Exclusively for you

AMPEx

Teresa

OWNERS MANUAL
WARRANTY

WELCOME TO THE GROWING FAMILY OF AMPLEX OWNERS. You have purchased one of the finest pieces of equipment of its kind available today. This recorder was accurately adjusted, carefully inspected and thoroughly tested before shipment from the factory and found to meet the recognized high quality standards of Ampex products. If it does not function properly or if there is some question about how it should operate, read your instruction book carefully—you may find that it can be easily corrected.

Ampex Audio, Inc., warrants to the purchaser of each new Ampex recorder-reproducer and/or Amplifier Speaker that any part thereof (with the exception of tubes) which proves to be defective in material or workmanship within ninety (90) days from the date of original purchase for use will be repaired or replaced in accordance with the terms of this warranty.

If any part except tubes should prove to be defective during the aforementioned ninety-day period, such defects should be brought to the attention of the Ampex Audio dealer from whom the equipment was purchased. If upon examination the part is determined to be defective in material or workmanship, the dealer will replace the defective part at no charge. The responsibility of Ampex Audio, Inc., is limited to making a new or factory-reconditioned replacement part available to the dealer through an Ampex Audio Authorized Service Center. It is the responsibility of the dealer to replace defective parts, either by his own service personnel or through an Ampex Audio Authorized Service Center.

The foregoing is in lieu of all other warranties, expressed, implied or statutory and Ampex Audio, Inc., neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with said equipment.

THIS WARRANTY IS EFFECTIVE ONLY WHEN ACCOMPANYING CARD IS FULLY AND PROPERLY FILLED OUT AND RETURNED TO FACTORY WITHIN TEN (10) DAYS OF ORIGINAL PURCHASE DATE.

Ampex Audio, Inc. reserves the right to make design changes, additions to, or improvements in its products without imposing any obligation upon itself to install them in previously manufactured products.
Dear Ampex Owner:

Congratulations on your selection of Ampex products. They represent the finest development of the art of music recording and reproduction. The amazing performance capabilities engineered and manufactured into our products will, with proper care, provide you with endless hours of pleasure.

The care you give your Ampex Music Center is important. In the manual, you will find important recommendations for its operation and additional suggestions for periodic maintenance to help keep your Ampex in top condition for many years of recording and listening pleasure.

To make certain your equipment has the best of care, it will pay you to obtain service from the men who know it best. Through your Ampex Audio, Inc. dealer, or Authorized Service Center, a staff of factory trained technicians, equipped with many years of experience, up-to-date training, and the latest in tools and electronic test equipment are ready to serve you.

Your dealer is vitally interested in helping you obtain efficient operation and dependable carefree performance. By all means, take advantage of his knowledge of Ampex' products.

Once again, congratulations and pleasant listening with your new Ampex Music Center.

Sincerely,

AMPEX AUDIO, INC.

Kenneth R. Hall, Manager
Service Engineering Department
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### AMPEX UNIVERSAL STEREOPHONIC RECORDER/REPRODUCER

The Ampex Universal stereophonic recorder/reproducer is an instrument of full professional quality, capable of essentially distortionless frequency response from 30 to 20,000 cycles per second at the operating speeds of 1-1/2 inches per second and 30 to 15,000 cycles per second at 3-3/4 inches per second. Its precision-engineered timing accuracy is such that it offers perfection of pitch held to tolerances of less than one-third of a half-tone. Playing times, using standard (0.02") tape, log play (0.015") tapes, and extra-long play (0.005") tapes are as follows:

#### A. 4-TRACK STEREO TAPES

<table>
<thead>
<tr>
<th>Speed</th>
<th>Time</th>
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<tbody>
<tr>
<td>1200 foot reel</td>
<td>3-3/4 ips</td>
</tr>
<tr>
<td>1800 foot reel</td>
<td>3-3/4 ips</td>
</tr>
<tr>
<td>2400 foot reel</td>
<td>3-3/4 ips</td>
</tr>
</tbody>
</table>

#### B. 2-TRACK STEREO TAPES

<table>
<thead>
<tr>
<th>Speed</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 foot reel</td>
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<td>3-3/4 ips</td>
</tr>
<tr>
<td>2400 foot reel</td>
<td>3-3/4 ips</td>
</tr>
</tbody>
</table>

#### C. MONOAURAL TAPES, HALF-TRACK

<table>
<thead>
<tr>
<th>Speed</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 foot reel</td>
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</tr>
<tr>
<td>2400 foot reel</td>
<td>3-3/4 ips</td>
</tr>
</tbody>
</table>

REWIND TIME: Less than 90 seconds for 1200 foot reel.

RECORD INPUTS: High impedance line inputs (radio/TV/phone/auxiliary) 0.3V rms for program level; high impedance microphone inputs.

PLAYBACK OUTPUTS: Approximately 1/2V rms from cathode follower when playing program level tapes.

PLAYBACK FREQUENCY RESPONSE: 30-20,000 cps at 7-1/2 ips; 30-15,000 cps at 3-3/4 ips.

Within ±2 db 50-10,000 cps at 5-3/4 ips, 50 db dynamic range;
Within ±2 db 50-15,000 cps at 7-1/2 ips, 55 db dynamic range.

FLUTTER AND WOW: Under 0.25% rms at 7-1/2 ips; under 0.25% rms at 3-3/4 ips.

### ELECTRO-ACOUSTIC TRANSDUCERS

To present to the ear a completely accurate, undistorted recreation of the original sound, Ampex engineers have designed an acoustically and electrically integrated system of components which, functioning together, far transcends any previous concepts of amplifier-speaker combinations. Because each part of the system—amplifier, sound projector, and enclosure—is engineered with as much attention to its function within the system as for its individual operation, the result is coverage of a far greater portion of the audio spectrum with lower distortion and smoother performance than ever before attainable at any power level. Optimum crossover is effected through the use of multiple L/C networks. All parts of the system are Ampex-designed and built.

### HIGH-FREQUENCY SOUND PROJECTOR

This unit is essentially omni-directional, unlike conventional "tweeters" utilizing a rigid spherical piston in place of the usual cone or horn. Its wide angular distribution is highly important to proper stereophonic effect, since it is the high-frequency end of the audio spectrum which contributes most to the spatial relationships of stereo sounds.

Frequency response is absolutely flat in the critical ranges, and when operated under laboratory conditions, properly baffled in the anechoic chamber and used with its companion crossover network, the absolute acoustic pressure response, on-axis, is within ±2 db from the mid range crossover point to 15,000 cps. The net effect, either in the laboratory or in your living room, is uniquely satisfying performance. This spherical projector has, in fact, exceeded the expectations and the critical performance parameters of its designers.

### 12" LOW-FREQUENCY SOUND PROJECTOR

Utilizing a high-efficiency magnet circuit and edgewound ribbon voice coil, this bass unit provides an unusually smooth response, free of peaks and valleys and extraneous sounds. One of the important factors contributing to this performance is a specially engineered cone design, with a carefully executed edge treatment for the purpose of eliminating the effects of edge resonances. This edge design provides high flexibility without unwanted spurious radiations—particularly critical in stereophonic reproduction because of the relatively poor direction—resolving ability of the human ear at lower frequencies. Throughout its range, this bass projector within its acoustic chamber, delivers more audio power with less distortion than the great majority of conventional speaker systems available today.

### AMPEX AMPLIFIERS

The function of the amplifier section of the Ampex electro-acoustic transducer is to accept input signals from any source, and without introducing any alteration in the form of the signals, amplify them linearly to whatever level is desired. To accomplish this, Ampex amplifiers provide operating characteristics (unequalized) flat within ±0.1 db, with total harmonic distortion less than 0.5 of 1%, throughout the maximum range of human hearing ability, at rated output.

Amplifier units designed for the Ampex Custom Series are rated at 15 watts each, and together deliver an effective 30 watts (60 watts peak) of audio power. Noise and hum are 85 db below rated output, and input sensitivity is 0.58 V to develop rated power.

The output stages use two new beam power type 6973 output tubes in class AB push-pull operation.

Output circuitry is of the distributed load type, providing ultra-linearity of response.
ANECHOIC TEST CHAMBER PROCEDURES

To insure that every Ampex transducer meets or exceeds its specifications, it is performance-checked in comparison with production standards developed in the Ampex anechoic chamber. The Ampex audio chamber is unique in that it is used as an extension of production techniques in controlling product quality off the assembly line.

Actual production designs of electro-acoustic transducers—amplifiers, sound projectors and enclosures—are introduced into the chamber's conditions of free space wave propagation for evaluation and determination of absolute values of performance. Standards thus established are used to check the performance of every transducer as it is assembled into a home music system, insuring that its future owner will receive the benefits of a properly integrated and completely tested group of acoustical components.

AMPEX FM AND AM STEREOPHONIC TUNER

One of the most important performance criteria in the reproduction of stereophonic broadcast is that of balance. The Ampex stereophonic FM and AM tuner was designed throughout its circuitry to provide optimum balance between the two parallel channels at all levels of operation. This is not only important for listening enjoyment, but critically important for stereophonic recording off the air.

The independent, precisely balanced channels of the Ampex stereophonic tuner offer unusually good selectivity and sensitivity. In measurements made in accordance with IEC standards, quieting sensitivity is .5 microvolts for 0.0001% of quieting (measured at 300 ohm antenna terminals). Maximum sensitivity is .5 microvolts for 0.1 V into a 1 megohm load. In performance tests made by an independent laboratory, the tuner's oscillator radiation was extremely low—only a small fraction of the amount permitted by FCC regulations. All RF, IF and AF sections are shock-mounted to reduce possibility of microphonics.

FM operation is drift-free, and the tuner incorporates full electronic AFC (automatic frequency control) in the circuit, easily switched "on" or "off" from front panel. The FM tuner uses a 3-gang tuning capacitor with a stage of tuned RF, AM circuitry includes broad and sharp selectivity positions, 3-gang tuning capacitor with stage of tuned RF, and incorporates a Bridge-T, inductance-tuned, 10 kc whistle filter for sharp and effective elimination of heterodynes. Tube complement includes 11 single-purpose and 6 multi-purpose tubes, for an effective complement of 23 tube functions. Engineering features include accurate visual tuning indicators for achieving properly balanced tuning, built-in antennas for console operation, and convenient, simple controls and flywheel tuning mechanisms. The Ampex stereo tuner also features provision for adapting to FM multiplex stereo broadcast reception. Frequency response—FM: 20-20,000 cps; AM: 20-8,000 cps. Total distortion less than 1/4 of 1.

AMPEX AUDIO CONTROL CENTER

The Ampex audio control center enables you to instantly select any desired source of sound, internal or external, for stereophonic or monaural reproduction. Each of the two channels has independent push-button-controlled inputs permitting selection of music from tape, records, FM-AM tuner, TV tuner, or other external source.

Separate controls are provided for bass and treble response, permitting individual adjustment as desired by the listener, with a maximum boost or cut of 16 db. Two loudness controls—one for each channel—are mounted on concentric shafts and friction-coupled to permit setting and maintaining uniform calibration and balance of audio levels. These controls provide treble and bass compensation for maximum listening pleasure at any desired volume level.

The audio control center utilizes a self-contained transformer power supply, with metallic rectifiers to minimize heat and extend life of components. Pre-amplifier tube heaters are DC-powered to insure lowest hum and noise characteristics. Four dual purpose low noise tubes are used, performing eight separate tube functions. Two dual purpose 12AX7's are feedback-equalized to either RIAA phonograph input (magnetic cartridge) or tape playback equalization (direct from tape heads). A 12AY7 dual purpose tube serves as a tone control amplifier and incorporates inverse feedback to provide distortion-free tone control action.

Two separate cathode follower outputs are provided by the 12AX7 utilized in this unit. The latest type of tone control contour is used—one especially designed with constant slope and variable turnover point. The advantages of this type of control are immediately apparent when used in conjunction with wide range, distortion-free amplifier and sound projectors such as those in all Ampex products. Over-all frequency response (tone controls flat) 50 to 20,000 cps ± 1 db. Total distortion less than .5 of 1.

4-SPEED STEREO/MONOAURAL RECORD CHANGER

This outstanding record changer, made for Ampex by Garrard, incorporates a high quality General Electric dual-axis variable reluctance pickup for reproducing stereo and monaural discs interchangeably. Features include a powerful constant-speed 4-pole motor, extra quiet heavily weighted turntable, automatic shut-off and swivel-mounted tone arm. The changer incorporates a special Ampex modification to permit operation with full bass response, avoiding distortion which can be otherwise noticeable at high power levels. This modification consists of a special suspension system to provide adequate acoustic isolation.

DIMENSIONS

SIGNATURE: 64" x 20" x 33" high
CRESCEDEO: A-423 CW, CT, FP, TM
51" x 22" x 32" high
A-423-B
47" x 21-1/2" x 32" high
CUSTOM: 52-1/2" x 19" x 26-1/2" high
PORTABLE: 9" x 15" x 17-1/2" high
AUDIO CONTROL CENTER PANEL: 4-1/2" x 14-15/16" DEPTH REQUIRED BEHIND PANEL: 9"
STEREOPHONIC TUNER PANEL: 1-1/2" x 14-15/16" DEPTH REQUIRED BEHIND PANEL: 9"
TOP VIEW — AMPEX SERIES 900

900 SERIES OPERATION

CONTROLS AND INDICATORS

1 - Turns on power; selects function desired.
2 - Adjusts volume of sound when reproducing recorded tapes.
3 - Moves tape quickly in a forward or reverse direction.
4 - Stops tape motion in any mode. Releases RECORD pushbutton when it is locked in the record position.
5 - Places equipment in the record mode.
6 - Locks the equipment in the play (reproduce), or record mode.
7 - Adjusts the radio, phonograph, or tuner recording level.
8 - Adjusts the microphone recording level.
9 - Microphone input connector.
10 - Indicates the recording level.
11 - Indicates the position of the tape.
16 - Selects tape speed UP—7-1/2 i.p.s. DOWN 3-3/4 i.p.s.

NOTE: Equipment must be ON when changing speeds.
17 - Head Shift Lever - DOWN for two (2) track tapes—UP for four (4) track tapes.
20 - Automatically stops tape motion at end of reel.

Tape Threading Path
14 - Supply Reel
12 - Tape Holdback
13 - Tape Guide
15 - Head Cover
18 - Capstan
19 - Capstan Idler
20 - Automatic Stop Arm
21 - Take-Up Reel
950 SERIES OPERATION

1 - Turns power; selects monitor or playback function desired.
1A - Selects Single or Stereo Record, plus record level meter for Left or Right channel.
2 - Adjusts left channel volume of sound when reproducing recorded tapes.
2A - Adjusts right channel volume of sound when reproducing recorded tapes.
3 - Moves tape quickly in a forward or reverse direction.
4 - Stops tape motion in any mode. Releases RECORD pushbutton when it is located in the record position.
5 - Places equipment in the record mode.
6 - Locks the equipment in the play (reproduce), or record mode.
7 - Adjusts left channel recording level of radio, phonograph or tuner.
7A - Adjusts right channel recording level of radio, phonograph or tuner.
8 - Adjusts left channel microphone recording level.
8A - Adjusts right channel microphone recording level.
9 - Left channel microphone connector.
9A - Right channel microphone connector.
10 - Indicates the recording level of left or right channel as selected by 1A.
11 - Indicates the position of the tape.
16 - Selects tape speed: UP - 7-1/2 l.p.s. - DOWN 3-3/4 l.p.s.
   NOTE: Equipment must be ON when changing speeds.
17 - Head Shift Lever - DOWN for two (2) track tapes - UP for four (4) track tapes.
20 - Automatically stops tape motion at end of reel.

Tape Threading Path

14 - Supply Reel
12 - Tape Holdback
13 - Tape Guide
15 - Head Cover
18 - Capstan
19 - Capstan Idler
20 - Automatic Stop Arm
21 - Take-Up Reel
FRONT VIEW
AMPEX - STEREO TUNER

STEREO TUNER OPERATION

1 - Selects Sharp or Broad AM selectively (Sharp for maximum distance reception; Broad for maximum fidelity).

2 - Indicates correct tuning of FM station. Tune for minimum dark area.

3 - Tunes desired AM station.

4 - Turns on the Tuner and selects FM with or without automatic frequency control (AFC). Use AFC position after tuning desired station.

5 - Indicates correct tuning of AM station. Tune for minimum dark area.

6 - Tunes desired FM station.

The Ampex tuner is a true Stereo tuner capable of receiving separate AM and FM broadcasts. In effect, it is two (2) tuners (one (1) AM and one (1) FM) on a common chassis. Thus, you can receive all AM, all FM, or all Stereophonic broadcasts within range.
AUDI0 CONTROL CENTER OPERATION

Master Power Switch On "Bass" Tone Control

1-L - Selects tape as the source of sound on left channel
1-R - Selects tape as the source of sound on right channel
2-L - Selects phonograph as the source of sound on left channel
2-R - Selects phonograph as the source of sound on right channel
3-L - Selects AM radio as the source of sound on left channel
3-R - Selects AM radio as the source of sound on right channel
4-L - Selects FM radio as the source of sound on left channel
4-R - Selects FM radio as the source of sound on right channel
5-L - Permits an external source of sound to be reproduced through the left channel
5-R - Permits an external source of sound to be reproduced through the right channel

6 - In normal position you are listening to the program source. When depressed, during a home recording session, you are listening to what you have recorded an instant before.

7 - Controls amount of bass increase or decrease from normal or "flat" position. Knob indicator should be at top (12 o'clock) channel's position for normal listening (also turns AC power "on")

8 - Adjusts left channel to give desired sound level
8A - Adjusts right channel to give desired sound level

9 - Same as 7, only treble

1 and 9 - Adjust to give the most pleasing response in your listening room

Selection of a single left or right channel source automatically provides monaural reproduction of this source through both channels.

Selection of one left and one right channel sound source will provide stereophonic (or simultaneous monaural) reproduction through the left and right channels, respectively.
NOTE: Mounting is same for both sides of either the audio control center or stereo tuner.

CENTER TO CENTER DIMENSIONS:

Center to right, "U" slot is 13.40".

 salmon. FROM RIGHT RIVET HEAD SITS IN "U" SLOT.

FOR MOUNTING ON FRAMING OF CABINET
2" CLEARANCE FOR CONNECTOR PANEL

13"

5"

2" CLEARANCE FOR MICROPHONE INPUT

1 3/8

6 3/8

7 1/2

4 1/2"

2"

DIMENSIONS AND SPACE REQUIREMENTS
900 SERIES RECORDER/REPRODUCER
NOTES

1. Consoles equipped with Stereo tuner are supplied with the AM connected to AM Right Channel of the Audio Control Center and FM connected to FM Left Channel. This sequence may be reversed or altered to meet your local requirements by the connectors located on the Audio Control Center.