

# Manual



PrimaryControl Reference Tonearm

Thank you for purchasing the PrimaryControl tonearm.  
Unlike conventional tonearms, this tonearm comes with high precision sapphire bearings and features many unique fine adjustment settings. To achieve the highest sound quality and to avoid damaging the tonearm, please take your time to get familiar with your PrimaryControl tonearm using this manual as your guide.

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## 1. Parts list

The PrimaryControl tonearm has been delivered in a customized soft cell package, which secures the tonearm during transport.

*Please retain all original packaging for storing and future transport.*

- A PrimaryControl tonearm
- B Standard tonearm weight
- C Tonearm cable
- D Ruler
- E Heavy tonearm weight (optional)
- F Long mounting base (optional)
- G Small parts container

- Hex base mounting screw M6 (4x)
- Cartridge torx mounting screws M2.5 (10X)
- Allen keys (1.5, 2, 5)

Please check the parts listed above.

***Before you get started:***

***For sonically reasons this tonearm uses material as wood and Delrin. Please be careful not to over-tighten the (set)screws!***

***Don't forget: the next step after "REALLY TIGHT" is "TOTALLY LOOSE".***

***In an unmounted situation, the mounting piece of the VTA post sits a bit loose. This is for technical reasons.***

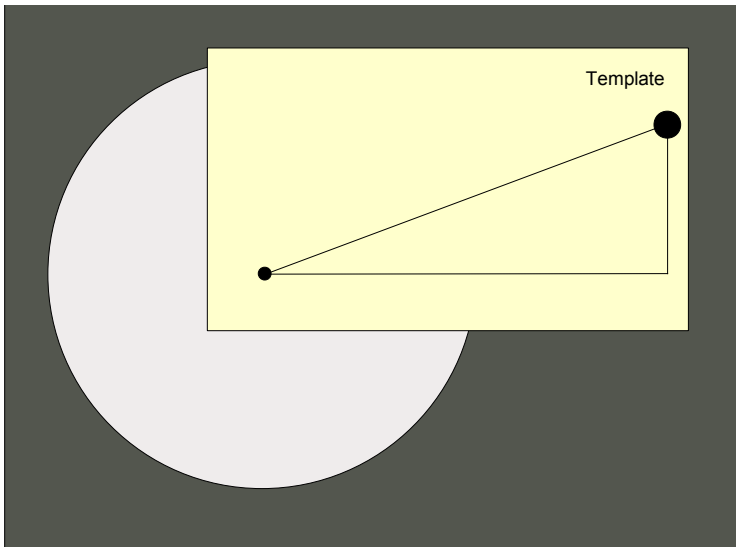
## 2. Mounting the PrimaryControl tonearm

*Note: Please leave the bearing protection on!*

Mounting the tonearm requires a 6mm drilled hole in your plinth or tonearm board.

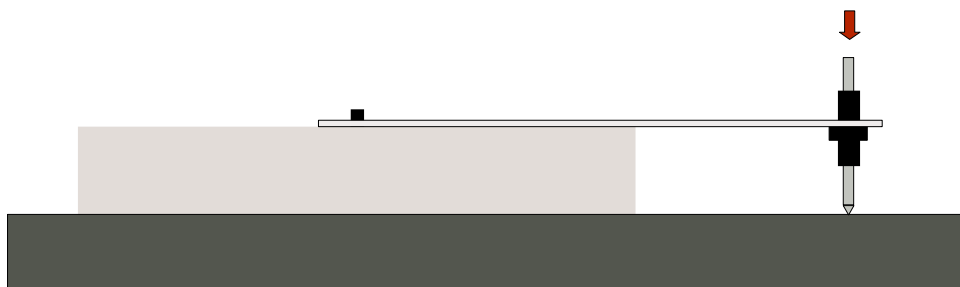
The minimum height distance plinth/arm-board to the platter top is 32mm (ideal 35-40mm), maximum 43mm.

Begin by marking the location of the mounting hole. For your convenience, a Template has been supplied, helping you to find the proper position for the 6mm hole.



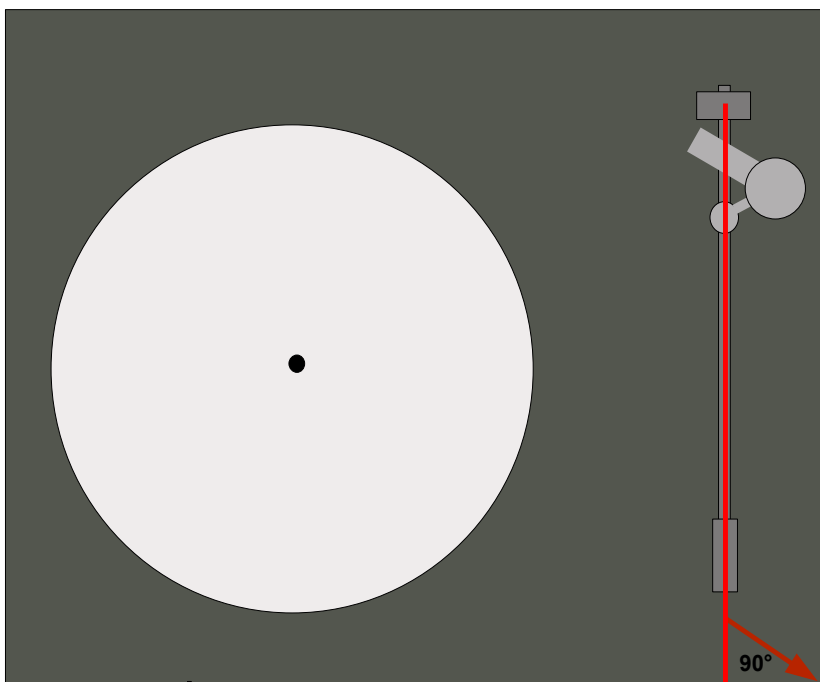
First you have to assemble the ruler as shown at the diagram. Insert the graphite rod into the ruler and make sure that the ruler is in level with your plateau. Do not bent the ruler. After marking the hole, check that all moving parts of the tonearm have enough clearance to the edges and allow free movement of the arm-wand (the arm-wand is parallel to the plinth).

If you are confident about the proper position of the hole, drill it.



Attach the tonearm to the turntable plinth or mounting board using a non-magnetic (2A supplied-, 4A, brass) M6-cylinder-head-screw from below. Choose the length of the screw so that then inserted a minimum of 12mm and a maximum of 26mm of the screw will be sticking out from the tonearm base.

Fix the arm base loosely without tightening the screw completely. The arm wand in rest position should remain parallel to the edges of the plinth. This is important for the proper working of the anti-skating devise! Tighten the M6-cylinder-head-screw. Now you can remove the bearing protection. Remove the black screw nut from the counterweight shaft and then slowly remove the white bearing protection . The tonearm base is now ready for further alignment.



### 3. Adjustment of the PrimaryControl tonearm.

#### 3.1 Mounting the cartridge

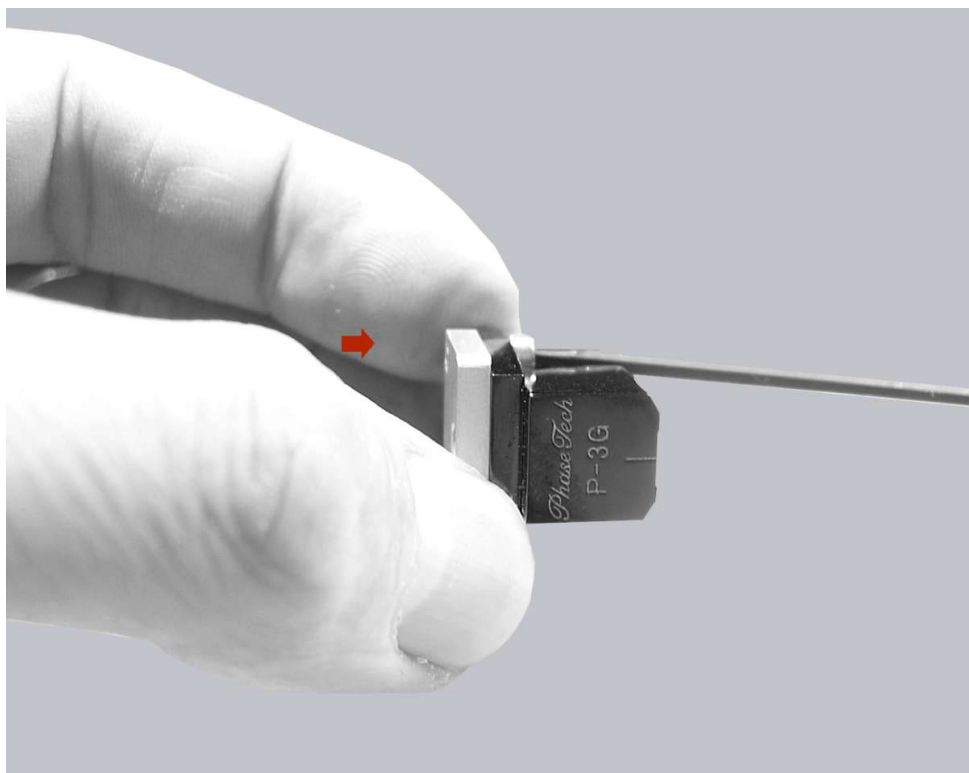
Before mounting the cartridge, install the counterweight by turning it on the threaded counterweight shaft close to the bearing. To avoid stress to the precision bearing please hold the head shell with your other hand.



Now you are ready to mount your cartridge. Unscrew the head shell plate and install your cartridge with the supplied non-magnetic M2.5 screws to the threaded holes. Choose the length of the screw that will fit to your cartridge and not stick out the top of the plate when fixed. Put the head shell plate back to the arm wand and tighten it lightly, so that it still can be moved back and forth.

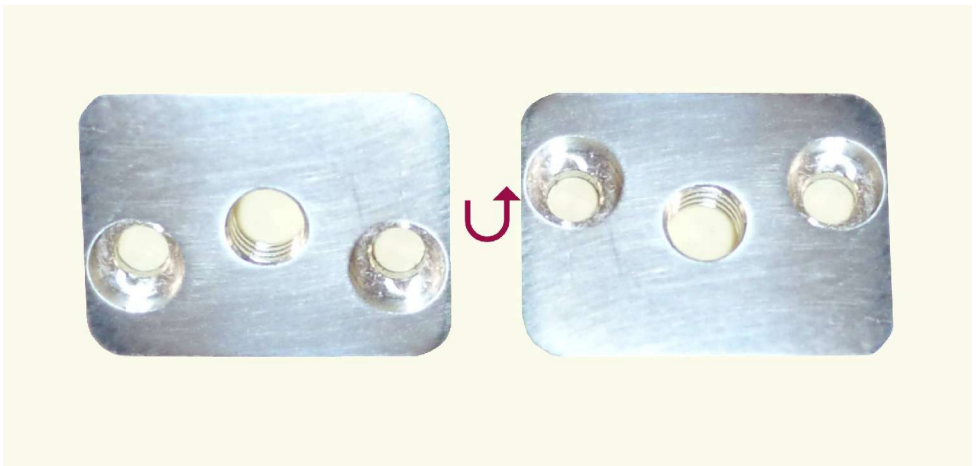
***For threaded cartridges use the extra non-threaded head shell plate supplied.***

Please be careful not to over-tighten the head shell screw. Overtightened screws can result in internal tensions in the cartridge body, negatively affecting the sound or even damaging the internal structure.





To extend the range for adjusting the overhang, it is possible to turn the head shell plate (180 degree) before mounting the cartridge.



### 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 phono stage omitting additional soldered connections. The restoring force of the supplied wiring is small and it can easily be „bent“ into shape, though sharp bends are to be avoided.

## 3.2 Setting the tracking force and the overhang/tracking angle

Leave the stylus protection on the cartridge. Loosen the VTA setscrew by a quarter turn. Turn the VTA knob so that the arm wand is in parallel to the platter. Use one of the proper templates (Denesen, Clearaudio) to set the overhang approximately. Remove the stylus protection. Set the tracking force in the lower range according to the manufacturer's specification. Adjusting tracking force is accomplished by turning the counter weight towards or away from the pivot point on the threaded shaft. While adjusting the tracking force with one hand, hold the head shell with your other hand to avoid stress to the precision bearing. You can fix the counterweight by fasten one or both of the setscrews (Do not over-tighten the screw). *Sometimes not fasten the setscrews at all can have sonically advantages.* For heavy cartridges, use the additional weight (optional).

Now you are prepared to align the cartridge. First you determine the overhang by loosening the M3 screw of the head shell plate. Then move the cartridge away or towards the bearing. Fix the screw lightly so that you still can turn the head shell plate.

Next, using the tracking angle position on your template, align the tracking angle by turning the head shell plate so that the cantilever is tangential to the record groove. The head shell plate is constructed so that a change of the tracking angle does not alter the overhang. In some cases, depending on your cartridge, the overhang has to be corrected. It is recommended that you check the overhang after altering the tracking angle and vice visa.

Once everything is correctly aligned, tighten the head shell screw.

*Here, some fine tuning is possible, by varying the pressure from head-shell plate to head-shell.*

### 3.3 Adjusting the azimuth

The azimuth of the tonearm is factory pre-adjusted. If you need to change the azimuth, bring the arm wand in rest position and turn the azimuth adjustment screw with the 2.0 Allen key. Check again at record level height and compensate if necessary.



### 3.4 Setting the damping

*Note: Please, read this chapter carefully!*

The PrimaryControl tonearm is designed with a center of gravity offset from the main pivot so as to create a constant side-load against a lower horizontal bearing. This offset force can be altered to vary the damping of the tonearm.

Loosen the setscrew slightly (1.5 Allen key) and turn the tracking weight assembly in very small steps. Turning the weight assembly towards the VTA post increases the damping force. Turning away from the VTA post decreases this force.

In order for correct functioning, there has to be a minimal force on the lower bearing, or the tonearm assembly will tilt to the left. The degree of damping depends on your cartridge. Some cartridges like the Decca/London cartridge need some more damping than others.

Carefully listening to a good recording with acoustical instruments and some space information can be very helpful for determining the correct damping. Too little damping results in a reproduction that is a bit nervous. Increase the force in very fine steps until you find the setting for which the instruments are very stable positioned with lots of air around them and a firm lower register. If you go over this setting, the instruments suddenly lose their airiness and the space will be somewhat clouded.

Please note that any damping (also Silicon) will give friction. Excessive damping can stress your cartridge and can result in faster wear of the suspension.

*After changing the damping, check if the arm still can move freely to the outer most record groove.*

*Do not over-tighten the setscrew!*

***Do not overtighten the setscrew!***

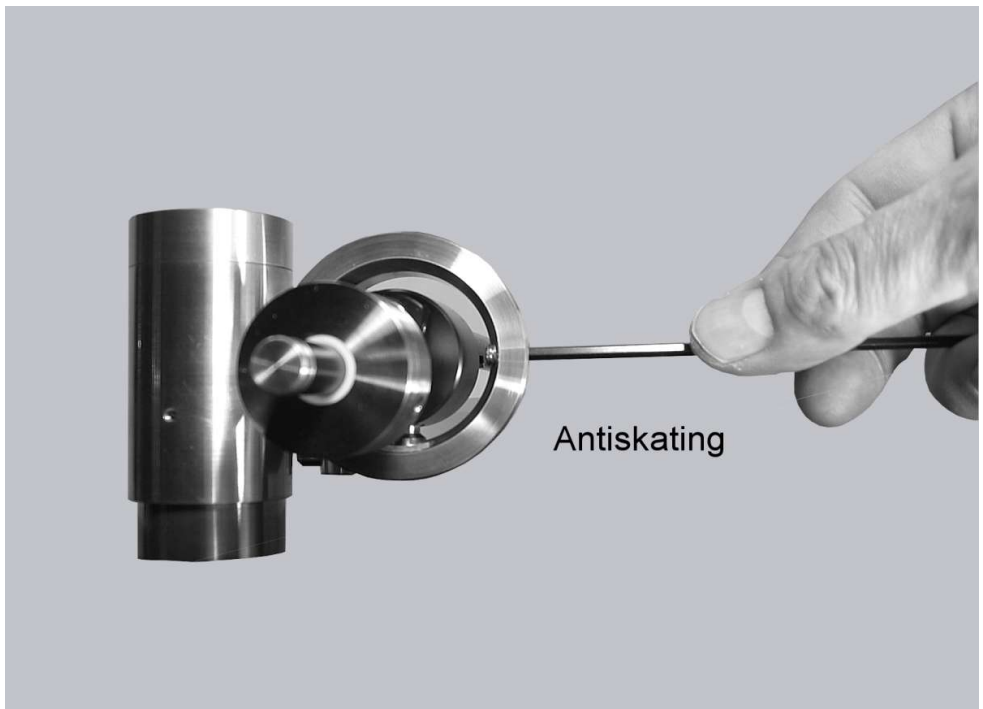


### 3.5 Setting the anti-skating

By inserting the Allen key into the anti-skating screw (A) you can alter the anti-skating force. Skating force varies with the amount of the tracking force and type of stylus. Turning the anti-skating screw clockwise increases the anti-skating force. First take a blank record or a record with a large lead-out area. Put the diamond between the lead-out grooves and adjust the anti-skating force so, that the tonearm moves slowly towards the record center. This is a good starting point for further fine adjustment.

Take a tracking ability test record or a recording with high level female voice and fine adjust the anti-skating force so that distortion (miss-tracking) occurs on both channels.

*After changing the anti-skating, check if the arm still can move freely to the outer most record groove.*



### 3.6 Adjusting the VTA

*Note: It is also possible to change the VTA height with the setscrew thightend.*

Set the VTA so that the cartridge's top surface is approximately parallel to the record surface when the arm is lowered onto a record. Loosen the setscrew of the VTA post by a  $\frac{1}{4}$  turn. Turning the VTA knob clockwise will lower the VTA post.

Play a record with good female vocals and clear high frequency sounds such as cymbals. Turn the VTA knob carefully to raise and lower the arm relative to the horizontal position until the voice and the cymbals becomes obviously excessive. Now lower the VTA post step by step until the voice and the cymbals just sound right. Even though the VTA post allows adjustments of roughly  $\frac{1}{100}$  of a millimeter, steps of  $\frac{1}{10}$  of a millimeter or even lager are more appropriate for this adjustment.



## 4. Service

If any service or repair on all PrimaryControl products is necessary, please contact PrimaryControl directly. We will inform you about your nearest service location.

**PLEASE RETAIN ALL ORIGINAL PACKAGING.** You will need it if this unit has to be transported and/or shipped.

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