

THE AMPEX MAGNETIC HEAD

The head assembly of an Ampex magnetic tape recorder is the heart of the equipment. The technical and detailed know-how required for the fabrication of these head assemblies has made Ampex the foremost manufacturer of magnetic recording equipment in the world today.

In theory, a tape recorder head assembly is a simple device. In practice however, building a head assembly is a complicated task requiring extremely precise manufacturing techniques. There are three head stacks in an assembly—erase, record and playback. In recording, the erase head eliminates any previous recording from the tape. The record head puts a new signal on the tape by magnetizing the iron oxide particles in the coating on the tape. In playback, the magnetic flux in the *moving* tape induces a voltage in the playback head.

The design and construction of these heads is extremely critical. Their surfaces are lapped to finishes so smooth that variations are measured in wave lengths of light. In typical playback heads the gap is .00025 inch, which give

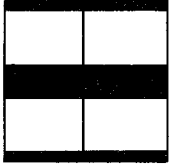
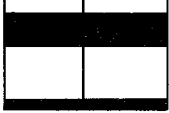
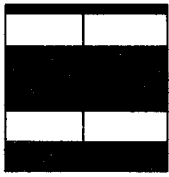
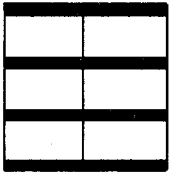
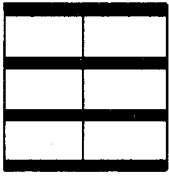
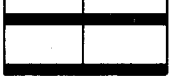
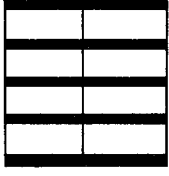
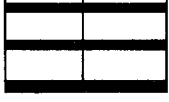

an indication of the precision required in building the heads.

Each of these heads is designed for a specific function with *no compromise* in the overall head assembly. Professional use demands top performance and there is no room for design compromise.

The superb design, engineering and manufacturing care built into Ampex head assemblies assures dependable long life and economical operation at the lowest cost per operating hours.

A portion of the section following will describe briefly by photography the different types of heads used in Ampex Multichannel equipment and a few significant features of development and alignment.

Head assemblies of the Multichannel equipment may be ordered through Ampex Corporation by including information relating to equipment type, equipment serial number, Ampex catalog number and the description of the part.

MODEL	ERASE HEAD	HEAD CONFIGURATION	AMPEX CATALOG NUMBER
300-2 STEREO	FULL TRACK		30028-01
	2-TRACK		30028-02
300-2M 2-TRACK MASTER STEREO	NO ERASE		80000-02
	NO ERASE		30471-01
300-3 3-TRACK AND 3-TRACK SEL-SYNC	FULL TRACK		30471-03
	3-TRACK		30471-04
300-4 4-TRACK AND 4-TRACK SEL-SYNC	NO ERASE		(OBTAINED ONLY THROUGH AMPEX CONTRACT ENGINEERING)
	FULL TRACK		
	4-TRACK		

NOTE:

ERASE, RECORD AND PLAYBACK ALL UTILIZE THE SAME CONFIGURATION

STANDARD MULTICHANNEL HEAD CONFIGURATION

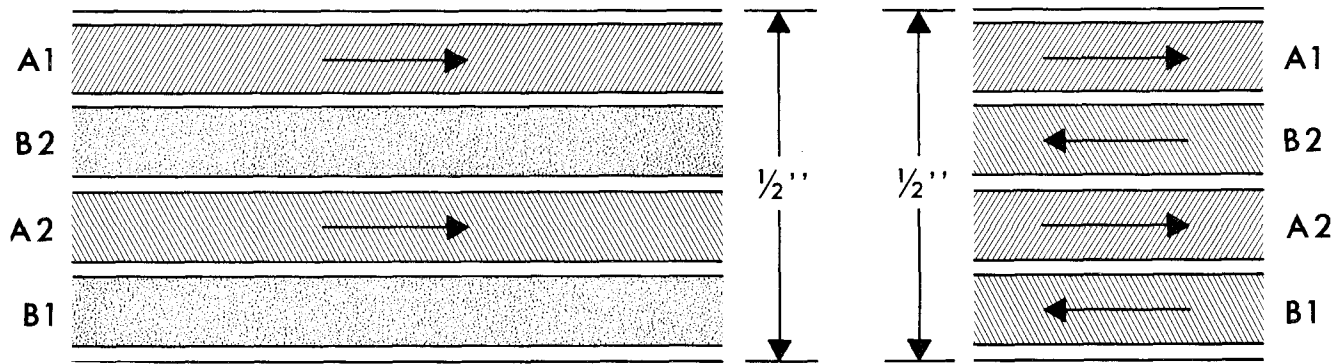
Head Assembly

The head assembly is housed in a die cast housing and contains three heads used in the operating process. The heads are respectively erase, record and playback as viewed from left to right when facing the machine. The gate on the assembly holds the playback and record shield covers and the tape-lifting fingers. The function of the tape lifting fingers is to remove the tape from the heads when the gate is open during the REWIND and FAST FORWARD operation. The tape may leave a deposit on the heads if allowed to contact them at high speeds.

Such a deposit will seriously impair the performance of the machine and should be guarded against by always opening the gate in the FAST FORWARD and REWIND modes. If a deposit is left, it may be removed by xylene on a soft rag. Never use metal of any kind to touch the head surfaces. The gates should never be allowed to spring shut, but should be closed gently.

Dual Track Head Assemblies

The dual track head assembly is constructed with full track erase or two track erase opera-

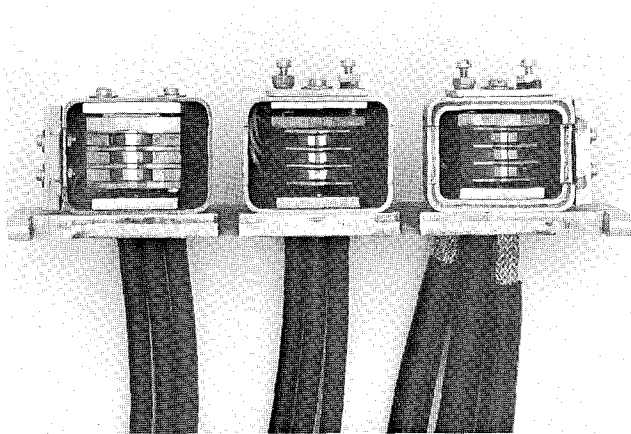


TRACK CONFIGURATION MODEL 300-2M

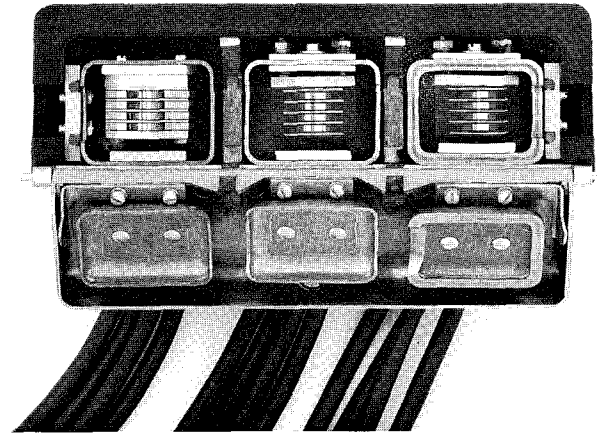
tion, utilizing 1/4-inch magnetic tape. (See chart for information on head configuration and Ampex Catalog Numbers).

A special designed head configuration in the 300-2M, dual track, no erase and utilizing 1/2-inch magnetic tape is shown in the chart in this

section of the manual. The purpose of this special head assembly is to record special 1/2-inch wide master tapes on which are recorded two dual track stereophonic programs appearing on opposite directions on the tape. (See chart for head configuration and Ampex Catalog Numbers.)



THREE TRACK HEAD ASSEMBLY



FOUR TRACK HEAD ASSEMBLY

Multichannel Head Assemblies

The three track head assembly (for Series 300-3 equipment) can be obtained containing no erase, a full track erase or a 3 track erase head, using 1/2-inch magnetic tape. This three track configuration permits recording of all three tracks separately or simultaneously. When using the Sel-Sync accessory unit with this Series 300-3 equipment the same head assembly is utilized.

The four track head assembly (for Series 300-4 equipment) can be obtained only by special order through Ampex Contract Engineering. Using 1/2-inch magnetic tape, this head assembly may be purchased with no erase, a four track erase or a full track erase head depending on the customer demands. When using the Sel-Sync accessory unit with this Series 300-4 equipment the same head assembly is utilized.

PART DESCRIPTION

INDIVIDUAL REPLACEABLE HEAD PARTS

*AMPEX
PART NUMBER*

Gate Spring, two required	438-01
Gate, Pin, two required	403-006
Glass Rod, Tape Guide 13/16 inches long, two required	457-00
Glass Rod, Tape Guide, 1/2 inch long, four required	1372-00
Gate Assembly (1/4-inch tape)	479-00
Gate Assembly (1/2-inch tape)	5635-00
Housing (1/4-inch tape)	433-01
Housing (1/2-inch tape)	5639-00



HEAD AZIMUTH ADJUSTMENT