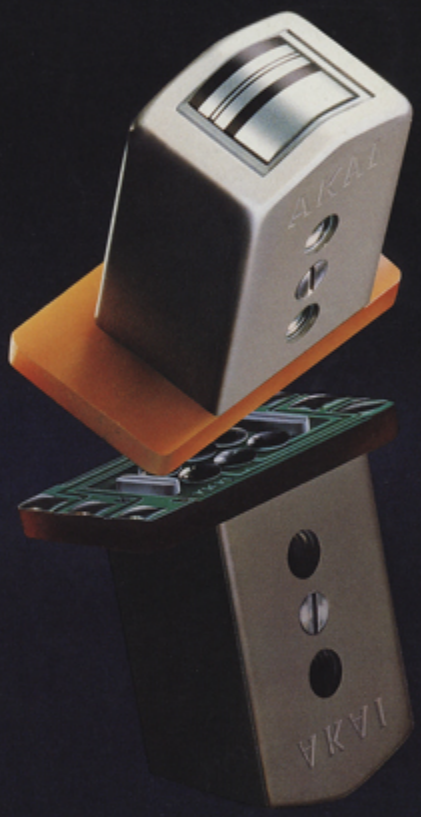
AKAI

SUPER GX....

A new revolution in stereo recording from AKAI

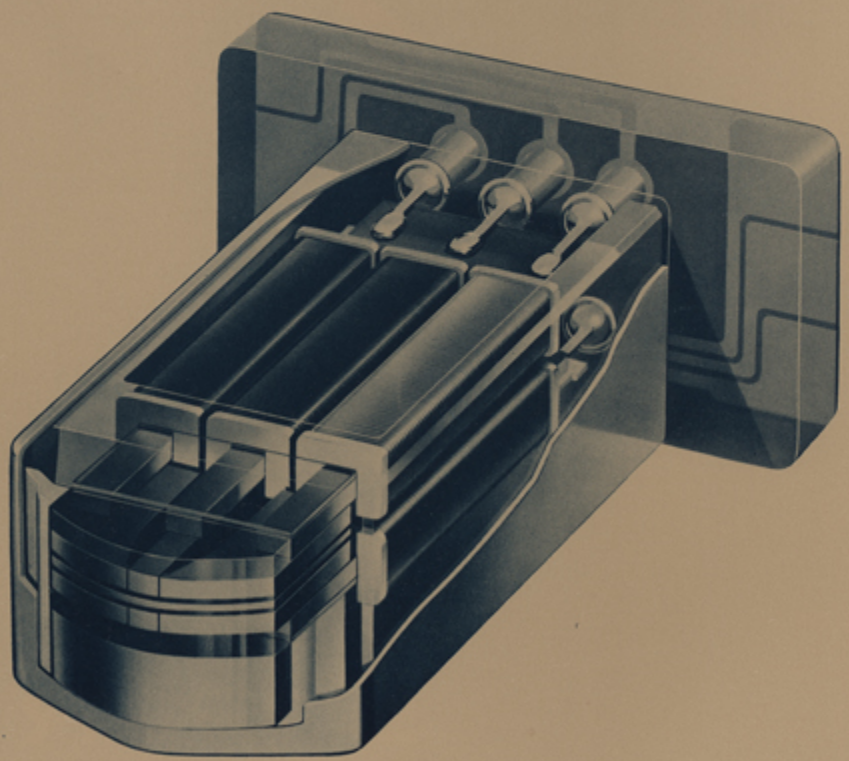
- **Twin Field SUPER GX heads**
- **3-head SUPER GX heads**
- **SUPER GX head material**



SUPER GX

It isn't every day we get the chance to tell you about a product advance as striking as is Super GX! As a matter of fact, it's been ten years now since Akai first revolutionized tape recording with the introduction of its GX head material. As a direct result, the Akai name has become highly revered by audio fans and experts around the world and, the GX head has become a synonym for Akai!

While retaining the existing GX head's excellence in terms of mechanical durability and high density recording with optimal focused field design, the Super GX head has further succeeded in enchancing the MOL (Maximum Output Level) during recording as much as 3 dB through improved saturation characteristics of magnetic flux density, Bs. Further, the Super GX heads are equipped with individual gaps for recording and playback respectively. Akai offers both the three-head system for professional-type audiophiles and the Twin Field Super GX head having one head structure with two gaps for those seeking less than the ultimate but substantially more than is currently possible using the GX head.

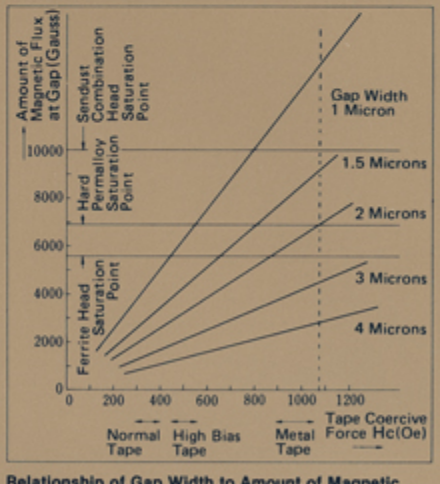


SUPER GX HEAD---MAGNETIC CHARACTERISTICS

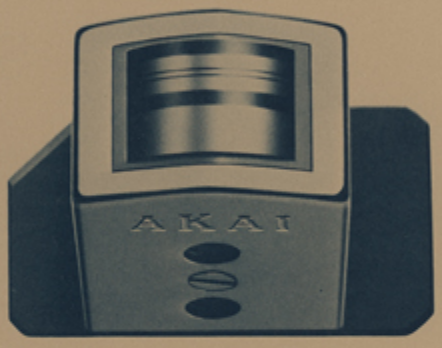
The Super GX head incorporates Akai's newly developed crystal ferrite as its core material with higher permeability (μ) and higher saturation of magnetic flux density (Bs). Thanks to the core material's magnetic characte ristics, the Super GX head creates an ideal magnetic recording field through the implementation of the proper width recording gap.

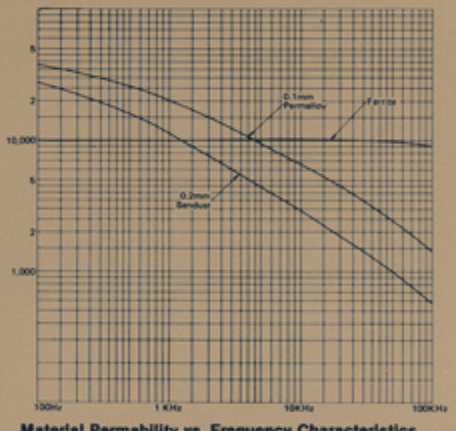
The Super GX head's core material has such an outstanding permeability throughout the actual recording frequency range that the recording field becomes very sharply focused. Because of this highly focused recording field, magnetic losses in the high frequency range are kept to an absolute minimum which vastly improves the high frequency response. And, the AC bias current can efficiently operate at about 100 KiloHertz which further improves the characteristics of the recorded signal.

With the use of a 4μ gap employed exclusively for recording and the superior core material enabling very high saturation flux densities, the Super GX head ensures a strong enough magnetic field for all recording situations. As a matter of fact, the strength of the magnetic field is not solely determined by the saturation flux density alone. As the graph shows, it is obvious that the head's versatility is controlled by both the gap width and the core material's saturation magnetic flux density. From this, it can easily be seen that a Super GX head with a 4μ gap can readily cope with the stronger coercive force (Hc) of metal tapes.



Relationship of Gap Width to Amount of Magnetic Flux at Gap



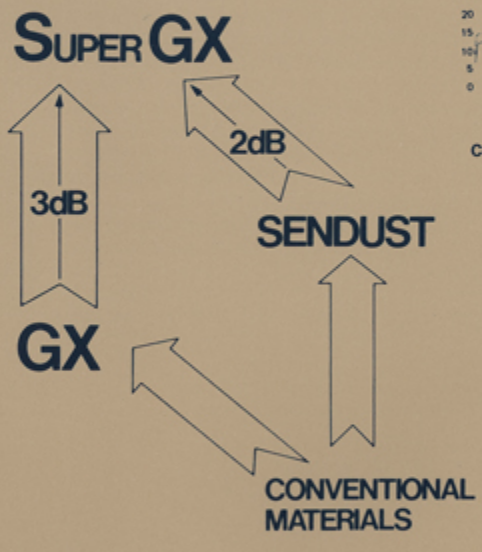


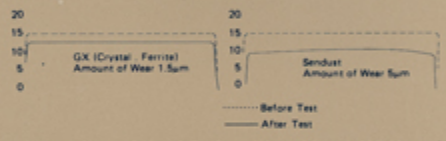
Material Permability vs. Frequency Characteristics

SUPER GX HEADS vs. OTHER HEADS

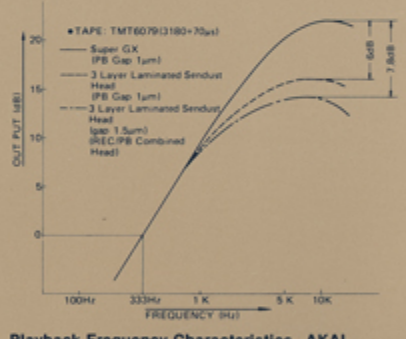
The Super GX head outperforms regular GX heads by as much as 3 dB in MOL while compared to the best sendust heads, its MOL improvement is still 2 dB! And, the Super GX head offers truly outstanding durability for both itself and the tapes with which it comes in contact. . . no other heads can even get close to the smoothness of the Super GX head's surface which is the reason for this super-low wear feature.

Another superb feature of the Super GX head is that, because of the exceptionally fine core material coupled with the provision of a seperate and independent 1μ playback gap, the Super GX head requires less playback compensation at higher frequencies which translates into better S/N ratios than is available from other heads.

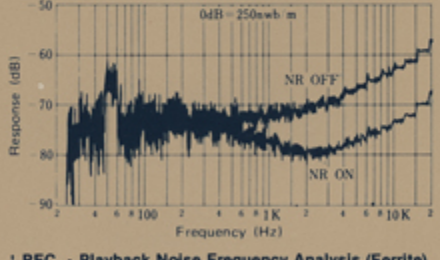




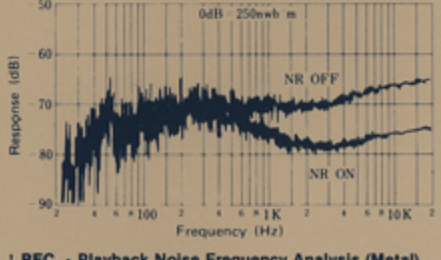
Comparison of Head Surface Wear After 1,000 Hours



Playback Frequency Characteristics AKAI Comparison



1 REC. • Playback Noise Frequency Analysis (Ferrite)



1 REC. • Playback Noise Frequency Analysis (Metal)

SUPER GX HEADS AND METAL TAPES

The use of the new metal tapes promise higher MOLs by as much as from 2 dB up to 8 dB over the MOL of SA tapes. However, the coercive force of metal tapes is generally twice as high as that of SA tapes and the residual magnetic flux density is more than double too!

That's why metal tapes can offer such highly improved performance with better frequency response under the high input power conditions, greater dynamic range in the high frequency regions and improved S/N ratios. But, such strong coercive force as is available with metal tapes requires much greater magnetizing energy than has been conventionally available up to this time. The Super GX heads are all fully capable of handling even more than these magnetizing energy requirements so as to provide an increase in MOL by a minimum of at least 2 dB.

AT SAME 10 kHz MOL

	Metal Tape			Chrome Tape			Low Noise High Output Tape		
	333Hz MML	10kHz MOL	10K/333 f Characteristics	333Hz MML	10kHz MOL	10K/333 f Characteristics	333Hz MML	10kHz MOL	10K/333 f Characteristics
	dB	dB	dB	dB	dB	dB	dB	dB	dB
Super GX Head	+11.2	−0.5	−12	+8.6	−6.4	−12	+8.8	−8.5	−12
Sendust REC/Playback Head	+10.4	−0.5	−11.4	+6.4	−6.4	−12	+7	−8.5	−11
Sendust Combination Head	+11.0	−0.5	−15	+6	−6.4	−12			

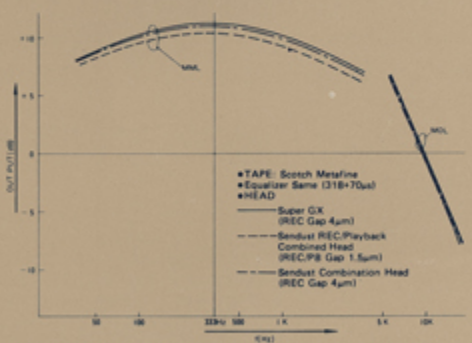
MEASUREMENT HEAD

Super GX Head Rec Gap 4μm
Sendust R/P Gap 1.5μm
Sendust combination Head Rec Gap 4μm

MML = Maximum Modulation Level
MOL = Maximum Output Level

***Low frequency MOL is said to be 3% Distortion point, the MML is shown separately.**
***10K/333f characteristics become true amount of recording equalization.**

AKAI Comparison



Metal Tape MML. MOL Characteristics Over the Entire Range

AKAI Comparison

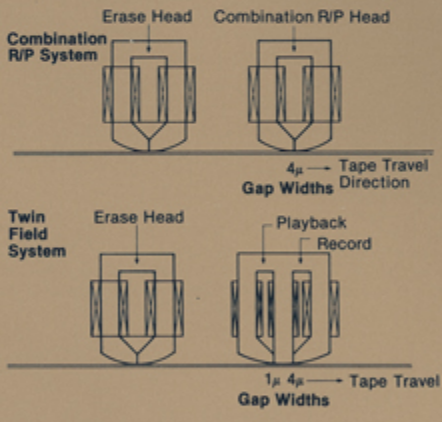
THE TWIN FIELD SUPER GX HEAD

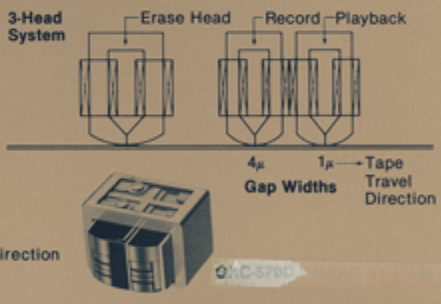
Up to this time, there have been only two basic approaches followed to design a single-structure head recording/playback system as shown in the figure. One is the 'combination' recording/playback head using a single gap and a single coil per track. This arrangement has been used for many years because of its very low cost and low production complexity. The use of the single gap involves extreme compromises in performance due to magnetic saturation of both the head material and the magnetic medium on the tape. These compromises permit reasonably good recording with poor playback characteristics.

The other approach followed was to electrically separate the recording and playback heads for each track and Akai pioneered in this development of the 3-head cassette deck such as the GXC-570D. While others were separating the record and playback heads mechanically, and thereby introducing 'azimuth loss', Akai maintained the integrity of the structure for almost no azimuth effect. And, by using the new Super GX head material plus optimum gap widths of 4 microns for recording and 1 micron for playback, Akai 3-head decks will continue to maintain their exceptional industry lead by providing the finest performance available at any price.

But, the 3-head approach is, of course, more costly than the use of a combination R/P stereo head. Enter the Twin Field head!! Here, the construction and cost is comparable to the combination R/P head while providing performance almost equal to that of the 3-head system! And, by using Super GX head material as its cores, further performance enhancements are provided plus the capability to operate perfectly with the new metal tapes.

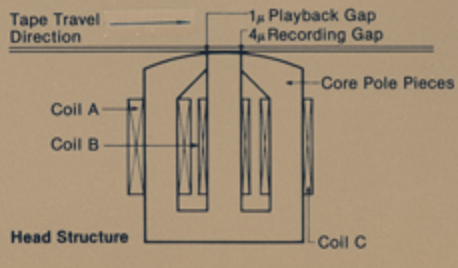
The Twin Field Super GX head is a remarkable new Akai development and is ideally timed to make optimum use of the new Super GX head material. It is an entirely new concept in single-structure stereo cassette tape deck heads aimed at the application in mid-priced cassette decks.





HOW THE TWIN FIELD SUPER GX HEAD WORKS

Again, looking at the three systems shown in the figure, note that the Twin Field system is physically similar to the combination R/P system whereas it is functionally similar to the 3-head system except that monitoring of the just-recorded signal is not possible.



In the second figure, we see a cut-away view of the three Super GX magnetic pole-pieces with two gaps per track and three independent coils per track. During recording, only coil C is used and all of the recorded signal is supplied from the 4 micron recording gap. On the other hand, during playback, two coils are used with the voltages from coils A and B aiding each other and all the energy for the signal provided from the 1 micron playback gap.

Simple enough but, it takes precision manufacturing capability to maintain the precise gap widths and coil e.m.f. characteristics across the whole frequency range. Akai has the skills required to do this with confidence to spare and thus the Twin Field concept in Super GX material brings you top class performance for application to medium-priced decks.

SUMMARY OF SUPER GX ADVANTAGES

- Better performance with any/all tape types
- 3 dB better MOL than GX
- 2 dB better MOL than any sendust materials
- Longer life for heads and tapes
- Superior metal tape operation
- Better S/N ratios
- Twin Field head deck availability
- Optimum individual gap widths for better recording and playback
- Anti-dust contact surface
- Lower distortion

AKAI

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