

DESCRIPTION AND PERFORMANCE CHARACTERISTICS

GENERAL

The AMPEX Series 351 Magnetic Tape Recorder/Reproducers are high quality precision instruments designed for the professional user who requires the finest and most faithful recording and reproduction.

A basic recorder/reproducer in the 351 series consists of a tape transport for operation at tape speed pairs of $3\frac{3}{4}$ inches per second (ips) and $7\frac{1}{2}$ ips or $7\frac{1}{2}$ and 15 ips; a head assembly for use with the $\frac{1}{4}$ -inch magnetic tape; and an electronic assembly which contains the record amplifier, reproduce amplifier, bias and erase oscillator, and power supply — all featuring etched board construction.

NOTE

This manual is primarily intended for recorders using Ampex Catalog Number 30960 electronics. In instances where there are significant differences between this electronics assembly and earlier models using Catalog Number 30750 or 30950 electronics an appropriate notation will be found.

Head assemblies for either full (single) track, half track or two track stereophonic (351-2) operation are available.

CCIR equalization can be obtained on request

when ordering equipment.

Several mounting arrangements are offered—console, two case portable, and rack mount.

In the portable equipment, one case contains the tape transport and the other houses the electronic assembly.

PERFORMANCE CHARACTERISTICS

Tape Width 1/4-inch

Tape Speed Pairs 3 3/4-7 1/2 ips
7 1/2-15 ips

<i>Frequency Response</i>	<i>Speed (ips)</i>	<i>Response (Cycles per second)</i>
	3 3/4	±2 db 50 to 7,500
	7 1/2	±2 db 40 to 10,000
	15	±4 db 30 to 15,000 ±2 db 30 to 15,000

<i>Signal-to-Noise Ratio</i>	<i>Speed (ips)</i>	<i>Peak Record Level to Unweighted Noise (db)</i>
	3 3/4	50
	7 1/2	60 full track
	15	55 half track or two track Same as 7 1/2 ips

Peak record level is that level at which the overall (input to output) total rms harmonic distortion does not exceed 3 percent when measured on a 400 cycle tone. Noise is measured when erasing a signal of peak recording level in the absence of new signal. Bias, erase and reproduce amplifier noise are included in the measurement. All frequencies between 50 and 15,000 cycles are measured.

<i>Flutter and Wow</i>	<i>Speed (ips)</i>	<i>Flutter and Wow (percentage rms)</i>
	3 3/4	.25%
	7 1/2	.2 %
	15	.15%

Flutter and wow measurements include all components between 0 and 300 cycles using an rms value of constant amplitude sine wave flutter.

<i>Recording or Reproducing Time (NAB 10 1/2 Inch Diameter Reels, 2400 feet of tape)</i>	<i>Speed (ips)</i>	<i>Half Track</i>		<i>Full Track</i>	
		<i>(hrs)</i>	<i>(min)</i>	<i>(hrs)</i>	<i>(min)</i>
	3 3/4	4	16	2	8
	7 1/2	2	8	1	4
15	1	4		32	

Starting Time The tape is accelerated to full speed in less than 1/10 of a second.

Stopping Time When operating at 15 ips, the tape moves less than two inches after the STOP button is pressed.

<i>Reproduce Timing Accuracy</i>	<i>Accuracy (percentage)</i>	<i>Accuracy (second)</i>	<i>Length of Recording (min)</i>
	±.2%	±3.6	30

Rewind Time Approximately 1 minute for a full 2,400 foot NAB reel.

Controls

- Tape Motion** All tape motion is controlled by four pushbuttons, PLAY, STOP, FAST FORWARD and REWIND.
- Record Control** A separate RECORD button on the face of the electronic assembly, when pressed, energizes the record relay which drops out when the STOP button is pressed. The stereophonic function (two track) is controlled by pressing the RECORD buttons on both electronic assemblies simultaneously. In two track operation, for consistency, the master electronic assembly is usually connected to the upper track in the head assembly so that, when the RECORD button on the master (only) is pressed, recording takes place on the upper track.
- Tape Speed** Tape speed can be changed by the TAPE SPEED switch. LOW or HIGH positions are used to select drive motor windings.
- Equalization** An EQUALIZATION switch on the face of the electronic assembly provides a means for selecting LOW or HIGH speed equalization appropriate to the tape speed used.
- Reel Size** A REEL SIZE toggle switch on the tape transport makes possible selection of the proper tape tensioning for the NAB 10½ inch diameter reel or the EIA 5 inch and 7 inch reels.
- Record Inputs** The INPUT TRANSFER SWITCH provides a means for selecting three different types of inputs:

Input

	<i>Input Impedance</i>	<i>Minimum Input Signal that will produce Operating Level (1% tape characteristic distortion)</i>
MICROPHONE	150 and 250 ohms nominal (transformer can be strapped for 30-50 ohms nominal.)	150 microvolts
BAL BRIDGE	200K ohms	-10 dbm
UNBAL BRIDGE	100K ohms	-10 dbm

Reproduce Output

Zero indication on the v-u meter corresponds to +8 dbm (± 1 db). Sufficient gain and power handling capabilities exist to feed a +14 vu line output into 600 ohms balanced or unbalanced. The center tap of the output transformer can be strapped to ground for balanced output. Plus 4 vu also can be obtained by strapping. (See INSTALLATION).

Head Housing

The erase, record, and reproduce heads are contained in a single head housing (See SECTION 6 on HEAD ASSEMBLIES).

Monitoring (aural and visual)

The signal on the tape can be monitored while the equipment is recording. Two phone jacks are available to allow monitoring the record input signal, or the output signal from the reproduce head. A switch provides a means for making direct comparison between the original program and the recorded program. The same switch transfers a 4 inch vu meter for level comparison and visual monitoring. The vu meter also is used to indicate bias and erase current.

Power Requirements

The half track and single track equipment requires 2.0 amperes at 117 volts ac and is available for 50 or 60 cycle line frequency. Two track equipment requires 2.5 amperes at 117 volts ac, 50 or 60 cycles.

When the Ampex Model 375 Precision Frequency 60 cycle amplifier is used with the equipment, power requirements are greater by 2.5 amperes: single track equipment 4.5 amperes; dual track 5.0 amperes.

EQUIPMENT AVAILABLE

<i>Dimensions and Weight (in.) (lb.)</i>	<i>Item</i>	<i>Height</i>	<i>Depth</i>	<i>Width</i>	<i>Weight</i>
<i>Rack Mount</i>	Tape Transport	15¾ (rack space)	8 (behind rack)	19	50
	Electronic Assembly	7 (rack space)	8½ (behind rack)	19	18
<i>Console</i>	Console	48 (max)	28½ (max)	24½	155
<i>Two Case Portable</i>	Tape Transport Case (Equipment in Case)	15½	17	20¼	69
	Electronic Ass'y. Case (Equipment in Case)	9	13	21	38
	Two Track Stereophonic Electronic Ass'y. Case (Equipment in Case)	16½	13	21	80

Remote Control

Part Numbers for Remote Control units are located in the Electronic Section Parts List.