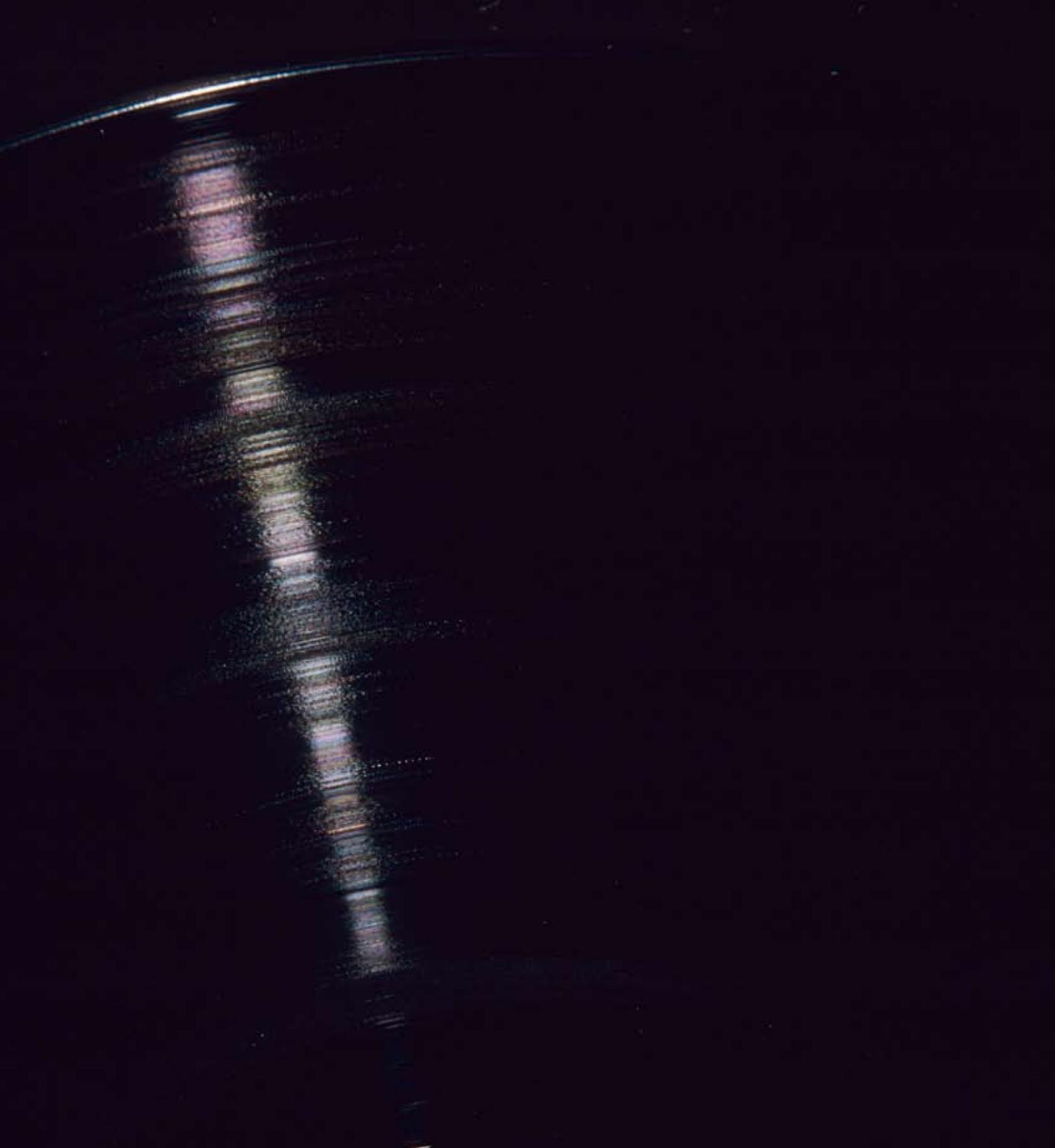


the **AXIOM**®  
reference tonearm



**owner's manual**

picture by  
Harry Ralston



ORIGINAL RECORDING BY



THE DECCA RECORD CO. LTD. LONDON

**DECCA**

picture by  
Moritz Teichmann

## A brief word by the designer

*The AXIOM is the result of my more than 30 years of intimate research and preoccupation with analog playback - the interaction of the record groove with the cartridge and tonearm in specifically.*

*The AXIOM is the true reference tonearm I always wanted for my own use.*

*An universal tonearm, which finally offers all and every option of alignment – while ensuring the best possible mechanical guidance for any cartridge.*

*Taking into account the paramount importance of energy transfer in relation to effective moving mass.*

*Resulting in a level of performance only obtainable, when each and every aspect of the analog audio tracking process is attended with utmost consequence and attention to every minute detail.*

*A level of performance, which does transcendent prior frontiers and opens new levels of musical realism in recorded music.*

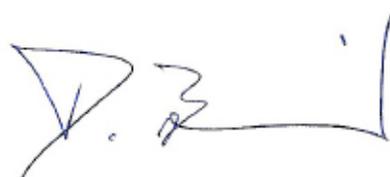
*My thanks and congratulations to you for choosing the AXIOM.*

*We do share the real passion for music and I am confident that the AXIOM will allow you to hear and enjoy your favorite records like you have never done before. Each and every AXIOM is assembled and precisely fine-tuned by me only.*

*The AXIOM is entirely manufactured and assembled in Bavaria, Germany.*

*Please do get yourself accustomed to the following manual. Make sure you familiarise yourself with each and every aspect of the AXIOM's options. Your time will be rewarded with outstanding performance. To the benefit of your whole analog set-up - and ultimately your enjoyment of recorded music.*

*With kind regards,*



D. D. Brakemeier

**General note:**

**Technical data and specifications are subject to change without prior notice.**

**version 10/2014**

# Content

<b>Technical features &amp; general design</b>	<b>6</b>
<b>Alignments</b>	<b>6</b>
<b>Unpacking the AXIOM</b>	<b>7</b>
<b>Mounting the AXIOM</b>	<b>8</b>
<b>Setting up the AXIOM</b>	<b>9</b>
<b>Balancing the AXIOM</b>	<b>11</b>
<b>Antiskating</b>	<b>11</b>
<b>Setting vertical tracking force</b>	<b>12</b>
<b>Setting horizontal operation point</b>	<b>12</b>
<b>Aligning the AXIOM</b>	<b>13</b>
<b>The genuine alignment template for the fixed head version AXIOM only</b>	<b>14</b>

## Technical features & general design

The AXIOM is a 12" pivot tonearm featuring double nano-gimbal bearings.

It can be operated in static balanced, full dynamic balanced (with specific cartridges only) and hybrid balanced mode.

The AXIOM is a full lateral balanced design.

The AXIOM features an unique compound arm wand - a combination of surface hardened Titanium and Carbon fiber pipes blocked together and internally damped by an all new design concept. A concept newer before applied in tonearm design. Resulting in unmatched fast energy transfer and total absence of any parasitic resonances in the tonearm itself.

The AXIOM was designed to explore the possibilities of analog playback to the utmost degree. To accomplish the best possible analog playback performance, the AXIOM offers an unique complete bundle of alignment options.

## Alignments

### Leveling the bearing axis

The AXIOM can be precisely leveled by the user, independent from the turntable or mounting surface.

### SRA/VTA adjusted at the cartridge

In the AXIOM the important alignment(s) of VTA / SRA can be made right at the cartridge – without altering the static parameters of the tonearm, while preserving the other set alignments and leaving the arm wand always in horizontal level.

## Tracking force during play

Vertical tracking force can be set by static means (adjust counterweight and/or trim weight position relative to bearing point) as well as by magnetic force.

It is possible to adjust VTF very precisely during actual play. This is done by adjusting the height of the magnetic counter bar in relation to the back shaft of the AXIOM.

The optic nano spindle attending the movement is so fine, that it takes 4 full revolutions to move the magnetic bar just 1 mm in height. It is possible to precisely fine adjust tracking force/stylus pressure by as little as 1/100 mN.

## Dynamic anti-skating

Skating compensation – or anti-skating – adjustment in the AXIOM is dynamic and follows the tangential geometry of the AXIOM.

It too can be adjusted during play.

## Tonearm height – VTA

Tonearm height can be adjusted on the main VTA-tower of the AXIOM.

One full turn of the large top knob does adjust height by precisely 1 mm.

## Two (2) variants

The AXIOM is available in 2 standard variants.

- ▶ **with fixed standard EIA ½" mounting slots**
- ▶ **with SME-compliant detachable headshell mount**

In the SME-variant it is possible to adjust overhang, effective length and azimuth even for

integrated headshell designs like EMT-Tondose, Ortofon-SPU, FR-7 and similar designs.

Both versions do feature the same technical design and unique options for alignments.

The 2 variants do however differ in their mounting distance, pivot to spindle distance and resulting effective length.

## Tangential alignment

It is of course possible to align the AXIOM to the standard tangential curves of Baerwald, Stevenson or Loefgren in any version and standard.

The absolute best possible performance however is obtained only by aligning the AXIOM to the new UNI-DIN tangential curve.

It's geometric design is based on the UNI-DIN.

## Unpacking the AXIOM

Please make sure that all parts are present by unpacking the AXIOM and all its tools and accessories.

The **AXIOM suitcase** contains the following:

the **AXIOM tonearm**

the **AXIOM's accessory box**

The **AXIOM's accessory box** contains these components:

- (1) very short fist screw driver 8.0 x 25 -
- (1) T-shaped Allen key driver 2.5 x 100
  
- (1) Main Tungsten counter weight with attached POM holder for trim weight

(3) tubular trim weights approx. 10 x 30 mm each - different weight and color -

(2) Lateral balance weight sets -  
(1) stainless steel, (1) aluminum

**\*\*for SME-bayonet version: (1) Lateral weight set tungsten HD17\*\***

(1) lock screw for lateral weight assembly

(1) metal screwdriver  
(with selection of blades inside)

(4) 90° Allen wrenches -  
metric sizes 0.89, 1.27, 1.5 and 2.0

(1) small diameter spirit level  
for use on tonearm bearing pivot

(1) 4.2 mm drill  
(non-metric countries only)

(1) M5 tap and die  
(non-metric countries only)

(3) special M5 mounting screws with  
- (1) 30 mm length  
- (1) 40 mm length  
- (1) 50 mm length

(3) hardened stainless steel mounting washers with 29 mm diameter each  
- (1) 8 mm, (1) 14 mm and  
(1) 20 mm strong  
- (1) 34 mm diameter stainless steel cover plate with rubber ring on down size

(1) cover plate for mounting point

Please check the AXIOM package carefully and make sure all the above listed components are present.

## Mounting the AXIOM

The AXIOM is mounted with (1) M5 screw and (1) hardened stainless steel washer only. In the accessory box you find (1) 4.2 mm drill and (1) M5 tap and die. With these tools you do create the single M5 thread needed to mount the AXIOM on your turntable.

### IMPORTANT

**The M5 thread (or 5 mm diameter hole if the material of the turntable's armboard does not allow for a thread - for instance: wood) has to have the following distance from the center of the turntable's spindle:**

- ▶ AXIOM with fixed mounting head: **233 mm**
- ▶ AXIOM with SME-bayonet head: **266 mm**

Please use a M 4.2 mm drill and a M5 tap and die to create the M5 thread in the desired distance from the center of the spindle.

Now do take the AXIOM and hold it in place vaguely at the spot above the M5 thread. Please check approximately how much the AXIOM has to be elevated so that its arm wand is horizontal level and 6-8 mm above the turntable platter.



Now do take the (3) hardened stainless steel washers. Select the one most likely to elevate the AXIOM to a suitable horizontal position relative to the turntable platter's surface.

The AXIOM's arm wand's underside shall be approximately 1/3" or 8 mm above the surface of the platter.

If in doubt, start with the 8 mm washer first.

This should bring the AXIOM to the needed horizontal level on most turntables.

Now take the stainless steel washer and look at it.

The top side is flat.

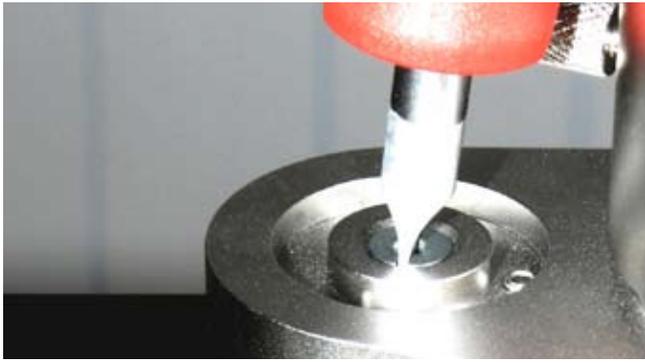
Its underside has a distinctive - if only 2/10 mm high - rim at the edge. Do put the washer in the indentation underneath the mounting area on the AXIOM.



Do take the (1) 30 mm length M5 screw. Put it through the suitable center hole on the AXIOM's mounting area and through the center hole in the stainless steel washer sitting underneath.

Make sure the (1) short fist screw driver 8.0 x 25 is within your reach.

Do put the whole AXIOM assembly right on top of the M5 thread and secure in place by screwing down the M5 screw.



Don't use maximum force, just make sure it has an easy fix and can still be moved in the horizontal plane.

The AXIOM is now sitting in place. Now do take an UNI-P2S, a SMARTractor or an other precision tool to determine the exact pivot to spindle distance of a tonearm.

On top of the AXIOM's bearing house is a 12 mm stainless steel plate with a small center hole. This center hole clearly marks the pivot center of the AXIOM.

Do slightly rotate the AXIOM till the pivot center shows exactly the correct distance from the spindle - the **P2S-value** is:

- ▶ AXIOM with fixed mounting head: **288 mm**
- ▶ AXIOM with SME-bayonet head: **308 mm**

In resting position, the inside of the AXIOM's headshell mount should be approx. 3.5" or 8.5 cm away from the outer rim of the turntable's platter.

## Setting up the AXIOM

### **IMPORTANT**

**Prior to set-up the AXIOM - for optimum performance, please make sure your turntable's platter is level!**

Before starting the set-up of the AXIOM, please make sure the following components are within your immediate reach:

- (1) Main Tungsten counter weight with POM holder for trim weights
  - (2) sets of lateral balance weights
  - (3) tubular trim weights
- (1) lock screw for lateral weight assembly
- 90° Allen wrenches - size 1.5 and 2.0 mm

Select your trim weight first. Make your choice based on the cartridge you want to mount in the AXIOM. The selection of trim weights does differ for the two available versions of the AXIOM.

### ***Fixed-mounting headshell version of AXIOM:***

The fixed-mounting head version of the AXIOM will rarely ever need the additional trim weights. Only with very heavy body cartridges this might be a useful option.



### ***SME-detachable headshell version of AXIOM:***

With the SME-version the effective moving mass of the AXIOM is very different from the fixed-head version.

For any MM-cartridge or any other cartridge with compliance greater than  $13 \times 10^{-6}$  dyne:  
- please select the steel trim weight.

For any cartridge with compliance of 9 to  $13 \times 10^{-6}$  dyne:  
- please select the gun metal / brass trim weight.

For any cartridge with compliance of less than  $9 \times 10^{-6}$  dyne:  
- please select the tungsten trim weight.



Place the selected trim weight in the POM-block on the lower end of the main counter weight.



Lock it in place with the left end (pointing towards the AXIOM's bearing) barely visible outside the POM block and the right end extending towards the rear by almost half of the length.

The main counter weight has a flattened side.

This side has to point inward - towards the main assembly of the AXIOM.

Now take the complete main counterweight and slide it onto the shaft at the rear end of the AXIOM.

Leave enough room on the rear of the shaft to accommodate the lateral weight set.

Lightly tighten the set screw in the tungsten main counterweight.

Now do take the stainless steel (or the tungsten set with SME-version of AXIOM) set of lateral weights.



One of the 2 cylinders features an Allen screw. Undo this screw and slide the cylinder off the 4 mm shaft. This 4mm shaft is firmly attached to the other cylinder. Take the shaft with cylinder and insert it through the horizontal hole at the end of the shaft carrying the counter balance weight.



Please do insert it with the fixed cylinder - which is firmly attached to the shaft - pointing outwards, away from the turntable platter and the AXIOM's main assembly. Now do move the cylinder as close as possible to the main shaft.

Do fix the lateral shaft in this position by firmly screw the lock screw into the rear end 3 mm thread - till it can't move no further and fixes the lateral shaft firmly in place.



Next please slide the other small cylinder onto the free part of the short shaft. Do fix it in place - right at the end of the shaft, so that the shaft ends with the cylinder - with the small M3 invert Allen screw.

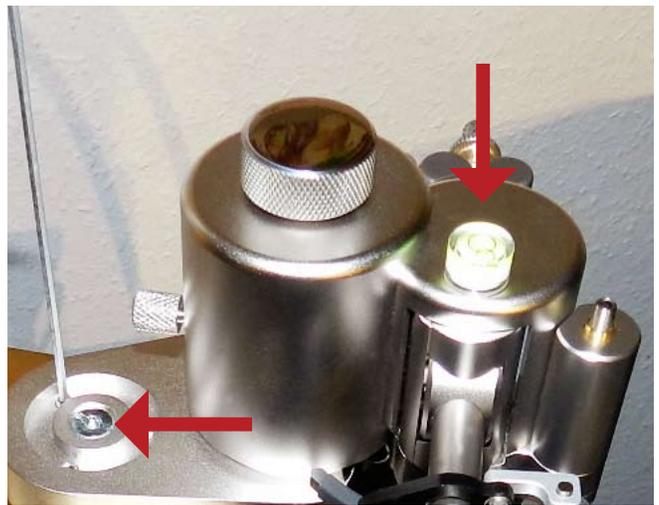


## Balancing the AXIOM

Please look at the AXIOM's mounting board. Around the single M5 screw, which fixes the AXIOM on your turntable, you see 3 invert Allen M4 screws forming a circle.

Please take the small spirit level and the T-shaped 2.5 Allen key driver.

Do place the spirit level right on top of the small bearing cover plate - the same plate which covers and marks the pivot of the AXIOM.



The spirit level is matching the diameter of the bearing cover plate.

Assuming that your turntable is already leveled, please use the 3 Allen screws around the center screw to bring the spirit level to dead center.

This is usually a swift and easy procedure. When the bubble is centered - so is your AXIOM's bearing.

## Antiskating

The AXIOM features a dynamic and non-contact skating compensation. This dynamic anti-skating is corresponding to the tangential curve following UNI-DIN.

Correct balanced and aligned, the AXIOM will display very little skating force at all. Many audiophiles do prefer to go without anti-skating compensation.

To minimize any negative effects implied by anti-skating, the skating compensation on the AXIOM is dynamic and can't be set too strong.

Please take the 1.27 mm Allen key and attend the small Allen screw barely visible on the top right backside of the AXIOM's bearing house.

Do screw it inwards, till there are only about 12 mm left to see outside the small metal block holding the Allen screw.

## Setting the vertical tracking force

Please use a precise tracking force gauge. If you do use a LOMC with strong magnets, make sure that you know the derivation implied by the cartridges magnets to the reading on the stylus force gauge.

### Setting the tracking force in hybrid mode:

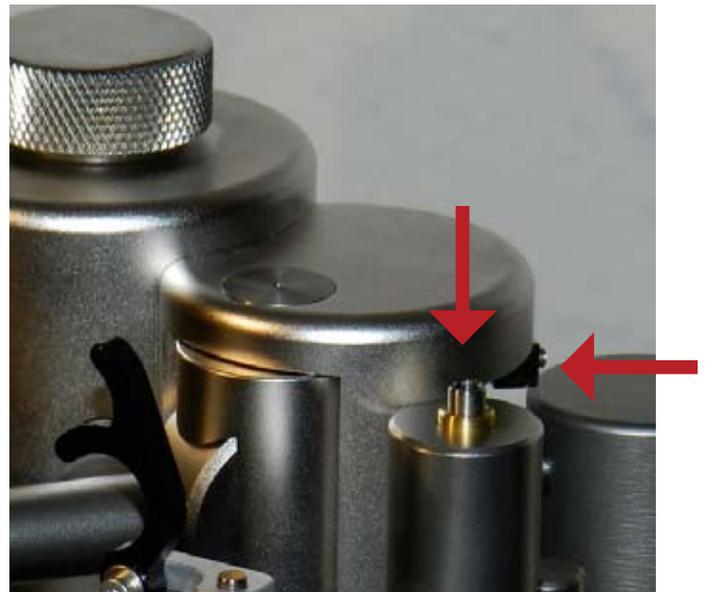
Mount your cartridge and do set the main counter weight and the trim weight thus, that you arrive at about 75 to 80% of the desired or recommended tracking force for your cartridge.

### **IMPORTANT**

**Make sure that you set minimum 70% of the total desired tracking force by setting the counter weight(s).**

To set the rest of the tracking force do use the T-shaped Allen key or any Allen key with 2.5 metric standard. Set your stylus on the stylus gauge and attend the invert Allen screw on top

of the main side cylinder next to the bearing house.



While turning the screw you will note that the small assembly on the rear side of the main cylinder is moving upwards or downwards.

### **Increasing VTF:**

Turn the Allen key ANTI-clockwise. The tracking force reading will increase and the small part cylinder carrying the magnetic counter-assembly will move upwards.

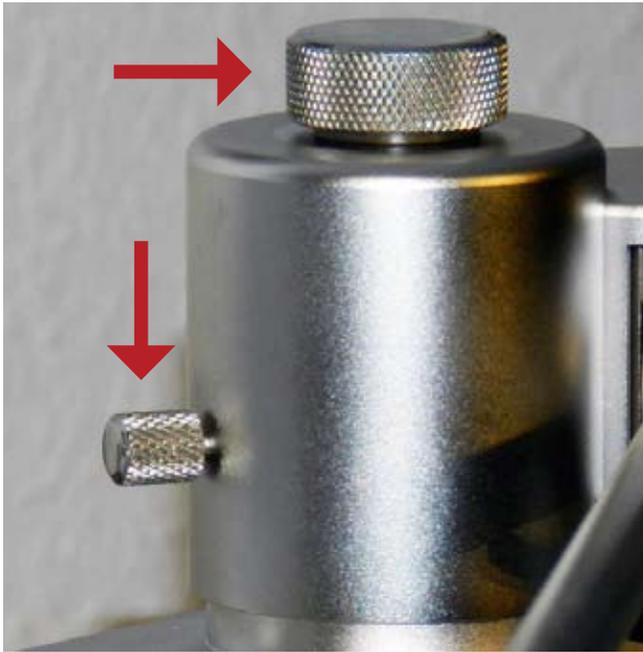
### **Decreasing VTF:**

Turn the Allen key clockwise. The tracking force reading will decrease and the small part cylinder carrying the magnetic counter-assembly will move downwards.

Do set a tracking force at or barely above the recommended minimum tracking force for your cartridge.

## Setting the horizontal operation point

Now do loose the small knob-screw on the inward pointing side of the AXIOM's large VTA-tower.



Do only turn it for 1 revolution maximum to release. Now you can attend the large top knob and set precise horizontal level for the AXIOM's arm wand.

This procedure shall only be used to fine-tune the horizontal height!

***Do retight side screw after setting is done.***

It is of course possible - if not the intention nor with any positive effects for the performance of your analog front-end - to use the top VTA-knob to adjust SRA or VTA.

If possible these cartridge-related alignments should always be done at the cartridge itself, to leave all other parameters of the tonearm as stable and unchanged.

Please don't alter tonearm height for more than 4-8 mm maximum. The general height adjustment is done by selecting the correct stainless steel washer underneath the mounting board.

The top knob on the VTA-tower is used for ***precisely fine-tune the arm wand to horizontal level only!***

Do set the VTA-tower that the arm wand of the AXIOM is 100% horizontal (i.e. parallel to the record surface) when the stylus is in the groove.

This isn't essential for general performance, but it is essential to extract the last bit of minute detail in your records grooves.

Common VTA/SRA is set at the cartridge itself - easily done in the AXIOM with fixed mounting head, as it features the unique SRA/VTA mechanism of the Arché headshell.

Setting SRA/VTA is a matter of personal taste. VTA/SRA can only be set "groove-compliant" - i.e. depending on the cutting angle used to cut the lathe and plates for the particular record. These angles do alter over periods and between labels considerably.

You will find a "common ground"-adjustment for most of your favorite records.

## Aligning the AXIOM

To maximize the performance possible with the AXIOM, please make sure to align it to UNI-DIN tangential curve.

It's geometrical design is in conjunction with UNI-DIN.

For the SME-version of the AXIOM do use either a **SMARTractor©** or an **UNI-Protractor©** with **UNI-DIN template©**.

For the **fixed head version of the AXIOM** please do use the genuine template coming with your fixed head AXIOM only.

For illustration please see pictures on following pages.

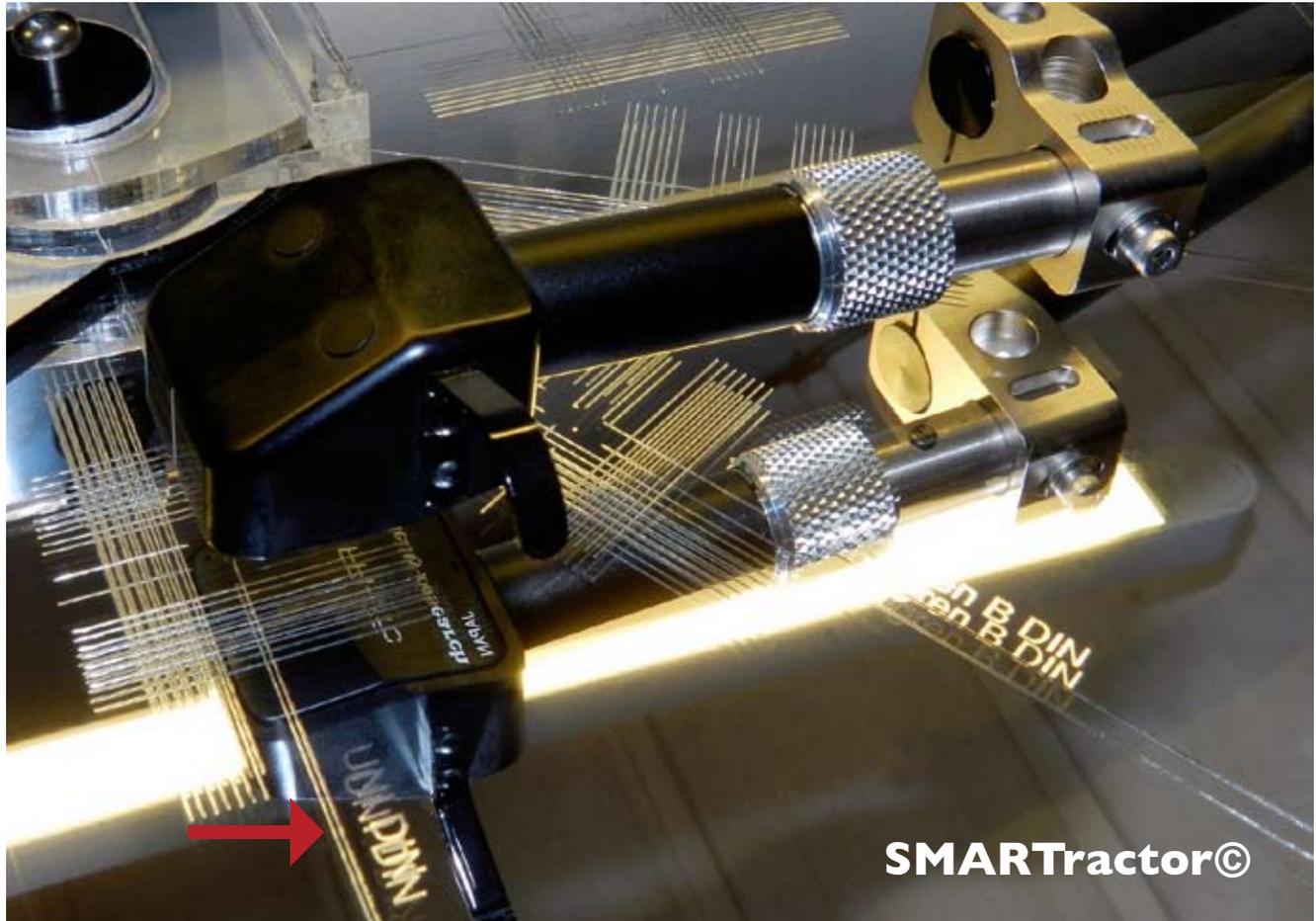
When the alignment is done, please put back all tools in the accessory-box.

Make sure to take full advantage of the unique alignment options featured in the SME-version of the AXIOM.

You can - by altering/adjusting the overhang as well as the azimuth - even align integrated headshell designs like the Fidelity Research FR-7, Ortofon SPU, Ikeda Musa/Suprema or EMT "Tondosen".

Allowing for the very first time to align these cartridges to modern tangential alignments in a unique precise way.

For best results possible please use the **SMARTractor**® or the **UNI-Protractor**® with **UNI-DIN template**®.

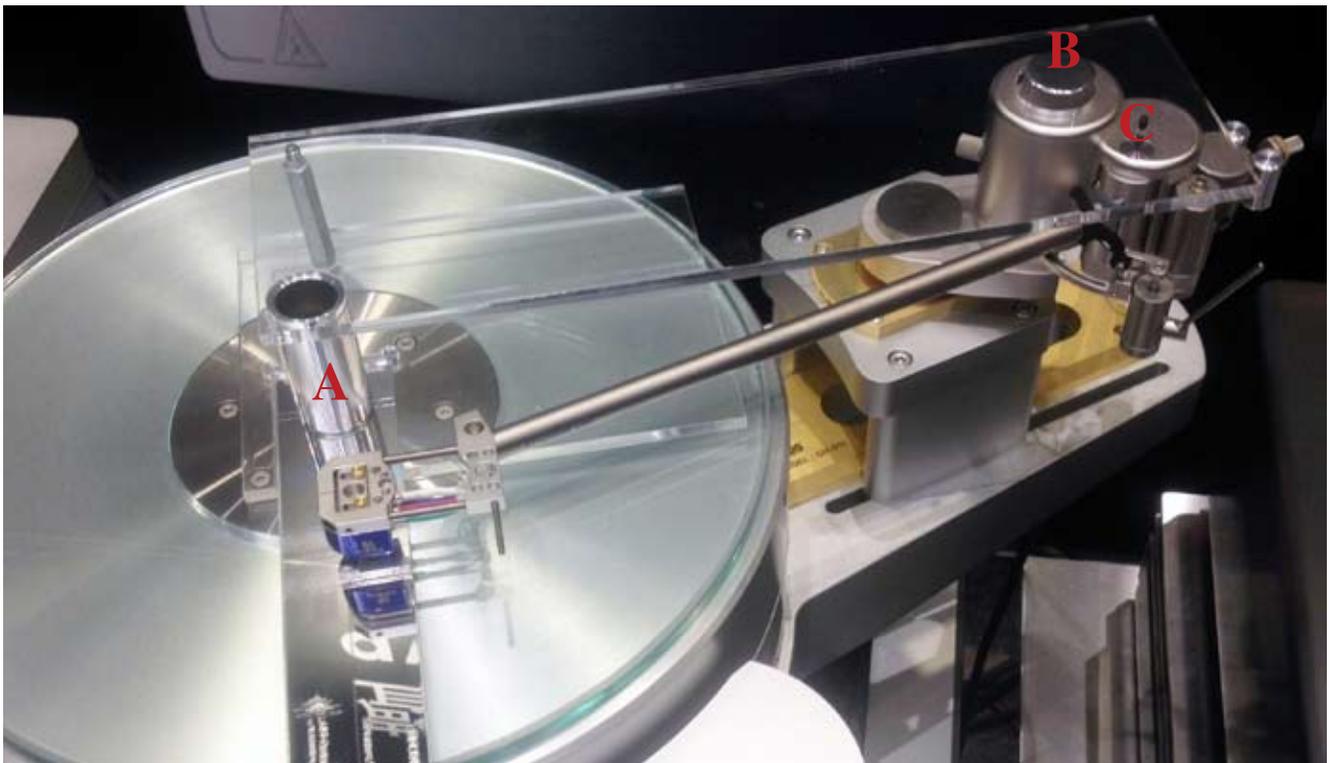


## The genuine alignment template for fixed head version AXIOM only

**A** The aluminum cylinder fixes the alignment template with the 20 mm POM spindle adapter.

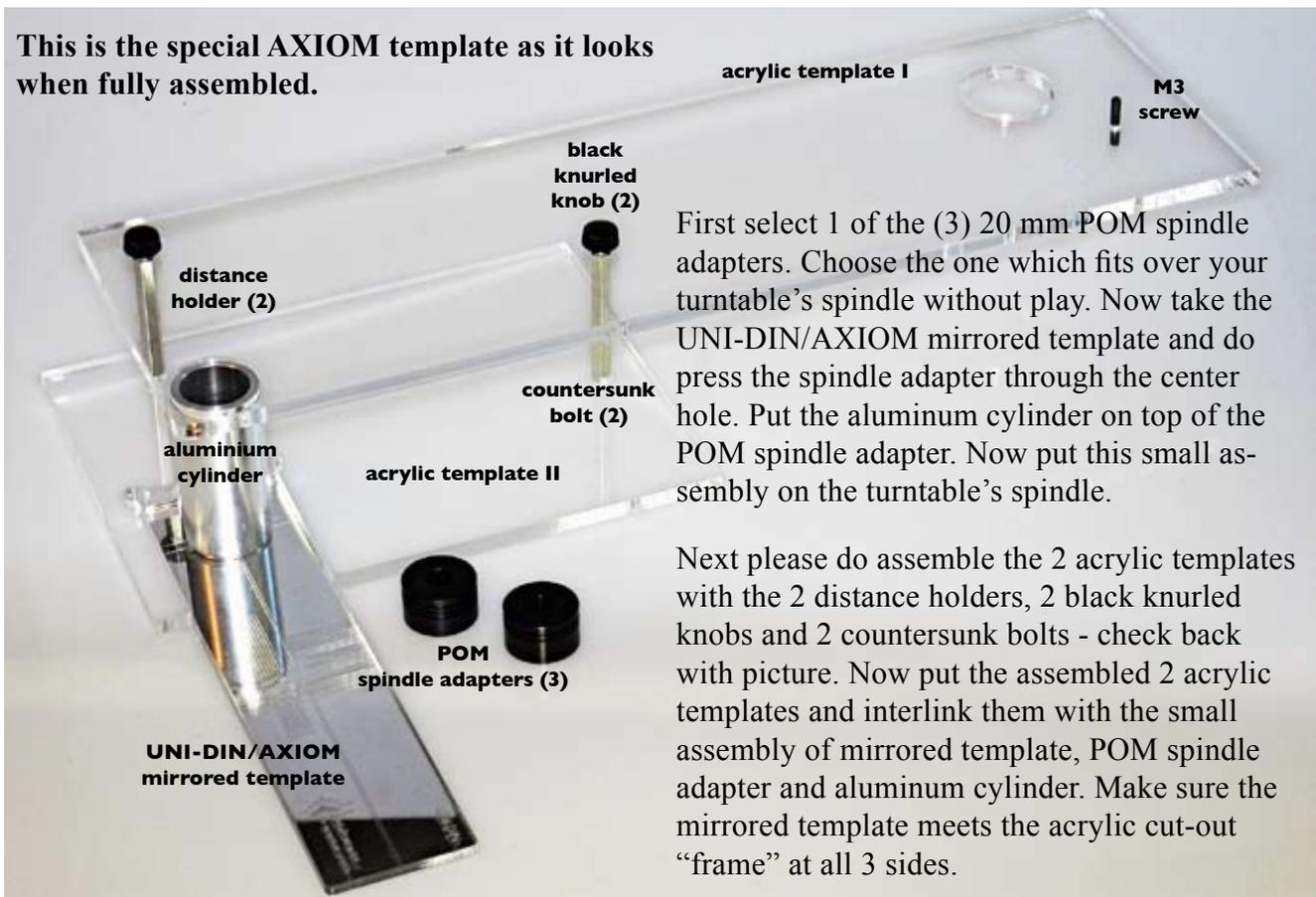
**B** Turn the large top VTA knob, till the top cover of the VTA tower reaches the underside of the top template. This is the ideal point to start with when aligning VTA and setting arm wand horizontal.

**C** Please screw down the M3 screw till it meets the pivot point.



There is no error possible during assembly, as all the parts do only fit and joint in one specific way.

**This is the special AXIOM template as it looks when fully assembled.**



First select 1 of the (3) 20 mm POM spindle adapters. Choose the one which fits over your turntable's spindle without play. Now take the UNI-DIN/AXIOM mirrored template and do press the spindle adapter through the center hole. Put the aluminum cylinder on top of the POM spindle adapter. Now put this small assembly on the turntable's spindle.

Next please do assemble the 2 acrylic templates with the 2 distance holders, 2 black knurled knobs and 2 countersunk bolts - check back with picture. Now put the assembled 2 acrylic templates and interlink them with the small assembly of mirrored template, POM spindle adapter and aluminum cylinder. Make sure the mirrored template meets the acrylic cut-out "frame" at all 3 sides.

***Now enjoy your records.***

Distribution of Presents; Band 4—No. 5. Scene  
and Grandfather's Dance

**ERNEST ANSERMET**

*conducting*  
**L'ORCHESTRE DE LA  
SUISSE ROMANDE**

Made in England

MADE IN ENGLAND  
COPYRIGHT AND OF THE OWNER OF THE RECORDED WORK RESERVED · UNAUTHORISED PUBLIC PERFORMANCE BROADCASTING AND C

ZAL-4221-IE

Distributed by:

copyright & design: D.D. Brakemeier

Manufactured and assembled in Germany

**for further infomations:**

[www.acoustical-systems.com](http://www.acoustical-systems.com)  
[info@acoustical-systems.com](mailto:info@acoustical-systems.com)

