AMPEX 600

OPERATOR'S GUIDE

AMPEX
CORPORATION

Your Ampex 600 is a lightweight portable magnetic tape recorder designed to meet the needs of both professional and non-professional users who demand nothing less than professional quality in their tape recordings. While great emphasis has been placed on its light weight, compactness and simplicity of operation, your "600" maintains the high performance standards and the professional features that have always been the Ampex hallimark.

Like any professional instrument, your Ampex 600 requires certain operating knowledge before achieving the fine performance of which it is capable. Accordingly, a careful reading of the instructions and suggestions herein is recommended.

Do not attempt any internal adjustments or modifications of this machine without consulting the Model 600 — Maintenance Manual.

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● **TWO OPERATING SWITCHES**

All tape motion is controlled by two switches:

PLAY-RECORD SWITCH (21)

REWIND-FAST FORWARD SWITCH (23)

NOTE:
When either switch (21) or (23) is used, the other must be set at its neutral point. Safety interlocks prevent using one switch while the other is in an operating mode.

● **FOUR OPERATING MODES**

1 The "PLAY" mode is started by turning switch (21) to the PLAY position.

2 To turn to the "RECORD" mode, depress the RECORD SAFETY button (20) while turning (21) to RECORD.

NOTE:
Either "PLAY" or "RECORD" modes can be stopped at any time by returning swtich (21) to its neutral position, marked by dot (22).

3 The "REWIND" mode is started by turning switch (23) to the left.

4 The "FAST FORWARD" mode is started by turning switch (23) to the right.

CAUTION:
Always allow tape to come to a full stop before operating the PLAY-RECORD Switch I21I.

1 METER ZERO ADJUST
2 VU METER
3 TAPE GUIDE
4 SUPPLY REEL
5 HOLD-DOWN KNOBS
6 HEAD ASSEMBLY COVER
7 ERASE, RECORD, PLAYBACK HEADS
8 CAPSTAN
9 CAPSTAN IDLER
10 TAKE-UP REEL
11 MICROPHONE RECORD LEVEL CONTROL
12 MONITOR SELECTOR
13 LINE RECORD LEVEL CONTROL

14 MICROPHONE CONNECTOR
15 POWER SWITCH
16 HEADPHONES JACK
17 OUTPUT CONNECTOR
18 117V AC POWER CONNECTOR
19 LINE INPUT
20 RECORD SAFETY BUTTON
21 PLAY-RECORD SWITCH
22 NEUTRAL (OR STOP) POSITION
23 REWIND-FAST FORWARD SWITCH
24 NEUTRAL (OR STOP) POSITION
25 SERIAL NUMBER PLATE
26 TAPE GUIDE POST
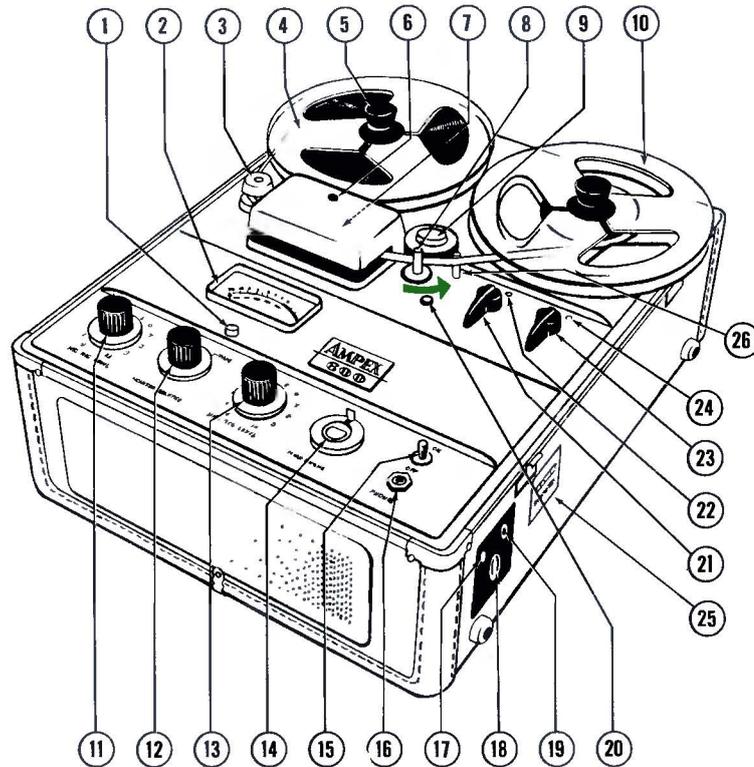
TAPE AND TAPE MOTION

GENERAL

- This machine may be operated in either the horizontal or the vertical position. To do so, unlatch and **remove** top cover.

- Use 117 volt, 50 or 60 cycle, AC power. Power line frequency is indicated on serial number plate (25).

- Use 3", 5" or 7" RTMA reels with ¼" plastic base tape wound "dull" side in. (Pre-recorded tapes must be of correct tape speed and track width to correspond with this machine.)

TAPE THREADING

1 Place full SUPPLY REEL (4) and empty TAKE-UP REEL (10) on the machine as illustrated. Be sure turntable pins properly engage reel slots.

2 Secure reels in place with HOLD-DOWN KNOBS (5).

3 Thread tape from reel (4) to reel (10) as shown. Arrow indicates path of threading. This path is the same for all modes of operation.

4 When threading half track machines, note which side of the tape reels is facing up (the hubs are marked for reference). Always be sure to turn the tape supply reel over to record or play back the second track.

STANDBY

- Connect power cord to receptacle (18), 117 V AC.

- Snap POWER switch (15) to "ON". The CAPSTAN (8) will rotate, but the tape will not move until one of the two operating switches is turned from its neutral position.

BEFORE STARTING TO RECORD

GENERAL

- Two separate and independent input channels are provided: MICRO-PHONE and LINE INPUT. Each has its own record level control. These two inputs may be "mixed" for simultaneous recording from two sources.
- Recordings can be made on either new or previously recorded tape. Any previous recording will be erased automatically.
- Matching plugs for the MICROPHONE connector (14) and the LINE INPUT connector (19), are supplied. Attach each to the owner's shielded cable, as shown.

... WITH MICROPHONE

SELECTION OF MICROPHONE

- Connect any high impedance microphone to the MICROPHONE connector (14). Follow microphone manufacturer's recommendations on cable type and length.
- Any high impedance microphone may be used, but the quality of recording depends on the quality of the microphone selected.
- Conversion to accommodate a **low impedance** microphone can be made with an accessory microphone transformer (Ampex Low Impedance Conversion Kit, Catalog No. 9359, or UTC Type A-11). Space for installing the transformer is provided inside of the machine. (See Model 600 — Maintenance Manual).

TO ATTACH CABLE

Use shielded cable of proper length and attach to microphone connector, as indicated.

CENTER CONDUCTOR
2
3
1
CANNON XL-3-12
SHIELD
FROM MICROPHONE
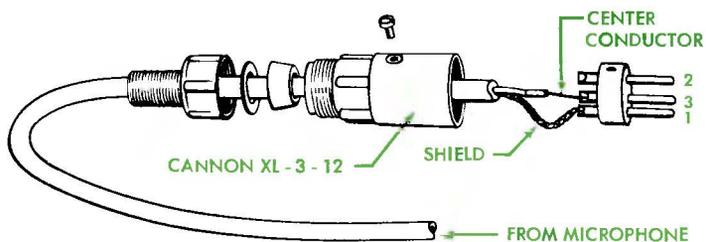
... WITH RADIO OR PHONOGRAPH

SELECTION OF INPUT

- The "LINE INPUT" connector (19) may be connected to the output of a tuner, phonograph record player or another tape recorder.
- If the tuner has more than one output, use the one marked "Detector."
- Use the output of almost any phonograph having a crystal pickup. If the phonograph has a magnetic or variable reluctance pickup, use the output of its preamplifier rather than that of the pickup. Attention should be given to equalizing the pickup used so as to give a "flat" input to the recorder. See the pickup manufacturer's recommendations.

TO ATTACH CABLE

Use cable of proper length and attach to line input connector, as indicated.

CENTER CONDUCTOR
SHIELD
FROM RADIO, PHONOGRAPH, ETC.
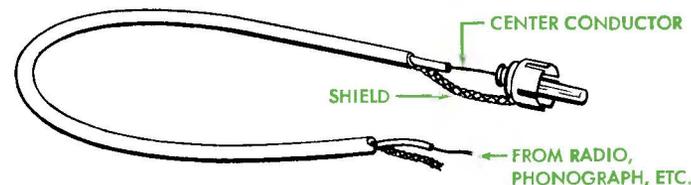
CHECK THESE SETTINGS FIRST

1 Set MONITOR SELECTOR (12) to "INPUT."

2 Set **both** MICROPHONE RECORD LEVEL (11) and LINE RECORD LEVEL (13) to "ZERO."

3 Be sure **both** switches, PLAY-RECORD (21) and REWIND-FAST FORWARD (23), are at their neutral points.

GENERAL NOTE:

An outstanding feature of this machine is that all recording adjustments can be made before the tape is actually set in motion. (See "MONITORING," page 10.)

...WITH MICROPHONE

1 Plug in microphone cable to MICROPHONE connector (14).

2 Use test script or rehearsal music to set the recording level just before starting to actually record on the tape.

3 Adjust MICROPHONE RECORD LEVEL control (11) until the most intense peaks of the "run-through" swing up to approximately "Zero" on the red scale of the VU METER (2), or to 100 on the black scale.

YOU ARE NOW READY TO RECORD ON THE TAPE

4 Depress RECORD SAFETY BUTTON (20) and turn PLAY-RECORD SWITCH (21) to "Record."

YOU ARE NOW RECORDING ON THE TAPE AT OPTIMUM RECORD LEVEL.

5 Stop the recording at any time by returning switch (21) to its neutral position.

WARNING:

Do not stop the recording by snapping power switch (15) "off."

...WITH RADIO OR PHONOGRAPH

1 Plug in tuner, phonograph or another tape recorder cable to LINE INPUT connector (19).

2 Follow identical procedures above for recording with microphone except that the recording level is now adjusted with the LINE RECORD LEVEL control (13).

MIXING

By simultaneously using bath MICROPHONE and LINE INPUT recording channels, two programs can be mixed. For example, voice announcements or instrumental accompaniment can be dubbed into a program being recorded from a tuner, phonograph player or another tape recarder. To do so, make the proper connections for both recording channels. Then adjust **both** microphone and line record level controls until the desired balance is attained.
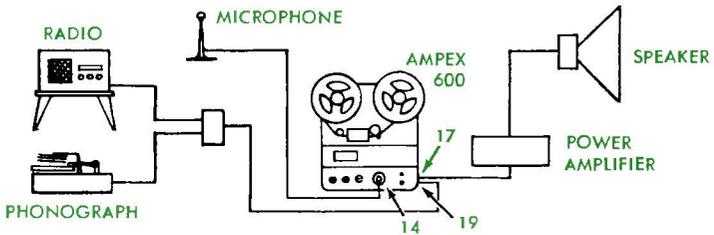
The Ampex 600 moy be connected os a permanent part of the home music system between the tuner ar phonograph preamplifier and the amplifier-speaker. For straight-thru operation, set the MONITOR SELECTOR (12) to INPUT. The Model 600 is then ready to record at o moment's notice.

VISUAL AND AUDIBLE MONITORING

- The verification of the quality, accuracy and completeness of a recording while it is being made or being played back, is generally referred to as monitoring.

- Visual monitoring is accomplished by reading the VU METER (2). The needle swing on the meter is a quantitative measure of the signal, from either, INPUT or TAPE, depending on position of the MONITOR SELECTOR (12). This same signal will be heard at PHONES (16) or at the OUTPUT connector.

- Audible monitoring is accomplished with headphones plugged into the PHONES connector (16). Use any high impedance headphones.
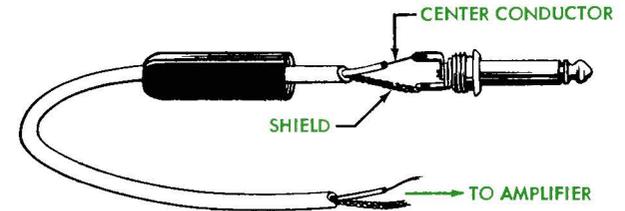
THE "MONITOR SELECTOR"

- The program can be monitored as it goes on the tape, or at an instant later when it comes off the tape, depending on the position af the MONITOR SELECTOR (12).

- If (12) is set to "INPUT," the headphones and meter report the signals as they go **on** the tape.

- If (12) is set to "TAPE," the headphones and meter report the signals as they come **off** the tape.

- By turning the MONITOR SELECTOR (12) from INPUT to TAPE, and back again, a quick comparison may be made of the incoming program and the program recorded on the tape.

THE "OUTPUT" CONNECTOR (17)

- The output of the recorder may be fed to the input of any amplifier-speaker combination whose impedance is 10,000 ohms or higher, or to the appropriate input of another tape recorder.

- To connect the output of the recorder to a low impedance line, use a suitable matching transformer such as UTC Type HA-133.

- A matching output connector is supplied. Attach it to an appropriate length of shielded cable as shown.

TO PLAY BACK

1 Set MONITOR SELECTOR (12) to "TAPE."

CAUTION
If the MONITOR SELECTOR (12) is left at "INPUT," no playback will be heard.

2 Turn PLAY-RECORD switch (21) to "PLAY."

TAPE IS NOW PLAYING BACK AT THE LEVEL PREVIOUSLY RECORDED ON THE TAPE.

3 Adjust playback volume by using the volume control on the amplifier or other sound system being used.

FOR FAST EDITING

Cueing and general editing can be done at high speed by shuttling the tape back and forth between the "REWIND" and "FAST FORWARD" modes. Exact places to be edited can be located by hand adjustment of the reels while monitoring with the headphones. Corrections can sometimes be made by erasing and re-recording, but are more often made by cutting and splicing the tape.

FOR CORRECT SPLICING

1 Cut the two ends of tape as shown.

2 Butt ends together on a flat surface, uncoated ("shiny") side up.

3 Splice the joint with splicing tape recommended by the recording tape manufacturer.

4 Carefully trim the spliced area to size.
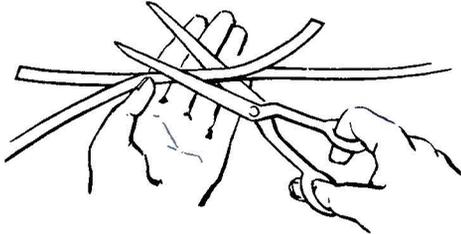
CAUTION
Be sure to use splicing implements that are **not magnetized.**

TO ERASE AN ENTIRE TAPE

To erase a previously recorded tape without recording a new program on it, turn **both** MICROPHONE RECORD LEVEL and LINE RECORD LEVEL controls to "ZERO," and run the tape through in the "RECORD" mode.

It is not necessary, however, to erase a tape in this manner prior to making a new recording on a previously recorded tape, since full erasure of any previous recording on the tape is automatically done concurrently with the recording process whenever the machine is in the RECORD mode of operation.

M O D E L
600

GENERAL
PERFORMANCE SPECIFICATIONS

TAPE SPEED	7½ inches per second.
FREQUENCY RESPONSE	40 to 15,000 cycles per second ± 2db 50 to 10,000 cps; down no more than 4 db at 15,000 cps.
SIGNAL-TO-NOISE RATIO	Full track: over 55 db below peak recording level at 3% total harmonic distortion. Half track: over 50 db.
FLUTTER AND WOW	Under 0.25%.
PLAYING TIME	**7-inch 1200-ft. reels:** 32 min. full track, 64 min. half track. **7-inch 1800-ft. reels:** 48 min. full track, 96 min. half track.
REWIND TIME	90 seconds for full 1200-foot reel.
TIMING ACCURACY	± 3.6 seconds in a 30 minute recording.
RECORD INPUTS	**Microphone:** any high impedance microphone. (Low Impedance Conversion Kit Catalog No. 9359 available at extra cost.) **Line:** 0.5 volts required for program level.
PLAYBACK OUTPUT	1.25 volts into 10,000 ohm load at program level.
POWER REQUIREMENTS	117 volts, 50 or 60 cycles; 0.52 amperes, 61 watts.
DIMENSIONS	Transport top area: 9 5/16" x 12½". Electronic top area: 6⅛" x 12½". Depth below top-plate: 5". Height above top-plate 1½".
WEIGHT	Less than 28 pounds, in portable carrying case.

ROUTINE MAINTENANCE

Every Ampex 600 is factory-tested to ensure its proper performance and operation. Under most conditions, only routine maintenance need be undertaken by the owner. If, however, major servicing is required, it should be done by a qualified technician.
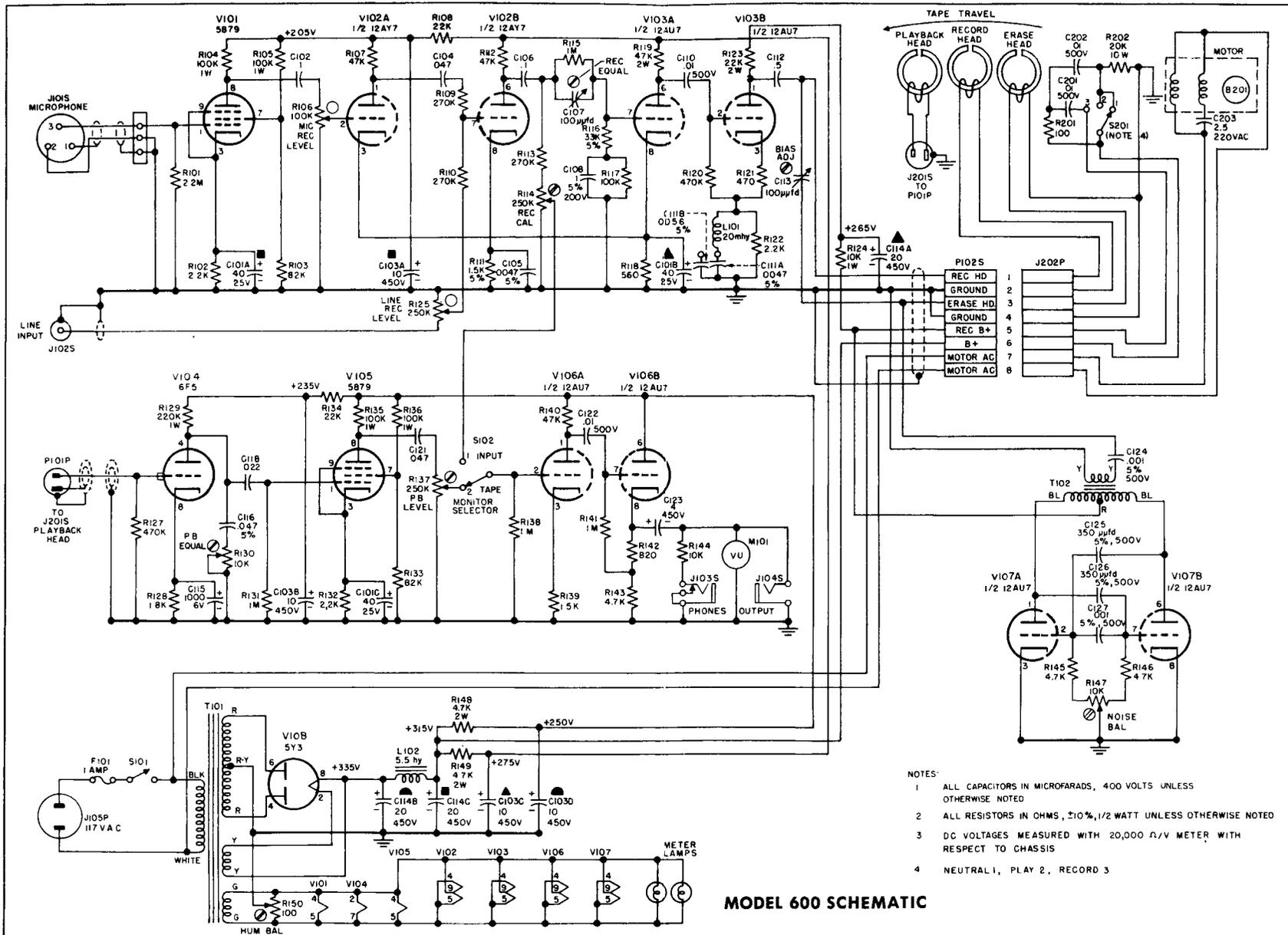
CLEANING

- Periodic cleaning of all parts making contact with the tape should be done according to the amount of usage of the machine.

- Clean residue of the tape from the erase, record and playback heads with ethyl alcohol. Do not use carbon tetrachloride. Use a cotton swab on a wood stick of adequate length, and clean gently.

WARNING

Do not remove the head assembly (7) for routine cleaning. Tape Guide (3) has a ball bearing. Do **not wash lubricant** out of this bearing by using too much alcohol.

The Model 600 — Maintenance Manual may be obtained by writing to Dept. 999, and enclosing a check or money order for $2.00.

MODEL 600 SCHEMATIC

NOTES:

1. ALL CAPACITORS IN MICROFARADS, 400 VOLTS UNLESS OTHERWISE NOTED

2. ALL RESISTORS IN OHMS, ±10%, 1/2 WATT UNLESS OTHERWISE NOTED

3. DC VOLTAGES MEASURED WITH 20,000 Ω/V METER WITH RESPECT TO CHASSIS

4. NEUTRAL 1, PLAY 2, RECORD 3