

<R42-152-0>

WIZTRONICS, INC.

Service Manual

REVERBERATION AMPLIFIER

SR-202W

<71B02Y51C>

PIONEER®

SPECIFICATIONS

SEMICONDUCTORS

Transistors 10
Diodes 2

AUDIO SECTION

R.M.S. Output Voltage	330mV (at 1kHz, Reverberation time: MIN. Input Level: 200mV)
Maximum Input Level	3V (at 1kHz, Reverberation time: MIN.)
Harmonic Distortion	Less than 0.2% (at 1kHz, Reverberation time: MIN, Output Level: 330mV)
Frequency Response	±2dB 20Hz to 35kHz (Reverberation time: MIN.) ±10dB 20Hz to 50kHz (Reverberation time: MAX.)
Signal-to-Noise Ratio	65dB (at 330mV output)
Reverberation time	0 ~ 2.5 sec. (at 1kHz)
Input Impedance	300kΩ (at 1kHz)
Output Jacks	OUTPUT jack Impedance 10kΩ (at 1kHz) TAPE RECORDING jack A and B.
Line Requirements	110, 120, 130, 220 and 240 volts (switchable) 50 ~ 60Hz. 8 watts (MAX.)
Dimensions	Overall 13" 1/16 / 322mm (width) 5" 1/2 / 140mm (height) 10" 3/8 / 263mm (depth)
Weight	Without Package 10lb 2oz, 4.6kg With Package 13lb, 5.9kg

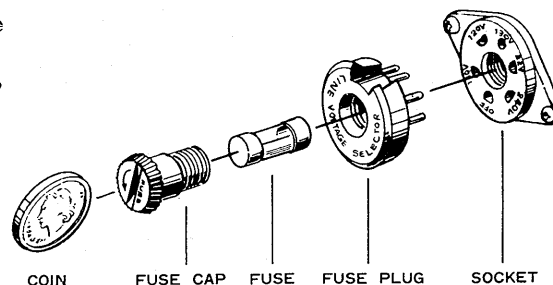
NOTE: Specifications and the design subject to modification without notice due to improvements.

LINE VOLTAGE AND FUSE

To move the fuse, turn the fuse cap located on the line voltage selector in the direction indicated by the arrow. Then remove the fuse plug from the unit. Put the fuse plug back so that the proper line voltage marking can be seen through the cut in the edge of the plug. Whenever the position of the selector is changed, check the rating of the fuse. A 0.2-ampere fuse is to be used for either 220V or 240V operation and a 0.3-ampere fuse for 110V, 120V or 130V operation. If the rating of the fuse is correct, replace cap.

Fuse replacement

If the fuse blows, the fuse cap and replace the fuse with a new one.
Take off the fuse cap by turning it with a coin, etc. in the direction indicated by the arrow.



Take off the fuse cap by turning it with a coin, etc. in the direction indicated by the arrow mark.

DISASSEMBLY

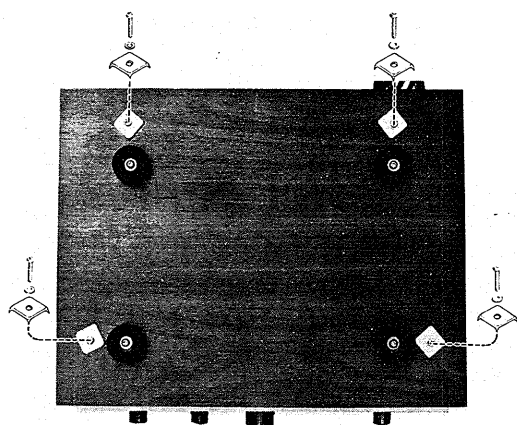


Photo 1

1. Remove the four screws securing the bottom of the cabinet with a philips screwdriver (Photo 1).
2. Pull the amplifier body out of the cabinet.
3. Remove each of the control knobs from the front panel with care so as not to damage them. If the knobs will not come off the shaft easily, wrap the knobs in a soft cloth as shown in Fig. 1-A, and pull it out as shown in Fig. 1-B.

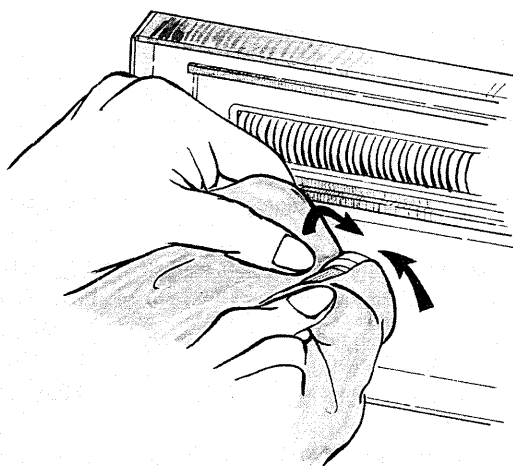


Fig. 1-A

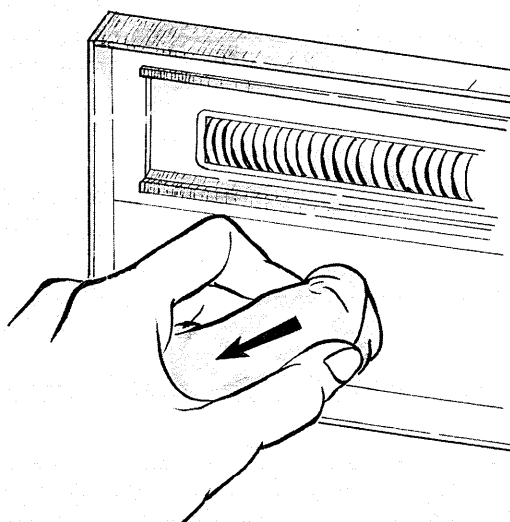


Fig. 1-B

4. Remove the nuts and washers from the shaft used for the POWER SWITCH and for the TAPE MODE SELECTOR SWITCH, respectively. Now, the front panel will come off the amplifier (Photo 2).

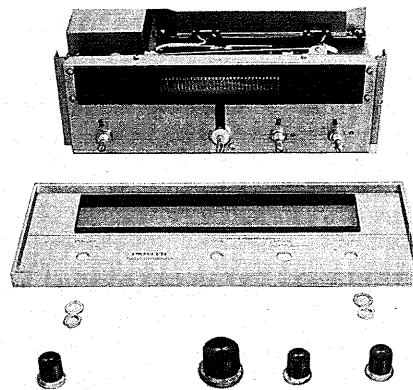


Photo 2

PRECAUTION IN PARTS REPLACEMENT

- Some of the screws, nuts, and pilot lamp sockets are paint locked. When replacing any of these parts, apply a few drips of thinner to the locked portion. This will dissolve the paint into making it easier to remove the parts.

CIRCUIT DESCRIPTION

1. AF AMP UNIT (W36-004)

Input signal applied to the input terminal on the rear panel is provided to the terminal ② (⑫) of the AF AMP UNIT through the REVERBERATION MODE SWITCH S1 and TAPE MODE SWITCH S2.

The input signal applied to terminal ② is then provided with impedance conversion through the emitter follower (Q_{101}) and then will appear at terminal ① as left-channel and right-channel mono signal via the emitter of Q_{101} (Q_{102}) and both resistors R_{109} and R_{110} . The mono signal is then applied to IN terminal of the Drive Amp Unit (W15-045).

On the other hand, the original input signal given time delay by the reverberation unit (W38-001) is applied to terminal ⑥. This delayed-time signal, after amplified through Q_{103} , is distributed to Q_{104} and Q_{105} via the reverberation time control connected to terminals ⑤, ⑧, and ⑨. The signal is then mixed with input signal provided from Q_{101} (Q_{102}) and amplified by Q_{104} (Q_{105}), and will then be applied to OUT terminal from terminal ④ (⑩).

2. DRIVE AMP UNIT (W15-045)

This amplifier unit consists of power supply section and drive amp section which drives the reverberation unit.

• DRIVE AMP SECTION

The complimentary circuit employed in this section comprises transistors Q_{203} and Q_{204} , being driven with transistors Q_{201} and Q_{202} . Since input impedance on the driver side of the reverberation unit is low, the reverberation unit needs to be driven by an amplifier which provides output of low impedance. If impedance is converted by means of a transformer, distortion and loss will become great. Therefore, for this drive amp a complimentary circuit has been employed to provide output of low impedance.

Q_{201} , which performs almost no amplification, is used for impedance conversion. Q_{202} drives both Q_{203} and Q_{204} . Q_{203} is an NPN-type transistor, Q_{204} is a PNP-type transistor; both of which form single-ended push-pull output circuit.

Capacitor C_{204} connected to the base and the collector of Q_{202} is provided for stabilizing a high frequency range, and the resistor R_{214} is provided for negative feedback (NFB). Capacitor C_{211} and resistor R_{218} connected to OUT terminal are provided for preventing possible oscillation from occurring in a high

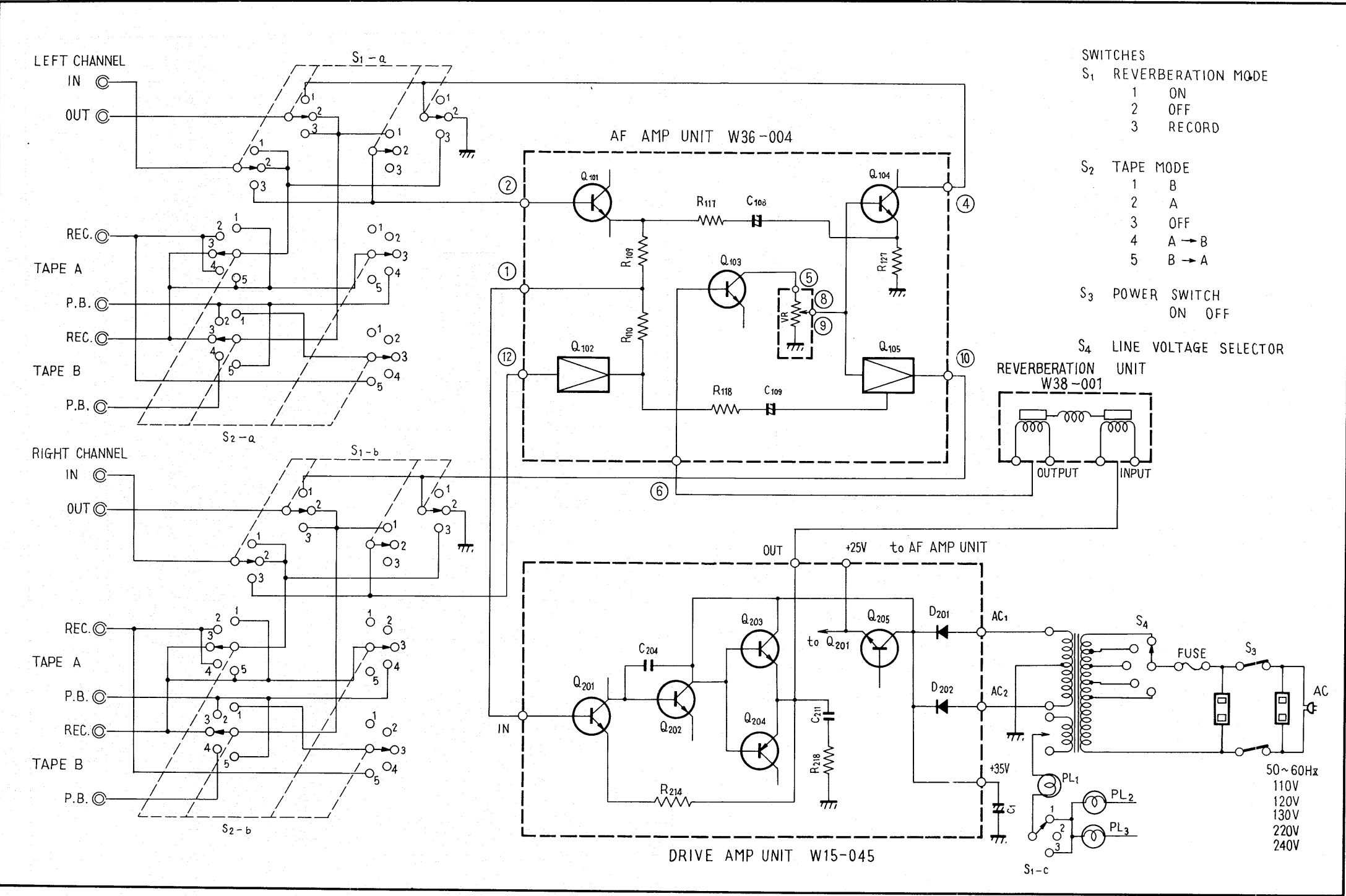
frequency range.

The input signal amplified through this drive amp unit drives the reverberation unit, thus adding a reverberating effect to sound reproduction.

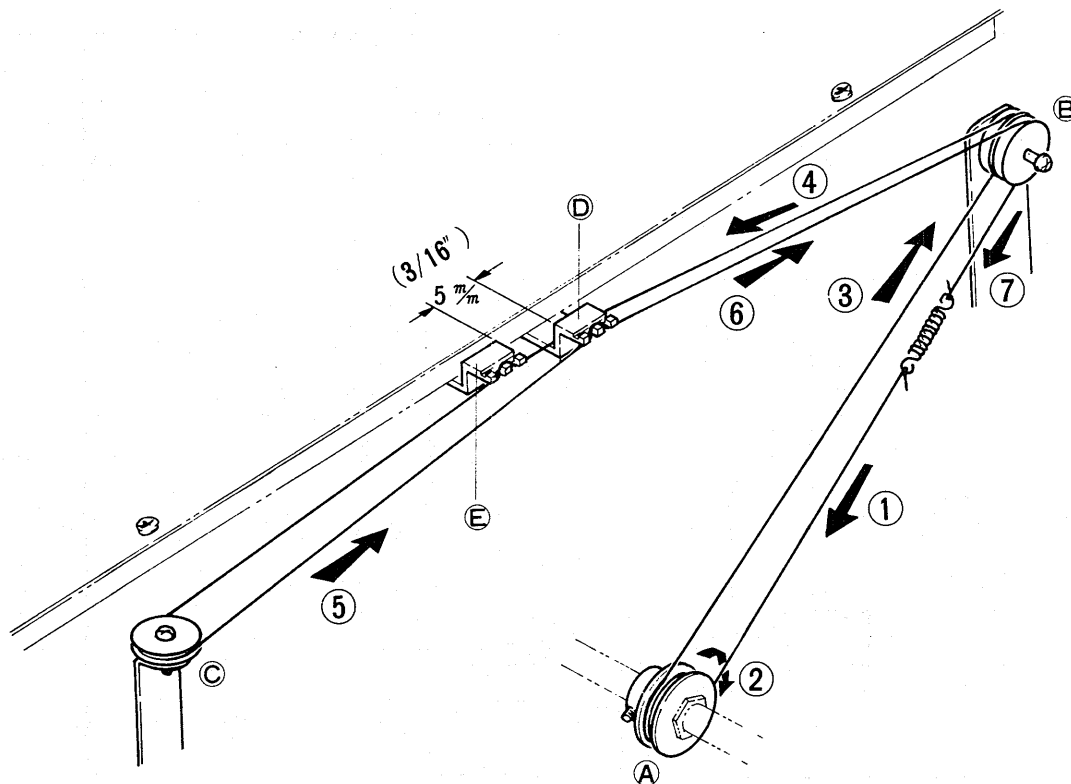
• POWER SUPPLY SECTION

AC power is rectified to DC power by diodes D_{201} and D_{202} , and supplied to the second and third stage of the drive amp with ripple removed by capacitor C1. DC power is then supplied to the first stage and the AF AMP UNIT after stabilized through the ripple filter of the Q_{205} .

BLOCK DIAGRAM



DIAL CORD STRINGING



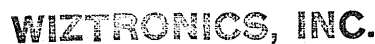
1. Bring the indicator arms E and D closest to each other.
2. Tie one end of the string to one end of the spring. Extend the string to the pulley A fixed on the reverberation control shaft and wind the string two turns on the pulley, and further extends it to the pulley B on the control panel side.
3. Give the string a turn at the pulley B and bring it up to the indicator arm E and hook it to the arm. Then, extend it up to the pulley C.
4. Return the string up to the indicator arm D and hook it to the arm. Then, extend it to the pulley B on the rear panel side and bring it to the other end of the spring. Tie the string to the end of the spring.

5. After the string has been arranged in the above steps 1 through 4, adjust a clearance between the indicator arms E and D to become about 5mm when the reverberation control is turned fully clockwise. Apply a little amount of lacquer of paint to the following portions.

- To the screw on the pulley A.
- To each portion of the indicator arms E and D, where the string is hooked.
- To each end of the spring, where the string is tied.

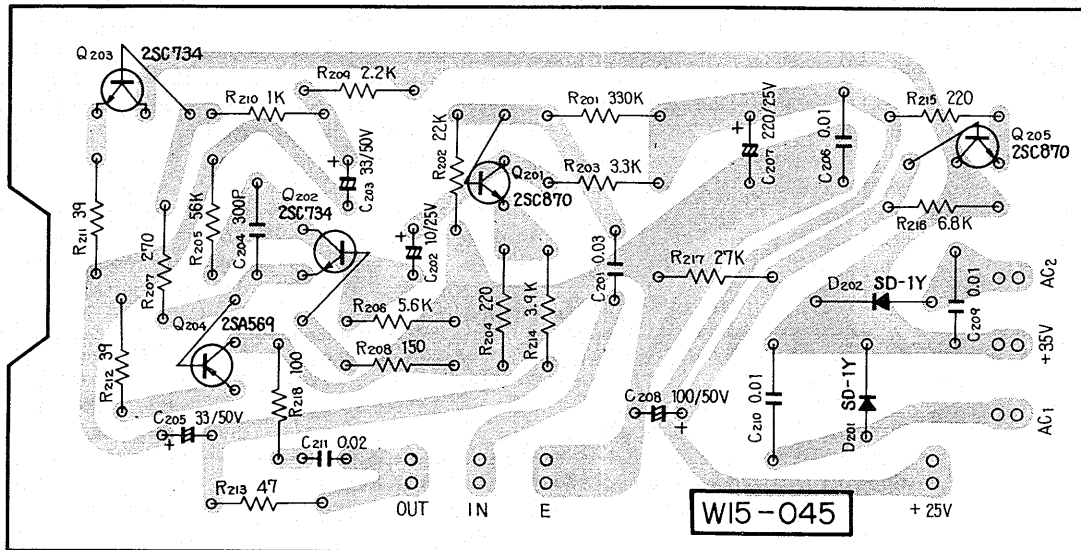
This will protect the string from slack during manipulation of the reverberation time control knob.

SR-202W

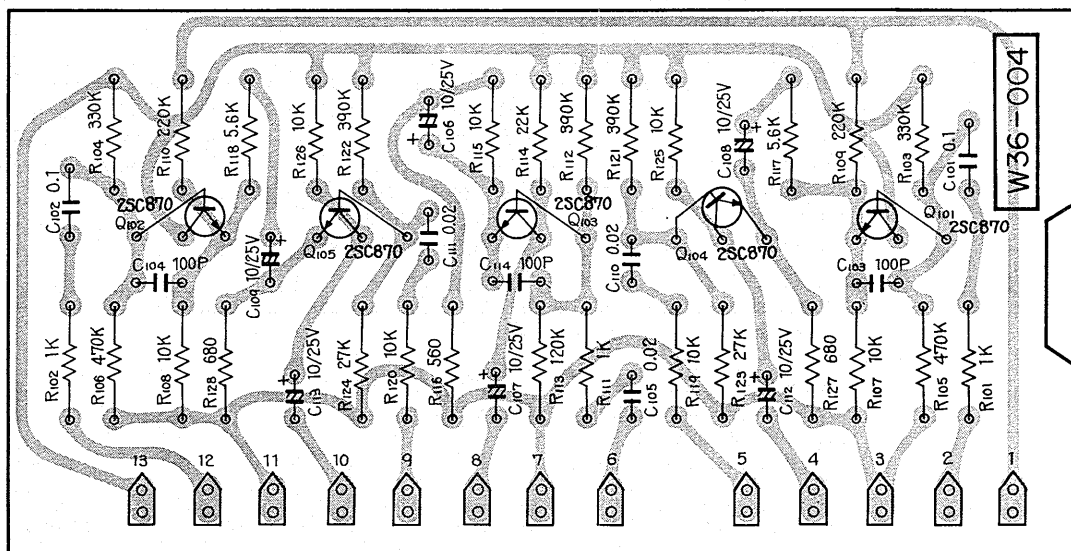


PRINTED CIRCUIT BOARDS

DRIVE AMP UNIT(W15-045)



AF AMP UNIT(W36-004)

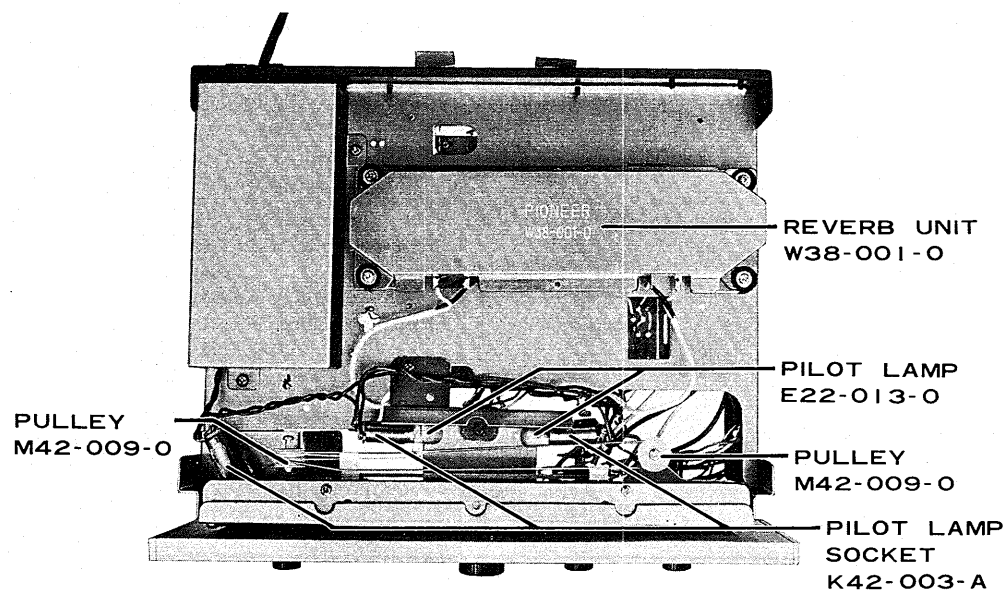
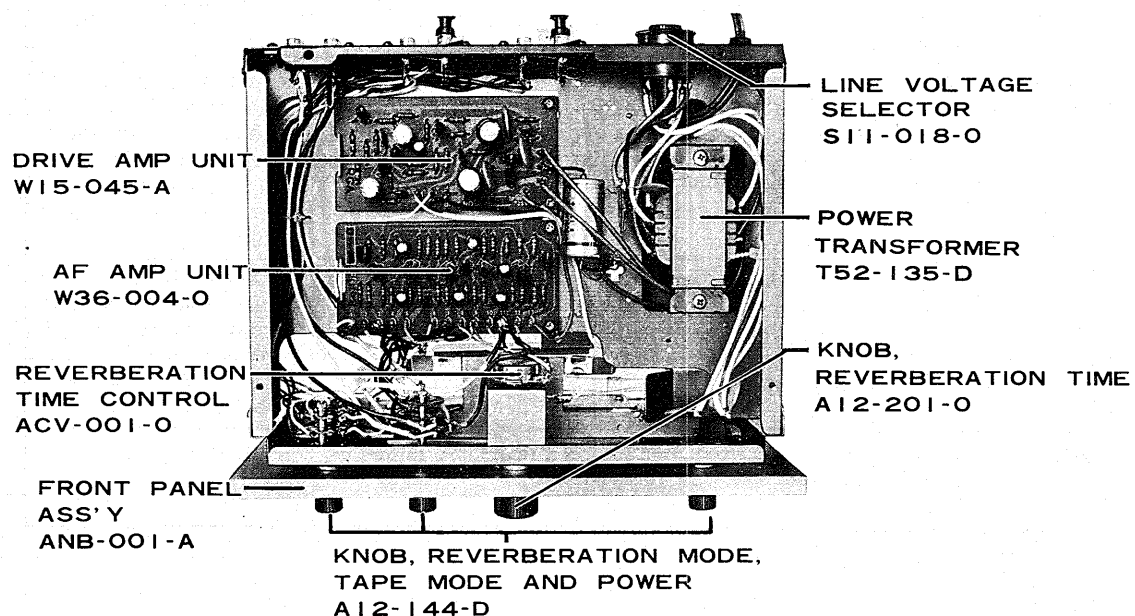


TROUBLESHOOTING CHART

Position of reverberation mode switch	Position of tape mode switch	Symptoms	Possible cause or reasons	Remedies
OFF	OFF	No sound from speaker systems, etc.	• Incomplete connection of cords to input or output terminals. • Input or output terminals board is defective. • Switch is defective.	• Check for connection. • Check soldered portions. If properly soldered, replace the defective parts. • Replace.
ON or RECORD	OFF	No sound from speaker systems, etc. (No noise is heard even if the vibration is applied with the REVERBERATION TIME control set to MAX.)	• Q₁₀₃, Q₁₀₄, or Q₁₀₅ is defective. • Switch is defective. • B circuit is defective (25V is not being provided).	• Check for soldered portions. If properly soldered, replace the defective parts.
		No sound from speaker systems, etc. (Noise is heard if vibration is applied with the REVERBERATION TIME control set to MAX.)	• Q₁₀₁ or Q₁₀₂ is defective. • Switch is defective.	• Check for soldered portions. If properly soldered, replace the defective parts.
		Output signal will come out without reverberation. (No noise is heard even if vibration is applied with the REVERBERATION TIME control set to MAX.)	• Pick up coil in the REVERBERATION UNIT is open. • Q₁₀₃ is defective. • The REVERBERATION TIME CONTROL is defective.	• Check for soldered portions. If soldered properly, replace the defective parts.
		Output signal will come out without reverberation. (Noise is heard if vibration is applied with the REVERBERATION TIME control set to MAX.)	• Drive Amp is defective. • Drive coil of the REVERBERATION UNIT is open.	• Replace.
		Reverberation cannot be controlled with the REVERBERATION TIME control knob.	• Ground lead wire for the potentiometer is open. • Potentiometer is defective.	• Solder the ground wires. If the condition remains the same, replace the potentiometer.

Position of reverberation mode switch	Position of tape mode switch	Symptoms	Possible cause or reasons	Remedies
ON or RECORD	OFF	The noise like "z, z, z" is heard together with the reverberation sound.	The magnet of the reverberation unit is contacting the frame, or the spring is contacting the case.	Adjust the position of the frame or of the spring. If such adjustment does not improve the condition, replace the reverberation unit (W38-001).
		When driving speaker systems with this reverberation unit turned on, howling occurs, sometimes.	The SR-202W is placed too close to the speaker systems.	- Move the SR-202W to another place and see if howling stops. - Place a shock absorber under the SR-202W.
OFF	A, B, A → B B → A	No sound from speaker systems, etc.	Switch is defective.	Replace.

PARTS LIST



CAPACITORS

IN μF , 10% TOLERANCE UNLESS OTHERWISE NOTED. P: μMf

Symbol	Description	Part No.
C1	Electrolytic 1000 35V	CEMX 1000MF35V
C2	Ceramic 0.01 1.4kVDC	C43-003-0
C3	Ceramic 0.01 1.4kVDC	C43-003-0
C4	Ceramic 0.01 1.4kVDC	C43-003-0

POTENTIOMETER

Symbol	Description	Part No.
	50k Ω Reverberation time control	ACV-001-0

SWITCHES

Symbol	Description	Part No.
S1	Reverberation Mode Selector	ASC-002-0
S2	Tape Mode Selector	ASC-001-0
S3	Power Switch	S11-016-A
S4	Line Voltage Selector	S11-018-0

TRANSFORMER

Symbol	Description	Part No.
T1	Power Transformer	T52-135-D

MISCELLANEOUS

Symbol	Description	Part No.
	Drive Amp Unit	W15-045-A
	A.F. Amp Unit	W36-004-0
	Reverb Unit	W38-001-0
	Front Panel Ass'y	ANB-001-A
	Wooden Case	AMN-001-0
	Indicator Board	A62-044-0
	Arm	E32-031-B
	Screen Board	ACE-003-0
	Lens for Indicator	A59-040-A
	Lens (Red) for Power	A59-026-0
	Knob, Reverberation Mode and Tape Mode and Power	A12-144-D
	Knob, Reverberation Time	A12-201-0
	Pilot Lamp	E22-013-0
	Pilot Lamp Socket	K42-003-A
	Fuse 0.2A	E21-016-0
	Pulley	M42-009-0
	Pulley (A)	M45-032-0
	AC Outlet	K82-014-0
	Terminal 4p	K21-010-C

SR-202W

AF AMP UNIT (W36-004)

CAPACITORS

Symbol	Description	Part No.
C101	Mylar 0.1 50V	CQMA 104K 50
C102	Mylar 0.1 50V	CQMA 104K 50
C103	Ceramic 100p 50V	CCDSL 101K 50
C104	Ceramic 100p 50V	CCDSL 101K 50
C105	Mylar 0.02 50V	CQMA 203K 50
C106	Electrolytic 10 25V	CEMX 10MF 25V
C107	Electrolytic 10 25V	CEMX 10MF 25V
C108	Electrolytic 10 25V	CEMX 10MF 25V
C109	Electrolytic 10 25V	CEMX 10MF 25V
C110	Mylar 0.02 50V	CQMA 203K 50
C111	Mylar 0.02 50V	CQMA 203K 50
C112	Electrolytic 10 25V	CEMX 10MF 25V
C113	Electrolytic 10 25V	CEMX 10MF 25V
C114	Ceramic 100p 50V	CCDSL 101K 50

RESISTORS

INΩ, ¼W UNLESS OTHERWISE NOTED

k:kΩ, M:MΩ

Symbol	Description	Part No.
R101	Carbon film 1k	RF¼PS 1K-K
R102	Carbon film 1k	RF¼PS 1K-K
R103	Carbon film 330k	RF¼PS 330K-K
R104	Carbon film 330k	RF¼PS 330K-K
R105	Carbon film 470k	RF¼PS 470K-K
R106	Carbon film 470k	RF¼PS 470K-K
R107	Carbon film 10k	RF¼PS 10K-K
R108	Carbon film 10k	RF¼PS 10K-K
R109	Carbon film 220k	RF¼PS 220K-K
R110	Carbon film 220k	RF¼PS 220K-K

R111	Carbon film	1k	RF¼PS 1K-K
R112	Carbon film	390k	RF¼PS 390K-K
R113	Carbon film	120k	RF¼PS 120K-K
R114	Carbon film	22k	RF¼PS 22K-K
R115	Carbon film	10k	RF¼PS 10K-K
R116	Carbon film	560	RF¼PS 560-K
R117	Carbon film	5.6k	RF¼PS 5R6K-K
R118	Carbon film	5.6k	RF¼PS 5R6K-K
R119	Carbon film	10k	RF¼PS 10K-K
R120	Carbon film	10k	RF¼PS 10K-K
R121	Carbon film	390k	RF¼PS 390K-K
R122	Carbon film	390k	RF¼PS 390K-K
R123	Carbon film	27k	RF¼PS 27K-K
R124	Carbon film	27k	RF¼PS 27K-K
R125	Carbon film	10k	RF¼PS 10K-K
R126	Carbon film	10k	RF¼PS 10K-K
R127	Carbon film	680	RF¼PS 680-K
R128	Carbon film	680	RF¼PS 680-K

SEMICONDUCTORS

Symbol	Description	Part No.
Q101	2SC870-GR or BL Transistor	
Q102	2SC870-GR or BL Transistor	
Q103	2SC870-GR or BL Transistor	
Q104	2SC870-GR or BL Transistor	
Q105	2SC870-GR or BL Transistor	

DRIVE AMP UNIT (W15-045) CAPACITORS

Symbol	Description	Part No.
C201	Mylar 0.03 50V	CQMA 303K 50
C202	Electrolytic 10 25V	CEMX 10MF 25V
C203	Electrolytic 33 50V	CEMX 33MF 50V
C204	Ceramic 330p 50V	CCDSL 331K 50
C205	Electrolytic 33 50V	CEMX 33MF 50V
C206	Ceramic 0.01 D.C. 1.4kV	C43-003-0
C207	Electrolytic 220 25V	CEMX 220MF 25V
C208	Electrolytic 100 50V	CEMX 100MF 50V
C209	Ceramic 0.01 D.C. 1.4kV	C43-003-0
C210	Ceramic 0.01 D.C. 1.4kV	C43-003-0
C211	Mylar 0.02 50V	CQMA 203K 50

RESISTORS

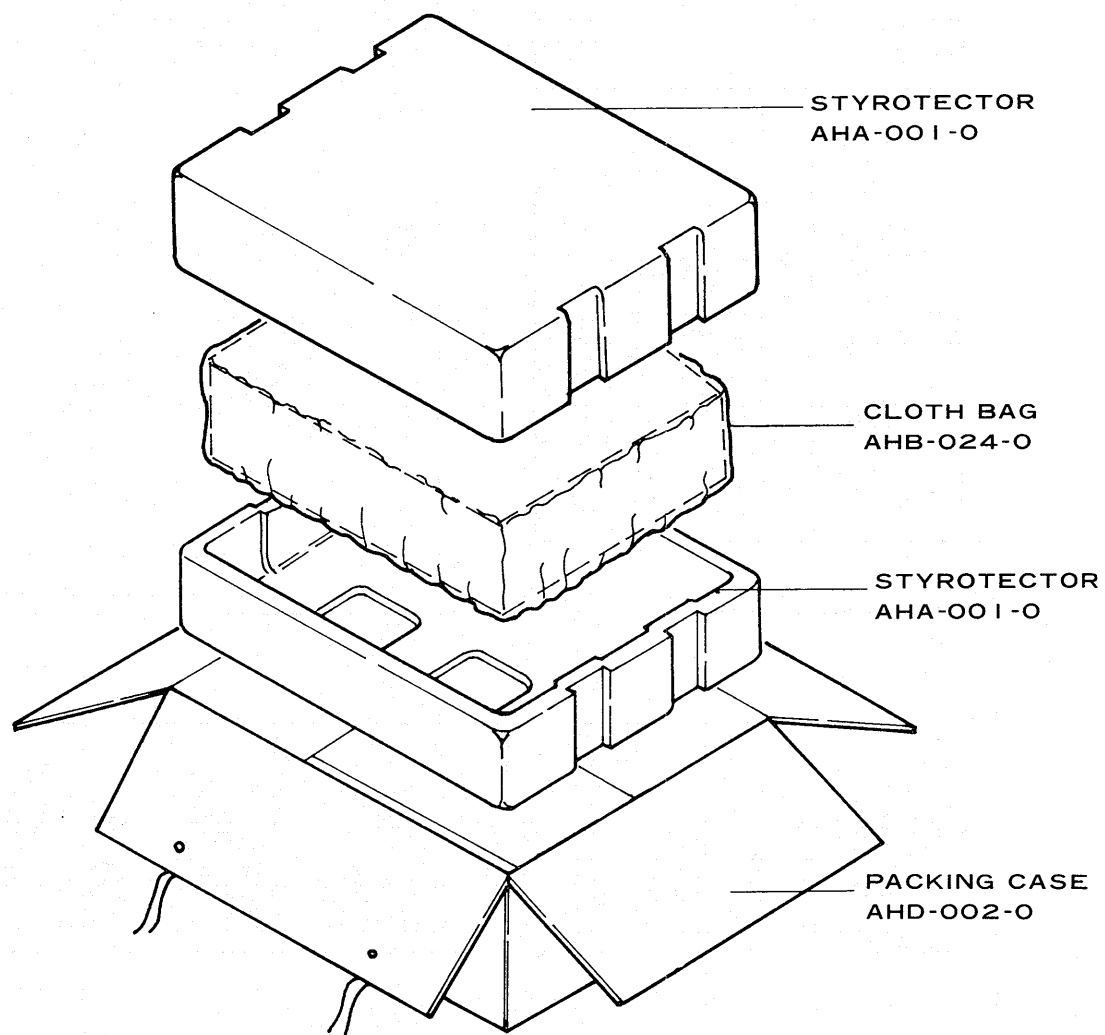
Symbol	Description	Part No.
R201	Carbon film 330k	RF¼PS 330K-K
R202	Carbon film 22k	RF¼PS 22K-K
R203	Carbon film 3.3k	RF¼PS 3R3K-K
R204	Carbon film 220	RF¼PS 220-K
R205	Carbon film 56k	RF¼PS 56K-K
R206	Carbon film 5.6k	RF¼PS 5R6K-K
R207	Carbon film 270	RF¼PS 270-K
R208	Carbon film 150	RF¼PS 150-K
R209	Carbon film 2.2k	RF¼PS 2R2K-K
R210	Carbon film 1k	RF¼PS 1K-K
R211	Carbon film 39	RF¼PS 39-K
R212	Carbon film 39	RF¼PS 39-K
R213	Carbon film 47	RF¼PS 47-K
R214	Carbon film 3.9k	RF¼PS 3R9K-K
R215	Carbon film 220	RF¼PS 220-K

R216	Carbon film	6.8k	RF¼PS	6R8K-K
R217	Carbon film	27k	RF¼PS	27K-K
R218	Carbon film	100	RF¼PS	100-K

SEMICONDUCTORS

Symbol	Description	Part No.
Q201	2SC870-GR or BL Transistor	
Q202	2SC734 Transistor	
Q203	2SC734 Transistor	
Q204	2SA569 Transistor	
Q205	2SC870-GR or BL Transistor	
D201	SD-1Y Diode	
D202	SD-1Y Diode	

UNPACKING



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