

Silvertone®



MAGNETIC SOUND RECORDER
Full Stereo Playback
Single Channel (Mono) Record
MODEL 4236

O W N E R ' S M A N U A L

Congratulations on your selection of a Silvertone Magnetic sound recorder. This product is the result of years of experience in the recording field and it has been designed to provide the benefits and results we believe you want, and need, to obtain the most satisfaction from your investment.

This booklet will show you the basic ways to use the unit; others will suggest themselves as you become more familiar with the recorder. We suggest you read the booklet through carefully.

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PREPARATION FOR OPERATION

Remove all accessories or other items from the storage compartment before operating the unit. The storage compartment is a part of the ventilation system.

Remove the rubber reel retainers from the two spindles. Always replace the reel retainers after loading reels and before operating the unit.

This model may be used in either a laydown (horizontal) or upright (vertical) position.

Place the unit on a surface which permits air to enter at the bottom if in a laydown position, or through the storage compartment if upright.

Connect the power cord to a 60 cycle a.c. 110-120 volt power outlet.

Before attempting to use this unit, study the controls and their functions listed below.

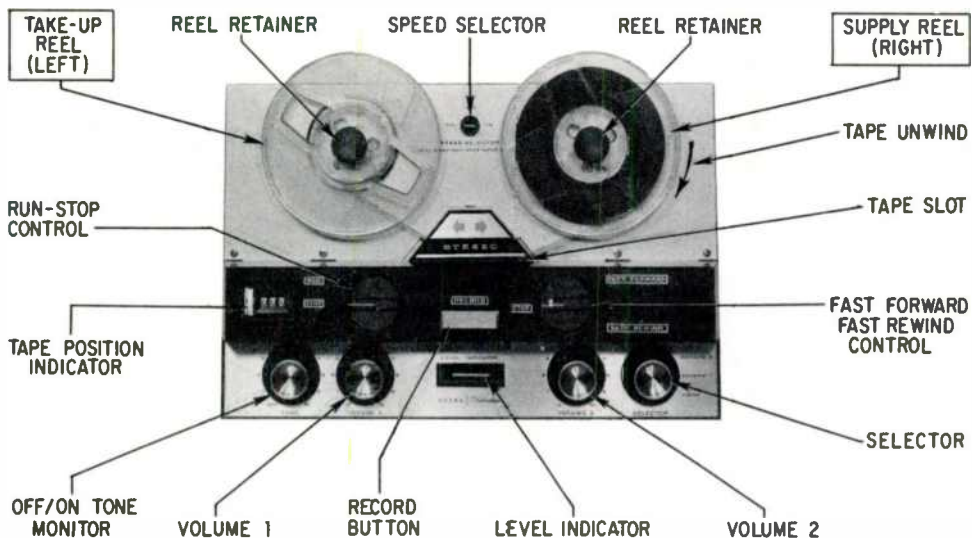


FIGURE 1

CONTROLS AND THEIR FUNCTIONS (See Figure 1)

1. OFF-TONE

This control has two functions:—

- a. It is the A.C. power switch in both record and playback. The control turns the unit ON or OFF at the extreme counter clockwise (left) position.
- b. In normal playback it alters the tonal response for both sound channels of the recorder; rotate to the right for low note emphasis, to the left for high note emphasis.

2. VOLUME 1

Varies the loudness of channel 1—for monaural or stereo playback. Sound from channel 1 is reproduced through the speaker on the left side (looking from front of recorder). This control is also used to MONITOR (hear) what is being recorded while recording from sources other than a microphone.

3. VOLUME 2

Varies the loudness of channel 2—for monaural or stereo playback and monaural record. Because *monaural* recordings are made through the channel 2 amplifier, use this control to adjust record level when recording. Sound from channel 2 is reproduced through the speaker on right side (looking from front of recorder).

4. SELECTOR

This control serves two functions:—(a) It switches the recording circuits of the unit to either of the two useable sound channels and (b) In stereo operation it switches the circuits for stereo playback.

Positions of the control (reading from top to bottom) are outlined as follows:

Monaural 2 — second of the two possible channels for monaural operation—playback or record. Also use this position to playback monaural recordings made with Selector in this position.

Monaural 1 — first of the two possible channels for monaural operation—play-back or record. Monaural recordings on this machine should be made beginning with the Selector in this position.

Stereo — with the Selector Switch in this position, pre-recorded stereo tapes are played back.

See page 9 for suggestions on how to increase the amount of monaural recording per reel under "NOTES ON RECORDING."

5. RUN-STOP

This control engages or disengages the tape drive and take up system and when in RUN position locks the RECORD button in place. In the STOP position it places all circuits in a non-function position. Rotating to the right (clockwise), to the RUN position, starts the drive system. Always place this control at STOP when removing or loading tape.

6. RECORD

This button actuates the recording circuits when depressed. With the button in the normal (up) position the circuits are in the playback condition. To record, depress this button and simultaneously turn the RUN-STOP control to RUN.

7. FAST FORWARD/FAST REWIND

Winds or rewinds tape at a fast speed. This control allows you to either rewind (FAST REWIND) when the tape has been completed or skip ahead (FAST FORWARD) to quickly reach a prerecorded selection. To stop the fast forward or rewind action, return the lever to the center position.

8. RECORDING LEVEL INDICATOR (EYE)

Electrically indicates the sound level while recording. For optimum undistorted recordings, the EYE should close only on loudest passages while recording (it should not overlap).

9. SPEED SELECTOR

Three speeds are provided— $7\frac{1}{2}$ "", $3\frac{3}{4}$ " and $1\frac{7}{8}$ " per second linear speed. This is the rate at which the tape moves past the recording and/or playback heads.

As a general rule, the faster, $7\frac{1}{2}$ ips, tape speed has a slightly better overall tone range than the slower $3\frac{3}{4}$ speed. Both, however, are equally suitable for music reproduction.

The slow $1\frac{7}{8}$ inch speed is not recommended for music. It's main advantage is for long, non-critical recording time (up to two hours uninterrupted time using a 1,200 ft. 7 inch diameter reel).

Change speeds only when the unit is ON and the motor is running.

This unit has a capstan regulated speed drive system. Material made on this unit can be played on other capstan driven units.

10. TAPE POSITION INDICATOR

This is a numerical counter which provides a reference (when notations are made) for finding a particular passage in a tape reel.

Always reset the indicator to "000" before recording, etc.

STEREOPHONIC OPERATION

This unit has been designed to provide superior sound reproduction, especially from pre-recorded stereophonic material, and can be used self contained as you receive it. See page 10 for suggestions on the use of external speakers.

Since prerecorded tape is made under controlled technically ideal conditions, the playing of such a tape will provide a good way to become familiar with the various control func-

tions, before you attempt to make a recording.

You can also make single channel (monaural) recordings. See page 6 for **MONAURAL OPERATION**.

Magnetic oxide coated tape of $\frac{1}{4}$ inch width is standard with the recording industry and is made available on several reel diameters and in varying lengths. Since this equipment utilizes magnetic tape for recording and reproducing sound, we call it a "Magnetic Sound Recorder" in preference to the common name "tape recorder."

The Magnetic Recording Industry of America (MRIA) sets the standards for placement of sound channels on the tape. This allows tapes to be interchanged between all recorders whether the tape travels from right to left or from left to right. This machine transports tape from right to left.

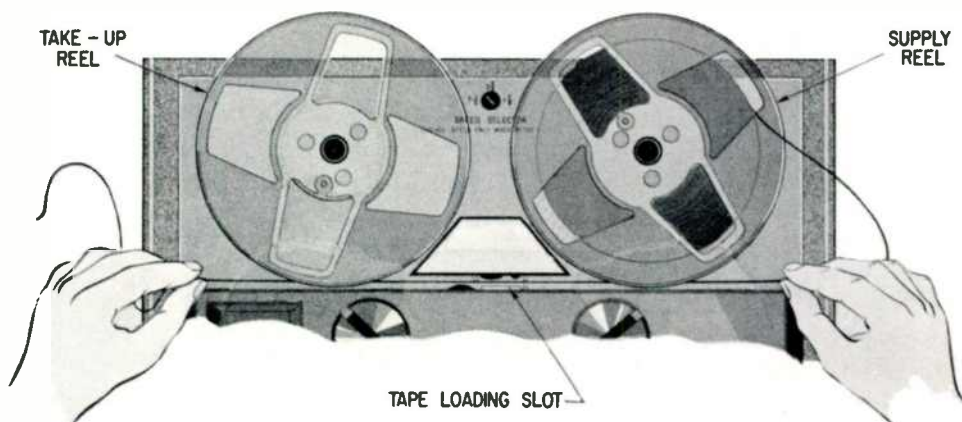


FIGURE 3

TO PLAY STEREOPHONICALLY PRE-RECORDED TAPES

1. Place the full reel of tape on the right (Supply) spindle. Place the empty reel on the left (Take Up) spindle. Replace the rubber tips on the reel spindle over the reels to hold them solidly in place.

As you unwind the tape, the shiny side should be facing you. Pull about one foot of tape from the FULL (Supply) REEL—to the right. (See figure 3.) If you are unwinding tape in the proper direction, motion of the full (Supply) reel will be in the clockwise direction as shown in the illustration. Bring the free end toward the EMPTY (Take Up) REEL.

2. Holding the center portion of the tape with about 6 inches of tape between your hands, drop the tape into the TAPE LOADING SLOT. Pull the loose end of the tape to the left across the EMPTY (Take Up) REEL.
3. Put a finger through one of the openings in the reel and hold the end of the tape against the center of the reel; while holding tape, turn the reel clockwise to captivate the tape, then take your finger out of the way and put an additional few turns on the reel to hold the tape firmly in place. After a few trials you will be able to load the tape in one easy motion.

NOTE: Be sure tape is not twisted and that the dull side is toward the inside of the reel and facing the back of the unit as it goes through the TAPE LOADING SLOT.

4. Place SELECTOR switch in "STEREO" position.
5. Set the speed selector to the desired speed. For music it will be either 7½" or 3¾" speed, as noted on the tape reel or package.
6. Set TAPE POSITION INDICATOR to "000."
7. Turn the RUN-STOP knob to "RUN."
8. Adjust VOLUME 1 and VOLUME 2 for desired loudness. The normal settings of these controls will usually be about equal but they may vary slightly. In any case set them where they bring out the "spacial" or large space effect. Adjust the TONE knob. Note that a reduction of high tones decreases the apparent stereo separation and sound effect. This is because low tones do not have the same degree of directivity.

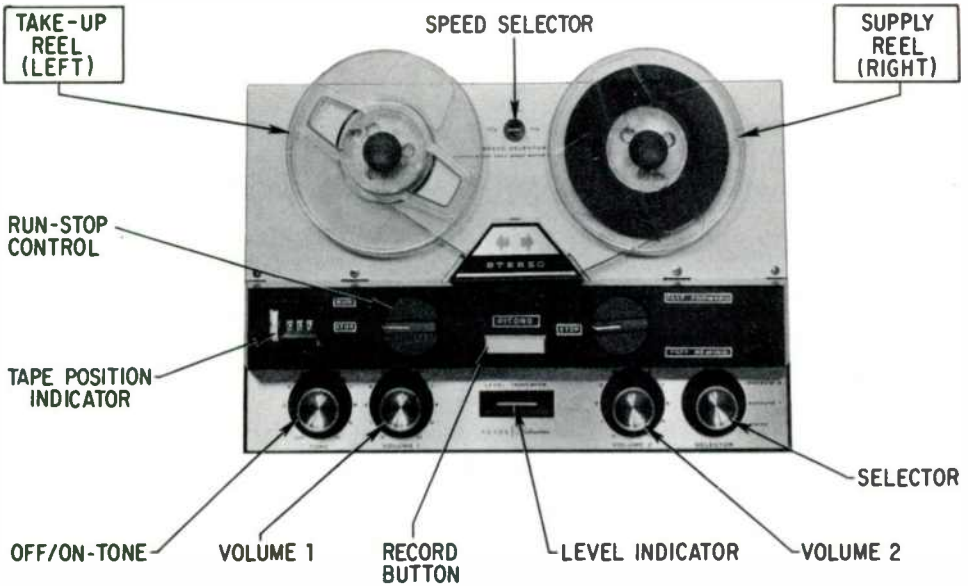


FIGURE 4

MONAURAL OPERATION (See Figure 4)

TO MAKE A MONAURAL RECORDING (Single Channel)

1. Turn unit on by rotating the OFF-ON/TONE CONTROL clockwise until a click is heard.
2. Place tape on the Unit as described in steps 1 thru 3 under "TO PLAY STEREO PRERECORDED TAPES" on page 5.
3. Insert the microphone plug into the receptacle (on the right side of the cabinet) marked "INPUT." Be sure to insert it all the way into the receptacle.
4. Set the TAPE POSITION INDICATOR to read "000."
5. Place the SELECTOR switch in "MONAURAL 1" position.
6. Rotate Volume 1 control knob fully counter-clockwise to "0" to prevent feedback (squeal) from speaker to microphone. NOTE: Use Volume 1 as a monitor control when recording from sources other than a microphone.
7. Depress RECORD button and simultaneously turn the RUN-STOP control to "RUN." You are now recording.

8. While holding the mike about 12 inches from your mouth, and speaking into the mike in a normal voice, turn the VOLUME 2 control knob until the two glowing portions of the LEVEL INDICATOR (EYE) almost touch at the center (and close when you speak in louder tones).

Under "RECORDING HINTS," suggestions are given for making preset checks without the tape running. See Page 11.

9. When you are through recording, turn the RUN-STOP knob to "STOP." This releases the recording circuits and stops the tape.

TO PLAY RECORDING JUST MADE

1. Rewind the recorded tape back onto the supply reel by turning the rewind control to "FAST REWIND." You may either rewind completely to the end, in which case you will have to rethread the tape, or save reloading time by quickly turning the rewind control to the neutral middle position when "000" appears on the TAPE POSITION indicator; the automatic brakes will bring the tape to a stop.
2. With the recorded tape in place, turn the RUN-STOP knob to "RUN."
3. Adjust VOLUME 2 knob for the desired loudness and the TONE knob for the tone condition you like.

There are two amplifiers in this unit through which monaural playback, as well as stereo, is heard. You may now adjust the VOLUME 1 knob to improve the sound distribution characteristics. This is an optional adjustment.

TO PLAY PREVIOUSLY RECORDED TAPE

To playback previously recorded monaural tape, load tape per instructions on page 5, place Selector to "MONAURAL 1" and follow steps 2 and 3 above.

For playback of tapes recorded under the half track method (on another machine) the Selector **MUST** be in MONAURAL 1 position.

See page 9 for suggestions on how to increase the amount of monaural recording per reel under "NOTES ON RECORDING."

INPUT JACK

The INPUT jack (top jack) is a dual type and has two connecting or holding (detent) positions. PLEASE NOTE THIS CAREFULLY.

When a standard two conductor jack is *fully inserted* it is connected to a high gain amplifier circuit. This is the normal mike insertion position.

When a standard two conductor plug is inserted about half way (to the first detent position) it is connected to a low gain circuit. Use the half way, first detent, position for all external input connections except for microphone.

TO RECORD FROM A RADIO, PHONO, OR TV

While a microphone can be placed in front of the loudspeaker of the above type units and a recording made, this is not the best way to obtain a high quality source of sound material because of room conditions, speaker reproducing characteristics, extraneous noise pick up and general loss of sound characteristics.

The direct connection method is superior and easy to make. Following are suggested arrangements for making these connections.

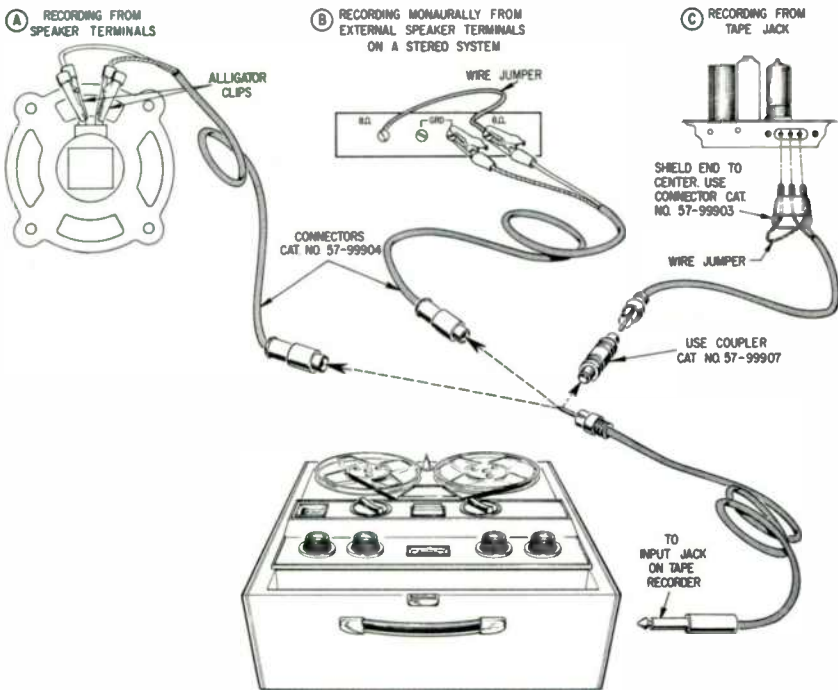


FIGURE 5

A. TO THE LOUD SPEAKER TERMINALS

Use the short cable with the alligator clips and fasten these to the terminals on the speaker shown in figure 5A.

B. TO THE EXTERNAL SPEAKER TERMINAL STRIP

If the unit is a stereophonic type combination model there are usually exposed external speaker connections. Connecting across the speakers as shown will permit making a monaural recording from a stereo sound, that is, combines the two sound channel informations into one. In this use, the Stereo sound from the speakers is changed to monaural as long as the speaker jumper is connected.

This is the arrangement used on most Silvertone combination models. See figure 5B.

NOTE: If you are likely to use either (1) or (2) above very often it is recommended that instead of clipping the leads on every wire, you purchase an extra connector, stock no. 57-99904 and leave it permanently attached to the unit. Simply coil it up when not in use, and plug it into the longer cable when ready to record.

C. TO THE TAPE JACK

Some Silvertone combination models have take off connections which are accessible in a plug arrangement. This plug is usually inserted in the socket but with no leads attached. Figure 5C shows how to make the connections. In this use the Stereo

sound from the speakers is changed to monaural as long as the plug is inserted. Therefore remove *this plug-in connection* when not recording. Use connector 57-99903 to the plug supplied with the set, and coupler 57-99907 to splice it to the main connecting cable which feeds the recorder.

Connectors, couplers and other connecting accessories may be purchased at any Sears store.

NOTE: Due to electrical differences in polarity it is sometimes possible to obtain a higher than desired hum on the recording. This can usually be eliminated, or reduced to an acceptable level by reversing the leads, or the A. C. line cord as it is inserted in the wall socket. Try these changes one at a time.

MONITORING—Monitoring, or hearing what is being recorded while it is being recorded is of valuable assistance in immediate checking for loose connections, reversed connections, poor signals, or improper tuning of a radio or T. V. especially when using the direct connection method outlined above. To monitor simply advance the VOLUME 1 control which will reproduce sound through the left hand speaker. NOTE: Always place VOLUME 1 at 0 when recording from mike in order to avoid feed back (squealing).

NOTES ON RECORDING

This is a quarter track unit. Each Sound Channel occupies $\frac{1}{4}$ the width of the tape. Stereo channels are alternately spaced. The selection of the recording and playback heads for either monaural (single channel), or stereo (two channels) is automatic and is determined by the position of the Selector Control.

Quarter track recording allows you to record twice as much material as conventional half track recording.

Though quarter track recording is a departure from half track recording, monaural tapes recorded on this machine can be played without difficulty on conventional half-track recorders, PROVIDED RECORDING ON BOTH HALVES OF THE TAPE IS MADE ONLY WITH THE UNIT IN "MONAURAL 1" POSITION.

Merely record as under "TO MAKE A MONAURAL RECORDING," page 6, with SELECTOR Switch in "MONAURAL 1." When tape is completed, remove full reel, TURN IT OVER, place it on the supply reel and reload. Continue your recording, with SELECTOR still in "MONAURAL 1." Recording made can also, of course, be played on any quarter track machine.

FOR ADDED RECORDING TIME — MONAURAL

Additional recording space is available, in fact recording time for monaural can be doubled, by recording all four channels. To do this, record as under "TO MAKE A MONAURAL RECORDING," Page 6, with SELECTOR Switch in "MONAURAL 1." When tape is finished, remove full reel, TURN IT OVER, place it on the supply reel, reload and continue recording. When tape is again completed, remove the full reel, TURN IT OVER, place it on the supply reel and reload. With SELECTOR Switch again in "MONAURAL 2," continue recording through the cycle just outlined—remove full reel, TURN IT OVER, place it on the supply reel, reload and complete the recording.

While this arrangement increases the recording time per reel of tape, there are difficulties of which you should be aware. Locating special passages in the middle of the tape, etc., is more difficult unless you have previously logged not only the TAPE POSITION INDICATOR number but the CHANNEL number on which the passage was recorded. (By loading this tape and running Fast Forward, to the reference channel and number, you can pick out the particular portion you want to play back.)

MICROPHONE TECHNIQUES

There are certain rules which govern proper microphone techniques. Individual listening tastes and repeated practice will be your guide for determining whether or not the sound pick up is good.

Here are some recommendations to improve the quality of your recordings:

1. Avoid dropping or other rough treatment of the microphone—it is a delicate instrument.
2. Check the microphone by speaking into it instead of blowing on or tapping it.
3. Position the microphone at least 12 to 18 inches from your mouth and speak in a normal voice. DO NOT SHOUT. This "blasts" the mike and causes distortion. If the speaker uses excessive sibilants in his speech (the pronunciation of the letters s, z, sh, zh, ch and i, accompanied by a hissing sound), turn the microphone so that it is perpendicular to the mouth or move the mike farther away.

If you plan to do much live music recording we suggest you consider the purchase of a better and more flexible microphone such as our 57-1407 and use it with floor stand 57-1403. This will give you more flexibility in placing the microphone, and directing it, for the best pickup.

4. Bare floors, walls and high ceilings create undesirable background noise because they reflect echoes and reverberation. These effects may be reduced by use of drapes and curtains on walls, windows, etc.
5. People talking in the background can create noise and spoil an otherwise good recording.
6. It is not recommended that recordings be made from the loudspeaker of a phonograph or radio through microphone recording except for those recordings on which you are not concerned about distortion and background noise. Use the direct connection method to the speaker for best results. Use the monitor control to hear what is being recorded.

MICROPHONE PLACEMENT

Microphone placement techniques for recording will be developed by you through experimentation. There are no rigid rules to follow in order to obtain optimum results because each recording situation, and the acoustical characteristics of the recording location, presents its own problems. Repeated practice will give you results which will serve as a guide in determining proper placement.

As a general rule avoid placing the mike so that sounds from a hard surface are reflected into it; also avoid placing the mike so that anyone is speaking or singing directly into it; avoid "blasting."

EXTERNAL SPEAKER

This unit will reproduce stereophonic sound without the use of separated speakers. For a greater stereo effect and also to increase low note response, an extension speaker may be substituted for the left speaker in the main cabinet. A separation, between speakers of 6 to 10 feet is usually sufficient in most instances. (Silvertone Speaker Cat. No. 57-4249 has been specifically designed for this application.) Use the EXTENSION SPEAKER jack at the right side to connect the extension speaker

RECORDING HINTS

PRESETTING RECORDING LEVELS

You may preset the recording level of the recorder, without a movement of the tape, by doing the following:

- a. With the cable, or mike, plugged in and unit ready for recording, depress and hold down the RECORD button. Do not turn the RUN-STOP control.
- b. Adjust the VOLUME for the required RECORDING LEVEL eye closure.

The volume level is now set for program content. To record simply depress the RECORD button and turn RUN-STOP to "RUN" whenever you are actually ready to record.

This method permits you to hook up a radio, TV or phono and set proper recording volume before making the actual recording. These preliminaries will thus not have to be done while the radio or TV program or phono is on and so eliminates loss of some of the program material.

RECORDING SOUNDS THIN AND WEAK

The volume control probably was not turned high enough during the recording. If the RECORDING LEVEL INDICATOR (EYE) never closes during the entire recording this normally indicates volume is set too low. May also be caused by poor contacts or dirty microphone plug surface or a dirty recording head. The source of the sound may also have been at a low loudness level or too far away.

RECORDING SOUNDS DISTORTED

The material was "over-recorded." DO NOT turn the VOLUME CONTROL so high that the RECORDING LEVEL INDICATOR (EYE) is completely closed (no shadow) at all times during the recording. It should close only on very loud passages.

This condition may also be caused by poor contacts or dirty surface on the microphone plug or record head. Use the cleaner supplied in the MAINTENANCE KIT.

THE RECORDING SOUNDS TOO FAST OR TOO SLOW

The tape SPEED CONTROL is in the wrong position.

DO NOT operate the SPEED CONTROL unless the recorder is turned on and the motor is running or a "chattering" noise will occur.

NOTE: If a "chattering" noise occurs, change the SPEED CONTROL (with motor running) to another speed, and then return it to the desired speed.

NOISES IN THE BACKGROUND OF THE RECORDING

Cushion the microphone on a loosely folded cloth or rubber sponge to absorb mechanical noises. Do not move the microphone around in your hand more than necessary or "finger" the microphone while recording.

EDITING AND CORRECTING TAPE

TO EDIT BY ERASING OR RECORDING

1. Play the tape through in order to pick out the section you wish to take out.
2. Note beginning and play to the end of the section to be deleted, then mark the end of the section. On back (smooth side) of tape place small tabs of splicing tape or another mark, at beginning and end of the section to insure that only the proper section will be taken out.

3. Place Fast Rewind control in the "FAST REWIND" position until tape is rewound back to beginning of section to be deleted.
4. Place the RUN-STOP control in the "RUN" position. A new recording may now be made in place of the section being edited by following previously described recording procedure; if no new recording is desired, turn the volume control completely counter-clockwise to completely erase this section on the tape. Be sure to STOP tape when tab at end of section passes record head.

TO EDIT UNDESIRE SECTION BY "CLIPPING IT OUT"

It should be understood that if you clip out a section of a recording, whether stereo or monaural, you are clipping out a section of ALL channels.

1. Follow the instructions given in steps 1 and 2 of "EDITING AND CORRECTING TAPE" above.
2. Clip out undesired section and follow instructions under SPlicing TAPE below.
3. For instant visual identification of various recorded selections spliced into a single reel, we suggest the use of Leader tape (Cat. No. 57-9958) which has a surface on which notes can be written. A section of Leader tape can be spliced into tape wherever desired and also be inserted at beginning and end of each reel of tape when it is necessary to use every inch of recording space. For inserting Leader tape follow the splicing procedure given below.

SPlicing TAPE

It should be understood, that if you clip out a section of a recording, whether stereo or monaural, you are clipping out a section of ALL channels.

1. Overlap the two ends of tape about a half an inch, and cut them simultaneously using a diagonal cut on an angle of about 45 degree (see Figure 6).
2. Butt both ends together smoothly, with the smooth sides up, and splice the two ends together with a small piece of special splicing tape. (Cat. No. 57-9967) **CAUTION:** DO NOT use common cellophane tape for splicing because, when pressed tightly, the gummy adhesive will run, causing adjacent layers of tape to stick together and gumming up the heads.
3. Trim the rough edges of the splice, cutting slightly into the edges of the recording tape (see Figure 6). A splicing machine No. 57-9959 can be used to make professional splices easily.

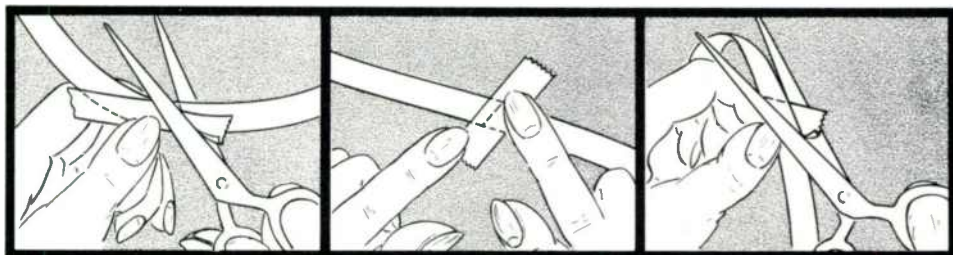


FIGURE 6

EXTERNAL CONNECTIONS

INPUT JACK

When microphone is used, plug must be fully inserted. When using an external input (high level) insert plug half way. Refer to detailed information under "INPUT JACK" on page 7.

EXT. AMP. JACK

For connecting an external amplifier, to replace the amplifier of this unit when a greater power output is desired.

NOTE: When using an external amplifier for stereo playback it is recommended that an amplifier of equal power and electrical specifications be used. To connect external amplifier, use a ¼ inch diameter, two conductor phone plug and plug into the "EXT AMP" jack.

EXT. SPKR. JACK

For extended stereophonic operation (greater separation) use an external speaker. For proper sound reproduction, the external speaker should have an 8 ohm impedance and be capable of handling at least 5 watts of power. A matched extension speaker such as No. 57-4249 is recommended for this purpose.

To connect an external speaker, you will need a ¼" diameter two conductor phone plug. Connect this plug to one end of the cable you desire to use. Connect the other end of the cable to the speaker terminals. Then plug the cable into the "EXT. SPKR" jack. This disconnects the speaker in the main cabinet. An 8 ohm impedance speaker should be plugged into the "EXT SPKR" jack.

CAUTION: Do NOT insert a plug into the "EXT SPKR" Jack without a speaker attached to it. Damage to the output tubes, transformers, and tone control may result due to having an open circuit.

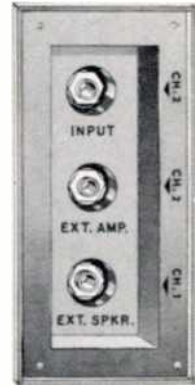


FIGURE 7

CHOOSING TAPE SPEEDS

The setting of the speed selector determines how fast the tape is pulled past the recording, or playback heads. The tape speed is capstan regulated which means that the speed of the tape is uniform to a tolerance from the beginning to the end of the tape.

7½ inches per second is the older speed standard for music reproduction. A large number of pre-recorded tapes are recorded at this speed.

3¾ inches per second is the current speed standard for music. Many of the music tapes formerly available only at 7½" are now available at this slower speed in ¼ track stereo. This speed is recommended for all general, music as well as voice, recording as it gives the longest time with results comparable to the faster speed.

1⅞ inches per second is satisfactory for all general voice recording. It is not recommended for music because at this slow speed the tape movement is not rapid enough to pick up the full range of sound frequencies. It does have the advantage of increasing the uninterrupted playing time. As an example, one channel on a 7" diameter 1,200 ft. reel, such as our #9951, will record two hours. Using all four channels monaurally will record a total of eight hours time, a 7" diameter 1,800 ft. reel of mylar gives 12 hours total recording time.

Representative playing time per 7" diameter 1,200 ft. reel at the various speeds is as follows:

Speed	One Track Mono	4 Track Mono.	One side stereo	Two side stereo
7½"	30 min.	2 hours	30 min.	60 min.
3¾"	1 hr.	4 hours	1 hr.	2 hrs.
1⅞"	2 hrs.	8 hours	Not recommended for music	

The use of 1,800 ft. reels of tape increases these playing times by 50%.

NORMAL CARE AND MAINTENANCE

HEADS AND PRESSURE ROLLER

During the normal operation of this tape recorder, deposits of a dull, reddish-brown colored substance will appear on the parts shown in Figure 8. This accumulation is due to a small amount of the oxide surface of the magnetic recording tape rubbing off during usage.

Whenever such a deposit is observed, it is recommended that it be removed. Failure to periodically clean these parts will result in reduction of sound output, distortion of recordings, loss of high frequencies, and inconsistencies of tape speed.

1. Remove head cover.
2. Dip end of cotton applicator into bottle labeled "Cleaner." Squeeze excess solution from cotton. Apply to face of both heads, rubbing back and forth until traces of oxide are removed. Use a dry applicator to remove excess solution from heads when cleaning is completed.

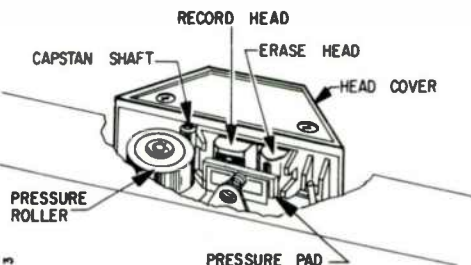


FIGURE 8

3. Clean surface of pressure roller, which contacts tape, thoroughly following same procedure as used on the heads. Turn unit on and place RUN-STOP control in "RUN" position. Then, with motor running, apply cotton applicator firmly to pressure roller surface. With motor still running, clean capstan shaft of all evidence of oxide deposits. The pressure roller and capstan shaft must be thoroughly clean and dry for most efficient recorder operation. Use a clean dry cotton applicator to wipe these parts upon completion of cleaning.
4. Rub cloth tape across surface of heads and capstan by moving tape across parts shown in Figure 8. This will assure a thorough cleaning and high polish on critical portions of the heads.
5. Dip end of cotton applicator into bottle labeled "Lubricant." Apply to entire face of head. Do not wipe off excess solution. Lubricant will coat heads after solvent evaporates. Lubricant will provide a smooth passage of the tape past the head surfaces, and will help retard future oxide accumulation.

CAUTION: DO NOT APPLY LUBRICANT TO PRESSURE PADS, ROLLER OR CAPSTAN. **NOTE:** Lubricant should not be confused with oils or greases. Lubrication for head surfaces is of a silicone base and is not of the same nature as petroleum greases and oil.

6. Be certain all parts have completely dried before replacing the cover and using the recorder.

TO REPLACE TUBES

Remove the metal vent panel on the bottom of the cabinet by removing the six (6) screws. The tubes are now accessible for removal. **CAUTION:** Be sure to replace the metal panel in the same position that it was, and that the interlock connection is secure.

IMPORTANT

We do NOT recommend that you attempt to lubricate the recorder. Factory lubrication is normally sufficient for quite some time. We suggest that you have the recorder checked and lubricated once a year by a qualified Sears technician to keep it in top operating condition.

CABINET CARE

Keep the lid closed when not in use to keep dust out of the mechanism. Periodically dust the interior of the cabinet. Clean the cabinet with a mild soap solution and a soft damp cloth.

IF RECORDER FAILS TO OPERATE PROPERLY

1. Carefully reread the instructions in this booklet to be sure it has been properly set up and being operated properly.
2. Be sure the power plug is making good contact in the AC receptacle. If a hum is heard, try reversing the plug in the receptacle.
3. Check to see if the tubes are securely seated in their sockets. Before checking tubes or removing cover from mechanism or amplifier, remove power plug from wall outlet.
4. If your set does not operate properly, call the Customer Service Department of your nearest Sears store. If your purchase was made by mail, write or call the Mail Order Branch from which you ordered your set, giving the model and chassis number, and explaining the difficulty you are having.

PERFORMANCE SPECIFICATIONS

3 SPEEDS	Capstan regulated at 7½", 3¾", 1½" per second
SPEED ACCURACY	+3 -1% maximum variation.
TAPE	Uses standard ¼" wide magnet tape reel sizes up to 7" diameter. Note: 3", 3¼" or 3½" diameter reels are not recommended for use on this machine as they are too small to provide adequate take up, braking, and time indicator readings.
OPERATION	Rotating type controls, fully interlocked.
RECORDINGS	¼ track monaural or stereo. Older ½ track recordings can be played on this unit without head position adjustment.
SHUTOFF	Automatic motor shut off switch at end of tape in RUN position prevents reel rotation when tape is not in the drive system.
WOW-FLUTTER	At 7½" .2% RMS maximum At 3¾" .3% RMS maximum At 1½" .6% RMS maximum
FREQUENCY RESPONSE	(Electrical at voice coil 8 ohms) At 7½" 40 to 12,000 cycles ±6 db At 3¾" 40 to 9,000 cycles ±6 db At 1½" 100 to 4,000 cycles ±6 db
EQUALIZATION	Automatic with speed change at 7½" and 3¾" to RIAA (NAB) standards for music reproduction.
INTERLOCKS	Automatic lockout and placement of all circuits to play whenever RUN-STOP is at STOP.
AMPLIFIERS	Each channel 2½ watts undistorted, 5 watts maximum, 10 watts—both channels
INPUTS	One dual position jack. Use first detent position (about half way in) for high input signals such as radio, tuner, record player etc. Use full insert position for microphone or other low signal source (about -55 db)
TONE CONTROL	Gonged, tandem, hi cut type -15 db minimum
MOTOR	Sturdy 4 pole with oilite type lubricated bearing
REWIND	Full 7" diameter 1,200 ft. reel—90 seconds, maximum
HUM LEVEL	-45 db maximum
ERASURE	-55 db minimum
STEREO SEPARATION	-45 db minimum
SIGNAL TO NOISE RATIO	-45 db minimum
BIAS FREQUENCY	60 kc
SPEAKERS	4 x 6" type, 8 ohm impedance
POWER REQUIREMENT	60 cycle a.c. 110-120 volts

MAKE SEARS YOUR HEADQUARTERS FOR ALL YOUR MAGNETIC RECORDING NEEDS

CHOOSING TAPES

BLANK TAPE — Use only top quality recording tape for best recordings and for protection against excessive wear. Professional grade tape, when made by a reputable manufacturer, is your best investment. So called budget or bargain tapes may seem satisfactory from the standpoint of voice recording; however, the quality controls necessary to prevent oxide flaking, high abrasiveness and, consequently, excessive variations in recording characteristics are seldom used in the manufacture of these tapes.

SILVERTONE tape is professional and meets all standards for studio and broadcast use. It is available on either a Standard Acetate or Premium Mylar base. The Standard grade is supplied in a 5" diameter 600 ft. reel (Cat. No. 57-9950) and 7" diameter 1200 ft. reel (Cat. No. 57-9951). For 50% longer playing time per reel, use the 7" diameter 1800 ft. reel of mylar base tape (Cat. No. 57-9953).

We do not recommend the use of smaller than 5" diameter reels for music recording. Use 3" diameter reels for voice only.

PRE RECORDED TAPE — Select tapes carefully. While this is a good piece of sound reproducing equipment, you can only get out of it what you put into it. It is a characteristic of magnetically recorded material to sound exceptionally good if well done, but disappointing if not made under ideal studio conditions or if otherwise marginal in quality.

Pre-recorded Stereo tapes that may be played on this equipment are identified on the box by one of the following names.

STEREO STACKED	BINAURAL STACKED	STEREO HALF TRACK
STEREO IN-LINE	BINAURAL IN-LINE	STEREO 4 TRACK (or ¼ TRACK)

Of the above types all except 4 track (or ¼ track) are played in only one direction and then rewound. Four track material is played in both directions.

Guarantee

We guarantee the Silvertone Tape Recorder to be free from defects in material and workmanship for a period of one (1) year, from date of sale. Should a defect occur, return part or set to us and we will:

1. During the first ninety (90) days from date of sale at our option, either repair or replace and install any defective parts or tubes free of charge.
2. After ninety (90) days and for the balance of the year at our option either repair or replace all defective parts and tubes, charging only for labor.

This guarantee does not provide free labor for service rendered in the home, nor does it include service necessitated by damage due to misuse, abuse, improper line voltage, fire or flood, lightning or other acts of God.

SEARS, ROEBUCK AND CO.

SEARS, ROEBUCK and CO.





Silverstone

IMPORTANT NOTICE

OWNER'S MANUAL SUPPLEMENT

This recorder uses a belt/pulley type speed change mechanism. Due to the time needed for the belt to adjust to the smaller pulley when changing from a higher speed to the lower 1-7/8 IPS speed, slight inconsistencies of tape speed may be experienced. Since this condition results from the normal adaptation of the belt, we recommend that whenever you use the slow 1-7/8 IPS speed, leave the recorder on for at least 10 to 15 minutes before starting the recording or playback procedures described in your Owner's Manual. THIS DELAY CAN BE AVOIDED BY STORING YOUR RECORDER IN THE 1-7/8 IPS SPEED POSITION.

M103

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