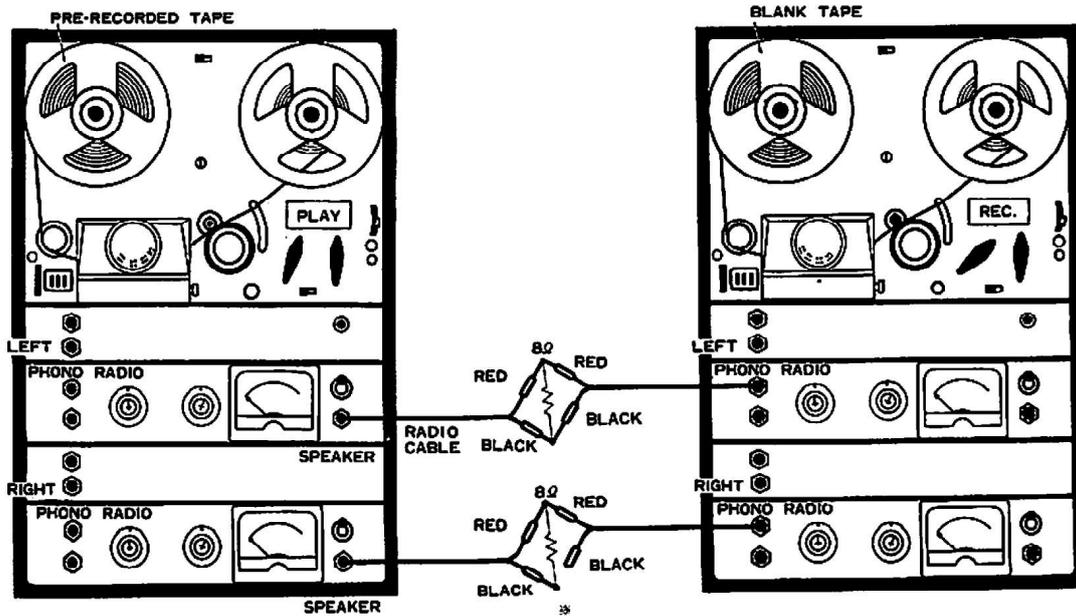


## 22. TAPE DUPLICATION

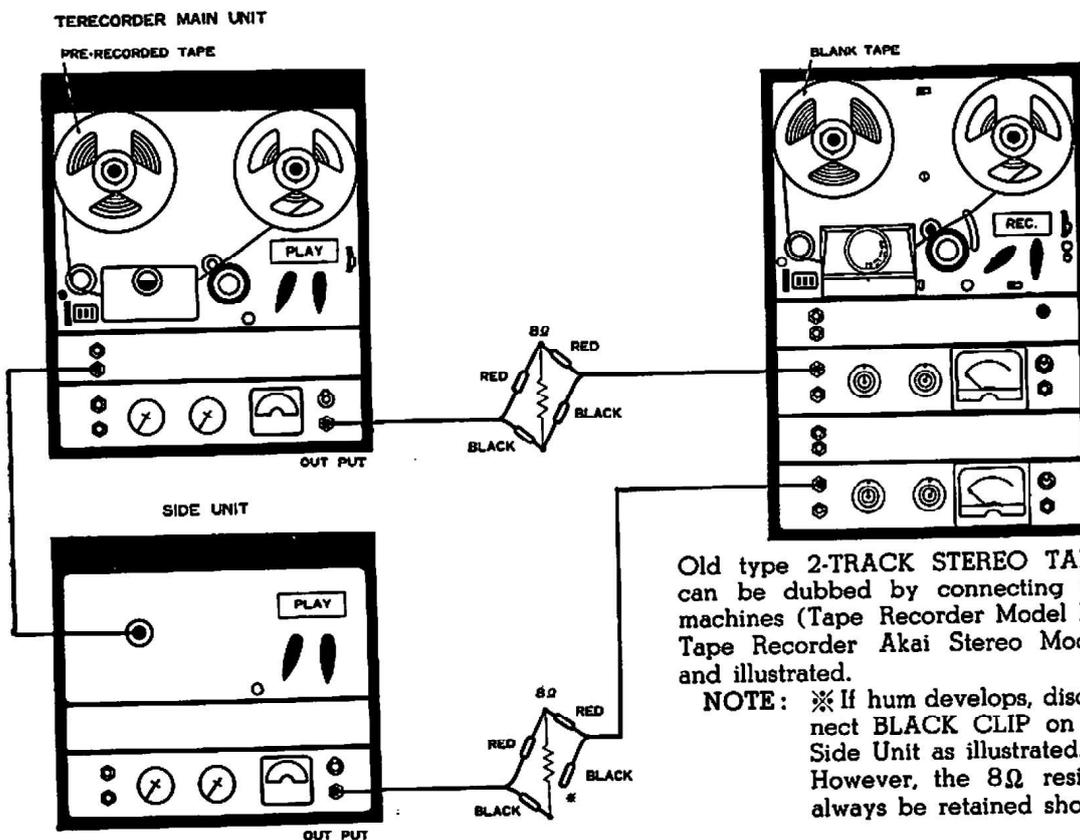
### 4 - TRACK MANAURAL AND 4 - TRACK STEREO



Set the POINTER of the Track Selector Control for "STEREO" on both Tape Recorder M-7. In this position, it will reproduce and record Tracks No. 1 and 3, and Tracks No. 4 and 2 when the reel is turned over. Also you can easily do this tape duplication by using 5-pin connection cable, connecting the both Din Jacks of M-7 recorders. (refer to the page 17)

NOTE: ※ If hum develops, disconnect BLACK CLIP on the RIGHT AMPLIFIER as illustrated. However, the 8Ω resistor should always be retained.

### 2 - TRACK STEREO TO 4 - TRACK STEREO

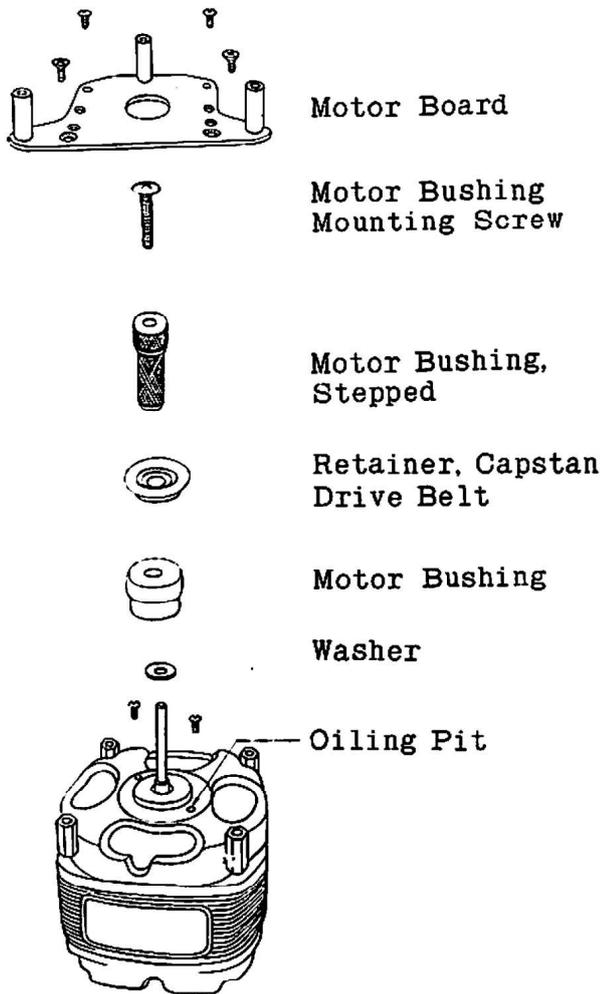


Old type 2-TRACK STEREO TAPES can be dubbed by connecting two machines (Tape Recorder Model M-7 Tape Recorder Akai Stereo Model) and illustrated.

NOTE: ※ If hum develops, disconnect BLACK CLIP on the Side Unit as illustrated. However, the 8Ω resistor always be retained should.

# II MAINTENANCE PROCEDURES

## 1. MOTOR LUBRICATION



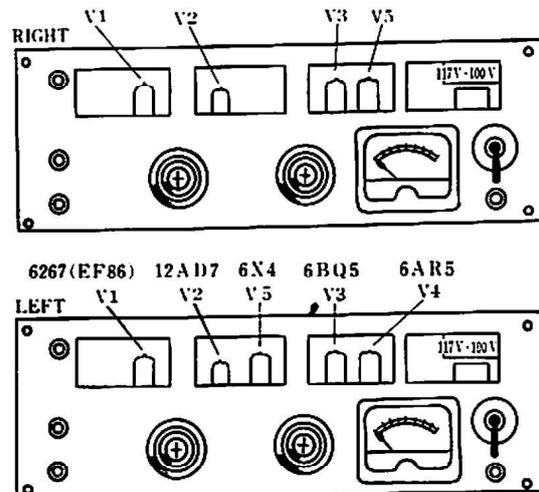
## 2. TUBE REPLACEMENT

Tubes are accessible by removing the two screws which mount the grilled panel of the tube section on both left and right amplifiers and lifting the panel clear.

For malfunctions listed in the trouble shooting chart replace the tube indicated in TUBE LOCATION CHART.

Care must be taken when replacing tubes to avoid bending tube pins.

Tubes and sockets have blank positions which must be aligned when tubes are re-inserted.



- V1 : 6267 (EF86) Low noise penthode.
- V2 : 12AD7 (same as 12AX7)  
High  $\mu$  dual triode.
- V3 : 6BQ5 Power output stage.
- V4 : 6AR5 Bias erase oscillator.
- V5 : 6 X 4 Rectifier tube

For maximum service life and optimum performance, it is recommended that the drive motor of your Model M-7 recorder be removed and lubricated after every 600 hours of operation as illustrated below. First, remove Motor Board, Motor Bushings, Belt Retainer and Washer as shown. Next, remove both of the ball-head screws which are mounted on the oiling pits of the cast motor frame. Oil the motor carefully until oil tank is saturated with the specified lubricant. Replace and tighten the ball-head screw. Reassemble and install the motor block as before.

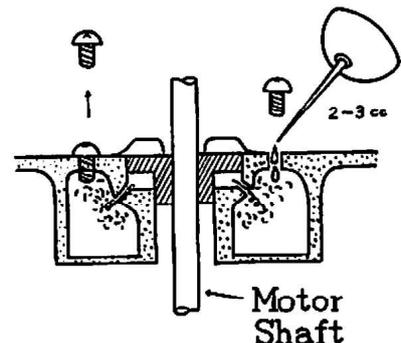
### CAUTION :

Use the specified lubricant (ESSTIC No. 50, TURBINE OIL No. 90 or equivalent) for this purpose. Any lubricant of good quality other than those specified can also be used but it will result in more frequent lubrication.

Do not over-lubricate, and wipe off excess immediately. Otherwise, the over-flowed lubricant may be scattered during operation and deterioration of rubber parts in the recorder will result.

**NOTE:** Lubricate also oil tank on the bottom side of the motor in the same manner.

Cross-sectional view of oil tank



### 3. LUBRICATION CHART

LUBRICATION POINT	AMOUNT OF LUBRICANT	LUBRICANT	NOTES
Rewind Idler Bearing, Wind Take-up Idler Bearing.	2 drops on each idler bearing	# 1	Remove top panel, remove idler retaining rings and composition washers; lift idlers slightly. Oil, Allow oil to soak into bearings and to flow down shaft before reassembly. Wipe off excess immediately.
Pinch Roller Bearing.	See note	# 2	Remove metal cap and retaining screw. Remove roller. Apply liberal coating of lubricant to bearing bore, replace roller on shaft. When lubricating pinch roller, do not replace roller until capstan bearing has been oiled.
Motor.	See previous page		
Drive Capstan Shaft.	Saturate felt washer in chrome retaining cap.	# 1	Remove speed change capstan, flow oil between shaft and retaining cap through the aperture, clean shaft with alcohol-soaked cloth.
Roller on all levers and cams.	As noted.	# 2	Apply a liberal film of lubricant to each roller surface as needed.

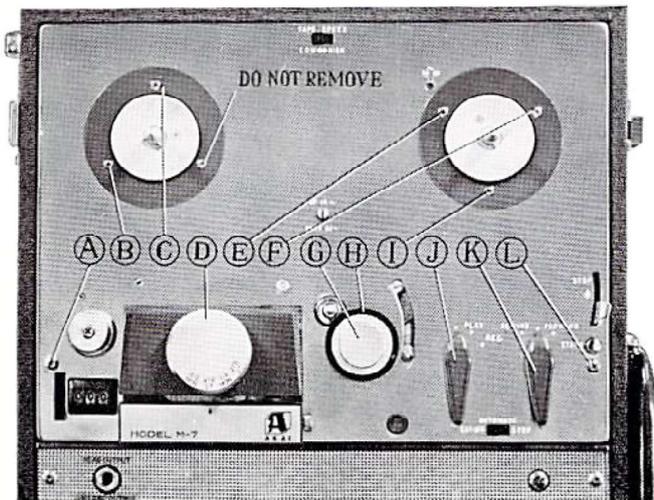
**LUBRICANTS :** # 1 - Light machine oil.  
# 2 - Light machine grease.

Lubricate Tape Recorder every 3 months in heavy duty service, every 6 months in moderate service, or annually in light service.

**CAUTION :** Do not over-lubricate.

### 4. HOW TO REMOVE TOP PANEL

When removal of the top panel is necessary for repair or maintenance, follow these instructions:



1. Remove all screws, pinch roller speed change knob and track selector control knob as illustrated in figure at left. The metal cap on the pinch roller can be easily removed with an edged instrument, such as a knife.
2. All other screws should be removed with a CROSS SCREW DRIVER except A, D, J and K.
3. The Track Selector Control Knob can be removed by loosening the screw "D". Before removing the knob remember the position of the indicator, as the control must be replaced in the same position.

## 5. FUSE REPLACEMENT & OTHERS

### FUSE REPLACEMENT :

REPLACE FUSE ONLY WITH A 1 AMPERE, 3 AG TYPE UNIT : Serious damage can result from incorrect fusing. Disconnect power and turn power switch off before replacing fuse.

### BRAKE ADJUSTMENTS AND REPAIRS :

In the event that tape spillage occurs when REWIND, FAST-FORWARD SWITCH is moved from either operational position to stop, adjustment of the BRAKE SHOE will solve the problem.

The BRAKE SHOES are mounted at the ends of the WIND and REWIND BRAKING BARS by means of screws and nuts. When the SWITCH is in stop position, the BRAKE SHOE, which halts tape travel after winding tape, is in contact with the serrated SPINDLE CLUTCH PLATE, below the FEED REEL SPINDLE and the other SHOE, contacts the braking idler between the TAKE-UP REEL SPINDLE and its CLUTCH PLATE. When the SHOES are mis-shaped and worn, they may be rotated a few degrees (Loosen mounting screws) to provide a new braking surface.

Only when the SHOES are completely worn will replacement be required. Be certain that the mounting screw is fully tightened after replacement or adjustment, as the SHOES must not be permitted to rotate. No maintenance requiring the removal of any protective cover should be performed until power cord has been disconnected from the power line. High voltages are present within the units when connected to lines.

### NOTE :

Tape spillage occurring when reels of different diameters are used is not abnormal. The use of identical reels is necessary for best tape handling.

### TAPE EDITING :

If only one track is recorded, the tape may be edited by cutting out unwanted portions or by joining selections from another sequence. Announcements may be inserted between selections, etc. Unused sections of tape can be spliced together for re-use. For very precise editing, turn REC-PLAY SWITCH to the "PLAY" position and push INSTANT STOP LEVER. Turn reel by hand to locate the word or sound. The tape is then cut or marked at this sound.

### NOTE

Only such corrective maintenance measures as are listed in the paragraphs 586 should be attempted by the user. Any other service which may be required should only be performed by service personnel intimate with the mechanical and electrical requirements of magnetic recorders. The TROUBLE-SHOOTING CHART serves as a guide to procedures which are felt to be within the limits of the "user-performed" service. When any difficulty is encountered in the operation of the recorder, consult the chart, locate the symptom and proceed as directed. If the symptom persists after corrective action has been taken, consult your nearest dealer for service recommendation.

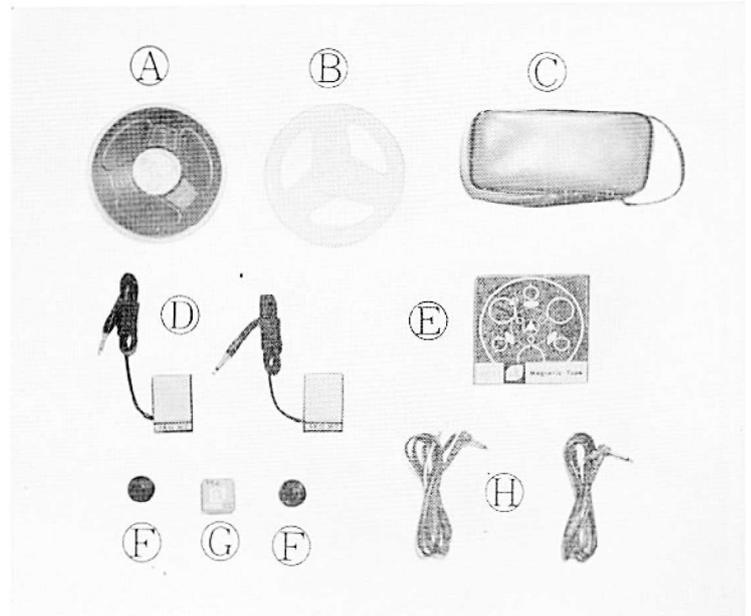
## 6. TROUBLE SHOOTING CHART

SYMPTOM	CAUSE	CURE
A. Motor does not run, pilot lamp in VU meters (LEFT & RIGHT) does not light.	<ol style="list-style-type: none"> <li>1. A. C. cord on Tape Recorder not properly connected.</li> <li>2. Fuse broken.</li> <li>3. Power cable disconnected.</li> </ol>	<p>Connect AC cord.</p> <p>Replace fuse.</p> <p>Reconnect power cable.</p>
B. Lamp in VU meters lights up but no speaker hum exists even at full volume.	<ol style="list-style-type: none"> <li>1. Speaker cable disconnected.</li> <li>2. Defective tube.</li> </ol>	<p>Reconnect speaker cable.</p> <p>Replace the defective tube.</p>
C. No record or play but speaker hums at full volume.	<ol style="list-style-type: none"> <li>1. Head cable disconnected.</li> </ol>	<p>Reconnect head cable.</p>
D. Hum recorded on the tape.	<ol style="list-style-type: none"> <li>1. Mike cable disconnected.</li> </ol>	<p>Reconnecte mike cable.</p>
E. Unit plays okay, recording distorted and poorly erased.	<ol style="list-style-type: none"> <li>1. Defective bias oscillator tube.</li> <li>2. Deposit of dust on head.</li> </ol>	<p>Replace.</p> <p>Clean the head gently with soft cotton swab.</p>
F. Wow or flutter at 7 ½"/sec. or 3 ¾"/sec. Insufficient drive.	<ol style="list-style-type: none"> <li>1. Defective drive idler.</li> <li>2. Oil on drive capstan.</li> <li>3. Defective main belt.</li> <li>4. Defective motor or capacitor.</li> </ol>	<p>Replace.</p> <p>Clean capstan.</p> <p>Refer to serviceman.</p> <p>Refer to serviceman.</p>
G. Poor high frequency response or noisy playback.	<ol style="list-style-type: none"> <li>1. Heads misaligned.</li> <li>2. Heads magnetized.</li> </ol>	<p>Align heads.</p> <p>Demagnetize heads.</p>
H. Cycle Conversion Switch does not move smoothly.	<ol style="list-style-type: none"> <li>1. Shortage of oil on the Cycle Conversion Switch</li> </ol>	<p>Give one or two drops of sewing machine oil on the Cycle Conversion Switch spindle.</p>
I. Tape spills off when winding or rewinding.	<ol style="list-style-type: none"> <li>1. Different reel size.</li> <li>2. Brake rollers worn or out of adjustment.</li> </ol>	<p>Use reels of same diameter.</p> <p>Replace or adjust brake shoes.</p>
J. Rewind not operating.	<ol style="list-style-type: none"> <li>1. Broken or worn rewind idler wheel.</li> </ol>	<p>Replace rewind idler wheel</p>

NOTE :

## 1. ACCESSORIES SUPPLIED

- (A) 7" reel with tape.
- (B) 7" reel.
- (C) Case for all accessories.
- (D) High Fidelity Dynamic Microphones.
- (E) 1-7/8 ips. demonstration tape.
- (F) Rubber caps for reels.
- (G) Splicing tape.
- (H) Radio cables.



## 2. ACCESSORIES AVAILABLE

### Endless Tape Magazine Accessoris No. AE-1

A 200 feet of recording tape is contained in a handy plastic magazine and both ends of tape are spliced together. It, therefore, forms a large loop of tape and will be used for continuous recording or play of programs up to 20 minutes stereophonically at the lowest tape speed of 1-7/8 ips.

### Telephone Pick-up Accessoris No. AP-2

It is designed to record telephone conversation with maximum clarity and sensitivity. Just press it to the back of the telephone and, a rubber sucker holds the Pick-Up in position.

### Tape Splicer Accessoris No. AS-3

Splicing of recording tapes is a hard job to well accomplish when a pair of scissors is used for this purpose. This Tape Splicer is a small pocketable device and it will not only provide easiness of tape splicing but also preserve the original quality of recordings.

### Monitor Earphone Accessoris No. AM-4 & AM-4P

The Monitor Earphone will be used both for recording and play. It is a quite useful piece of equipment for monitoring programs being recorded on tape. During playback, just plugging it into the recorder's Speaker Output Jack will give you the pleasure of listening to a high fidelity sound without disturbing your neighbors. A high impedance Crystal type and two different models are available as shown in picture.

### Microphone Stand Accessoris Nos. AMS-5 & AMS-5L

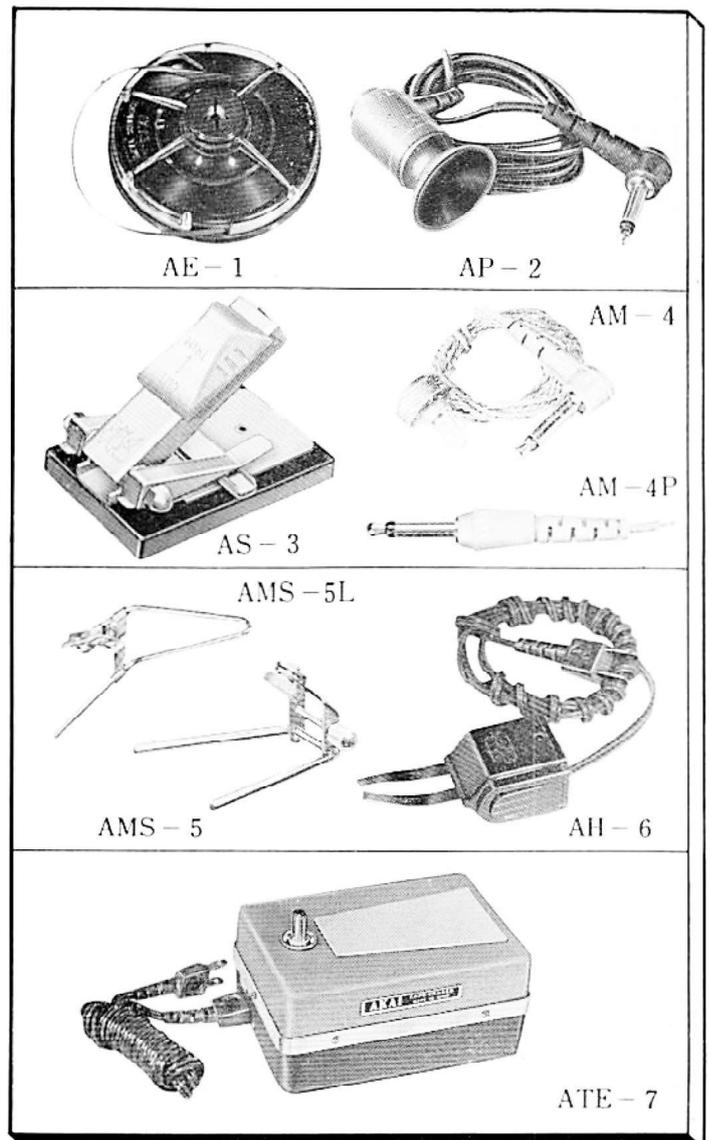
These are the smallest table models but, are indispensable accessories for recorder especially when placement of microphone on the table is required.

### Head Demagnetizer Accessoris No. AH-6

In the course of normal use, the steel pole pieces which from a part of the tape heads become slightly magnetized. The effect of the slight magnetization is to partially erase the tape with high frequencies suffering most. A periodical application of Head Demagnetizer is the only and best way to keep the original fine quality of your costly tapes. Has built-in on-off switch and a neon bulb.

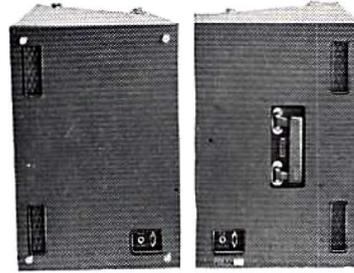
### Tape Eraser Accessoris No. ATE-7

It erases any previously recorded materials completely in a few seconds and is accomodate for tape reel from 3" to 10.5" in diameter. Designed to provide the maximum erasing efficiency. Has a pop-up shaft to hold the tape reel in position, which will serve also as power switch and on-off indicator of the unit.



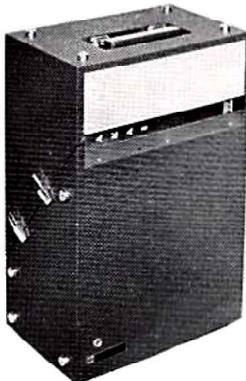
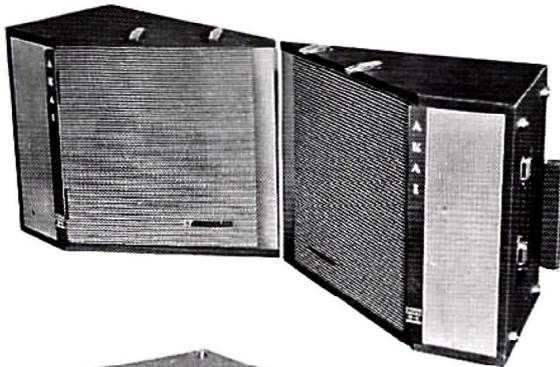
### 3. ACCESSORY SPEAKERS

#### MODEL **SS - 70**



Unlock the two BINDING CLAMPS located on each side of the speaker boxes. Release the top speaker box very slowly, lifting by the handle. The TREBLE SOUND from the speaker has SOUND DIRECTION. Then, place the speakers in locations that will give full advantage to the high notes. To connect to the Terecorder Model M-7, use the accessory Speaker Cable and insert the plug into the Jack of the speaker box, as illustrated. The speaker may be used in vertical position, however, there will be a noticable loss of high notes.

#### MODEL **SS - 50**



#### MODEL **SS - 70**

DeLuxe speaker system having large case capacity for better sound effect in low frequencies. Two 8" coaxial speakers are used just like as the SS-50 but thy are specially designed to emphasize high frequencies when the Tone Selector Switch is set at its "FLAT" position.

Input Impedance: 8 ohms, Maximum Power Input: 10 watts, Frequency Response: 50 to 15,000 cycles, Dimensions: 12-1/2" x 16-1/2" x 19-1/3"

#### MODEL **SS - 50**

It is beautifully designed to match with the M-7 recorder in style and size. Equipped with two 8" mechanical 2-way (with built-in tweeter) speakers in a dividable carrying case. Has a wide range frequency characteristic of 50 to 14,000 cycles, yet small and light weight. The input impedance is 8 ohms and the maximum power input is 8 watts. Dimensions: 8-1/4" x 14" x 20-1/2"

# V SCHEMATIC

