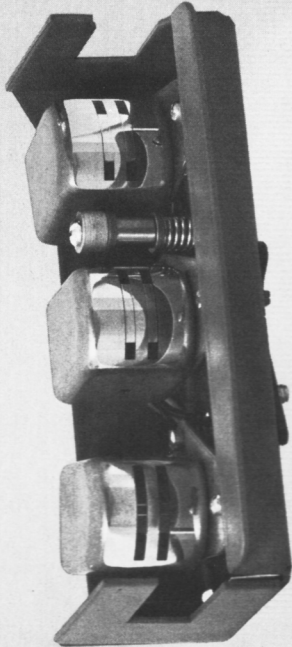


AMPEX

**FINE LINE 1200
MAGNETIC HEADS**

a story of exacting precision...



AMPEX CORPORATION
AUDIO PRODUCTS
 934 CHARTER STREET
 REDWOOD CITY, CALIFORNIA

AMPEX

"RESTRICTED AREA - ONLY AUTHORIZED PERSONNEL MAY ENTER - NO SMOKING". This sign is attached to the door of a large room in the Ampex Audio Plant - a room only a few people are allowed to enter. This closed room, strictly "off limits" to all but authorized personnel, is temperature and humidity controlled. The people who work in it must wear special lint-free smocks.

This room is where the world-renowned Ampex Audio Head is built.

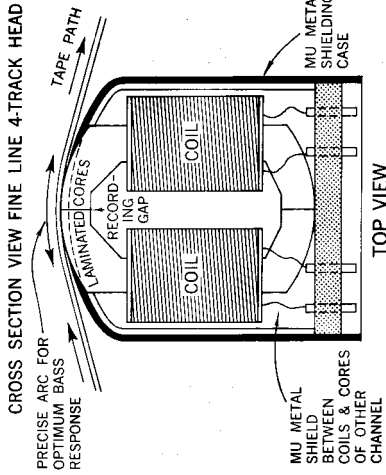
Heart of the Ampex Fine Line 1200 is its cluster of magnetic heads . . . delicate and indispensable parts whose function is both the beginning and end of tape recording and playing. Many of the processes used in manufacture of these heads, and some of the material actually utilized in their construction, are highly classified Ampex secrets. Special precision equipment located in the room was designed and built by Ampex especially for the building of the never-equalled Ampex Magnetic Head.

Ampex, since it first introduced the magnetic tape recorder in the United States over 14 years ago, has produced the finest heads ever used in a magnetic device - whether the device is used for audio, video, scientific or digital recording. Ampex leadership in the technology and engineering "know-how" of magnetic head manufacture has made Ampex the world's most **EXPERIENCED** and **DIVERSIFIED** producer of magnetic recording devices.

Fine Line 1200 Head Construction . . .

The Ampex Fine Line 1200 uses three separate heads - erase, record and playback. The construc-

tion of each head is slightly different to produce optimum performance for each of these functions. However, the overall fabrication of all three heads is similar. Each "track" of an Ampex 4-track head is made up of two hand assemble "cores" which are separated by precision shims, or a vacuum deposited material, to form a magnetic gap. These cores consist of layers of thin, delicate wafers of molybdenum permalloy (ferrite in erase head) separated from each other by an insulating film. Around each stack of wafer laminations, a coil of extremely fine wire is wound to pick-up or create changes of magnetic state in the cores. This method of using thin, insulated laminations greatly increases the expense of manufacture, but the end result of high signal-to-noise ratio, uniform performance and smooth frequency response throughout the entire audio range justifies itself in terms of Ampex Standards.



Each of the three Fine Line 4-track heads is mounted in a similar mu metal shielding case; the mu metal used for these cases is given a special pre-fabrication treatment by Ampex to insure that the finished front surface will have a hard, extra long-life polish. The snug fit and high degree of shielding possible with magnetic damping mu metal gives almost complete isolation of the heads from each other and from external magnetic and electrical fields. This results in recording and playback with negligible hum, hiss or other extraneous noise. This combination of shielding in the playback head also eliminates cross-talk, both inter-channel and the bass rumble variety.

Magnetic Gap Critical for Mid-Range and High Frequencies . . .

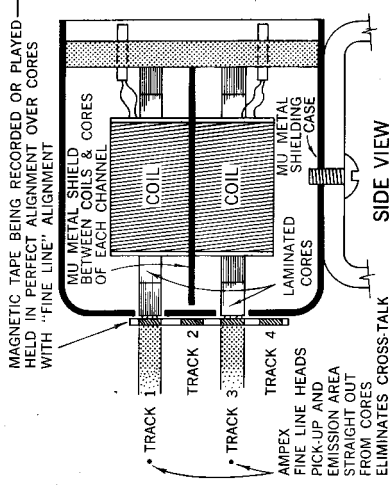
The actual recording or playing function for mid-range and high frequencies is performed in the magnetic gap between the two facing cores that make up one track of a head. This is a highly critical area . . . for the surfaces of the cores that form the walls of this gap must be absolutely true and straight. Any variation in these walls causes distortion and unpredictable frequency response in the head. Ampex takes the costly time to insure the precision of this gap by lapping the faces of the butting cores to millionths of an inch. Wear *does not* affect this gap in Fine Line heads.

The gap width in a head is determined by its function — erase, record, playback. The extremely narrow gap necessary for optimum response from

a playback head (a signal receiver) *does not* make a superior record head (a signal generator). In addition, a record head requires larger wire in its coil windings and fewer turns. This is why Ampex *does not use* one head to perform both record and playback functions. To do so would sacrifice performance in either recording or playing, or both. For superior mid-range and high frequency response, the Fine Line 1200 uses *optimized* record and playback heads. For superior high frequency response, the playback head has an extremely narrow gap — 100 millionths of an inch, about 1/50th the size of a human hair.

Shape and Finish of Magnetic Heads Critical for Bass Response . . .

The recording and playback of bass frequencies (100 cps and down) takes place over the entire



FOR TOP PERFORMANCE
always use Ampex tape -

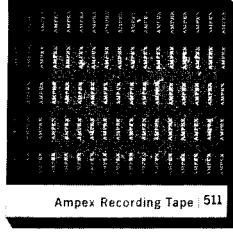
surface of a magnetic head. The "flatness" and total range of bass response is dependent upon the precise amount of head-to-tape contact - which in turn is dependent upon the precise shape and polish of the head. Ampex uses special, custom-designed machines to grind and polish each Fine Line head to a perfectly shaped and polished arc. The technology and extra care used by Ampex at this stage of manufacture results in bass response without severe bass variations, which are called "bumps."

In addition, this overall perfection of shape and polish also minimizes dips and waves that would prevent intimate tape contact with the head gap and also result in a loss of high frequency response.

Ampex Fine Line Heads — Exceptional Performance and Long Life

Noted for their exceptional long life, Ampex heads have been known to operate for as many as ten thousand running hours without variation from original specifications. You can expect a long life from Ampex heads.

Although a magnetic head is simple in theory, the building of one to meet the quality standards of Ampex is a complicated task requiring experience in hundreds of technologies and a know-how for precise manufacture. Ampex has this, but not content with resting on their world-wide reputation, Ampex engineers constantly strive to develop even better heads. If a better head is possible, it will be designed and manufactured by Ampex, and *it will be the standard of excellence throughout the industry.*



AMPEX 500
*premium quality
tape for semi-
professional and
home recording . . .*

Ampex 500 Series is a *premium* quality audio recording tape with exclusive Ferro-Sheen® oxide surface for maximum frequency response, clean operation and low head wear. It is available on 5 or 7 inch plastic reels and is the best quality tape for semi-professional and first-rate home recording. It is designed for optimum performance on Ampex recorders. An Ampex SIGNATURE BINDING and gold foil title tab is included with each reel of Ampex tape so your finished recording will have an attractive library binding with a personalized title.

TYPES OF AMPEX 500 TAPE

No. 531	1.5 mil Mylar* base	strongest, hardest wearing
No. 511	1.5 mil Acetate base	strong and economical
No. 541	1.0 mil Mylar* base	extended play, strong
No. 521	1.0 mil Acetate base	extended play, economical
No. 551	0.5 mil Mylar* base	extra-long play

*T.M. DuPont