

 **KENWOOD**

TS-10
TURNTABLE SHEET

DS-20/21
DISK STABILIZER

TS-10 turntable sheet and DS-20/21 disc stabilizer. The dynamic duo that opens up a whole new dimension in disc sound.

The TS-10 ceramic turntable sheet and the DS-20/21 disc stabilizer are two more breakthroughs from Kenwood, both products of persistent and dedicated research. This is the age of super hi-fi in which disc music lovers expect the same fast-paced advances in turntables and disc music as in amplifiers and speakers. Kenwood does not

disappoint them. The TS-10 serves to keep the mechanical impedance beneath the stylus at the right level while cutting out disc vibration. The DS-20/21 disc stabilizer further suppresses the vibrations that can ruin a good sound. Use these two hi-fi enhancers together as a dynamic duo to derive the most from your turntable and records!



KENWOOD QUALITY THE CORRECT PRICE. TURNTABLES

DS-20/21 disc stabilizer bans those harmful disc vibrations from hi-fi.

It's not much fun knowing that the sound from your discs is being impaired by record vibrations. In the past, you've had the option of using an inner disc stabilizer to try and get rid of those vibrations. Now, Kenwood goes beyond established convention to bring you the benefits of a dual package—the DS-20 outer disc stabilizer and the DS-21 inner disc stabilizer.

The disc stabilizers secure just the right amount of mechanical impedance beneath the stylus and suppress the low-frequency-range vibrations generated by the high rigidity of the disc. These vibrations are a true stumbling block to hi-fi reproduction. Overcome this obstacle by taking advantage of the disc stabilizer and, preferably, the TS-10 turntable sheet for the best effects.

What's the stabilizer's secret?

The disc stabilizer is effective in improving the sound from records in two ways.

First, it suppresses the vibration from the high rigidity of the disc. As the stylus traces the sound grooves, the pressure which it applies to the record gives rise to partial vibrations of the records. The DS-20/21 puts a stop to vibration by keeping the record perfectly still.

Second, it increases the total moment of inertia of the platter. The DS-20 has a moment of inertia of $430 \text{ kg} \cdot \text{cm}^2$ and the DS-21 $2.5 \text{ kg} \cdot \text{cm}^2$. When combined with the platter, the total gives a rotational energy which does not vary at all once the platter starts to turn.

How do you use the DS-20/21 stabilizer?

First place the record on the platter mat and then put the positioning

gauge on the record. Set the outer disc stabilizer on the outside of the disc, aligning it with the gauge, and hold it in the optimum position. Now remove the gauge, put the inner disc stabilizer into position and start playing the record.

Remember that the DS-20/21 are designed for Kenwood turntables and many other brands but not for all brands.

What are the exact effects of the disc stabilizer?

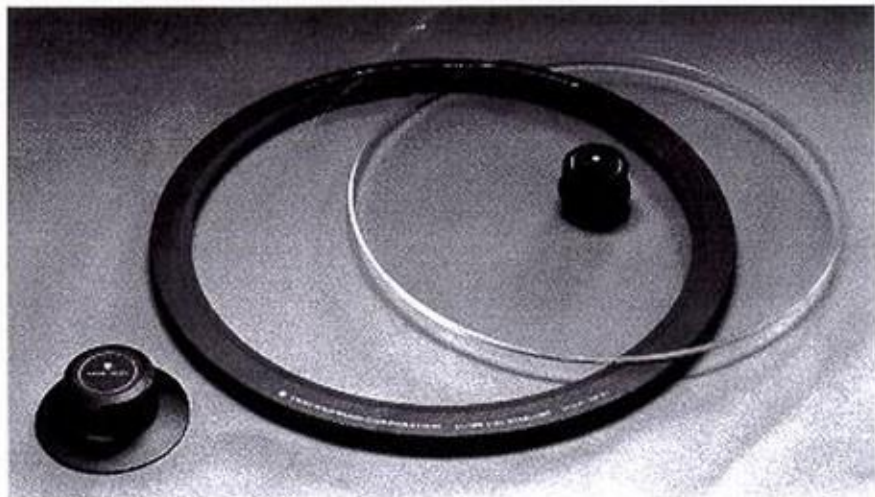
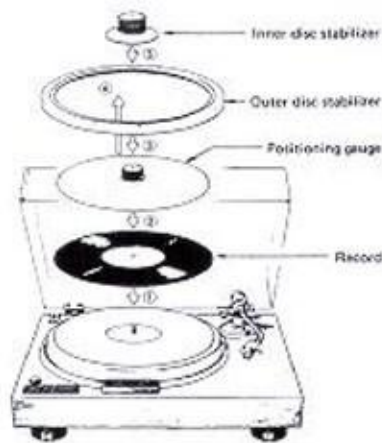
To demonstrate just how effective the twin stabilizer can be, Kenwood used two top-flight electromagnetic pickups to measure the suppression of the record's high-rigidity vibration (see graph on back page). Vibrations were applied and the transfer function between the two pickups was measured.

As far as the phase response is con-

cerned, the more numerous the phase shift points, the greater the phase rotation and the more indistinct the sound image positionality. A good vibration suppression is shown by a high attenuation, a low level and a smooth overall response. When the rubber mat was tested, the phase was found to shift greatly. The level was seen to deviate greatly with good vibration suppression in the high range but hardly any in the low range.

In contrast, tests on the turntable fitted with the TS-10 turntable sheet and twin stabilizer reveal very little phase deviation and a flat vibration prevention response above the low-range and mid-range. This combination does not "color" the sound but reproduces the sound as originally intended.

Remember to use the TS-10, too, if you want only the best sound from your records!



TS-10 turntable sheet wins the vital battle against disc vibration.

Every time you play a record, exceedingly small vibrations stop you from enjoying hi-fi at its best. They are so detrimental that they have to be suppressed. Kenwood has found that an improved platter mat stops them. Enter the TS-10 turntable sheet. It is designed to maintain the mechanical impedance beneath the stylus and cancel out the low-frequency-

range vibrations caused by the high rigidity of the disc and the high-frequency-range vibrations generated by internal loss. It looks a pretty simple affair, but with Kenwood, looks are very often deceptive. To appreciate its excellent features, slip the TS-10 into place and enter a new dimension of disc hi-fi.

How does the TS-10 improve the sound?

The TS-10 turntable sheet is made of ceramic with sintered crystals of alumina, the second hardest substance after diamonds, and their rigidity is equivalent to a high Young's modulus of 38,000 kg/mm². This is more than enough to keep the mechanical impedance beneath the stylus at just the right level and give immunity from low-range resonance given off by the record vibrations.

Inside, the silicon rubber impregnated pores which account for about 18% of the total volume display an internal loss which ideally absorbs the record vibrations in the mid-range and high-frequency range without changing the shape of the material.

How do you use the TS-10?

All you have to do is remove the platter mat which comes with your turntable and replace it with the TS-10, taking care to put the aluminum circular side face up. Remember that the TS-10 is designed for Kenwood turntables and many other brands but not for all brands. If you are in any doubt as to whether it will work for your model, ask your dealer for advice.

What are the exact effects of the TS-10?

One key weapon against vibration is



the material used for the platter mat. The TS-10 with its porous ceramic displays a short attenuation time and a low initial vibration when a single-pulse vibration is applied. In contrast, a rubber mat is hardly at all immune to low-range vibration, and with a glass mat, these vibrations are inherent.

Another telling factor is the frequency of the record vibration. Naturally, the whole frequency level should be low and display minimal fluctuations.

As shown in the graph on the back page, the TS-10 keeps the frequency down to a low level with very little fluctuations, displaying excellent immunity from vibration in the low-range through the mid-range.

The glass mat is rigid enough to prevent low-range vibration but the level fluctuates wildly starting at the mid-range. The rubber mat loses the battle against vibration at frequencies below 200Hz.

Remember to use the DS-20/21 disc stabilizer too, if you want only the best sound from your records!



TS-10·DS-20/21

SPECIFICATIONS

TS-10 Ceramic Turntable Sheet

Diameter	303mm (11-5/16")
Thickness	7.0mm (1/4")
Weight	1,200g (2.65 lbs)

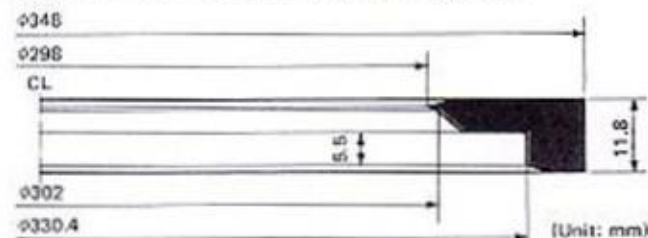


DS-20 21 Disc Stabilizer

DS-20

Outer Disc Stabilizer

Material	Bs8M
Moment of Inertia	430 kg·cm ²
Diameter	Outer: 348.0mm (13-45/64") Inner: 298.0mm (11-47/64")
Weight	1.6 kg (3.52 lbs)



DS-21

Inner Disc Stabilizer

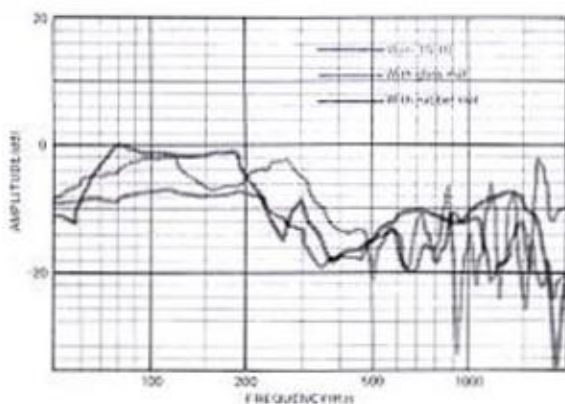
Material	Bs8M
Moment of Inertia	2.5 kg·cm ²
Diameter	84.0mm (3-5/16") (Max.)
Height	33.5mm (1-5/16")
Weight	600 g (1.32 lbs)

Adjusting Gauge (supplied)

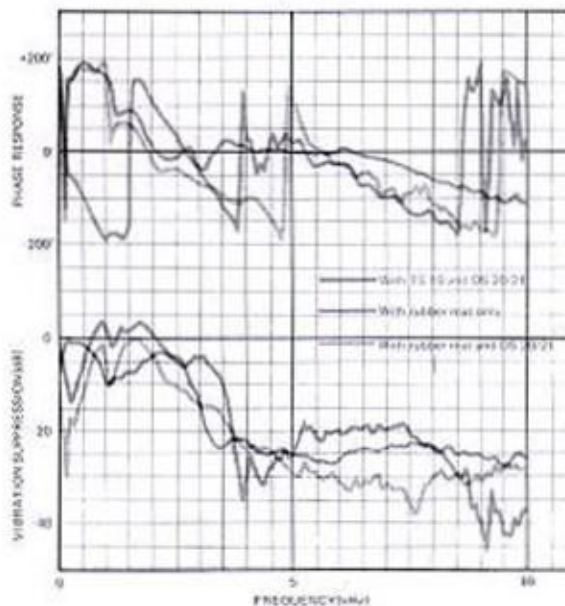
Material	Acryl
Diameter	297.8mm (11-23/32")
Height	24.0mm (15/16")
Weight	400 g (0.88 lbs)

Kenwood follows a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Analysis of the frequency of record vibrations by the material of the platter mat.



Measuring the effects of high-rigidity vibration suppression.



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