

OPERATION

GENERAL

The 354 Series recorder/reproducers are available for two track stereophonic operation. All operating controls are located on the tape transport with the exception of the record control which is on the front panel of the electronic assembly. When the remote control unit is furnished, duplicate tape motion controls, a RECORD button, a RECORD INDICATOR light and a TAPE MOTION indicator light are mounted on the remote unit.

The equipment can accommodate the NAB 10½ inch diameter tape reels or the EIA 5 and 7-inch reels. Provision is made for selection of proper tape tensioning at the REEL SIZE switch on the tape transport for the LARGE or SMALL size reels.

NOTE

In the LARGE reel position both the rewind and take-up reels must be NAB type and in the SMALL reel position both reels must be EIA.

Either of two capstan drive motor speeds can be selected at the LOW-HIGH TAPE SPEED switch on the tape transport.

On the front panel of the electronic assembly are facilities for setting RECORD LEVEL, selecting the channel(s) to be recorded, and selecting LOW SPEED or HIGH SPEED EQUALIZATION. Two phone jacks (PHONES) for monitoring, a RECORD button, two RECORD INDICATOR lights, and a POWER ON-OFF switch are also mounted on the electronic assembly front panel.

SUMMARY OF CONTROLS, SWITCHES AND INDICATORS

<i>Item</i>	<i>Schematic Reference Symbol</i>	<i>Location</i>	<i>Function</i>
POWER OFF-ON SWITCH	S6	Electronic Assembly front panel	Controls power to the electronic and mechanical assemblies. When power is on capstan will rotate if tape is properly threaded or the safety switch is mechanically closed. The v-u meter lamps light when power is on, and are unaffected by the safety switch, remaining lighted till the power is turned off.
TAPE SPEED	S503	Tape Transport control cluster	Determines speed of the capstan drive motor by high or low speed winding. Used in conjunction with EQUALIZATION switch S2.
EQUALIZATION LOW HIGH SPEED SPEED	S1	Electronic Assembly front panel	Used to select appropriate equalization circuitry for tape speed chosen.
REEL SIZE LARGE SMALL SWITCH	S504	Tape Transport	Adjusts tape tensioning circuitry for the reel size used. The switch is closed when (LARGE position) NAB 10½ inch reels are used. In the SMALL position the switch is open, connecting resistance R502 in series with the torque motors, thereby reducing holdback and take-up tension.
RECORD SELECTOR	S4	Electronic Assembly front panel	Provides bias and erase current to channel A only when in channel "A" position if RECORD button is pressed; provides bias and erase current to channel B when in channel "B" position if RECORD button is pressed; provides bias and erase current to both channels when in "A & B" position if RECORD button is pressed; and does not provide bias or erase current to either channel when in either SAFE position regardless of whether or not the RECORD button is pressed.
RECORD LEVEL	R1 R2	Electronic Assembly front panel	Adjusts record level.
VU METER	M1 M2	Electronic Assembly front panel	Provides a means for visually monitoring record input level, reproduce level, and bias and erase.
PLAY button	S505	Tape Transport control cluster	Controls tape motion in the reproduce (PLAY) and record modes. Interlocked with rewind and fast forward modes.

RECORD button	S5	Electronic Assembly front panel	Controls the record relay in the electronic assembly. Power is applied to the bias erase oscillator when this button is pressed. The PLAY button must be pressed to put the tape in motion before the record button is used.
REWIND button	S507	Tape Transport control cluster	Controls the rewind relay. Full a-c power is connected directly to the rewind (supply) motor when this button is pressed, the resistance R504 is placed in the a-c circuit to the take-up motor.
FAST FORWARD button	S506	Tape Transport control cluster	Controls the fast forward relay. Connects full a-c power to the take-up motor and places resistance R504 in the a-c circuit to the rewind motor when this button is pressed.
STOP button	S502	Tape Transport control cluster	When this button is pressed, the brake solenoids and all relays are de-energized.
OUTPUT SELECTOR	S2 S3	Electronic Assembly front panel	In the REPRODUCE position, the v-u meters indicate the signal level at the secondary of the output transformer. In the RECORD position, the v-u meters indicate a "flat" reading of the input signal.

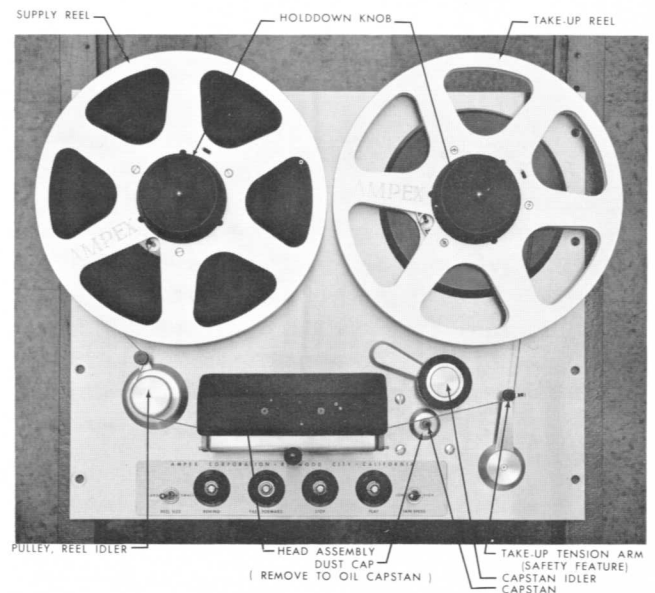
OPERATING TECHNIQUES

Threading the Tape

Thread the tape as shown in the illustration. Unwind and inspect all new factory wound reels of tape by running them through in the FAST FORWARD mode. New tapes may be looped to the hub in such a manner that the tape will not come free at the end of the reel. This will prevent the safety switch (S501) from disengaging the capstan idler from the capstan, which in turn results in a flat being worn on the capstan idler wheel. (Any adhesive material accumulation on the reel hub may also keep the tape from coming free at the end of the reel, and should therefore be removed with solvent.)

Power

Power is supplied through power switch S6 which must be turned on to operate the electronic and mechanical assemblies. The mechanical assembly and electronic assembly are individually fused by the 3 ampere control circuit fuse F1 and the ¾ ampere electronic fuse F2.



Tape threading path

Speed Switches

There are two switches associated with operating speed. The tape speed switch S503 determines the speed of the capstan drive motor, and the equalization switch S1 changes the equalization in the amplifiers appropriately.

Tape Motion

The tape motion is controlled by means of four pushbuttons labeled REWIND, FAST FWD, STOP and PLAY.

PLAY OR RECORD

The tape is set into play motion at the speed selected by the tape speed switch when the PLAY button S505 is pressed. To change from play to the record mode with the tape in motion, press the RECORD button S5 on the electronic assembly.

STOP

To stop the tape while it is moving in any mode, press the STOP button S502. The equipment will stop automatically if the tape breaks or runs off either reel.

FAST FORWARD

The equipment can be started in fast forward or switched to fast forward from any of the operating modes by pressing the fast forward button S506.

REWIND

The equipment can be started in rewind or switched to rewind from any of the operating modes by pressing the rewind button S507.

NOTE

In using either the fast forward or rewind mode, it is desirable to remove the tape from direct contact with the heads by opening the gate of the head assembly. This will reduce wear on the heads and prevent the oxide coating on the tape from depositing on the heads and impairing their performance.

Editing and Cueing

Indexing the tape as in editing or cueing, or when approaching the end of the reel, is simplified by holding down a combination of buttons. Tape motion can be reduced by holding down the fast forward and rewind buttons simultaneously, and then alternating between the two to control tape direction. When the desired point is reached, the STOP button must be held down until the fast forward and rewind buttons are released.

CAUTION

Never press the STOP and PLAY buttons in rapid sequence when the tape is traveling at high speed in the REWIND or FAST FORWARD modes. This will almost invariably break the tape since it does not allow the tape to stop before the capstan idler locks it to the capstan.

Reproduce (Playback)

To reproduce a previously recorded tape, place the OUTPUT SELECTOR switch, S2 or S3 or both, in the REPRODUCE position, then start the tape in motion as indicated under PLAY. RECORD SELECTOR switch, S4, should be in either of the two SAFE positions.

Record

To record a new program on previously recorded tape, or on blank tape, place the OUTPUT SELECTOR switch, S2 or S3 or both, in the RECORD position and the RECORD SELECTOR switch, S4, in either of the SAFE positions. Turn the RECORD LEVEL control, R1 or R2 or both, clockwise until the level reads 0 (zero) on the associated vu meter on the most intense program peaks. The program can be audibly monitored through either the phone jacks (PHONES), J17 and J18, or the line out connectors (LINE OUTPUT), J3 and J4, before the tape is in motion. This direct monitor feature allows the program to be set up through the machine without actually recording during the set up period.

When the program level is properly set, turn the RECORD SELECTOR switch, S4, to the "A," "A & B," or "B" position as applicable and start the tape in motion as indicated under PLAY. Then press the RECORD button, S5. The RECORD INDICATOR, DS1 or DS2 or both, will now glow and the equipment is recording.

Remote Control

For remote operation, remove the dummy plug P502P from the receptacle J502S on the control box of the tape transport and connect the remote control cable from J502S to the remote control unit (see TAPE TRANSPORT MECHANISM—REMOTE CONTROL).