KUZMA SAFIR 12 TONEARM

Instruction manual

2025-07 Serial Number: ……..

The **SAFIR 12** tonearm is a very precisely engineered piece of equipment, however, the construction is robust and requires minimal maintenance for optimal performance.

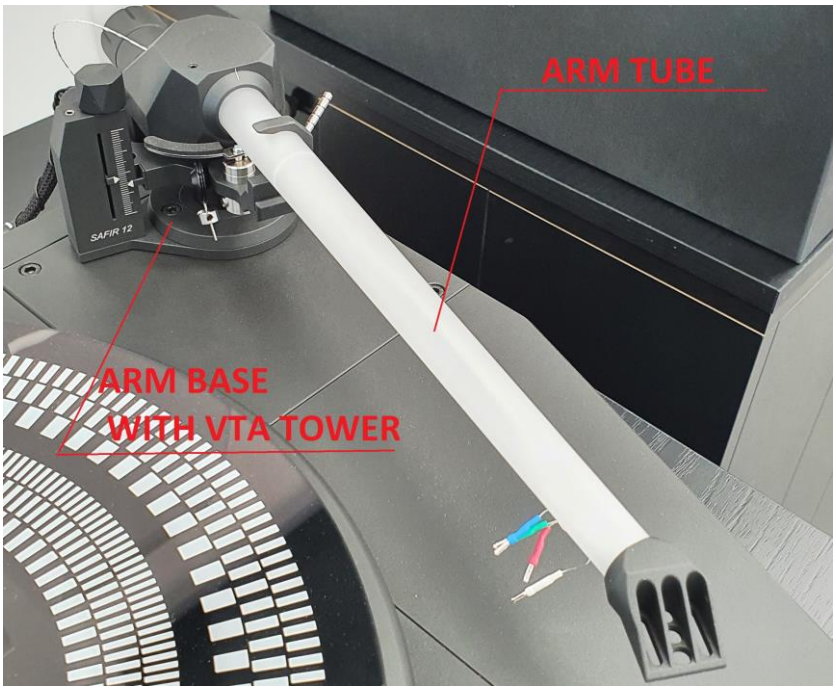

Fig. 1.

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General description

The Kuzma SAFIR 12 tonearm is the result of our attempt to extract more music from vinyl records than ever before. (Fig. 1)

The heart of the tonearm is a very rigid and stiff, sapphire conical tube which allows the cartridge to perform to its maximum potential. The bearings are our own unique design of 4 spikes set in sapphire cups, the same as those used in Safir 9 tonearms. All four points have minimal starting and moving friction and zero play in all directions, thus ensuring that the headshell with the cartridge moves precisely and with minimal vibration across the record.

The sapphire tube is fitted into a massive block of solid aluminium and brass, giving inert support and further dissipating vibrations which occur during playback. The counterweight, with lock mechanism balances, the tonearm. Azimuth can be adjusted in small repeatable increments with zero play, by means of an Allen key.

The tonearm is fixed on the turntable arm board via the Kuzma arm base which also incorporates a VTA tower with scale.

Internal wiring is of superior special alloy silver wires. A set of 4 wires runs unbroken from the cartridge pins via a 1,5 m long tonearm cable with silver RCA bullet connectors.

Listening suggestions:
Play records which you though were sounding poor on your audio system!
Try to play louder than you think that your system is capable of!
L-R channel balance might be different than you are used to….

Product registration and warranty extension

Kuzma products have a non transferable 2 year limited warranty on parts and labour, which may vary in each country.
To obtain the 5 year* limited warranty from us, you need to register the product on our web site within 30 days of purchase. We suggest registration of products in any case because this will also help you to receive our technical support more easily and with resale of products.
Simply register on our web site, complete the forms and you will receive an extended five year warranty card on your email within a few days. * not valid for ex demo products.

Technical data:

Mass:	1620 gr
Effective length :	304.8 mm (12 inch)
Mounting distance:	291 mm (Kuzma 12 inch cut)
Tube:	sapphire
Offset angle:	17.8 deg
Effective mass:	60 g
VTA adjustment:	yes (VTA tower)
Azimuth adjustment:	yes
Bias adjustment:	yes
Cables:	selected silver wires
Arm mount:	Kuzma arm base

Accessories:

Allen key 1.5 mm	bias, cueing device
Allen key 2.0 mm	azimuth adjustment, VTA tower, arm base , cartridge screws
Allen screwdriver 2.5 mm	azimuth lock
Allen key 4.0 mm	arm base mount
Various screws	arm base mount
Spirit level	round

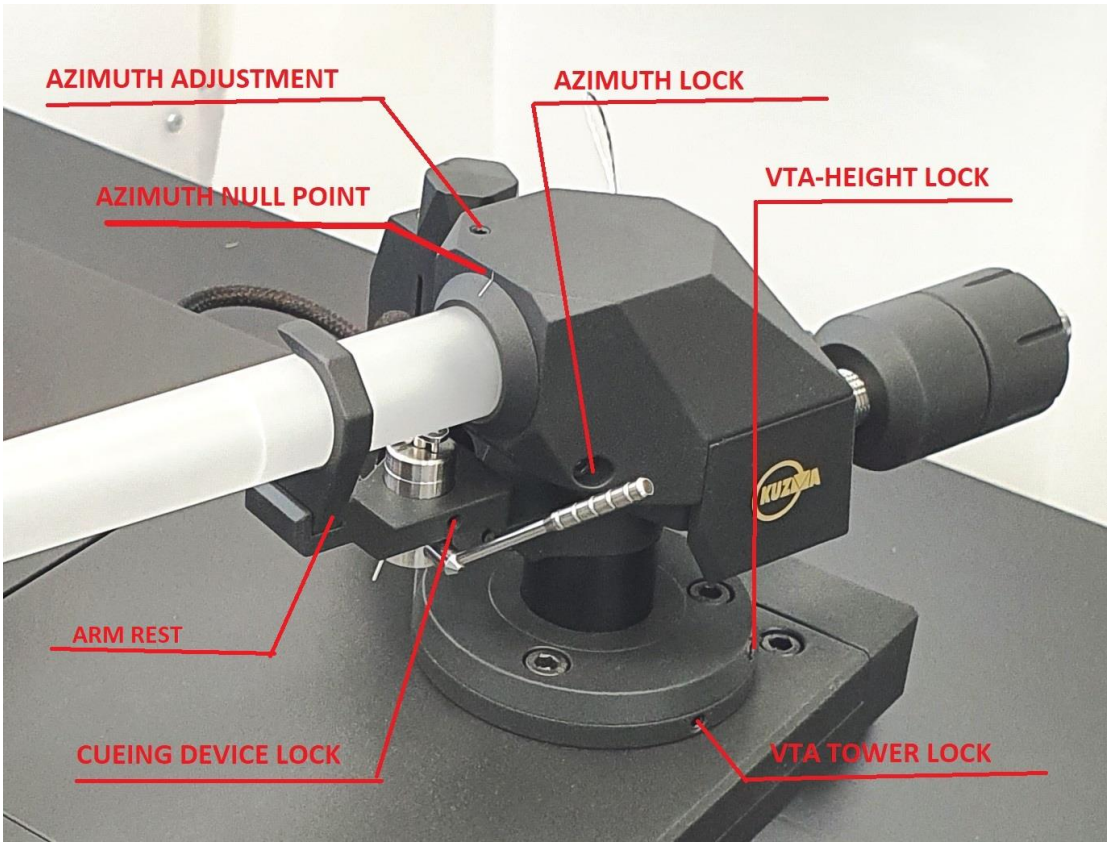

Fig. 2. Various adjustments

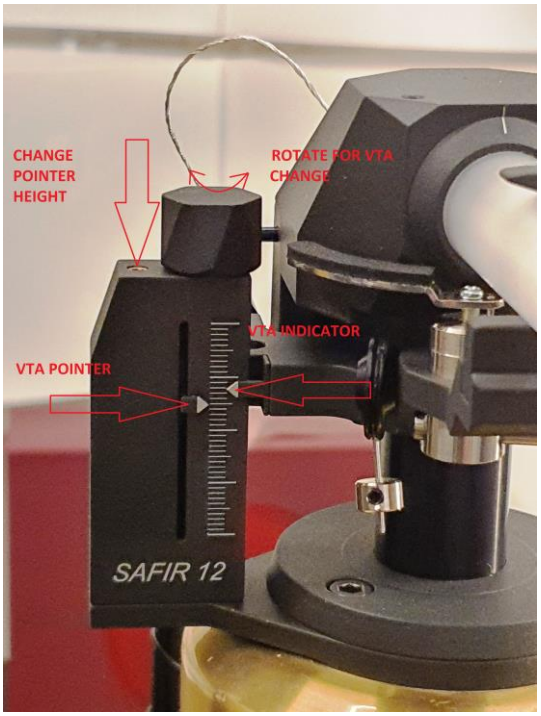

Fig. 3. VTA tower-scale

Fig. 3a. VTA tower- lock screw

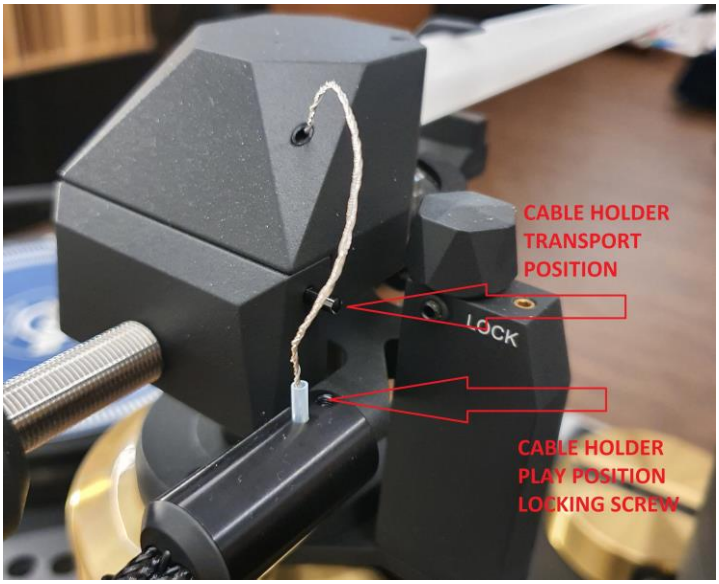

Fig. 4. VTA and cable position- rear

1. Unpacking

Open the box carefully and remove top cover, top foam and instruction manual- **read it first!**
Then remove the arm base and VTA tower and prepare them for fixing onto the turntable. Be sure that the arm board on the turntable has the correct Kuzma cut-out.
The arm tower with horizontal bearing is blocked during transport by protective foam. (Fig. 5&7)
Note:
When the tonearm is transported remove the tube assembly from the arm tower, gently lift the top of the arm tower and reinsert foam back into the gap!

Handle the tube assembly with vertical bearing points with care and, when put aside, ensure that nothing is touching the bearing points. Bear in mind how you will handle it with the output cable which is fixed on the tube assembly during transport.

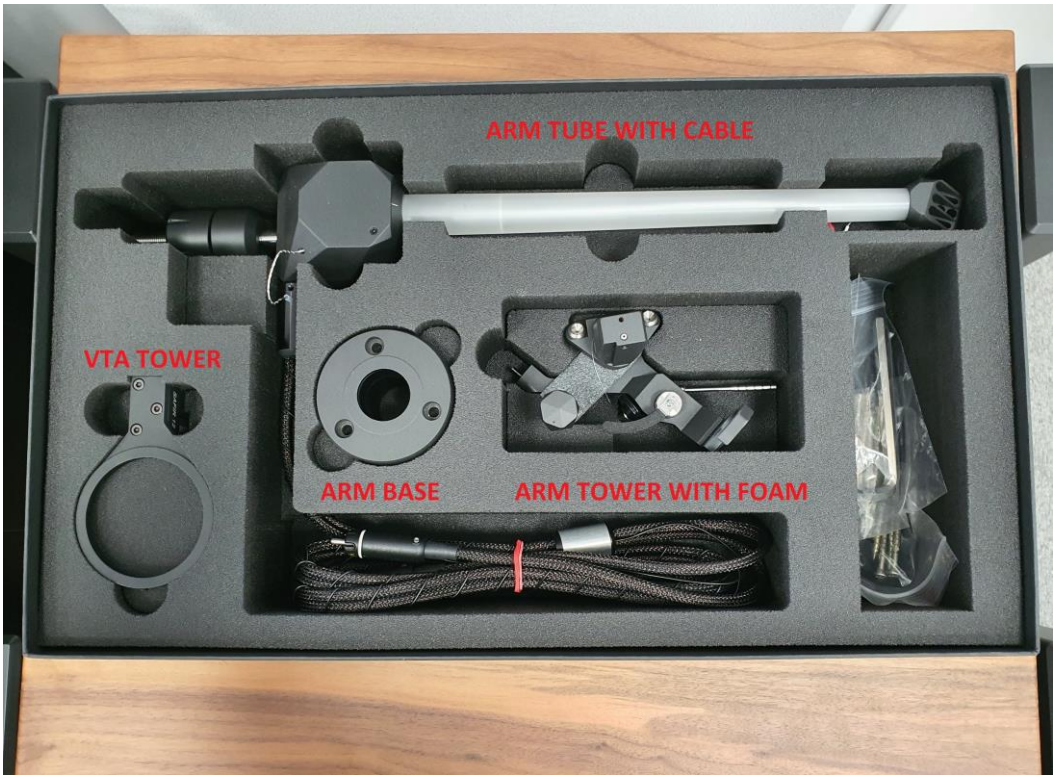

Fig. 5. Packing box: arm tube with cable, VTA tower, arm base, arm tower, accessories

2. Basic set up

Arm base:

Assemble together arm base and VTA tower by using Allen key 2 mm. See position of VTA tower screw. (Fig. 2, 6&6a)

Fig. 6. Kuzma arm base and VTA tower-separate

Fig. 6a. Kuzma arm base and VTA tower- assembled

Mount the arm base with VTA tower on the turntable at a distance of 291 mm from spindle to Kuzma cut on arm board, using screws M 5. Use Allen key 4 mm. You can use nuts or a ring underneath and fix three screws with nuts or into this ring, which will then hold the arm base very tightly.

If the pre-cut arm board has a thread (M 5), then use three screws and fix them from the top through the arm base into the arm board threads. Ensure that you position the arm base so as to give access to an Allen key for fixing the arm tower into the arm base i.e. towards the right side corner of the turntable.

You can rotate the VTA tower later independently. Also check, when mounting the arm on turntable, that you allow enough clearance for the counterweight and correct position of the tube in relationship to the platter.
Safir 12 has an arm base with a VTA tower. By releasing the VTA tower screw with Allen key 2 mm you can rotate it around the arm base to optimise the tube position on turntable. (Fig. 6b)

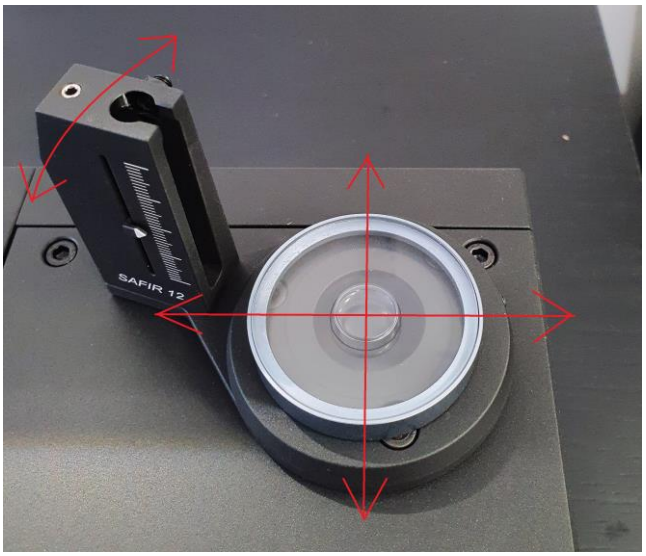

Fig. 6b. Turntable levelling on the arm base

Note:
For precise horizontal levelling of the turntable to achieve accurate bias do it on arm base. (Fig. 6b) See for more details in bias section on page 11.

Arm tower assembly:
Carefully handle and insert the arm tower (Fig. 7) into the arm base. (Fig. 7a&7b)


Fig. 7. Arm tower with VTA knob

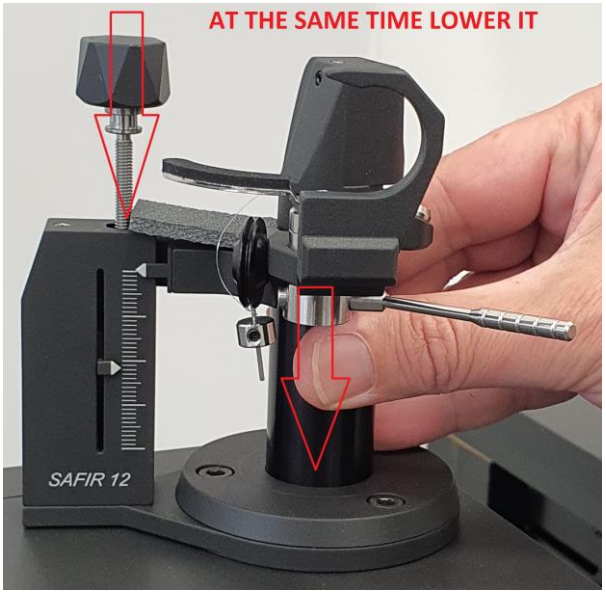

Fig. 7a. Lowering arm tower into the arm base

Insert simultaneously the arm tower with VTA knob into the arm base and into the VTA tower and gently lower it. The VTA knob will sit on top of the VTA tower when inserted properly. (Fig. 7b)

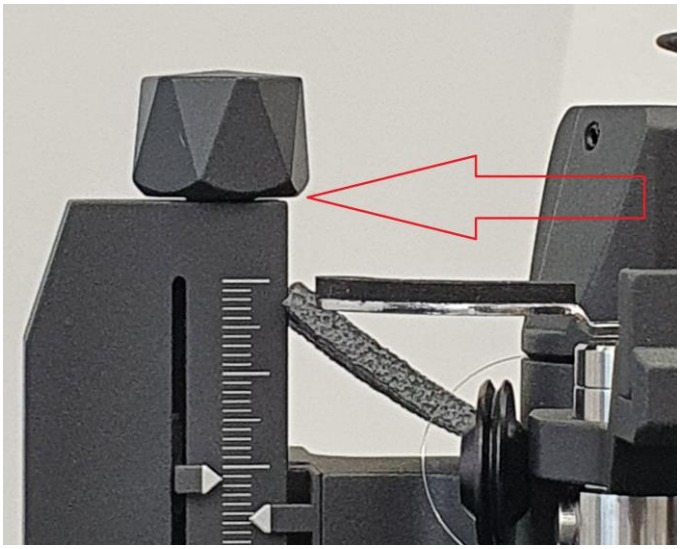

Fig. 7b. Observe the gap marked

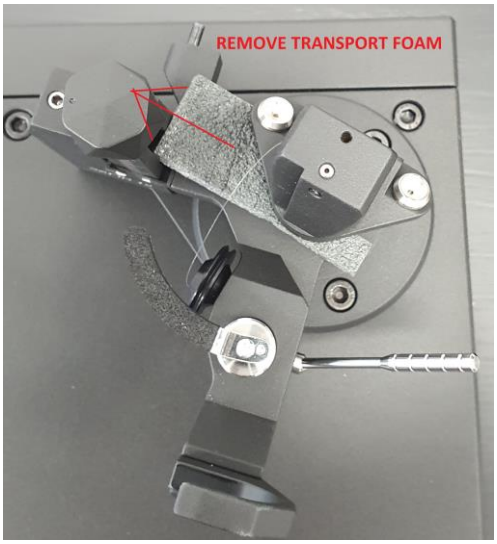

Fig. 8. Remove foam from arm tower

Remove the transport foam from under arm tower. (Fig. 8). Gently lift up the tower with bearing cups and pull out the foam.

Check that the bias thread is fixed and the thread is in the V groove of the bias wheel. Gently rotate the horizontal bearing assembly from one to another extreme. It is only possible to make approximately ¼ of a turn and it is normal to feel slack in the bearings.

Tube assembly:

Carefully take the tube assembly with the cable and gently position the square hole over the square top of the tower. You might gently rotate the top tower to align the square hole in the tube over the square top of arm tower. (Fig. 9-11).

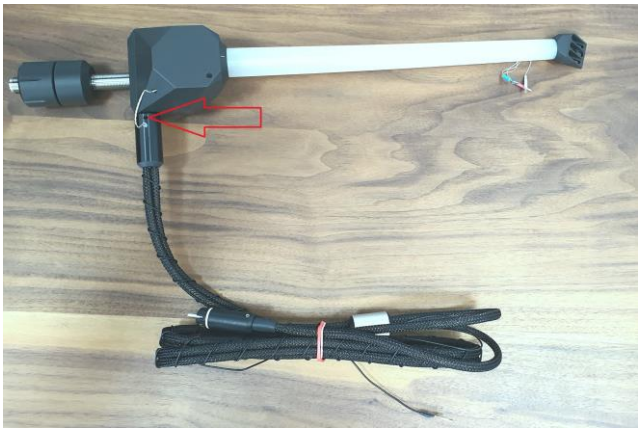

Fig. 9. Tube with cable holder in transport position

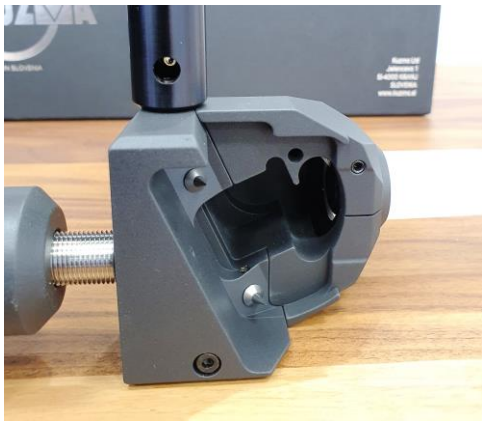

Fig. 10. Tube square hole with spikes

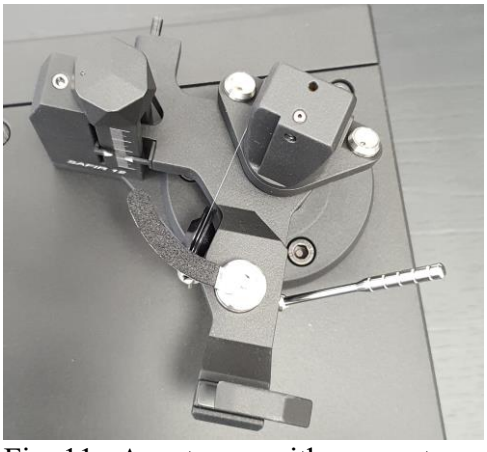

Fig. 11. Arm tower with square top

Cable assembly:
Remove cable from the arm tube assembly by releasing the black cable holder from the transport position with the 1.5 mm Allen key. (Fig. 9). Fix it to the empty pin at the back of the VTA tower into play position. Fix it in such a way, that the wires go upwards towards the tube in a loop. (Fig. 9&12)

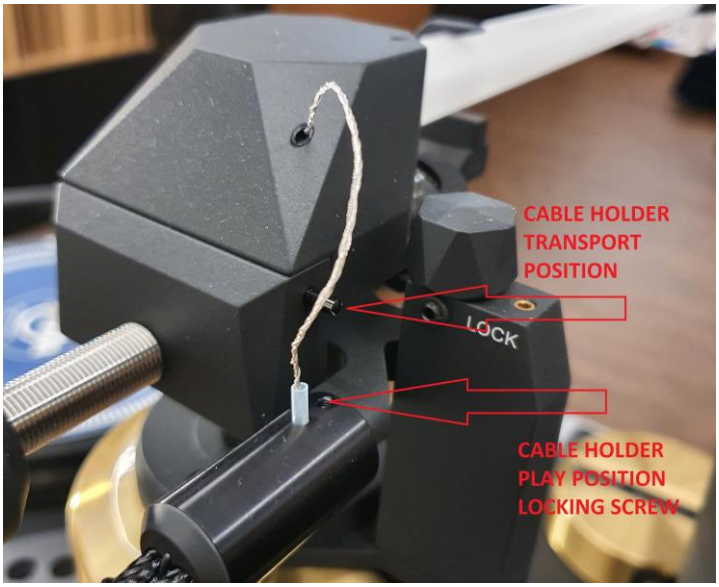

Fig. 12. Cable holder in play position

3. Setting up the tonearm:

Note:
On our web site look for KAA 2016 download (Kuzma Analogue Academy 2016 booklet) where you will find theoretical and practical information how to optimally set up a tonearm and cartridge!

Connecting the tonearm:
Check the horizontal movement of the tube to ensure that the headshell reaches the outer edge of record label, but that it will not travel further to the centre of the record. Connect the tonearm cable and ground wire into the phono preamp.
Due to the added mass of the tonearm, turntable levelling and suspension should be checked and adjusted according to the turntable manual.

Cartridge mounting:
Mount the cartridge with the appropriate set of M 2.5 mm screws. When fixing cartridge clips be sure not to damage the wires under the insulation tubes! Use tweezers not pliers. If you wish you can fix the finger lift on the side of the headshell- no key required. (Fig. 13).


Fig. 13. Headshell's fingerlift

Balancing of the tonearm:
Rotate the counterweight and aim towards zero balance. Adjust it to be roughly balanced and increase tracking force by counterweight rotation. The tonearm's centre of gravity is chosen to be around the height of vertical rotation, therefore balancing the tonearm to zero is not possible.

If the counterweight rotation is too loose, hold the front part of the counterweight with fingers and rotate the rear part until it feels a little firmer, or if too tight, rotate the rear part in the opposite direction. (Fig. 14)

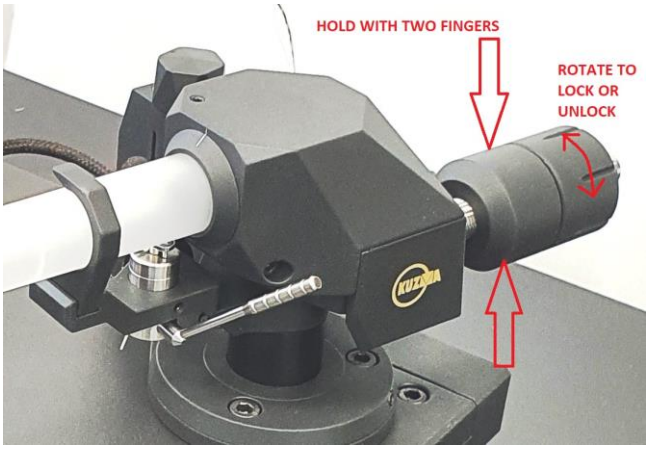

Fig. 14. Counterweight: lock-unlock

4. Tracking force (VTF)
Set the tracking force using a balancing scale, which must be measured at record height! Rotate the counterweight towards the tube. One rotation will change tracking force by approximately 0.7 g.
Set the tracking force suggested to the highest value given in cartridge data. (Fig. 14)
If you change the tonearm height later (VTA), you will need to readjust VTF. Finally you can lock the counterweight into final VTF setting.

5. Tangential geometry set up
Put a record on the platter, cue the cartridge, lift up the cartridge from the record and adjust height of the arm tower in such a way, that the central axis of the tube will be parallel to the record. That is just starting position!
Using the protractor, adjust geometry at two null points. The starting overhang position is achieved when diamond tip is at the edge of the headshell.(Fig. 15) Rough guidance is given by the edges of the cartridge body, but accurate adjustment is by observing whether the cantilever and lines are parallel at the two null (zero) points or by special single null point protractors. See position of the horizontal pivot centre. (Fig. 15a) **See KAA 2016 for tangential geometry details.**

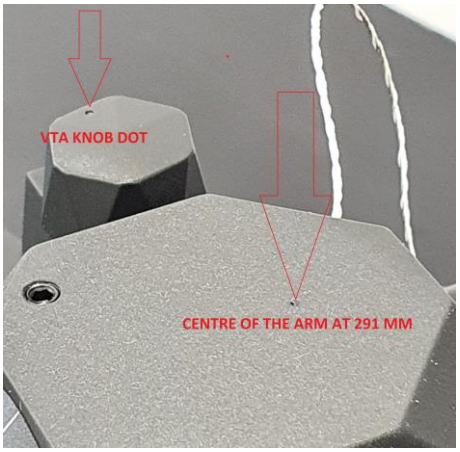

Fig. 15a. Arm centre & VTA knob

6. VTA (height of the tonearm)

Change VTA on this tonearm by releasing the screw with Allen key 2 mm in the arm base. The VTA tower will keep its height position after the unlocking screw in the arm base. (Fig. 2&7b). Rotate VTA knob according to VTA changes. One rotation of the VTA knob CCW will raise VTA for 0.7 mm- that is about 0.1 deg change.
You can secure chosen VTA by gently fixing screw at the rear of the VTA tower with Allen key 2 mm. That will gently block VTA knob rotation. (Fig. 3&3a)
But for firm VTA set up lock screw in arm base.
You can move VTA pointer to be in the same line as VTA indicator by rotating pointer height screw with Allen key 2 mm. (Fig. 3)
VTA scale has a max range of 40 mm- but the usable range depends on starting position.
You might find that extreme VTA height causes problems with the height of the cartridge needle over the record so readjust cueing device height. (Fig. 2)

7. Azimuth adjustment

To make azimuth adjustments, release the azimuth screw locking the mechanism on the side of the tube assembly, with Allen key 2.5 mm. Insert the Allen key 2 mm into the top screw, rotate it and it will alter the azimuth. (Fig. 16)

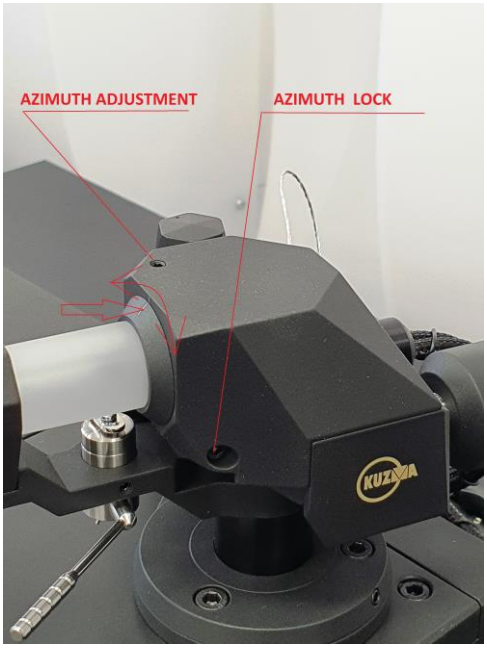

Fig. 16. Azimuth adjustment

Changes can be seen by misalignment of the white lines on the top of the centre of the tube assembly. Rotation of Allen key 2 mm into CW(clock wise direction) will move azimuth line ACW (anti clock wise). Then lock chosen position with Allen key 2.5 mm. One thickness of the line is about 2 deg.

8. Bias adjustment:

The bias should be adjusted according to the tracking force. Using Allen key 1.5 mm, unlock the screw on the bias weight and position it per your chosen tracking force. Lock the screw back, when weight is in the position. (Fig. 18) Be sure the nylon thread stays in the wheel V groove of the bias wheel.

First ensure that the arm base is levelled horizontally in both directions, the requirement is below 0.2 deg! This is the main cause of a too strong or weak bias! (Fig. 6b)

A circular spirit level is supplied (you can use any side). Do not use turntable or platter surfaces for fine leveling- just the arm base. Level the turntable until the air bubble is inside the circle.
Position of bias weight:

0.0-1.0 gr	no bias weight	
0.8-1.6 gr	min	(3 mm)
1.4-2.6 gr	medium	(6-10 mm)
Above 2.5 gr	max	(13 mm)

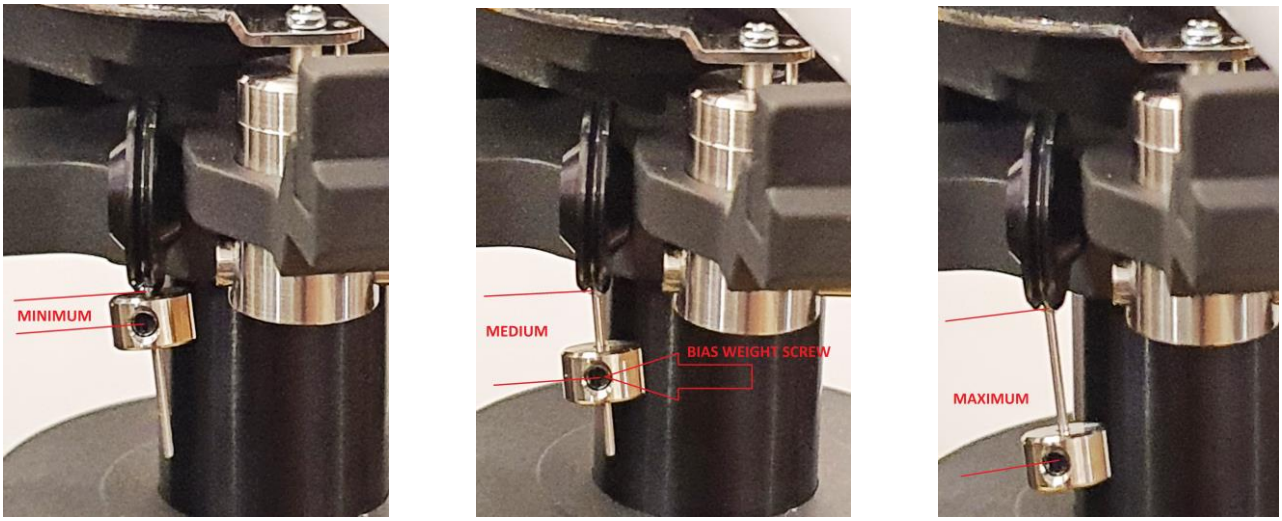

Fig. 18. Bias adjustments distances: minimum – medium - maximum

Do not use test records with blank space where the tip of the needle sits on the surface rather than in the groove. Our suggested settings are more correct- for more technical details see **KAA 2016!**

9. Cueing device adjustment

Should you find that in the 'up' position the cartridge tip is too low or too high above the record then the cueing device can be raised or lowered. (Fig. 2) This can be done simply by using Allen key 1,5 mm:
-Insert key into screw on side of arm rest.
-Release screw, raise or lower device and retighten.
-Check position of supporting foam holder from the top to clear tube movement.

10. Maintenance

The bearing does not need maintenance. Clean dust from the tonearm with a dry soft cloth or brush.

11. Transport

During transport the tube assembly must be removed from the arm tower and the cable holder on the tube assembly repositioned. (Fig. 7&16)
Note: Return fixing foam below arm tower assembly prior to transport!

Fig. 17. Blocking arm tower with foam for transport

If you transport a turntable with the tonearm in place, ensure that hard vibration from the car does not transmit directly to the tonearm. Ensure that blocking foam is inserted. (Fig. 17) Placing soft material such as rubber, foam or a thick blanket below the turntable is helpful in filtering rough vibrations during transport. The safest is to pack the arm tube and arm tower back into the original box.

12. Troubleshooting

The cartridge is not reaching inner grooves: check that the position of the tonearm is correct and that the spindle to arm base distance is 291 mm. Also you might need to rotate the arm tower in such a way that the arm tube is a bit closer to the platter.

If the bias is too strong or weak-check horizontal levelling on the arm base first.
See bias setting on page 11.

Kuzma Ltd
Jelenceva 1
SI-4000 KRANJ
SLOVENIJA
P: +386 4 25 35 450
E mail: kuzmaltd@siol.net
www.kuzma.si