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SONY

STEREO TAPECORDER TC-230 / TC-230W

NER'S INSTRUCTION MANUAL

The SONY Model 230/230 W features a complete stereo music control center with integrated lid speakers for the TC-230 or with the SONY accessory Speaker System SS-23 for the TC-230W.

Special features: Stereo Music Center

This compact, but incredibly powerful stereo music control center consists of an amplifier utilizing quality SONY silicon transistors. A precision 4-track stereo tape deck and high performance speaker systems... Three pairs of stereo inputs: tuner, phonograph and microphone that correspond to the settings of the source selector on the front panel... Noise suppressor removes undesired high-frequency noise... Line outputs and stereo headphone jack are provided for flexibility... The OTL (Output Transformerless) circuits together with quality selected speakers assure superb tone quality.

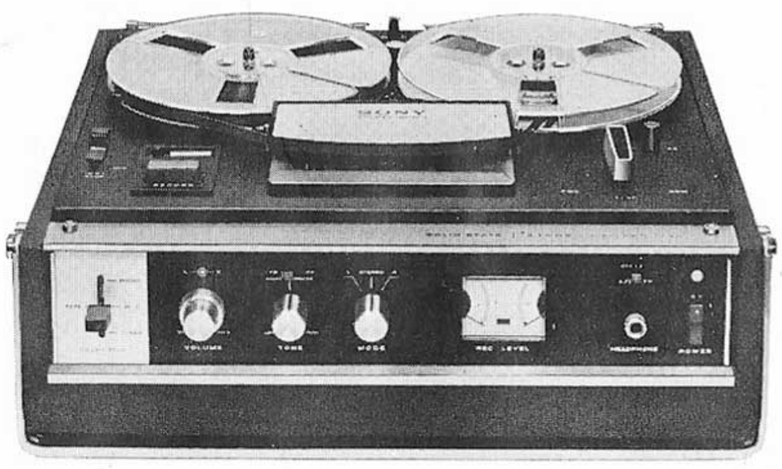
Other features...

Horizontal-styled 4-track stereo tape deck with three speeds, automatic sentinel shut-off switch and retractable pinch roller for easy tape threading.

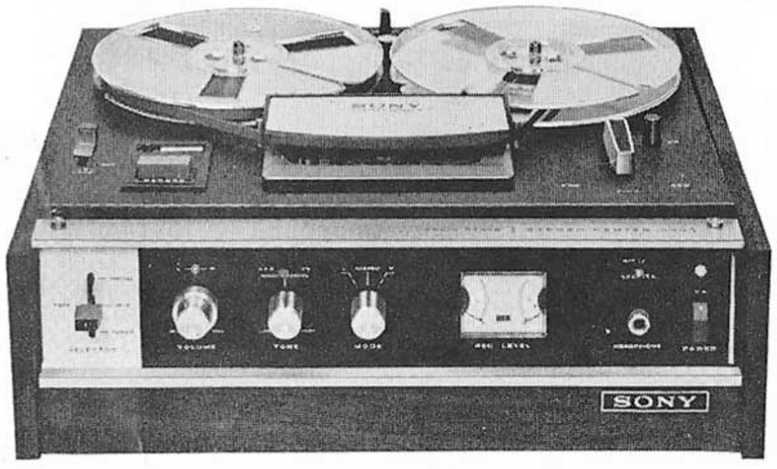
Model 230: mounted in handsome carrying case for portability, equipped with lid speakers.

Model 230W: mounted in walnut finish base.

Read this manual carefully before operating and save it for future reference.



Model 230



Model 230W

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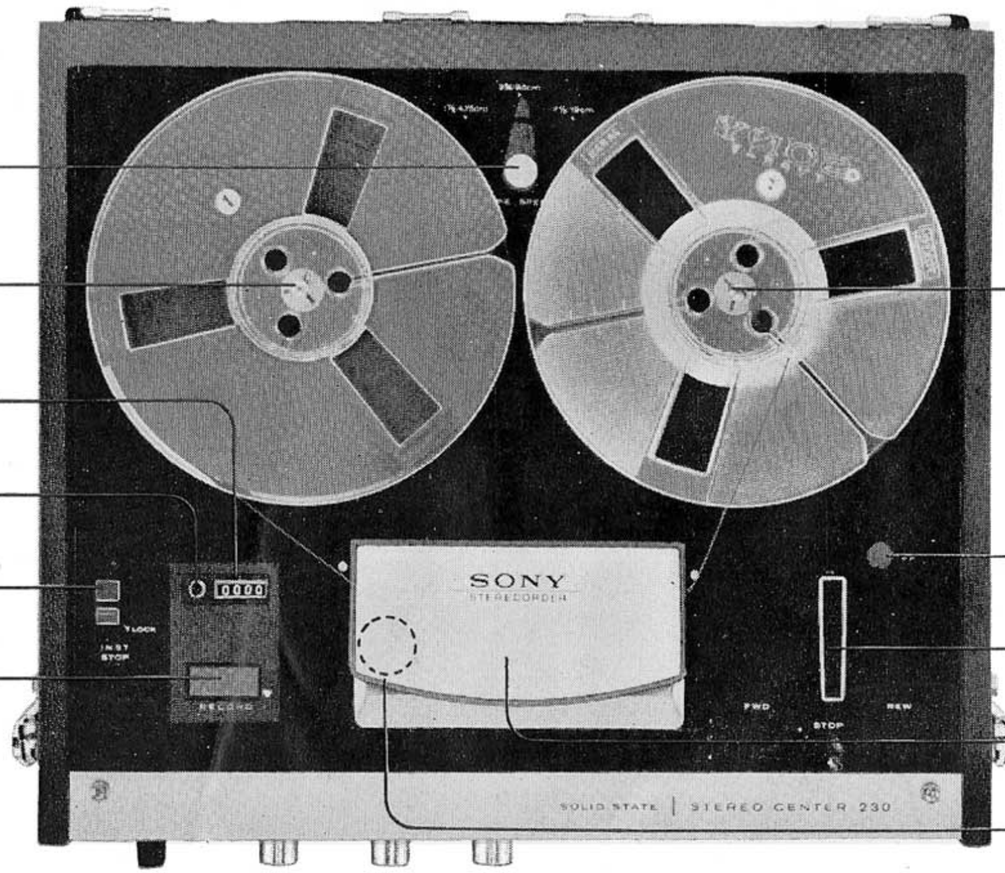
Location of Controls and Connectors



TAPE SPEED SELECTOR [TAPE SPEED] 1

FEED REEL SPINDLE 2

TAPE COUNTER 3

TAPE COUNTER RESET BUTTON 4

INSTANT STOP LEVER [INST STOP] 5

RECORD BUTTON [RECORD] 6

7 TAKE-UP REEL SPINDLE

8 FAST FORWARD BUTTON [FF]

9 FUNCTION SELECTOR

10 HEAD COVER

11 AUTOMATIC SHUT-OFF SWITCH

For operating instructions, read the paragraph "Operation of Controls" on page 4.

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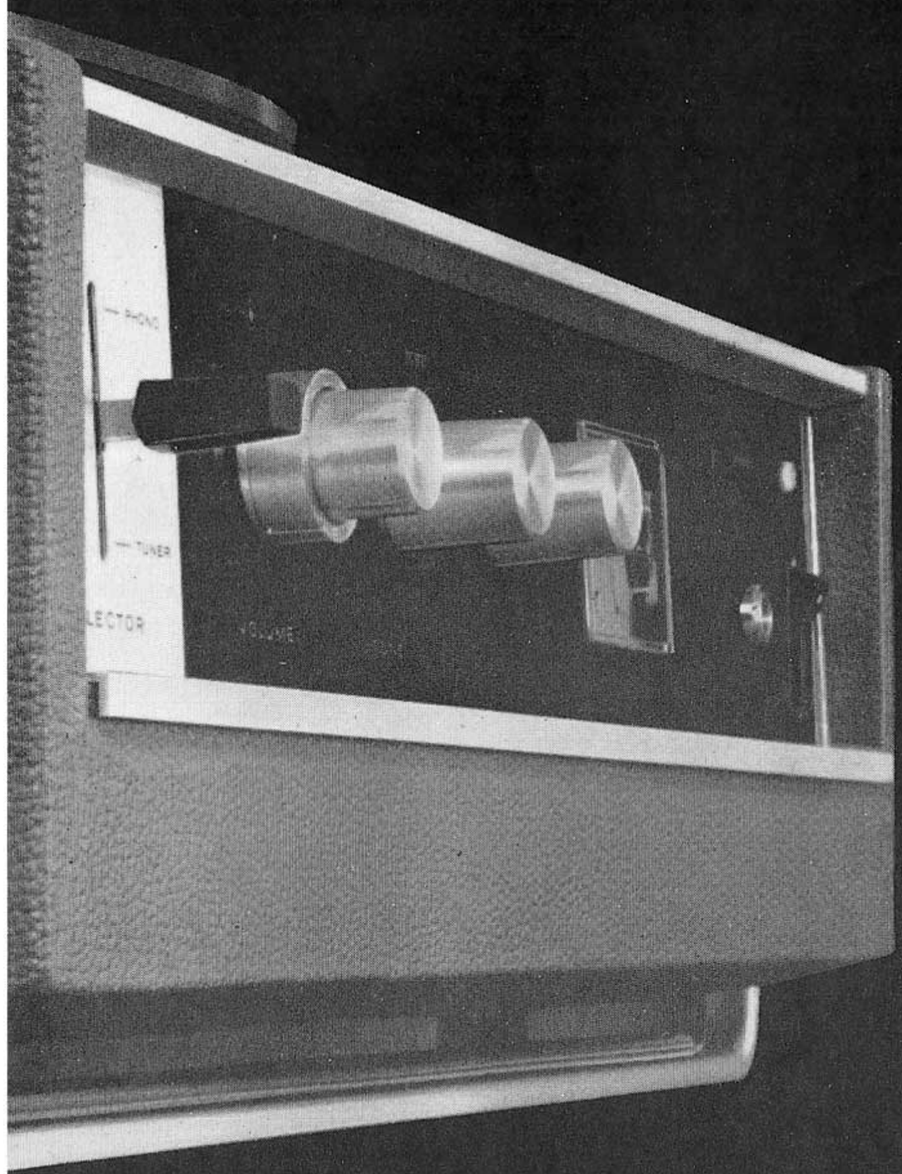


Operation of Controls

1 TAPE SPEED SELECTOR

Selects the desired tape speed of 7-1/2 ips, 3-3/4 ips or 1-7/8 ips and automatically sets the proper recording and playback characteristics for each speed.
7-1/2 ips and 3-3/4 ips are ideal when recording music and best sound quality is desired.
1-7/8 ips is ideal for speech especially when longer recording time is desired.
In playback mode, set the tape speed to correspond with the speed of the pre-recorded tape.
Change tape speed only when FUNCTION SELECTOR is in [STOP] position.

2 FEED REEL SPINDLE

Tape travels from left to right therefore tape is started from this spindle.

3 TAPE COUNTER

Indexes the tape used in record or playback. Press the reset button; four zeros will appear in the window to register starting point of tape.

4 TAPE COUNTER RESET BUTTON

Resets the figures on the TAPE COUNTER window as mentioned above.

5 INSTANT STOP LEVER [INST STOP]

Instantly stops tape motion while the recorder is in either record or playback mode.
Pull the lever toward you until it locks into position.
To release, push the lever down, the tape will immediately pick up normal forward speed.

6 RECORD BUTTON [RECORD]

Activates the record mode switch. While pressing the button, turn FUNCTION SELECTOR to [FWD] position; the tape motion will start and red lamps in the RECORD LEVEL METERS will illuminate indicating that the recorder is in RECORD mode. If FUNCTION SELECTOR is turned to [STOP] position while recording, RECORD BUTTON will be released and the recorder will automatically switch from record to playback mode.
Turn FUNCTION SELECTOR to either [FWD] or [REW] position to release locked record button.

7 TAKE-UP REEL SPINDLE

For placing an empty reel.

8 FAST FORWARD BUTTON [FF]

This button is used in conjunction with FUNCTION SELECTOR to facilitate fast forward tape motion.
Turn FUNCTION SELECTOR to [STOP] position, and while pressing this button, turn FUNCTION SELECTOR to [FWD] position.
This button will then be locked and the tape will rapidly move forward.
To stop fast tape motion, turn FUNCTION SELECTOR to [STOP] position.

9 FUNCTION SELECTOR

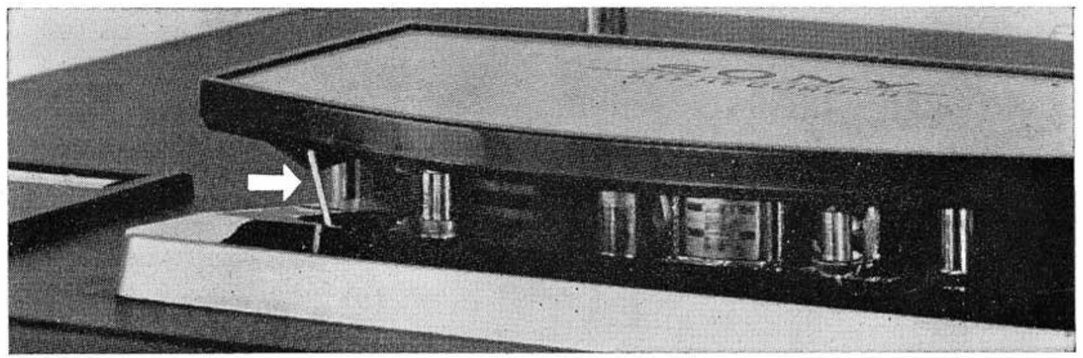
Controls all tape motions [FWD] forward, [STOP] and [REW] rewind.
To play tape, turn the selector to [FWD] position.
To stop tape, turn the selector to [STOP] position.
To record, press RED record button and simultaneously turn the selector to [FWD] position.
To rewind tape, turn the selector to [REW] position.

10 HEAD COVER

Protects the heads. When cleaning the tape path, demagnetizing head or lubricating capstan or pinch roller, etc., remove the head cover by loosening the screws located at the rear side of the cover.

11 AUTOMATIC SHUT-OFF SWITCH

This is a sentinel switch for automatically shutting off tape transport when end of available tape is reached. This switch is controlled by a wire lever located under the HEAD COVER.
In [STOP] position, the shut-off lever recedes to facilitate smooth tape threading. In [FWD], [REW] or [FF] position, after the tape is threaded, the lever contacts the tape and is held in operating position. If the tape runs out or breaks the lever will fall forward and activates SHUT-OFF SWITCH which stops the tape transport. However, the amplifier remains ON.



12 NOISE SUPPRESSOR [NOISE SUPPRESS]

Cuts off signals above 9 kHz.
With the setting of this switch to [ON], objectionable high-frequency noise such as record scratch or tape hiss is removed from the program material. This suppressor does not affect response to frequencies below 9 kHz allowing full pass-band for the majar part of the audio frequency range.

13 SOURCE SELECTOR [SELECTOR]

Selects any of three input program sources; [PHONO] [TAPE-MIC] or [TUNER].

[PHONO] position
Connects phonograph inputs. Stereo or monophonic discs loaded on a turntable connected to PHONO INPUT JACKS can be played or recorded through this position.

[TAPE-MIC] position
Activates stereo or monophonic microphone inputs, as well as providing playback of stereo or monophonic tapes. If and when the Model TC-230W is installed into a HI-FI cabinet the microphones may be connected permanently and therefore stored in a convenient and readily acceptable place in the cabinet without affecting the tape playback in any manner whatsoever. The microphones, therefore, will be immediately available for use as soon as the selector is in the TAPE-MIC position and with the instrument in record mode.

[TUNER] position
Connects FM/AM tuner inputs. Stereo or monophonic radio programs can be recorded and monitored simultaneously in this position.

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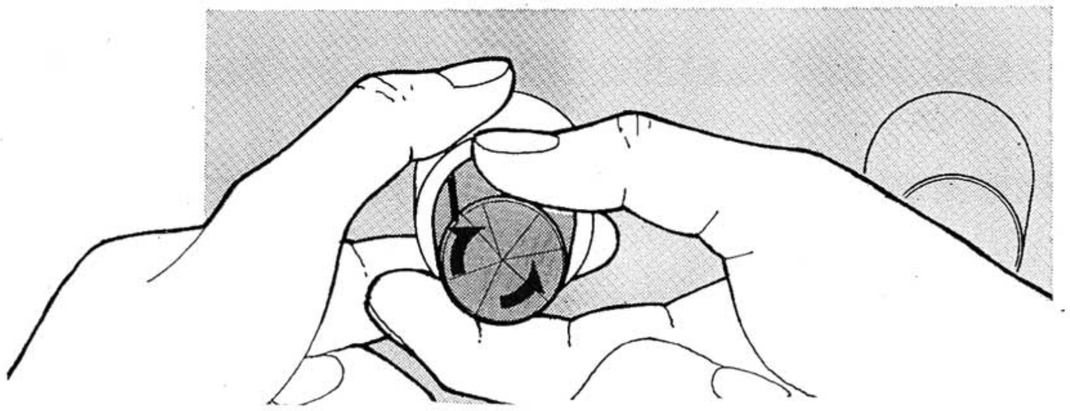
14 VOLUME CONTROL KNOBS [VOLUME]

Control the record, speaker, headphone, or line output volume of both left [CH-1] and right [CH-2] channels. Both knobs will rotate simultaneously or separately. For balancing stereo sound, turn one knob while holding the other stationary. The outer knob controls the left channel and the inner knob controls the right channel.



15 TONE CONTROL KNOB [TONE]

Controls tone quality of left channel and right channel through the speakers, headphone or line outputs in playback. Turn clockwise for treble sound, turn counter-clockwise for bass sound. Center line is adjusted for flat response.

16 MODE SELECTOR [MODE]

Has three positions [L], [STEREO] and [R].
Avoid use of this selector while recording.

[L] position
Connects left channel sound to left and right speakers or headset, as well as activating the left channel recording facility.

[STEREO] position
Connects left and right channel sound to the respective speaker or headset. Activates both left and right channel recording facilities.

[R] position
Connects right channel sound to left and right speakers or headset, as well as activating the right channel recording facility.

17 RECORD LEVEL METERS [REC LEVEL]

Indicate the signal level being recorded.
Deflection of the neeble to the boundary of the red and black zones provides normal recording level. However, occational transient peaks will swing the needle into the red zone without detrimental effect. The red lamp in the meters will be illuminated when the recorder is in RECORD mode.

18 SPEAKER SWITCH [SPEAKER]

Switches the speakers ON or OFF in either play or record position. While speaker monitoring, loudness can be adjusted in two steps: [1] position is for soft sound and [2] position is for loud sound.
When monitoring through HEADPHONE JACK, turn this switch off.

19 PILOT LAMP

Illuminates when the power is ON.

20 POWER ON-OFF SWITCH [POWER]

Switches the operating power ON or OFF.

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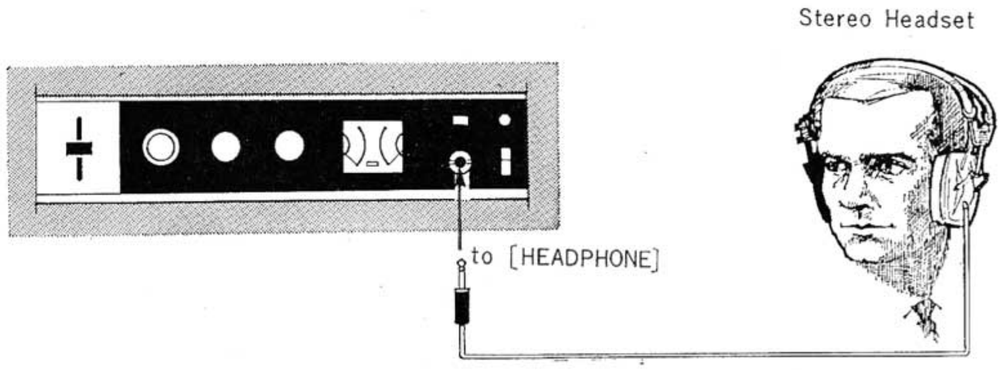
Input and Output Connectors

21 HEADPHONE JACK [HEADPHONE]

Connects to any high quality 8 ohm or 10 K ohm stereo headset equipped with a standard phone plug. The recommended headset is the SONY Stereo Headset DR-3A or DR-3C (optional accessory). When the headset is connected, turn SPEAKER SWITCH OFF and adjust VOLUME CONTROL KNOBS and TONE CONTROL KNOB to obtain desired volume and tone quality.



22 AC POWER CORD

For connecting to 117V AC household power line. Plug the end of the cord into the 117V AC outlet.

23 AC POWER OUTLET [AC 117V OUTLET]

Supplies 117V AC power at a maximum of 300 watts to other components when the AC POWER CORD is connected to an AC wall outlet. This outlet is not switched off by POWER ON-OFF SWITCH.

24 GROUND TERMINAL [E]

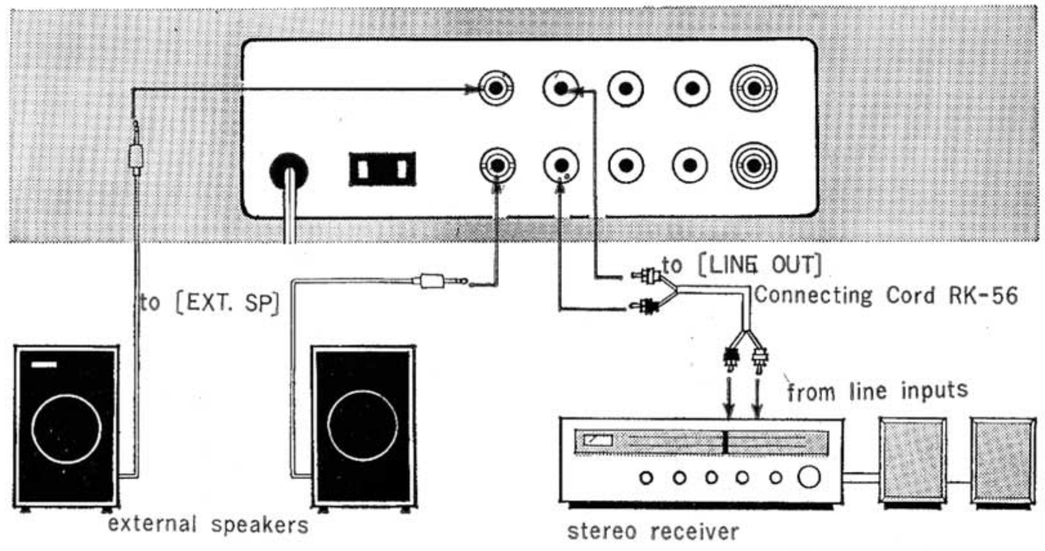
For ground connection with player or the earth.

25 EXTERNAL SPEAKER JACKS [EXT SP]

Equipped with mini jacks. Connect the lid speakers or any 8 ohm external speakers. The recommended speakers are the SONY Speaker System SS-23 (optional accessory).
Connect the left [CH-1] speaker to [L] jack and the right speaker to [R] jack respectively. The speakers can be used either vertically or horizontally.

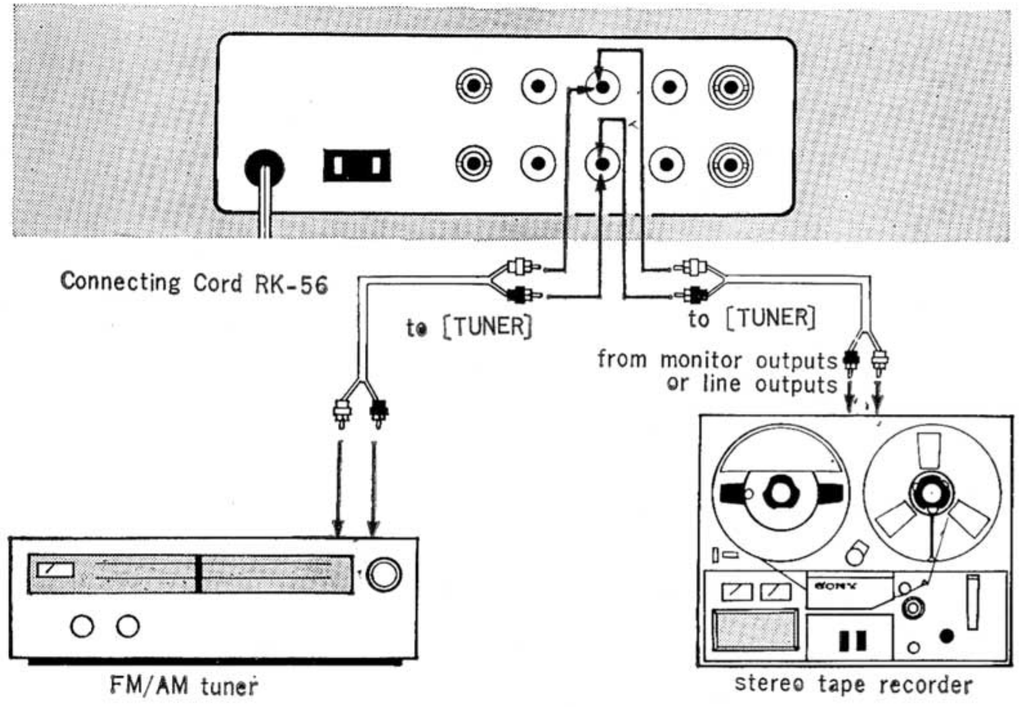
26 LINE OUTPUT JACKS [LINE OUT]

Equipped with phono jacks. Connects outputs to another tape recorder inputs, or the tape recorder inputs, auxiliary inputs, or line inputs of an integrated amplifier or pre-amplifier having an impedance of more than 10K ohms. Tone quality and sound volume of outputs will be controlled by turning VOLUME CONTROL KNOBS and TONE CONTROL KNOB. When the NOISE SUPPRESSOR is in ON, high-frequencies above 9 kHz of outputs are cut off.



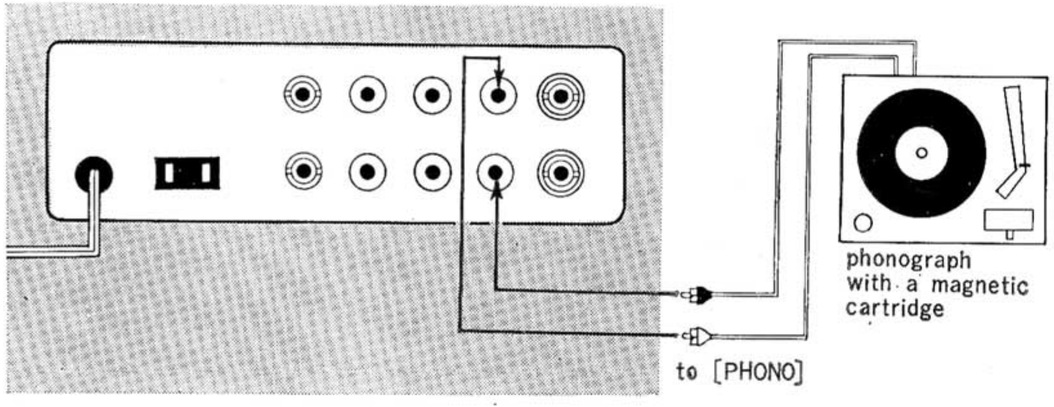
27 TUNER (AUXILIARY) INPUT JACKS [TUNER]

Equipped with phono jacks. Will accept outputs of FM/AM tuner, integrated amplifier (recording outputs), tape recorder (monitor outputs or line outputs) for listening or recording programs directly from the connected component. These inputs have an impedance of 100K ohms.



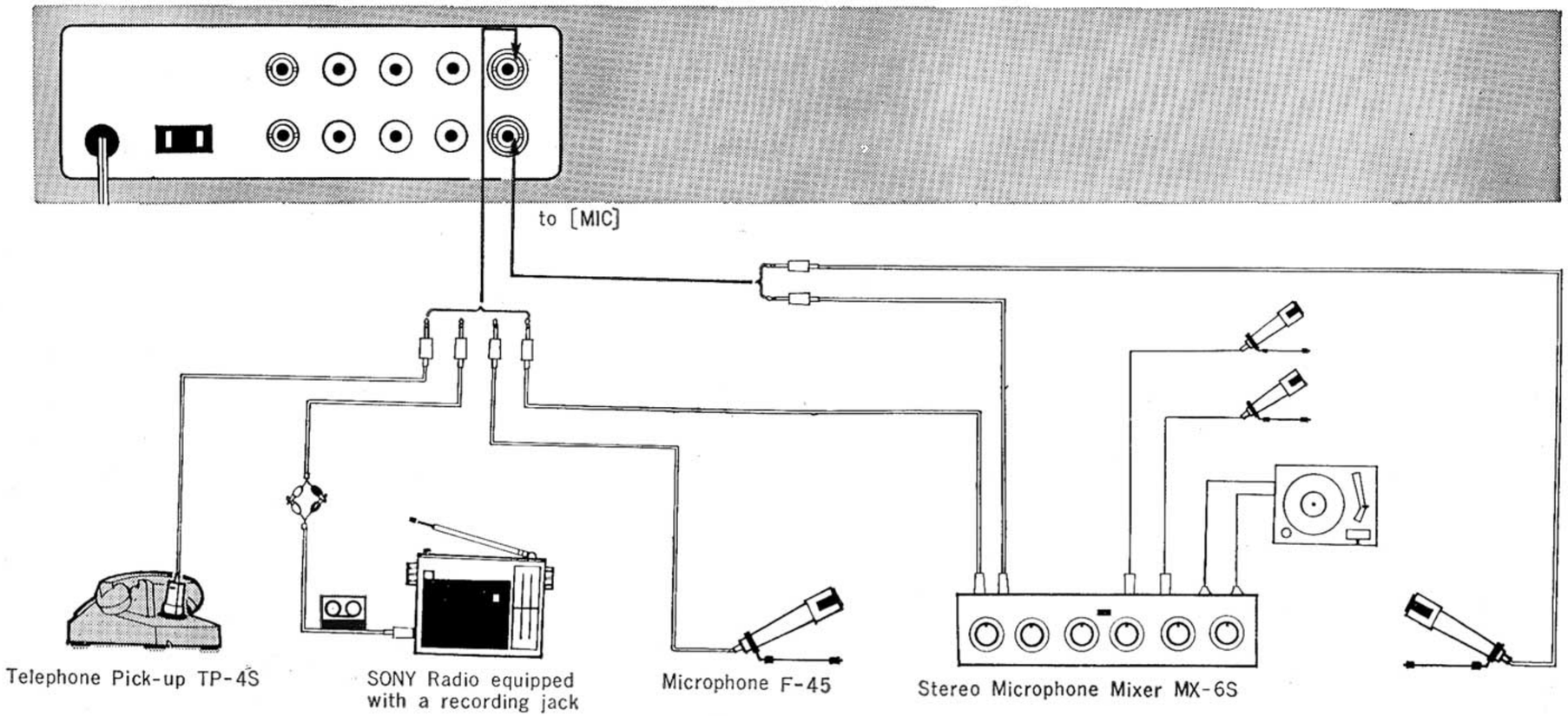
28 PHONO INPUT JACKS [PHONO]

Equipped with phono jacks. Connect magnetic type cartridge having sensitivity of more than 4 mV. These inputs have a sensitivity of 2 mV. The desired sound volume of the phonograph inputs is controlled by the VOLUME CONTROL KNOBS, according to the cartridge used.



29 MICROPHONE INPUT JACKS [MIC]

Equipped with mini jacks. Will accept dynamic microphone SONY F-45 (supplied) or any high quality low impedance microphone. Also accepts inputs of a telephone pick-up such as SONY TP-4S (optional accessory), stereo microphone mixer SONY MX-6S (optional accessory) and SONY radio equipped with a recording jack. Public address can be obtained through these jacks.



How to set up and use the 230/230W as a stereo center

Connection

1. Insert AC POWER CORD into AC 117V outlet.
2. Place left and right speakers and connect them to the respective EXTERNAL SPEAKER JACKS.
3. Connect stereo or monophonic source to proper inputs. Refer to "INPUT AND OUTPUT CONNECTORS" on page 7.

Operation

1. Press POWER ON-OFF SWITCH to turn the power ON.
   Make sure to set FUNCTION SELECTOR to [STOP] position.
2. Turn SOURCE SELECTOR to respective position to inputs.
3. Set MODE SELECTOR to [STEREO] or either [L] or [R] position.
4. Turn SPEAKER SWITCH ON.
   When listening through a headset, turn SPEAKER SWITCH OFF.
5. Adjust VOLUME CONTROL KNOBS and TONE CONTROL KNOB for desired volume and tone quality.

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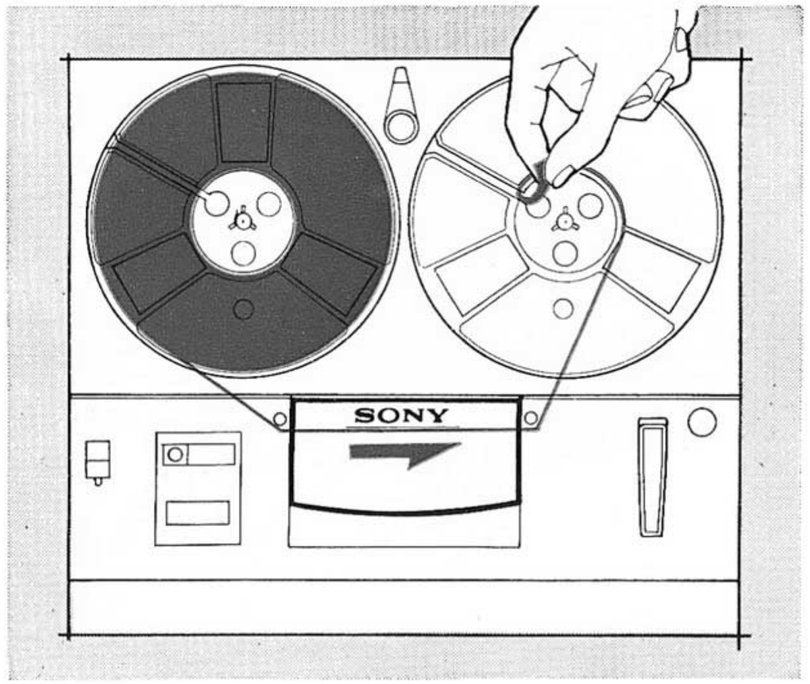
How to use the 230/230W as a tape deck

Tape threading and Tape speed setting

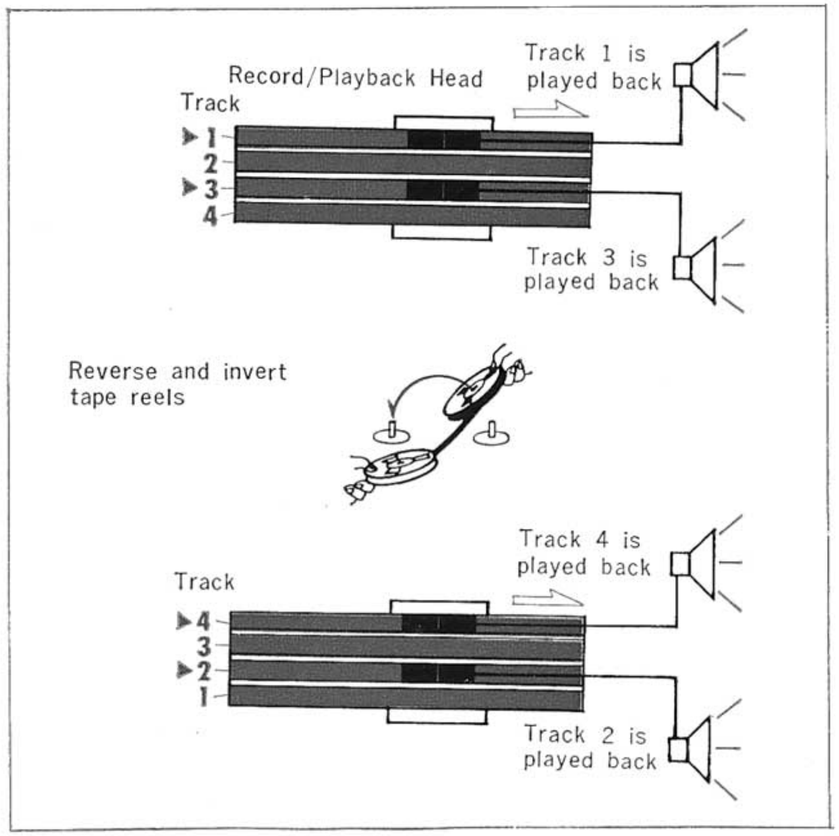
Before tape threading, insert AC POWER CORD into AC 117V outlet. Place and connect speakers.
Reel sizes from 3 to 7 inches diameter are accomodated.
Thread the tape as follows:

1. Place an empty reel on TAKE-UP REEL SPINDLE and a full reel of tape on FEED REEL SPINDLE.
2. Unwind about 18 inches of tape or leader from the full reel of tape and bring it from left to right through the tape path under HEAD COVER. Dull side of the tape should face the heads.
3. Wrap it around the empty reel hub, or insert the end into the reel slot. (The use of a SONY Easy Tape Threader will facilitate the threading of tape).
4. Set the desired tape speed of 7-1/2 ips, 3-3/4 ips or 1-7/8 ips by turning TAPE SPEED SELECTOR. A recording must always be played back at the same speed at which it was recorded.



4-track stereo tape playback

1. Press POWER ON-OFF SWITCH to turn the power ON.
2. Turn SOURCE SELECTOR to [MIC-TAPE] position.
3. Set MODE SELECTOR to [STEREO] position.
4. Turn SPEAKER SWITCH ON.
   When you listen through a headset, turn SPEAKER SWITCH OFF.
5. Turn FUNCTION SELECTOR to [FWD] position.
6. Adjust VOLUME CONTROL KNOBS and TONE CONTROL KNOB for desired volume and tone quality.
7. When track 1 and 3 (side 1) are completed, turn FUNCTION SELECTOR to [STOP] position.
8. To play tracks 4 and 2 (side 2), do not rewind the tape, simply reverse and invert the tape reels and repeat playback.
9. When tracks 4 and 2 are completed, turn FUNCTION SELECTOR to [STOP] position.



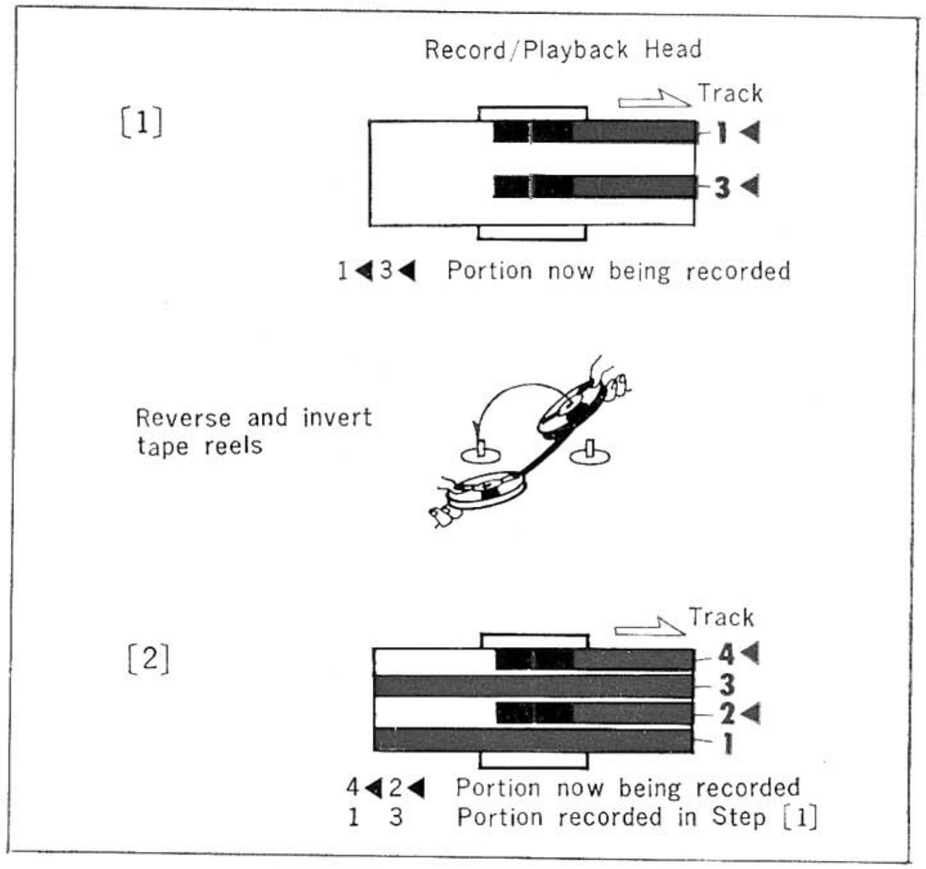
4-track monophonic tape playback

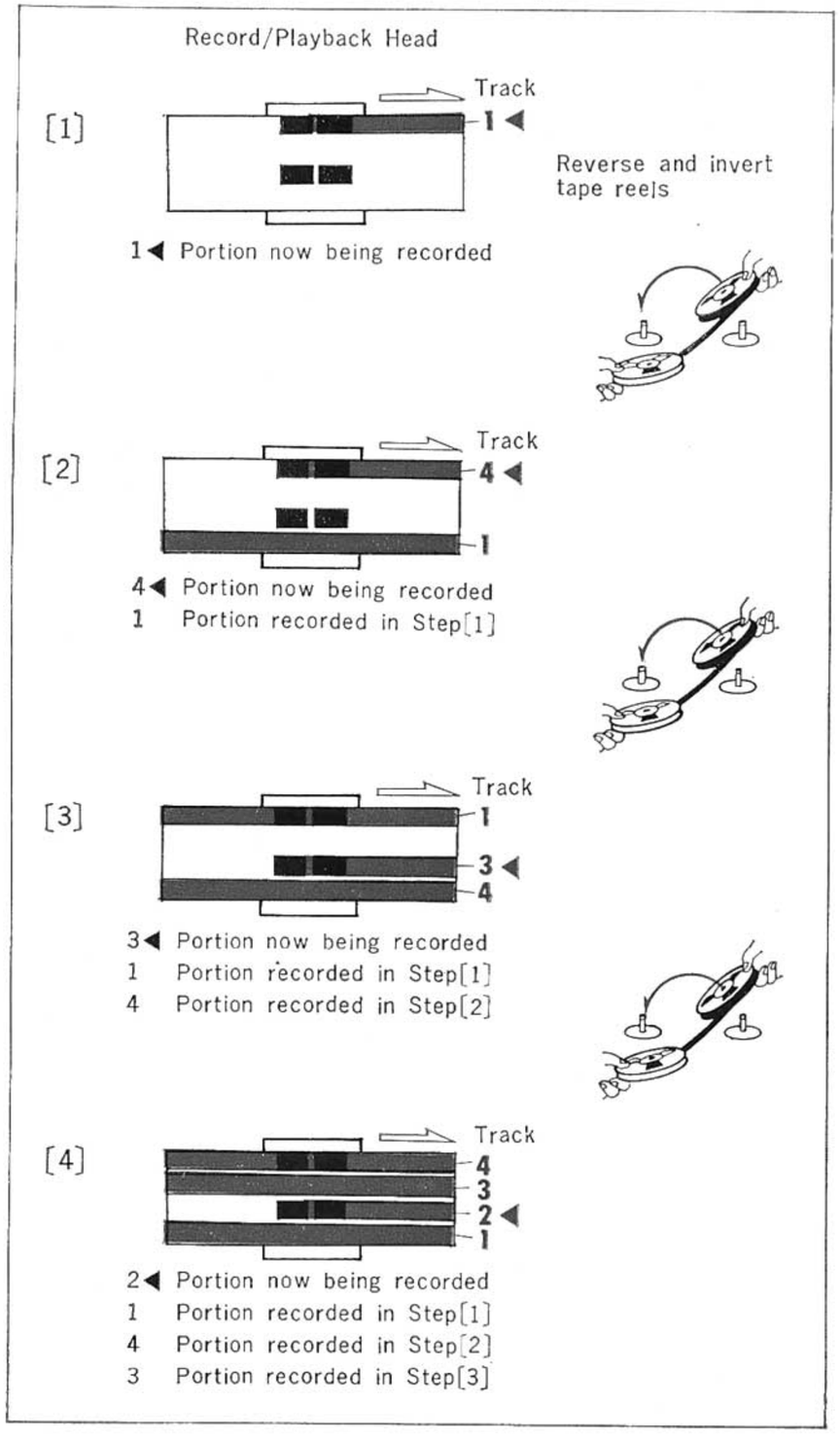
The following playback procedure is recommended for a monophonic tape whose sequence of recording is: track 1—track 4—track 3—track 2.

1. Press POWER ON-OFF SWITCH to turn the power ON.
2. Turn SOURCE SELECTOR to [MIC-TAPE] position.
3. Set MODE SELECTOR to [L] position.
4. Turn SPEAKER SWITCH ON.
   When you listen through a headset, turn SPEAKER SWITCH OFF.
5. Turn FUNCTION SELECTOR to [FWD] position.
6. Adjust VOLUME CONTROL KNOB [L] and TONE CONTROL KNOB for desired volume and tone quality.
7. When track 1 is complete, turn FUNCTION SELECTOR to [STOP] position.
8. To playback track 4, do not rewind tape, simply reverse and invert the tape reels. Repeat playback.
9. When track 4 is complete, do not rewind the tape, simply reverse and invert the tape reels.
10. To playback tracks 3 and 2, set MODE SELECTOR to [R] position.
    Adjust VOLUME CONTROL KNOB [R] and TONE CONTROL KNOB.
11. When track 3 is complete, reverse and invert the tape reels to playback track 2.
12. When the end of tape is reached, turn FUNCTION SELECTOR to [STOP] position.

4-track stereo recording

1. Press POWER ON-OFF SWITCH to turn the power ON.
2. Connect stereo source to proper inputs. Refer to "INPUT AND OUTPUT CONNECTORS" on page 7.
3. Turn SOURCE SELECTOR to respective position of inputs.
4. Set MODE SELECTOR to [STEREO] position.
5. Press RECORD BUTTON and adjust VOLUME CONTROL KNOBS for proper recording level. See RECORD LEVEL METERS.
6. Hold RECORD BUTTON in and turn FUNCTION SELECTOR to [FWD] position. The RECORD BUTTON is now locked and recording (track 1 and 3) has started.
7. When the end of tape is reached, do not rewind. Turn FUNCTION SELECTOR to [STOP] position.
8. Reverse and invert tape reels and record side 2 (track 4 and 2). Repeat procedure in paragraphs 5 and 6.
9. When recording is complete, turn FUNCTION SELECTOR to [STOP] position. Do not rewind tape.





4-track monophonic recording

1. Press POWER ON-OFF SWITCH to turn the power ON.
2. Connect monophonic source to left [L] input for source used. Refer to "INPUT AND OUTPUT CONNECTORS" on page 7.
3. Turn SOURCE SELECTOR to respective position of inputs.
4. Set MODE SELECTOR to [L] position.
5. Press RECORD BUTTON and adjust VOLUME CONTROL KNOB [L] for proper recording level. See RECORD LEVEL METER [L].
6. Hold RECORD BUTTON in and turn FUNCTION SELECTOR to [FWD] position. RECORD BUTTON is now locked and recording on track 1 has started.
7. When the end of tape is reached, do not rewind. Turn FUNCTION SELECTOR to [STOP] position.
8. Reverse and invert tape reels and record side 2 (track 4), using procedure outlined in paragraphs 5 and 6.
9. When the end of tape is reached, turn FUNCTION SELECTOR to [STOP] position.
10. To record track 3, reverse and invert tape reels.
11. Change the connection of input program from the left [L] to the right [R] input jack.
12. Set MODE SELECTOR to [R] position.
13. Press RECORD BUTTON and adjust VOLUME CONTROL KNOB [R]. See RECORD LEVEL METER [R].
14. Hold RECORD BUTTON in and turn FUNCTION SELECTOR to [FWD]. Recording on track 3 has started.
15. When the end of tape is reached, do not rewind.
16. Reverse and invert tape reels to record track 2 using procedure outlined in paragraphs 13 and 14.
17. When recording on track 2 is completed, turn FUNCTION SELECTOR to [STOP]. Do not rewind tape.

Monitoring

While recording, monitoring through either speakers or stereo headset connected to HEADPHONE JACK is possible.

Speaker Monitoring

1. Turn SPEAKER SWITCH ON.
2. While recording with a microphone, howling sound (acoustic feedback) may occur when the microphone is too near the speaker. If this occurs:
   a) Move the microphone away from the speaker.
   b) Reduce the volume by adjusting VOLUME CONTROL KNOBS.

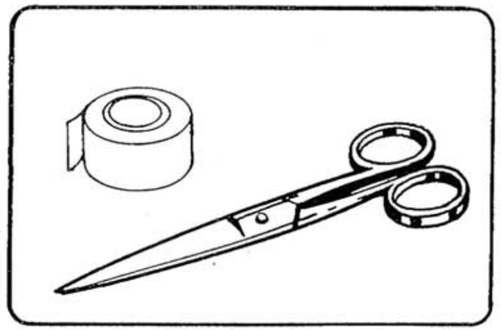
Stereo headset Monitoring

1. Connect the headset to HEADPHONE JACK.
2. Turn SPEAKER SWITCH OFF.

Erasing Tape

The erase head operates only in record mode, therefore every time you make a recording, any previous recording on the tape is automatically erased.

You can also erase a tape without adding a new recording. Place the recorder in record mode. Turn VOLUME CONTROL KNOBS to minimum and run the tape through without connecting any input source.



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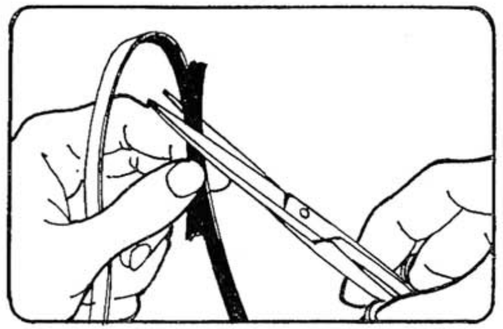

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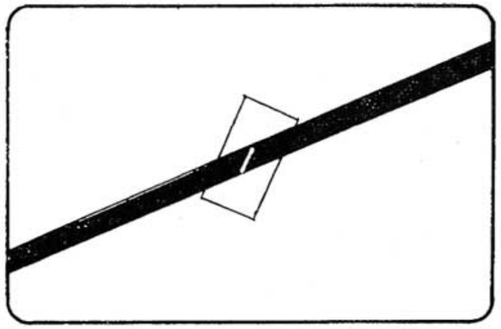

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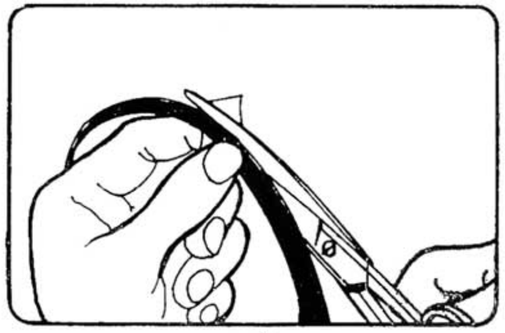


4

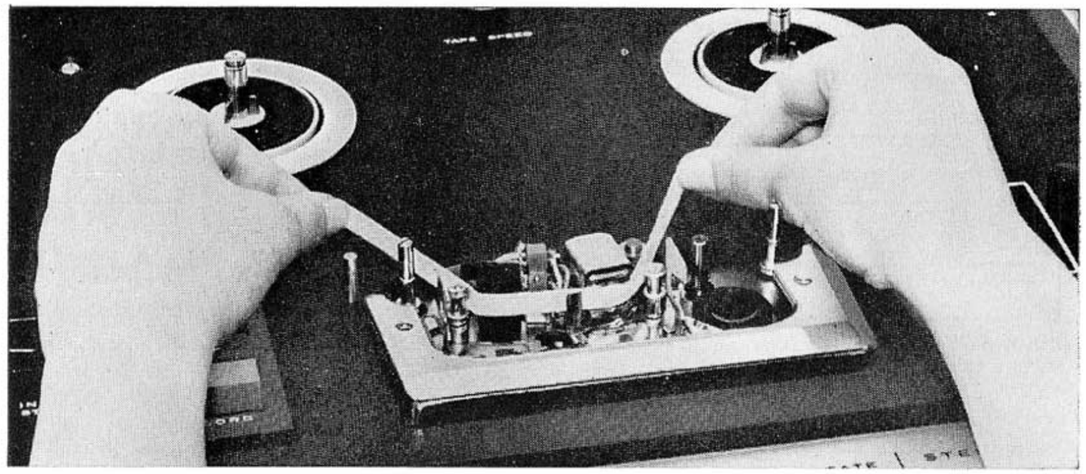
Splicing Tape

1. Use splicing tape and a pair of scissors. Do not use ordinary cellophane tape; it tends to deteriorate.
2. Overlap recording tapes and make a diagonal cut across both tapes.
3. Carefully align and butt the cut ends together. Keep the ends in contact, firmly press a piece of splicing tape over the shiny side of the tape to make a firm joint.
4. Tri offm the excess splicing tape.

Maintenance

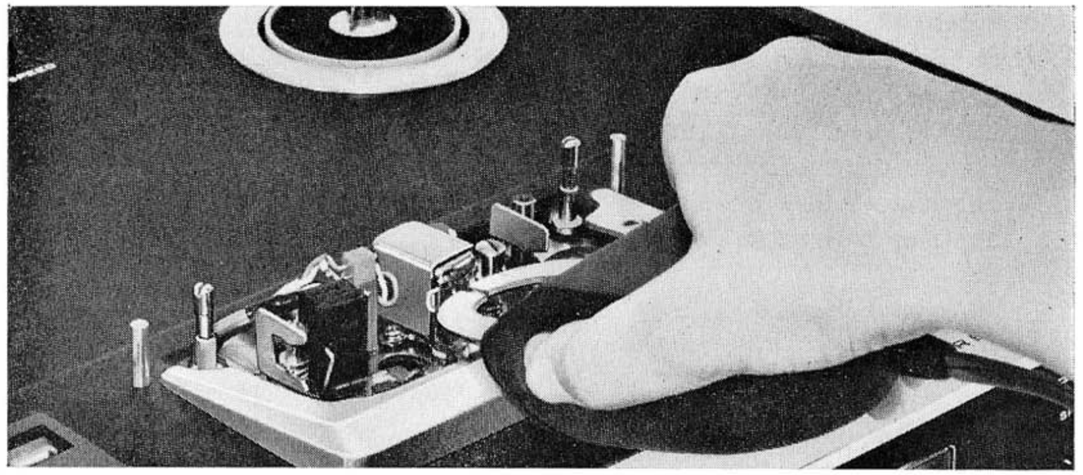
Cleaning heads

The iron oxide particles in the tape may build up a deposit on the heads. These deposits prevent complete erasure of old recordings when reusing the tape. They may also cause weak or distorted recordings. Therefore, it is better to clean the heads after every ten hours of use.
Remove HEAD COVER by loosening the screws located at the back of the cover with a small screw driver. Use the head cleaning ribbon supplied or a soft cloth and carefully wipe the portion of the heads over which the tape travels. When the deposits cannot be removed, moisten the ribbon or cloth with denatured alcohol. The use of inferior brands of tapes will result in excessive oxide deposits. Frequent inspection of the heads will help maintain optimum performance. The use of SONY Tape is recommended for best results.



Demagnetizing heads

Through continuous use, residual magnetism will be gradually built up on the heads and this excessive residual magnetism will produce noise while the tape is being played. Therefore, periodic use of the SONY Head Demagnetizer HE-2 (optional accessory) or equivalent is recommended for dest possible performance.



Lubrication

Use light machine oil and lubricate CAPSTAN, PINCH ROLLER and IDLER SHAFTS every 6 months. Avoid excessive lubrication. It may cause slippage in the mechanism and contamination of your tape.

(1) CAPSTAN bearing

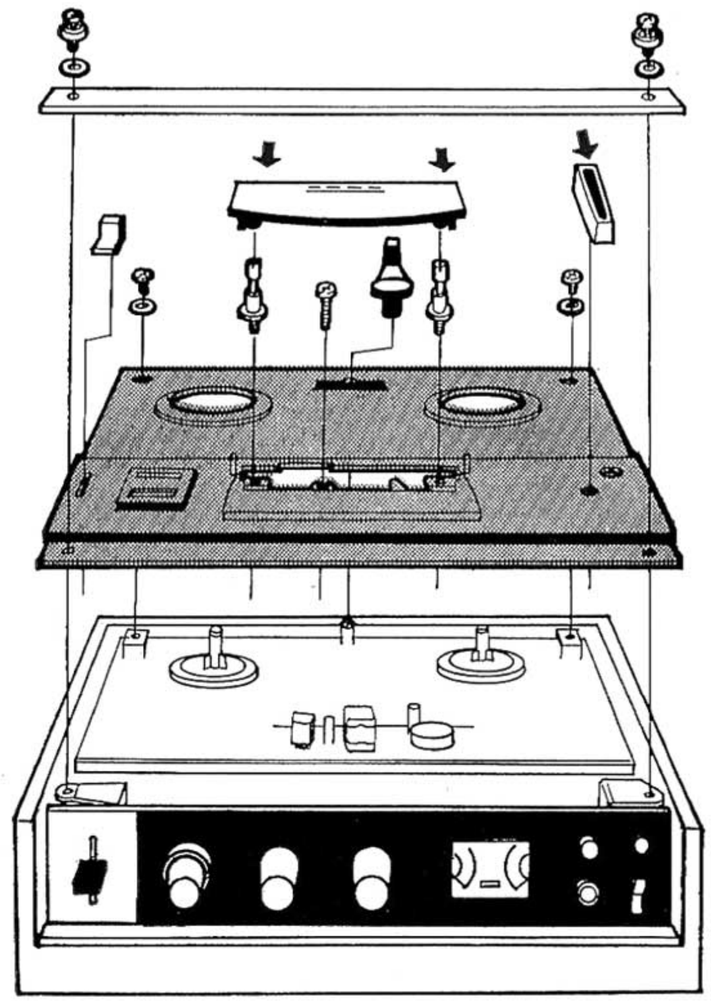
Remove the HEAD COVER by loosening the screws located at the rear side of the head cover. Lubricate with 3 drops of light machine oil.
Don't stain capstan surface.

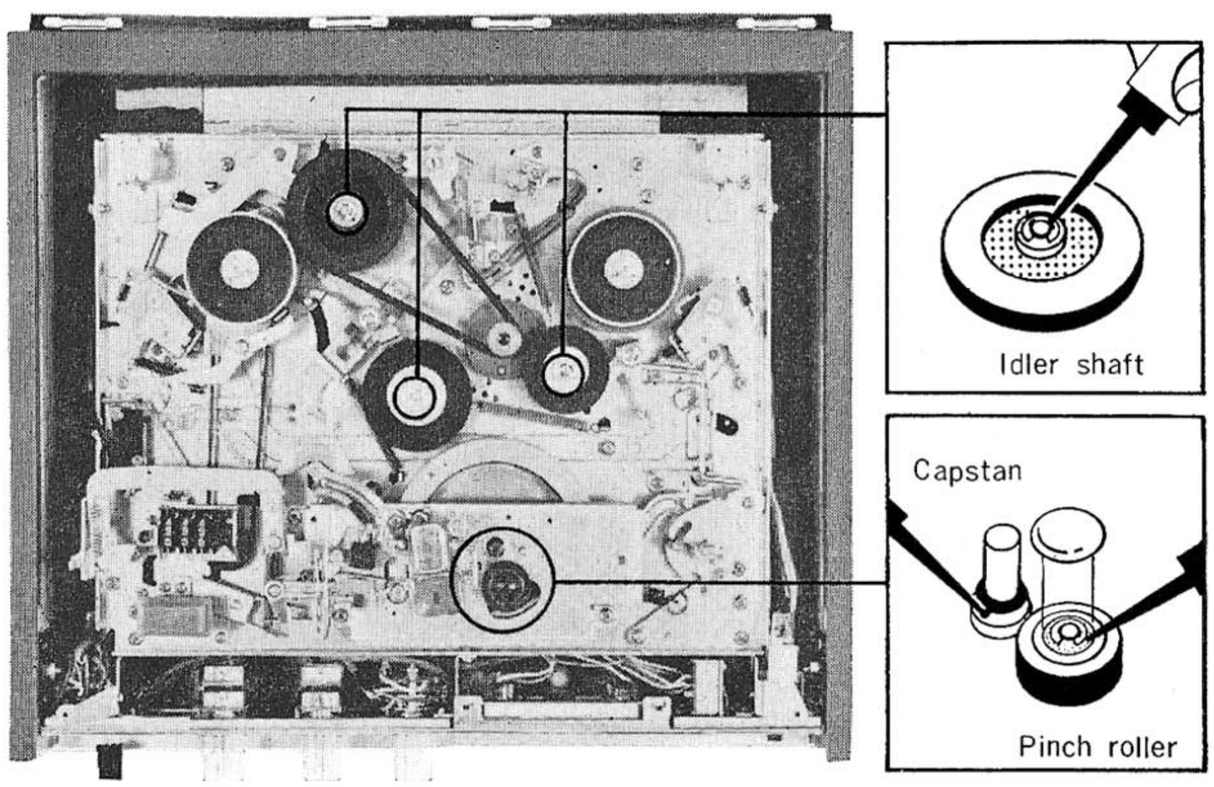
(2) PINCH ROLLER bearing

Remove the HEAD COVER by loosening the screws located at the rear side of the head cover. Lubricate with 1 drop of light machine oil.
Don't stain rubber surface.

(3) IDLER SHAFTS

Remove the HEAD COVER, TAPE SPEED SELECTOR KNOB, INSTANT STOP LEVER, FUNCTION SELECTOR KNOB by loosening retaining screws. Then remove the top cover panel by loosening 7 screws as illustrated.
Lubricate 3 idler shafts with one drop each of light machine oil. Remove shaft cover for lubricating one shaft.





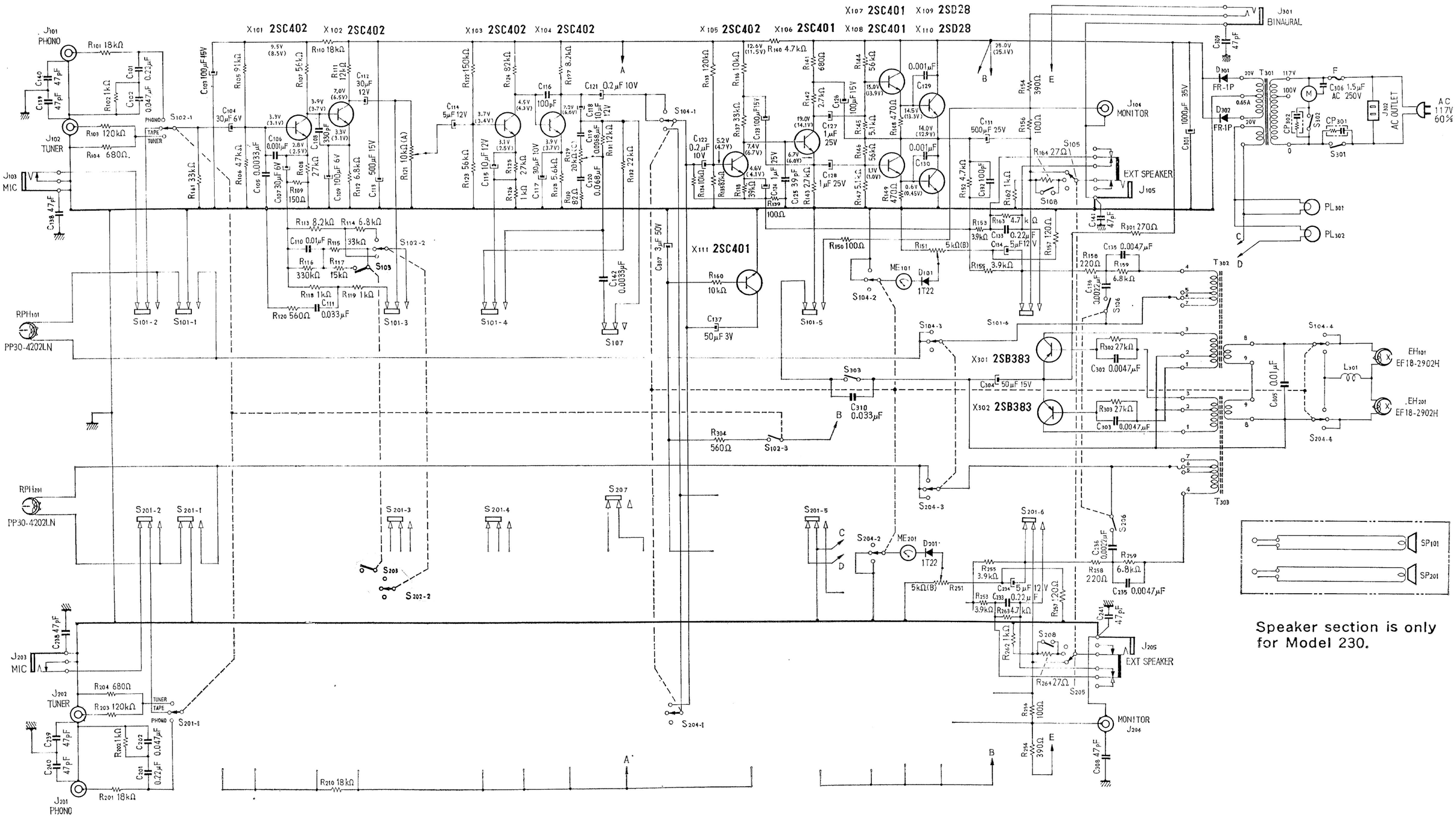
Technical Specifications

Power requirements:	55 watts, 117 volts, 60 cycles AC
Reels:	7″ or smaller
Tape speed:	7-1/2 ips, 3-3/4 ips or 1-7/8 ips with automatic switching for equalization changes
Recording system:	4-track stereophonic or monophonic
Frequency response:	30~18,000 Hz at 7-1/2 ips 30~12,000 Hz at 3-3/4 ips 30~ 6,000 Hz at 1-7/8 ips (±2 db 50~15,000 Hz at 7-1/2 ips)
Flutter and Wow:	less than 0.1% at 7-1/2 ips less than 0.15% at 3-3/4 ips less than 0.2% at 1-7/8 ips
Signal to noise ratio:	better than 50 db
Harmonic distortion:	less than 3% at 0 db line output
Level indication:	VU meters
Recording time:	with 1800′ tape 4-track stereo 1 hr 30 min at 7-1/2 ips 3 hrs at 3-3/4 ips 6 hrs at 1-7/8 ips
Power output:	20 watts total music power

Inputs:	microphone inputs sensitivity: -75 db (0.14 mV) impedance: 600 ohms tuner (auxiliary) inputs sensitivity: -25 db (44 mV) impedance: approx. 100 K ohms phono inputs sensitivity: -52.5 db (2 mV)
Outputs:	line outputs output level: PB +3 db (1.1V) REC +1 db (0.87V) load impedance: 10 K ohms
Speaker load impedance:	8 ohms
Headphone output impedance:	8 ohms or more
Heads:	PP30-4202LN, EF18-2902H
Transistors:	2SC402×10, 2SD28×4 2SC401×8, 2SB383×2
Diodes:	FR-1P×2, 1T22×2
Dimensions:	model 230 —17 (w)×9-5/8 (h)×14 (d)″ model 230W—15-3/4(w)×7-1/2(h)×13-1/2(d)″
Weight:	model 230 —29 lb model 230W—22 lb

* Design and specifications subject to change without notice.

Schematic Diagram



Speaker section is only for Model 230.

S101, 201 : RECORD/PLAYBACK SWITCH (RECORD POSITION)
S102, 202 : SELECTOR SWITCH (TAPE MIC POSITION)
S103, 203 : PB EQUALIZER SWITCH (7-1/2 IPS, 3-3/4 IPS ON 1-7/8 IPS OFF)
S104, 204 : MODE SWITCH (STEREO POSITION)
S105, 205 : SPEAKER SWITCH (2 POSITION)

S106, 206 : REC EQUALIZER SWITCH (7-1/2 IPS OFF 3-3/4 IPS, 1-7/8 IPS ON)
S301 : POWER SWITCH
S302 : AUTOMATIC MOTOR SHUT OFF SWITCH
S303 : BIAS OSC ON/OFF SWITCH
S107, 207 : NOISE SUPPRESSOR ON/OFF SWITCH
S108, 208 : RECORD/PLAYBACK SWITCH (RECORD POSITION)

SONY®

WARRANTY

WARRANTY

Your SONY tape recorder is a quality product and fully guaranteed against defective materials and workmanship for a period of 90 days from date of purchase.

This guarantee is valid only if repairs are effected by an authorized SONY/SUPERSCOPE Service Station and the attached Warranty Registration Card has been returned to SUPERSCOPE within 10 days of the purchase date. If it is necessary to send this Recorder to SUPERSCOPE Inc., or the nearest authorized service station, all shipments must be prepaid. If the repairs are within the terms of this Warranty, the recorder will be returned prepaid, provided it is addressed within the continental limits of the United States.

This Warranty is void if the Serial Number has been altered or removed.

This Warranty shall not apply if the instrument has not been connected or operated in accordance with the instructions furnished by SONY and SUPERSCOPE.

This Warranty shall also be voided if the instrument has been altered or repaired in any way that SUPERSCOPE believes has affected the stability or reliability of the instrument. This Warranty is in lieu of all others expressed or implied.

The SONY Corporation and/or SUPERSCOPE Inc. reserves the right to make changes in design and improvements upon its products without any obligation to install these changes upon any of its products theretofore manufactured.

SUPERSCOPE®

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