

AIWA®

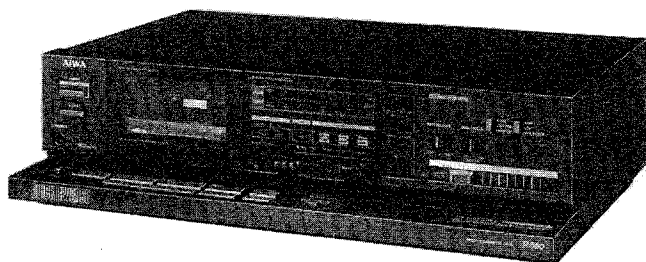
S/M Code No. 84-026
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SERVICE MANUAL

**STEREO CASSETTE
DECK**

MODEL NO.

AD-R650



TYPE. HB, HUB, CB, UB, EB, KB, GB, ZB

SPECIFICATIONS

Type	Stereo cassette tape deck	Tape speed	4.8 cm/sec. (1-7/8 ips)
Track format	4 tracks, 2 channels	Rewind time	65 sec. (C-60)
Circuitry	20 ICs, 35 transistors, 22 diodes, 34 LEDs, 2 photo-interrupter	Fast forward time	65 sec. (C-60)
Power supply	AD-R650 E, Z AC 220 V, 50/60 Hz AD-R650 K, G AC 240 V, 50/60 Hz AD-R650 U, C AC 120 V, 50/60 Hz AD-R650 H AC 120 V/220 V/240 V switchable, 50/60 Hz	Recording system	AC bias (frequency 85 kHz)
Power consumption	20 W	Erase system	AC erase
Frequency response	METAL tape: 20—19,000 Hz CrO ₂ position tape: 20—18,000 Hz NORMAL tape: 20—17,000 Hz	Motor	DC Servomotor for capstan × 1 DC motor for reels × 1
Signal-to-noise ratio	73 dB (METAL tape DOLBY C NR ON)	Head	Recording, playback head: DX combination head × 1 Erase head: Double gap ferrite light head × 2
Wow and flutter	According to DIN 45 500 0.1% 0.035% (WRMS)	Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 kΩ)
		Outputs	LINE OUT standard output level: 0.38 V (0 VU); suitable load impedance: over 50 kΩ; Headphones: 8 Ω
		Dimensions	420 (W) × 116 (H) × 300 (D) mm
		Weight	5.0 kg
		Accessories	Stereo pin cord (2)

- Design and specifications are subject to change without notice.
- Noise reduction and headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX Professional originated by Bang and Olufsen.
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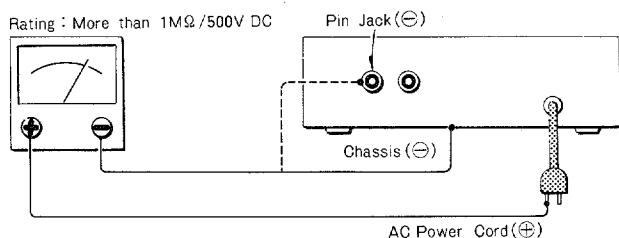
Follow the instructions carefully, which will allow the user to optimise the products' performance and give many years of service.

1. No scratch and melting shall be made to covered lead-wires of an a.c. primary circuit including mains leads.
2. No illegibility shall be given to the specification plate, the caution labels, the fuse labels and others.
3. When, on pattern sides of circuit boards, additional repair-parts have been made up, the parts shall be firmly glued to circuit boards or other components, unless the parts can be attached firmly.
4. The following matters shall be maintained as they are, when repairing.
 - 1) Soldering of lead-wire ends
 - * Care should be taken of the space distance in an a.c. primary circuit as well as soldering.
 - 2) Wiring and holding of lead-wires with wire-clips and binders
 - 3) Materials of lead-wires
 - * e.g.; For UL models, lead-wires to be used shall be approved or accepted by the UL.
 - 4) Location of all kinds of insulators
 - 5) Setting of voltage selector switch
 - * Set the Voltage Selector Switch to 240V, 220V, or 120V, According to your Local Voltage.

6. General instructions for mechanism repair
 - 1) The heads, capstan and pinch roller shall be cleaned of good quality alcohol after repaired, because dirty heads shall cause distorted sounds while dirty capstan and pinch roller shall occur wow/flutter and take-up fault.
 - 2) When oiling, only one or two drops shall be applied so as not to run over and be dispersed. Note should be taken of the metal fitting for the capstan and rotating portions of the idlers and pinch roller, especially.
 - 3) E-rings and poly slider washers shall be replaced with new ones, if once those have been removed. — No re-utilization due to unreliability.
 - 4) Regular spare-parts shall always be used for repair, because using irregular parts and tampering with the products shall cause deterioration, malfunction and damage.

5. After repaired, the insulation resistance or leakage current shall be measured with $500 \pm 5V$ D.C and shall be not less than $1M\Omega$.
Measuring Point

Connect to Chassis or Outside \ominus of Pin Jack



ELECTRICAL MAIN PART LIST

• *mark means less required items and availabilities may be limited.

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
< I C >			< Capacitor >					
	87-027-879	AN6882	C51.505.	87-018-044	1000pF CERAMIC	D611.612.	87-027-542	LED, LN217RP (PEAK PROGRAM METER, C-TYPE, ADMS, METAL)
	87-020-372	L78N05	506.806.			613.614.		
	82-132-640	LC6502B-B-670	807			615.616.		
	87-020-157	M5210L	C56	87-015-321	0.47µF 50V ALUMINUM SOLID	619.627.		
	87-027-895	M5218L				633		
	87-027-909	M54523P	C109.110	87-015-379	1µF 50V ELECTROLYTIC BP	D621.632	87-027-671	LED, LN417YP (SOURCE, CrO ₂)
	87-027-949	NJM2043S-A				D622.623.	87-020-178	LED, SLF-102D-01R (REVERSE MODE)
	87-020-052	NJM4556S	C201.202.	87-018-034	150pF CERAMIC	624		
	87-027-986	NJM4560S	309.310			D625.626	87-020-179	LED, SLF-202B-01GR (DIRECTION)
	87-027-937	TC4030BP	C203.204.	87-018-047	0.01µF 16V CERAMIC	< Capacitor >		
	87-027-656	TC4066BP	205.206.			C601.602	87-018-047	0.01µF 16V CERAMIC
	87-020-151	TD62505P	207.208.			C603.604	87-015-697	3.3µF 50V ELECTROLYTIC
			209.210.			< VOLUME CIRCUIT BOARD SECTION >		
			409.410			PCB-G	*	VOLUME CIRCUIT BOARD
< TRANSISTOR >						D617.628.	87-027-097	DIODE, 1S1555
	89-108-854	2SA885R, S	C501.502	87-015-691	0.1µF 50V ELECTROLYTIC	629.630		
	89-109-521	2SA952K	C503.504	87-012-105	0.022µF CERAMIC	VR301	82-199-634	SLIDE VOLUME, 100kΩ-A (RECORD LEVEL)
	89-110-155	2SA1015GR	C705	87-010-138	22µF 25V ELECTROLYTIC BP	VR302	82-199-632	VOLUME, 250kΩ-W (REC BALANCE)
	89-210-154	2SB1015 (Y, GR)				VR601	82-197-632	VOLUME, 50kΩ-B (BIAS FINE [%])
	89-309-455	2SC945L (PQ)	C707	87-014-159	0.012µF 100V PP	S3.4	87-031-692	PUSH SWITCH (DOLBY NR B-C ON/OFF, DOLBY NR B-C SELECTOR)
	89-318-155	2SC1815GR	C804	87-010-206	2200µF 25V ELECTROLYTIC	< Capacitor >		
	89-320-015	2SC2001K	C805	87-010-205	1000µF 35V ELECTROLYTIC	C301.302	87-015-695	1µF 50V ELECTROLYTIC
	89-321-204	2SC2120Y	C809.810	87-010-231	220µF 10V ELECTROLYTIC	C303	87-010-060	100µF 16V ELECTROLYTIC
	89-408-804	2SD880 (Y, GR)				C307.308	87-015-682	22µF 16V ELECTROLYTIC
	89-408-862	2SD886Q	< PIN CIRCUIT BOARD SECTION >			< KEY CIRCUIT BOARD SECTION >		
	89-413-023	2SD1302S	PCB-B	*	PIN CIRCUIT BOARD	PCB-H	*	KEY CIRCUIT BOARD
< MAIN CIRCUIT BOARD SECTION >			J1.2.3.4	87-049-055	PIN JACK 4P (LINE IN/ REC, LINE OUT/PLAY)	D51.52.53.	87-027-097	DIODE, 1S1555
PCB-A	*	MAIN CIRCUIT BOARD	< TR CIRCUIT BOARD SECTION >			54.55.56.		
D66.701	87-027-097	DIODE, 1S1555	PCB-C	*	TR CIRCUIT BOARD	57.58.59.		
D702	87-027-365	DIODE, S5277B	< HX CIRCUIT BOARD SECTION >			60		
ΔD801	87-027-815	DIODE, 1B4B1 LC-2	PCB-D	82-132-620	HX CIRCUIT BOARD	D61.65	87-027-731	LED, SR-535D (REC. REC MUTE)
D802	87-027-083	DIODE, 1S1885 (H, HU only)	D1.2	87-020-156	DIODE, MC931	D62.63	87-027-732	LED, SG-235D (REV. PLAY, PLAY)
D802	87-027-365	DIODE, S5277B (E, K, G, Z only)	L1.2	82-132-643	OSC COIL, HX	D64	87-027-733	LED, SY-435 (PAUSE)
			SFR1.2	87-021-869	SFR, 220kΩ-B	S41.42.43.	87-031-771	TACT SWITCH (REC, F, FWD (◀), RVS PLAY, PLAY, F, FWD (▶), STOP, PAUSE, REC MUTE)
D803.804	87-020-123	DIODE, DS446				44.45.46.		
D805	87-027-674	ZENER DIODE, HZ7A2				47.48		
L51	82-196-649	OSC COIL, LC6502C				S49.50	87-031-807	SLIDE SWITCH (REVERSE MODE, REC TIMER)
L401.402	82-132-631	COIL, 4.7mH				< HP CIRCUIT BOARD SECTION >		
L701	82-132-644	OSC COIL, EH-85K				PCB-I	*	HP CIRCUIT BOARD
L702.703	87-003-051	CHOKE COIL, 470µH				J501	87-049-653	JACK, 6.3φ (PHONES)
F101	82-190-629	LOW-PASS FILTER, 85K-2				< Resistor >		
F301.302	87-030-061	LOW-PASS FILTER, 85K				4.7Ω 1/4W		FUSE RESISTOR
F401.402	82-135-631	TRAP FILTER, 85K				< DISPLAY CIRCUIT BOARD SECTION >		
S1.2	82-132-641	PUSH-SWITCH (MPX FILTER, MONITOR)	ΔR5.6	87-029-082	100Ω 1/4W FUSE RESISTOR	PCB-F	*	DISPLAY CIRCUIT BOARD
						D601.602.	87-027-543	LED, LN317GP (PEAK PROGRAM METER, B-TYPE, TAPE, NORMAL)
SL701	87-031-751	SW SOLENOID				603.604.		
SFR51	87-021-745	SFR, 47kΩ-B				605.606.		
SFR101.	87-021-734	SFR, 100Ω-B				607.608.		
102						609.610.		
SFR103.	87-021-743	SFR, 22kΩ-B				618.620.		
104						631		
SFR401.	87-021-744	SFR, 33kΩ-B				< Capacitor >		
402						C1.2	87-014-041	220pF PP
						C3.4	87-014-131	0.0018µF PP
ΔR705.801.	87-029-089	4.7Ω 1/4W FUSE RESISTOR				< Resistor >		
802								

Symbol No.	Part No.	Description
< SW CIRCUIT BOARD SECTION >		
PCB-J	*	SW CIRCUIT BOARD
△S7	87-031-753	PUSH SWITCH (POWER)
△F1	87-035-107	FUSE. 315mA (T) (H, HU only)
△F1	87-035-292	FUSE. 315mA (C, U only)
△F1	87-035-132	FUSE. 160mA (T) (E, K, G, Z only)
△	★87-033-147	FUSE CLAMP
< Capacitor >		
△C801	87-019-110	0.01μF Spark killer (H, HU only)
△C801	87-019-112	0.01μF Spark killer (C, U only)
△C801	87-019-113	0.01μF Spark killer (E, K, G, Z only)
< AUTO STOP CIRCUIT BOARD SECTION >		
PCB-K	*	AUTO STOP CIRCUIT BOARD
PS51	87-027-644	PHOTO SENSOR, NJL-5141EA
< CONNECT CIRCUIT BOARD SECTION >		
PCB-L	82-132-610	CONNECT CIRCUIT BOARD
S6	87-031-852	SLIDE SWITCH (FORWARD/REVERSE)
< DOLBY CIRCUIT BOARD SECTION >		
	87-020-133	DOLBY UNIT HA12058-3H (W/PCB-M, N)
< MISCELLANEOUS >		
△PT1	82-132-622	POWER TRANSFORMER (H, HU only)
△PT1	82-132-623	POWER TRANSFORMER (C, U only)
△PT1	82-132-624	POWER TRANSFORMER (E, Z only)
△PT1	82-132-625	POWER TRANSFORMER (K, G only)
△	87-034-958	AC POWER CORD (H, HU only)
△	87-034-951	AC POWER CORD (C, U only)
△	87-034-877	AC POWER CORD (E, Z only)
△	87-034-975	AC POWER CORD (K only)
△	87-034-892	AC POWER CORD (G only)
△	★87-085-184	AC POWER CORD BUSHING (H, HU, C, U only)
△	★87-085-185	AC POWER CORD BUSHING (E, K, G, Z only)
RPH	87-046-252	R/P HEAD
EH1.2	87-046-253	EH (FWD/RVS)
M51	87-045-135	MOTOR, DC/EG
M52	09-011-050	REEL MOTOR
SL51.52.53	81-505-603	SOLENOID, 9ME-A (REVERSE, PLAY, PAUSE)
S51.52.53	81-505-607	LEAF SWITCH (CASSETTE, REC EN A, REC EN B)

Symbol No.	Part No.	Description
S54.57.58	81-505-601	LEAF SWITCH (DIRECTION, PLAY, PAUSE)
S55.56	81-505-602	LEAF SWITCH (METAL, CrO ₂)
△S8	★87-031-586	ROTARY SWITCH (VOLTAGE SELECTOR) (H, HU only)
D806	87-020-109	LED SLF-201C (CASSETTE)
PS52	87-020-340	PHOTO SENSOR SP1-307

⚠ Safety component symbol
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- C-MOS IC handling precaution**
The C-MOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles.
1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit.
 2. To use solder iron less than 40W (less than 260°C) of power consumption for soldering. But do not overheat more than 10 second.
 3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.
 4. The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (Ⓜ).

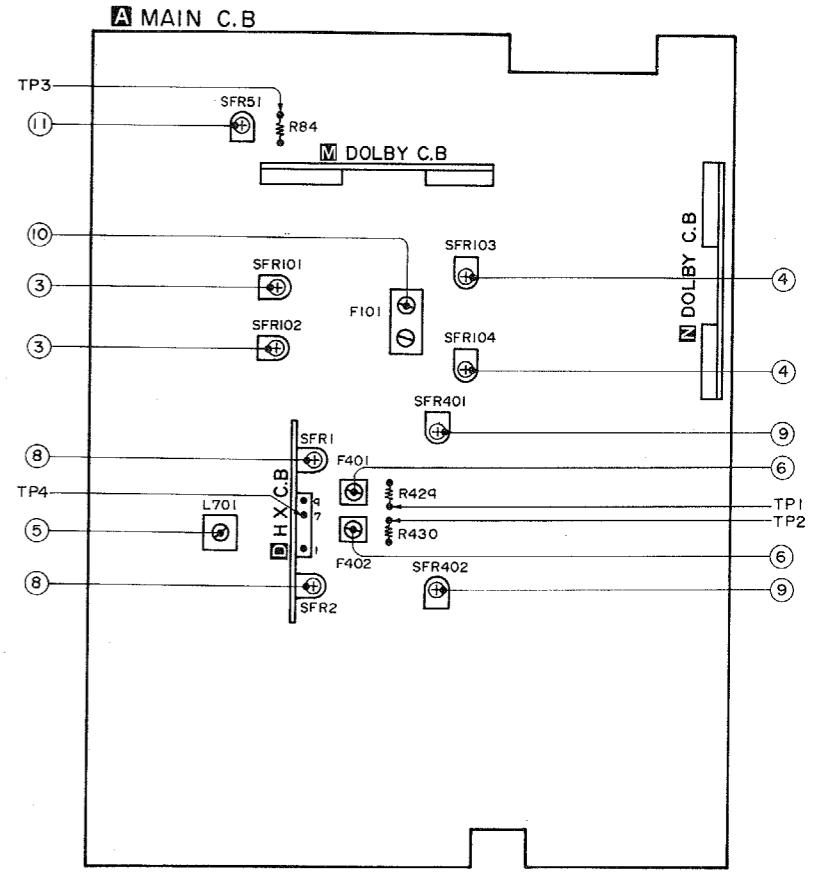
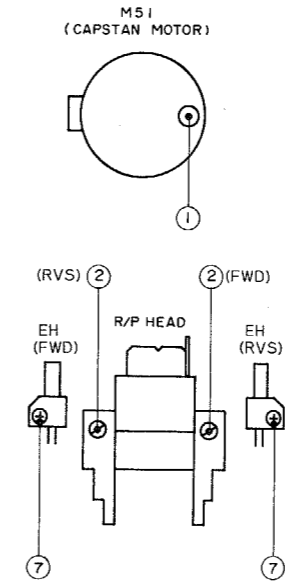
Note; Combination Circuit Board
The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board 82-132-601
PCB-A 82-132-602
PCB-B 82-132-603
PCB-C 82-132-604

Combination circuit board 82-132-611
PCB-F 82-132-612
PCB-G 82-132-613
PCB-H 82-132-614
PCB-I 82-132-615
PCB-J 82-132-616

Combination circuit board 81-506-611
PCB-K 81-506-612
81-506-613
81-506-614

ADJUSTMENT



1. Tape Speed Adjustment
Settings: Alignment tape: TTA-111
Adjusting point: SFR of motor

2. Azimuth Adjustment
Settings: Alignment tape: TTA-317H
Adjusting point: RPH head azimuth adjusting screw
Test point: LINE OUT
Method: Make adjustment in each of the PLAY and REV PLAY modes.

3. PB Frequency Response Adjustment
Settings: • Test tape: TTA-317H
• Test point: LINE OUT
• Dolby NR SW: OFF
• Adjustment location: SFR101 (Lch) SFR102 (Rch)
Method: Play back the test tape, then adjust so that the output difference between 1 kHz and 10 kHz is 0 ± 1.5 dB.

4. PB Sensitivity Adjustment
Settings: • Test tape: TTA-161
• Test point: LINE OUT
• Dolby NR SW: OFF
• Adjustment location: SFR103 (Lch) SFR104 (Rch)
Method: Adjust so that the output is 580 mV ± 0.5 dB.

5. Bias Frequency Adjustment
Settings: • Test tape: TTA-119J
• Test point: Pin 7 of HX C.B. (TP4)
• Adjustment location: L701
Method: Set the unit in the REC mode and adjust so that the frequency is 85 kHz ± 0.5 kHz.

6. Bias OSC Leakage Adjustment
Settings: • Test point: TP1 (Lch), TP2 (Rch)
• Adjustment location: F401 (Lch) F402 (Rch)
Method: Adjust for minimum output.

7. Erase Head Height Adjustment
Settings: • Test tape: TTA-119J
• Test point: LINE OUT
• Dolby NR SW: OFF
Adjustment location: Erase head height adjustment screw
Method: Adjust so that the erase ratio is 60 dB or more.

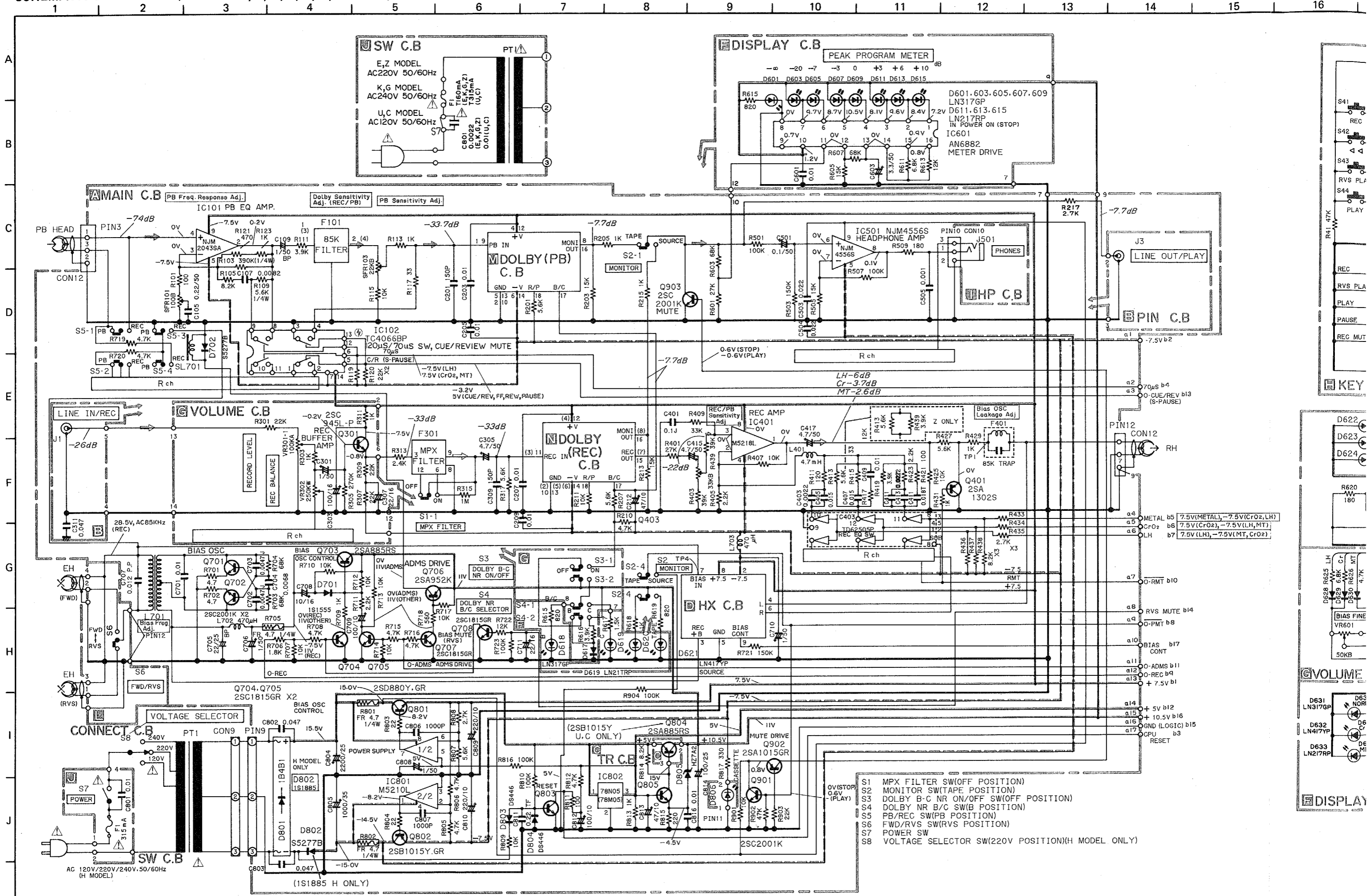
8. REC/PB Frequency Response Adjustment
Settings: • Test tape: TTA-119J
• Test point: LINE OUT
• Dolby NR SW: OFF
• Adjustment location: SFR1 (Lch) SFR2 (Rch)
Method: Record the 1 kHz & 10 kHz signals, then play back the recorded tape and adjust so that the output difference between 1 kHz and 10 kHz is 0 ± 0.5 dB.

9. REC/PB Sensitivity Adjustment
Settings: • Test tape: TTA-119MX
• Test point: LINE OUT
• Dolby NR SW: OFF
• Adjustment location: SFR401 (Lch) SFR402 (Rch)
Method: Record the 1 kHz signal, then play back the recorded tape and adjust so that the output difference is 0 ± 0.5 dB compared with the REC mode.

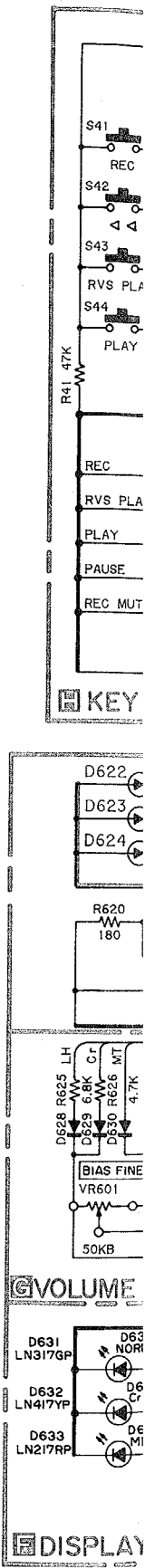
10. Dolby Sensitivity Adjustment (REC/PB)
Settings: • Test tape: TTA-119MX
• Test point: LINE OUT
• Dolby NR SW: ON
• Dolby NR B-C SW: C
• Adjustment location: F101
Method: Record the 400 Hz signal, then play back the recorded tape and adjust for minimum output.

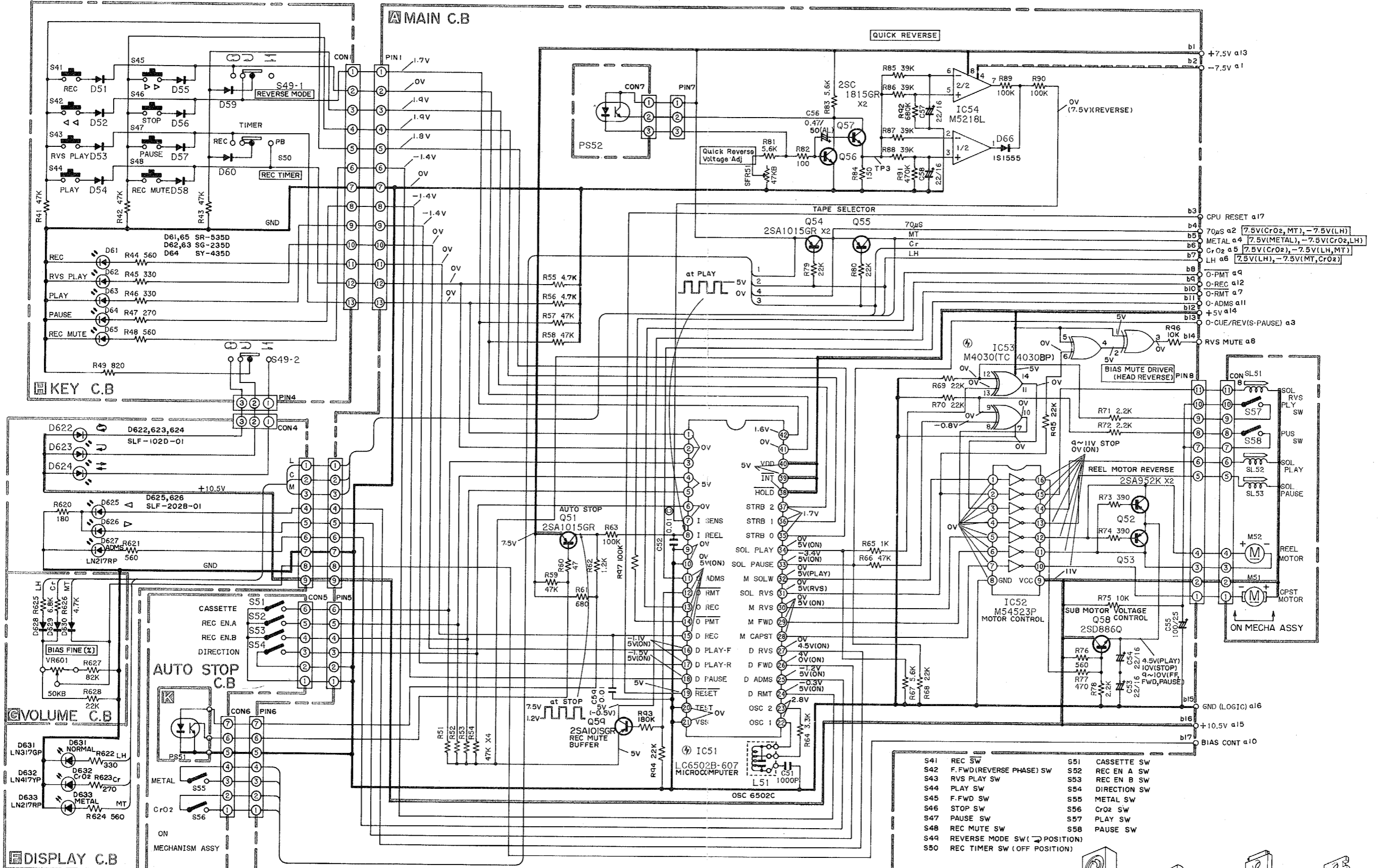
11. Quick Reverse Voltage Adjustment (Forward)
Settings: • Test tape: TTA-119G
• Test point: TP3
• Adjustment location: SFR51
Method: Adjust for 3V ± 0.25V.

SCHEMATIC DIAGRAM-1 (AD-R650 H, C, U, E, K, G, Z models)

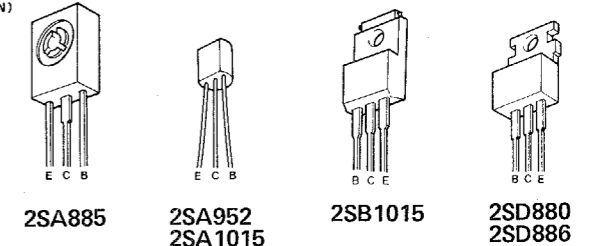


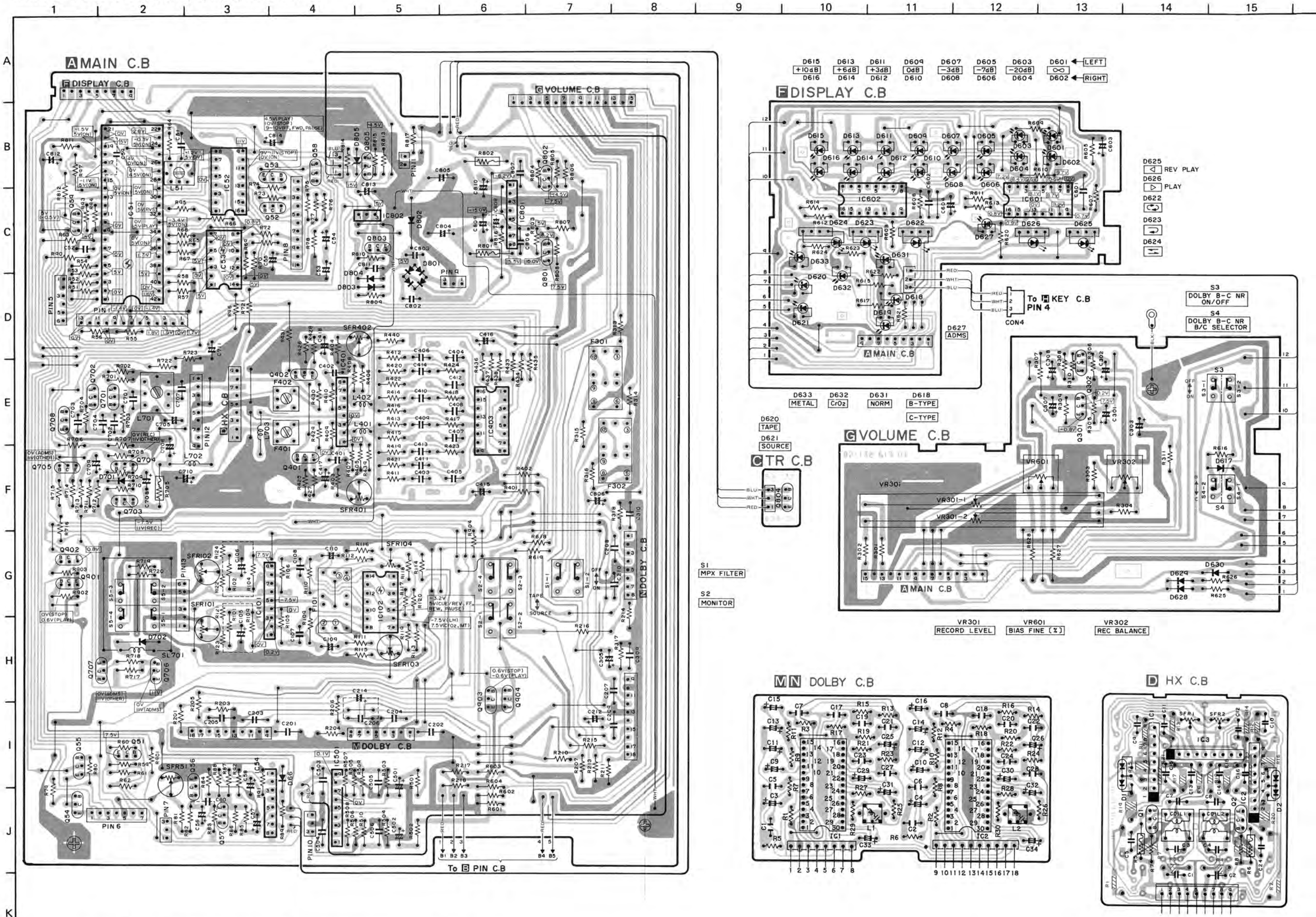
- S1 MPX FILTER SW(OFF POSITION)
- S2 MONITOR SW(TAPE POSITION)
- S3 DOLBY B-C NR ON/OFF SW(OFF POSITION)
- S4 DOLBY NR B/C SW(B POSITION)
- S5 PB/REC SW(PB POSITION)
- S6 FWD/RVS SW(RVS POSITION)
- S7 POWER SW
- S8 VOLTAGE SELECTOR SW(220V POSITION)(H MODEL ONLY)





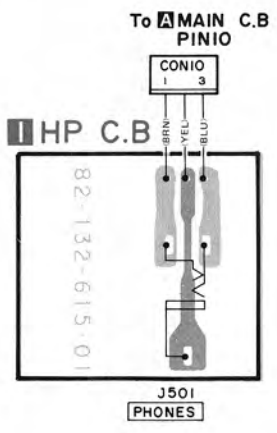
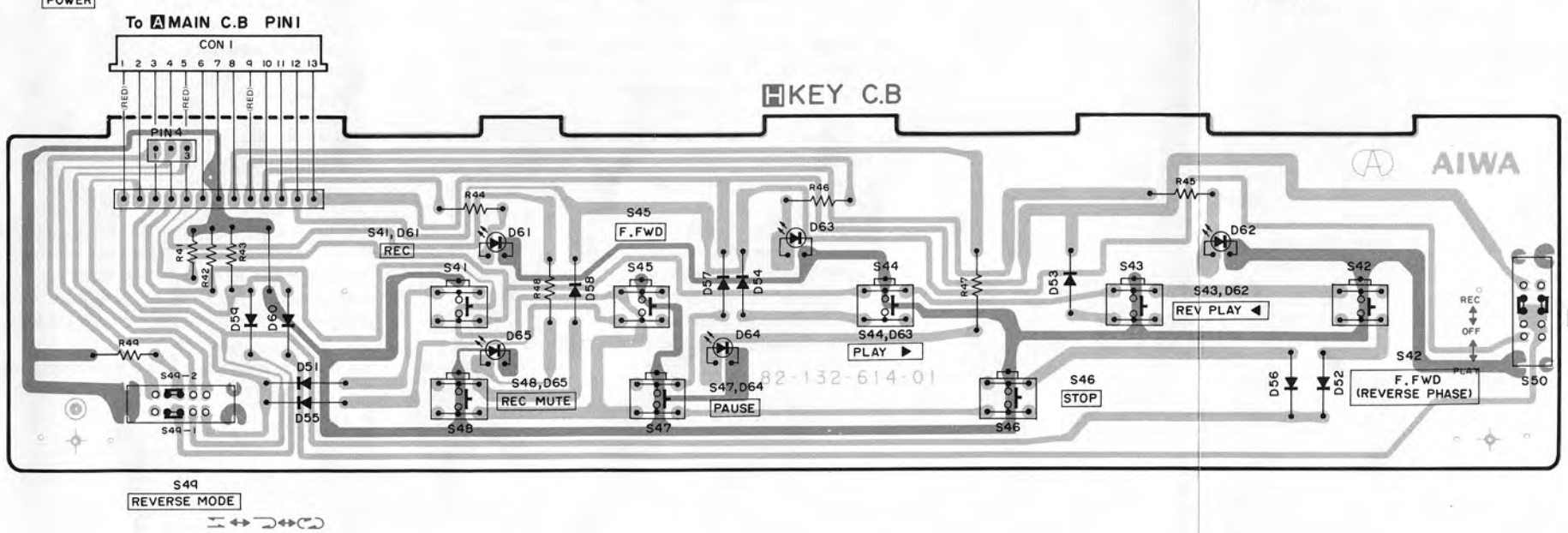
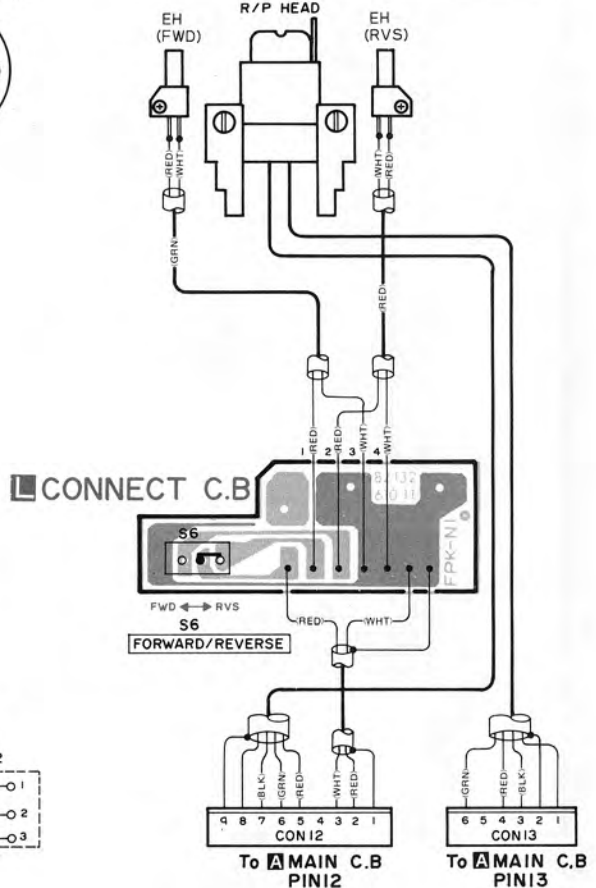
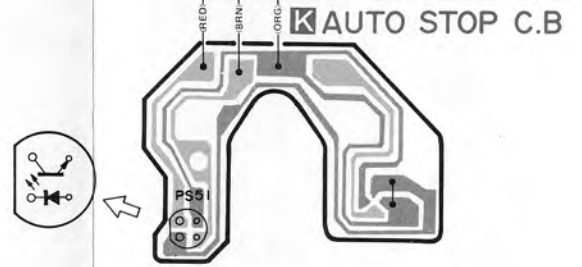
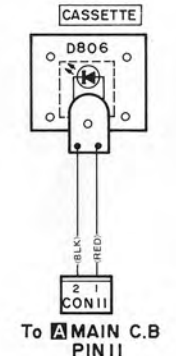
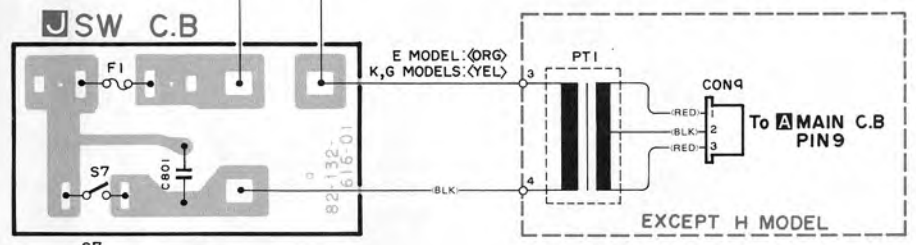
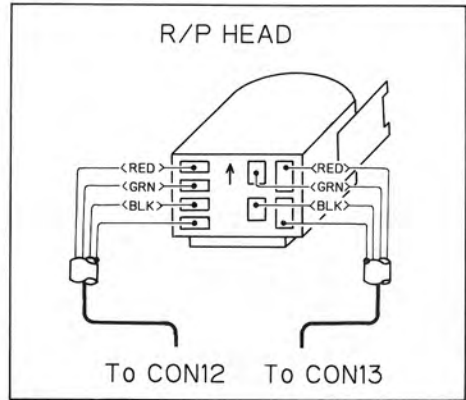
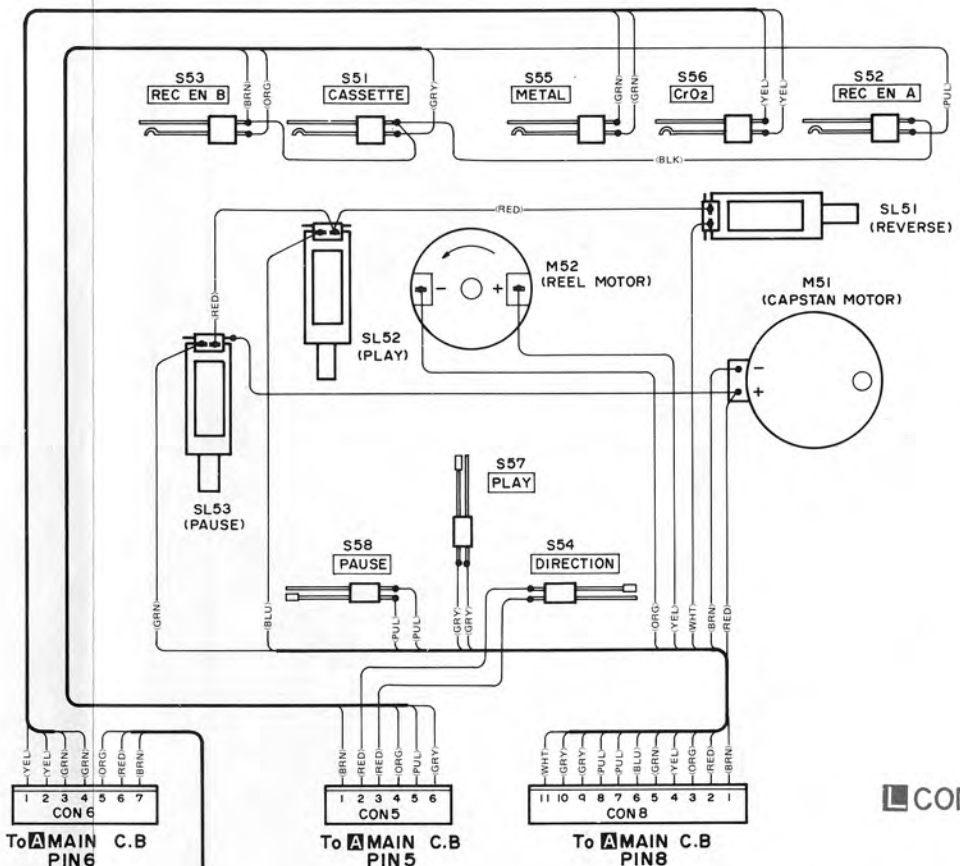
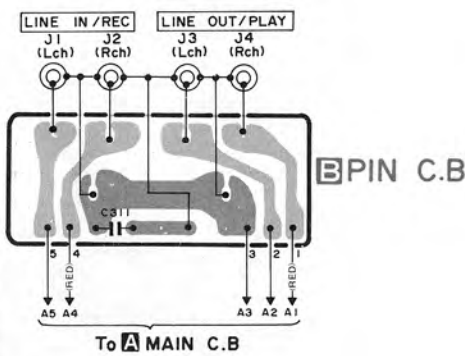
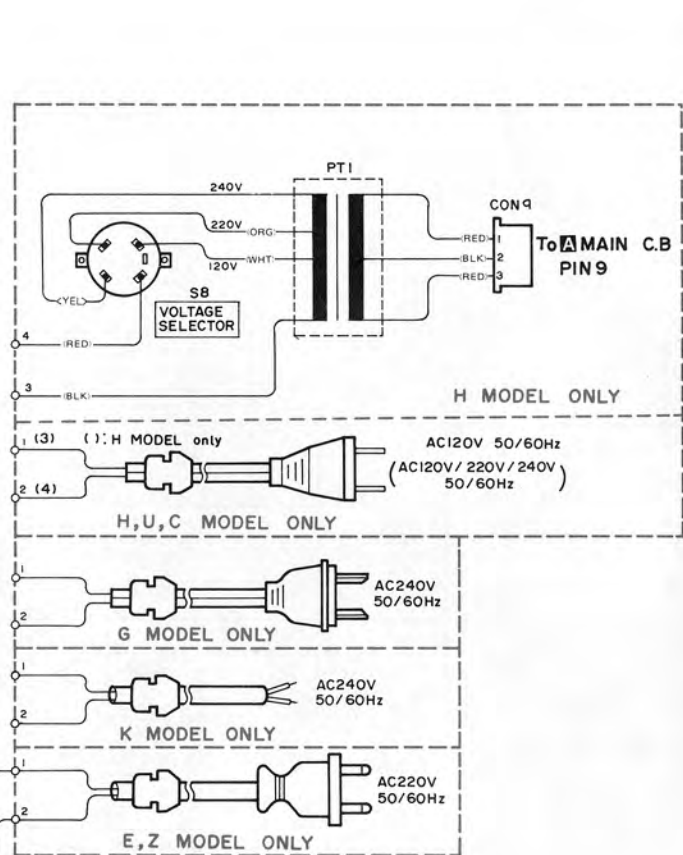
- S41 REC SW
- S42 F.FWD(REVERSE PHASE) SW
- S43 RVS PLAY SW
- S44 PLAY SW
- S45 F.FWD SW
- S46 STOP SW
- S47 PAUSE SW
- S48 REC MUTE SW
- S44 REVERSE MODE SW (→ POSITION)
- S50 REC TIMER SW (OFF POSITION)
- S51 CASSETTE SW
- S52 REC EN A SW
- S53 REC EN B SW
- S54 DIRECTION SW
- S55 METAL SW
- S56 CrO2 SW
- S57 PLAY SW
- S58 PAUSE SW

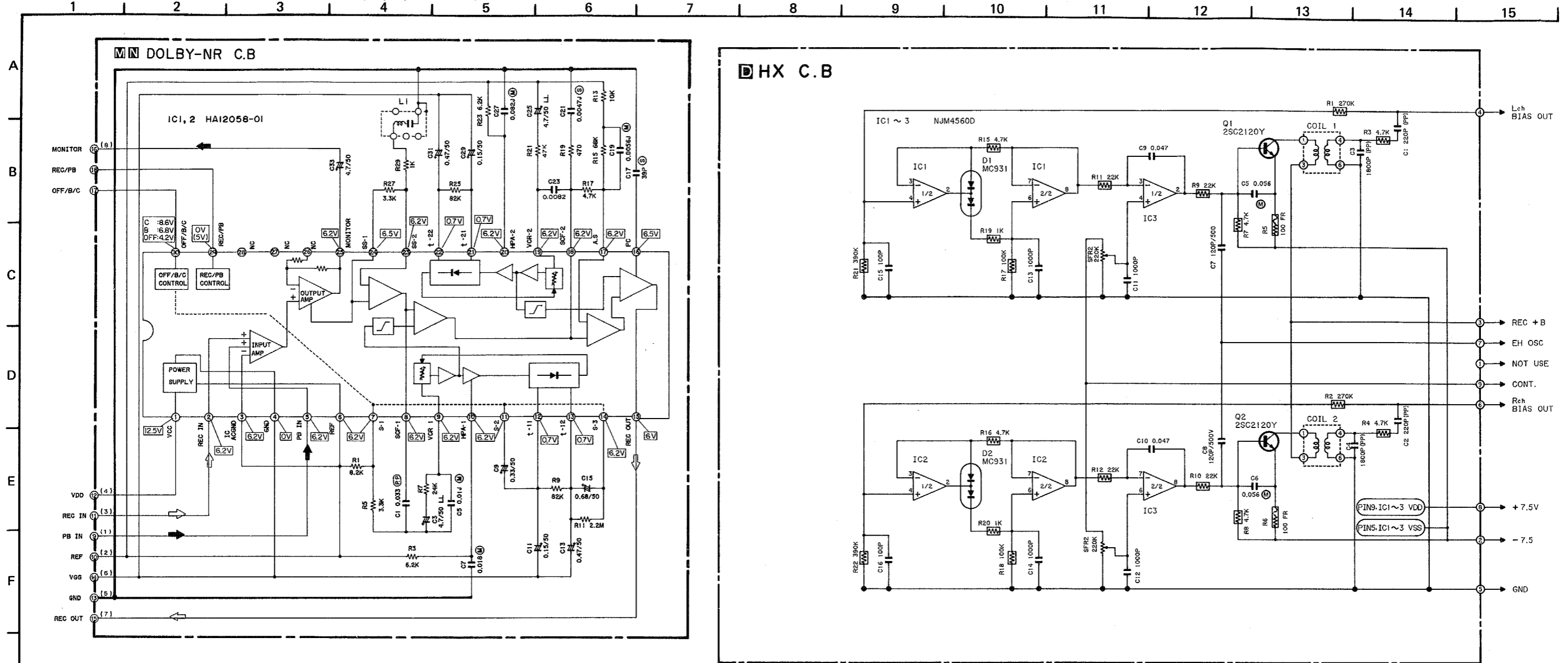




NOTES (1) Earth pattern Printed resistor pattern Others pattern
 (2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.

The ICs on the electrical parts which are indicated by an C- MOS IC symbol mark ().





Practical Service Figure

Pinch roller pressure:	350 ± 30 g	Erasing ratio:	More than 58 dB (125 Hz, 0 VU + 10 dB, METAL)
Take-up torque:	40 ± 10 g-cm	Bias frequency:	8.5 kHz
FF&rewind torque:	150 ± 30 g-cm	Inputs:	LINE IN maximum input sensitivity: 40 mV (more than 50 kΩ)
CUE/REV take-up torque:	150 ± 30 g-cm	Outputs:	LINE OUT/PLAY standard output level: 0.41 V (0 VU); suitable load impedance: more than 50 kΩ;
Counter indication error:	0 ± 2.5 digit (C-60)	Test tape:	Headphones: 1.8 mW (8 Ω) METAL TTA-119MX NORMAL TTA-119J CrO ₂ TTA-119G TTT-119D (Z model)
REC/PB output:	LINE 0 VU ± 1 dB (NORMAL)		
REC/PB distortion:	Less than 2.5% (METAL) Less than 2.5% (CrO ₂) Less than 4% (CrO ₂ , Z model only) Less than 2% (NORMAL)		
Playback noise: (Unweighted)	Less than 4.0 mV (NORMAL DOLBY-NR OFF) Less than 1.5 mV (METAL, CrO ₂ , DOLBY-NR C)		
REC/PB SN ratio: (Unweighted)	1 kHz, 0 VU More than 43/49 dB (METAL, CrO ₂ , DOLBY-NR C OFF/ON) More than 40/46 dB (NORMAL, DOLBY-NR C OFF/ON)		

NOTES:

- 1) B (+) power supply
- 2) Signal path
Rec path
- 3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
- 4) Resistors with no designation have a rated power of 1/4W and a tolerance of ±5%.
- 5) Capacitors with no designation have a dielectric strength of less than 50WV.
- 6) The only capacitor tolerance indicated are ±5% (J) and ±10% (K).
- 7) Ceramic capacitor symbols:
 - For temperature compensation (SL)
 - High dielectric constant system (YY)
 - High dielectric constant system (YW, YP, YZ)
 - Semiconductor ceramic
 - For temperature compensation (SH)

8) Explanation of symbols

- Mylar capacitor
- Aluminum solid capacitor
- Polypropylene film capacitor
- Bi-polarized capacitor
- Low-leakage capacitor
- Tantalum capacitor
- Styrol capacitor
- Printed resistor
- Fuse resistor
- Nonflammable resistor
- Low noise resistor

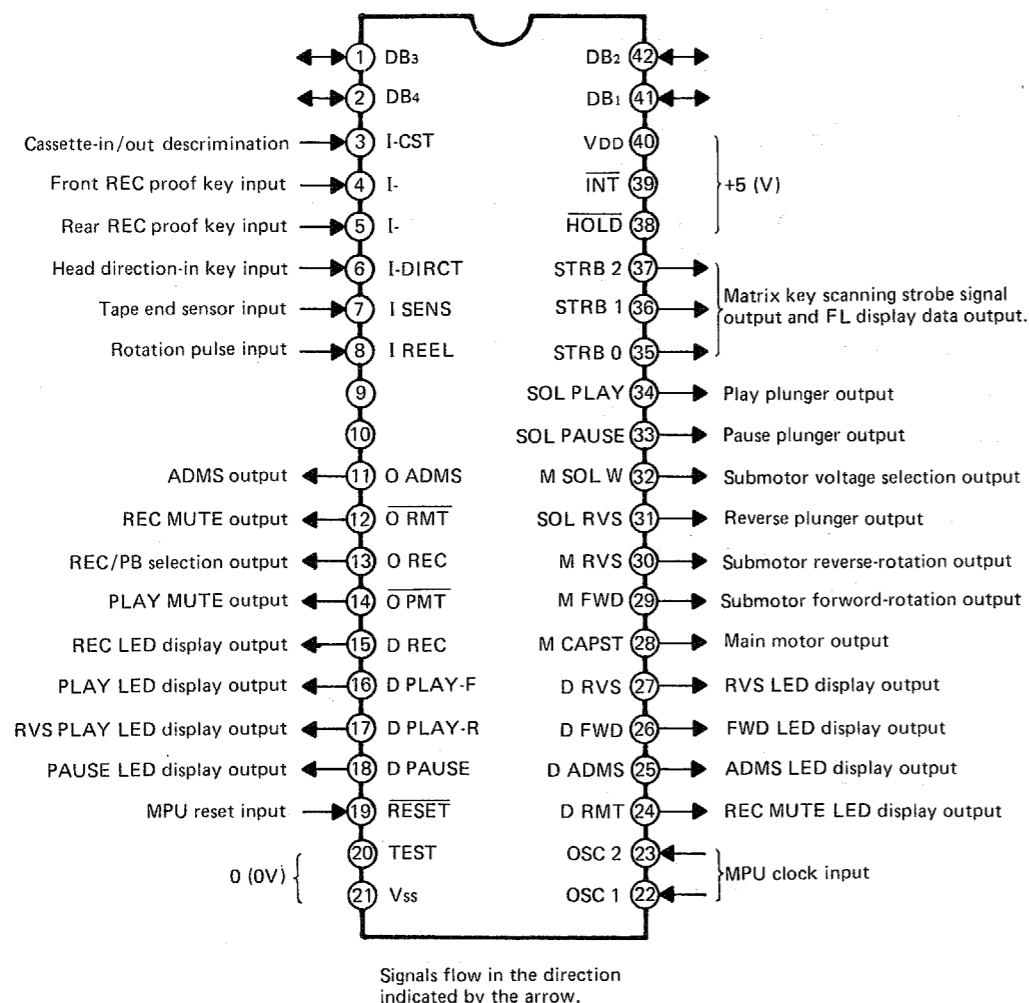
Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

This schematic diagram is subject to change without notice in the interests of improved performance.

1. DESCRIPTION OF IC LC6502B-670

1-1 Terminal name



Signals flow in the direction indicated by the arrow.

1-2 Terminal description

Pin No.	Terminal Symbol	Function		
		When ST0 is "H"	When ST1 is "H"	When ST2 is "H"
41	DB1	REC key input	FF key input	Reverse mode rear→front
42	DB2	RWD key input	STOP key input	Reverse mode front→rear
1	DB3	RVS PLAY key input	REC MUTE key input	TIMER-PLAY key input
2	DB4	PLAY key input	REC MUTE key input	TIMER-PLAY key input
3	I-CST	Used to discriminate between cassette-in and cassette-out. Cassette-in at "L" level.		
4	I-	Front REC proof key input. Goes "L" level when it is possible to record.		
5	I-	Rear REC proof key input. Goes "L" level when it is possible to record.		
6	I-DIRCT	Head direction-in key input. The FWD mode at "L" level.		
7	I-SENS	Using the tape end sensor input, starts detecting 8 seconds later after the unit enters the PLAY or REC PLAY mode. 1 CTL pulse is input at tape end.		

Pin No.	Terminal Symbol	Function
8	I-REEL	Using the rotation pulse input of a take-up reel, used for the auto stop detection.
9	-	Not used (Connected to GND)
10	-	Not used (Connected to GND)
11	O-ADMS	ADMS output. Goes "H" level for 2 seconds after power-on.
12	O-RMT	Goes "H" only for canceling of muting by the REC mute output if the mechanism is stabilized in the REC PLAY mode. Muted until the mechanism is stabilized at the time of head reverse-rotation.
13	O-REC	Goes "H" only in the REC PLAY (PAUSE) mode by the REC/PB selection output. Goes "L" until the mechanism is stabilized at the time of head reverse-rotation.
14	O-PMT	Goes "H" for canceling of muting by the play mute output if the mechanism is stabilized in the (REC) PLAY, CUE and REV modes. Muted until the mechanism is stabilized at the time of head reverse-rotation.
15	D-REC	REC LED display output. Goes "H" level at putting only REC key, REC-PLAY key, REC-PLAY-PAUSE key and REC-PLAY-REC MUTE key.
16	D-PLAY-F	PLAY LED display output. Goes "H" level at putting (REC)-PLAY key and (REC)-PLAY-PAUSE key.
17	D-PLAY-R	RVS PLAY LED display output. Goes "H" level at putting RVS-(REC)-PLAY key and RVS-(REC)-PLAY-PAUSE key.
18	D-PAUSE	PAUSE LED display output. Goes "H" level at putting (REC)-PLAY-PAUSE key and PAUSE key.
19	RESET	The MPU is set at "H" level with a delay of CD time constant from the power supply (VDD).
20	TEST, Vss	Connected to GND [0V].
21	TEST, Vss	Connected to GND [0V].
22	OSC1.2	MPU clock input.
23	OSC1.2	MPU clock input.
24	D-RMT	REC MUTE LED display output. The action is same as model AD-R550.
25	D-ADMS	ADMS LED display output. Keeps "H" level during ADMS operation.
26	D-FWD	FWD LED display output. When the mechanism operates in FWD mode, it keeps "H" level.
27	D-RVS	RVS LED display output. When the mechanism operates in RVS mode, it keeps "H" level.
28	M-CAPST	Used to control the main motor. The motor rotates at "H" level. Goes "L" only in the STOP mode.
29	M-FWD	Goes "H" only in the FF and CUE modes by the submotor forward rotation output.
30	M-REV	Goes "H" only in the RWD and REV modes by the submotor reverse-rotation output.
31	S-RVS	Goes "H" for 64m sec at the time of head reverse-rotation and editing start/end by the reverse plunger output.
32	M-SLOW	Goes "H" level only in the PLAY and REC-PLAY modes by the submotor voltage selection output.
33	S-PAUSE	Goes "H" only in the PAUSE, CUE, REV and (REC) PLAY PAUSE modes by the pause plunger output.
34	S-PLAY	Goes "H" only in the (REC) PLAY, (REC) PLAY PAUSE, CUE and REV modes by the play plunger.
35	ST0	Matrix key scanning strobe signal output and FL display data output.
36	ST1	
37	ST2	
38	HOLD	Connected to +5 [V].
39	INT	
40	VDD	

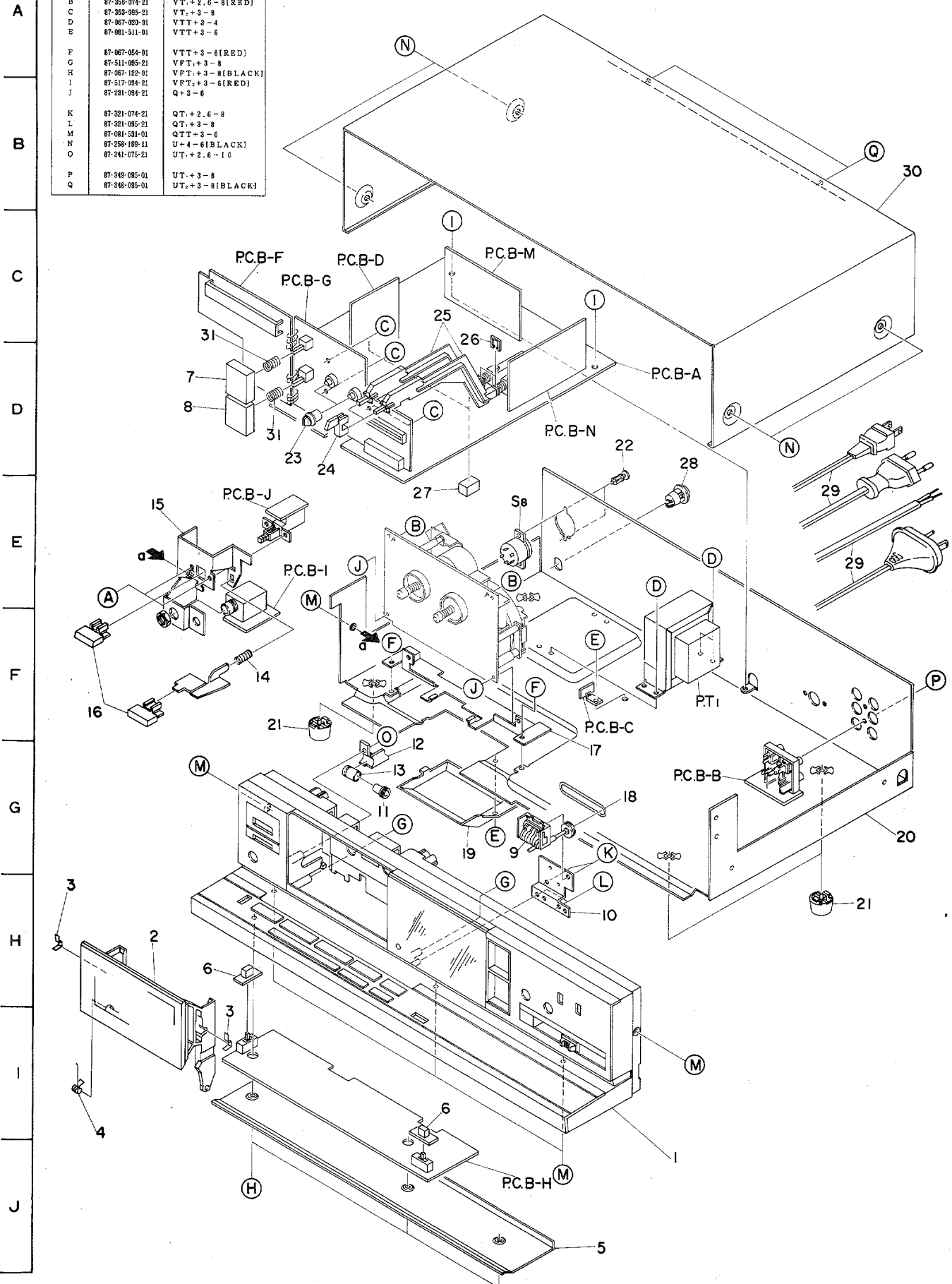
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Dotted lines for writing.

EXPLODED VIEW - I

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-261-054-21	V+3-6
B	87-359-374-21	VT,+2.6-8(RED)
C	87-359-095-21	VT,+3-8
D	87-067-020-01	VTT,+3-4
E	87-081-511-01	VTT+3-6
F	87-067-054-01	VTT+3-6(RED)
G	87-511-055-21	VFT,+3-8
H	87-067-122-01	VFT,+3-8(BLACK)
I	87-517-084-21	VFT,+3-6(RED)
J	87-281-084-21	Q+3-6
K	87-321-074-21	QT,+2.6-8
L	87-321-095-21	QT,+3-8
M	87-081-531-01	QTT+3-6
N	87-258-169-11	U+4-6(BLACK)
O	87-241-075-21	UT,+2.6-10
P	87-249-085-01	UT,+3-8
Q	87-249-085-01	UT,+3-8(BLACK)



PARTS LIST

MECHANICAL PARTS LIST

● ★-mark means less required items and availabilities may be limited.

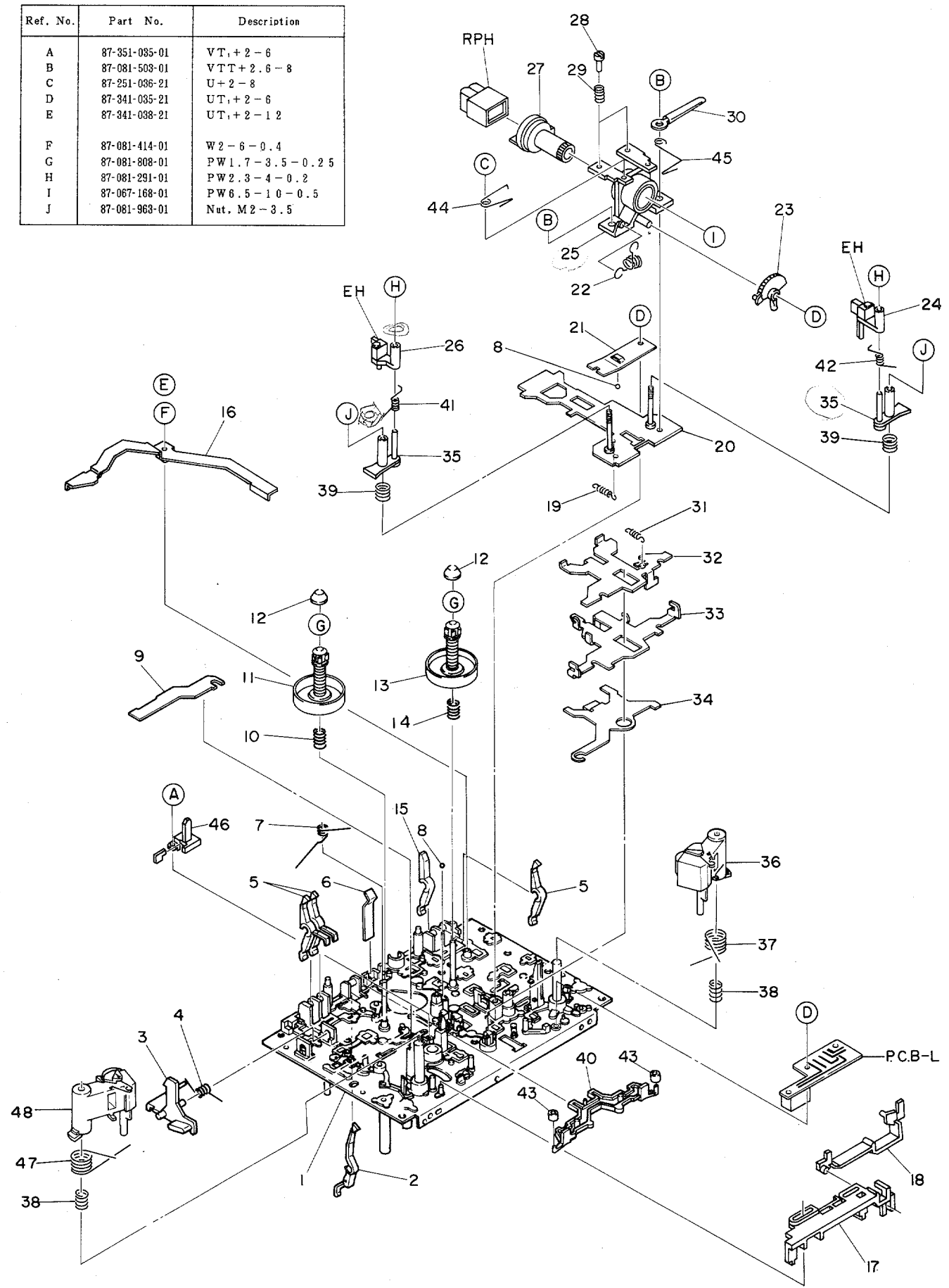
Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1-1	82-132-001	FRONT CABINET Ass'y	※	1
	1-2	82-132-007	CASSETTE BOX Ass'y	※	1
	1-3	82-192-218	P-SPRING, CASSETTE HOLDER	FX-30	2
	1-4	82-132-215	T-SPRING, EJECT H	※	1
	1-5	★82-199-019	CABINET, BOTTOM	AD-R550	1
	1-6	★82-199-018	KNOB, SLIDE SW2	AD-R550	2
	1-7	★82-199-015	PUSH-BUTTON, DOLBY A	AD-R550	1
	1-8	★82-199-016	PUSH-BUTTON, DOLBY B	AD-R550	1
	1-9	★87-040-176	COUNTER		1
	1-10	★82-132-211	HOLDER, COUNTER A	※	1
	1-11	82-534-264	GEAR, OIL-DAMP		1
	1-12	82-175-210	HOLDER, OIL-DAMP	AD-3500	1
	1-13	82-175-207	SHAFT BEARING, OIL-DAMP	AD-3500	1
	1-14	82-199-215	C-SPRING, EJECT	AD-R550	1
	1-15	★82-199-202	HOLDER, POWER	AD-R550	1
	1-16	★82-188-012	KNOB, POWER	AD-F990	2
	1-17	★82-132-205	HOLDER, MECHANISM	※	1
	1-18	82-543-202	BELT, COUNTER		1
	1-19	★82-132-012	BOTTOM LID	※	1
	1-20	★82-132-202	AMP. CHASSIS (EXCEPT FOR H)	※	1
		★82-132-204	AMP. CHASSIS (HB, HUB only)	※	1
	1-21	★82-132-010	FOOT		4
	1-22	87-085-090	NYLON RIVET 3-6.5 (HB, HUB only)		2
	1-23	★82-199-024	KNOB, BIAS B	AD-R550	2
	1-24	★82-191-001	KNOB, TAPE/SOURSE	AD-F770	2
	1-25	★82-309-208	ROD, SELECTER		2
	1-26	★82-385-383	STOPPER ROD		2
	1-27	★82-199-219	G CUSHION 10×15×10	AD-R550	2
	1-28	★87-085-184	CORD BUSHING (HB, HUB, CB, UB only)		1
		★87-085-185	CORD BUSHING (EB, KB, GB, ZB only)		1
	1-29	★87-034-958	AC POWER CORD (HB, HUB only)		1
		★87-034-951	AC POWER CORD (CB, UB only)		1
		★87-034-877	AC POWER CORD (EB, ZB only)		1
		★87-034-975	AC POWER CORD (KB only)		1
		★87-034-892	AC POWER CORD (GB only)		1
	1-30	★82-199-012	STEEL CABINET	AD-R550	1
	1-31	82-132-214	C-SPRING, DOLBY	※	2

EXPLODED VIEW-2

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-351-085-01	VT,+2-6
B	87-081-503-01	VTT+2.6-8
C	87-251-036-21	U+2-8
D	87-341-035-21	UT,+2-6
E	87-341-038-21	UT,+2-12
F	87-081-414-01	W2-6-0.4
G	87-081-808-01	PW1.7-3.5-0.25
H	87-081-291-01	PW2.3-4-0.2
I	87-067-168-01	PW6.5-10-0.5
J	87-081-963-01	Nut, M2-3.5

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DM-21-3H
81-561-353-01

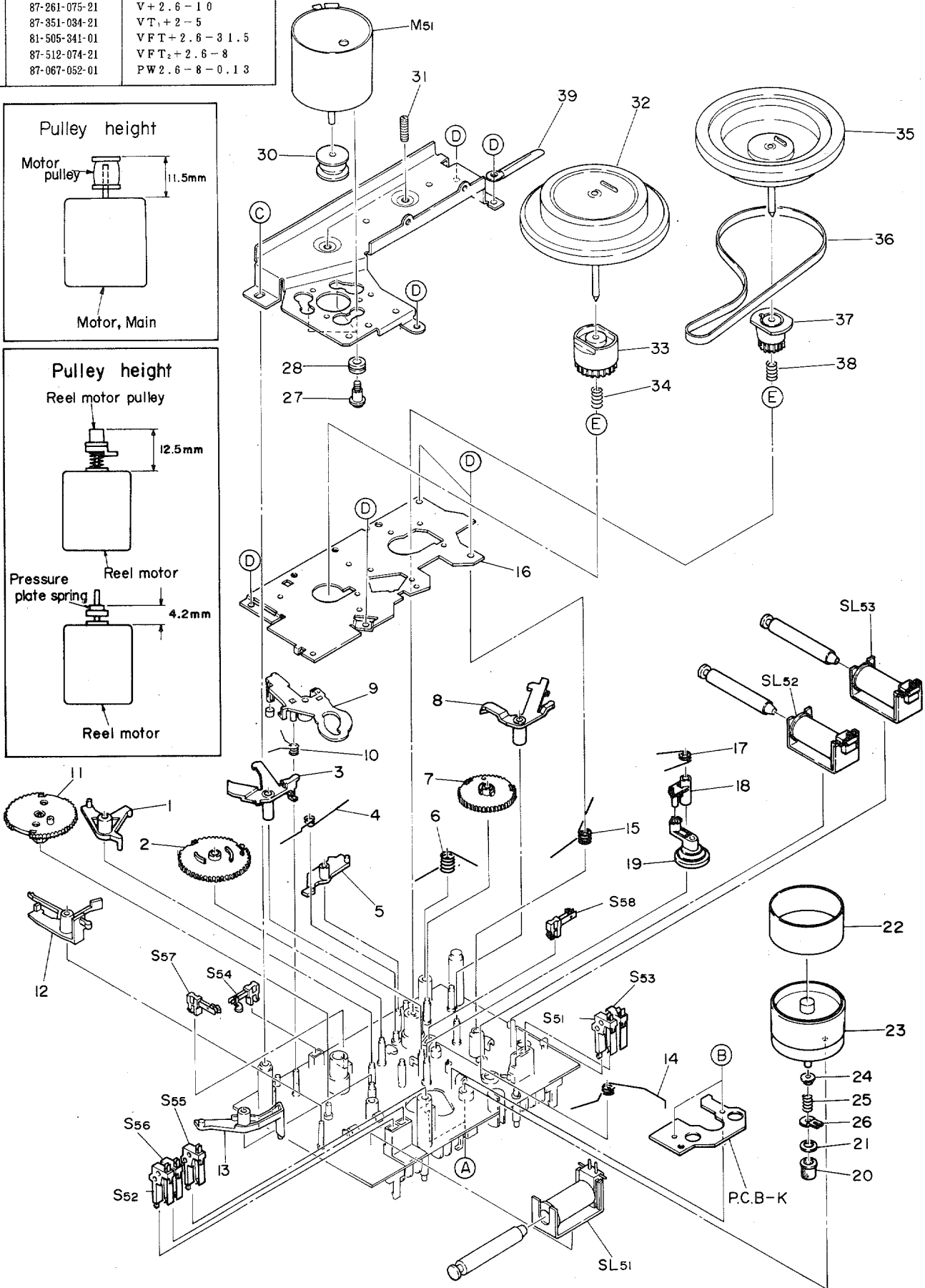
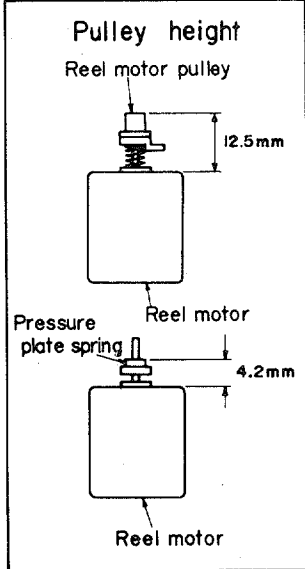
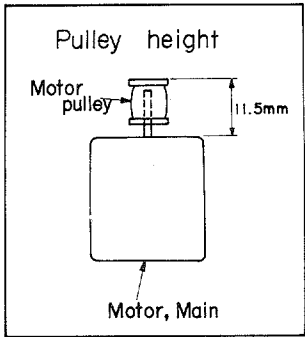
Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	2-1	★81-506-267	OUTSERT CHASSIS Ass'y		1
	2-2	★81-505-242	LEVER, METAL		1
	2-3	★81-505-239	EJECT, LEVER		1
	2-4	★81-505-273	T-SPRING, LID LOCK		1
	2-5	★81-505-241	REC BLOCKING LEVER		3
	2-6	★81-505-260	P-SPRING, CASSETTE HOLDER		1
	2-7	★81-505-268	T-SPRING, SLIDE BRAKE		1
	2-8	★87-073-005	STEEL BALL		2
	2-9	★81-505-238	BLOCKING PLATE, EJECT		1
	2-10	★81-506-352	C-SPRING, REEL PLATFORM L		1
	2-11	★81-506-343	SUPPLY REEL PLATFORM R Ass'y		1
	2-12	★82-303-398	CAP, TAKE-UP REEL PLATFORM		2
	2-13	★81-506-233	TAKE-UP REEL PLATFORM Ass'y		1
	2-14	★81-506-268	C-SPRING, REEL PLATFORM COUNTER		1
	2-15	★81-505-240	CASSETTE SENSOR LEVER		1
	2-16	★81-505-307	LEVER, BRAKE EJECT		1
	2-17	★81-506-215	SLIDE LEVER, HEAD SELECT		1
	2-18	★81-506-335	LEVER SW		1
	2-19	★81-505-265	E-SPRING, ACTUATING CHASSIS		1
	2-20	★81-506-247	ACTUATING CHASSIS Ass'y 3H		1
	2-21	★81-507-224	P-SPRING, ACTUATING CHASSIS		1
	2-22	★81-506-334	T-SPRING, SEGMENT GEAR		1
	2-23	★81-506-261	SEGMENT GEAR		1
	2-24	★81-506-253	HOLDER, EH, R		1
	2-25	★81-506-257	HEAD BASE Ass'y 3H		1
	2-26	★81-506-252	HOLDER, EH, L		1
	2-27	★81-506-271	HEAD HOUSING Ass'y 3H		1
	2-28	★81-506-262	ADJUST SCREW, AZIMUTH		2
	2-29	81-506-347	C-SPRING, AZIMUTH		2
	2-30	★87-038-056	WIRE BINDER		1
	2-31	★81-505-266	E-SPRING, PAUSE PLATE		1
	2-32	★81-506-301	PAUSE PLATE		1
	2-33	★81-506-281	PLATE, PINCH LEVER R		1
	2-34	★81-506-203	SELECT LEVER, PINCH ROLLER		1
	2-35	★81-506-254	LEVER EH Ass'y		2
	2-36	★81-506-275	PINCH LEVER FG Ass'y		1
	2-37	★81-506-341	T-SPRING, PINCH FG		1
	2-38	81-506-311	C-SPRING		2
	2-39	81-506-263	C-SPRING		2
	2-40	★81-505-236	SLIDE BLAKE LEVER		1
	2-41	81-506-265	T-SPRING, EH-L		1
	2-42	81-506-266	T-SPRING, EH-R		1
	2-43	81-507-229	G BLAKE		2
	2-44	81-506-345	T-SPRING, WIRING A		1
	2-45	81-506-346	T-SPRING, WIRING B		1
	2-46	★81-506-602 ★82-199-211	GUIDE, LED	AD-R550	1
	2-47	★81-506-342	T-SPRING, PINCH RG		1
	2-48	★81-506-276	PINCH LEVER RG Ass'y		1

EXPLODED VIEW-3

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-261-075-21	V+2.6-10
B	87-351-034-21	VT ₁ +2-5
C	81-505-341-01	VFT+2.6-31.5
D	87-512-074-21	VFT ₂ +2.6-8
E	87-067-052-01	PW2.6-8-0.13

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Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	3-1	★81-505-230	PLAY LEVER		1
	3-2	★81-505-234	GEAR. PLAY CAM		1
	3-3	★81-505-231	TRIGGER LEVER. PLAY		1
	3-4	★81-505-272	T-SPRING. CAM		1
	3-5	★81-505-308	PAUSE LEVER B		1
	3-6	★81-505-283	T-SPRING. PAUSE LEVER		1
	3-7	★81-505-235	GEAR. PAUSE CAM		1
	3-8	★81-505-233	TRIGGER LEVER. PAUSE		1
	3-9	★81-506-214	REVERSE LEVER		1
	3-10	★81-506-221	T-SPRING. REVERSE LEVER		1
	3-11	★81-506-241	GEAR. REVERSE		1
	3-12	★81-506-242	TRIGGER LEVER. REVERSE		1
	3-13	★81-506-216	LEVER. ACTUATING CHASSIS		1
	3-14	★81-505-269	T-SPRING. PINCH PLATE		1
	3-15	★81-505-271	T-SPRING. TRIGGER LEVER		1
	3-16	★81-505-204	MECHANISM CHASSIS B		1
	3-17	★81-505-282	T-SPRING. FR IDLER		1
	3-18	★81-505-254	IDLER LEVER FR A		1
	3-19	★81-507-231	FR IDLER Ass'y		1
	3-20~26	09-011-050	REEL MOTOR Ass'y		1
	3-27	★81-081-483	MOTOR SCREW. M2.6		3
	3-28	★87-087-029	RUBBER CUSHION		3
	3-29	★81-506-202	HOLDER. MOTOR		1
	3-30	★82-565-334	MOTOR PULLEY		1
	3-31	★82-565-373	THRUST SCREW		2
	3-32	★81-506-287	FLYWHEEL RB Ass'y		1
	3-33	★81-506-243	GEAR. FLYWHEEL		1
	3-34	★81-506-228	C-SPRING. FLYWHEEL R		1
	3-35	★81-506-205	FLYWHEEL F Ass'y		1
	3-36	81-506-344	RUBBER BELT. 3H		1
	3-37	★81-505-225	GEAR. FLYWHEEL		1
	3-38	★81-505-261	C-SPRING. FLYWHEEL F		1
	3-39	★87-038-039	WIRE BINDER		1

■ ACCESSORIES/PACKAGE LIST

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1	82-132-904	INSTRUCTION BOOKLET	※	1
	2	★87-032-845	SIEMENS PLUG (HB only)		1
	3	★87-034-978	CONNECTION CORD CW-2 5 4 BSK		2
	4	82-132-851	BOX, GIFT	※	1

AIWA Co., Ltd. Tokyo Japan