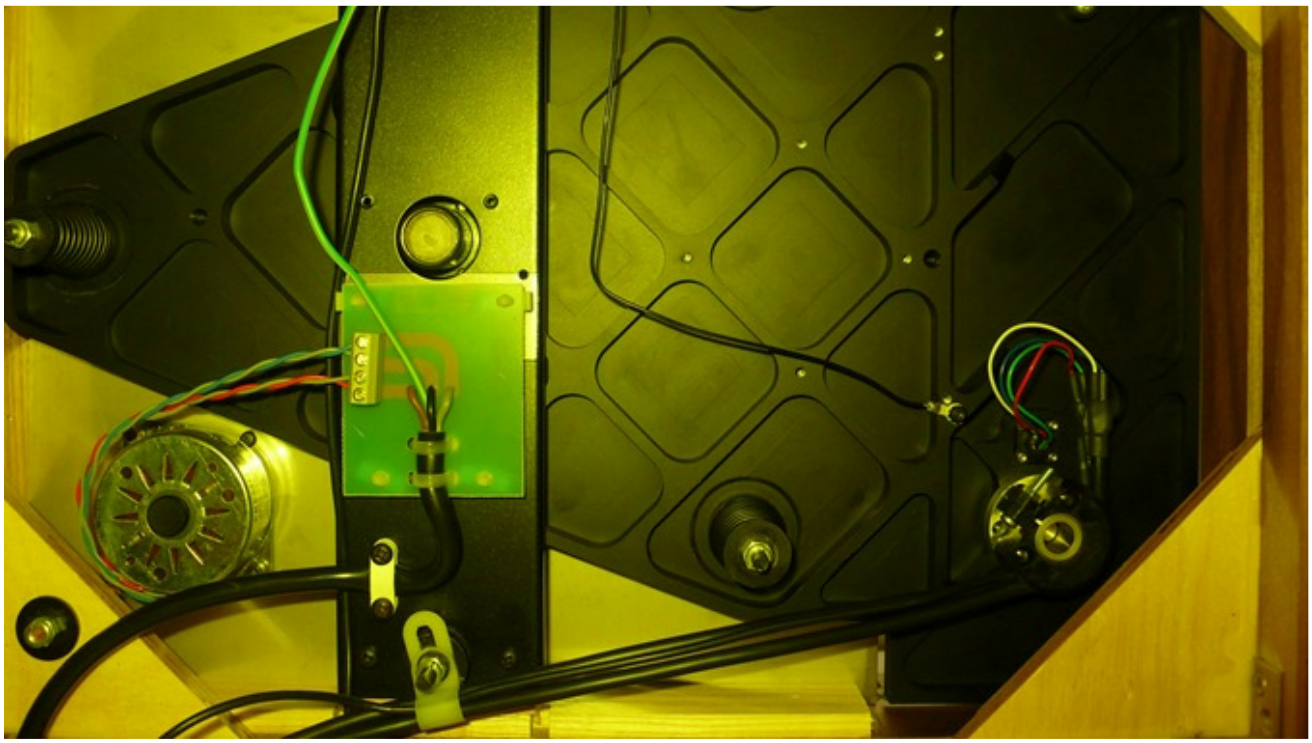

Figure 100 – Try to keep your Aro arm cable as straight as possible by rotation of the cable exit of the Aro Arm

With arms that have captive cables or the Aro arm lead, the principle is the same as before, except that you can't plug in or unplug anything to check how much, if any, influence there is on the suspension, so a slightly different approach needs to be employed but the required end result needs to be the same (*Figure 100*).

Basically, take a very long, hard look at the arm board position and suspension movement. Be really sure of it. Attach your chosen p-clip and then double check the arm-board position and suspension movement are exactly as they were before you attached the arm cables. It is quite tough to get right, as you can't unplug anything!

The p-clip position can be moved a little so as to allow for any anomalies in arm board position and or suspension bounce before locking up the securing nut. Likewise, adjust the suspension height to compensate for the mass of the arm lead at this time.

If, at the end of this process, you are still in doubt as to the quality of the bounce and/or arm board position, I suggest that you remove the nut, p-clip, let the cable hang loosely and check again. It is the best course of action and repeat the fitting once you have made any necessary adjustments to the cable/p-clip position.

If you are very close, but feel there is still something not quite 100%, here are a couple of things to try/check:

1) Plastic coated arm leads can be stiff and have memories and even though you may have bullied them into position, the gentle use of a heat gun/hair dryer to soften the plastic and help to remove its memory can help.
2) Run the deck to speed and switch off again. This may help a little if the belt has somehow assumed a different position on the pulley during set-up.
3) Check the plinth is still level as maybe it has moved a little in the jig during set-up.

Following all this, one hopes you now have a really nice, free pistonic suspension movement with a level and straight arm-board parallel to the sides of the cut-out!

All that remains is the fitting of the baseboard and whilst most of it is common sense, over the years there have been a number of different baseboard solutions and so it's worth covering them all in turn.

Older LP12s were generally fitted with a baseboard made of hardboard which was certainly a popular material back in the 1970s and 1980s. It was a necessary feature to ensure there were no mains connections exposed beneath the LP12.

Unfortunately, early baseboards were secured by the four rubber feet in each corner and without sufficient support in the centre of the baseboard it tended to droop in the middle. This being visible from the front of the LP12 and was rapidly corrected by the addition of two centrally located securing screws, one at the front and one at the back of the plinth.

This was still not an ideal solution, as only part of the drooping problem was resolved. In other areas where the baseboard should have been in contact with the plinth small amounts of drooping allowed for the baseboard to rattle against the plinth. In some quarters it was considered better to remove the baseboard completely and go what was termed "bottomless". This poses the risk of exposing live mains connections in the pursuit of better sound quality! Not advised for safety reasons of course.

In my opinion, it would've been far better to cure the problem, rather than to remove the baseboard. Quite simply, by Increasing the number of screw fixings attaching the baseboard to the plinth (always drill these holes, do not self-tap them into the wood or you will split/damage the plinth).The rattling problem, and hence the consequent reported loss of sound quality would have been avoided in my opinion.

The next generation of baseboards we are made from a thick Formica type of material rather than hardboard. There are two versions and the solid baseboard again was attached to the plinth by the four feet and two centrally located fixing screws. The original Trampolin baseboard also featured the Formica material but now had four feet attached to four rubber diaphragms, which themselves were each attached to the baseboard with four small screws. The two central fixing screws remained.

Latterly, a lozenge shaped washer was used under these two central fixing screws to spread the clamping forces and make a better job of securing the Trampolin to the plinth. Early Trampolins required the use of screws and washers in the four corners, or by leaving the four small rubber feet in the four corners, to attach the Trampolin to the plinth.

This was not ideal and was fairly quickly replaced by the addition of eight additional fixing screws, two in each corner And also for thin strips of self-adhesive felt type material (I call it interface material), so as to stop the rattling of the baseboard against the plinth. This certainly improved things but the early Trampolin was often criticised by some LP 12 owners, with many of them still preferring to go for a solid Formica base solution or no baseboard at all with all the risks of exposed high voltage wires!

The material for the baseboard subsequently was changed from Formica to aluminium and the Trampolin 1 was replaced by the Trampolin 2.

At this time, the original Formica solid baseboard was also replaced with a new aluminium solid baseboard. These two most recent baseboards are very substantially better than anything that has come before.

There are several reasons for this improvement and they are listed below:

Both the solid and the Trampolin 2 baseboards are attached via potentially 10 fixing points (only nine of these fixing points can be used on older plinths as one of the fixing points is unfortunately coincidental with the mains outlet in these plinths so please beware!), which with the addition of the interface material strips sitting where the baseboard contacts the plinth means that you have for the first time a very rigid and a rattle free solution, whether it be using conventional rubber feet or the Trampolin diaphragm foot.

In addition to this, both baseboards now feature and earth point which should now be connected to the crossmember stud at the front of the LP12.

It is my opinion that if either of these baseboards is correctly fitted to an LP12 which is bottomless or features one of the earlier baseboards, there will be an improvement in sound quality.

For most placement situations, including most hi-fi racks, cabinets and wall shelves, the Trampolin 2 is recommended although the solid baseboard may work better on some very light, rigid supports, So it's always best to ask your Linn retailer for advice on this if possible.

Both the Urika one and Urika two phono stages utilise a modified Trampolin 2 baseboard and given the additional cabling requirements for these two phono stages, both the Urikas and Trampolins feature a large cable chute at the rear motor corner, so as to allow these extra cables easy exit from beneath the LP12 plinth, whether it be a modern plinth or a much older plinth. Finally, a couple of things to watch out for when fitting baseboards to plinths:

Firstly, before attaching the Earth wire or any fixing screws please make sure that your new baseboard will actually sit within the recess of your plinth. Sometimes, particularly with older plinths, the baseboard appears to be slightly too big for the recess. If this is the case, then in my opinion the only course of action is to carefully file down the edges of the baseboard using a metal file. As you will observe, the baseboard projects a few millimetres at each corner both front, back and sides.

So, having looked at where the baseboard will not fit, use the file on the baseboard in the corners where the fitting is problematic. Please ensure you do this carefully and progressively, stopping frequently to offer the baseboard back up to the recess in the plinth until enough material has been removed from the baseboard for it to fit snuggly in the recess. I do not recommend taking material from the plinth, as being wood, this could easily split and compromise the plinth. So filing down the edges of the baseboard is the most easily controlled and effective way of getting round the problem.

As touched on above, older plinths may have a different position for the power cable outlet, so please ensure that if you are about to attach a modern baseboard to your plinth, that the rear left-hand fixing point, pretty much directly behind the motor, has not lined up with this cable outlet. If it has, do not use this fixing attachment, as there is a high risk of electrical shock to you and damage to the LP12.

Just use the other nine fixing points as this is a sufficient number and far greater than any previous baseboard had to attach to your plinth.

In order to ensure all the screw attachments to the plinth are good, please do not try self-tapping screws into the plinth. It is essential that you use a small drill. 2.5mm is ideal to make small pilot holes in the plinth using the baseboard fitted the correct way round as the template. In this way when you finally attach the baseboard to the plinth the wood of the plinth which in some cases will be many years old, will not split and thus compromise the quality of the fixing and also the plinth.

With the use off the thicker T-cables and larger p-clips, the older arm cable exit (being directly behind the cross-member stud) can cause problems, as there just is insufficient space for the cable to exit as the p-clip is in the way! If this is the case, as you will see, there is a push out section in the aluminium base boards to allow revised arm cable routing out beneath the plinth.

Please note, that when having removed the push out section, sometimes the metal edge is sharp and could cut into the arm cable, so please just use a metal file to remove any sharp edges.

In recent years, a potential problem has been spotted when using the Radikal with either the Trampolin or the Urika phono stages. Basically, on the rare occasions where the plinth is very slightly shallower, or the recess in the bottom of the plinth for the baseboard is slightly deeper.

In this situation it is possible for the endplate of the motor to come into contact with the rear left Trampolin foot, which if left will degrade sound quality! This issue needs to be rectified.

The best way to check for contact if you are concerned, having fitted or are about to fit one of these baseboards to an LP 12 with a Radikal, is to firstly check the inward facing quarter of the foot nearest the motor is not raised as a result of overtightening of the four fixing screws.
If it is, remove the foot completely and gently flatten the securing ring with a soft hammer whilst on a solid surface and refit ensuring it is now flat. If it is not, then remove again, repeat the process with the soft hammer and re-fit.

When you are satisfied that the ring is as flat as possible, all you need to do to check for contact, is just paint a little engineers blue or even nail varnish on the inner facing part of the ring of the Trampolin foot. Please then refit the Trampolin to the plinth using the securing screws. Upon removal of the Trampolin again, please check to see if any engineers blue or nail varnish is present on the bottom of the motor. This is a more reliable and easier method than the use of a long paper feeler, to check clearance is present between the motor end plate and Trampolin foot.

Obviously if there is no transfer from the ring of the foot to the base of the motor, then you know there is no contact and this is good. If however some of the marking material has been transferred from the Trampolin foot to the motor then you know you have contact and this is something that needs to be resolved.

The best and simplest route is to use some very thin and even thickness strips of packing wood in the recess of the plinth, packing it by the required amount at the rear but also the sides and the front to ensure that there is no more contact between the base of the motor and the foot and that the degree of spacing between plinth and baseboard is even.

Repeat the checking process to ensure the contact has been eliminated. Once you are satisfied there is no contact, I suggest you glue the strips in place.

Once all of the above has been done, then finally you can attach the earth wire from the baseboard to the crossmember stud, reattach the fixing screws adjacent to the feet and the two central screws complete with their lozenge shaped washers.

Now, finally you have finished the set up!

You can now return your LP12 to its normal playing position, whether that be on a hi-fi stand or a wall shelf. Please check the plinth is level, replace your outer platter and re-confirm that you are happy with your cartridge's tracking force and anti-skate settings.

All that remains now, is to make your power supply and the signal connections to your amplifier.

Hopefully now you will sit back and enjoy the fruits of your labours!

Thank you for reading this guide and I hope it is of real benefit to you.

If you have any questions regarding specific areas of set-up, please email your questions to peter@cymbiosis.com and I'll do my best to answer you promptly.

Best regards,

Peter Swain