

Schroder



Instruction Manual Model 2

Dear Customer

Congratulations! You have purchased a unique tonearm that will transcribe the most accurate detail and provide the most musically enjoyable reproduction from your vinyl records. The tonearm features a bearing that is different from all other tonearms. To take full advantage of this inherently superior design please take the time to study and familiarise yourself with this manual.

I hope you will enjoy mounting and adjusting the tonearm and rediscovering your record collection.

1. Mounting the Tonearm

Mounting the arm requires drilling a 20 -23mm hole (Rega mounting) in your plinth or armboard plus three (tapped) holes for the mounting screws (non-magnetic M4).

The pivot to spindle distance for this arm measures 222mm.

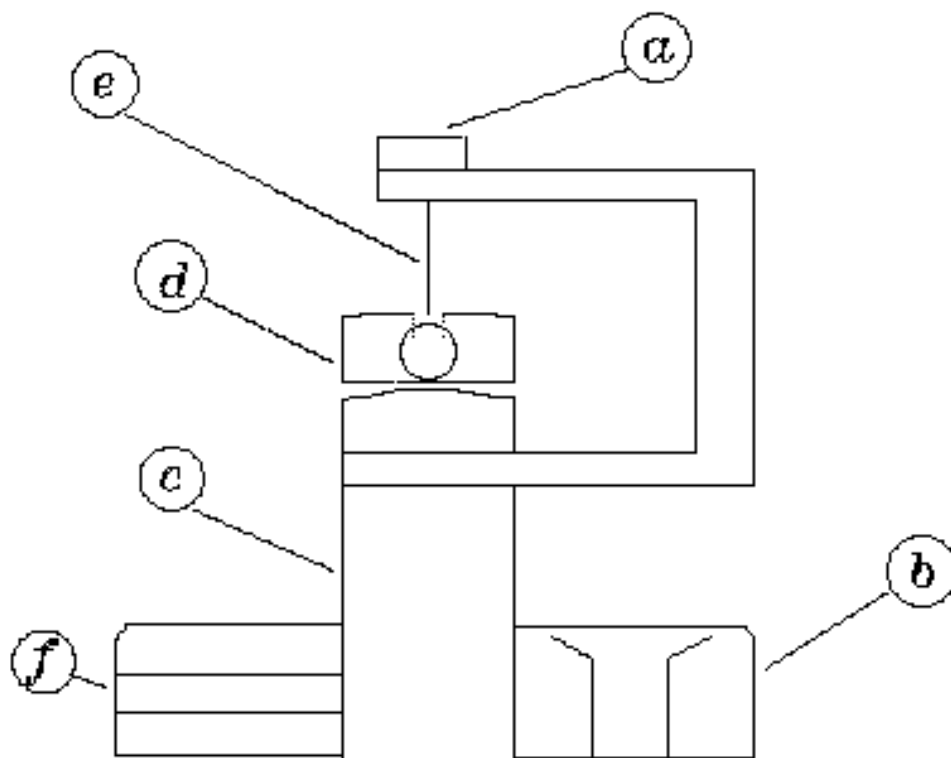
Once you have found the correct position screw the mounting collar (b) to the base or plinth of your tonearm using three M4screws or, if your turntable features a wooden plinth, suitable brass or stainless wood screws.

If your pivot to spindle distance should be off by +/- 1mm the difference can easily be compensated for when adjusting the overhang (see below).

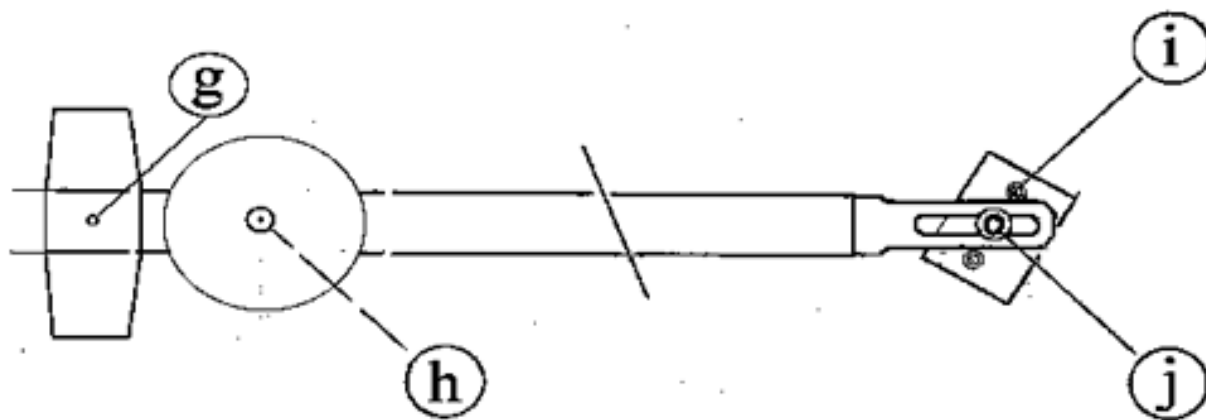
The following schematics will help you to identify the tonearm parts including the setscrews necessary to properly align your arm and cartridge:

- a. Antiskating adjustment disc, also used to adjust gap between magnets
- b. Mounting collar, one of three mounting screw holes shown
- c. Tonearm shaft

- d. Upper bearing disc
- e. Bearing thread
- f. VTA adjustment locking screw



Tonearm assembly, seen from above:



- g. Counterweight locking screw
- h. Bearing thread
- i. Cartridge mounting holes/screws
- j. Overhang and offset angle locking screw

2) Dressing the tonearm wiring

This tonearm comes standard with a cable that was chosen for its sonic and mechanical properties. The signal is carried in a single run from the cartridge clips to the headamp or phonostage omitting additional soldered connections..

Please try to keep a distance of about 10mm between the magnet assembly and the wiring. The restoring force of the supplied wiring is small and it can easily be "bent" into shape, though sharp bends are to be avoided.

3) Electrical connections, grounding

The conductors/connectors are colour-coded according to the international standard:

Red = right channel, hot ; green = right channel, ground ; white = left channel, hot ; blue = left channel, ground .

RCA plugs: red = right channel ; black = left channel

The standard wiring is shielded from the arm to the RCA-plugs. The "ground" wire is to be connected to the following amplification stage's "ground". If you use a "star grounding" pattern, connect the ground wire to your "central" ground.

4) Adjusting your tonearm/cartridge

4.1) Alignment of the arm relative to the turntable

The arm will now be moved back to its resting position, then the shaft © needs to be turned so that the armwand in its resting position ends up being parallel with the right side of your turntable. Any position is fine but you might prefer the more "orderly" look of the properly aligned ensemble.

Now you can remove the cardboard strip sitting between the magnets. It was placed there to prevent excessive movement during shipping. This bearing is, unlike many other bearing types, not susceptible to shock induced damage. It is still advisable to keep the cardboard strip for later transports (any appropriately folded piece of paper will do).

4.2) Mounting your cartridge

The cartridge can be mounted in the headshell using the supplied M2.5 non-magnetic stainless steel screws (i). You might prefer to first separate the mounting plate from the armwand by unscrewing the M3-connection-screw(j) . Usually it is sufficient to tighten the M2.5 screws well, but not excessively so. Over-tightened screws can result in internal tensions in the cartridge body, negatively affecting the sound or even damaging the internal structure. Don't forget: the next step after "REALLY tight" is "totally loose".

Connecting the mounting plate with the armwand requires tightening screw j, the same rules apply.

4.3) Tracking force and overhang

Take the counterweight and slide it onto the back section of the armwand. Leave your "stylus cover" (if your cartridge features such a device) on and set the tracking force to approx. 1.5 gr. Tighten the counterweight locking screw (**g**) just so that you can still slide the counterweight without applying much pressure.

Using a proper template (i.e. Dennesen, Clearaudio or my own) the overhang is now adjusted by first loosening screw **j**, then sliding the mounting plate towards or away from the bearing. Using the aforementioned alignment gauges will automatically result in achieving a proper "outer" zero-point (120.9mm) once you have managed to get the "inner" zero-point(66.04mm) right.

Next, check the tangency of the cantilever as seen from above – with the stylus not quite touching the alignment gauge - and if necessary turn the headshell mounting plate, making sure the cantilever (not the cartridge body) is tangential to the record.

Finally, tighten screw (**j**) again.

4.4) VTA-Adjustment

As a starting point you should raise or lower the tonearm block until the armwand appears to be parallel to the record surface with the needle in the groove.

Just unscrew the VTA-set screw (**f**) while supporting the arm with one hand, then slide the shaft (**c**) up or down until the armwand appears about parallel to the record with the "needle in the groove". The fine adjustment has to be carried out using your ears. Raise or lower the arm by small increments until you have reached a position that combines precise placement of images with an effortless delivery of dynamic contrasts. Sibilants should come from the same position in space as the singer's body.

4.5) Antiskating

To compensate for the skating force turn the antiskating-adjustment-disc (**a**) counter-clockwise to increase force (initially, several turns might be required!) and clockwise to reduce it. A good compromise will be achieved once mistracking occurs in both channels simultaneously while playing the tracking ability test tracks on the ORTOFON test record(0002 or 0003). In case you have no access to any such test record just put the diamond on the space between the leadout grooves (or a "blank" record, i.e. Cardas sweeper record) and adjust antiskating until the arm/cartridge combo wanders slowly towards the center of the record.

From then on, use your ears...

4.6) **Adjusting the gap between the magnets**

With a decent light source placed behind your record player it is easy to make out (and control) the gap between the magnets which facilitates friction-free movement of the tonearm.

The distance between the magnets determines the effectiveness of damping both tonearm/cartridge resonance and "parasitic" energy, generated by the cartridge or the turntable.

The smaller the gap the higher the damping and vice versa.

The gap between the magnets is altered by first inserting a 1.5mm Allen key into the set screw that is sitting in the middle of disc (a). Once your Allen key caught the screw hold it steady while turning the disc clockwise to widen the gap or counterclockwise to close it.

This sounds a lot more difficult than what it is..

The gap should be about 0.3mm wide, enough to allow for a common business card to be slid in without too much resistance.

If the magnets were to touch each other during play the resulting friction would cause the cartridge to skip.

The suspension thread used has an extremely high tensile strength, a very hard surface and will not deteriorate over time.

It does stretch (break in) though over a period of no more than two weeks. Once it has set, only under extreme conditions (very high temperatures + high humidity) can the thread exhibit a tendency to "give" a little more. So check the gap after a summer thunder storm (no more stretching after three of those)..

4.7) **Silicon damping or not**

The arm features the option to use silicon oil (i.e. SME2013) to dampen the tonearm resonance – predominantly in the axis of the armwand – resulting in a reduction of the "wiggleness" commonly associated with unipivot tonearms. This has almost no bearing (pun intended) on the tonearm – cartridge resonance that is a function of the effective Mass of the arm, the compliance of the cartridge and its mass.

Simply dip a piece of non-magnetic wire (brass, copper...) into the silicon fluid, wait until a drop has formed and wipe it off onto the thread (near its upper end). The drop will slowly travel down the thread until it finally vanished in the small oil well where the thread enters the armwand. Repeat until the well is almost full or, better until you're satisfied with the sonic results. Common silicon fluid have no adverse affect on the thread or the bearing in general, excess fluid can be wiped off using a cotton swab.

The effect resulting from that procedure depends upon the cartridge used and usually increases perceived "blackness" between notes and solidity of images without sacrificing "attack" and "air".

5) **The "Fine Tuning"**

Everyone who has to mount cartridges frequently understands the importance of precisely adjusting an arm/cartridge combination to release it's full potential.

Overhang, azimuth, VTA, tracking force and, if featured, variable damping of the arm movement are all important parameters.

The overhang adjustment was described already, nevertheless let me add that a single "perfect" overhang setting does not exist. Should you own a lot of records that are cut close to the inner groove you might consider using 63mm instead of 66mm as your inner "zero point" – many crescendo finales of symphonic works could be tracked with reduced distortion this way.

On the other hand exist a lot of "pop"-records with no modulation but leadout groove already where the "inner" zero point is located. One doesn't even benefit from this second distortion minimum..

Correct overhang adjustment results in tracing-error-related tracking distortion of barely more than 0.1%.

Next, the azimuth should be adjusted so that crosstalk is the same for both channels. This can be done by using a mono record played back via an X-adaptor or through your preamp switched to mono.

Reverse the headshell clips on one channel only (switch red and green i.e.) and adjust for the weakest signal coming from your speakers.

The proper way to adjust azimuth is by turning the counterweight set screw loose enough to allow turning the counterweight clock-or anticlockwise until the headshell plate appears to be parallel with the record surface (as a starting point). If the resulting image stability leaves something to be desired, turn the counterweight in small increments clock-or anti-clockwise. This will allow you to compensate for minor misalignments of the stylus/cantilever assembly.

Once you've "hit it on the nail" a centrally recorded female voice should be precisely located in space with no difference in the decay characteristics between channels.

Starting with the armwand parallel to the record surface, VTA adjustment should be carried out in small steps until the best separation between individual instrument in space, the least amount of "grain" audible and the best integration of fundamentals and upper harmonics is achieved (see above)

There is no "perfect" position, varying record thicknesses and a different cutting angle used for most records made before 1965 necessitate a new setting for every other record (if you want to get the absolute "best" out of each record). Stylus shapes are also more or less susceptible to changes in the VTA – generally speaking, the "sharper" the stylus, the more sensitive to changes..) The more time you spend on adjusting the VTA the less you'll get to actually enjoy your records.

The tracking force determines the tracking ability and also the position of the coils in the magnetic generator. Follow the manufacturer's recommendation and try increasing or lowering the tracking force by increments of 0.1gr. Low frequency tracking ability shouldn't be lower than 70my. Sound-wise more relevant is the high frequency tracking ability. The appropriate tracks on the Shure TT115 test record are helpful to get closer to the optimal tracking force.

The damping is , as already mentioned, a function of the distance between the magnets, or, more precisely, the flux density in the gap between the magnets.

It is to be adjusted so that the lower registers will be reproduced with control and heft without losing the resolution of high frequency fine detail and "air".

Overdamping this arm is close to impossible (often the case with silicone fluid damped arms) but rarely does the smallest gap result in the most satisfying sound.

The amount of tightening of any of the arm's screws has an influence on the energy transmission and therefore dissipation and should be experimented with.

Generally speaking, only screws **b** and **f** should be tightened well. Screws **g, i and j** require some experimentation.

Should you have any questions regarding mounting/adjusting or technical details of this tonearm, feel free to contact me via phone or email.

Equally welcome is any sort of criticism or suggestions for improvements.

**Yours truly,
Frank Schröder**
