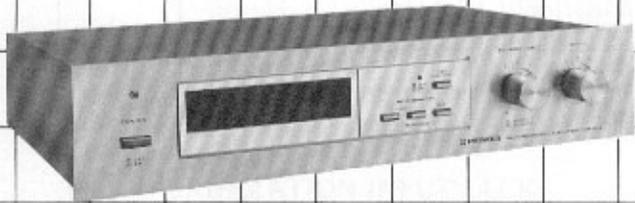


## REVERBERATION AMPLIFIER

# SR-303

## OPERATING INSTRUCTIONS

KU



### IMPORTANT NOTICE

The serial number for this equipment is located on the rear panel. Please write this serial number on your enclosed warranty card and keep in a secure area. This is for your security.

**WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

## CONTENTS

Features .....	2	Operation .....	6
Rear Panel Facilities .....	3	Effect 1 and Effect 2 .....	6
Installation Precautions .....	3	Using a Tape Deck .....	7
Connections .....	4	Specifications .....	8
Front Panel Facilities .....	5		

## FEATURES

### All-Electronic Reverberation Amplifier with High S/N and Low Distortion

This is an all-electronic reverberation amplifier which incorporates an audio-use delay element known as a bucket brigade device (BBD). Unlike conventional mechanical reverberation amplifiers this particular unit is not in the least affected by external vibration or fluctuations in the reverberation effect. Furthermore, the delay element features a C MOS IC semiconductor which contributes greatly to yielding such impressive characteristics as a high signal-to-noise ratio of 90dB and a low total harmonic distortion (at 1kHz, 1V) of 0.05%.

### TIME and DEPTH Controls to Adjust Reverberation Effect

This reverberation amplifier comes with two handy controls: the TIME control that allows the delay time to be adjusted continuously and the DEPTH control which allows the depth of the reverberation to be adjusted continuously. Using the two knobs in combination makes it easy to produce the desired reverberation effect in line with the music source which you are listening to.

### Selection between Two Types of Reverberation Effect

You can choose freely between two modes with this amplifier. One mode, known as EFFECT-1, is the so-called "echo" mode when the reverberation components of the original sound are made to last for a long time — a feature which is effective in large halls. The other mode, known as EFFECT-2, refers to a single reverberation component which is generated to turn a solo vocal into a chorus or duet. Make the most of these two effects to derive more enjoyment and satisfaction from your music source.

### Visually Attractive Reverberation Effect Indicator

This indicator is designed to express the reverberations produced visually. The flickering of the blue rings of light indicate the effect at a glance. When the reverberation time is long, the flickering intervals will increase, and conversely when the time is short, these intervals will decrease.

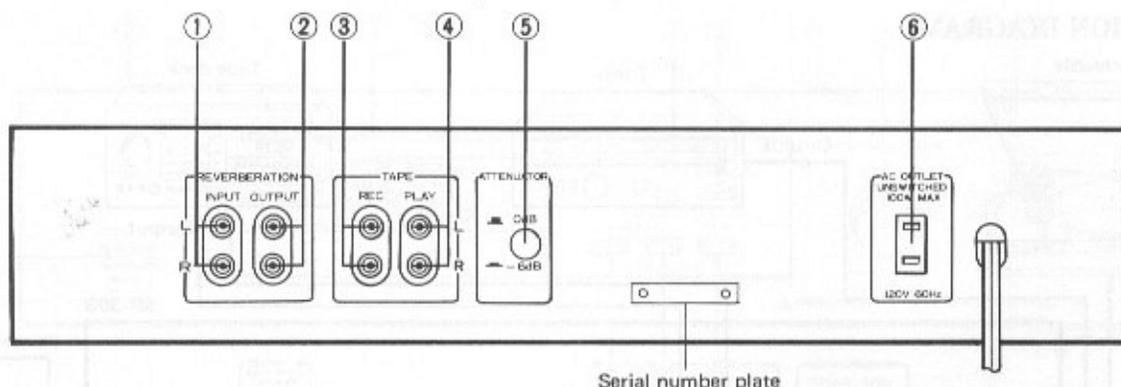
Another function of the display is to display the strength of the reverberations: the more reverberation components, the brighter the rings of light.

### Smart, Slimly Designed Styling

The reverberation amplifier has been slimly designed with the beautiful reverberation effect indicator in the center for a clean, fresh look. The height dimension of the front panel conforms to the EIA\* standard 2U size format. Using the optional rack mount adaptors (JA-R104), the reverberation amplifier can be installed in a rack conforming to EIA specifications.

\* EIA: Electronic Industries Association

## REAR PANEL FACILITIES



### ① REVERBERATION INPUT JACKS

Connect these jacks to the TAPE REC jacks on the stereo amplifier or to the PREAMP OUT (OUTPUT) jacks on the preamplifier.

### ② REVERBERATION OUTPUT JACKS

Connect these jacks to the TAPE PLAY jacks on the stereo amplifier or to the POWER AMP IN (INPUT) jacks on the power amplifier.

### ③ TAPE REC JACKS

Connect these to the INPUT (REC) jacks on the tape deck.

### ④ TAPE PLAY JACKS

Connect these to the OUTPUT (PLAY) jacks on the tape deck.

### ⑤ ATTENUATOR SWITCH

This is used to attenuate the model SR-303's input signals. It is normally set to 0dB (released position). When using the model to reverberate the sound of a program source having an extremely wide dynamic range, such as a live recording, or when the sound appears to be distorted with the switch set at the 0dB position, depress this switch and set it to the -6dB position.

**NOTE:**

*The maximum rated input of the model SR-303 is 2V. When it is being used between the PREAMP OUT jacks of the preamplifier and the POWER AMP IN jacks of the power amplifier, set this switch beforehand to -6dB if the output level of the preamplifier will exceed 2V.*

### ⑥ AC OUTLET

This is an auxiliary power outlet. Connect the power plug of your tape deck or other stereo hi-fi component to this outlet. It is not coupled with the power switch on the model SR-303 (UNSWITCHED). The maximum power capacity is 100W and so do not connect electrical appliances with a power capacity exceeding this value.

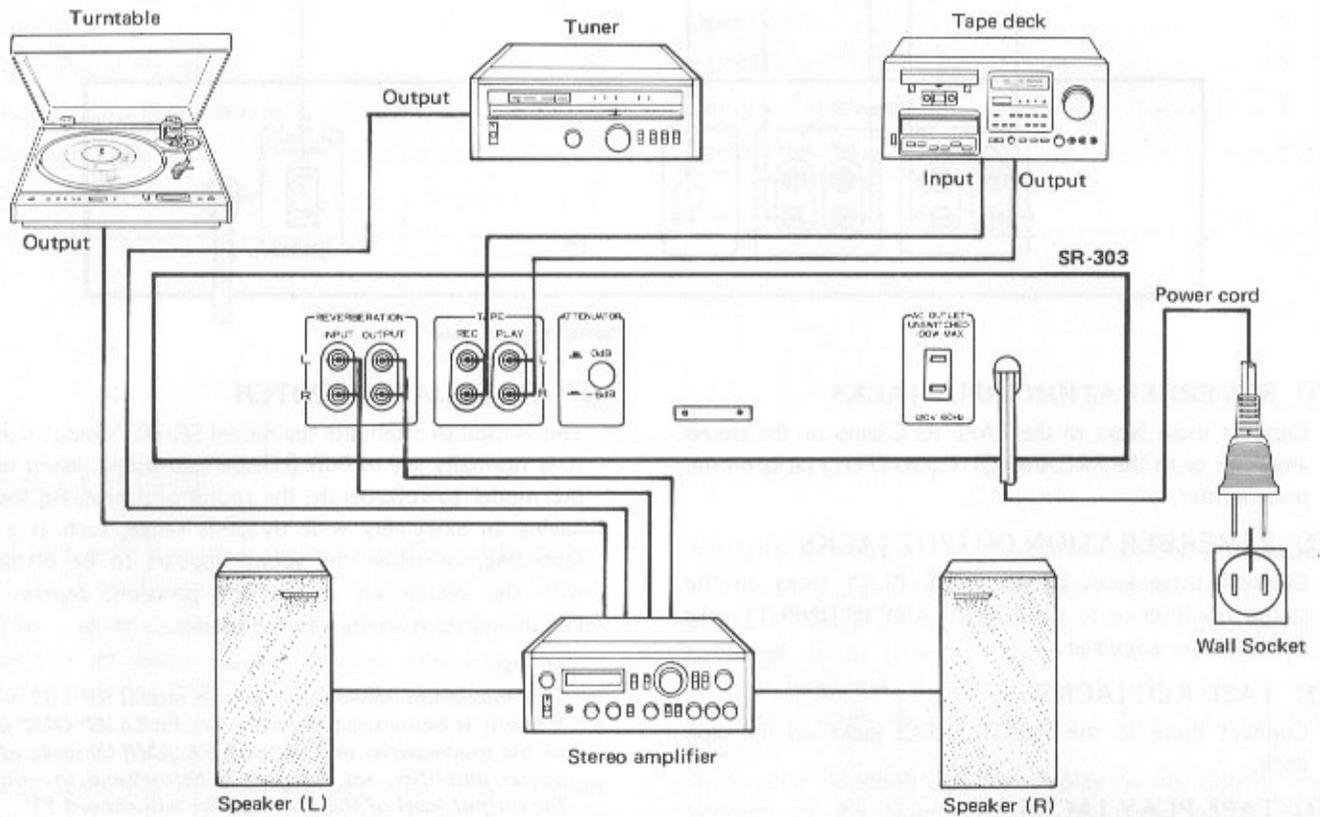
## INSTALLATION PRECAUTIONS

To ensure the best sound quality and trouble-free operation, avoid setting up the reverberation amplifier in any of the locations described below:

Locations liable to downgrade performance and result in breakdowns	Resulting trouble
<ol style="list-style-type: none"> <li>Locations exposed to direct sunlight, or near heaters.</li> <li>Locations with poor ventilation, with high humidity or moisture contents, or dusty locations.</li> <li>Locations susceptible to vibration.</li> </ol>	<ol style="list-style-type: none"> <li>External heat causes the performance of the electronic parts to deteriorate, and operation becomes unstable.</li> <li>Cause of faulty contact in input-output terminals, and rust. High humidity and a high moisture content cause deterioration in insulation. There is also the danger of current leakage and heat generation in the circuit parts.</li> <li>These locations affect the precision parts adversely.</li> </ol>

# CONNECTIONS

## CONNECTION DIAGRAM



### CONNECTIONS TO STEREO AMPLIFIER

Use the accessory connecting cords to connect the REVERBERATION INPUT and OUTPUT jacks on the SR-303 to the TAPE REC and TAPE PLAY jacks on a stereo amplifier (Fig. 1). Take care not to reverse L (left) and R (right) channels, and make sure connection securely.

### TAPE DECK CONNECTIONS

SR-303 is provided with recording output jacks and playback input jacks for adding reverberation effect to the program source to be recorded or the playback signals.

#### Connections for recording

Connect the recording input jacks (INPUT) on the tape deck to the TAPE REC jacks on the SR-303.

#### Connections for playback

Connect the playback output jacks (OUTPUT) on the tape deck to the TAPE PLAY jacks on the SR-303.

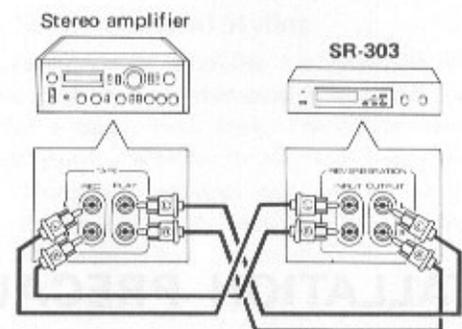


Fig. 1

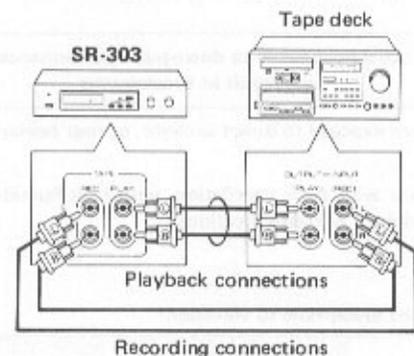
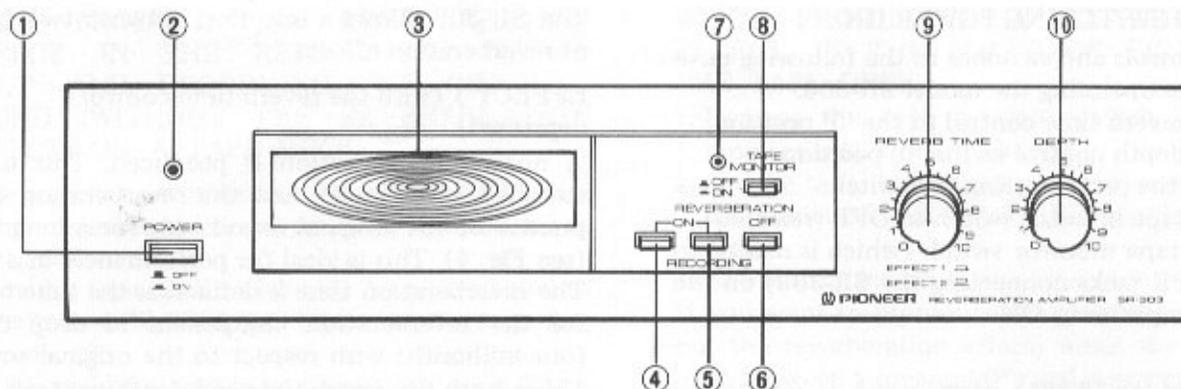


Fig. 2

## FRONT PANEL FACILITIES



## ① POWER SWITCH

Power is supplied to the model SR-303 when this switch is depressed. The power indicator comes on as soon as the power is supplied.

## ② POWER INDICATOR

This comes on as soon as the SR-303's power switch is set to ON to indicate that power is being supplied.

## ③ REVERBERATION EFFECT INDICATOR

This displays the reverberation effect graphically. When the reverberation time is increased (the reverb time control is rotated clockwise), the winking intervals of the light are lengthened. Conversely, when this time is reduced (the reverb time control is rotated counterclockwise), these intervals are cut short. Also, the lighting area increases in proportion to the size of the reverberation components. This area is increased as the depth control is rotated clockwise. The reverb time and depth controls are set to the preferred position as you check out the reverberation, but if the reverberation indicator's circle of light remains on the display, it means that the reverberation components are excessive (too much of an echo). Use this as a base for adjustments.

## ④ REVERBERATION ON SWITCH

Depress this switch to produce a reverberation effect with the signals fed from the REVERBERATION INPUT jacks. The reverberation effect indicator will come on, and signals featuring a reverberation effect only will be fed out from the model SR-303's OUTPUT jacks.

## ⑤ REVERBERATION ON-RECORDING SWITCH

Depress this switch when recording a program source whose signals feature a reverberation effect onto a tape in a deck connected to the model SR-303's TAPE jacks. This will allow signals with the reverberating sound to be made available from both the SR-303's OUTPUT jacks and the TAPE REC jacks.

## ⑥ REVERBERATION OFF SWITCH

Depress this switch to cut off the reverberation effect. This will allow signals without a reverberating sound to be made available from both the SR-303's OUTPUT jacks and the TAPE PLAY jacks.

## NOTE:

*The reverberation on switch, the reverberation on-recording switch and the reverberation off switch are all coupled. When you depress one switch, make sure that all the others are released. Do not depress more than one switch at a time.*

## ⑦ TAPE MONITOR INDICATOR

This comes on when the tape monitor switch is depressed.

## ⑧ TAPE MONITOR SWITCH

Depress this switch to monitor the sound on the tape as it is being recorded or when playing back a tape using a tape deck connected to the SR-303's TAPE jacks. (The tape monitor indicator comes on.)

## ⑨ REVERB TIME CONTROL

This is used to adjust the delay time.

The reverberation effect becomes more pronounced when this control is rotated clockwise as you listen to the reproduced sound. Listen to the sound and then set this control for the optimum effect. Selection can be made between two types of reverberation with the model SR-303 by pushing the reverb time control or pulling it out. Pushing the control gives EFFECT 1 (longer reverberation time) and pulling it out gives EFFECT 2 (one reverberation component). For details, refer to EFFECT 1 and EFFECT 2 on page 6.

## ⑩ DEPTH CONTROL

This is used to adjust the depth of the reverberation. When it is set to the '0' position, only the original sound will be heard. The reverberation component increases as this control is rotated clockwise. Listen to the sound as it reverberates and adjust this control to the optimum position.

## OPERATION

### PRIOR TO SWITCHING POWER ON

Set the controls and switches to the following positions before operating the model SR-303.

1. Set the reverb time control to the '5' position.
2. Set the depth control to the '0' position.
3. Depress the reverberation off switch.
4. Set the tape monitor switch to OFF (released).
5. Set the tape monitor switch (which is related to the TAPE jacks connecting the SR-303) on the stereo amplifier to ON.

#### NOTE:

Even when the SR-303's power switch is at OFF, the INPUT signal will bypass the reverberation circuit and it will be fed out to the OUTPUT jacks and TAPE REC jacks when the reverberation off switch is depressed.

### Operation procedure

1. Play the program source on the stereo amplifier, and listen to the sound without adding the reverberation effect.
2. Depress the reverberation on switch (ON).
3. Rotate the depth control clockwise, increase the reverberation components and adjust to the preferred level. The level fluctuations of the reverberated sound will make the reverberation indicator's light ring weak and strong. Rotate the depth control and adjust so that the light ring fluctuates widely between strong light and weak light. Remember that when the light ring of the reverberation indicator comes on strong, the reverberation effect is excessive.
4. Rotate the reverb time control, try lengthening or shortening the delay time, and set this control to the optimum position.

#### NOTE:

Select reverberation EFFECT 1 or EFFECT 2 using the reverb time control, in accordance with the program source which you intend to reproduce.

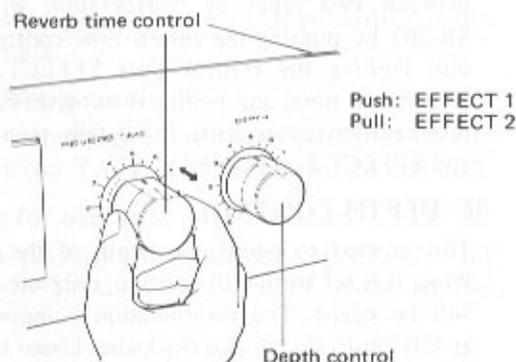


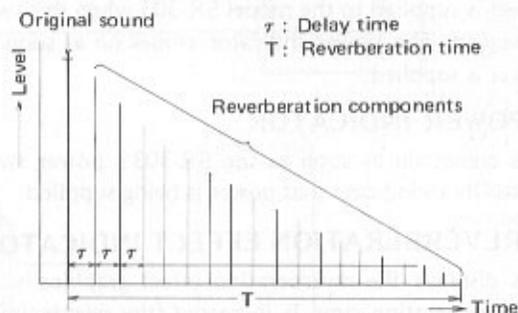
Fig. 3

## EFFECT 1 AND EFFECT 2

The SR-303 allows a selection between two types of reverberation effects

### EFFECT 1 (with the reverb time control depressed)

A normal reverberation is produced. This is the so-called echo mode, and the reverberation component of the original sound lasts for a long time (see Fig. 4). This is ideal for performances in a hall. The reverberation time is defined as the time taken for the reverberation component to drop 60dB (one-millionth) with respect to the original sound. Using both the reverb time and depth controls, it is possible to adjust the reverberation time between 0 and 3 seconds.



$\tau$ : 25 msec (REVERB TIME : 0)~100 msec (REVERB TIME : 10)

The delay time ( $\tau$ ) is defined as the time difference between the original sound and the reverberation components. When the reverb time control is set to the '0' position, this delay time ( $\tau$ ) is about 25 msec. The time is increased as the control is rotated clockwise, and at the '10' position, it is about 100 msec.

Fig. 4

### EFFECT 2 (with the reverb time control pulled out)

As shown in Fig. 5, only one reverberation component is generated with respect to the original sound. Since only this single component is added to the reproduced sound, the effect sounds like a chorus. In order to make the most of the EFFECT 2 facility, it is recommended that the reverb time control be set to between position '8' and '10'. This effect is ideal for making vocals sound like duets.

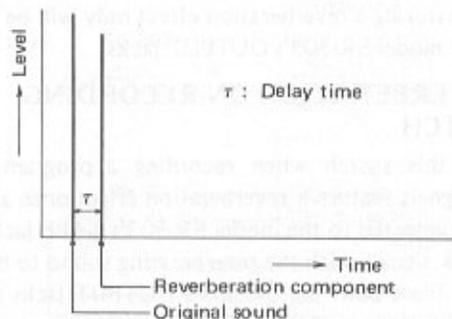


Fig. 5

## USING A TAPE DECK

WHEN PRODUCING A REVERBERATION EFFECT IN THE REPRODUCED SIGNAL ONLY AND RECORDING THE ORIGINAL SOUND (WITHOUT THE REVERBERATION EFFECT) ON A TAPE DECK:

1. Depress the reverberation on switch (make sure the reverberation on-recording switch is released).
2. Set the tape deck which you have connected to the model SR-303's TAPE jacks to the recording mode.
3. The original sound is now available at the TAPE REC jacks. When monitoring the recording, depress the tape monitor switch. (The tape monitor indicator comes on.)

WHEN RECORDING A SIGNAL WITH THE REVERBERATION EFFECT

1. Depress the reverberation on-recording switch (with the reverberation on switch released).
2. Set the tape deck which you have connected to the model SR-303's TAPE jacks to the recording mode.
3. When monitoring the recording, depress the tape monitor switch. (The tape monitor indicator comes on.)

WHEN PRODUCING A REVERBERATION EFFECT IN THE PLAYBACK SIGNALS OF THE TAPE DECK.

1. Depress the tape monitor switch. (The tape monitor indicator comes on.)
2. Set the tape deck which you have connected to the model SR-303's TAPE jacks to the playback mode.
3. Depress the reverberation on switch.

If you want to reproduce the original sound (without the reverberation effect) when the SR-303 is used between a preamplifier and a power amplifier, depress the reverberation off switch and the tape monitor switch. There is no need to set the power switch to ON.

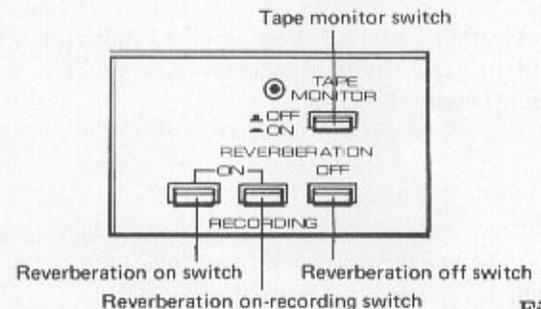
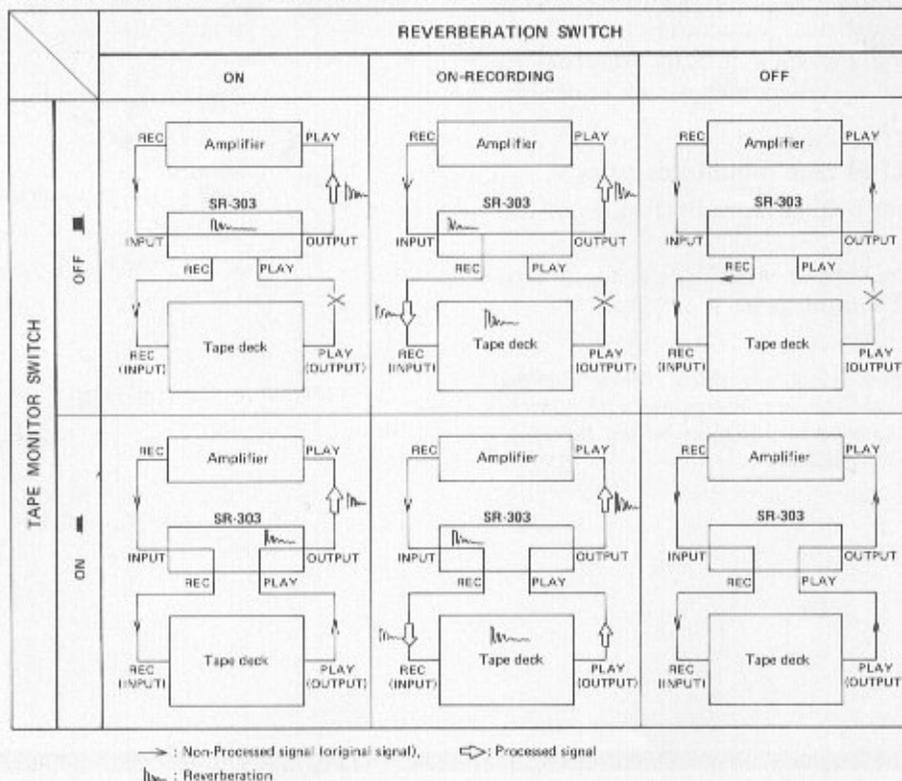


Fig. 6

Relationship between signals and combinations of reverberation selectors and the tape monitor switch



# SPECIFICATIONS

## Semiconductors

ICs	8
FET	1
Transistors	14
Diodes	16

## Reverberation Amplifier Section

Input (Sensitivity/Impedance)	150mV/50kΩ (at 1kHz, DEPTH volume: 0)
Frequency Response	5Hz to 70kHz ±1dB (at DEPTH volume: 0)
Total Harmonic Distortion	Less than 0.05% (at 1kHz, 1V, DEPTH volume: 0)
Maximum Input Level	2V (at 1kHz, 1V, DEPTH volume: 0)
Signal to Noise Ratio	90dB (at 1V, DEPTH volume: 0)
Reverberation Time	0 to 3 sec (at EFFECT 1, 400Hz) 25msec to 100msec (at EFFECT 2, 400Hz)
Output (Level/Impedance)	150mV/1kΩ (at 1kHz, DEPTH volume: 0)

## Miscellaneous

Power Requirements	AC 120V, 60Hz
Power Consumption	13W
Dimensions	420(W) x 99(H) x 336(D) mm 16-9/16(W) x 3-7/8(H) x 13-1/4(D) in
Weight (without package)	4.3kg (9 lb 8 oz)

## Furnished Parts

Connection cord with pin plugs	2
Operating instructions	1

**NOTE:**

Specifications and the design subject to possible modification without notice due to improvements.

## RACK MOUNT ADAPTORS

The JA-R104 rack mount adaptors are available as options. They have a 2U size format which meets EIA (Electronic Industries Association) standards and so by attaching the rack mount adaptors to the model, it can be installed into a rack conforming to EIA standards.

### Attaching the JA-R104 rack mount adaptors

1. Detach the rubber bushes from both sides of the model.
2. Use the mounting screws which are accessory to the JA-R104 and mount as in Fig. 7.

**NOTE:**

The JA-R104 adaptors are 3 mm thick. When aligning them with other Pioneer stereo components with a thickness of 5 mm, slide the accessory spacers behind the adaptors and then attach (Fig. 8).

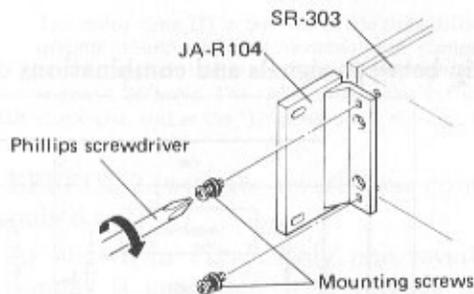


Fig. 7

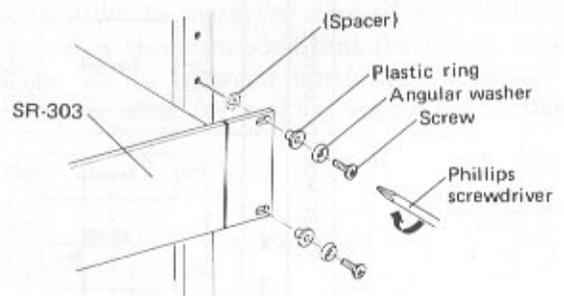


Fig. 8