

# OPERATING INSTRUCTIONS & SERVICE MANUAL

SOLID-STATE REVERBERATION AMPLIFIER

## SANSUI RA-500



*Sansui*

SANSUI ELECTRIC COMPANY LIMITED

Congratulations on joining the thousands of proud, satisfied owners of quality stereo components from Sansui.

The RA-500 reverberation amplifier is a unique component to add a new thrilling pleasure to your stereo enjoyment. It can provide reverberation effects to all the program sources set up on your existing stereo control amplifier, including the playback from, recording on a tape deck, and dubbing between two tape decks. The continuously controllable reverberation time, multicolored reverberation indicator and other new ideas have been engineered into the RA-500.

This manual has been prepared to guide you in connecting and operating the reverberation amplifier correctly. Please read it carefully before operating the amplifier and retain it for future reference.

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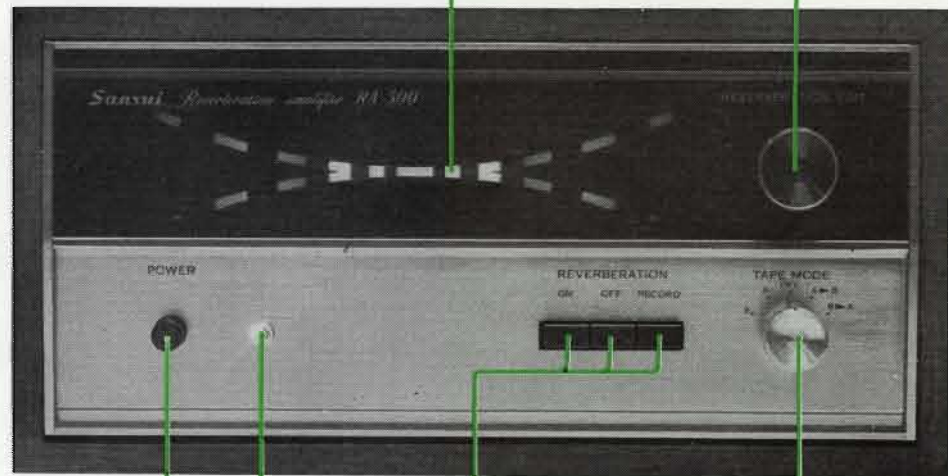
# SWITCHES AND CONTROLS

## REVERBERATION INDICATOR

The reverberation indicator is illuminated when the Reverberation On or Record button is depressed. The two rainbows, one inverted, draw sharply and distinctly apart as the reverberation time is shortened.

## REVERBERATION TIME CONTROL

Use this control to adjust the reverberation time while watching the reverberation indicator. To lengthen the time, turn it clockwise; to shorten the time, turn it counterclockwise.



## POWER SWITCH

Push this switch once to turn the power on; push it again to turn the power off.

## POWER INDICATOR

The power indicator is lit when the Power switch is turned on. It remains lit while the amplifier is on.

## REVERBERATION PUSHBUTTONS

**ON**—Depress this button to add reverberation to any program source. If it is depressed during the recording process, the recording is made without reverberation but only the sound from the speakers is reverberated.

**OFF**—Depress this button if you want not to add reverberation during the recording process or while listening to records, radio broadcasts or tapes.

**RECORD**—Depress this button to add reverberation to the sound of the recording.

## TAPE MODE SELECTOR

**B**—Use this position to record on, or play back through, the tape deck connected to the TAPE DECK B jacks.

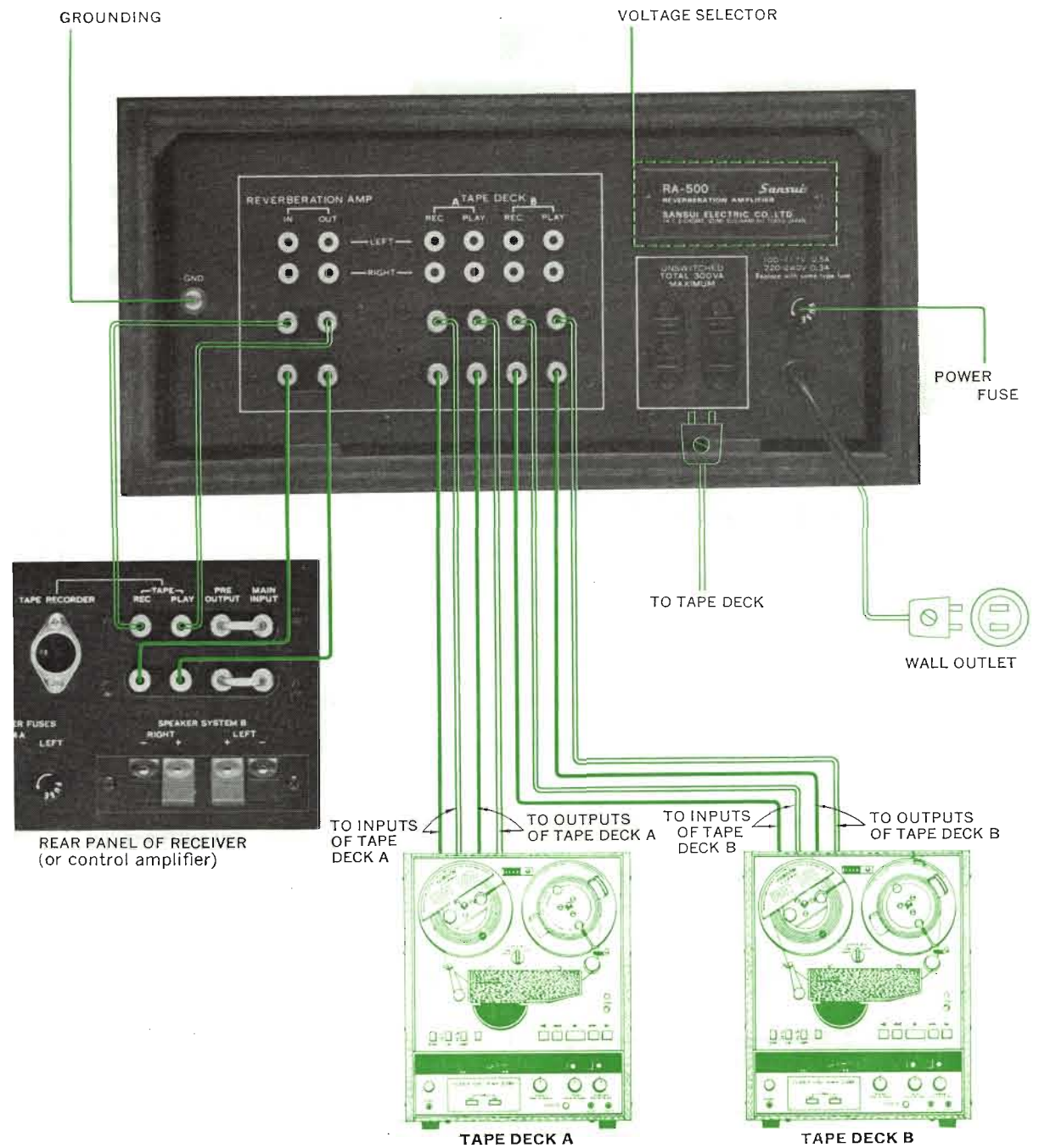
**A**—Use this position to record on, or play back through, the tape deck connected to the TAPE DECK A jacks.

**OFF**—Use this position to provide reverberation effects to a program source set up on the receiver (or control amplifier) connected to the RA-500. With the selector switched to this position, the reverberation amplifier is disconnected from the tape deck circuits.

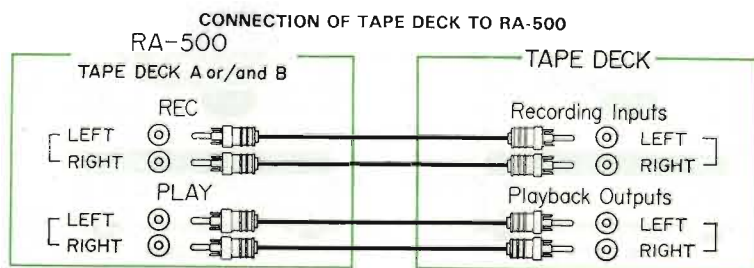
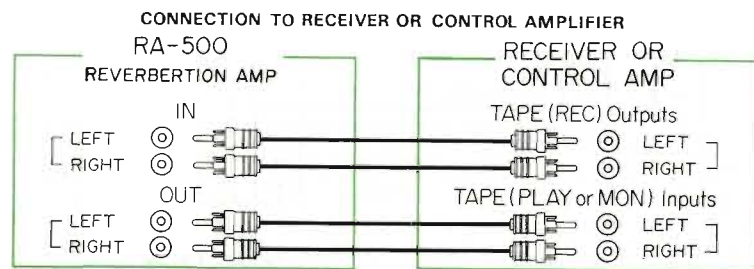
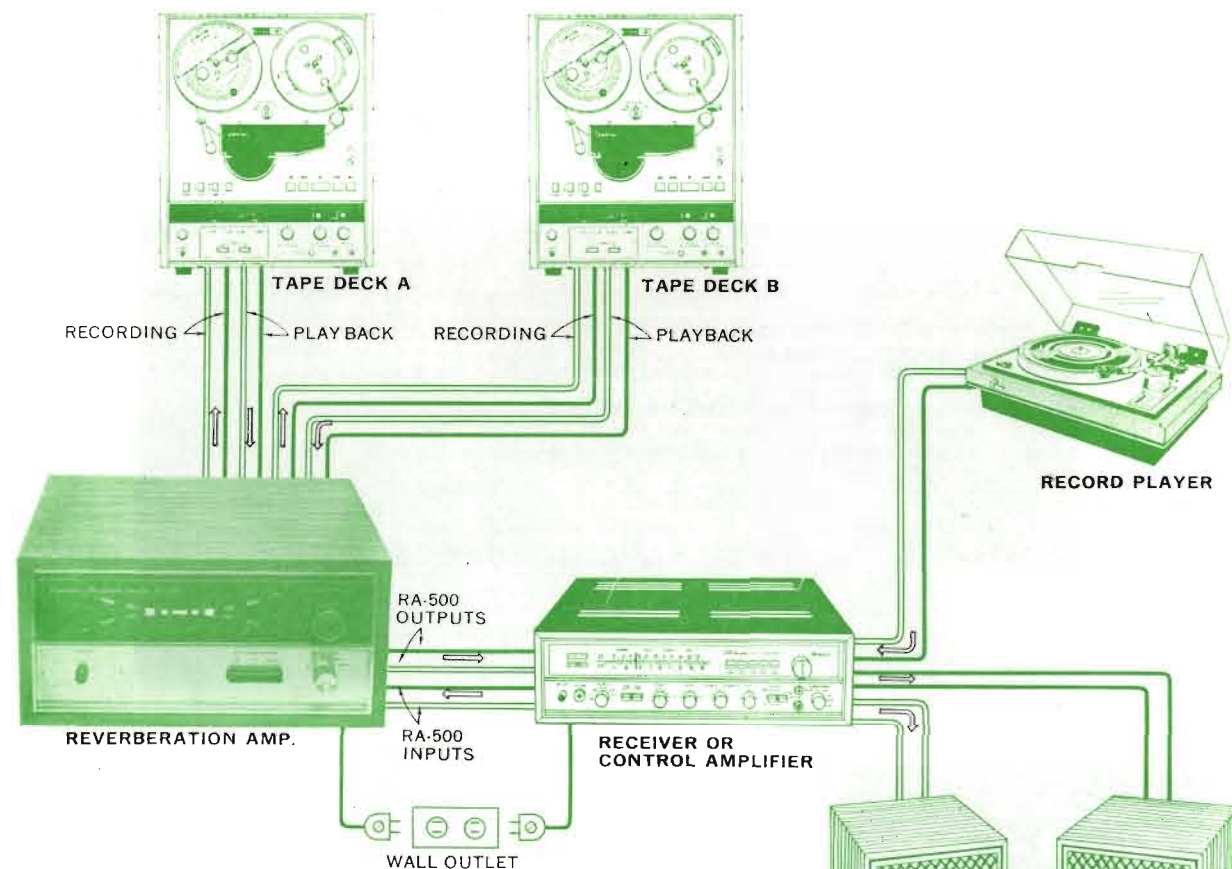
**A▶B**—Use this position to record from the tape deck A to the tape deck B.

**B▶A**—Use this position to record from the tape deck B to the tape deck A.

# CONNECTIONS



# CONNECTIONS / OPERATION



## To Reverberate Sound From Any Program Source—Record Player, Tuner or Microphone—Except Tape Deck

1. Set the Tape Monitor switch on the receiver (or control amplifier) to its PLAYBACK or ON position.
2. Turn the Tape Mode selector on the RA-500 to its OFF position.
3. Depress the Reverberation On button.
4. Adjust the Reverberation Time control to the desired reverberation.

## To Reverberate Sound From or Through the Tape Deck Playback

1. Set the Tape Monitor switch on the receiver (or control amplifier) to its PLAYBACK or ON position.
2. Turn the Tape Mode selector on the RA-500 to A or B depending on which jacks are being used for playback.
3. Depress the Reverberation On button.
4. Operate the tape deck in the playback mode.
5. Adjust the Reverberation Time control to the desired reverberation.

## Recording

1. Set the Tape Monitor switch on the receiver (or control amplifier) to its PLAYBACK or ON position.
2. Turn the Tape Mode selector on the RA-500 to A or B depending on which jacks are being used for recording.
3. Depress the Reverberation Record button.
4. Operate the tape deck in the recording mode.
5. Adjust the Reverberation Time control to the desired reverberation.

### Notes:

- If the Reverberation On button is depressed during the recording process, the original program can be recorded without reverberation

while the reverberated sound comes from the speakers.

- If the Reverberation Off button is depressed during the recording process, no reverberation is added to the sound of the recording nor to the sound from the speakers.

## Dubbing

1. Set the Tape Monitor switch on the receiver (or control amplifier) to its PLAYBACK or ON position.
2. When recording from the tape deck A to the tape deck B, turn the Tape Mode selector to A▶B; when recording from the B to the A, turn the selector to B▶A.
3. Depress the Reverberation Record button.
4. Operate one tape deck in the playback mode and another in the recording mode.
5. Adjust the Reverberation Time control to the desired reverberation.

**Note:** If you want *not* to add reverberation during the dubbing process, depress the Reverberation Off button. If the Reverberation On button is depressed during the dubbing process, the original tape can be recorded without reverberation while the reverberated sound comes from the speakers.

## Monitoring

If your tape deck has its own preamplifier as well as separate recording and playback heads, you can monitor the tape instantly after the recording is made and while the recording is still in progress. For use with a two-head tape recorder which can pick up a signal before the recording is made, you can listen to it as well. If a two-head tape recorder which does not employ this arrangement is used for recording, not playback, the Tape Monitor switch on the control amplifier (or receiver) should be set to its SOURCE or OFF position, otherwise no sound comes from the speakers.

# HINTS ON USE/SPECIFICATIONS/ACCESSORIES

## Connections

Be sure to use shielded cable (four connecting cords supplied) to connect a control amplifier and tape decks to the RA-500. The use of an ordinary twin leadwire may cause hum or noise. Always check to see if the connecting cords are plugged firmly and properly into their corresponding output or input jacks. If the connections are loose or in touch with other parts, the RA-500 will not perform normally, and may produce undesirable noise. If used in such a way for a long time, it will eventually break down.

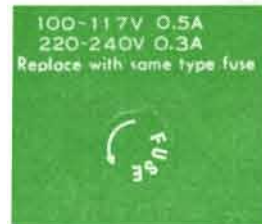
## A.C. Outlets

The two a.c. outlets on the rear panel are live at all times and for plugging in a pair of tape decks. They have a maximum capacity of 300 VA total. Never use them beyond their rated capacity.



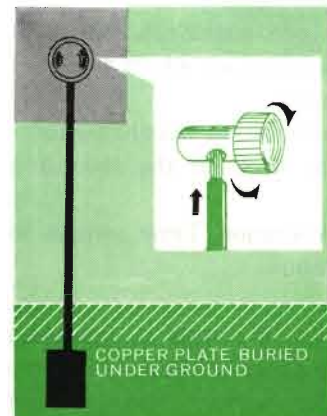
## Power Fuse

If the unit remains completely dead when the power is switched on (the POWER indicator fails to light), the power fuse is probably blown. In this case, remove the line cord from its a.c. outlet and replace the fuse after finding and eliminating the trouble that caused the fuse to blow. Use only an identical glass-tubed fuse. For 100-117 volt operation, a 0.5 ampere fuse is required. For 220-240 volt operation, a 0.3 ampere fuse should be used. Never attempt to use a piece of wire or a fuse of a different capacity as a substitute.



## Grounding

Connect one end of vinyl or enameled wire to the terminal screw marked GND on the rear of the amplifier, attach a copper plate to the other end and bury it underground. In all cases, grounding is desirable since it allows a better SN ratio to be obtained. To ground an entire audio system, connect the grounding wire of each component to this terminal.

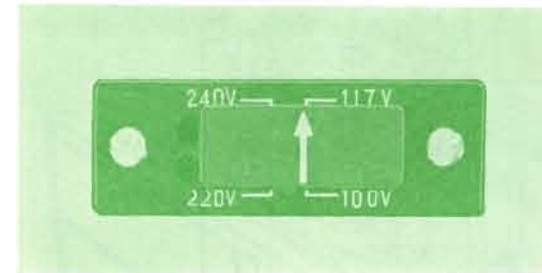


## Voltage Adjustment

To reach the voltage selector, remove the two screws from the nameplate on the rear panel and then remove the nameplate. The voltage selector makes it possible to operate the RA-500 at the correct volt in any area. The volt has been pre-adjusted at the factory, but can be easily readjusted as follow:

1. Set the arrow on the voltage selector plug to the required volt: 100, 117, 220 or 240 volts.
2. The power fuse should also be changed whenever the a.c. line voltage is changed. For 100-117 volt operation, a 0.5 ampere fuse is required. For 220-240 volt operation, the fuse should be changed to a 0.3 ampere fuse.

**Note:** The voltage selector can be also used to eliminate the trouble caused by the considerable voltage fluctuation. In this case, it should be set to the peak voltage.



## Placement

Your RA-500 may be placed in any position where it is convenient to reach. But we recommend to place it away from the speakers because unnatural reverberation or booming noise may be caused.

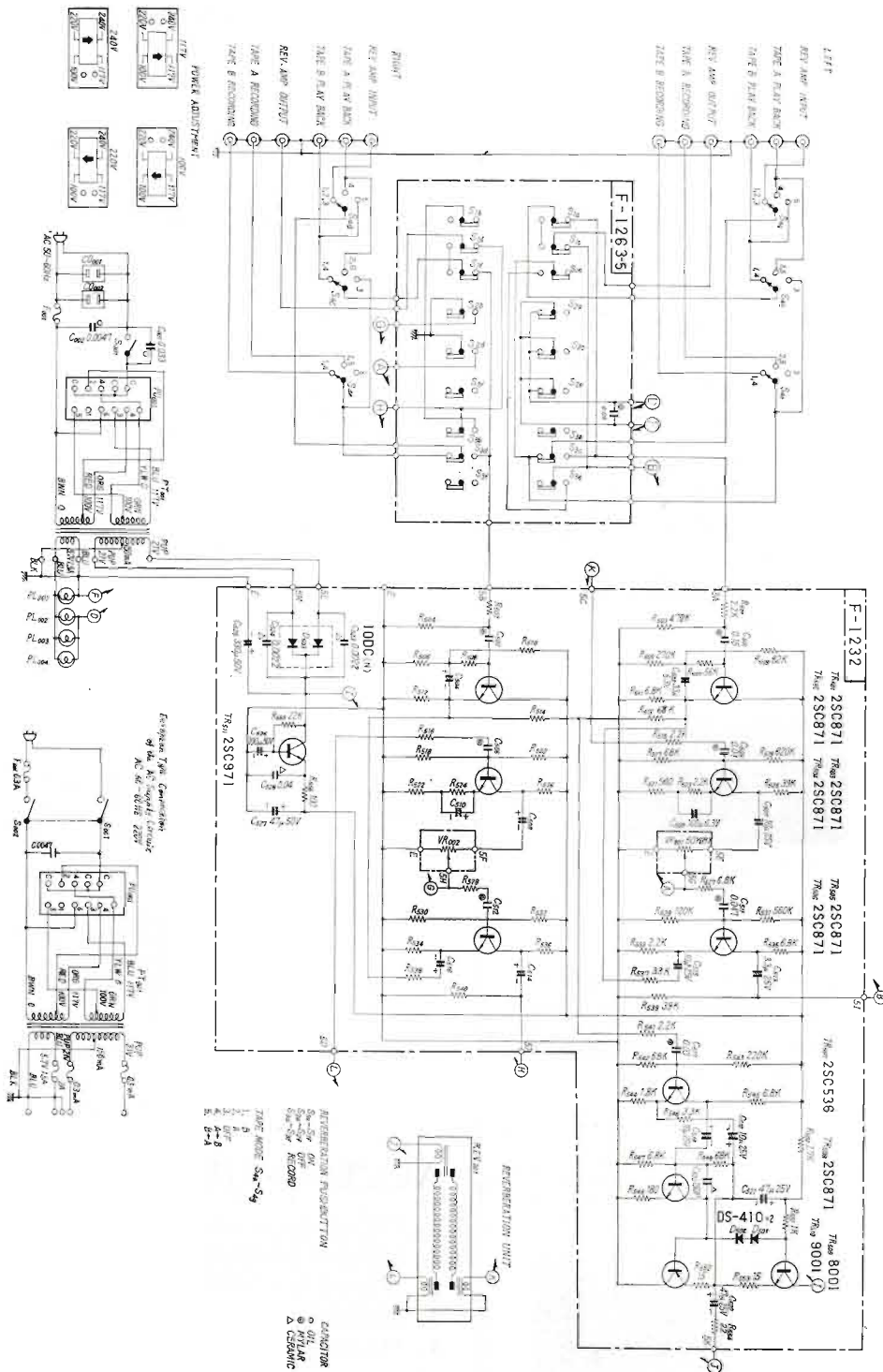
## SPECIFICATIONS

<b>RATED OUTPUT VOLTAGE:</b>	300mV (at 1,000Hz, Reverberation time minimum input level 200mV)
<b>MAXIMUM INPUT VOLTAGE:</b>	3V (at 1,000Hz, Reverberation time minimum)
<b>HARMONIC DISTORTION:</b>	Less than 0.2% (at 1,000Hz, Reverberation time minimum output level 300mV)
<b>FREQUENCY RESPONSE:</b>	20 to 30,000Hz $\pm$ 2dB (at Reverberation time minimum) 20 to 30,000Hz $\pm$ 10dB (at Reverberation time maximum)
<b>SIGNAL TO NOISE RATIO:</b>	65dB (at output level 300mV)
<b>REVERBERATION TIME:</b>	1.9 to 3.2 second (at 1,000Hz)
<b>INPUT IMPEDANCE:</b>	greater than 200k ohms (at 1,000Hz)
<b>INPUT AND OUTPUT JACKS:</b>	INPUT OUTPUT TAPE RECORDING—A TAPE RECORDING—B TAPE PLAY BACK—A TAPE PLAY BACK—B
<b>LOAD IMPEDANCE:</b>	100k ohms
<b>SWITCHES AND CONTROLS:</b>	<b>REVERBERATION MODE:</b> ON, OFF, RECORD
<b>TAPE MODE:</b>	REC/PLAY—B REC/PLAY—A A—B DUBBING B—A DUBBING
<b>REVERBERATION TIME:</b>	
<b>POWER REQUIREMENT:</b>	<b>POWER VOLTAGE:</b> 100, 117, 220, 240V 50/60Hz
<b>POWER CONSUMPTION:</b>	10VA
<b>SEMI CONDUCTORS:</b>	Transistors: 11 Diodes: 3
<b>DIMENSIONS:</b>	1 $\frac{5}{8}$ " (302mm) W, 6 $\frac{3}{8}$ " (162mm) H, 10 $\frac{7}{16}$ " (265mm) D
<b>WEIGHT:</b>	11.4 lbs. (5.2kg)

## ACCESSORIES

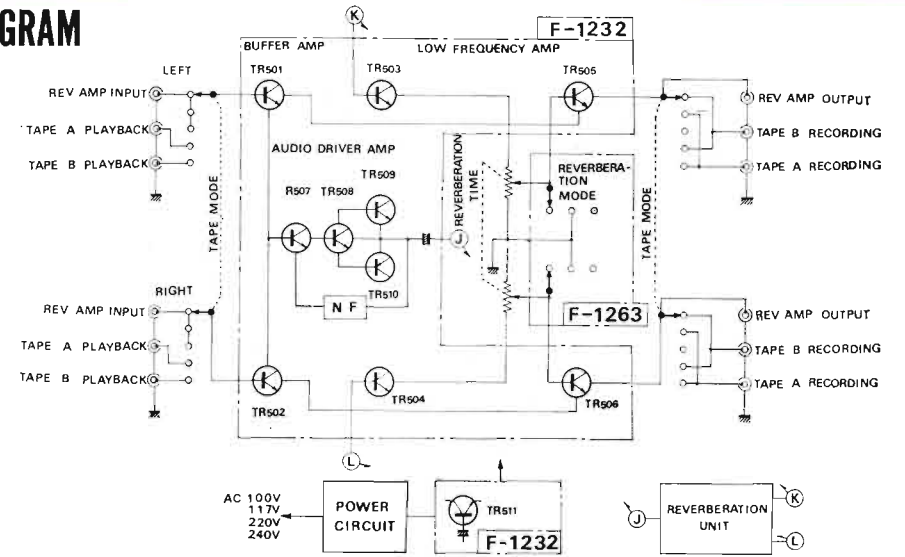
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# SCHEMATIC DIAGRAM

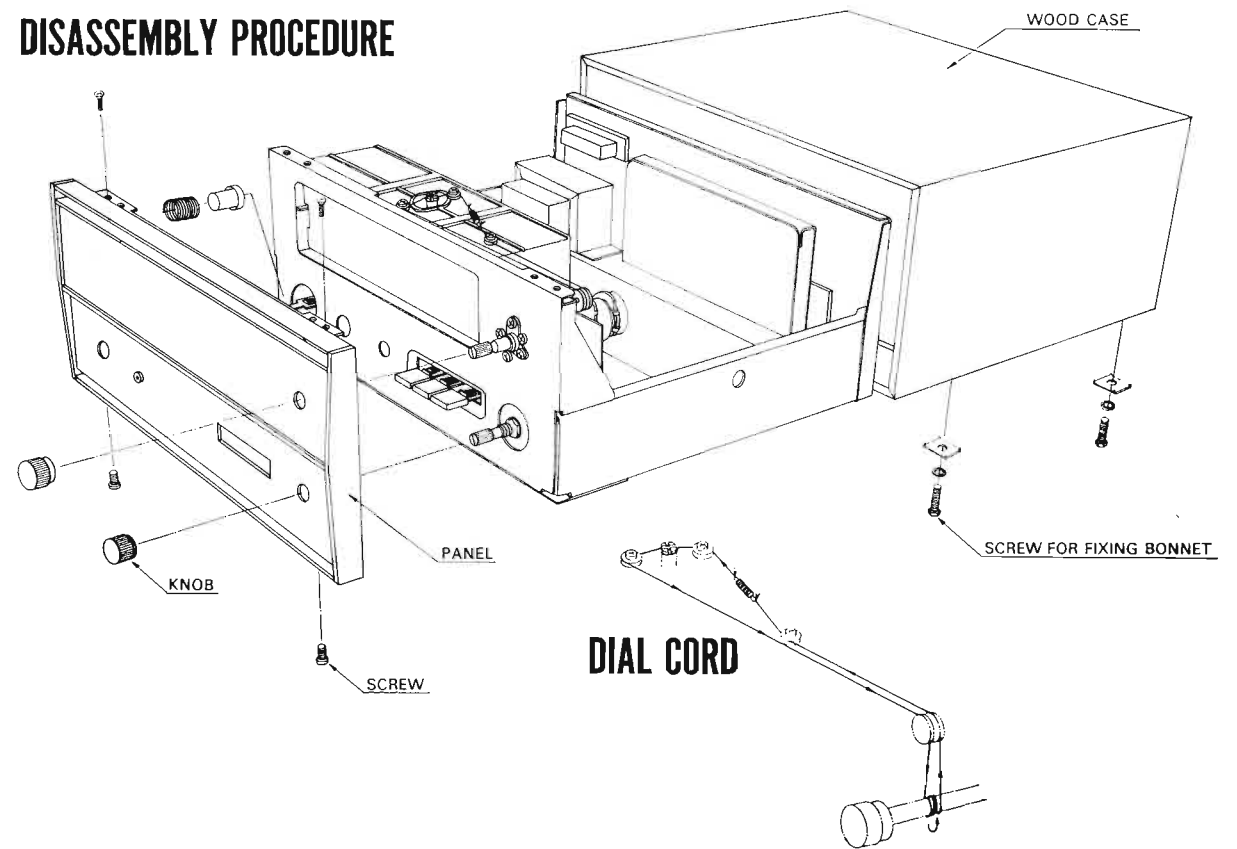


# BLOCK DIAGRAM / DISASSEMBLY PROCEDURE / DIAL CORD

## BLOCK DIAGRAM



## DISASSEMBLY PROCEDURE



# PRINTED CIRCUIT BOARDS AND PARTS LIST

W: Parts No. X: Parts Name Y: Stock No. Z: Position of Parts

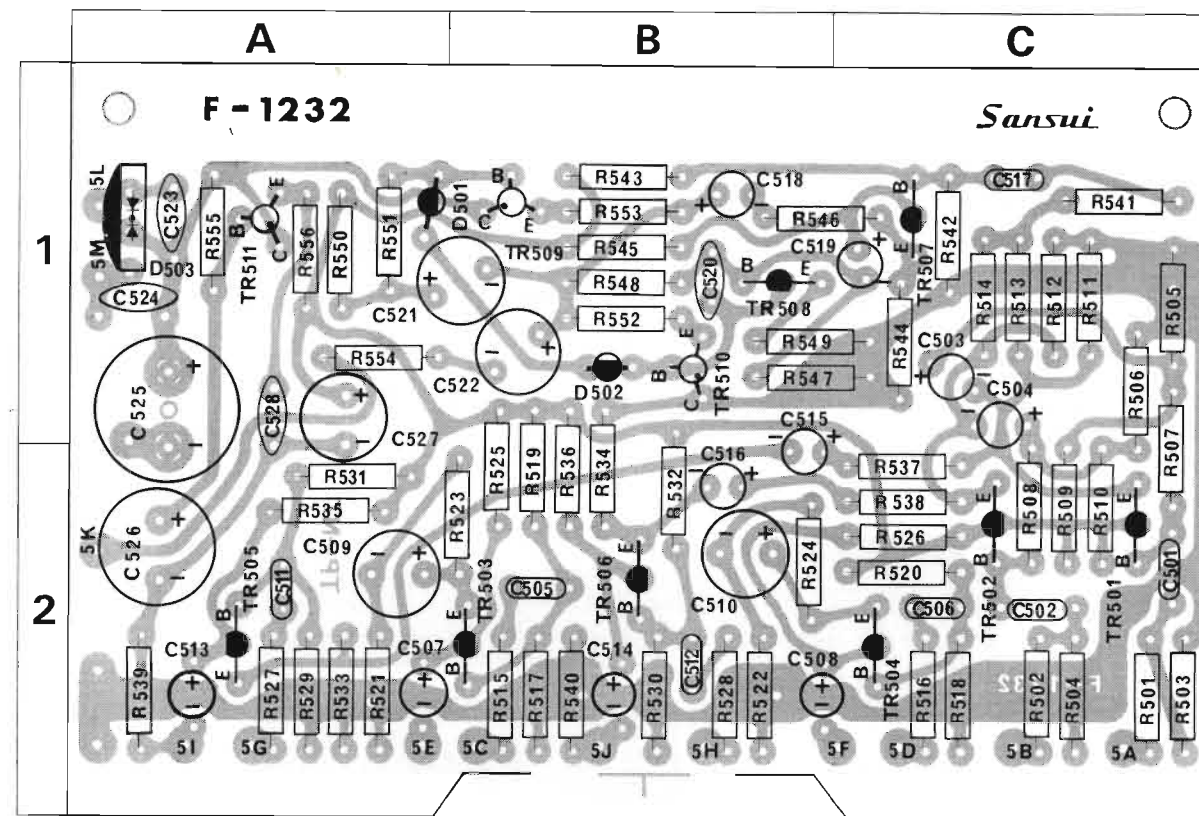
## Abbreviations

CR : Carbon Resistor  
 MC : Mylar Capacitor  
 EC : Electrolytic Capacitor  
 CC : Ceramic Capacitor  
 OC : Oil Capacitor

## AUDIO DRIVER BLOCK <F-1232>

W	X	Y	Z
R501	2.2kΩ	0101222	2C
R502	2.2kΩ	0101222	2C
R503	470kΩ	0101474	2C
R504	470kΩ	0101474	2C
R505	270kΩ	0101274	1C
R506	270kΩ	0101274	1C
R507	56kΩ	0101563	1, 2C
R508	56kΩ	0101563	2C
R509	82kΩ	0101823	2C
R510	82kΩ	0101823	2C
R511	6.8kΩ	0101682	1C
R512	6.8kΩ	0101682	1C
R513	68kΩ	0101683	1C
R514	68kΩ	0101683	1C
R515	2.2kΩ	0101222	2B
R516	2.2kΩ	0101222	2C
R517	68kΩ	0101683	2C
R518	68kΩ	0101683	2B
R519	820kΩ	0101824	1, 2B
R520	820kΩ	0101824	2C
R521	560Ω	0101561	2A
R522	560Ω	0101561	2B
R523	2.2kΩ	0101222	2B
R524	2.2kΩ	0101222	2B
R525	39kΩ	0101393	1, 2B
R526	39kΩ	0101393	2C
R527	6.8kΩ	0101682	2A
R528	6.8kΩ	0101682	2B
R529	120kΩ	0101124	2A
R530	120kΩ	0101124	2B
R531	560kΩ	0101564	2A
R532	560kΩ	0101564	2B
R533	2.2kΩ	0101222	2A
R534	2.2kΩ	0101222	1, 2B
R535	6.8kΩ	0101682	2A
R536	6.8kΩ	0101682	1, 2B
R537	3.3kΩ	0101332	2C
R538	3.3kΩ	0101332	2C
R539	39kΩ	0101393	2A
R540	39kΩ	0101393	2B
R541	2.2kΩ	0101222	1C
R542	68kΩ	0101683	1C
R543	220kΩ	0101224	1B
R544	1.8kΩ	0101182	1C
R545	6.8kΩ	0101682	1B
R546	3.3kΩ	0101332	1B, C
R547	6.8kΩ	0101682	1B, C
R548	68kΩ	0101683	1B
R549	180Ω	0101181	1B, C
R550	2.7kΩ	0101272	1A
R551	1kΩ	0101102	1A
R552	15Ω	0101150	1B
R553	15Ω	0101150	1B
R554	22Ω	0101220	1A
R555	22kΩ	0101223	1A
R556	100Ω	0101101	1A

W	X	Y	Z
C501	0.15μF	0601158	2C
C502	0.15μF	0601158	2C
C503	33μF	0510330	1C
C504	33μF	0510330	1C
C505	0.03μF	0601307	2B
C506	0.03μF	0601307	2C
C507	10μF	0513100	2A
C508	10μF	0513100	2B, C
C509	100μF	0510101	2A
C510	100μF	0510101	2B
C511	0.047μF	0601477	2A
C512	0.047μF	0601477	2B
C513	3.3μF	0513339	2A
C514	3.3μF	0513339	2B
C515	10μF	0513100	1, 2B
C516	10μF	0513100	2B
C517	0.03μF	0601307	1C
C518	10μF	0513100	1B
C519	10μF	0513100	1C
C520	150pF	0660151	1B
C521	47μF	0513470	1A, B
C522	47μF	0513470	1B
C523	0.0022μF	0652222	1A
C524	0.0022μF	0652222	1A
C525	330μF	0515331	1, 2A
C526	100μF	0515101	2A
C527	47μF	0515470	1, 2A
C528	0.04μF	0650403	1A
D501	DS-40	0340030	1A
D502	DS-40	0340030	1B
D503	10DC-1(N)	0310680	1A
TR501		0305470,1	2C
TR502		0305470,1	2C
TR503		0305470,1	2B
TR504		0305470,1	2C
TR505		0305470,1	2A
TR506		0305470,1	2B
TR507	2SC536 (E)	0305150	1C
TR508	2SC872 (D, E)	0305470,1	1B
TR509	8001 (A, B, C)	0305660, 1, 2	1B
TR510	9001 (A, B, C)	0300200, 1, 2	1B
TR511	2SC971 (3)	0305530	1A



## MODE SWITCH BLOCK <F-1263-5>

W	X	Y
C901	0.06μF ±10% 50 V MC.	0601607
S1~3	Reverberation Mode Switch	1130410

# OTHER PARTS AND THEIR POSITION ON CHASSIS

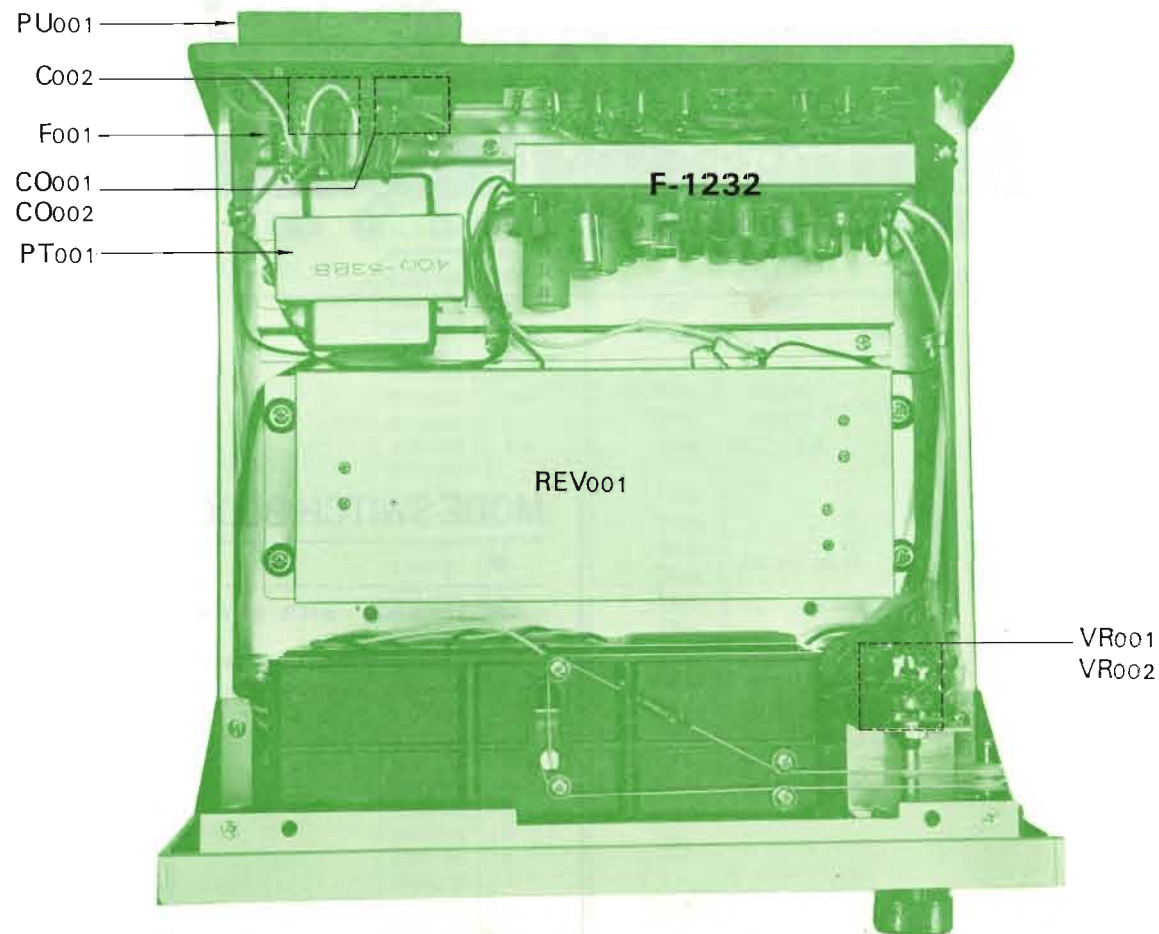
W: Parts No. X: Parts Name Y: Stock No.

## OTHER PARTS

W	X	Y
C001	0.033 $\mu$ F } 0.0047 $\mu$ F } 600V OC.	0591337
C002		0591476
VR001, 002	50k $\Omega$ (B) $\times$ 2	1010530
PL001	8V 0.15A	0400120
PL002	6.3V 0.25A Fuse Type	0420020
PL003		0420020
PL004		0420020
F001	0.3A (220~240V)	0430450
	0.5A (100~117V)	0430012

W	X	Y
S001	Power Switch	1130160
S4(a~f)	Tape Mode Switch	1102270
REV001	Reverberation Unit	4350010
PT001	Power Transformer	4000690
PU001	Voltage Selector	2410080
CO001	AC Outlet	2450011
		CO002

\* Manufacturer reserves right to change design and/or specifications without notice for purpose of improvement.





**Sansui**

SANSUI ELECTRIC COMPANY LIMITED

Head Office; 14-1, 2-chome, Izumi, Suginami-ku, Tokyo, Japan. TEL. 323-1111

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