

# WHAT MAKES A GOOD TURNTABLE?

In order to answer this, we first have to go through the basics.

Turntables and phono cartridges act like a microphone. They pick up the micro information stored in the groove of the vinyl as well as all distortions and resonances around.

These include:

- rumble of the bearing
- resonances of the tonearm, platter and chassis
- noise from the motor
- moving air from the speakers (especially bass frequencies)
- resonances from surroundings (table, floor, etc...)

Also important to note is that if a turntable does not turn precisely close to 100% of the desired playback speed (for example 33 rotations per minute), the timing of the music will be wrong.

Short: A turntable is a precision instrument which meticulously tracks all the information of the micro groove.

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## Principles of a good turntable

Massive, heavy chassis - never made out of plastic and no hollow spaces.

- Bad - plastic
- Better - particle board
- Best - MDF

### Why?

The heavier the chassis, the better the damping of the noise coming from the motor and the bearing. This also ensures a reduction of the vibrations from the speakers and surroundings.

## Platter

Heavy platter without resonances guarantees best speed and resonance-free tracking of the record.

- No go - pressed light weight, high resonance platter
- Good - heavy stamped steel platter, resonance-free acryl or MDF platter
- Best - very heavy, ultra-precise fully damped aluminium or special alloy platter

## Platter bearing

Best machining and minimal tolerances are a must. The better the bearing, the better the speed consistency and the lower the rumble.

- Best - ultra, precise hardened steel in bronze bushings. Tolerance less than 0,01mm.
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### Motor

The motor must be as quiet and as accurate in speed as possible. Good turntables have isolated motors with electronic speed control. Best turntables have completely separated motor units.

### Tonearm

The bearing must guide the cartridge in the groove. If the tonearm is too heavy and slow with a lot of friction, the cartridge cannot track the details accurately. Additionally, the bearing must be ultra-precise without clearance and the tonearm tube must be as stiff as possible.

- No go – plastic tonearm tube or head shell, rattling or loose tonearm bearings.
- Good – Tonearm must be made out of one piece to maximise its stiffness.
- Best – The best tonearms are made out of sophisticated materials like carbon. (light and stiff with damping devices)

Turntables manufactured with detachable head shells are usually not good. Especially in the low-price range. This only works in the high-end price range where the connection of the head shell and the tonearm tube is done with the highest precision.

### Cartridge

The cartridge is the most important part of a turntable. Without a good cartridge, even the best turntable will not sound good! That is because cartridges are very sensitive and must operate extremely accurate.

- No go – most of the turntables lower than 500 US-Dollar have cheap cartridges - mostly less than 30 US-Dollars worth
- Good – Cartridges around 100 US-Dollar
- Best – MC (moving coil) cartridges, which are superior than MM (moving magnet)

### Cables

Similar to cartridges, a bad cable will not allow even a good turntable to sound good. A cable does not make the sound better, a cable always makes the sound worse, the question is how much.

- No go – cheap wires with plastic connectors and no isolation (give-away-cable)
- Good – correct cables come with turntable
- Better – symmetrical cables, shielded twice with metal connector
- Best – extra connection offered in order to upgrade the cable

### Warning! - Phono stage or Phono amplifier

The signal of the cartridge that is picked up from the groove is very, very low (0,5 millivolt and less) and needs to be amplified and equalised. Therefore, you need a phono stage.

But, if the phono stage is not good or linear, even the best turntable and best cartridge will sound bad!

Even though, many record players under 500 US-Dollar do offer included phono stages, most of the time however these are simple integrated circuits (ICs) with a value of around one US-Dollar!

- Good – no built-in phono stage from good, acknowledged phono amplifier manufacturers
- Better and Best – never have built-in phono stage

### **What about adjustments?**

A turntable is only as good as you can adjust it, which allows you to perfect your set-up.

A turntable:

- must be levelled to track correctly
- has adjustable feet
- its cartridge must be correctly positioned
- Better and the best turntables offer height adjustments (VTA) and horizontal adjustments. This is important when you want to change the cartridge for a better one, or because your cartridge is not available anymore and is worn out.

#### Tip:

Consult a phono specialist dealer and do not buy online. He or she will assist you in order to reach the best sound possible.

#### Rule:

A correctly adjusted 300 US-Dollar turntable sounds better than a 600 US-Dollar turntable that has been installed badly.

### **Accessories (sometimes included with good turntables)**

- Audiophile platter-mats, like leather or cork
- Clamps or pucks, to secure the record sits accurately on the platter and to flatten warped records

### **Anti-skating**

Skating is a power which occurs because of the radial tracking of the record. So, because of the friction of the needle in the groove, the tonearm is pulled towards the center of the record and a non-linear tracking with more distortion is the result. The problem is that this skating force is not linear to the radius of the record and is constantly changing which results an increase of friction.

To avoid this, turntables usually have an antiskating mechanism.

Good turntables have an anti-skating pre-adjusted to make it easier for the customer. Better ones have a spring or magnet. This is quite easy to adjust by scale.

Unfortunately, this is not an accurate technology as the skating power varies from the out to the inside the record and a spring or magnet only creates a constant power.

The best and all high-end turntables are using a construction of an anti-skating weight over an angled pole.

This system changes the power mechanically, the more the arm is moving towards the inner grooves, the length of the string of the anti-skating weight gets longer or shorter

Simple, mechanical, but the best.