

AIWA® SERVICE MANUAL

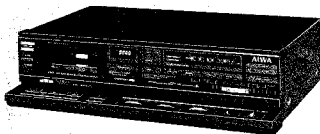
S/M Code No. 85-024

DATE OF ISSUE 5/1985

**STEREO CASSETTE
DECK**

MODEL NO.

AD-F640, S40



**TYPE. HB,EB,KB,GB,ZB
UB(AD-S40)**

Type	Stereo cassette deck
Track format	4 tracks 2 channels
Power supply	AD-F640E, Z AC 220 V 50 Hz AD-F640K, G AC 240 V 50 Hz AD-S40 U AC 120 V 60 Hz AD-F640H AC 120 V/220 V/240 V switchable, 50/60 Hz
Power consumption	20 W
Frequency response	METAL tape: 20—18,000 Hz CrO ₂ position tape: 20—17,000 Hz NORMAL tape: 20—16,000 Hz
Signal-to-noise ratio	75 dB (METAL tape DOLBY C NR ON)
Wow and flutter	According to DIN 45 500 0.09% 0.028% (WRMS)
Tape speed	4.8 cm/sec. (1-7/8 ips)
Rewind time	60 sec. (C-60)
Fast forward time	60 sec. (C-60)
Recording system	AC bias (frequency 55 kHz)
Erase system	AC erase
Motor	DC Servomotor for capstan DC motor for reels
Head	Recording, playback head: DX combination head Erase head: Double gap ferrite head

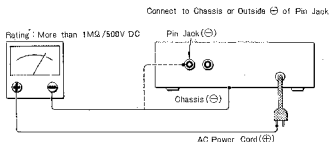
Inputs	LINE IN maximum input sensitivity: 50 mV (over 50 k-ohms)
Outputs	LINE OUT standard output level: 0.41 V (0 VU); Suitable load impedance: over 50 k-ohms; Headphones: 8 ohms
Dimensions	420(W) × 110(H) × 299.5(D) mm [16-5/8" (W) × 4-3/8" (H) × 11-7/8" (D)]
Weight	4.7 kg (10.3 lbs.)
Accessories	Stereo pin cord..... 2

- Design and specifications are subject to change without notice.
- Noise Reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- HX PRO headroom extension originated by Bang & Olufsen and manufactured under license from Dolby Laboratories Licensing Corporation.
- "Dolby," the double-D symbol, and "HX PRO" 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) Lubricants been stained the surfaces of transmitting portion of the belts, idlers, capstan and pinch roller shall be removed, because slippery and faulty tape travel shall be caused.
- 3) 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.
- 4) E-rings and poly slider washers shall be replaced with new ones, if once those have been removed. — No re-utilization due to unreliability.
- 5) Regular spare-parts shall always be used for repair, because using irregular parts and tampering with the products shall cause deterioration, multifunction and damage.

ELECTRICAL MAIN PARTS LIST

- +++ mark denotes a component of assembled part which part code is represented by a previously stated component.
 • * mark means less required items and availabilities may be limited.

CAPACITORS

No mark, U, UF, P, PF
 : pF

COILS

MMH: mH
 UH: μH

FUSE

MMA: mA

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
=== IC ===								
	87-020-503	IC, AN78M07	L511	* 82-196-649	COIL OSC L05502C	S48	87-031-807	SLIDE SW 2-2-3 (TIMER)
	87-020-504	IC, AN78M07	L701	* 82-132-644	COIL OSC 85K-HX	S49	87-031-807	SLIDE SW 2-2-3 (COUNTER)
	87-020-180	IC, 85K146	L702	* 87-003-051	COIL, CHOK 470MMH	=== HK CIRCUIT BOARD SECTION ===		
	87-020-372	IC, L78M05	L703	* 87-003-051	COIL, CHOK 470MMH	PCB-E	82-132-620	HK CIRCUIT BOARD
⑤	82-100-630	IC, L05502B-724	AR005	87-029-089	RES, FUSIBLE, 1/4W-1.7	C1	* 87-014-041	CAP, PR 220P
	87-027-895	IC, M221RL	AR801	87-029-019	RES, FUSIBLE, 1/2W-2.2	C2	* 87-014-041	CAP, PR 220P
	87-027-925	IC, M222D	S1	82-100-631	PUSH SW-SUL 2-2-2 (MPX)	C3	* 87-014-131	CAP, PP 0.0018
	87-027-909	IC, M4523P	52	82-100-632	PUSH SW-SUL 2-4-2 (MONITOR)	O4	* 87-014-131	CAP, PP 0.0018
	87-020-052	IC, NJM5565	SFR101	* 87-021-734	SFR 100	D1	87-020-156	DIODE M931
	87-027-886	IC, NJM5605	SFR102	* 87-021-734	SFR 100	D2	87-020-156	DIODE M931
⑥	87-027-937	IC, TC4039SP	SFR103	* 87-021-743	SFR 22K	L1	* 82-132-643	COIL, OSC 85K-HX
	87-027-656	IC, TC4065SP	SFR104	* 87-021-743	SFR 22K	L2	* 82-132-643	COIL, OSC 85K-HX
			SFR101	* 87-021-744	SFR 33K	AR5	87-029-082	RES, FUSIBLE, 1/4W-100
			SFR102	* 87-021-744	SFR 33K	AR6	87-029-082	RES, FUSIBLE, 1/4W-100
			SFR103	* 87-021-743	SFR 22K	SFR1	* 87-021-869	SFR 220K
			SFR104	* 87-021-743	SFR 22K	SFR2	* 87-021-869	SFR 220K
=== TRANSISTOR ===								
	89-100-854	TRANSISTOR, 2SA889R,S	SFR602	* 87-021-743	SFR 22K	=== HP CIRCUIT BOARD SECTION ===		
	89-109-521	TRANSISTOR, 2SA892K	SOL701	* 87-031-751	SW SOLENOID	PCB-F	*	HP CIRCUIT BOARD
	89-110-155	TRANSISTOR, 2SA1015,GR	=== FRONT CIRCUIT BOARD SECTION ===					
	89-318-155	TRANSISTOR, 2SC1815GR,BL	PCB-B	*	FRONT CIRCUIT BOARD	=== POWER SW CIRCUIT BOARD SECTION ===		
	89-320-011	TRANSISTOR, 2SC2001K	C301	* 87-015-695	CAP, ELECT 1-50	PCB-G	*	POWER SW CIRCUIT BOARD
	89-321-204	TRANSISTOR, 2SC2120Y	C302	* 87-015-695	CAP, ELECT 1-50	C601	* 87-019-113	SPARK KILLER, 2,0022E
	89-412-753	TRANSISTOR, 2SD1275	C303	* 87-015-694	CAP, ELECT, 47-16V	S7	87-031-753	PUSH SW SLD D (POWER)
=== MAIN CIRCUIT BOARD SECTION ===								
PCB-A	*	MAIN CIRCUIT BOARD	C307	* 87-015-682	CAP, ELECT 22-16	=== AUTO STOP CIRCUIT BOARD SECTION ===		
C51	* 87-018-044	CAP, CERA-SOL S 1000P	C308	* 87-015-682	CAP, ELECT 22-16	PCB-H	81-505-605	AUTO STOP CIRCUIT BOARD
C101	* 87-018-033	CAP, CERA-SOL S 120P	D611	* 87-027-301	DIODE, ZENER HZ 3A1	P531	* 87-027-544	PHOTO SENSOR IUL-5141EA
C102	* 87-018-033	CAP, CERA-SOL S 120P	D612	* 87-027-543	LED, LN317GP (G-TYPE)	=== DOLBY UNIT CIRCUIT BOARD SECTION ===		
C103	* 87-018-040	CAP, CERA-SOL S 470P	D613	* 87-027-542	LED, LN217RP (G-TYPE)	PCB-I	81-505-605	AUTO STOP CIRCUIT BOARD
C104	* 87-018-040	CAP, CERA-SOL S 470P	D614	* 87-027-543	LED, LN317GP (TAPEI)	PCB-J	* 87-027-544	PHOTO SENSOR IUL-5141EA
C109	* 87-010-132	CAP, ELECT BP 1-50	D615	* 87-027-542	LED, LN317GP (TAPEI)	=== DOLBY UNIT CIRCUIT BOARD SECTION ===		
C110	* 87-010-132	CAP, ELECT BP 1-50	D622	* 87-027-542	LED, LN217RP (ADMS)	PCB-J	* 87-020-133	DOLBY UNIT HA12058-3H
C201	* 87-018-034	CAP, CERA-SOL S 150P	D628	87-020-110	DIODE 1SS177	PCB-I	* 87-020-133	DOLBY UNIT HA12058-3H
C202	* 87-018-034	CAP, CERA-SOL S 150P	D629	87-020-110	DIODE 1SS177	=== DOLBY UNIT CIRCUIT BOARD SECTION ===		
C309	* 87-018-034	CAP, CERA-SOL S 150P	D630	87-020-110	DIODE 1SS177	PCB-I	* 87-020-133	DOLBY UNIT HA12058-3H
C310	* 87-018-034	CAP, CERA-SOL S 150P	D631	* 87-027-543	LED, LN317GP (NORMAL)	PCB-J	* 87-020-133	DOLBY UNIT HA12058-3H
C505	* 87-018-044	CAP, CERA-SOL S 1000P	D632	* 87-027-671	LED, LN417YP (G-G)	=== MISCELLANEOUS ===		
C506	* 87-018-044	CAP, CERA-SOL S 1000P	D633	* 87-027-542	LED, LN317GP (METAL)	Δ	* 87-034-958	AC CORD (H) (H ONLY)
C705	* 87-010-138	CAP, ELECT BP 22-25	F601	82-197-631	FL B-ST-100K (TAPE COUNTER)	Δ	* 87-034-951	AC CORD, IJC (U ONLY)
C713	* 87-014-159	CAP, PP 0.012G-100V	F602	82-199-635	FL B-ST-232K 1200T (PEAK PROGRAM METER)	Δ	* 87-034-977	AC CORD E (E, Z ONLY)
C809	* 87-010-231	CAP, ELECT 220-10 KS	R609	* 87-025-154	RES, MF, 1W-270	Δ	* 87-034-975	AC CORD K (K ONLY)
C810	* 87-010-231	CAP, ELECT 220-10 KS	S601	87-031-930	TACT SW, KH15912 (COUNTER RESET)	Δ	* 87-034-892	AC CORD G (G ONLY)
D51	* 87-020-110	DIODE 1SS177	VR031	82-100-633	SLIDE VR, 100KA (REC LEVEL)	EH	* 87-046-253	ERASE HEAD
D52	* 87-020-110	DIODE 1SS177	=== VOLUME CIRCUIT BOARD SECTION ===					
D803	* 87-020-110	DIODE 1SS177	PCB-C	*	VOLUME CIRCUIT BOARD	LED1	* 87-027-944	LED, SLF30IC (CASSETTE)
D802	* 87-020-110	DIODE 1SS177	53	* 87-031-807	SLIDE SW 2-2-3 (DOOLBY B-C NR)	M51	87-045-135	MOTOR DC ES
D803	* 87-020-110	DIODE 1SS177	VR302	82-199-632	VR, 250KΩ-BAL (REC BALANCE)	M52	81-505-604	REEL MOTOR
D804	* 87-020-110	DIODE 1SS177	VR601	82-197-632	VR 50KΩ CC (DAS FINE)	APT	82-199-622	TRANSFORMER, PT, H (H ONLY)
D805	* 87-027-702	DIODE, ZENER H262CL	=== KEY CIRCUIT BOARD SECTION ===					
J1	* 87-049-055	JACK, 4P (LINE IN)	PCB-D	*	KEY CIRCUIT BOARD	APT	82-199-623	TRANSFORMER, PT, U (U ONLY)
J2	+++	JACK, 4P (LINE IN)	D41	* 87-027-731	LED SR-5350 (REC MUTE)	APT	82-199-624	TRANSFORMER, PT, E (E, Z ONLY)
J3	+++	JACK, 4P (LINE OUT)	D42	* 87-027-731	LED SR-5350 (REC MUTE)	APT	82-199-625	TRANSFORMER, PT, K, G, K, G (ONLY)
J4	+++	JACK, 4P (LINE OUT)	D44	* 87-027-732	LED SR-235D (PLAY)	RPH	87-046-194	REC/PS HEAD
J501	* 87-049-394	5.3 JACK (PHONES)	VR031	82-100-633	SLIDE VR, 100KA (REC LEVEL)	ΔS8	87-031-586	ROTARY SW (AC VOLTAGE) (H ONLY)
L101	* 82-190-629	FILTER LP, 85K-2	D43	* 87-027-733	LED SY-435 (PAUSE)	S51	81-505-607	LEAF SW(AU) BSW187-2 (DC G)
L102	* 82-190-629	FILTER LP, 85K-2	S41	* 87-031-771	TACT SW EVQ-OSK04M (REW/REVIEW)	S52	81-505-607	LEAF SW(AU) BSW187-2 (METAL)
L301	* 82-135-632	FILTER MPX 85K	S42	* 87-031-771	TACT SW EVQ-OSK04M (PLAY)	S53	81-505-607	LEAF SW(AU) BSW187-2 (CASSETTE)
L302	* 82-135-632	FILTER MPX 85K	S43	* 87-031-771	TACT SW EVQ-OSK04M (STOP)	S54	81-505-607	LEAF SW(AU) BSW187-2 (REC EN)
			S44	* 87-031-771	TACT SW EVQ-OSK04M (F.FWD/CC)	S55	81-505-601	LEAF SW (PLAY)
			S45	* 87-031-771	TACT SW EVQ-OSK04M (PAUSE)	SOL51	* 81-507-237	SOLENOID 9ME-C (PLAY)
			S46	* 87-031-771	TACT SW EVQ-OSK04M (REC MUTE)	SOL52	* 81-507-237	SOLENOID 9ME-C (PAUSE)
			S47	* 87-031-771	TACT SW EVQ-OSK04M (REC MUTE)			

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 A 82-100-601

PCB-A 82-100-602

PCB-F 82-100-603

Combination circuit board B 82-100-611

PCB-B 82-100-612

PCB-C 82-100-613

PCB-D 82-100-614

PCB-G 82-100-615

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 aluminum 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 (Ⓢ).

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.

ADJUSTMENT

board
s list which are indicated by an
single combined circuit board.
plied separately. If this becomes
circuit board.

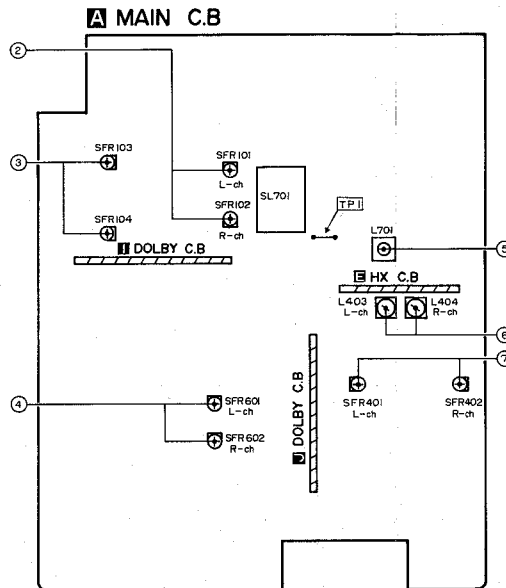
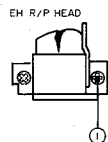
82-100-601

82-100-611

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rich are made to conform to special
when replacing a component with
e that you use a designated part.



Practical Service Figure

Pinch roller pressure:	F side $350 \pm 30 \text{ g}$ ($3.43 \pm 0.29 \text{ N}$)
	T side $165 \pm 15 \text{ g}$ ($1.62 \pm 0.15 \text{ N}$)
Take-up torque:	$38 \pm 10 \text{ g} \cdot \text{cm}$ ($0.37 \pm 0.098 \text{ m} \cdot \text{N}$)
FF & REW torque:	$150 \pm 40 \text{ g} \cdot \text{cm}$ ($1.47 \pm 0.39 \text{ m} \cdot \text{N}$)
Counter indication error:	$0 \pm 3 \text{ digit}$ (C-60)
PB output:	$560 \pm 68 \text{ mV}$ (LINE)
(TTA-161)	
REC/PB output:	LINE $380 \pm 30 \text{ mV}$
	(NORMAL)
REC/PB distortion:	Less than 1.5% (NORMAL)
Playback noise:	Less than $4.0/2.0/1.7 \text{ mV}$
(Unweighted)	(NORMAL DOLBY-NR OFF/B/C)
(WTD)	Less than $1.5/0.7 \text{ mV}$
	(NORMAL DOLBY-NR OFF/B, C)
REC/PB SN ratio:	More than $42/45/48 \text{ dB}$
(Unweighted)	(NORMAL DOLBY-NR OFF/B/C)
Erasing ratio:	More than 80dB
(125 Hz)	
Bias frequency:	85kHz
Test tape:	METAL TTA-119MP
	NORMAL TTA-119J
	CrO ₂ TTA-119G

1. Azimuth Adjustment
• Test tape: TTA-317E

2. PB Frequency Response Adjustment

- Settings:
- Test tape: TTA-317E
 - Test point: LINE OUT
 - DOLBY NR switch: OFF
 - Adjustment locations: SFR101 (L-ch)
 - SFR102 (R-ch)

Method: Play back the test tape, then adjust so that the output difference between 1kHz and 10kHz is $0 \pm 0.5 \text{ dB}$.

3. PB Sensitivity Adjustment

- Settings:
- Test tape: TTA-161
 - Test point: LINE OUT
 - DOLBY NR switch: OFF
 - Adjustment locations: SFR103 (L-ch)
 - SFR104 (R-ch)

Method: Adjust so that output is 560mV.

4. FL Level Meter Adjustment

- Settings:
- Recorder mode
 - MONITOR switch: SOURCE
 - Input signal: 1kHz, 380mV
 - Test point: LINE OUT
 - Adjustment locations: SFR601 (L-ch)
 - SFR602 (R-ch)

Method: Adjust RECORD VOLUME so that the output is 380mV. Adjust SFR601, 602 so that 0dB LED light up.

5. Bias OSC Frequency Adjustment

- Settings:
- Test tape: TTA-119MP
 - Test point: TP1
 - Adjustment location: L701

Method: Adjust so that the OSC frequency is 85kHz $\pm 0.1 \text{ kHz}$.

6. NORMAL REC/PB Frequency Response Adjustment

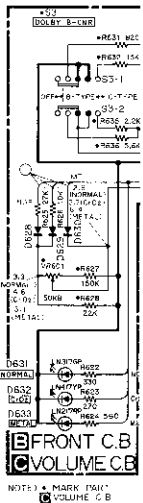
- Settings:
- Recorder mode
 - Test tape: TTA-119J
 - Input signal: 1kHz, 0dB
 - Adjustment locations: L403 (L-ch)
 - L404 (R-ch)

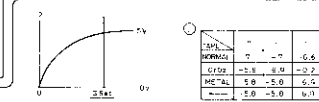
Method: Supply a 1kHz, 38mV signal and adjust the recording level so that the LINE output is made 38mV. Record and playback the 1kHz and 10kHz signals and adjust so that the 10kHz output is 0~0.5dB based on the 1kHz output.

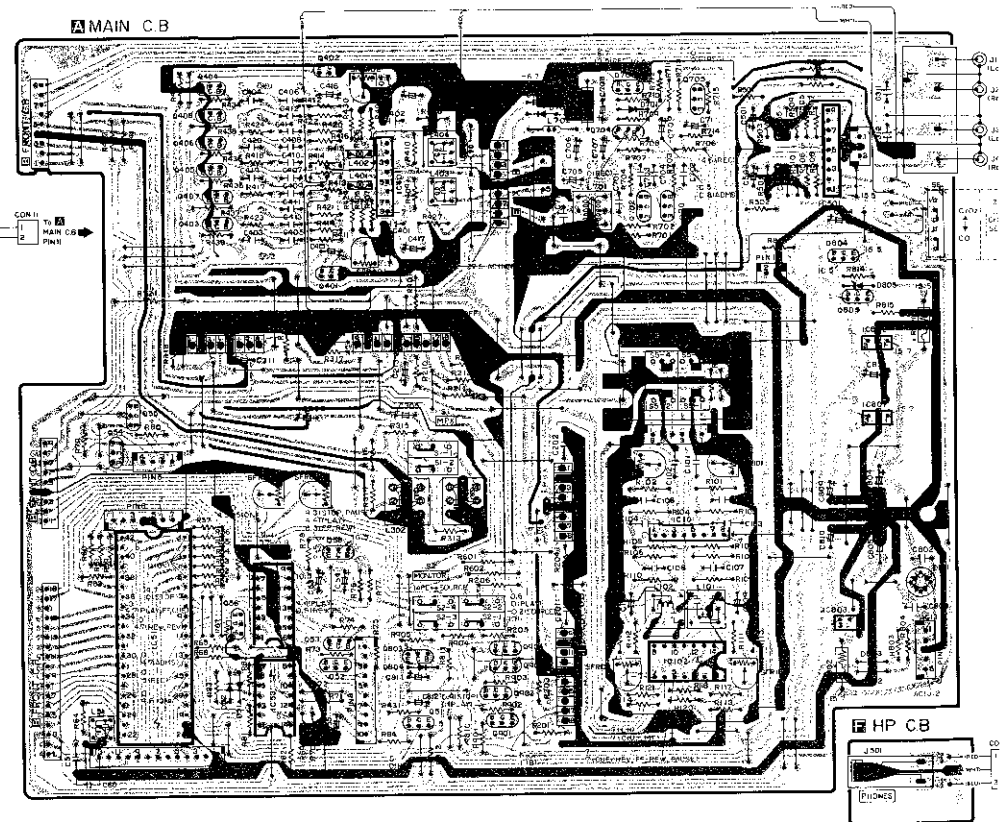
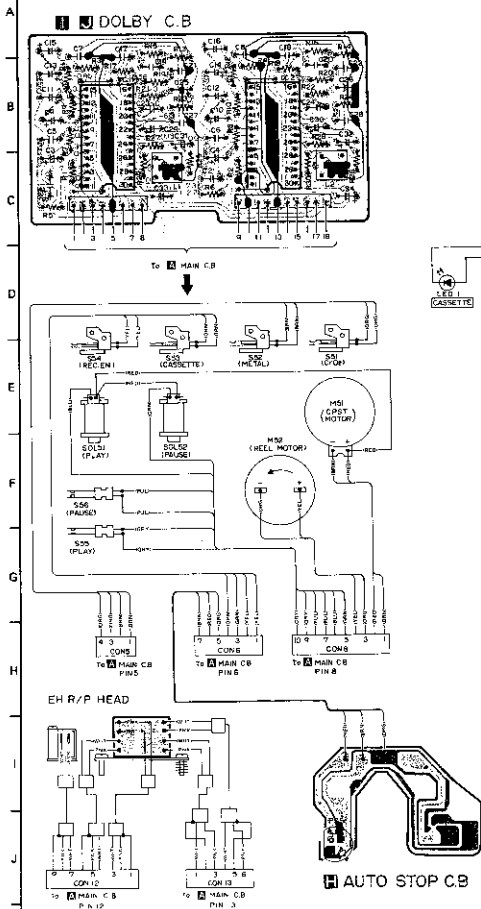
7. NORMAL REC/PB Sensitivity Adjustment

- Settings:
- Recorder mode
 - Test tape: TTA-119J
 - Output level: MAX
 - Input signal: 1kHz, 0dB
 - Adjustment locations: SFR401 (L-ch)
 - SFR402 (R-ch)

Method: Make the characteristics identical to the 6. NORMAL REC/PB Frequency Adjustment. Adjust and adjust so that the LINE output is made 38mV.







- 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. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

FRONT C.B

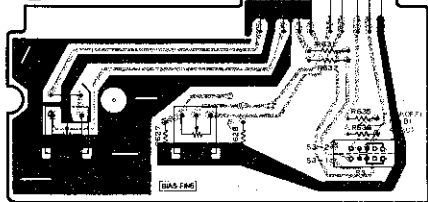
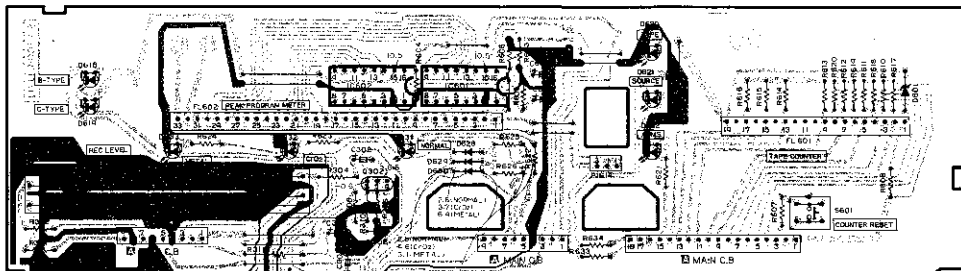
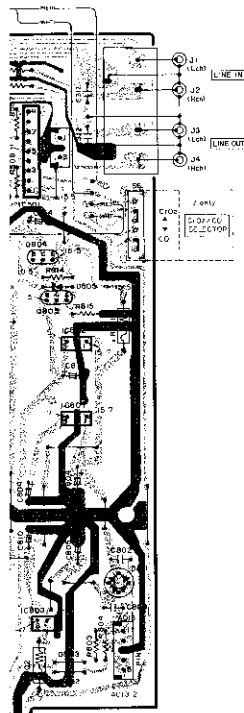
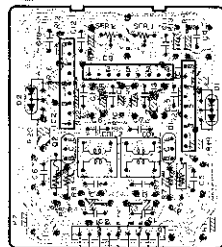
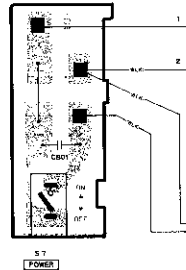


TABLE	1	2	3
NO. OF	1	2	3
OF	1	2	3
METAL	1	2	3
---	1	2	3

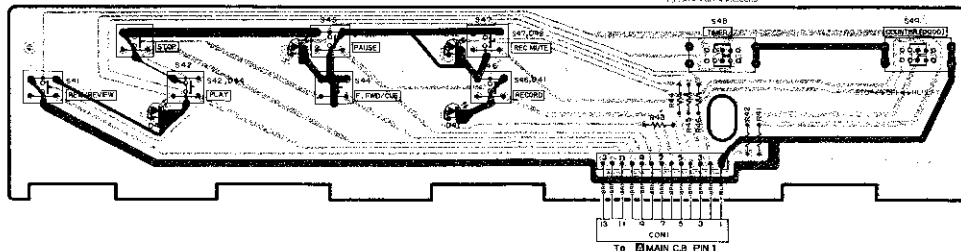
EHX C.B



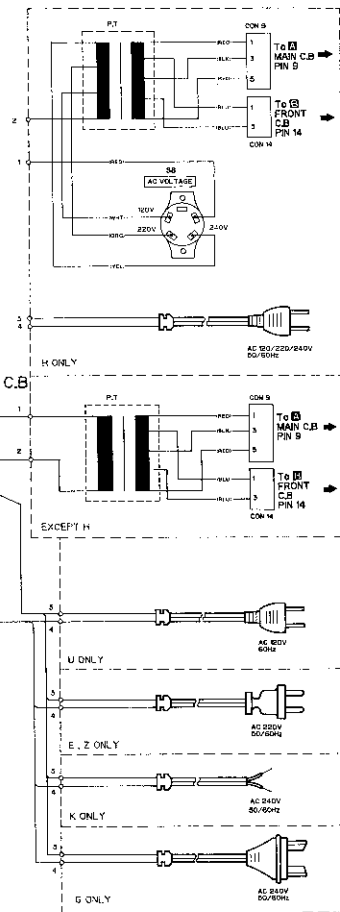
G POWER SWITCH C.B

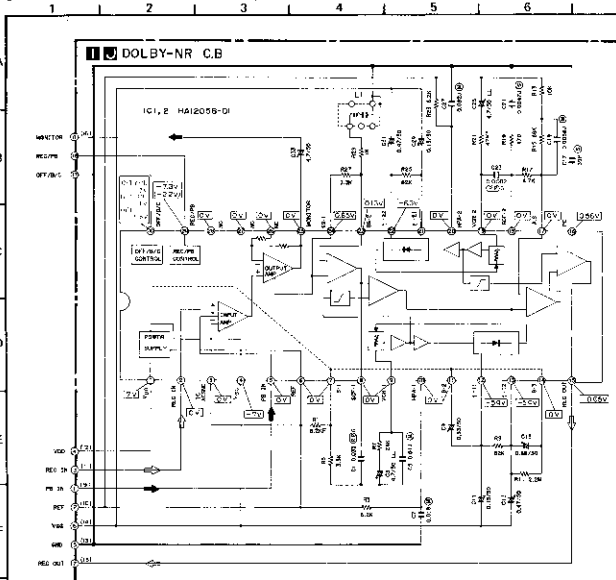


KEY C.B

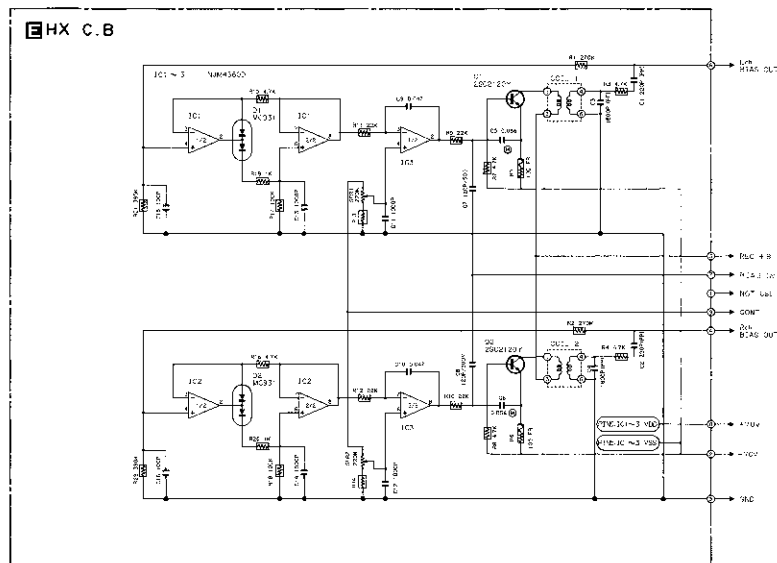


F HP C.B





HX C.B



NOTES:

- 1) B (+) power supply
- 2) B (-) power supply
- 3) Signal path

4) Rec path
The voltage is the reference value measured with a testor (20 k-ohms/V DC) when there are no signals. But () is with AM reception or recording. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.

5) Resistors with no designation have a rated power of 1/8W and a tolerance of $\pm 5\%$.

6) Capacitors with no designation have a dielectric strength of less than 50WV.

7) The only capacitor tolerance indicated are $\pm 5\%$ (J) and $\pm 10\%$ (K).

8) Ceramic capacitor symbols:

① For temperature compensation (SL)

② High dielectric constant system (YY)

③ High dielectric constant system (YW, YP, YZ)

④ Semiconductor ceramic

⑤ For temperature compensation (SH)

⑥ Explanation of symbols

⑦ Mylar capacitor

⑧ Aluminum solid capacitor

⑨ Polypropylene film capacitor

⑩ Bipolarized capacitor

⑪ Low-leakage capacitor

⑫ Tantalum capacitor

⑬ Stryol capacitor

⑭ Fuse resistor

⑮ Nonflammable 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.



2SA885



2SA962



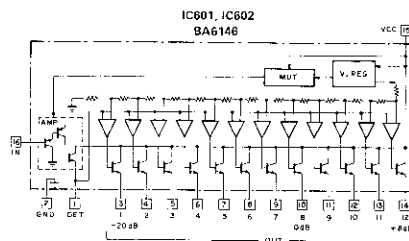
2SD1275

2SA1015

2SC1815

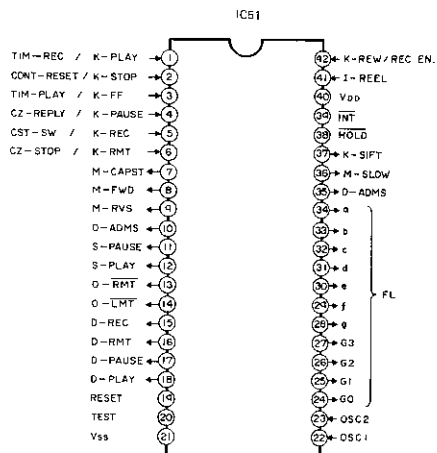
2SC2001

2SC2120



1. DESCRIPTION OF IC LC6502B-724

1-1. Terminal name



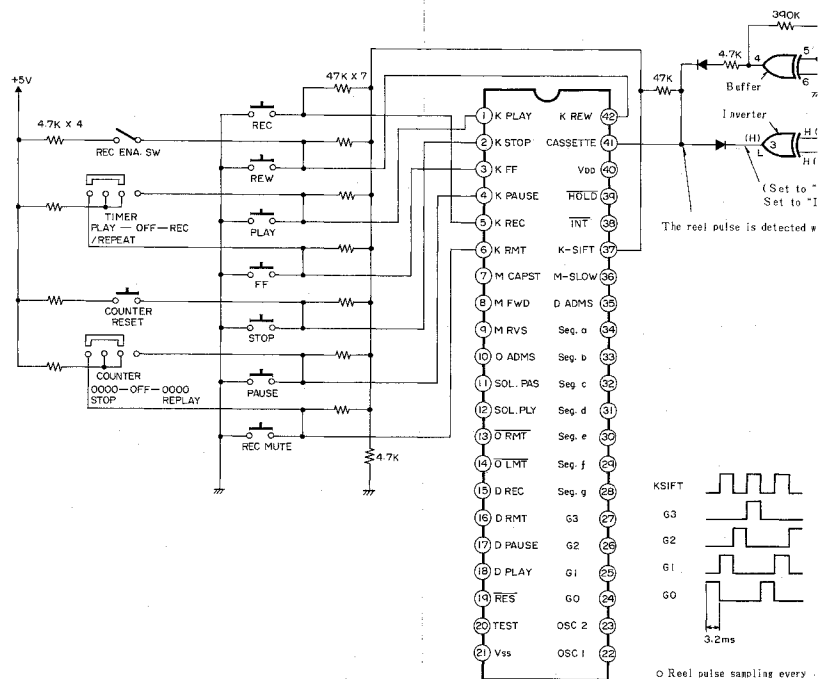
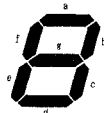
Mechanical control + F.L. driver (Counter)

- * Mechanism: 9ME-2 (used in AD-F660, F770, F990)
3-Head Dual Cassette
- * F.L. counter: Directly driven by this CPU

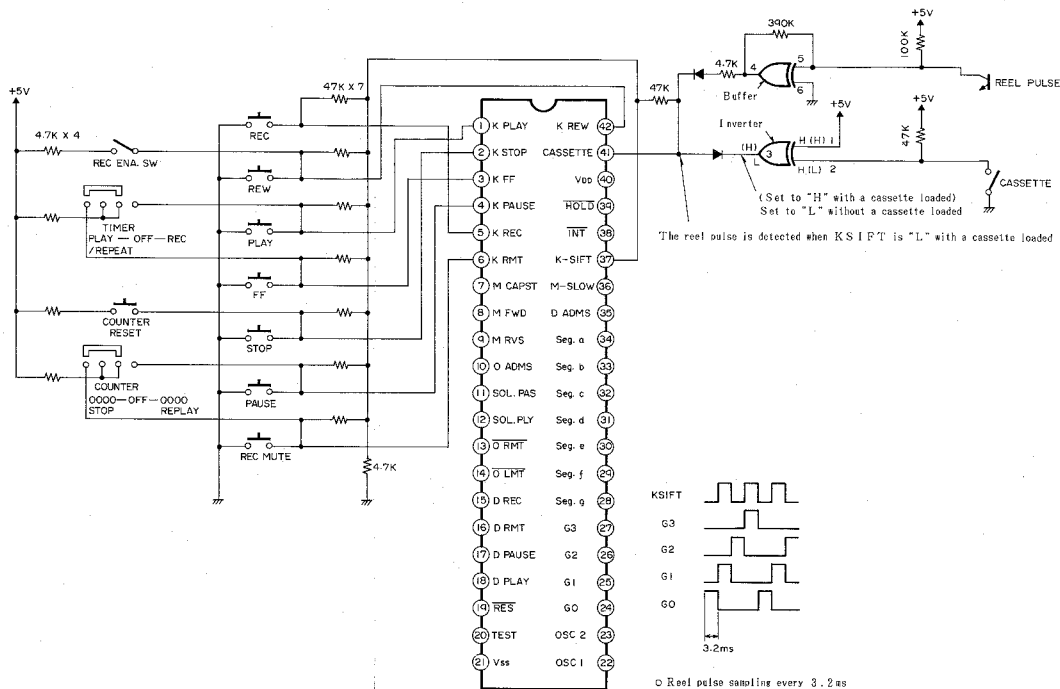
- * CONT: Cassette "0000"
- TIM: Timer
- PLAY: Play
- CZ: Counter Zero ("0000")
- CST: Cassette

Pin No.	Symbol	Description	
		When K-SIFT is set to "H"	When K-SIFT is set to "L"
42	K-REW/ K-REC EN.	REW key input (Active Low)	REC EN key input (Active High) [REC enabled at "H"]
1	K-PLAY/ K-TIM-REC	PLAY key input (Active Low)	TIMER REC input (Active High)
2	K-STOP/ K-CNT-RES	STOP key input (Active Low)	Counter Reset input (Active High)
3	K-FF/ K-TIM-PLY	FF key input (Active Low)	TIMER PLAY/Repeat input (Active High)
4	K-PAUSE/ K-CZ-PLY	PAUSE key input (Active Low)	Counter "0000" replay input (Active High)
5	K-REC/K-CST	REC key input (Active Low)	Cassette switch input (Active High) [Set to "H" level with cassette]
6	K-RMT/ K-CZ-STP	REC MUTE key input (Active Low)	Counter "0000" stop input (Active High)
41	I-REEL	Take-up reel rotation pulse input. Auto stop, F.L. counter and slack tape removal control.	
7	M-CAPST	Cassette motor control input. Motor turns at "H" level.	
8	M-FWD	Sub-motor forward rotation output. Set to "H" in PLAY/REC, FF and CUE modes.	
9	M-RVS	Sub-motor reverse rotation output. Set to "H" in REW/REV modes.	
10	O-ADMS	ADMS output. Set to "H" for 2 sec after power is turned on. (When cassette is loaded, set to "H" after slack tape removal.)	
11	S-PAUSE	Pause plunger output. Set to "H" in PAUSE, PLAY PAUSE, R/P PAUSE, FF, REW, CUE and REV modes.	
12	S-PLAY	Play plunger output. Set to "H" in PLAY, PLAY PAUSE, R/P PAUSE, CUE and REV modes.	
13	O-RMT	REC MUTE output. Set to "H" when the mechanism is stabilized in the REC/PLAY modes.	
14	O-LMT	PLAY MUTE output. Set to "H" when the mechanism is stabilized in PLAY, REC/PLAY, Cue and REV modes.	
15	D-REC	REC LED output. Used in O-REC also. Set to "H" in REC, REC/PLAY, REC/PLAY-PAUSE, REC/PAUSE, REC/PLAY/REC MUTE modes.	
16	D-RMT	REC MUTE LED output. Set to "H" in REC/PLAY/RMT modes. Set to "H" every 1 sec when the RMT key is pressed continuously for 4 sec or more.	
17	D-PAUSE	Pause LED output. Set to "H" in PAUSE, R/P PAUSE, PLAY/PAUSE modes.	
18	D-PLAY	Play LED output. Set to "H" in PLAY, REC/PLAY, PLAY/PAUSE, R/P PAUSE modes.	
35	D-ADMS	ADMS LED output. Set to "H" during slack tape removal and ADMS modes after power is turned on.	

Pin No.	Symbol	Description
24	G ₀	FL counter xrid 0 Digit scan output 1 place digit
25	G ₁	FL counter xrid 1 Digit scan output 10 place digit
26	G ₂	FL counter xrid 2 Digit scan output 100 place digit
27	G ₃	FL counter xrid 3 Digit scan output 1,000 place digit
28	SEG. s	FL segment output s
29	SEG. f	FL segment output f
30	SEG. e	FL segment output e
31	SEG. d	FL segment output d
32	SEG. c	FL segment output c
33	SEG. b	FL segment output b
34	SEG. a	FL segment output a
37	K-SIFT	Selects key input according to the "H" or "L" state.
36	M-SLOW	Reel motor voltage control output. Set to "H" in PLAY and REC/PB modes.
38	HOLD	Connected to +5V
39	INT	
40	V _{cc}	
19	RESET	Microprocessor reset input. Gradually changes to +5V from 0V within 3 sec after power is turned on.
20	TEST	Connected to GND
21	V _{ss}	
22	OSC1	
23	OSC2	Microprocessor clock input (400kHz)



Description		
-id 0	Digit scan output	1 place digit
-id 1	Digit scan output	10 place digit
-id 2	Digit scan output	100 place digit
-id 3	Digit scan output	1.000 place digit
itout g		
itout f		
itout e		
itout d		
itout c		
itout b		
itout a		
out according to the "H" or "L" state.		
stage control output. Set to "H" in PLAY and REC/PB modes.		
+ 5V		
reset input. Gradually changes to + 5V from 0V within 3 sec turned on.		
GND		
clock input (400kHz)		

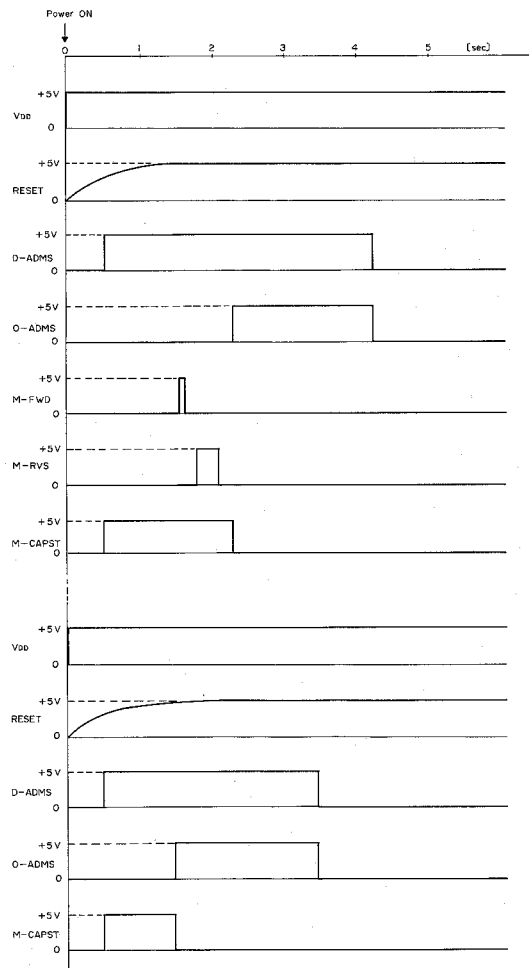


TIMING CHART

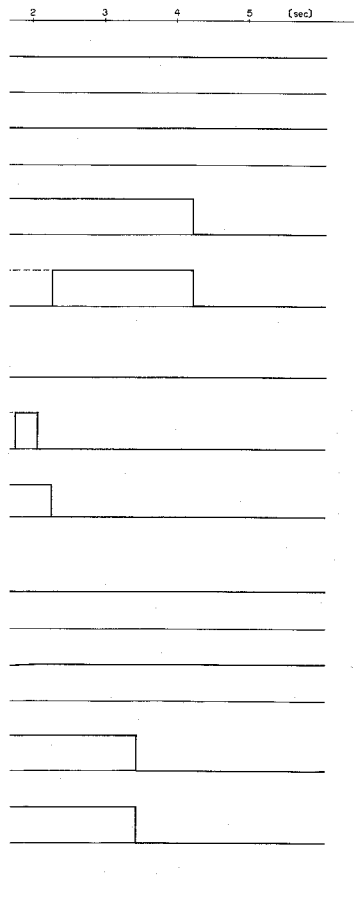
Operation after power is turned on

[When cassette is loaded]

[When cassette is not loaded]



Power is turned on



DISASSEMBLY INSTRUCTIONS

1. Removing Steel Cabinet

- 1) Remove the 6 screws.

2. Removing Mechanism

- 1) Remove the 4 screws and open the cassette lid.
- 2) Lift up the mechanism in the direction of the arrow.
(See Figure-1)

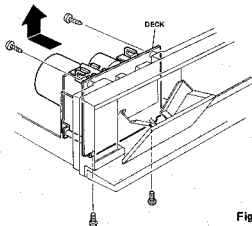


Fig. 1

3. Removing Front Cabinet

- 1) Removing the 8 screws.
- 2) Detach the front cabinet in the direction of the arrow.
(See Figure-2)

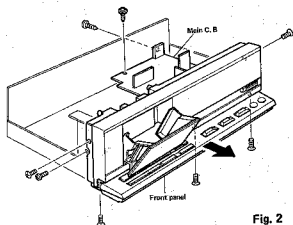


Fig. 2

4. Removing Circuit Boards

- 1) Remove the 3 screws and detach the bottom cabinet.
(See Figure-3)

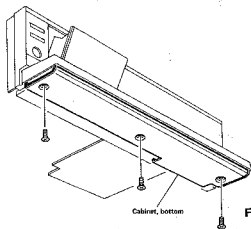


Fig. 3

- 2) Remove the 2 screws and 3 knobs. (See Figure-4)

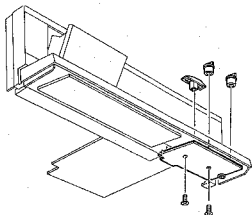


Fig. 4

- 3) Unfix the Front P.C.B. by loosening 6 plastic holders. (See Figure-5)

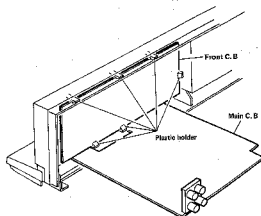


Fig. 5

5. Removing Reel Motor

- 1) Remove the 2 screws pushing the lever for brake release in the direction of the arrow. (See Figure-6)

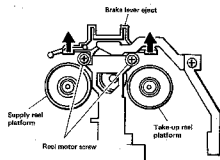


Fig. 6

EXPLODED VIEW-1

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-258-105-11	U _T +4-6
B	87-348-085-01	U _T +3-8
C	87-543-685-01	U _T +3-10
D	87-357-074-21	V _T +2.5-8
E	87-353-085-21	V _T +3-8
F	87-367-085-21	Q _T +3-8
G	87-081-511-01	V _T +3-6
H	87-067-064-01	V _T +3-8 (RED)
I	87-881-531-01	Q _T +3-6
J	87-067-122-01	V _F T+3-8
K	87-517-964-21	V _F T+3-6
L	87-543-686-21	V _F T+3-10

A

B

C

D

E

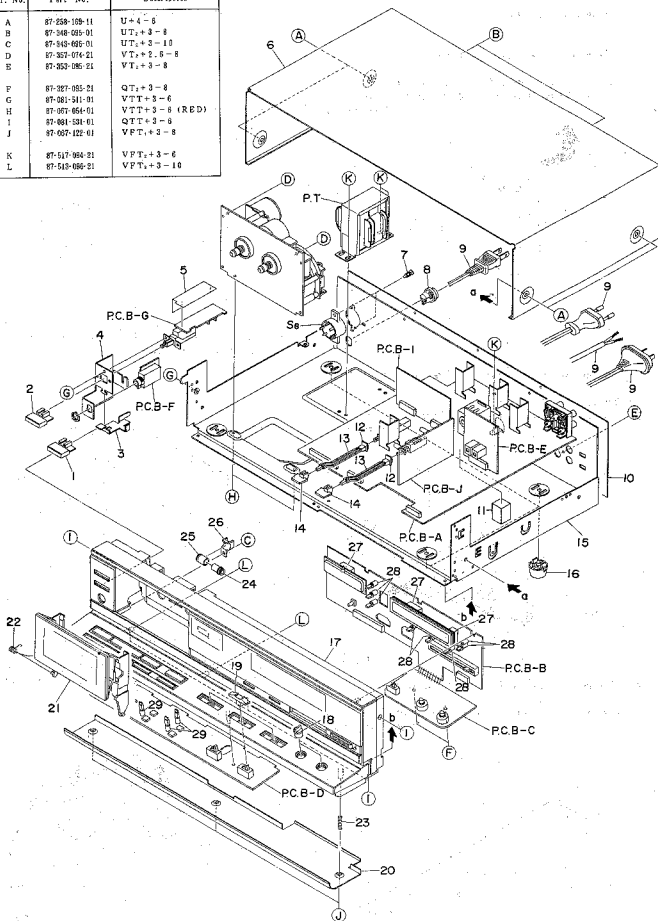
F

G

H

I

J

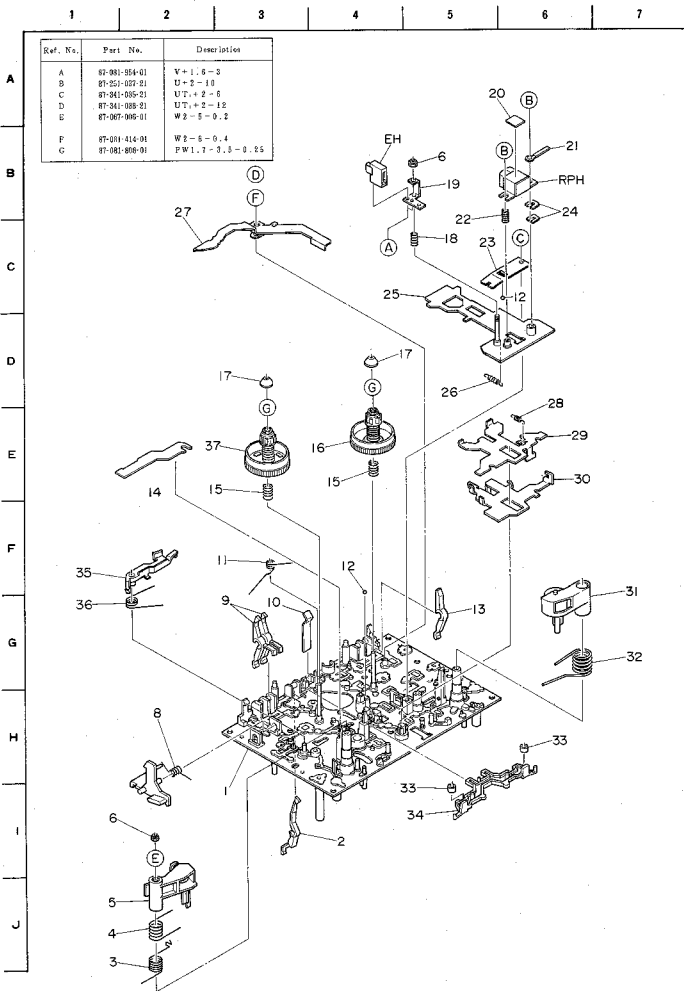


MECHANICAL PARTS LIST

- * mark in this part list shows exclusive part.
- * mark means less required items availabilities may be limited.
- No availability part is marked with — in Part No. list.

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1-1	★82-134-022	KNOB, POWER SL	AD-F350	1
	1-2	★82-188-012	KNOB, POWER	AD-F990	1
	1-3	—	LEVER, EJECT		1
	1-4	—	HOLDER, POWER		1
	1-5	—	SHIELD, POWER		1
	1-6	★82-199-012	STEEL CABINET	AD-R550	1
	1-7	★87-085-090	NYLON RIVET (H only)		2
	1-8	★87-085-184	CORD BUSHING (H, S40U only)		1
		★87-085-185	CORD BUSHING (E, K, G, Z only)		1
	1-9	★87-034-958	AC POWER CORD (H only)		1
		★87-034-951	AC POWER CORD (S40U only)		1
		★87-034-877	AC POWER CORD (E, Z only)		1
		★87-034-975	AC POWER CORD (K only)		1
		★87-034-892	AC POWER CORD (G only)		1
	1-10	★82-100-023	JACK PLATE (H only)	※	1
		★82-100-024	JACK PLATE (S40U only)	※	1
		★82-100-025	JACK PLATE (E only)	※	1
		★82-100-026	JACK PLATE (K only)	※	1
		★82-100-029	JACK PLATE (G only)	※	1
		★82-100-027	JACK PLATE (Z only)	※	1
	1-11	—	G CUSHION, CIRCUIT BOARD		1
	1-12	★82-385-383	STOPPER, LOD		2
	1-13	★82-185-214	LOD, DOLBY		2
	1-14	★82-100-016	PUSH-BUTTON TS	※	2
	1-15	—	AMP. CHASSIS (H only)		1
		—	AMP. CHASSIS (EXCEPT H)		1
	1-16	★87-055-055	FOOT		3
	1-17	★82-100-030	FRONT CABINET B Ass'y	※	1
	1-18	82-100-015	KNOB, BIAS	※	2
	1-19	82-100-014	SLIDE KNOB, TIMER	※	3
	1-20	—	BOTTOM CABINET	※	1
	1-21	82-100-019	CASSETTE BOX Ass'y (EXCEPT S40U)	※	1
		82-100-040	CASSETTE BOX-U Ass'y (S40U only)	※	1
	1-22	★82-100-209	T-SPRING, EJECT	※	1
	1-23	★82-100-208	C-SPRING, EARTH B	※	3
	1-24	★82-534-264	GEAR, OIL-DAMP		1
	1-25	★82-175-207	SHAFT BEARING, OIL-DAMP		1
	1-26	★82-683-212	HOLDER, OIL-DAMP		1
	1-27	—	G CUSHION COUNTER		3
	1-28	—	COLLAR, LED B		8
	1-29	—	COLLAR, LED BF		4

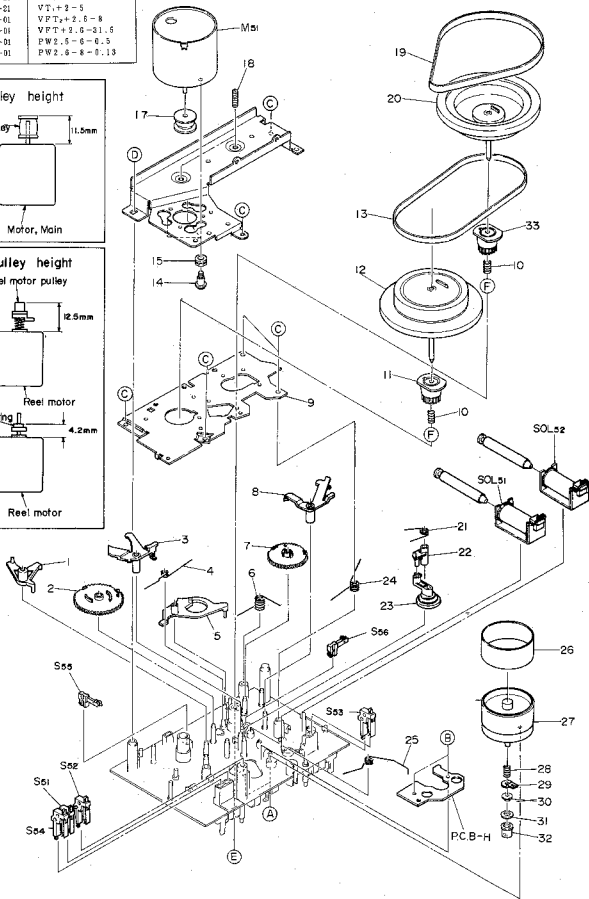
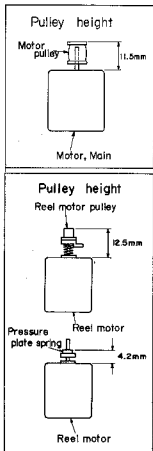
EXPLODED VIEW-2



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	2-1	★81-507-225	OUTSERT CHASSIS Ass'y		1
	2-2	★81-505-242	LEVER, METAL		1
	2-3	★81-507-228	C-SPRING, PINCH LEVER S		1
	2-4	★81-507-217	T-SPRING, PINCH LEVER S		1
	2-5	81-507-207	PINCH LEVER S Ass'y		1
	2-6	★87-081-963	NYLON NUT M2-3.5		2
	2-7	★81-505-239	EJECT LEVER		1
	2-8	★81-505-273	T-SPRING, LID LOCK		1
	2-9	★81-505-241	REC BLOCKING LEVER		2
	2-10	★81-505-260	P-SPRING, PRESSURE CASSETTE		1
	2-11	★81-505-268	T-SPRING, SLIDE BRAKE		1
	2-12	★87-073-005	STEEL BALL 24		2
	2-13	★81-505-240	LEVER, CASSETTE SENSOR		1
	2-14	★81-505-238	BLOCKING PLATE, EJECT		1
	2-15	★81-507-219	C-SPRING, REEL PLATFORM		2
	2-16	81-507-256	TAKE-UP REEL PLATFORM		1
	2-17	★82-303-388	CAP. TAKE-UP REEL PLATFORM		2
	2-18	★81-507-251	C-SPRING, EH B		1
	2-19	★81-507-250	HOLDER, EH C		1
	2-20	—	LABEL, HEAD		1
	2-21	—	WIRE BINDER		1
	2-22	★82-307-212	C-SPRING, EH		1
	2-23	★81-507-224	P-SPRING, ACTUATING CHASSIS		1
	2-24	★81-507-227	SPACER		2
	2-25	★81-507-252	ACTUATING CHASSIS Ass'y B		1
	2-26	★81-505-265	E-SPRING, ACTUATING CHASSIS		1
	2-27	—	LEVER, BRAKE EJECT		1
	2-28	★81-507-266	E-SPRING, PAUSE PLATE		1
	2-29	★81-505-207	PLATE, PAUSE		1
	2-30	★81-507-220	PLATE, PINCH LEVER		1
	2-31	81-505-210	PINCH LEVER F Ass'y		1
	2-32	★81-505-267	T-SPRING, PINCH F		1
	2-33	★81-507-229	G BRAKE		2
	2-34	★81-505-236	LEVER, SLIDE BLAKE		1
	2-35	★81-507-222	LEVER, BACK TENSION		1
	2-36	★81-507-223	T-SPRING, B. T		1
	2-37	81-505-275	SUPPLY REEL PLATFORM		1

EXPLODED VIEW-3

Ref. No.	Part No.	Description
A	87-261-075-21	V+2.0-10
B	87-851-034-21	VT+2-5
C	87-512-074-01	VFT ₂ +2.6-8
D	81-505-541-01	VFT+2.6-31.5
E	82-416-553-01	PW2.5-6-0.5
F	87-067-052-01	PW2.5-8-0.13



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	3-1	★81-505-230	LEVER, PLAY		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	LEVER B, PAUSE		1
	3-6	★81-505-288	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	—	CHASSIS B, MECHANISM		1
	3-10	★81-505-261	C-SPRING, FLYWHEEL F		2
	3-11	★81-505-225	GEAR, FLYWHEEL		1
	3-12	81-507-205	FLYWHEEL S Ass'y FD		1
	3-13	81-507-247	RUBBER BELT B		1
	3-14	★87-081-488	MOTOR SCREW, M2.6		3
	3-15	—	RUBBER CUSHION		3
	3-16	—	HOLDER, MOTOR		1
	3-17	★81-505-245	MOTOR PULLEY 2-10-6.8		1
	3-18	★82-565-373	SCREW, THRUST		2
	3-19	81-507-216	RUBBER BELT A		1
	3-20	81-507-242	FLYWHEEL T Ass'y FD		1
	3-21	★81-505-361	T-SPRING, FR IDLER B		1
	3-22	★81-505-358	LEVER C, FR IDLER		1
	3-23	81-505-356	FR IDLER Ass'y B		1
	3-24	★81-505-271	T-SPRING, TRIGGER LEVER		1
	3-25	★81-505-269	T-SPRING, PINCH PLATE		1
26~32		09-047-198	REEL MOTOR Ass'y		1
	3-26	—	SHIELD PLATE		1
	3-27	—	MOTOR, REEL		1
	3-28	—	C-SPRING, FR IDLER C		1
	3-29	—	LEVER C, FR IDLER		1
	3-30	—	PRESSURE PLATE SPRING		1
	3-31	—	FELT 4.5-7.2-1.0		1
	3-32	—	PULLEY, REEL MOTOR		1
	3-33	★81-505-354	GEAR, FLYWHEEL		1

■ ACCESSORIES/PACKAGE LIST

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty	
	1	★82-100-904	INSTRUCTION BOOKLET	※	1	
	2	★87-032-845	SIEMENS PLUG (HB only)		1	
	3	★87-034-978	CONNECTION CORD CW-254 BSK		2	

AIWA Co., Ltd. Tokyo Japan