

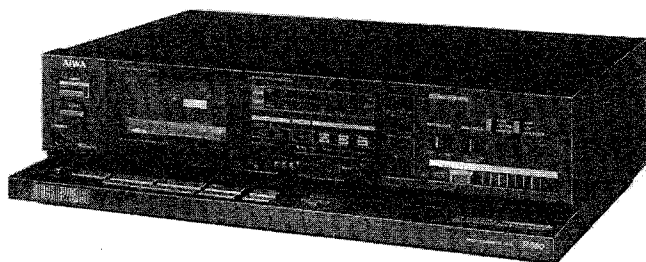
AIWA® SERVICE MANUAL

S/M Code No. 84-026
DETA OF ISSUE 9/1984

**STEREO CASSETTE
DECK**

MODEL NO.

AD-R650



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

SPECIFICATIONS

Type	Stereo cassette tape deck
Track format	4 tracks, 2 channels
Circuitry	20 ICs, 35 transistors, 22 diodes, 34 LEDs, 2 photo-interrupter
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
Power consumption	20 W
Frequency response	METAL tape: 20—19,000 Hz CrO ₂ position tape: 20—18,000 Hz NORMAL tape: 20—17,000 Hz
Signal-to-noise ratio	73 dB (METAL tape DOLBY C NR ON)
Wow and flutter	According to DIN 45 500 0.1% 0.035% (WRMS)

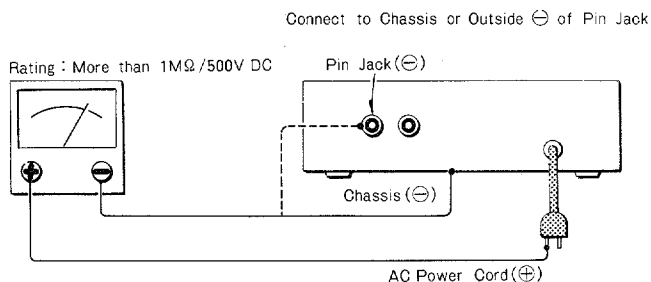
Tape speed	4.8 cm/sec. (1-7/8 ips)
Rewind time	65 sec. (C-60)
Fast forward time	65 sec. (C-60)
Recording system	AC bias (frequency 85 kHz)
Erase system	AC erase
Motor	DC Servomotor for capstan × 1 DC motor for reels × 1
Head	Recording, playback head: DX combination head × 1 Erase head: Double gap ferrite light head × 2
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.
- "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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.
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



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.

ELECTRICAL MAIN PART LIST ● ★-mark means less required items and availabilities may be limited.

Symbol No.	Part No.	Description
< I C >		
⊕	87-027-879	AN6882
	87-020-372	L78N05
	82-132-640	LC6502B-B-670
	87-020-157	M5210L
	87-027-895	M5218L
	87-027-909	M54523P
	87-027-949	NJM2043S-A
	87-020-052	NJM4556S
	87-027-986	NJM4560S
	87-027-937	TC4030BP
⊕	87-027-656	TC4066BP
⊕	87-020-151	TD62505P

< TRANSISTOR >		
	89-108-854	2SA885R, S
	89-109-521	2SA952K
	89-110-155	2SA1015GR
	89-210-154	2SB1015 (Y. GR)
	89-309-455	2SC945L (PQ)
	89-318-155	2SC1815GR
	89-320-015	2SC2001K
	89-321-204	2SC2120Y
	89-408-804	2SD880 (Y. GR)
	89-408-862	2SD886Q
	89-413-023	2SD1302S

< MAIN CIRCUIT BOARD SECTION >		
PCB-A	*	MAIN CIRCUIT BOARD
D66.701	87-027-097	DIODE. 1S1555
D702	87-027-365	DIODE. S5277B
ΔD801	87-027-815	DIODE. 1B4B1 LC-2
D802	87-027-083	DIODE. 1S1885 (H. HU only)
D802	87-027-365	DIODE. S5277B (E. K. G. Z only)
D803.804	87-020-123	DIODE. DS446
D805	87-027-674	ZENER DIODE. HZ7A2
L51	82-196-649	OSC COIL. LC6502C
L401.402	82-132-631	COIL. 4.7mH
L701	82-132-644	OSC COIL. EH-85K
L702.703	87-003-051	CHOKE COIL. 470μH
F101	82-190-629	LOW-PASS FILTER. 85K-2
F301.302	87-030-061	LOW-PASS FILTER. 85K
F401.402	82-135-631	TRAP FILTER. 85K
S1.2	82-132-641	PUSH-SWITCH (MPX FILTER. MONITOR)
SL701	87-031-751	SW SOLENOID
SFR51	87-021-745	SFR. 47kΩ-B
SFR101.	87-021-734	SFR. 100Ω-B
102		
SFR103.	87-021-743	SFR. 22kΩ-B
104		
SFR401.	87-021-744	SFR. 33kΩ-B
402		
< Resistor >		
ΔR705.801.	87-029-089	4.7Ω 1/4W
802		FUSE RESISTOR

Symbol No.	Part No.	Description
< Capacitor >		
C51.505.	87-018-044	1000pF CERAMIC
506.806.		
807		
C56	87-015-321	0.47μF 50V
		ALUMINUM SOLID
C109.110	87-015-379	1μF 50V
		ELECTROLYTIC BP
C201.202.	87-018-034	150pF CERAMIC
309.310		
C203.204.	87-018-047	0.01μF 16V CERAMIC
205.206.		
207.208.		
209.210.		
409.410		
C501.502	87-015-691	0.1μF 50V ELECTROLYTIC
C503.504	87-012-105	0.022μF CERAMIC
C705	87-010-138	22μF 25V
		ELECTROLYTIC BP
C707	87-014-159	0.012μF 100V PP
C804	87-010-206	2200μF 25V ELECTROLYTIC
C805	87-010-205	1000μF 35V ELECTROLYTIC
C809.810	87-010-231	220μF 10V ELECTROLYTIC

< PIN CIRCUIT BOARD SECTION >		
PCB-B	*	PIN CIRCUIT BOARD
J1.2.3.4	87-049-055	PIN JACK 4P (LINE IN/ REC. LINE OUT/PLAY)

< TR CIRCUIT BOARD SECTION >		
PCB-C	*	TR CIRCUIT BOARD

< HX CIRCUIT BOARD SECTION >		
PCB-D	82-132-620	HX CIRCUIT BOARD
D1.2	87-020-156	DIODE. MC931
L1.2	82-132-643	OSC COIL. HX
SFR1.2	87-021-869	SFR. 220kΩ-B

< Resistor >		
ΔR5.6	87-029-082	100Ω 1/4W
FUSE RESISTOR		
< Capacitor >		
C1.2	87-014-041	220pF PP
C3.4	87-014-131	0.0018μF PP

< DISPLAY CIRCUIT BOARD SECTION >		
PCB-F	*	DISPLAY CIRCUIT BOARD
D601.602.	87-027-543	LED. LN317GP (PEAK PROGRAM METER. B-TYPE. TAPE. NORMAL)
603.604.		
605.606.		
607.608.		
609.610.		
618.620.		
631		

Symbol No.	Part No.	Description
D611.612.	87-027-542	LED. LN217RP (PEAK PROGRAM METER. C-TYPE. ADMS. METAL)
613.614.		
615.616.		
619.627.		
633		
D621.632	87-027-671	LED. LN417YP (SOURCE. CrO ₂)
D622.623.	87-020-178	LED. SLF-102D-01R (REVERSE MODE)
624		
D625.626	87-020-179	LED. SLF-202B-01GR (DIRECTION)
< Capacitor >		
C601.602	87-018-047	0.01μF 16V CERAMIC
C603.604	87-015-697	3.3μF 50V ELECTROLYTIC

< VOLUME CIRCUIT BOARD SECTION >		
PCB-G	*	VOLUME CIRCUIT BOARD
D617.628.	87-027-097	DIODE. 1S1555
629.630		
VR301	82-199-634	SLIDE VOLUME. 100kΩ-A (RECORD LEVEL)
VR302	82-199-632	VOLUME. 250kΩ-W (REC BALANCE)
VR601	82-197-632	VOLUME. 50kΩ-B (BIAS FINE [%])
S3.4	87-031-692	PUSH SWITCH (DOLBY NR B-C ON/OFF. DOLBY NR B-C SELECTOR)

< Capacitor >		
C301.302	87-015-695	1μF 50V ELECTROLYTIC
C303	87-010-060	100μF 16V ELECTROLYTIC
C307.308	87-015-682	22μF 16V ELECTROLYTIC

< KEY CIRCUIT BOARD SECTION >		
PCB-H	*	KEY CIRCUIT BOARD
D51.52.53.	87-027-097	DIODE. 1S1555
54.55.56.		
57.58.59.		
60		
D61.65	87-027-731	LED. SR-535D (REC. REC MUTE)
D62.63	87-027-732	LED. SG-235D (REV. PLAY. PLAY)
D64	87-027-733	LED. SY-435 (PAUSE)
S41.42.43.	87-031-771	TACT SWITCH (REC. F. FWD (◀▶), RVS PLAY. PLAY. F. FWD (▶▶), STOP. PAUSE. REC MUTE)
44.45.46.		
47.48		
S49.50	87-031-807	SLIDE SWITCH (REVERSE MODE. REC TIMER)

< HP CIRCUIT BOARD SECTION >		
PCB-I	*	HP CIRCUIT BOARD
J501	87-049-653	JACK. 6.3φ (PHONES)

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

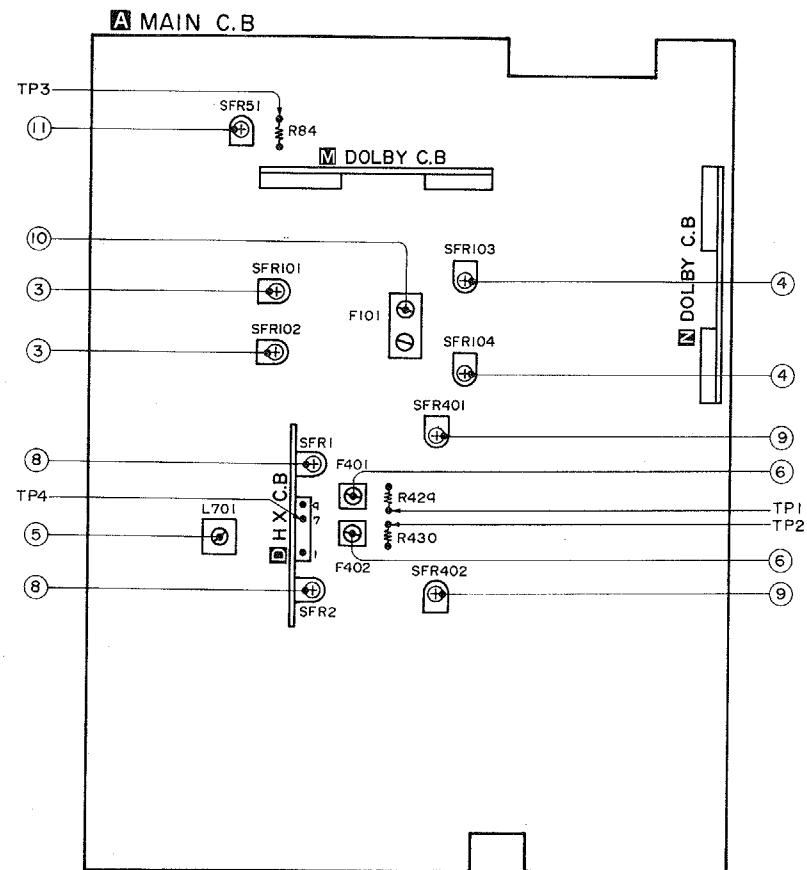
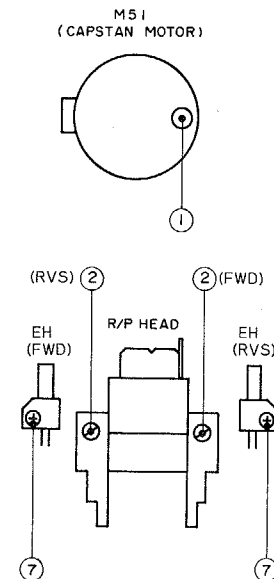
Combination circuit board 81-506-611

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 $85 \text{ kHz} \pm 0.5 \text{ kHz}$.

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

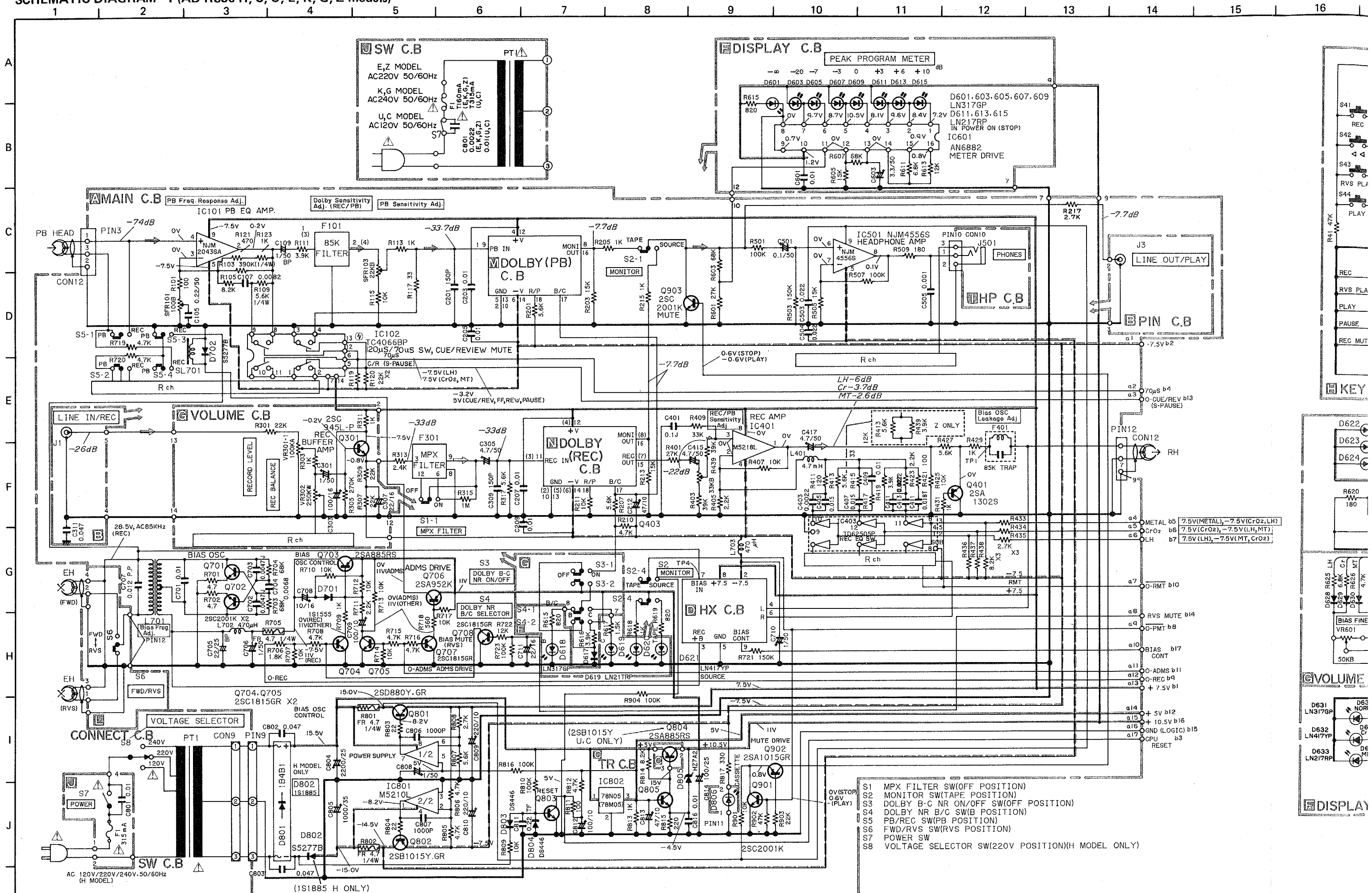
Method: Record the 400 Hz signal, then play back the recorded tape and adjust for minimum output.

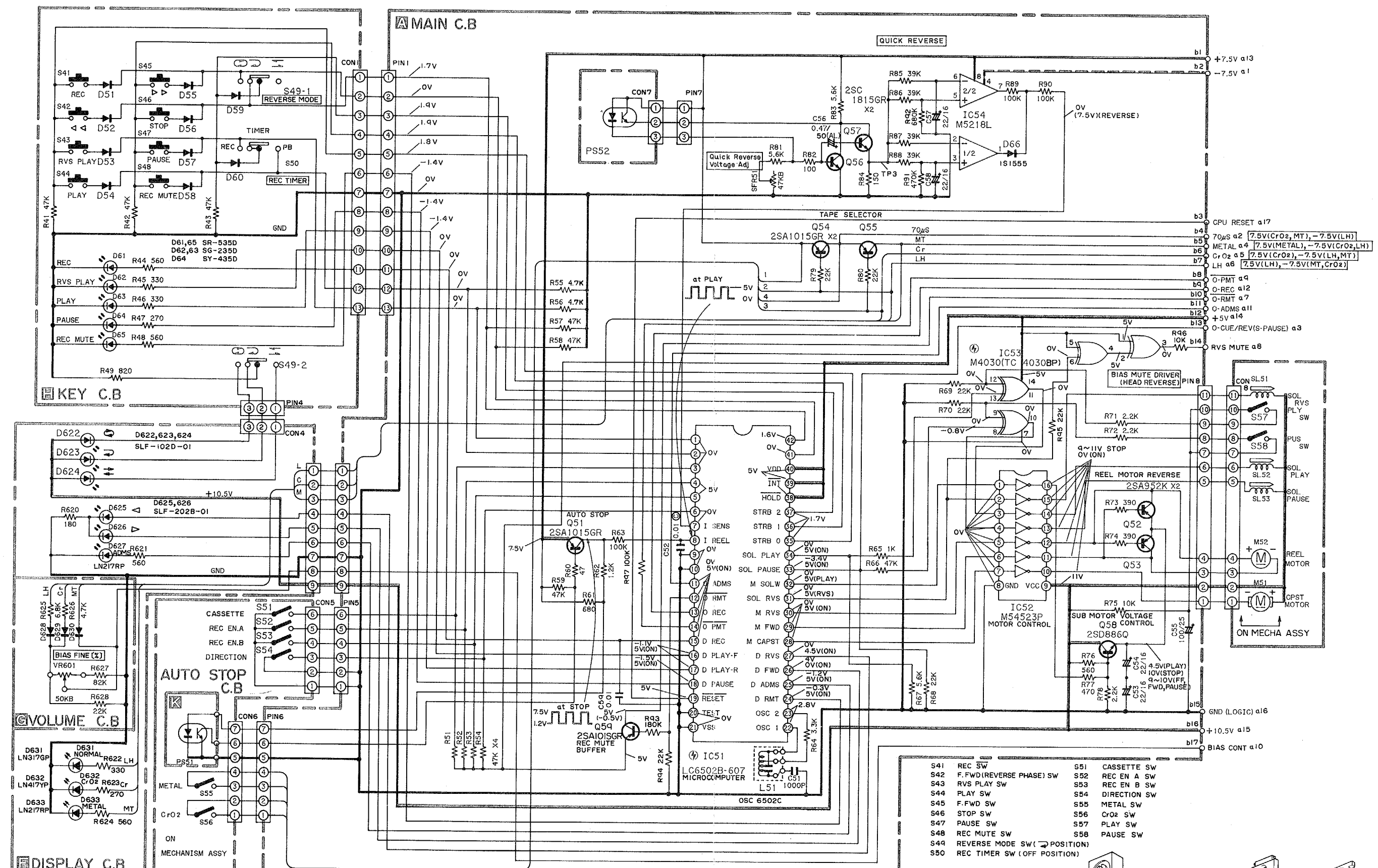
11. Quick Reverse Voltage Adjustment (Forward)

Settings: • Test tape: TTA-119G
• Test point: TP3
• Adjustment location: SFR51

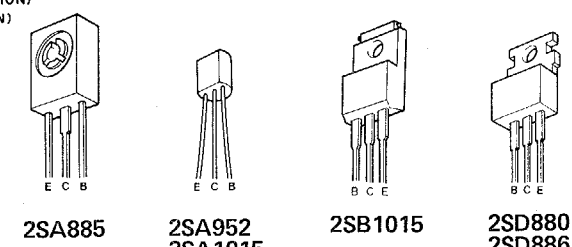
Method: Adjust for $3 \text{ V} \pm 0.25 \text{ V}$.

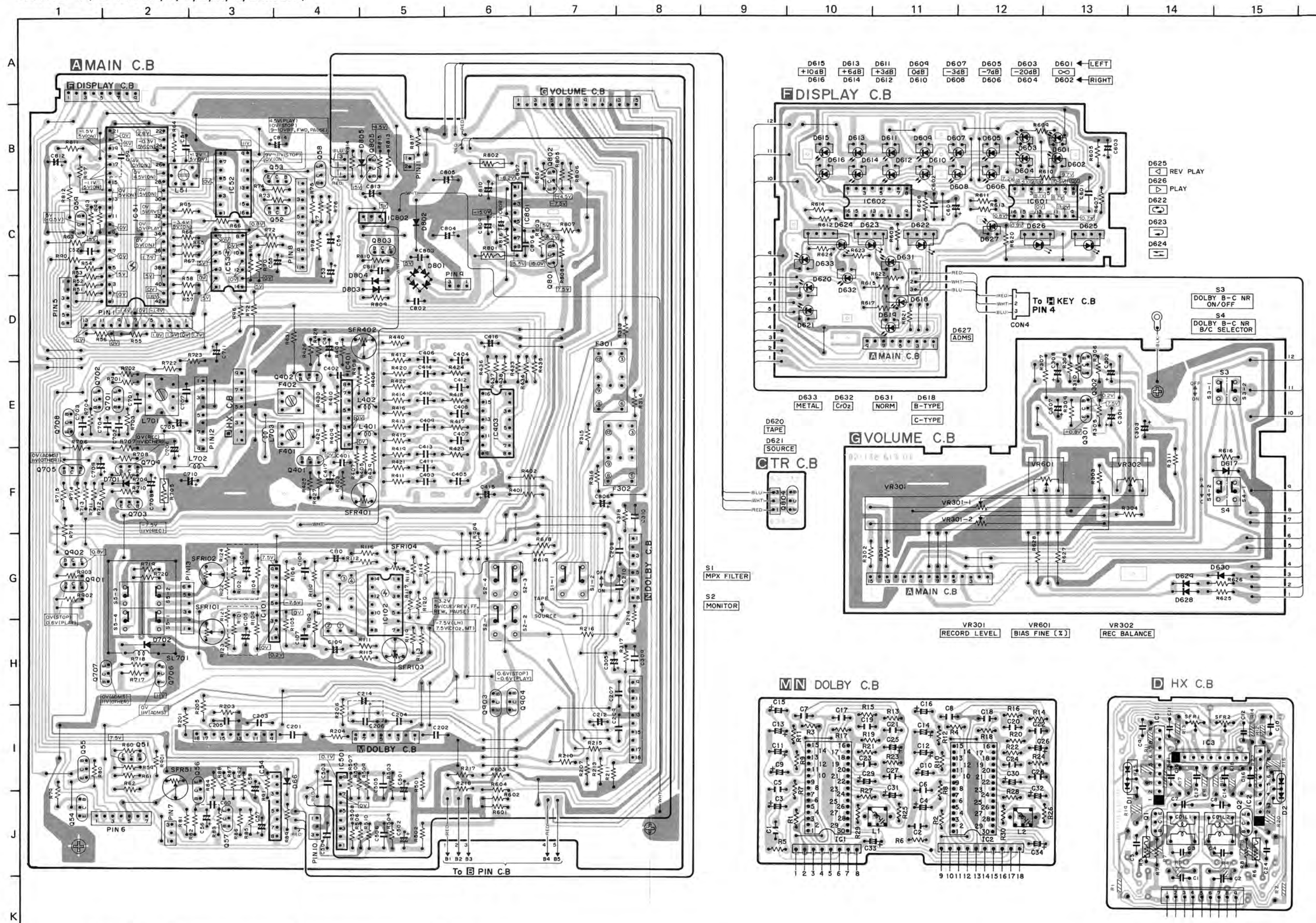
SCHEMATIC DIAGRAM-1 (AD-R650 H, C, U, E, K, G, Z models)

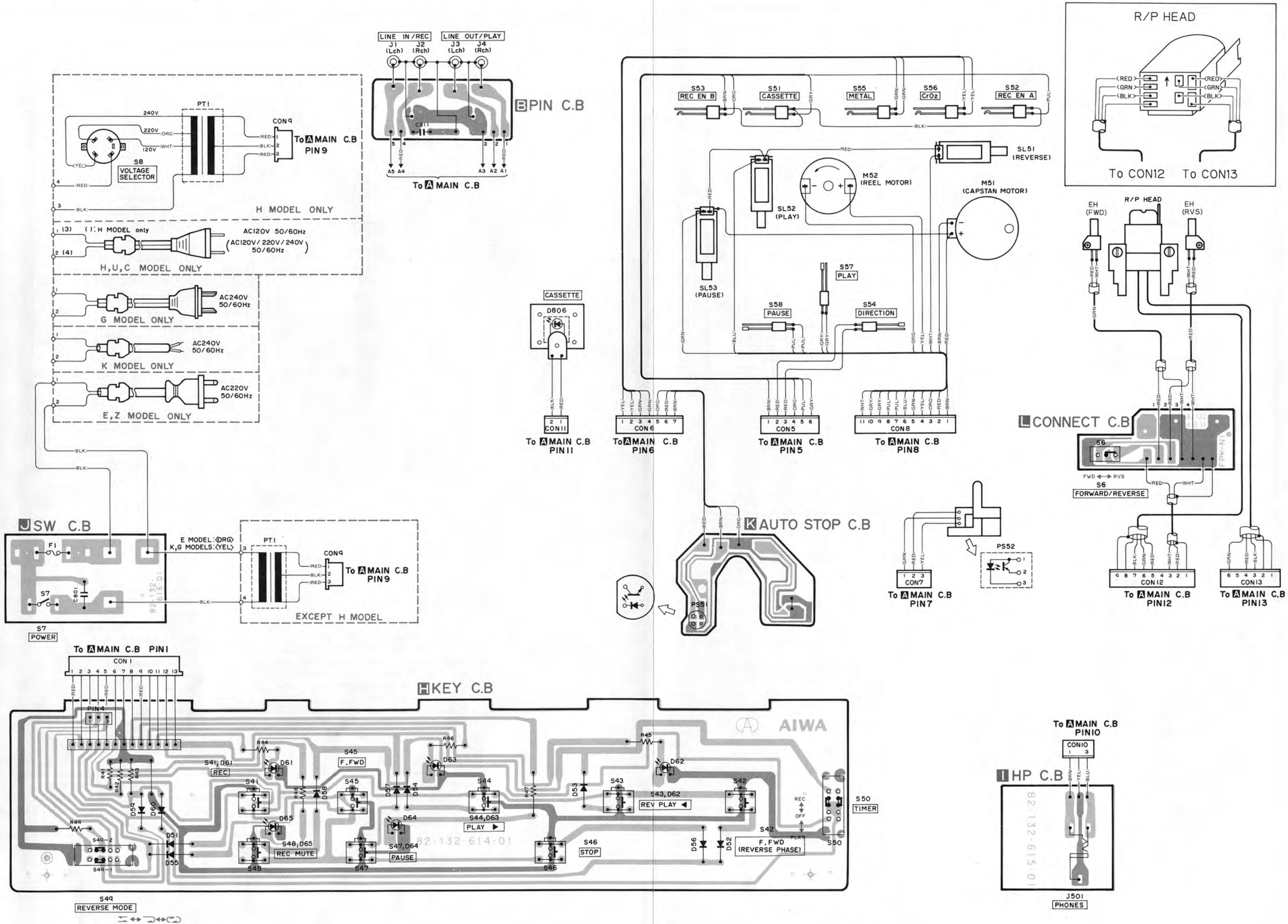


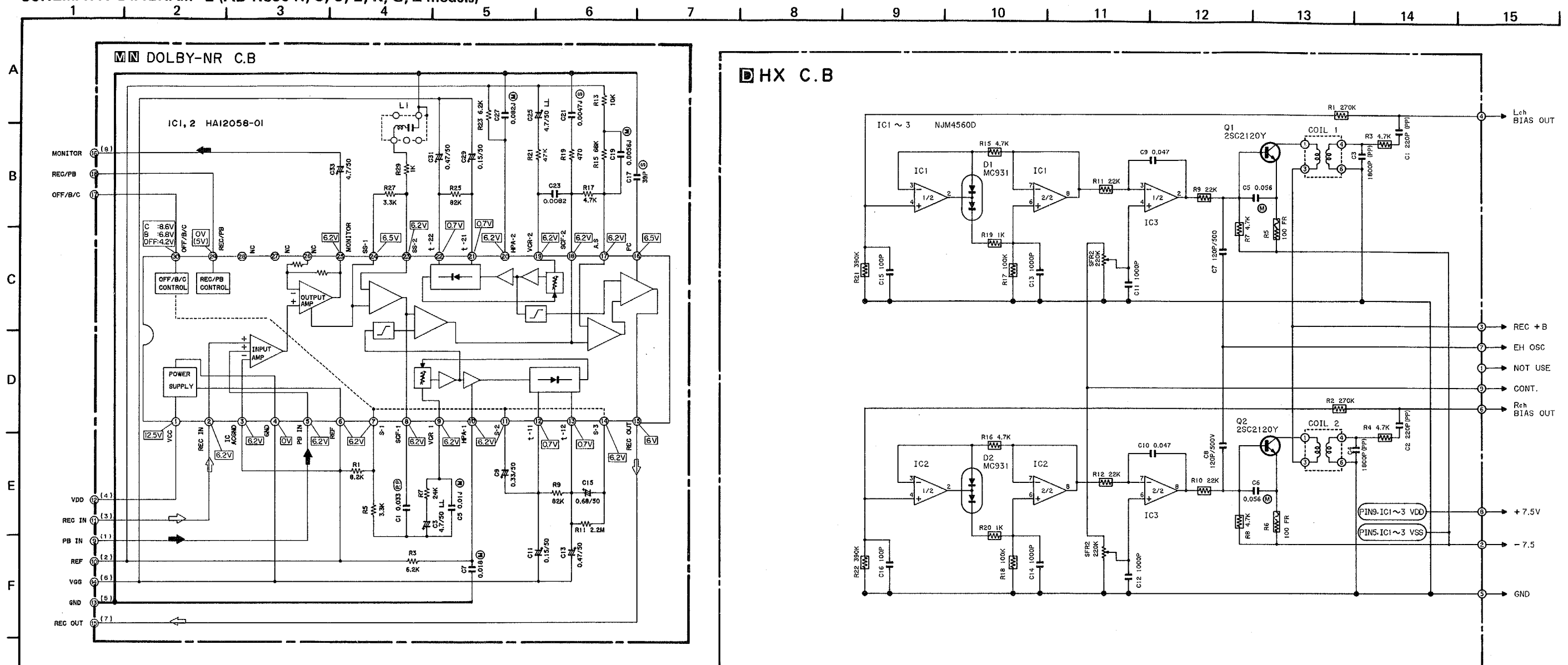


- | | |
|----------------------------------|------------------|
| S41 REC SW | S51 CASSETTE SW |
| S42 F.FWD(REVERSE PHASE) SW | S52 REC EN A SW |
| S43 RVS PLAY SW | S53 REC EN B SW |
| S44 PLAY SW | S54 DIRECTION SW |
| S45 F.FWD SW | S55 METAL SW |
| S46 STOP SW | S56 CrO2 SW |
| S47 PAUSE SW | S57 PLAY SW |
| S48 REC MUTE SW | S58 PAUSE SW |
| S49 REVERSE MODE SW (→ POSITION) | |
| S50 REC TIMER SW (OFF POSITION) | |



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
Take-up torque:	40 ± 10 g-cm		(12.5 Hz, 0 VU + 10 dB, METAL)
FF&rewind torque:	150 ± 30 g-cm	Bias frequency:	8.5 kHz
CUE/REV take-up torque:	150 ± 30 g-cm	Inputs:	LINE IN maximum input sensitivity: 40 mV (more than 50 kΩ)
Counter indication error:	0 ± 2.5 digit (C-60)	Outputs:	LINE OUT/PLAY standard output level: 0.41 V (0 VU); suitable load impedance: more than 50 kΩ;
REC/PB output:	LINE 0 VU ± 1 dB (NORMAL)	Test tape:	Headphones: 1.8 mW (8 Ω)
REC/PB distortion:	Less than 2.5% (METAL)		METAL TTA-119 MX
	Less than 2.5% (CrO ₂)		NORMAL TTA-119 J
	Less than 4% (CrO ₂ , Z model only)		CrO ₂ TTA-119 G
	Less than 2% (NORMAL)		TTT-119 D (Z model)
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 50V.
- 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

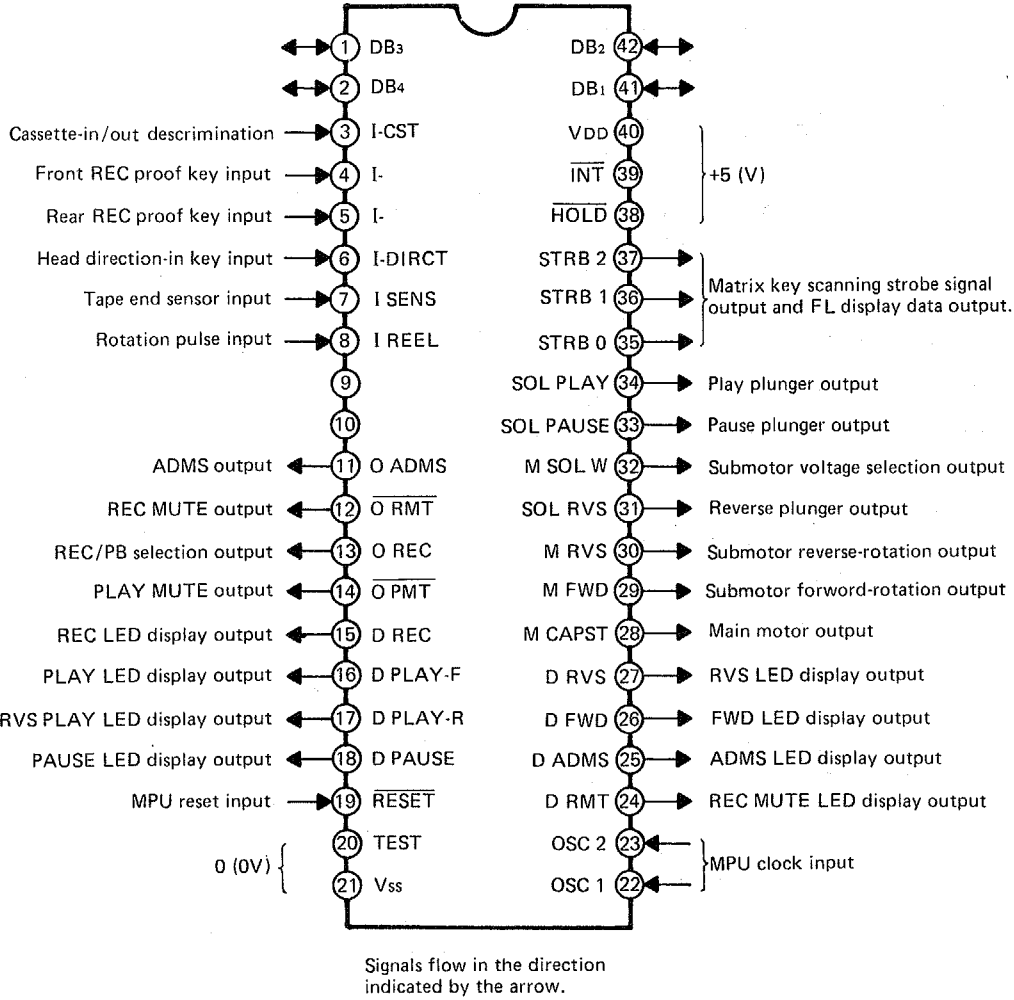
⚠ Safety component symbol

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- 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



1-2 Terminal description

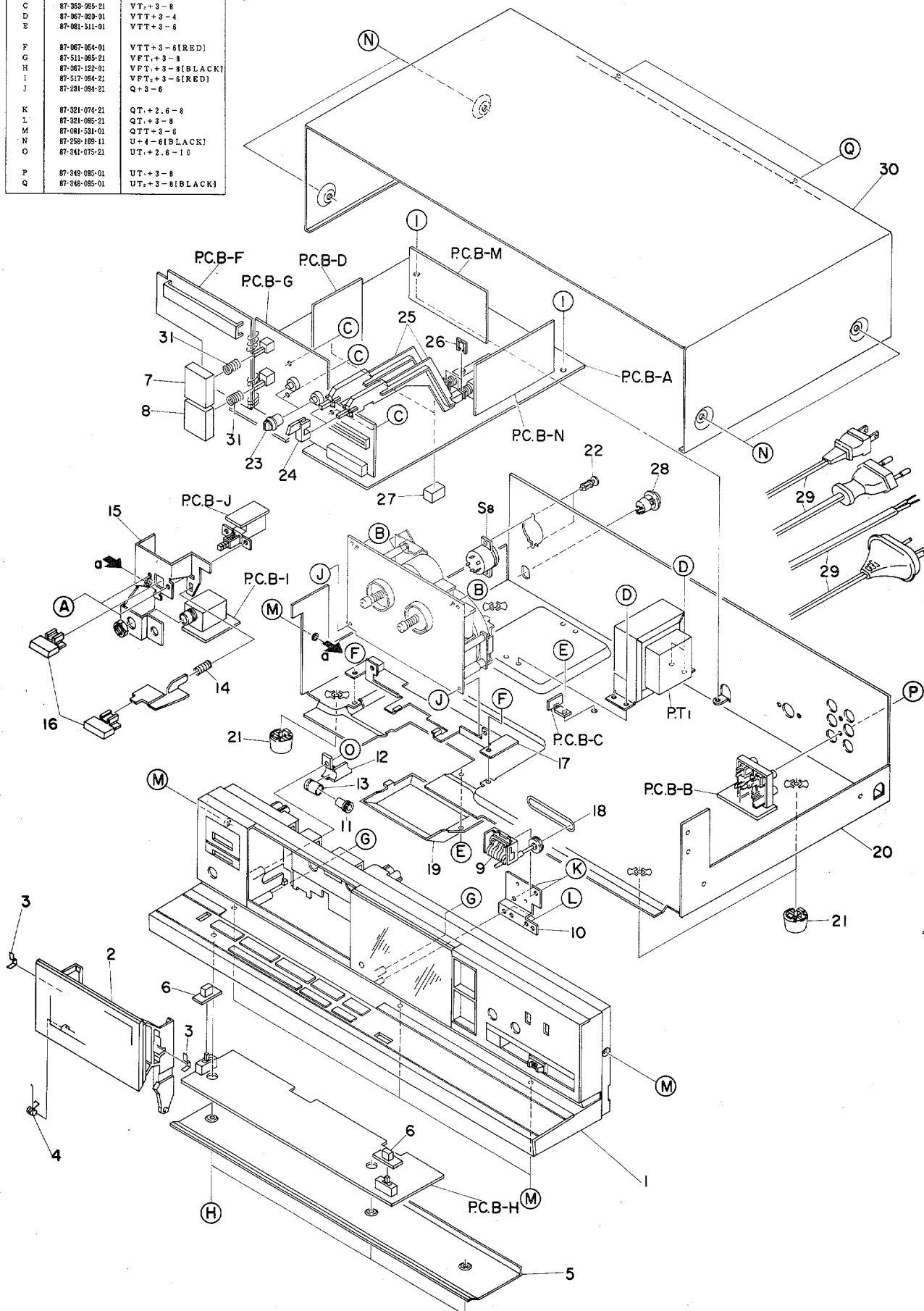
Pin No.	Terminal Symbol	Function		
		When ST0 is "H"	When ST1 is "H"	When ST2 is "H"
41	DB1	REC key input	FF key input	Reverse mode rear→front
42	DB2	RWD key input	STOP key input	Reverse mode front→rear
1	DB3	RVS PLAY key input	REC MUTE key input	TIMER-PLAY key input
2	DB4	PLAY key input	REC MUTE key 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 reverserotation.
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	

EXPLODED VIEW - I

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-061-054-21	V+3-6
B	87-059-076-21	VT+2.6-8(RED)
C	87-059-095-21	VT+3-8
D	87-067-029-01	VTT+3-4
E	87-061-511-01	VTT+3-6
F	87-067-054-01	VTT+3-6(RED)
G	87-511-055-21	VPT+3-8
H	87-067-122-01	VPT+3-8(BLACK)
I	87-517-054-21	VPT+3-6(RED)
J	87-221-094-21	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/SOURCE	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

A

B

C

D

E

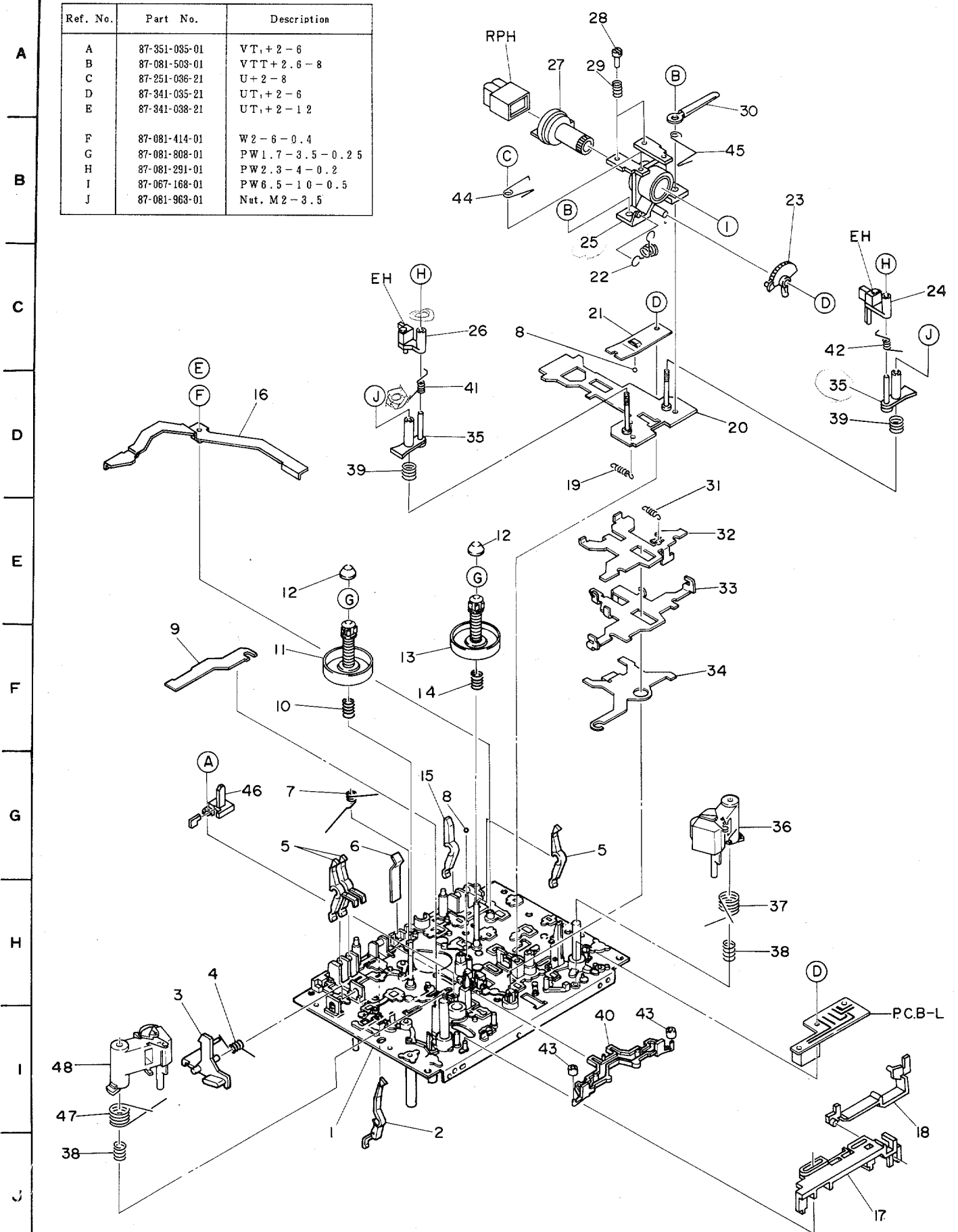
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G

H

I

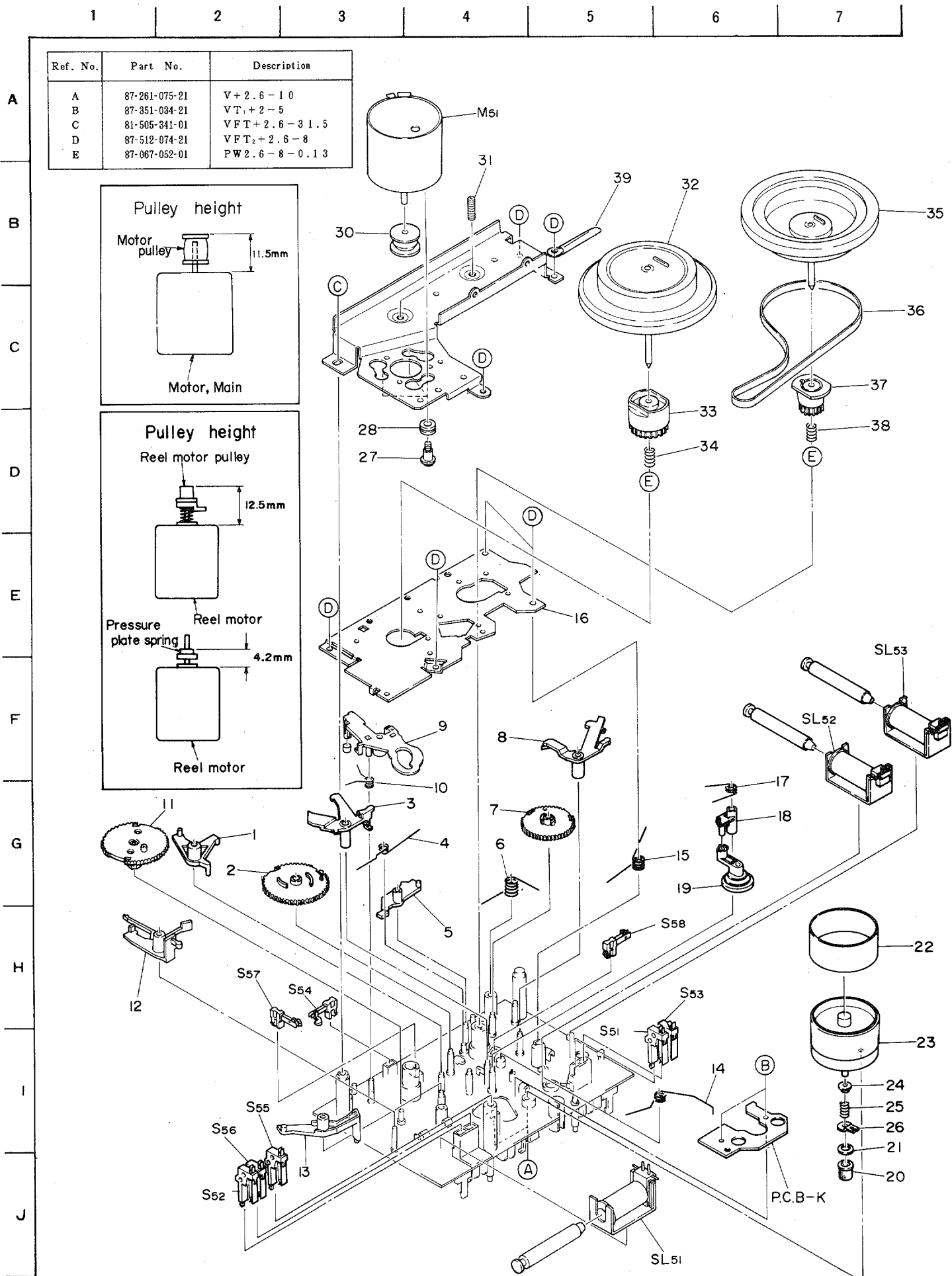
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DM-21-3H
81-556-353-01

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



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	

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