Instruction Manual

Solidcoreaudio

Tonearm **flex**

1 Introduction

The tonearm **flex** represents a new approach to analogue music reproduction. Developed for the highest precision and maximum adaptability, **flex** combines innovative bearing technology with a unique modular construction.

At its center is a specially developed magnetic bearing that works in both the horizontal and vertical planes. This design allows friction-free, play-free movement of the tonearm and creates ideal conditions for exceptionally precise record tracking.

At the same time, **flex** opens up new freedom in configuration. Examples include exchanging the arm tube for different lengths or installing different base plates.

For this reason, the wiring is deliberately routed externally along the arm tube. Only this cable routing makes it possible to change the arm tube "flexibly" or to replace the wiring with another version. **flex** can be adjusted across a wide range of inertia, allowing it to be matched perfectly to the compliance of the cartridge. The tonearm can therefore be light, medium-mass, or heavy - exactly as you want it.

The arm tube itself is heavily damped: the part of the energy that is not converted into current is "destroyed" in the arm tube and not drained away in the usual manner.

flex is aimed at users who expect not only the highest playback quality, but who also value the possibility of further developing their system individually. Instead of a closed, rigidly defined construction, **flex** deliberately relies on flexibility that can be adapted to different requirements.

2 Mounting the Cartridge

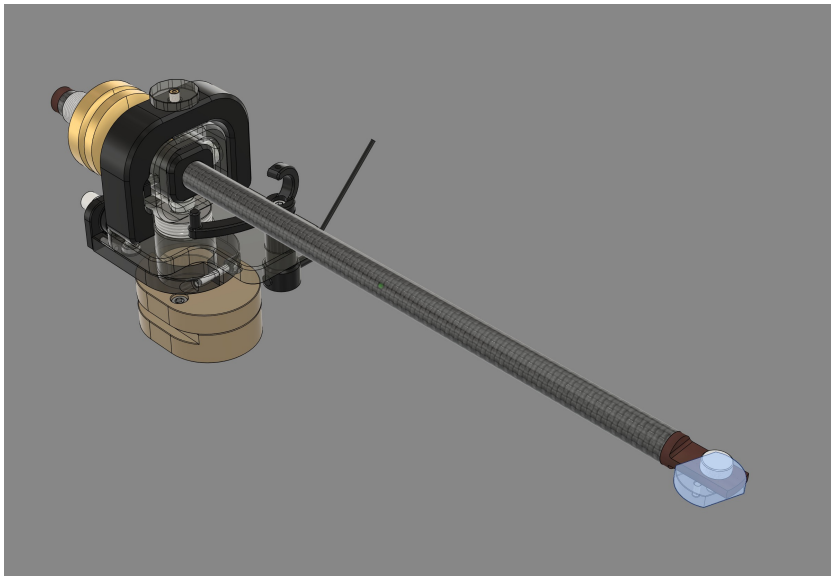

Figure 1: mounting plate with knurled screw

The cartridge is mounted on a mounting plate. To do this, loosen the knurled screw and mount the cartridge on the plate. There is a small M2.5 slotted screw on the plate. After the cartridge has been tightened with the two mounting screws, this screw can define an additional support point in order to approach the intended ideal three-point support. Turn this screw in until it rests on the top of the cartridge and resistance can be felt.

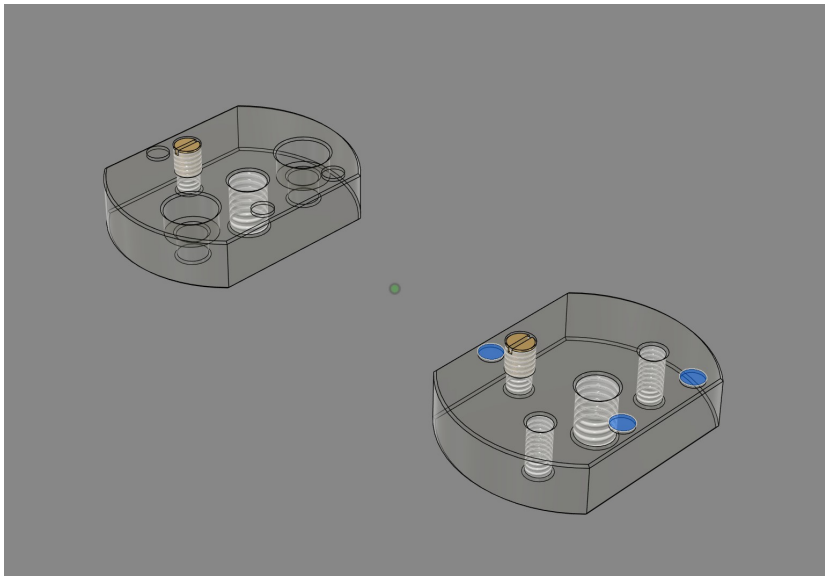

Figure 2: the mounting plate is available in two versions

ATTENTION: for almost all adjustment work, it is advisable to fit the stylus guard!

There are two versions of the mounting plate, as shown in Figure 2: one with threads and one without threads. The threaded version is intended for cartridges that have through-holes. They can then be fastened from below with suitable screws without an additional nut. ATTENTION: these screws must not protrude beyond the top of the mounting plate.
To meet the principle of three-point support, there are three small raised points on the top of the mounting plate (marked in blue on the front mounting plate in the picture). These support the underside of the headshell.

The cartridge can now be pre-mounted to the headshell using the mounting plate. Make sure it sits approximately centered in the elongated hole of the headshell. Above all, make sure the mounting plate does not touch the headshell at the rear.

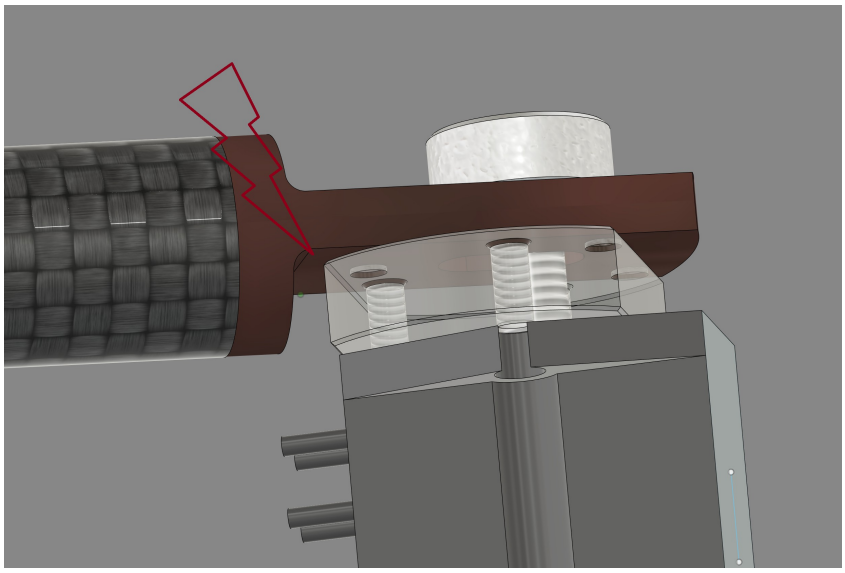

Figure 3: the mounting plate must have clearance at this point from the headshell

3 Mounting the Tonearm on Your Turntable

Ideally, I have made a turntable base for your turntable on which you can now mount the tonearm sled.

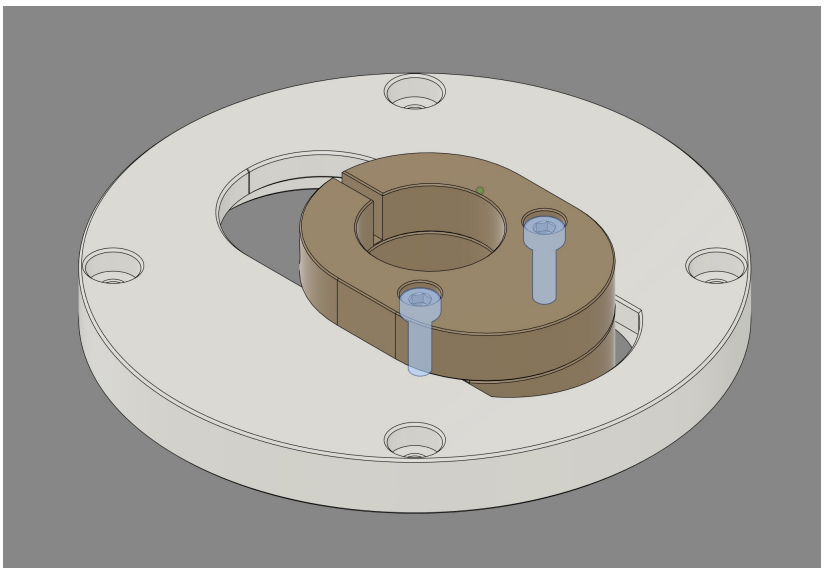

Figure 4: turntable base (here for a PTP 12)
with the tonearm sled

Loosen the screws highlighted in blue, insert the two halves of the sled into the turntable base, and reinstall the screws. Carefully tighten the screws so that the sled can still be moved in the elongated hole, but is no longer loose. The cartridge overhang will later be adjusted using this elongated hole.

Mount the turntable base with the sled on your turntable.
Insert the arm with the pre-mounted cartridge (with the stylus guard fitted) into the bore of the sled. It may be necessary to loosen the screw marked in the lower picture.

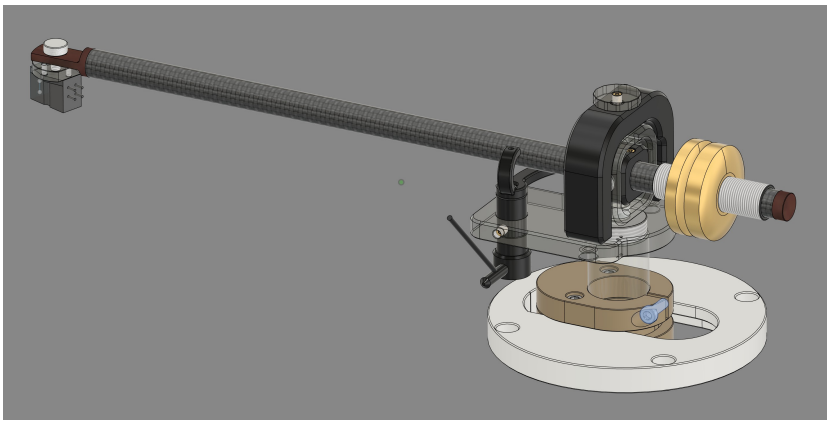

Figure 5: inserting the tonearm into the turntable base

Now bring the arm to **approximately** the correct **height** and align it by rotating it. The stylus should be just outside the record when the arm is not locked into the lift. Lightly tighten the marked screw (Figure 5).

4 Adjusting the Azimuth

Check whether the arm tube is aligned vertically. To do this, use a commercially available alignment gauge and/or the familiar pencil lead attached to the top or underside of the headshell. In most cases, only a check is required, because the arm has been adjusted by me. If a correction is necessary, loosen the screw highlighted in blue (Torx T4 or 1.27 mm hex key) on the inner bearing block and rotate the arm tube until the horizontal position is reached. Then tighten this screw again carefully.

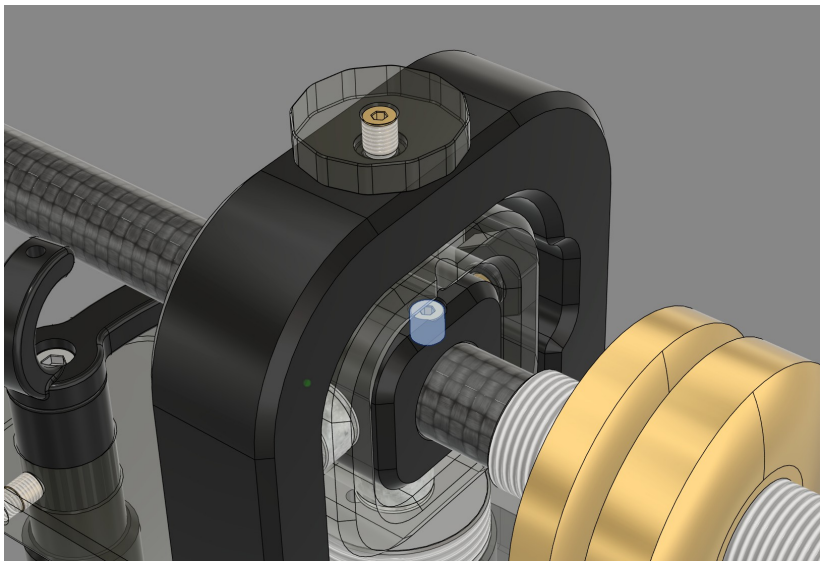

Figure 6: this screw fixes the arm tube to the inner bearing block

5 Connecting the Cartridge

The cartridge can now be electrically connected to the tonearm cable. The colors are:

RED -> **RIGHT** channel **PLUS**
WHITE -> **LEFT** channel **PLUS**
GREEN/YELLOW -> **RIGHT** channel **GROUND**
BLUE -> **LEFT** channel **GROUND**

The connector sleeves of the tonearm cable are made from silver foil and are nickel-free. They guarantee excellent contact, but they are somewhat more delicate to handle than conventional sleeves.
Use fine tweezers, grip the connector sleeve at the rear, and push it onto the corresponding pin of the cartridge.
If the sleeve slides onto the pin too easily, it can be gently squeezed with fine needle-nose pliers. To avoid crushing the sleeve, place a toothpick in the pliers as well. If it is nevertheless squeezed too much, the sleeve can be brought back into shape with a sewing needle or similar tool.

6 Setting Overhang and Offset Angle 1

a) Vertical balancing

Set the tracking force to zero. The weights can be loosened by rotating them against each other and locked again after balance has been found. ATTENTION: gentle rotation is sufficient to create a very firm connection between the two weights.

b) Horizontal balancing

See section 11: Setting the anti-skating force. The goal is for the arm to turn neither left nor right.

c) Setting the tracking force

The tracking force can now be set using a suitable scale.

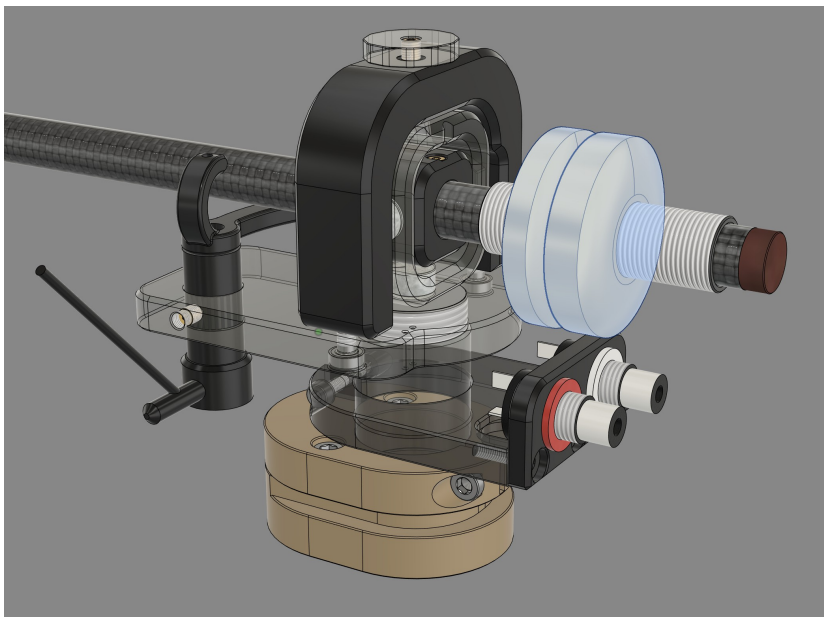

Figure 7: the counterweights

After the weight has been adjusted, the cartridge is aligned using an alignment protractor. As already mentioned, the overhang is adjusted mainly by moving the sled. The offset angle is adjusted at the front of the headshell by rotating the cartridge.

Now carefully remove the arm from the sled again (without moving the sled) and tighten the two screws (Figure 4) that clamp the sled.

7 Adjusting Tonearm Height

First, align the arm on the turntable. Insert the tonearm back into the sled and align it so that it can be operated comfortably. When the arm rests on the lift support (NOT locked in), the cartridge should stand approximately at the edge of the record.
The height can now be corrected by moving the tonearm in the sled to the correct height. As a rule, it is set so that the arm tube is level when the stylus is lowered.
Now tighten the transverse screw of the sled.

8 Adjusting the RCA Socket Holder

So far, there are two arm base plates for the flex:

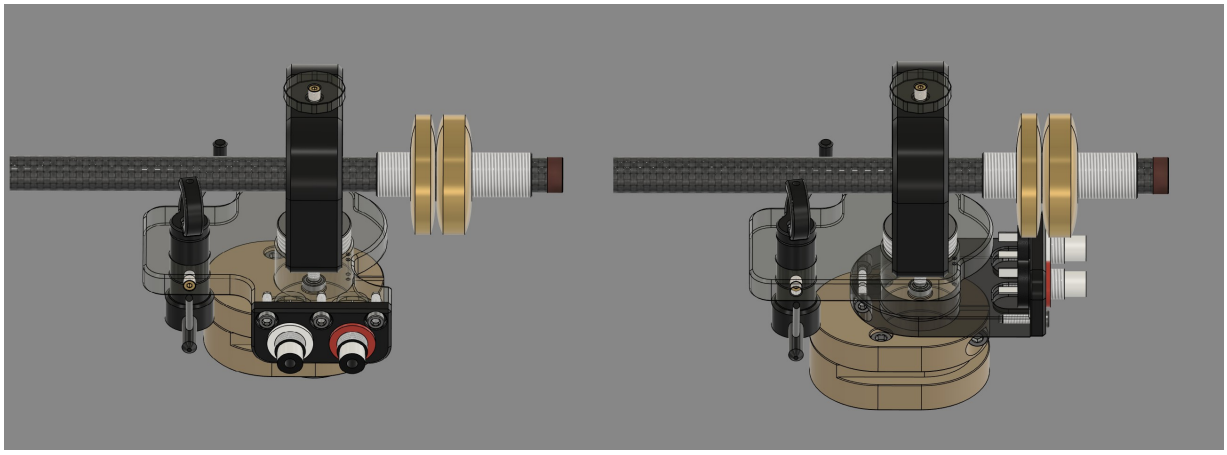

Figure 8: Base 1 Base 2

With Base 2, you can adjust the height and orientation of the RCA socket holder. Loosen the transverse M3 screw and optimize the position as desired.

9 Setting Overhang and Offset Angle 2

Check the overhang and offset angle again.

10 Setting the Tracking Force

Check the tracking force again.

11 Setting the Anti-Skating Force

By turning the large screw, you can compensate for the skating force.

CLOCKWISE -> anti-skating is **REDUCED**
COUNTERCLOCKWISE -> anti-skating is **INCREASED**

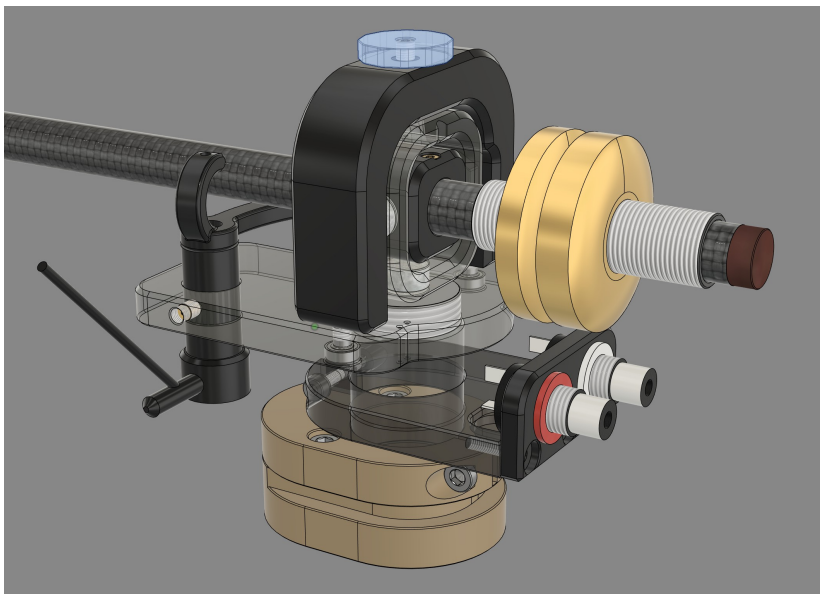

Figure 9: the anti-skating screw

If in doubt, choose a slightly lower anti-skating force. Suitable records are available for setting the anti-skating force. Alternatively, choose a record with a high level and check whether distortion occurs in only one channel.

Distortion on the left -> increase anti-skating force
Distortion on the right -> reduce anti-skating force

12 Connecting to a Phono Amplifier

Connect the RCA sockets to the phono stage using a cable of your choice. For MM systems, I recommend a cable with low capacitance. MC systems usually tolerate somewhat more capacitance.
ATTENTION: switch off the amplifier before connecting!

13 Further Information

a) Adjusting the Lift

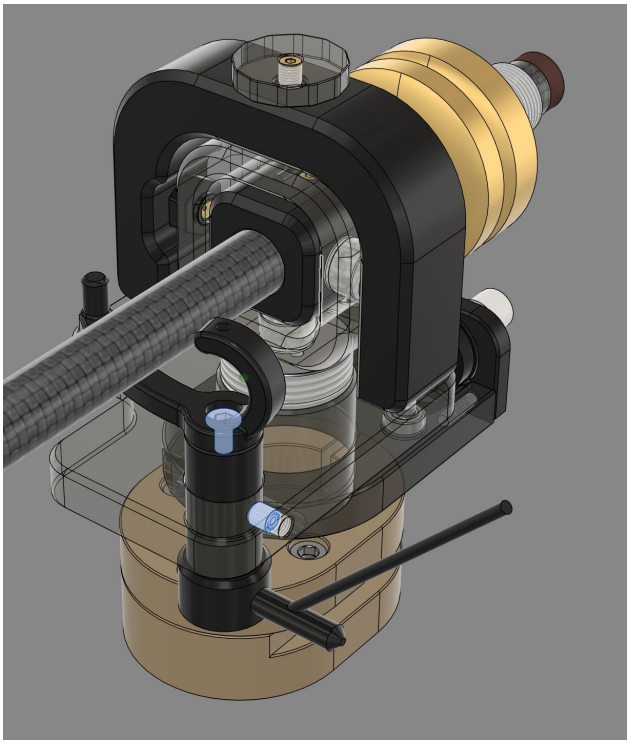

Figure 10: the lift screws

The lift can be adjusted using the two screws marked in blue.
The lift height can be adjusted by loosening the transverse screw.
By loosening the upper screw, the arm rest can be rotated or removed completely. When the arm rest has been removed, the piston can be pulled upward with small pliers. There are three grooves on the piston that are filled with oil or grease. Depending on the filling level and the lubricant used, the lowering speed of the lift changes.

b) Checking and Adjusting the Bearing Blocks

The three bearing blocks should be approximately centered relative to each other:

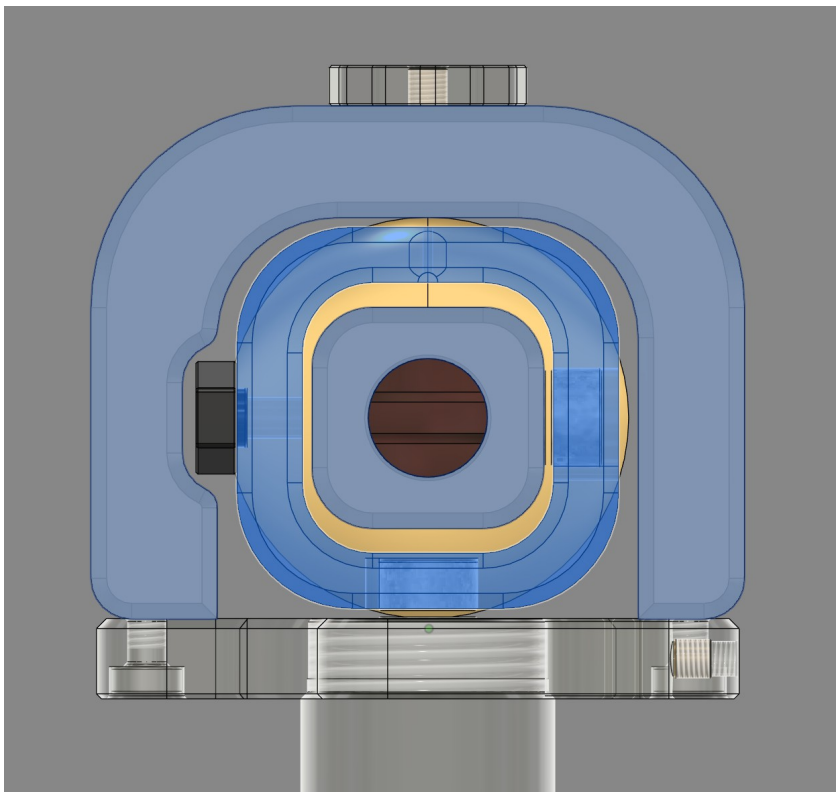

Figure 11: the three bearing blocks

A slight deviation is completely acceptable. However, if it becomes too large, the bearing shells can be centered by turning the inner grub screw of the anti-skating screw or of the horizontal screw. The principle is explained using the horizontal screw. It controls the centering of the inner bearing block to the left or right relative to the middle bearing block. If the grub screw is turned counterclockwise, the inner bearing block moves to the left. If this grub screw is turned clockwise, it moves to the right.

ATTENTION: the horizontal screw must be turned in the opposite direction by the same amount as the grub screw is turned. Otherwise, the tracking force will be roughly altered.

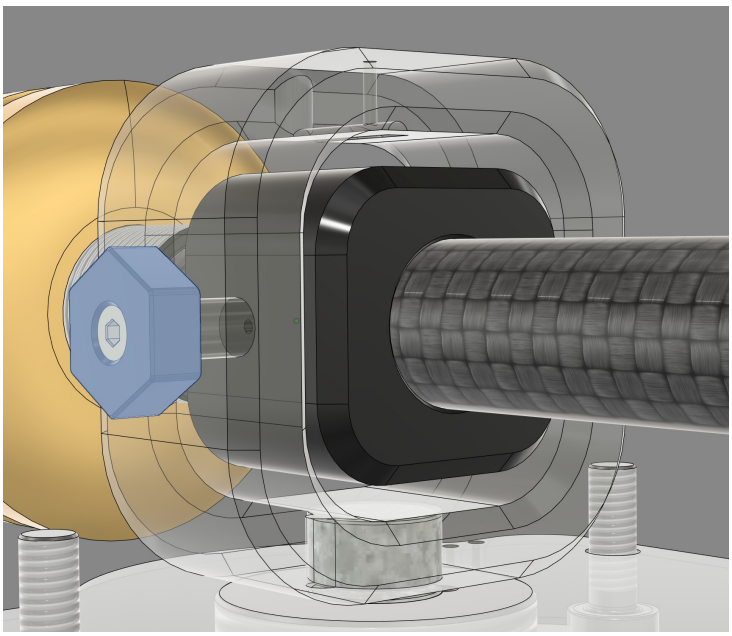

Figure 12

c) Required Tools

Slotted screwdriver max. 2 mm (watchmaker)

Torx T4 or 1.27 mm hex key

2.5 mm hex key

3 mm hex key

Tweezers

Fine pliers

Toothpick

Alignment aid / protractor

Patience

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V1.1 / 31.05.2026