

AMPEX

4890161-03

AG-350 & AG-355 Recorder/Reproducer

Operation and Maintenance Manual

ISSUED: JANUARY 1966

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ASTERISK DENOTES PAGES AFFECTED BY LATEST CHANGE.

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DESCRIPTION**1.1 GENERAL**

Ampex Models AG-350 and AG-355 Magnetic Tape Recorders and Reproducers are derived from the famous Ampex Series 350 equipment. Using the basic transport made famous by the Series 350, these machines are equipped with solid state electronic circuitry which provide high quality performance coupled with a long, dependable, operating life.

The Model AG-350 (see Fig. 1-1) is a recorder and reproducer, while the Model AG-355 is a reproduce-only equipment. Either is available in a two channel or single channel version.

Three mounting arrangements are available. The equipment may be ordered mounted in a console as shown in Fig. 1-1 or portable cases, or unmounted (to be installed in racks or in custom consoles).

1.2 TAPE TRANSPORT

The tape transport (see Fig. 1-2) handles 1/4-inch magnetic tape on reels up to 10-1/2 inches in diameter. Two tape speeds are available -- either 3-3/4 and 7-1/2 inches per second (ips) or 7-1/2 and 15 ips.

Tape motion is controlled by pushbutton switches adjacent to the head assembly, while selection of tape speed and reel size is provided by two toggle switches. Manually operated tape

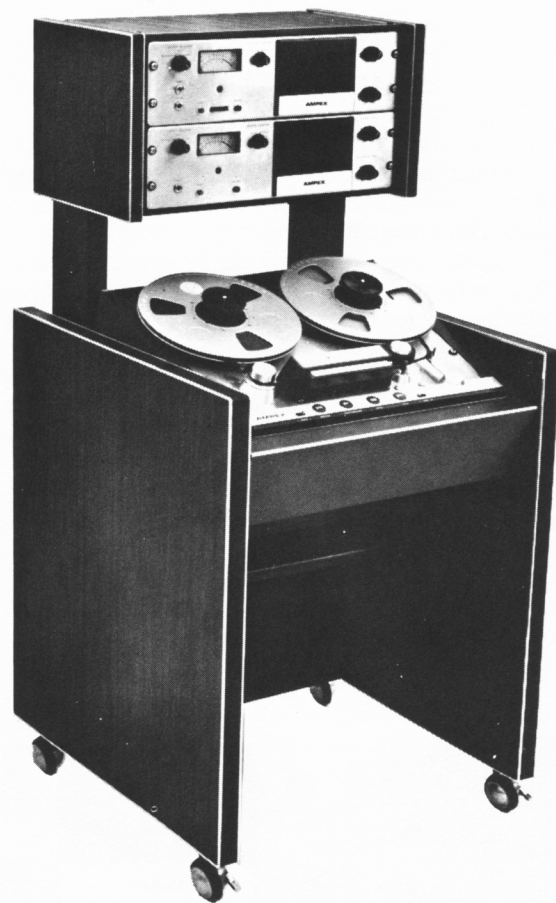


Fig. 1-1 Ampex Model AG-350, Two Channel, Recorder/Reproducer Console Mounted

lifters, actuated when the head gate is open will remove the tape from contact with the heads during fastwinding operation.

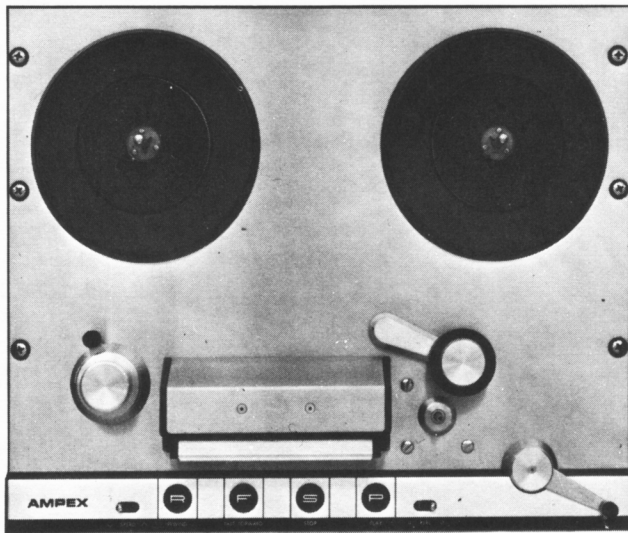


Fig. 1-2 *Tape Transport, with Head Assembly*

1.3 ELECTRONIC ASSEMBLY

On record/reproduce equipment, one electronic assembly (see Fig. 1-3) is provided for each channel. This assembly contains all circuitry for recording and reproducing one channel of program material. Plug in equalizer modules are inserted in receptacles, beneath a cover on the front panel; equalization is switched automatically when tape speed is selected at the transport. A record selector switch allows recording on any or all channels, or places the electronics in a "safe" condition where no recording is possible. With two channel equipment, one electronic assembly acts as a "master", the other as a "slave"; the master assembly controls power application to the entire system, and also controls the record function of the system. A vu meter provides a visual monitoring function for record, reproduce, and bias levels.



Fig. 1-3 *Record/Reproduce Electronic Assembly*

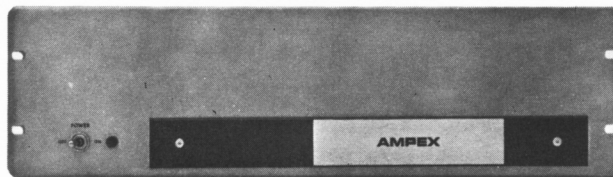


Fig. 1-4 *Reproduce-only Electronic Assembly*

One electronic assembly (see Fig. 1-4) containing either one or two audio reproduce modules and one power supply module, is provided with reproduce-only equipment. Equalization components are built into the assembly, so no plug-in modules are provided; equalization switching is automatic, controlled by the tape speed switch. The vu meter on this assembly is an optional accessory.

All assemblies can be strapped to provide either a +8 dbm or +4 dbm output into a 600 ohm line. A switch on the back panel provides internal termination of 600 ohms for test procedures or if the equipment is to feed a high impedance load.

1.4 HEAD ASSEMBLIES

The head assembly for a single channel recorder/reproducer contains three head stacks -- erase, record, and reproduce. Each stack contains one head, either full track or half track.

Standard head assemblies for two channel recorder/reproducers are also in three stacks, containing two track erase, two track record, and two track reproduce heads. A special four stack head assembly is available, containing a two track erase head, two track record head, 1/4 track reproduce head, and two track reproduce head. A switch selects either the 1/4 track or two track reproduce head.

NOTE

The 1/4 track reproduce head stack contains two heads of proper width and spacing to reproduce four track stereophonic recordings.

Single channel reproduce-only equipment utilizes a head assembly with one stack, containing either a full-track or half track reproduce head. On two channel reproduce-only units, a two stack assembly -- containing a 1/4 track and two track reproduce head -- is provided.

1.5 ACCESSORY EQUIPMENT

1.5.1 Line Input

On record/reproduce equipment, an accessory receptacle is provided on the back panel of the electronic assemblies for optional plug-in units. No accessory unit is required if the equipment is to be fed from an unbalanced line. If a balanced line input is desired, either of two input transformers must be plugged into this receptacle. One of these optional accessories (Catalog No. 4580116-01) is a balanced bridging transformer with unity gain; the other (Catalog No. 4580116-02) is a balanced matching transformer with a 14 db gain.

A microphone preamplifier (Catalog No. 4010040-01) can also be inserted in this receptacle to allow recording directly from a microphone.

A switch on the back panel of the electronic assembly allows the selection of unbalanced line (no accessory unit employed) or the optional accessory that is used.

1.6 SPECIFICATIONS

1.6.1 Tape Transport.

Tape Width	1/4-inch
Tape Speed	Two speeds: Either 3-3/4 and 7-1/2 ips or 7-1/2 and 15 ips.
Maximum Reel Size	10-1/2-inch NAB, will operate with reel sizes as small as 5 inches.
Start Time	Tape will accelerate to selected speed within 0.1 second after the play pushbutton is pressed.
Stop Time	Tape will not travel more than the indicated distance after the stop pushbutton is pressed: 15 ips -- 2 inches 7-1/2 ips -- 1 inch 3-3/4 ips -- 1/2 inch
Speed Accuracy	±0.2%, which corresponds to 3.6 seconds in a 30 minute recording.

1.6.2 Electronics

Input	100,000 ohms unbalanced. Will accept input signal levels as low as -18 dbm for normal recording level.
Output	Will feed a 600 ohm line, balanced or unbalanced, with a nominal output level of +8 dbm or +4 dbm (depending on internal strapping). Maximum playback output level before clipping is at least +28 dbm.

1.5.2 Remote Control Unit

Operation of the tape transport can be remotely controlled by an optional remote control unit. This unit is available in two versions. One (Catalog No. 01-96510-01) is a desk type unit, completely wired and ready to plug into the remote control receptacle on the tape transport control box; this unit is supplied with a 30 foot interconnecting cable. The other remote control (Catalog No. 01-96520-01) is mounted on a panel, suitable for a custom console installation. The panel is wired, but no interconnecting cable is furnished.

If remote control is not used, a dummy plug (provided) must be inserted in the connector on the transport.

1.5.3 Motor Drive Amplifier

A motor drive amplifier can be plugged into a receptacle on the transport to provide a precise a-c drive for the capstan motor. If such an amplifier is not used, a dummy plug (provided) must be inserted in the receptacle.

Flutter and Wow
Measured according to
ASA Z57.1 1954, measuring
all components from
0.5 to 200 cps.

15 ips; not more than 0.11% rms
7-1/2 ips, not more than 0.14% rms
3-3/4 ips, not more than 0.18% rms

Overall Frequency Response
(500 cps reference)

15 ips -- ±2 db 30 to 18,000 cps
7-1/2 ips -- ±2 db 40 to 10,000 cps
 +2 -4 db 30 to 15,000 cps
3-3/4 ips -- ±2 db 50 to 7,500 cps

Overall Signal-to-Noise Ratio

<u>Type of Head</u>	<u>15 ips</u>	<u>7-1/2 ips</u>	<u>3-3/4 ips</u>
Full Track	60 db	60 db	55 db
Half Track or Two Track	55 db	55 db	50 db

Signal-to-noise is measured from peak record level, which is 6 db above normal operating level, to unweighted noise. Noise is measured while erasing a 500 cps tone which is recorded at peak record level, using a filter to attenuate noise outside of the audio spectrum.

Even-Order Distortion

The second harmonic distortion of a 500 cps signal recorded at normal record level is less than 0.4%

1.6.3 General

Power Requirements

105-125 volts a-c, 60 cps (equipment available for 50 cps operation).

Power Consumption

Approximately 2.5 amperes at 117 volts a-c for a two channel record/reproduce equipment.

Magnetic Tape

Specifications are based on the use of professional quality magnetic tape, such as Ampex No. 631 or equivalent.