

AIWA®

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SERVICE MANUAL

**AUTO SORTING STEREO
DOUBLE CASSETTE
DECK**

MODEL NO.**FX-A120****TYPE. HB, UB, EB, KB**

SPECIFICATIONS

Type	Stereo cassette tape deck		Recording system	AC bias (frequency 100 kHz)
Track format	4 tracks 2 channels		Erase system	AC erase
Power supply			Motors	Capstan: DC servo motor × 2 Fastforward/rewind: DC motor × 2 Auto sorting: DC motor × 2
FX-A120K	AC 240 V, 50/60 Hz		Head	Playback head × 1 (Deck I) Recording/playback head × 1 (Deck II)
FX-A120E	AC 220 V, 50/60 Hz		Inputs	Erase head × 1 (Deck II) LINE IN maximum input sensitivity: 50 mV (over 50 kΩ)
FX-A120H	AC 120 V/220 V/240 V switchable, 50/60 Hz		Outputs	LINE OUT standard output level: 280 mV (0 VU); suitable load impedance: over 50 kΩ
FX-A120U	AC 120 V, 60 Hz		Dimensions	330(W) × 106.5(H) × 330(D) mm
Power consumption			Weight	7 kg
	FX-A120E, K	26 W	Accessories	Sorting cartridge (2) Head cleaning swab (1)
	FX-A120H, U	22 W		
Frequency response				
	METAL tape:	20–16,000 Hz		
	CrO ₂ position tape:	20–15,000 Hz		
	LH tape:	20–14,000 Hz		
Signal-to-noise ratio	73 dB (METAL tape DOLBY C NR ON)			
Wow and flutter	According to DIN 45 500 0.10% 0.038% (WRMS)			
Tape speed	4.8 cm/sec. (1-7/8 ips) 9.5 cm/sec. (high speed dubbing only)			

● Design and specifications are subject to change without notice.

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 $1M\Omega$.
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.

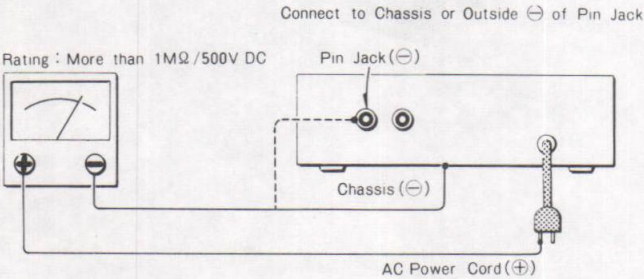
2) Lubricants been stained the surfaces of transmitting portion of the belts, idlers, capstan and pinch roller shall be removed, because slippery and faulty tape travel shall be caused.

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.

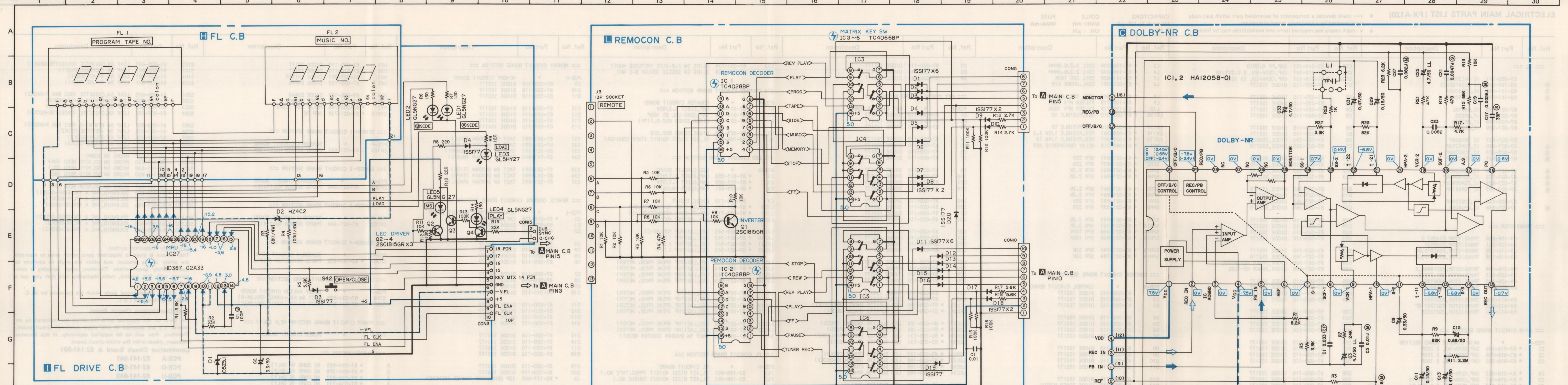
5) Regular spare-parts shall always be used for repair, because using irregular parts and tampering with the products shall cause deterioration, malfunction and damage.

Measuring Point



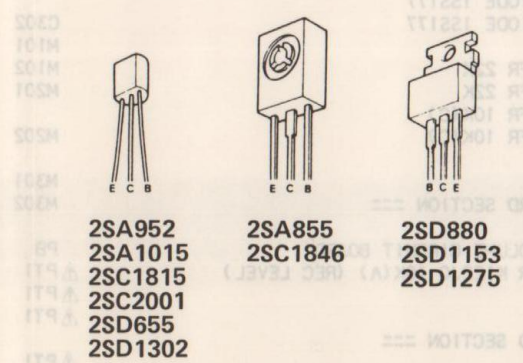
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Ref. No	Part No	Description	Ref. No	Part No	Description	Ref. No	Part No	Description	Ref. No	Part No	Description	Ref. No	Part No	Description	Ref. No	Part No	Description	Ref. No	Part No	Description	
=== IC ===			C76	* 87-014-131	CAP, PP 0.0018	L3	* 82-196-604	COIL 2.2/6.8MMH	D2	87-020-110	DIODE 1SS177	S22	87-031-724	SLIDE SW 2-2-3SSS (REVERSE MODE)	=== MEMORY CIRCUIT BOARD SECTION ===	D55	87-020-110	DIODE 1S177	S102	81-505-602	LEAF SW, CASSETTE (CASSETTE-DECK1)
	87-020-241	IC HA12058NT	C94	* 87-018-047	CAP, CERA-SOL S 0.01Y/16	L4	* 82-196-604	COIL 2.2/6.8MMH	D3	87-020-110	DIODE 1SS177	S23	87-031-928	SLIDE SW SSS313 (DOLBY B-C NR)	D56	87-020-110	DIODE 1S177	S103	81-505-601	LEAF SW (REVERSE-DECK1)	
④	82-197-642	IC HD38702A33	C102	* 87-018-131	CAP, CERA-SOL SS 1000P	L5	* 82-141-620	COIL OSC 100K	D4	87-020-110	DIODE 1SS177				D65	87-027-097	DIODE 1S1555	S104	81-505-601	LEAF SW (PLAY-DECK1)	
④	82-141-649	IC, LC6502B1	D1	87-020-110	DIODE 1SS177	L6	* 87-003-051	COIL, CHOKE 470				=== COUNTER CIRCUIT BOARD SECTION ===	PCB-K	*	MEMORY CIRCUIT BOARD	D67	87-020-123	DIODE DS446	S105	81-505-601	LEAF SW (PAUSE-DECK1)
	87-027-895	IC, M5218L	D2	87-020-110	DIODE 1SS177	L8	* 82-196-649	COIL OSC LC6502C	=== KEY CIRCUIT BOARD SECTION ===	PCB-E	*	KEY CIRCUIT BOARD	D9	87-020-110	DIODE 1SS177	D68	87-020-123	DIODE DS446	S201	81-505-602	LEAF SW, CASSETTE (REC ENA F-DECK2)
	87-027-925	IC, M5220	D3	87-020-110	DIODE 1SS177	L9	82-198-715	FILTER MPX 100K	D1	87-020-110	DIODE 1SS177	C1	* 87-015-697	CAP, ELECT 3.3/50V	D69	87-020-123	DIODE DS446	S202	81-505-607	LEAF SW BSW187-2 (CO-DECK2)	
	87-020-346	IC, M5230X	D4	87-020-110	DIODE 1SS177	L10	82-198-715	FILTER MPX 100K	D2	87-020-110	DIODE 1SS177	C2	* 87-018-119	CAP, CERA-SOL SS 100P	RY2	* 83-203-749	RELAY 12V IC2PJ	S203	81-505-607	LEAF SW BSW187-2 (MT-DECK2)	
	87-027-909	IC, M54523P	D5	87-020-110	DIODE 1SS177	△R156	* 87-029-010	RES, FUSIBLE 10	D3	87-020-110	DIODE 1SS177	D1	87-027-225	DIODE, ZENER 05Z-5.1 (TP)	SFR15	* 87-021-738	SFR 1K	S204	81-505-602	LEAF SW, CASSETTE (CASSETTE-DECK2)	
	87-027-837	IC TA7666P	D6	87-020-110	DIODE 1SS177	△R157	* 87-029-010	RES, FUSIBLE 10	D4	87-020-110	DIODE 1SS177	D2	87-027-405	DIODE, ZENER RD2.2EB				S205	81-505-607	LEAF SW BSW187-2 (REC ENA R-DECK2)	
	87-027-688	IC, TC4025BP	D7	87-020-110	DIODE 1SS177	△R174	* 87-029-361	RES, FUSIBLE 1/2W 3.3	D5	87-020-110	DIODE 1SS177	FL1	82-198-601	FL, 4ST 01ZS1 4DIGIT (TAPE COUNTER)				S206	81-505-601	LEAF SW (REVERSE-DECK2)	
	87-027-657	IC, TC4028BP	D8	87-027-393	DIODE, ZENER HZ4C2	△R175	* 87-029-017	RES, FUSIBLE 1/4W 10	D6	87-020-110	DIODE 1SS177				S31	87-031-893	TACT SW QVD04M (CALL)	S207	81-505-601	LEAF SW (PLAY-DECK2)	
	87-020-937	IC, TC4030BP	D9	87-027-365	DIODE, S5277B	RY1	* 87-045-218	RELAY FBR244D012 A59	D7	87-020-110	DIODE 1SS177				S32	87-031-893	TACT SW QVD04M (CLEAR)	S208	81-505-601	LEAF SW (PAUSE-DECK2)	
	87-027-656	IC, TC4066BP	D10	87-027-365	DIODE, S5277B	SFR1	* 87-021-857	SFR 220	D8	87-020-110	DIODE 1SS177	=== LED CIRCUIT BOARD SECTION ===	PCB-G	*	LED CIRCUIT BOARD	S33	87-031-893	TACT SW QVD04M (MEMORY)			
	87-027-723	IC, TC-4049BP	D11	87-027-365	DIODE, S5277B	SFR2	* 87-021-857	SFR 220	D16	87-020-110	DIODE 1SS177	C3	* 87-015-688	CAP, ELECT 4.7/35V	S36	87-031-893	TACT SW QVD04M (TAPE)				
	87-027-827	IC, TC4069UBP	D12	87-027-365	DIODE, S5277B	SFR3	* 87-021-861	SFR 2.2K	D17	87-020-110	DIODE 1SS177	C4	* 87-015-688	CAP, ELECT 4.7/35V	S37	87-031-893	TACT SW QVD04M (PROG.)				
	87-027-565	IC TC4081BP	D13	87-027-365	DIODE, S5277B	SFR4	* 87-021-861	SFR 2.2K	D18	87-020-110	DIODE 1SS177	C5	* 87-015-681	CAP, ELECT 10/16							
	87-020-438	IC, TD62504P	D14	87-027-365	DIODE, S5277B	SFR5	* 87-021-861	SFR 2.2K	D19	87-020-110	DIODE 1SS177	D3	87-020-110	DIODE 1SS177	=== REMOTE CONTROL CIRCUIT BOARD SECTION ===	PCB-L	*	REMOTE CONTROL CIRCUIT BOARD	S305	82-141-631	MICRO SW SC101A REED (B1)
④	87-027-538	IC, UPD4069	D15	87-027-365	DIODE, S5277B	SFR6	* 87-021-861	SFR 2.2K	D20	87-020-110	DIODE 1SS177	LED6	* 87-027-773	LED, GL-9NG4 (DIRECTION, D)	PCB-R	*	SENSOR-3 CIRCUIT BOARD	SOL101	* 81-505-603	SOLENOID, 9ME A (REVERSE-DECK1)	
			D16	87-027-365	DIODE, S5277B	SFR7	* 87-021-857	SFR 220	D21	87-020-110	DIODE 1SS177	LED7	* 87-027-773	LED, GL-9NG4 (DIRECTION, L)	OP202	87-027-644	PHOTO SENSOR NJL5141EA	SOL102	* 81-505-603	SOLENOID, 9ME A (PLAY-DECK1)	
			D17	87-027-365	DIODE, S5277B	SFR8	* 87-021-857	SFR 220	D22	87-020-110	DIODE 1SS177	LED8	* 87-027-542	LED, LN217RP (DOLBY-B)				SOL103	* 81-505-603	SOLENOID, 9ME A (PAUSE-DECK1)	
			D18	87-020-110	DIODE 1SS177	SFR9	* 87-021-861	SFR 2.2K	D23	87-020-110	DIODE 1SS177	LED9	* 87-027-543	LED, LN317GP (DOLBY-C)							
=== TRANSISTOR ===			D19	87-020-110	DIODE 1SS177	SFR10	* 87-021-861	SFR 2.2K	D24	87-020-110	DIODE 1SS177	LED10	* 87-027-542	LED, LN217RP (C)	D7	87-020-110	DIODE 1SS177	PCB-S	*	SENSOR-4 CIRCUIT BOARD	
	89-108-854	TRANSISTOR 2SA885 R	D20	87-020-110	DIODE 1SS177	SFR11	* 87-021-868	SFR 100K	D25	87-020-110	DIODE 1SS177	LED11	* 87-027-542	LED, LN217RP (C)	D8	87-020-110	DIODE 1SS177	CP301	* 82-141-622	PHOTO REFLECTOR SP1216	
	89-109-521	TRANSISTOR 2SA952K	D21	87-020-110	DIODE 1SS177	SFR12	* 87-021-868	SFR 100K	D26	87-020-110	DIODE 1SS177	LED12	* 87-027-542	LED, LN217RP (C)	D9	87-020-110	DIODE 1SS177				
	89-110-155	TRANSISTOR, 2SA1015, GR													D10	87-020-110	DIODE 1SS177	=== DOLBY SWITCH CIRCUIT BOARD SECTION ===			
	89-318-155	TRANSISTOR, 2SC1815, GR	D22	87-020-110	DIODE 1SS177	SFR13	* 87-021-744	SFR 33K	D27	87-020-110	DIODE 1SS177	LED13	* 87-027-543	LED, LN317GP (PEAK PROG. METER)	D11	87-020-110	DIODE 1SS177	PCB-T	*	DOLBY SWITCH CIRCUIT BOARD	
			D23	87-027-365	DIODE S5277B	SFR14	* 87-021-744	SFR 33K	D28	87-020-110	DIODE 1SS177	LED14	* 87-027-543	LED, LN317GP (PEAK PROG. METER)	D12	87-020-110	DIODE 1SS177	S306	87-031-895	TACT SW KHL-10902 (DOLBY-B)	
	89-318-464	TRANSISTOR, 2SC1846R, S	D24	87-027-509	DIODE, ZENER HZ12B3T2L				D29	87-020-110	DIODE 1SS177	LED15	* 87-027-543	LED, LN317GP (PEAK PROG. METER)	D13	87-020-110	DIODE 1SS177				
	89-320-012	TRANSISTOR 2SC 2001K	D25	87-027-606	DIODE, ZENER HZ-7C2L				D30	87-020-110	DIODE 1SS177	LED16	* 87-027-543	LED, LN317GP (PEAK PROG. METER)	D14	87-020-110	DIODE 1SS177	S307	87-031-895	TACT SW KHL-10902 (DOLBY-C)	
	89-406-555	TRANSISTOR, 2SD655E				=== CONTROL CIRCUIT BOARD SECTION ===			D31	87-020-110	DIODE 1SS177	LED17	* 87-027-543	LED, LN317GP (PEAK PROG. METER)				=== POWER CIRCUIT BOARD SECTION (E, K ONLY) ===			
	89-408-804	TRANSISTOR, 2SD6880, Y	D26	87-020-110	DIODE 1SS177	PCB-B	*	CONTROL CIRCUIT BOARD	D32	87-020-110	DIODE 1SS177	LED18	* 87-027-543	LED, LN317GP (PEAK PROG. METER)	D15	87-020-110	DIODE 1SS177	PCB-U	*	POWER CIRCUIT BOARD	
			D27	87-020-110	DIODE 1SS177	D1	87-020-110	DIODE 1SS177	D33	87-020-110	DIODE 1SS177	LED19	* 87-027-542	LED, LN217RP (PEAK PROG. METER)	D16	87-020-110	DIODE 1SS177				
	89-411-530	TRANSISTOR, 2SD1153	D28	87-020-110	DIODE 1SS177	D2	87-020-110	DIODE 1SS177	D34	87-020-110	DIODE 1SS177	LED20	* 87-027-542	LED, LN217RP (PEAK PROG. METER)	D17	87-020-110	DIODE 1SS177				
	89-412-653	TRANSISTOR 2SD1265 QP	D29	87-020-110	DIODE 1SS177	D3	87-020-110	DIODE 1SS177	D35	87-020-110	DIODE 1SS177	LED21	* 87-027-542	LED, LN217RP (PEAK PROG. METER)	D18	87-020-110	DIODE 1SS177				
	89-413-023	TRANSISTOR, 2SD1302S	D30	87-020-110	DIODE 1SS177	D4	87-020-110	DIODE 1SS177	D36	87-020-110	DIODE 1SS177	LED22	* 87-027-542	LED, LN217RP (PEAK PROG. METER)				=== MISCELLANEOUS ===			
=== MAIN CIRCUIT BOARD SECTION ===			D31	87-020-110	DIODE 1SS177	D5	87-020-110	DIODE 1SS177	PCB-H	*	FL CIRCUIT BOARD	LED23	* 87-020-168	LED SLP177B (NEXT TAPE-DECK1)	D19	87-020-110	DIODE 1SS177	△	* 87-034-958	AC CORD (H ONLY)	
PCB-A	*	MAIN CIRCUIT BOARD SECTION	D32	87-020-110	DIODE 1SS177	D6	87-020-110	DIODE 1SS177	FL1	82-198-601	FL, 4ST 01ZS1 4DIGIT (PROG. TAPE NO.)	LED24	* 87-020-168	LED SLP177B (PAUSE-DECK2)	D20	87-020-110	DIODE 1SS177	△	* 87-034-578	AC CORD (U ONLY)	
C1	* 87-018-036	CAP, CERA-SOL S 220P	D33	87-020-110	DIODE 1SS177	D7	87-020-110	DIODE 1SS177	FL2	82-198-601	FL, 4ST 01ZS1 4DIGIT (MUSIC NO.)	LED25	* 87-020-168	LED SLP177B (PLAY-DECK2)	J3	* 82-137-609	13P CONNECTOR SOCKET (REMOTE)	△	* 87-034-877	AC CORD (E ONLY)	
C2	* 87-018-036	CAP, CERA-SOL S 220P	D34	87-020-110	DIODE 1SS177	D8	87-020-110	DIODE 1SS177				LED26	* 87-020-168	LED SLP177B (REC MUTE-DECK2)				△	* 87-034-711	AC CORD (K ONLY)	
C3	* 87-018-032	CAP, CERA-SOL S 100P	D35	87-020-110	DIODE 1SS177	D9	87-020-110	DIODE 1SS177				LED27	* 87-020-168	LED SLP177B (PHONO)							
C4	* 87-018-032	CAP, CERA-SOL S 100P	D36	87-020-110	DIODE 1SS177	D10	87-020-110	DIODE 1SS177				LED28	* 87-020-168	LED SLP177B (TUNER)							
C5	* 87-018-047	CAP, CERA-SOL S 0.01Y/16	D37	87-020-110	DIODE 1SS177	D11	87-020-110	DIODE 1SS177				LED29	* 83-203-731	LED TLUG163 (REV PLAY-DECK2)							
C6	* 87-018-047	CAP, CERA-SOL S 0.01Y/16										LED30	* 83-203-731	LED TLUG163 (PLAY-DECK2)							
C9	* 87-010-135	CAP, ELECT BP 10/25V	D43	87-020-110	DIODE 1SS177										=== FL DRIVE CIRCUIT BOARD SECTION ===						
C10	* 87-010-135	CAP, ELECT BP 10/25V	D44	87-027-399	DIODE, ZENER HZ7A3L				PCB-I	*	FL DRIVE CIRCUIT BOARD				PCB-M	*	GOVERNOR CIRCUIT BOARD				
C11	* 87-010-139	CAP, ELECT BP 47/10V	D45	87-020-110	DIODE 1SS177	D22	87-020-110	DIODE 1SS177	C1	* 87-018-032	CAP, CERA-SOL S 100P	S3	87-031-893	TACT SW QVD04M (REV PLAY-DECK1)	D1	87-020-110	DIODE 1SS177				
C12	* 87-010-139	CAP, ELECT BP 47/10V	D46	87-020-110	DIODE 1SS177	D25	87-020-110	DIODE 1SS177	D2	87-027-225	DIODE, ZENER 05Z-5.1 (TP)	S4	87-031-893	TACT SW QVD04M (FWD SKIP-DECK1)	D2	87-020-110	DIODE 1SS177				
C17	* 87-018-039	CAP, CERA-SOL S 390P	D47	87-020-110	DIODE 1SS177	D26	87-020-110	DIODE 1SS177	D3	87-027-393	DIODE, ZENER HZ4C2	S5	87-031-893	TACT SW QVD04M (STOP-DECK1)	D3	87-020-110	DIODE 1SS177				
C18	* 87-018-039	CAP, CERA-SOL S 390P										S6	87-031-893	TACT SW QVD04M (STOP-DECK1)							
C19	* 87-018-047	CAP, CERA-SOL S 0.01Y/16	D48	87-020-110	DIODE 1SS177										S7	87-031-893	TACT SW QVD04M (PAUSE-DECK1)	C301	* 87-015-457	CAP, ELECT BP 47/16V	
C20	* 87-018-047	CAP, CERA-SOL S 0.01Y/16	D49	87-020-110	DIODE 1SS177										D4	87-020-110	DIODE 1SS177	M101	81-506-605	MOTOR BFB2L71 (DECK1)	
C23	* 87-010-133	CAP, ELECT BP 2.2/50V	D50	87-027-244	DIODE, ZENER 05Z8.2U										D3	87-020-110	DIODE 1SS177	M102	09-011-048	REEL MOTOR (DECK1)	
																		M201	81-506-605	MOTOR BFB2L71 (DECK2)	
C24	* 87-010-133	CAP, ELECT BP 2.2/50V	D57	87-020-110	DIODE 1SS177																
C25	* 87-010-139	CAP, ELECT BP 47/10V	D58	87-020-110	DIODE 1SS177																
C26	* 87-010-139	CAP, ELECT BP 47/10V	D59																		



- NOTES:**
- 1) B (+) power supply 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. But () is with recording. 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 1/8W and a tolerance of $\pm 5\%$.
 - 5) Capacitors with no designation have a dielectric strength of less than 50WV.
 - 6) The only capacitor tolerance indicated are $\pm 5\%$ (J) and $\pm 10\%$ (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
 - Fuse resistor
 - 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.



ADJUSTMENT (FX-A120)

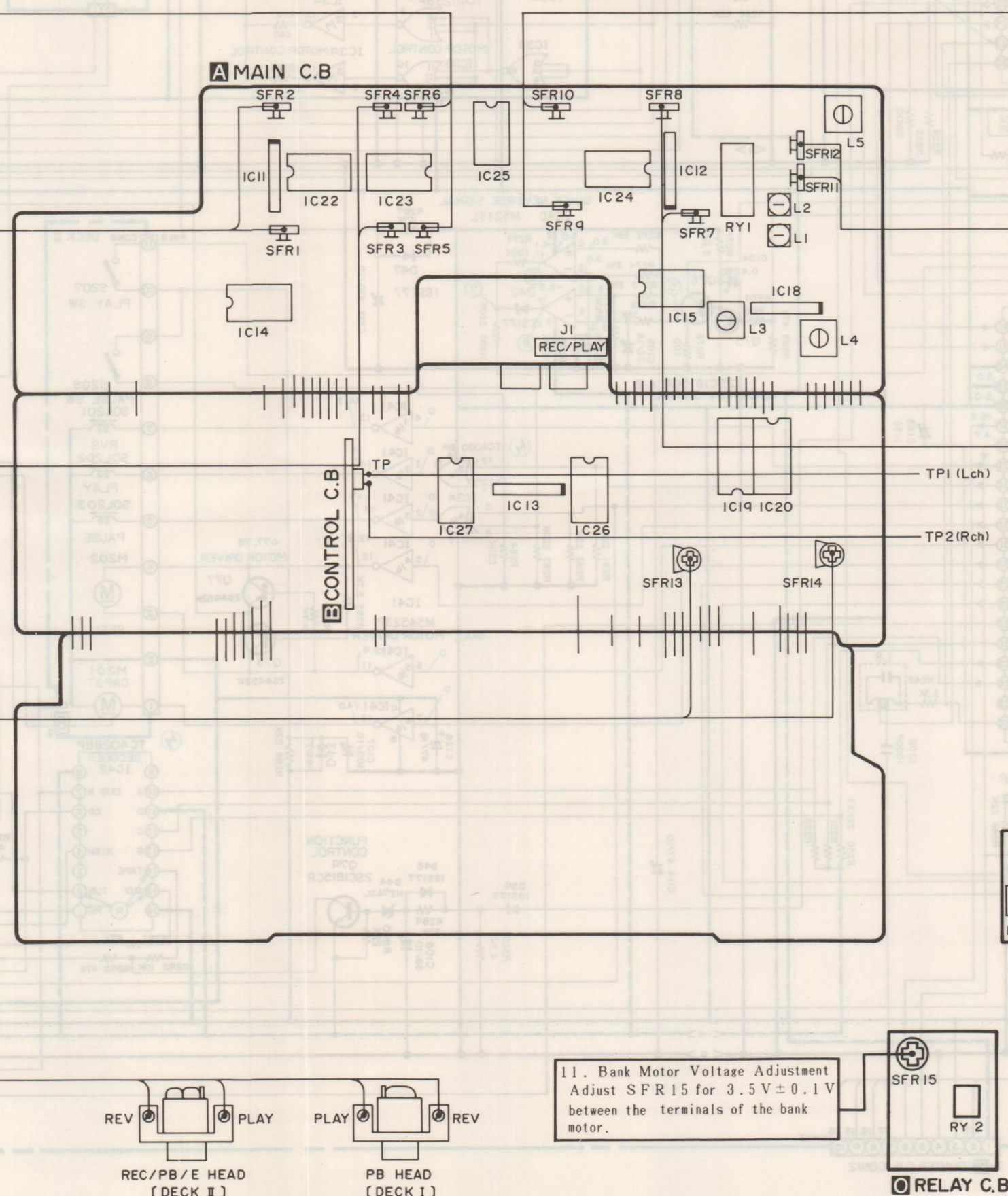
4. Playback Frequency Response Adjustment (Deck I)
 Settings: • Test tape: TTA-317H
 • Test point: TP-1 (Lch), TP-2 (Rch)
 • Adjustment location: SFR5 (Lch)
 SFR6 (Rch)
 Method: Playback the test tape, then adjust so that the output difference between 1kHz and 10kHz is $0 \pm 0.5\text{dB}$.

6. Playback Sensitivity Adjustment (Deck I)
 Settings: • Test tape: TTA-161
 • Test point: TP-1 (Lch), TP-2 (Rch)
 • Adjustment location: SFR1 (Lch)
 SFR2 (Rch)
 Method: Playback the test tape and adjust for $580\text{mV} \pm 20\text{mV}$.

10. High Speed Frequency Response Adjustment
 Settings: • Test tape: TTA-317H (Deck I)
 TTA-119J (Deck II)
 • Test point: TP-1 (Lch), TP-2 (Rch)
 • Adjustment location: SFR3 (Lch)
 SFR4 (Rch)
 Method: After performed the high speed dubbing, playback the Deck II. Adjust for equal output level of 10kHz against 1kHz.

9. Rec/Pb Sensitivity Adjustment (Deck II)
 Settings: • Test tape: TTA-119J
 • Test point: TP-1 (Lch), TP-2 (Rch)
 • Signal input: REC/PLAY jack (Pins 1 & 4)
 • Adjustment location: SFR13 (Lch)
 SFR14 (Rch)
 Method: After set up the REC mode in the Deck II, put a signal of 1kHz into the jack and adjust an external attenuator for the output level of 40mV at the test points. Then, record the signal of 1kHz and playback it. Adjust for the output level of $40\text{mV} \pm 2\text{mV}$.

1. Azimuth Adjustment (Deck I, Deck II)
 Settings: • Test tape: TTA-317H
 • Test point: TP-1
 • Adjustment location: Azimuth adjustment screw
 Method: Adjust for maximum output level in the PLAY mode and the REV PLAY mode.



5. Playback Frequency Response Adjustment (Deck II)
 Settings: • Test tape: TTA-317H
 • Test point: TP-1 (Lch), TP-2 (Rch)
 • Adjustment location: SFR9 (Lch)
 SFR10 (Rch)
 Method: Playback the test tape, then adjust so that the output difference between 1kHz and 10kHz is $0 \pm 0.5\text{dB}$.

8. Rec/Pb Frequency Response Adjustment (Deck II)
 Settings: • Test tape: TTA-119J
 • Test point: TP-1 (Lch), TP-2 (Rch)
 • Signal input: REC/PLAY jack (Pins 1 & 4)
 • Adjustment location: SFR11 (Lch)
 SFR12 (Rch)
 Method: After set up the REC mode, put a signal of 1kHz into the jack and adjust an external attenuator for the output of 40mV at the test points. Then, record signals of 10kHz and 1kHz and compare the recorded output levels between the two signals by playback. Adjust so that the output difference between 1kHz and 10kHz is $-1 \pm 0.5\text{dB}$.

7. Playback Sensitivity Adjustment (Deck II)
 Settings: • Test tape: TTA-161
 • Test point: TP-1 (Lch), TP-2 (Rch)
 • Adjustment location: SFR7 (Lch)
 SFR8 (Rch)
 Method: Playback the test tape and adjust for $580\text{mV} \pm 20\text{mV}$.

2. High Speed Adjustment (Deck I, Deck II)
 Settings: • Test tape: TTA-111H
 • Test point: TP-1 (Lch)
 • Adjustment location: SFR15 (Deck I)
 SFR16 (Deck II)
 Method: Connect the test point TP-3 to the ground. Playback the test tape and adjust for 3kHz in both decks.
 Caution: Make the test point TP-3 free after completed this adjustment.

3. Normal Speed Adjustment (Deck I, Deck II)
 Settings: • Test tape: TTA-111S
 • Test point: TP-1 (Lch)
 • Adjustment location: SFR17 (Deck I)
 SFR18 (Deck II)
 Method: Playback the test tape and adjust for 3kHz in both decks.

Practical Service Figure

Wow and flutter:	Less than 0.045% (DECK I, II)
Pinch roller pressure:	$280 \pm 20\text{g}$ (DECK I, II)
Take up torque:	$40 \pm 10\text{g-cm}$ (DECK I, II)
F.FWD torque:	$150 \pm 30\text{g-cm}$ (DECK I, II)
Rewind torque:	$150 \pm 30\text{g-cm}$ (DECK I, II)
Back tension:	$3 \pm 1\text{g-cm}$ (DECK I, II)
Playback output:	$0.38 \pm 0.03\text{V}$ (DIN)
Bias frequency:	100kHz (DECK II)
Playback noise:	Less than 1.0mV (CrO ₂ , DOLBY B NR ON) Less than 3.0mV (NORMAL, DOLBY NR OFF)
PB/REC Output:	0VU $\pm 1\text{dB}$ (DECK II)
PB/REC Distortion:	METAL: Less than 2.0% (DECK II) CrO ₂ : Less than 2.0% (DECK II)
PB/REC Signal:	More than 43/49dB (DECK II)
noise ratio:	(METAL, CrO ₂ DOLBY B NR OFF/ON)
(400Hz, 0VU)	More than 40/47dB (DECK II)
(Unweighted)	(NORMAL, DOLBY B NR OFF/ON)
Channel separation:	More than 35dB
(1kHz, 0VU)	
Erasing ratio:	More than 60dB (DECK II)
(125Hz)	
Test tape:	• CS42 (METAL) • TTA-119G (CrO ₂) • TTA-119J (NORMAL)



1. EXPLANATION OF IC LC6502B1
1-1. Pin Description

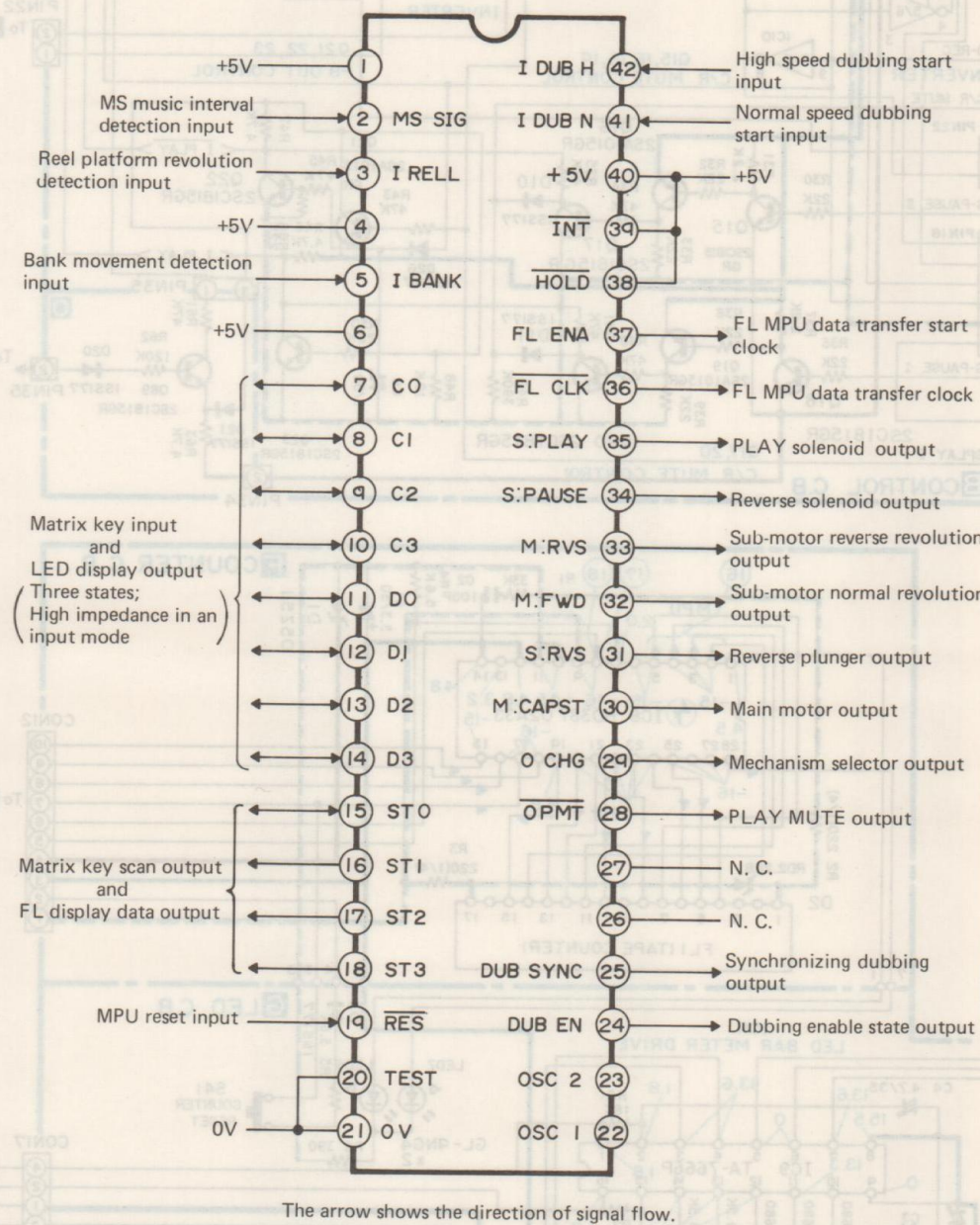


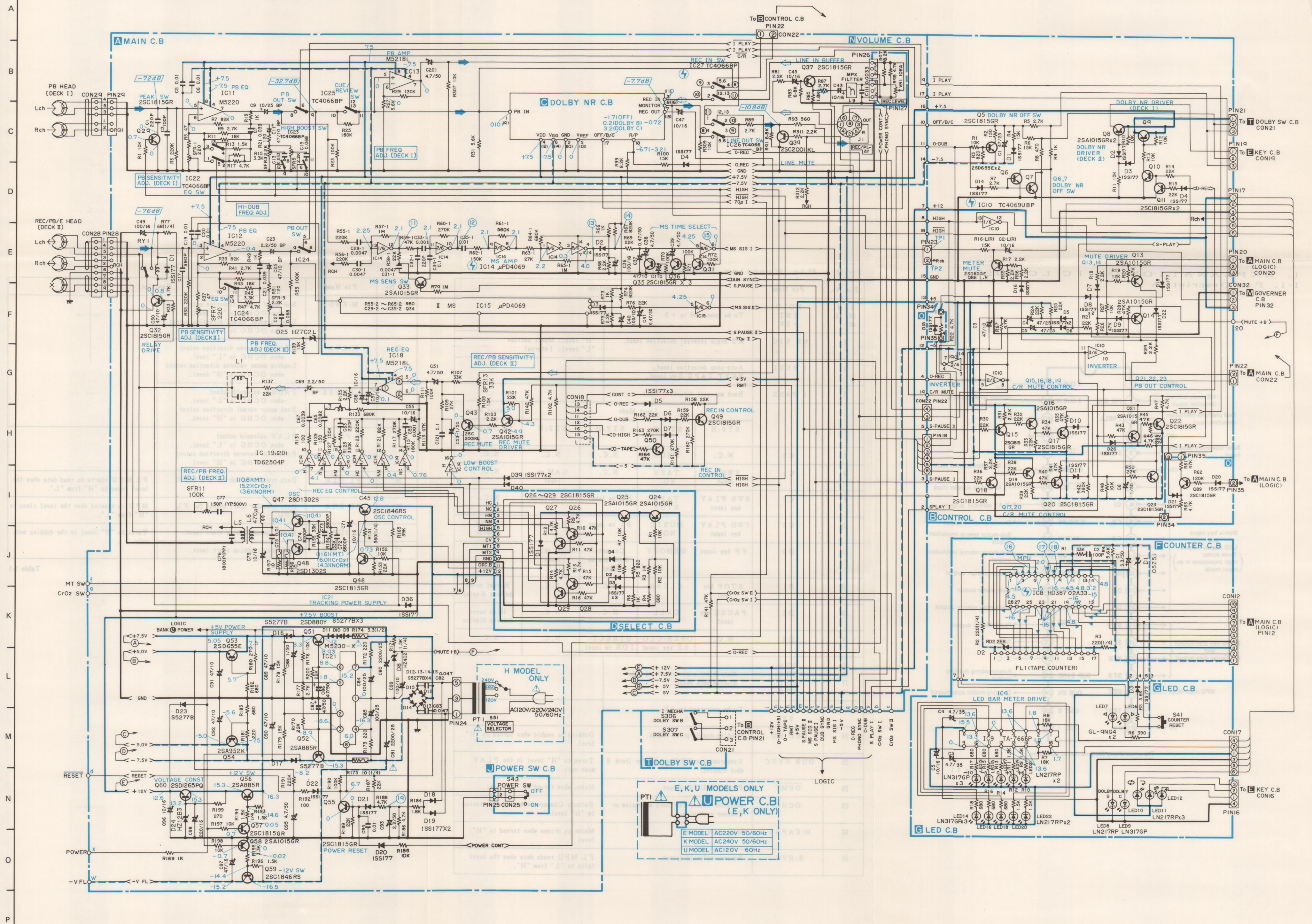
Fig. 1-1

1-2. Pin Function Explanation

Pin No.	Pin Name	Function					
1, 4, 38, 39, 40	HOLD INT +5V	To be connected to +5.					
2	MS SIG	MS music interval detection input.		"H" level: Music section "L" level: Interval			
3	I REEL	Auto-stop detection input. NEXT TAPE Key input.					
5	I BANK	Bank movement detection input.					
		Input Mode			Output Mode		
		ST0:H	ST1:H	ST2:H	ST3:H	LED display output	
7	C0	N.C.	PROG	N.C.	N.C.	N.C.	
8	C1	RWD key input	TAPE NO.	N.C.	CAM sw input	N.C.	
9	C2	RVS PLAY key input	TAPE SIDE	BO sw input	CL sw input	N.C.	
10	C3	FWD PLAY key input	MUSIC NO.	BI sw input	CR sw input	PAUSE display	
11	D0	FF key input	MEMORY	Cassette detection sw input	Blank skip sw input	N.C.	
12	D1	STOP key input	CLEAR	N.C.	N.C.	Normal speed dubbing display	
13	D2	PAUSE key input	CALL	N.C.	N.C.	High speed dubbing display	
14	D3	N.C.	OPEN/CLOSE key input	DIRECT-ION sw input	N.C.	N.C.	
15, 16, 17, 18	ST0, ST1, ST2, ST3	Matrix key scan output and FL display data output.					
20, 21	TEST 0V	To be connected to 0V.					
24	DUB EN	Dubbing enable state output.		Dubbing is enable when turned to "H" level.			
25	DUB SYNC	Synchronizing REC output for Deck II when dubbing.		Turns to "H" level in the PLAY mode only.			
28	OPMT	PLAY MUTE output.		Mutes when turned to "L" level.			
29	OCHG	Selector output for Deck mechanism or Changer mechanism.		Selects Changer mechanism when turned to "H" level.			
30	M:CAPST	Main motor output.		Motor is driven when turned to "H" level.			
31	S:RVS	Reverse solenoid output.		FL MPU reads data when the level falls to "L" from "H".			

Pin No.	Pin Name	Function	
32	M:FWD	Sub-motor normal direction output when OCHG is "L" level. Loading motor normal direction output when OCHG is "H" level.	
33	M:RVS	Sub-motor reverse direction output when OCHG is "L" level. Loading motor reverse direction output when OCHG is "H" level.	
34	S:PAUSE	PAUSE solenoid output when OCHG is "L" level. Bank motor normal direction output when OCHG is "H" level.	
35	S:PLAY	PLAY solenoid output when OCHG is "L" level. Bank motor reverse direction output when OCHG is "H" level.	
36	FL CLK	Data transfer clock for FL MPU.	FL MPU starts to read data when the level rises to "H" from "L".
37	FL ENA	Data transfer start output for FL MPU.	MPU is cleared when the level rises to "H" from "L".
41	I DUB N	Normal speed dubbing start input. Turns to "H" level in the dubbing mode only.	
42	I DUB H	High speed dubbing start input.	

Table 1-1



A MAIN C.B

B CONTROL C.B

DOLBY NR C.B

DOLBY NR C.B

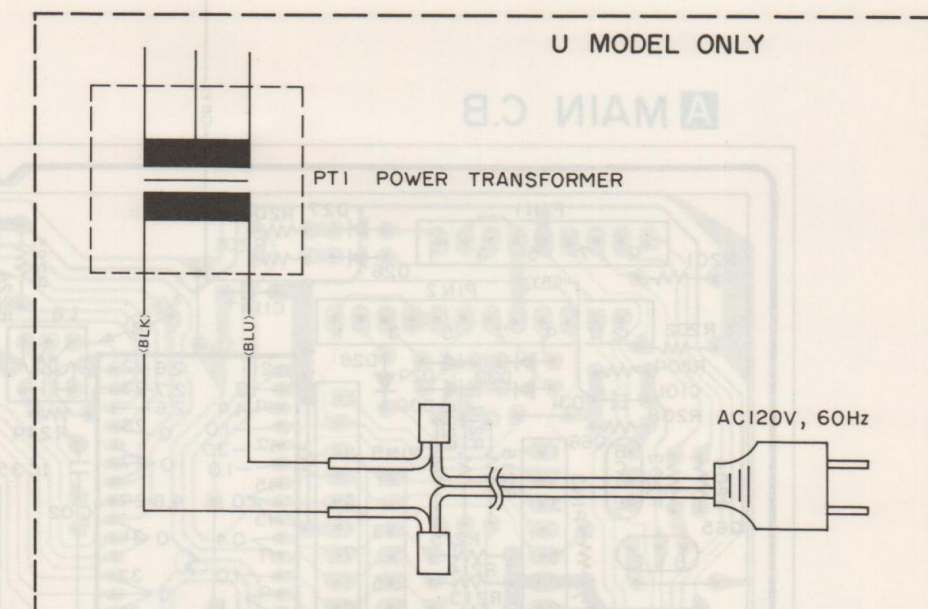
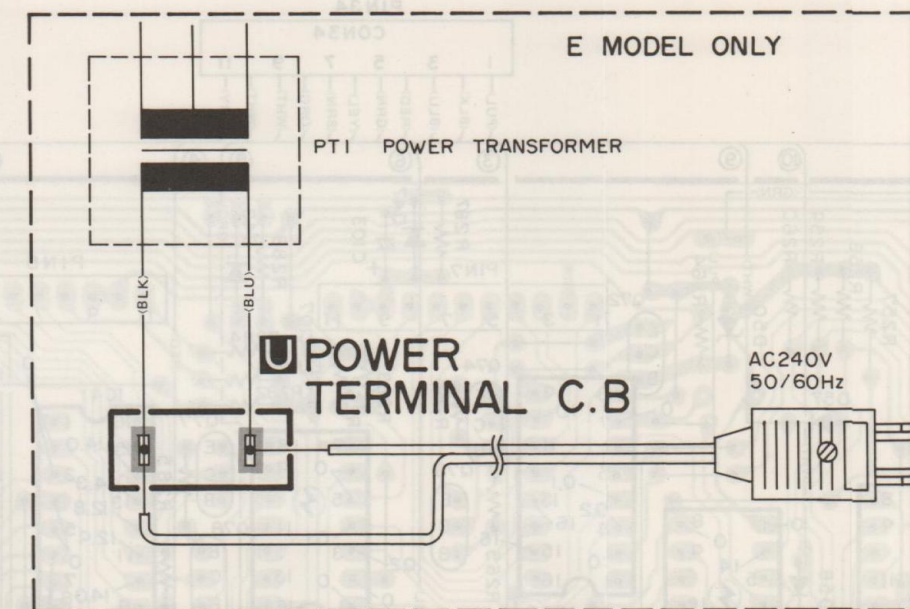
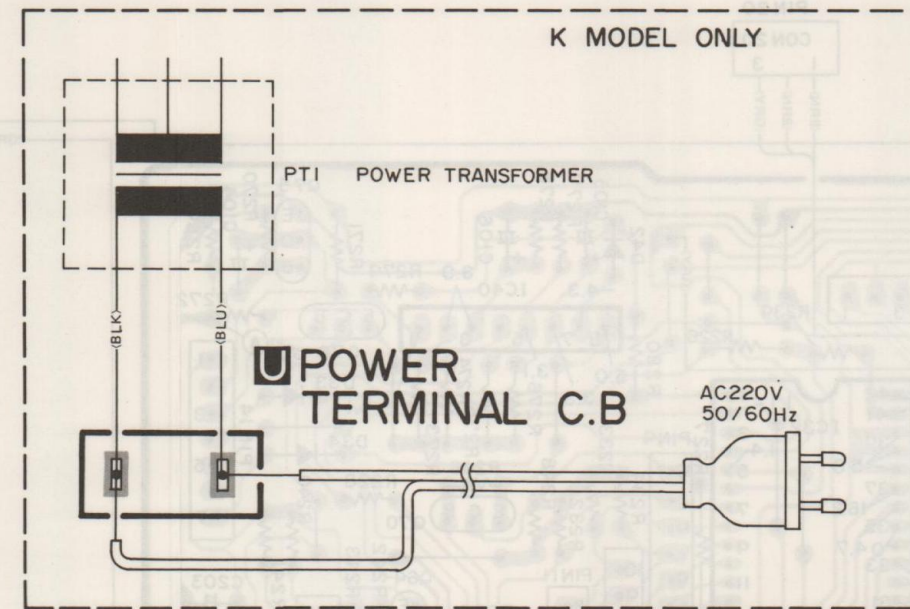
D SELECT C.B

DOLBY NR C.B

D SELECT C.B

- NOTES (1) Earth 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.

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



2. EXPLANATION OF IC LC6502B 2

2-1. Pin Description

2-2. Pin Function Explanation

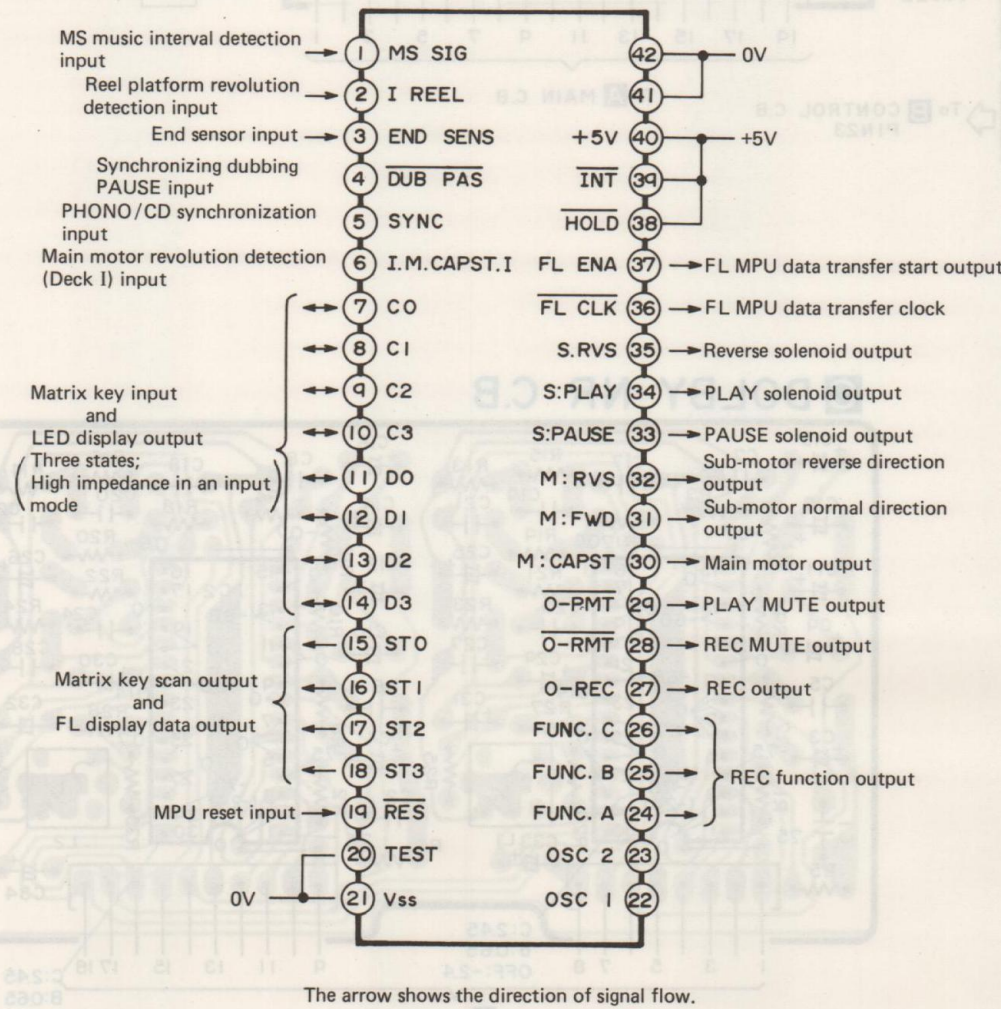
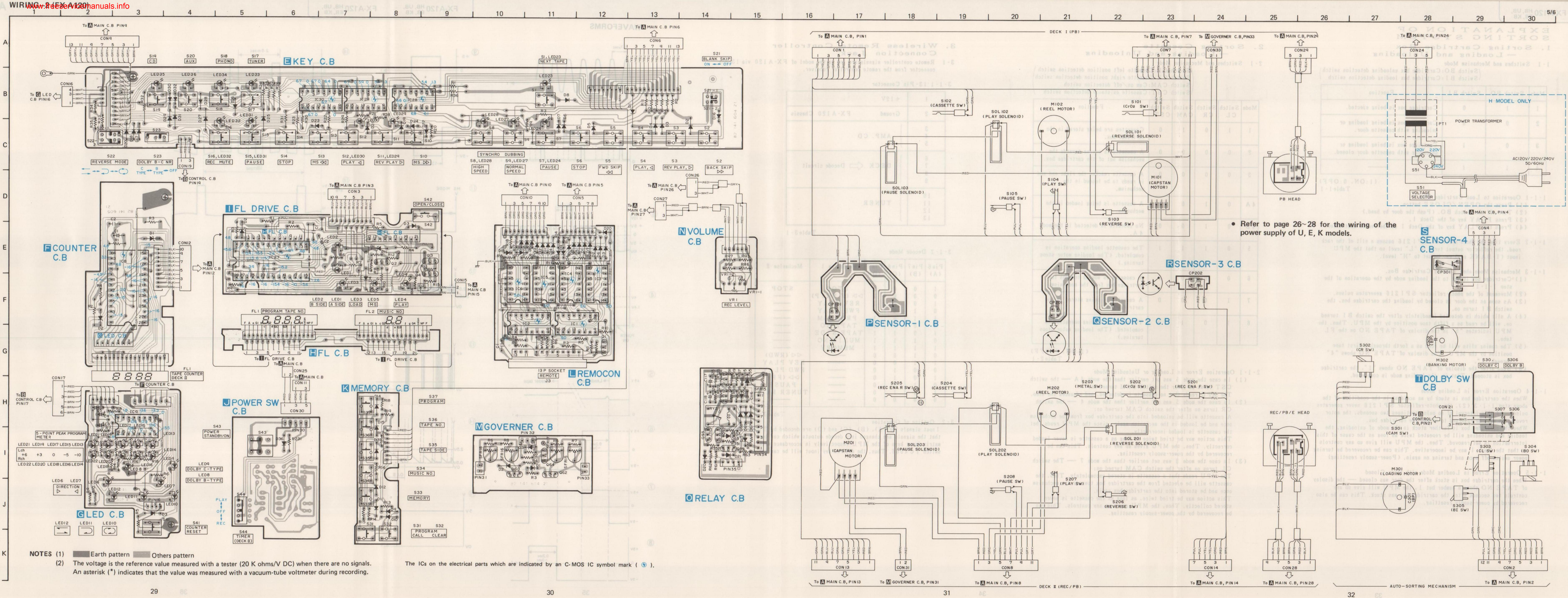


Fig. 2-1

Pin No.	Pin Name	Function
1	MS SIG	MS music interval detection input. { "H" level: Music section "L" level: Music interval
2	I-REEL	Take-up reel revolution pulse input. Detects auto-stopping, tape-counting and its associated function.
3	END SENS	Tape-end sensor input. Starts to detect 8 seconds after the PLAY or REC PLAY mode is set up. A pulse is taken in when a tape reaches the end.
4	DUB PAS	Program dubbing PAUSE control. A mode is changed to REC PLAY PAUSE from REC PLAY when the level falls to "L" from "H". On the other hand, a mode is changed to REC PLAY from REC PLAY when the level rises to "H" from "L".
5	PHONO SYNC CD SYNC	Each synchronizing REC input. { REC PLAY mode is set up when turns to "L" level. REC PLAY PAUSE mode is set up when turns to "H" level.
6	I M CAPST. I	Detects a state of the main motor M-CAPST in the mechanism 1.
7	DB 0 ~ 7 Mode	Input Mode
	ST 0 ~ 3 Output	Output Mode
8	DB 0	Blank skip RVS mode FWD→RVS COUNTER RESET N.C. RVS PLAY display
9	DB 1	RWD RVS mode RVS→FWD TIMER REC FWD PLAY display
10	DB 2	RVS PLAY Normal speed dubbing TIMER PLAY PAUSE display
11	DB 3	FWD PLAY High speed dubbing Dubbing enable REC MUTE display
12	DB 4	FF TUNER REC Cassette detection TUNER REC display
13	DB 5	STOP PHONO REC REC enable FWD PHONO REC display
14	DB 6	PAUSE CD REC REC enable RVS CD REC display
15	DB 7	REC MUTE AUX REC DIRECT-ION AUX REC display
15	ST 0	Matrix key scan strobe signal output and FL display data output.
16	ST 1	
17	ST 2	
18	ST 3	
19	RESET	Turns to "H" level by CR time constant behind the power supply V _{DD} , and sets up the MPU.
20, 21	TEST, V _{SS}	To be connected to the ground (0V).
22, 23	OSC 1, 2	MPU clock input.

Pin No.	Pin Name	Function																																				
24, 25, 26	FUNC. A FUNC. B FUNC. C	<table><tr><th>FUNC. C</th><th>FUNC. B</th><th>FUNC. A</th><th></th></tr><tr><td>0</td><td>0</td><td>0</td><td>—</td></tr><tr><td>0</td><td>0</td><td>1</td><td>0-TAPE</td></tr><tr><td>0</td><td>1</td><td>0</td><td>0-TUNER</td></tr><tr><td>0</td><td>1</td><td>1</td><td>0-AUX</td></tr><tr><td>1</td><td>0</td><td>0</td><td>0-PHONO</td></tr><tr><td>1</td><td>0</td><td>1</td><td>0-CD</td></tr><tr><td>1</td><td>1</td><td>0</td><td>0-DUB. N</td></tr><tr><td>1</td><td>1</td><td>1</td><td>0-DUB. H</td></tr></table>	FUNC. C	FUNC. B	FUNC. A		0	0	0	—	0	0	1	0-TAPE	0	1	0	0-TUNER	0	1	1	0-AUX	1	0	0	0-PHONO	1	0	1	0-CD	1	1	0	0-DUB. N	1	1	1	0-DUB. H
FUNC. C	FUNC. B	FUNC. A																																				
0	0	0	—																																			
0	0	1	0-TAPE																																			
0	1	0	0-TUNER																																			
0	1	1	0-AUX																																			
1	0	0	0-PHONO																																			
1	0	1	0-CD																																			
1	1	0	0-DUB. N																																			
1	1	1	0-DUB. H																																			
27	O-REC	REC/PB selector input. Turns to "H" level in the REC PLAY (PAUSE) mode only, but keeps "L" level until the mechanism becomes stabilized in the mode of head direction change.																																				
28	O-RMT	REC MUTE output. Turns to "H" level to release the muting after the REC PLAY mode is set up and the mechanism becomes stabilized.																																				
29	O-PMT	PLAY MUTE output. Turns to "H" level to release the muting after the (REC) PLAY, CUE, or REVIEW mode is set up and the mechanism becomes stabilized. Operates the muting until the mechanism becomes stabilized in the mode of head direction change.																																				
30	M:CAPST	Main motor control output. Drives the motor when the level is "H". Keeps "L" level in the STOP mode only. But, in the model of FX-A120, the main motor is continuously driven.																																				
31	M:FWD	Sub-motor normal direction output. Turns to "H" level in the FF or CUE mode.																																				
32	M:RVS	Sub-motor reverse direction output. Turns to "H" level in the REW or REVIEW mode.																																				
33	S:PAUSE	PAUSE solenoid output. Turns to "H" level in the PAUSE, CUE, REVIEW or (REC) PLAY PAUSE mode.																																				
34	S:PLAY	PLAY solenoid output. Turns to "H" level in the (REC) PLAY, (REC) PLAY PAUSE, CUE, or REVIEW mode.																																				
35	S:RVS	Reverse solenoid output. Turns to "H" level for 64 ms in the modes of head direction change and also edit start/end.																																				
36	FL CLK	Data transfer clock for FL MPU. When the clock is "L" level, DB 0~DB 7 are set to output modes so that LED displays can be operative.																																				
37	FL ENA	Turns to "H" level only when D ₀₀ ~D ₀₃ appear at ST 0~ST 3 during data transfer for the FL MPU.																																				
38 39 40	HOLD INT V _{DD}	} To be connected to +5V.																																				
41	I PMT. 1	Detects a state of <u>OPMT</u> of the mechanism 1.																																				

Table 2-1



EXPLANATION OF SORTING SYSTEM

1. Sorting Cartridge Box — Loading and Unloading

1-1 Switches and Mechanism Mode
(Switch BO: Cartridge box unloading detection switch)
(Switch BI: Cartridge box loading detection switch)

Mode	Switch BO	Switch BI	Function
1	1	0	Cartridge box is being ejected.
2	0	0	Cartridge box is being loading or unloading with cassette door.
3	0	1	Cartridge box is being loading or unloading with cassette door closed.
4	1	1	

(1: ON, 0: OFF)
Table 1-1

1-1-1 Operation to Load Cartridge Box
(1) Press the OPEN/CLOSE button.
(2) Turn off the switch BO. (Push the door by hand.)
(3) Press PLAY key of the Deck 1.
(4) Press the PLAY key of the Deck 1 on the remote controller.

1-1-2 Every time the photo-reflector SPI 216 passes a slit of the rack road, the reflector output turns to "L" level so that the MPU input (I-BANK pin) can be set to "H" level.

1-1-3 Mechanism Mode when Loading Cartridge Box.
(1) Cartridge box is set to the loading mode by the operation of the step 1-1-1.
(2) Movement of the photo-reflector SPI 216 generates pulses.
(3) As soon as the door is closed by loading the cartridge box, the switch BI turns on.
(4) A slit which is detected immediately after the switch BI turned on, will be read as a fifth tape position by the MPU. Then, the MPU indicates "5" in the display of TAPE NO on the FL tube.
(5) The coming slits will be read as a forth through a first tape position by the MPU. The display of TAPE NO shows "4" through "1".
(6) Soon after the display of TAPE NO shows "1", the cartridge box is stopped. That is, the loading mode is completed.

1-1-4 Operation Error in Loading Mode
When the cartridge box is stuck by an accident in the condition of the above step 1-1-3 (2), the photo-reflector SPI 216 never generates pulses. If this interval of no pulse continues two seconds, the motor revolution will be reversed to unload the cartridge box.
When the cartridge box is further stuck in the mode of unloading, the loading and unloading will be repeated twice as long as the cause of this interruption is not removed. Then, the MPU will give up any controls so that the Deck 1 may be inoperative. This can be recovered by turning power switch off once and turning on again. (Power-supply resetting)

1-1-5 Operation Error in Loading Mode with Door Closed
When the cartridge box is stuck after the door was closed — the display of TAPE NO shows a number but 1, the MPU will give up any controls two seconds after the cartridge box was stuck. This can be also recovered by power-supply resetting.

2. Sorting Cassette — Loading and Unloading

2-1 Switches and Mechanism Mode
(Switch CL: Cassette left position detection switch)
(Switch CR: Cassette right position detection switch)
(Switch CAM: Cam on/off detection switch)
(Switch CST: Cassette existence detection switch)

Mode	Switch CL	Switch CR	Switch CAM	Switch CST	Function
1	1	0	1	0	Cassettes are being stored in the cartridge box.
2	0	0	0	0	A cassette is moving towards the mechanism out of the cartridge box.
3	0	0	0	0	A cassette reaches the right end and is ready to be loaded in the mechanism.
4 A	0	1	0	1	A cassette is being loaded in the mechanism.
4 B	0	1	0	0	No cassette is detected in the mode 4 A.
5	0	1	1	1	The cassette loading operation is completed. (The loading motor stops turning.)
6	0	0	0	0	A cassette is moving towards the cartridge box from the mechanism.
7	1	0	0	0	A cassette is being stored in the cartridge box.
8	1	0	1	0	The cassette loading operation is completed. (The loading motor stops turning.)

(1: ON, 0: OFF)
Table 2-1

2-1-1 Operation Error in Loading or Unloading Mode
(1) In case the mode 5 was set earlier than the mode 4 A — the switch CST turns on after the switch CAM turned on:
The MPU reads that no cassette is detected, and advances the step.
(2) In case the mode 5 was set earlier than the mode 4 — the switch CR turns on after the switch CAM turned on:
A cassette will be unloaded into the cartridge box from the mechanism once and be loaded in the mechanism again, since the MPU reads that the cassette is loaded incorrectly.
This action may be tried twice as long as a cassette is never loaded correctly. Then, the MPU gives up any controls. This can be recovered by the power-supply resetting.
(3) In case the mode 8 was set earlier than the mode 7 — The switch CL turns on after the switch CAM turned on:
The MPU reads that a cassette is stored uncompletely. Thus, the cassette will be ejected from the cartridge box towards the mechanism once and be stored into the cartridge box again.
This action may be tried twice, as long as the cassette is never stored collectly. Then, the MPU gives up any controls. This can be recovered by the power-supply resetting.

3. Wireless Remote Controller Connection Jack

3-1 Remote controller signals are led to the model of FX-A 120 via 13-pin connector from the remote controller receiver.

3-1-1 13-Pin Connector

1	+12V
2	Ground FX-A120 Chassis
3	AMP. CD
4	
5	
6	DECK ← Decode circuit
7	
8	
9	
10	TUNER
11	
12	
13	

Table 3-1

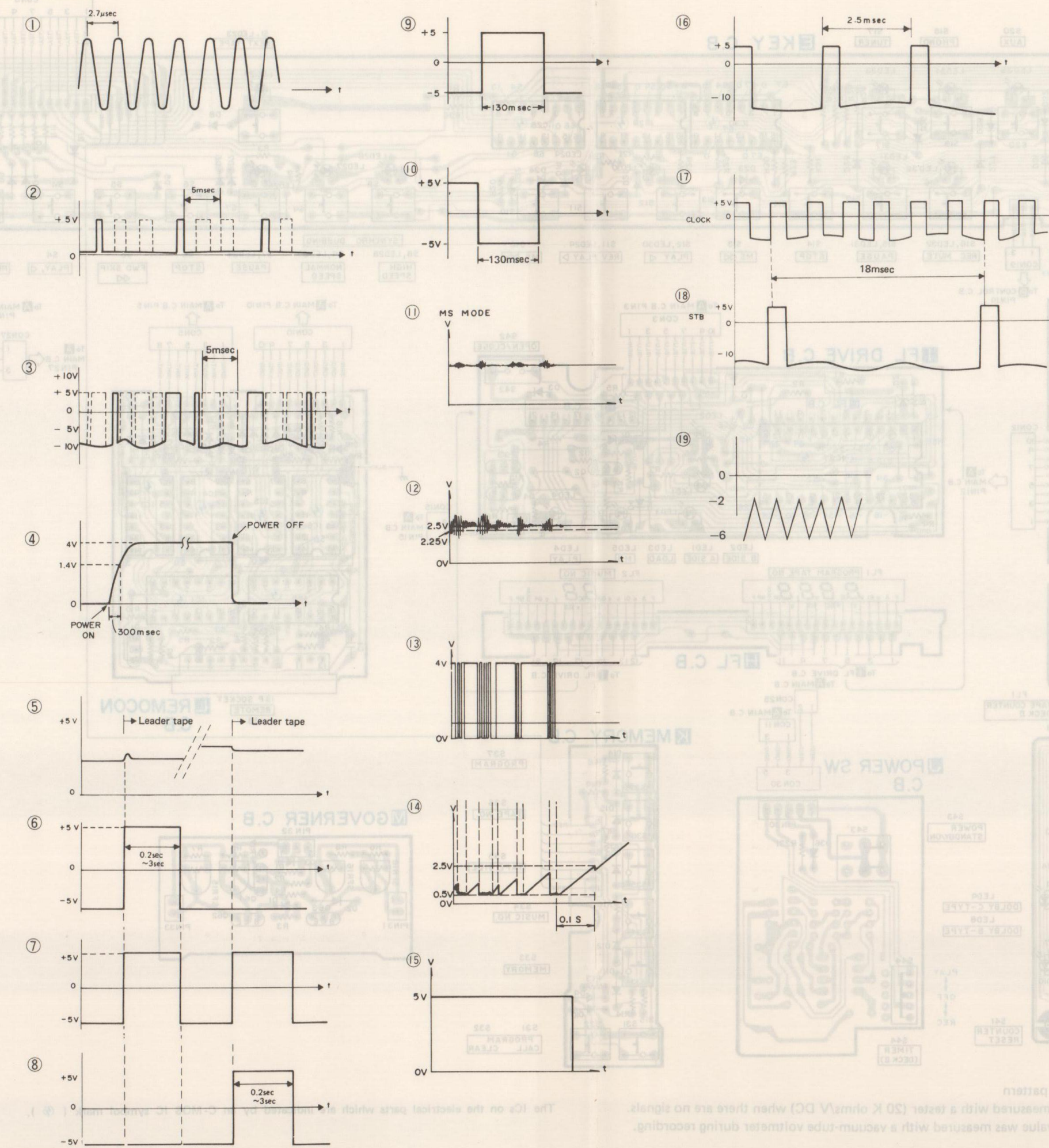
3-1-2 Decode Mode

Pin6 (A)	Pin7 (B)	Pin8 (C)	Pin9 (D)	Mechanism I	Mechanism II
1	0	0	0	STOP	STOP
0	0	0	1	▷▷ (F.SKIP)	—
1	0	0	1	REV PLAY	—
0	1	0	1	FWD PLAY	—
1	1	0	1	PROGRAM	—
0	0	1	1	TAPE NO	—
1	0	1	1	TAPE SIDE	—
0	1	1	1	MUSIC NO	—
1	1	1	1	MEMORY	—
0	1	0	0	—	◁◁ (RWD)
1	1	0	0	—	REV PLAY
0	0	1	0	—	FWD PLAY
1	0	1	0	—	▷▷ (FF)
0	1	1	0	—	PAUSE
1	1	1	0	—	TUNER REC
0	0	0	0	—	—

Table 3-2

3-2 Outline of Operation
Input signals for (A), (B), (C) and (D) are decoded by TC 4028 so that the signals are changed into decode outputs which can control the matrix input keys of the MPU respectively in accordance with the analogue switch TC 4066. Thus, the desired key input will be carried out.

WAVEFORMS



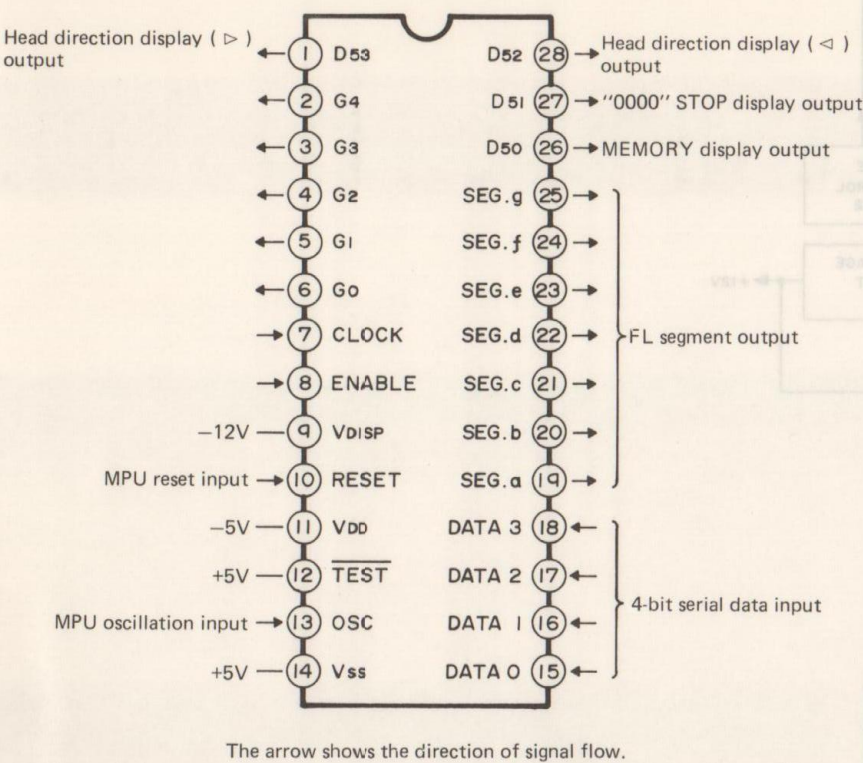


Fig. 3-1

3-2. Pin Function Explanation

Pin No.	Pin Name	Function
15	DATA 0	4-bit serial data inputs. (See Tables 3-2 & 3-3)
16	DATA 1	
17	DATA 2	
18	DATA 3	
7	CLOCK	Clock for six serial data inputs. Reads data when the level falls to "L" from "H".
8	ENABLE	First data discrimination input for six serial data. Detects the first data when the level rises to "H" from "L".
19	SEG.a	FL segment outputs.
20	SEG.b	
21	SEG.c	
22	SEG.d	
23	SEG.e	
24	SEG.f	
25	SEG.g	
6	G ₀	Digit scan signal outputs. (FL grid)
5	G ₁	
4	G ₂	
3	G ₃	
2	G ₄	
26	D ₅₀	MEMORY display output for the counter.
27	D ₅₁	"0000" STOP display output for the counter.
28	D ₅₂	Head direction display "<" output.
1	D ₅₃	Head direction display ">" output.

Table 3-1

D₀₀ ~ D₀₃
D₁₀ ~ D₁₃
D₂₀ ~ D₂₃
D₃₀ ~ D₃₃
D₄₀ ~ D₄₃

D₅₀ ~ D₅₃ are of static outputs corresponding to 1:1 bit.

DATA	HEX					SEGMENT						
	#3	#2	#1	#0		d	e	f	a	b	c	g
0	0	0	0	0		1	1	1	1	1	1	1
1	0	0	0	1		1	1					
2	0	0	1	0		1	1		1	1		1
3	0	0	1	1		1	1	1	1			1
4	0	1	0	0		1	1			1	1	
5	0	1	0	1		1		1	1		1	1
6	0	1	1	0		1		1	1	1	1	1
7	0	1	1	1		1	1	1				
8	1	0	0	0		1	1	1	1	1	1	1
9	1	0	0	1		1	1	1	1			1

Table 3-2

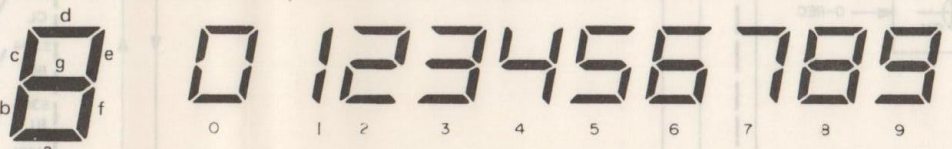


Fig. 3-2

4. EXPLANATION OF IC TC4028BP
4-1. Pin Description

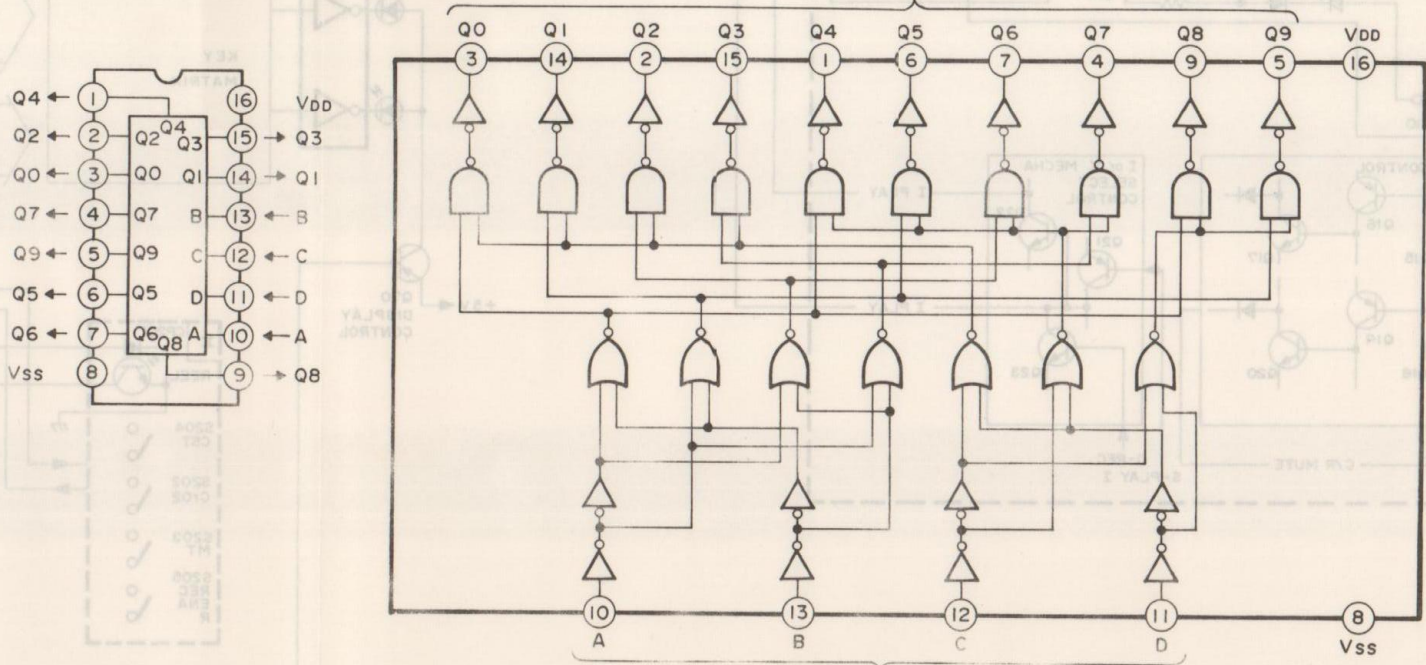


Fig. 4-1

4-2. Pin Function Explanation

Pin No.	Pin Name	Function
14	O-TAPE	Turns to "H" level for 125ms when the PLAY mode is set up.
2	O-TUNER	Turns to "H" level for 125ms when the function is switched over in the amplifier during the synchronizing REC mode.
1	O-PHONO	Turns to "H" level again by pressing the synchronizing REC keys during the REC mode.
6	O-CD	
15	O-AUX	
7	O-DUB N	Turns to "H" level in the normal speed dubbing mode.
4	O-DUB H	Turns to "H" level in the high speed dubbing mode.

Table 4-1

IC BLOCK DIAGRAM
M5230L

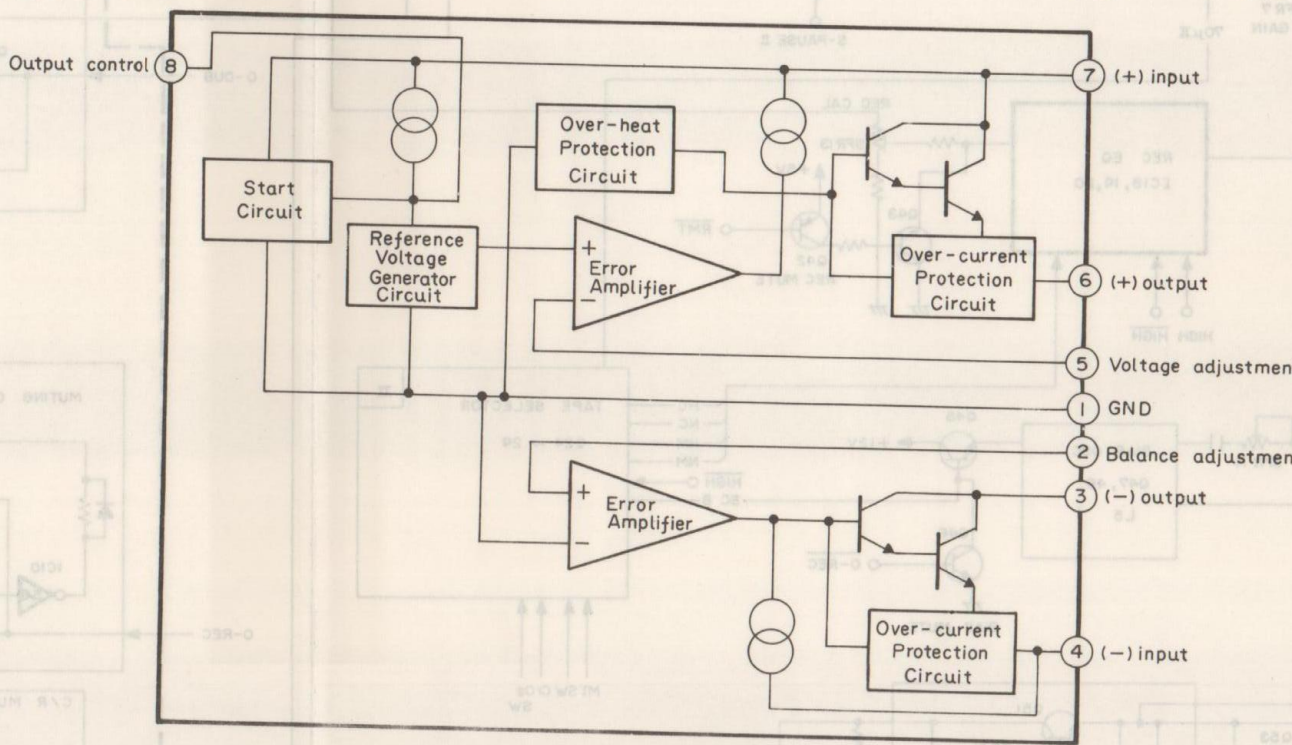
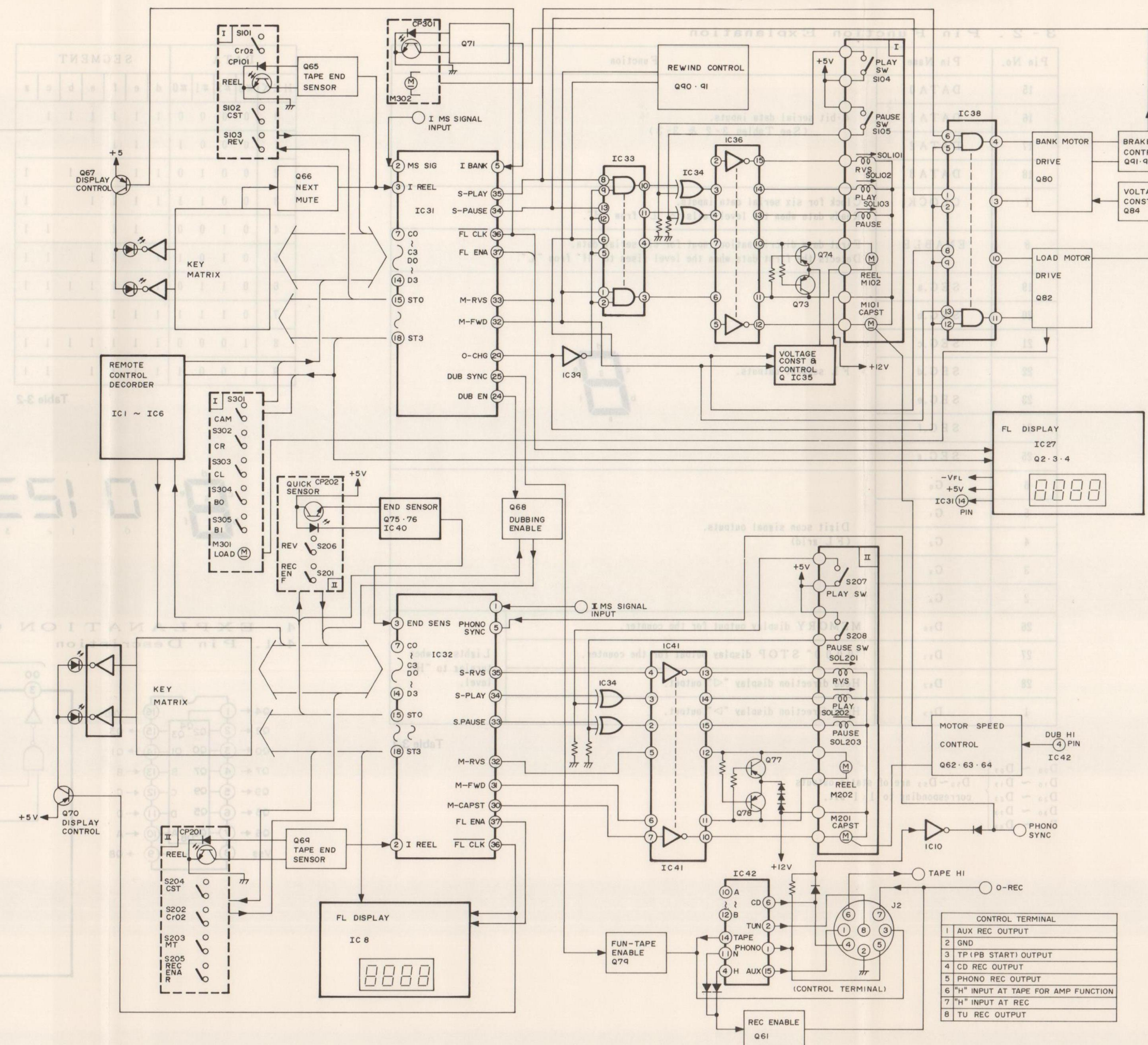
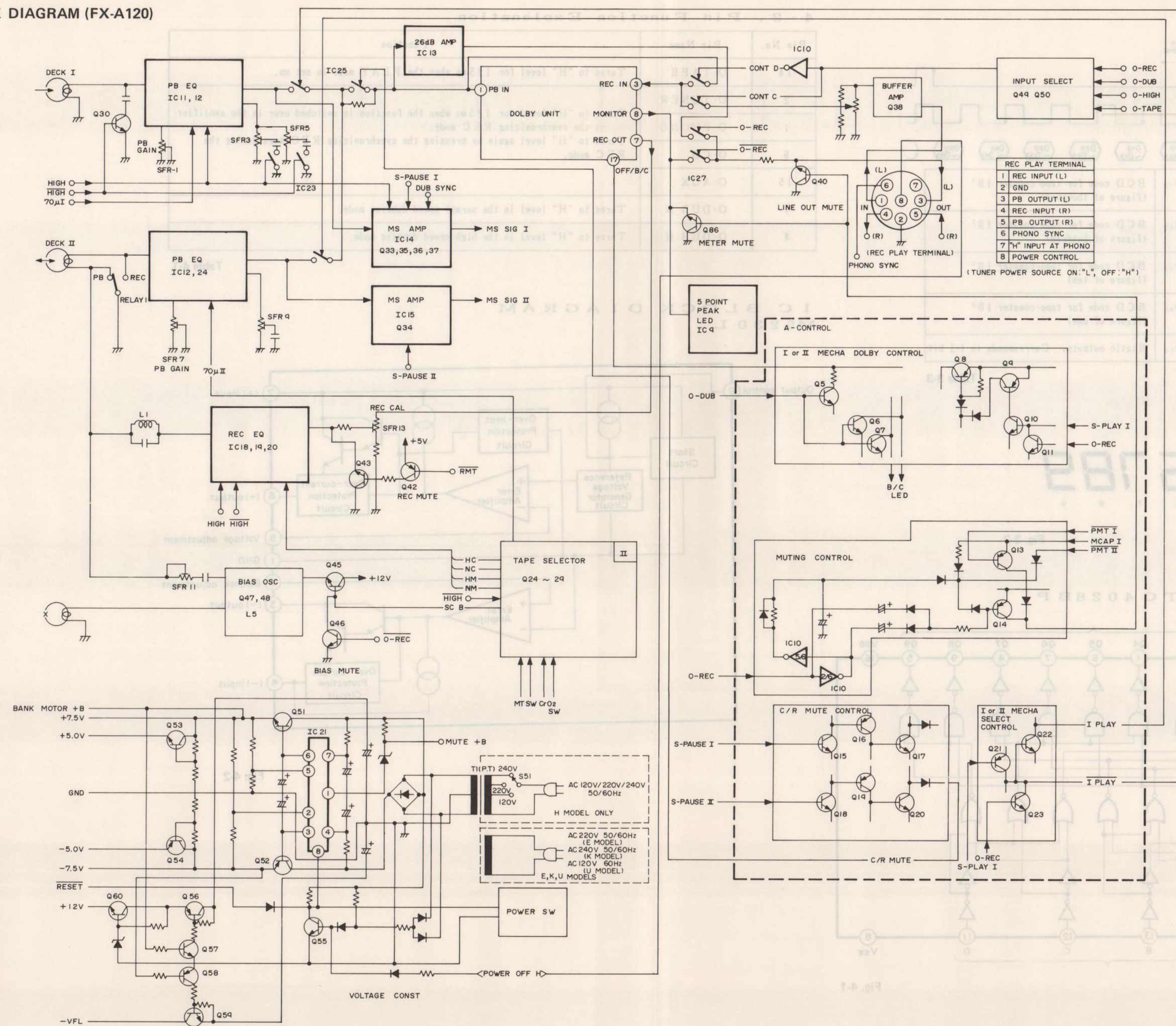


Fig. 4-2

BLOCK DIAGRAM (FX-A120)



DISASSEMBLY INSTRUCTIONS

1. Removal of Front Cabinet with Deck II

- 1) Remove the 6 screws and pull out the front cabinet with the deck II in the direction of the arrow.
(See Figure-1)

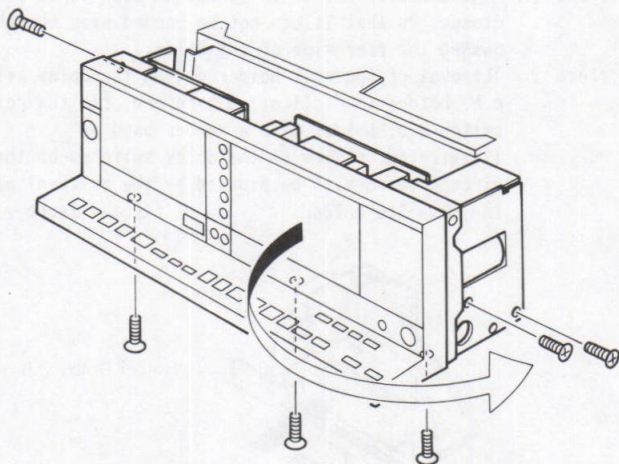


Fig.1

2. Deck II Removal

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

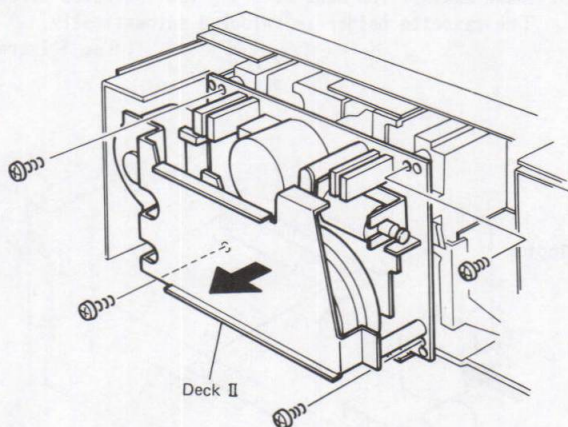


Fig.2

3-1. Deck I Removal (Auto-Soating Mechanism Side)

- 1) Remove the 3 screws of the rack holder.
- 2) Remove the 3 screws of the cassette holder.
(See Figure-3)

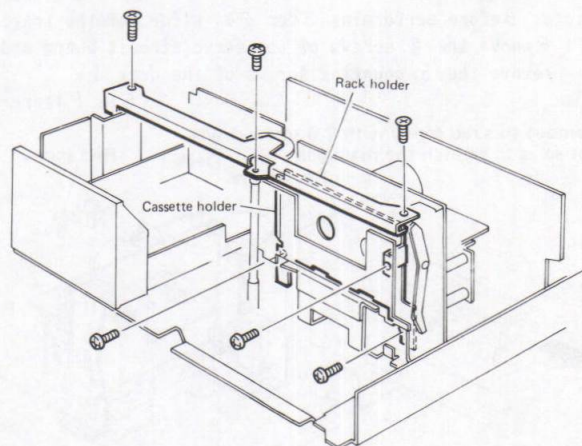


Fig.3

- 3) Remove the E-washer to pull out the shaft R in the direction of the arrow. Then remove the 5 screws to lift up the mechanism.
(See Figure-4)

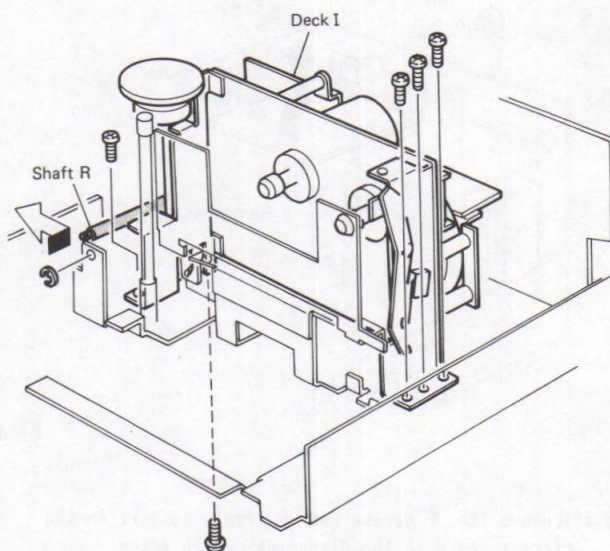


Fig.4

3-2. Deck I Removal (Auto-Soating Mechanism Side)

- 1) Remove the steel cabinet.
- 2) Remove the 3 screws of the rack holder. (See Figure-3)

Note: Before performing Step 3), slide out the tray.

- 3) Remove the 2 screws of the servo circuit board and remove the 5 mounting screws of the deck I. (See Figure-5)

Remove this red screw with 2.6 screw-driver not so as to scratch the main gear.

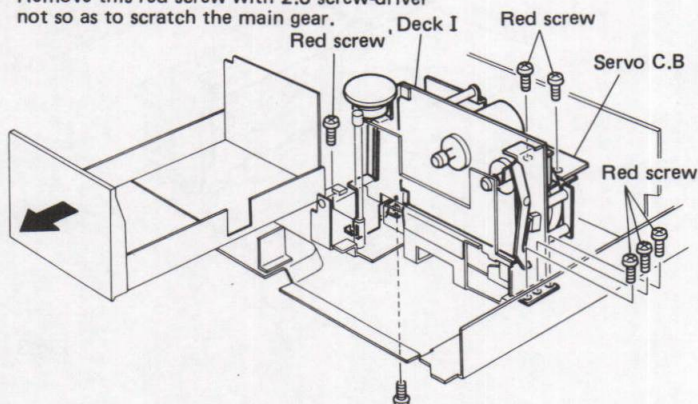


Fig.5

4. C.B. Removal

- 1) Remove the screw of the remote control circuit board. (See Figure-6)

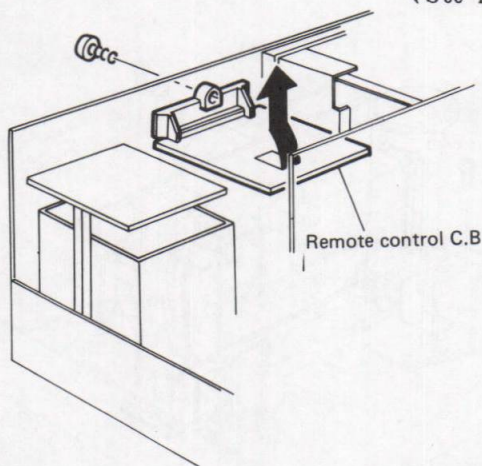


Fig.6

- 2) Remove the 4 screws and 2 rivets to lift up the circuit board in the direction of the arrow. (See Figure-7)

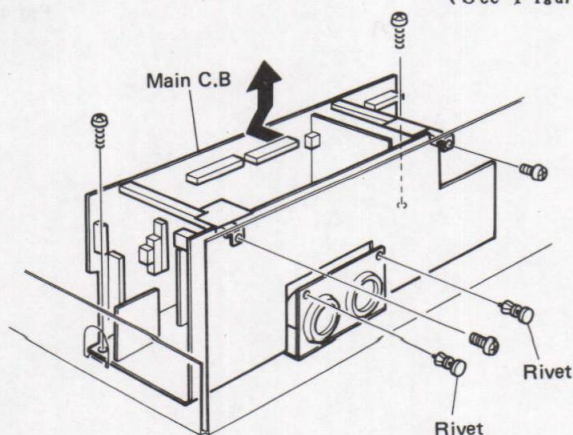


Fig.7

ONE POINT ADVICE

1. To Open Cassette Holder by Manual Operation

Note 1: The cassette holder is locked as soon as it is closed, so that it can not be opened even though pushed the rear side of the holder.

Note 2: Removal of the rack holder causes the dolby switch c.b. holder to decline. Therefore, fix the dolby switch c.b. holder with a rubber band as illustrated, otherwise the dolby switches on the circuit board will be damaged by the movement of the cassette holder. (See Figure-8)

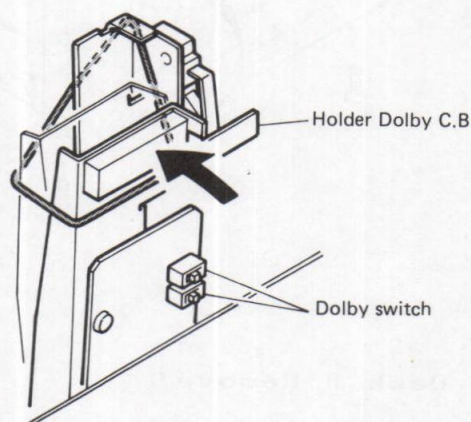


Fig.8

- 1) Push against the bank motor in the indicated direction. The cassette holder is unlocked automatically. (See Figure-9)

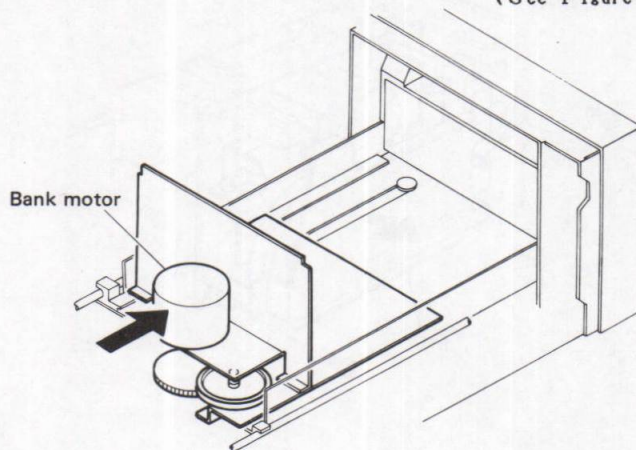


Fig.9

- 2) Or, push the rear side of the cassette holder, unlocking the pawl of the chassis c.b. ass'y. (See Figure-10)

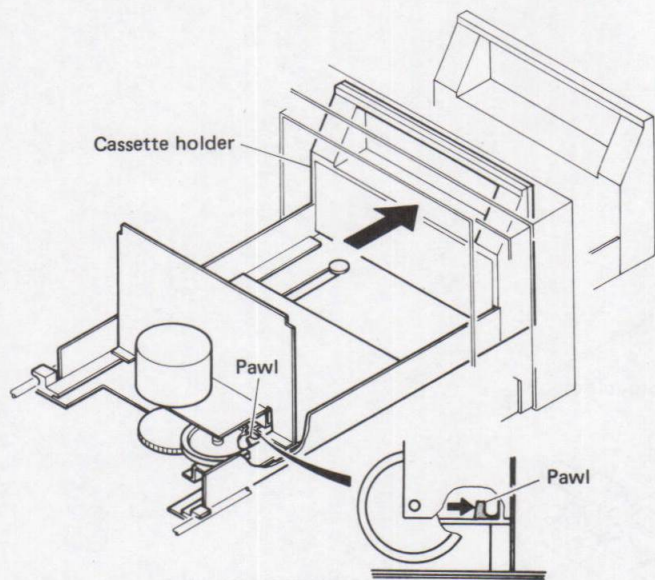


Fig.10

2. To Remove Blind Plate

- 1) Remove the screw to detach the blind plate in the direction of the arrow. (See Figure-11)

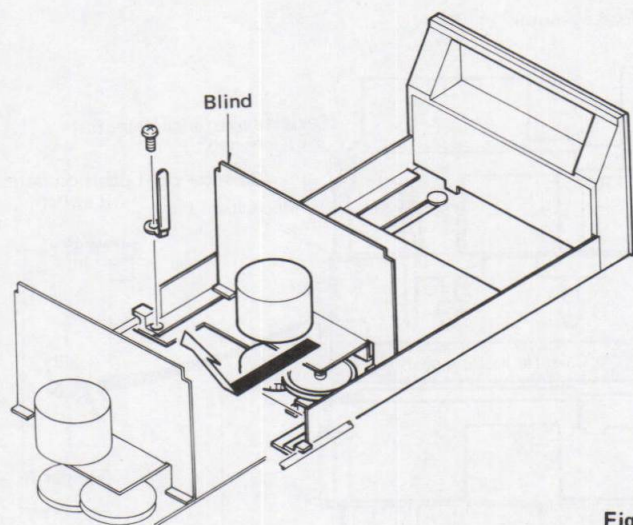


Fig.11

Wire Treatment after Service

- 1) Put lead-wires in order as illustrated, otherwise the cartridge box will be stuck. Proceed as follows; (See Figure-12)

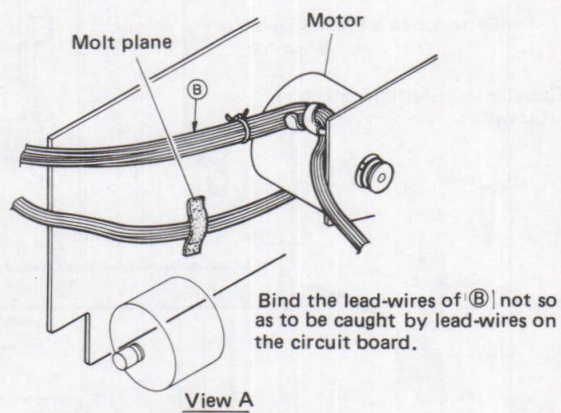
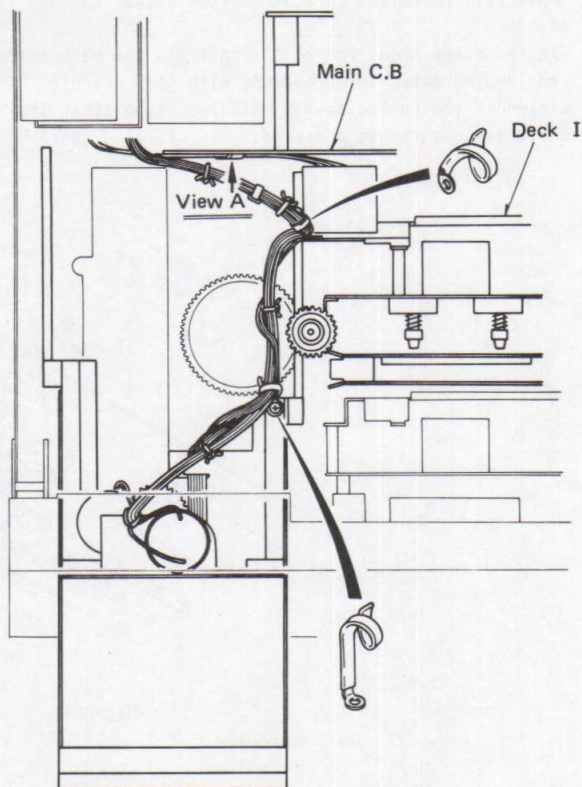


Fig.12

Auto-Soating Mechanism Operation

1. The cartridge box starts moving inwards upon the slit of the rack road. At this time, the photo-reflector which is located under the cartridge box detects slits. This slit detection is read as tape number by the MPU.
On the other hand, the MPU controls the bank motor and loading motor in accordance with "on" or "off" states of the following six switches, soon after the soating mechanism is operated. (See Figure-13)

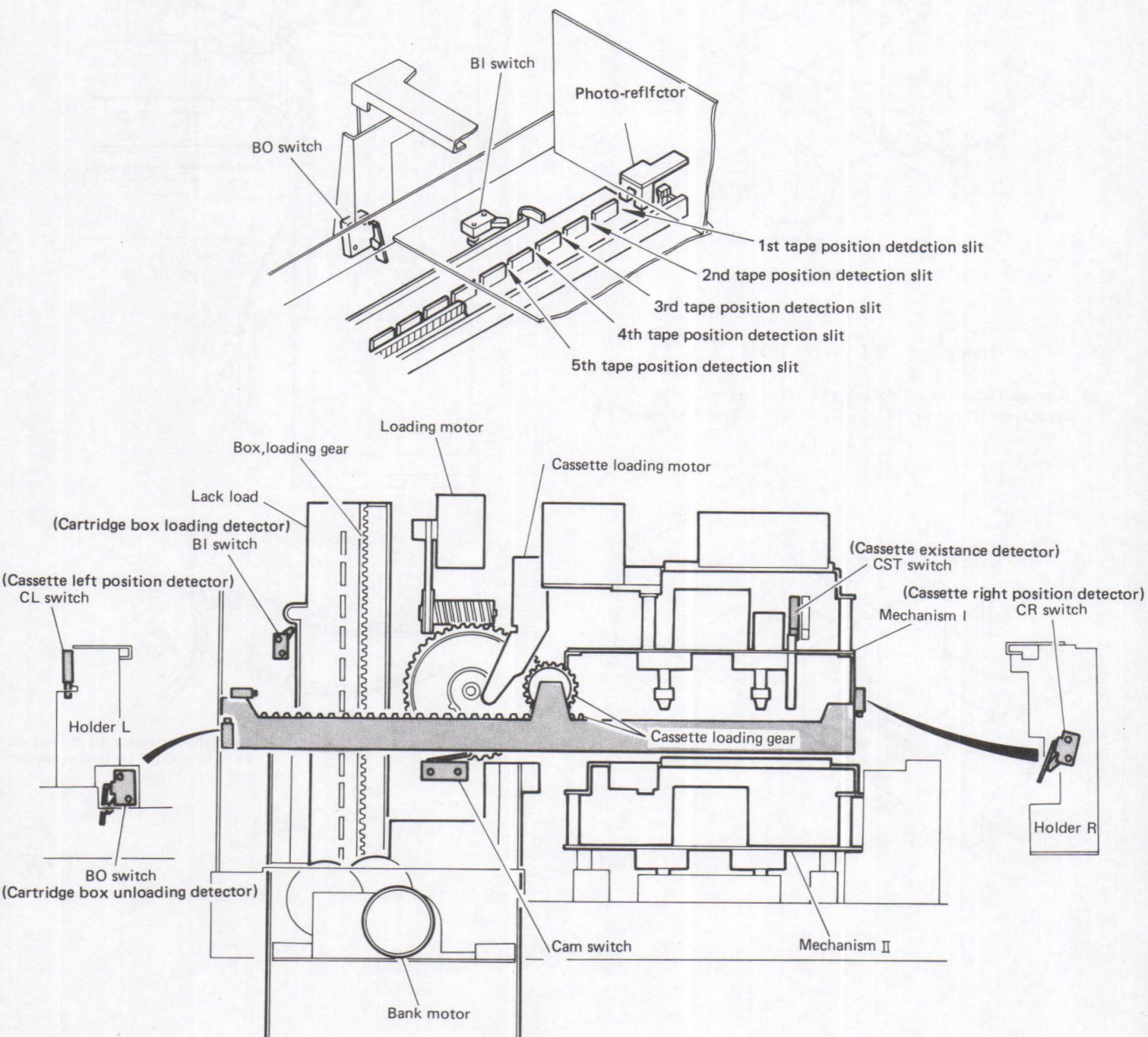
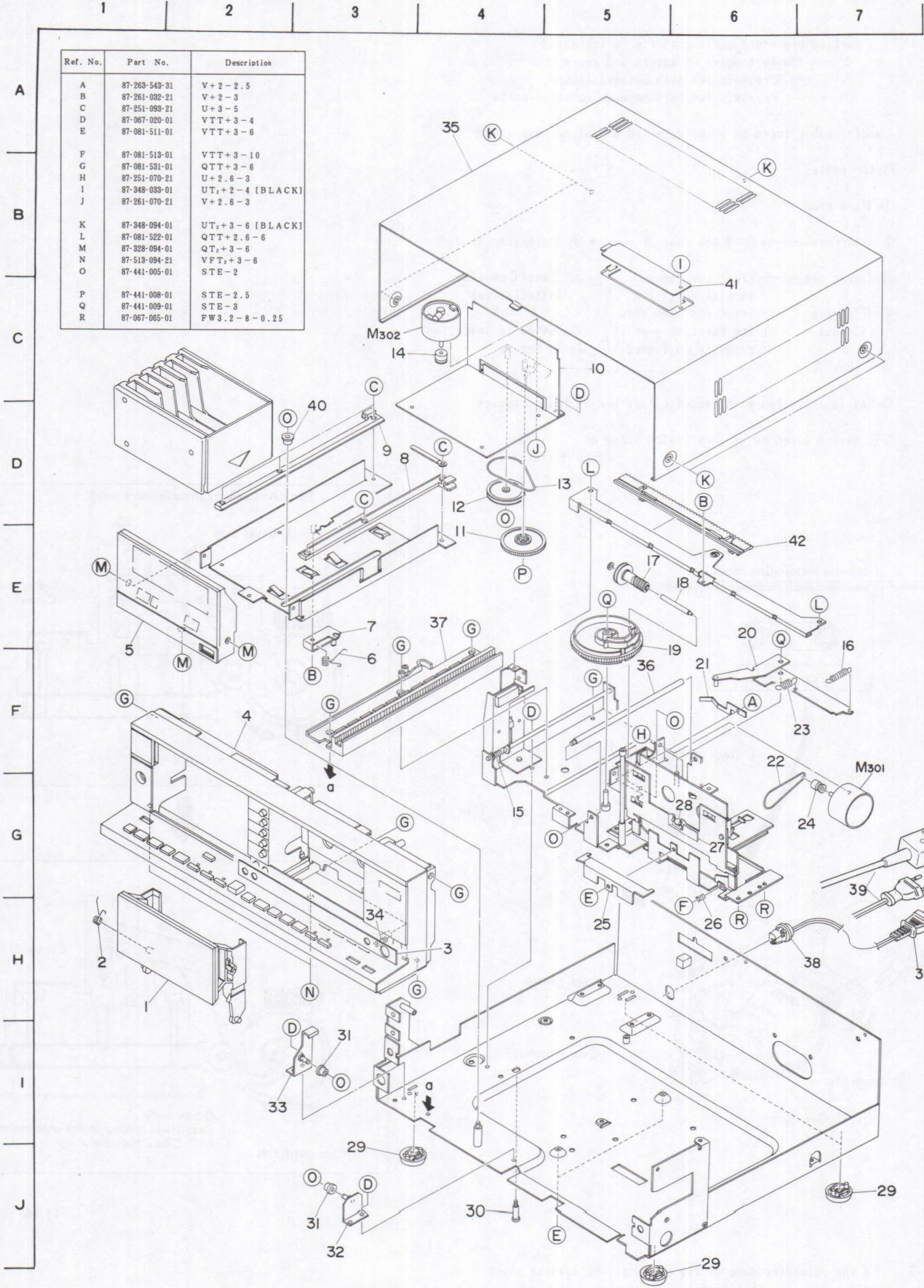


Fig.13

3. In the unloading mode of the soating, the loading motor turns reversely until cassette is ejected.

- Fig.14**

EXPLODED VIEW - I



PARTS LIST

MECHANICAL PARTS LIST

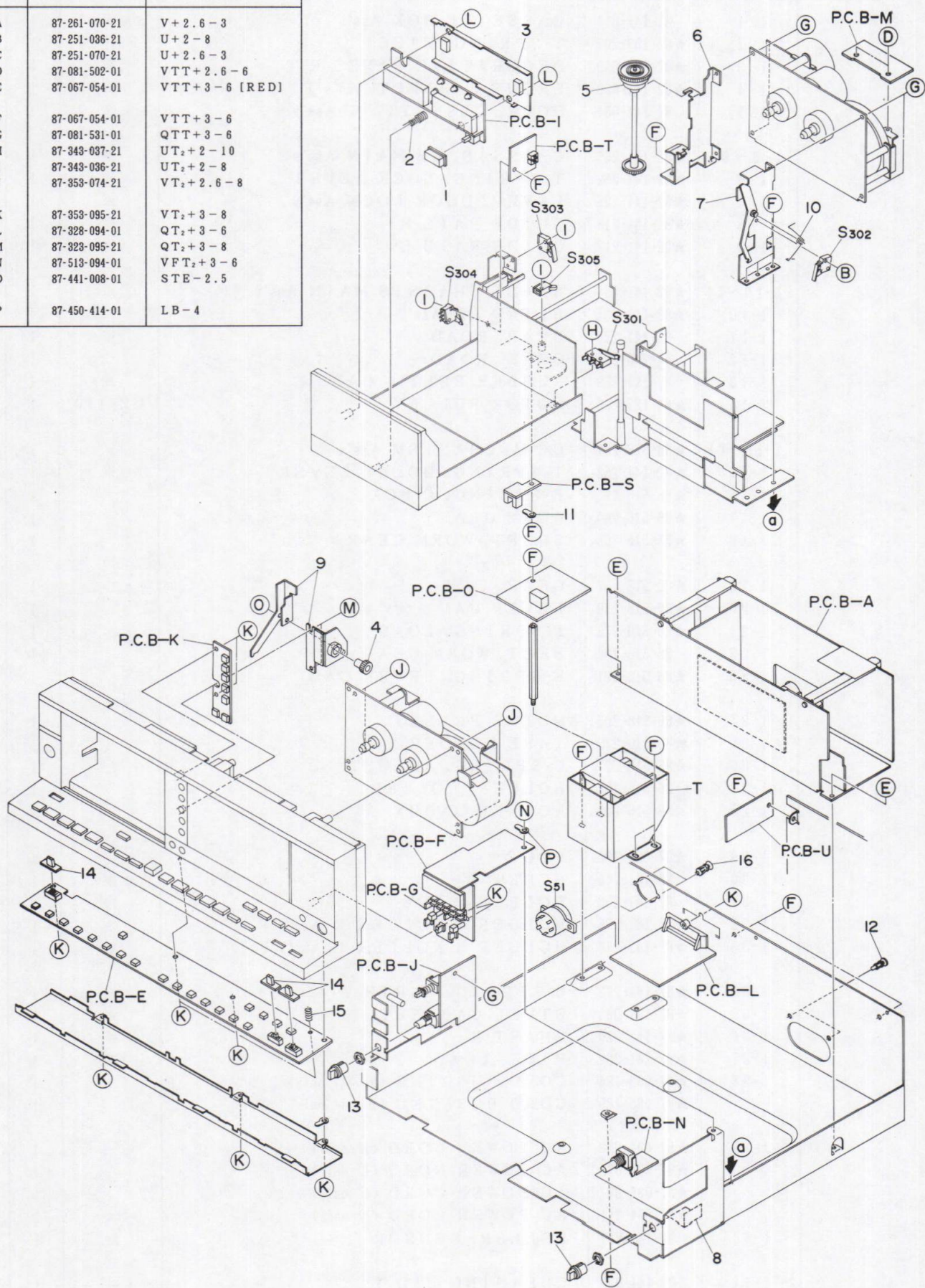
●※mark in this part list shows exclusive part
 ●★mark means less required items and availabilities may be limited.

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1-1	81-141-014	CASSETTE BOX Ass'y	※	1
	1-2	★82-197-207	T-SPRING, EJECT	FX-90	1
	1-3	★82-141-055	DECORATIVE PANEL R T	※	1
	1-4	★82-141-059	FRONT CABINET Ass'y F	※	1
	1-5	82-141-034	DOOR, CASSETTE T Ass'y	※	1
	1-6~9	★82-141-255	CHASSIS, CB MAIN Ass'y	※	1
	1-6	★82-141-252	T-SPRING, LOCK LEVER	※	1
	1-7	★82-141-205	LEVER, DOOR LOCK Ass'y	※	1
	1-8	★82-141-218	GUIDE RAIL R	※	1
	1-9	★82-141-217	GUIDE RAIL L	※	1
	1-10~14	★82-141-256	SLIDE CHASSIS MAIN Ass'y	※	1
	1-10	★82-141-234	BLIND CB Ass'y	※	1
	1-11	82-141-229	GEAR, ROAD	※	1
	1-12	84-700-224	GEAR, ROAD		1
	1-13	82-141-269	RUBBER BELT, LOAD	※	1
	1-14	★84-127-205	MOTOR PULLEY	LX-110	1
	1-15~28	★86-516-201	CC MECHANISM Ass'y		1
	1-15	★82-141-253	T-SPRING, DOLBY LEVER	※	1
	1-16	★86-516-295	E-SPRING, C-BOX		1
	1-17	★86-516-264	WORM GEAR		1
	1-18	★86-516-265	SHAFT, WORM GEAR		1
	1-19	★86-516-257	GEAR, CAM		1
	1-20	★86-516-258	LEVER CAM Ass'y		1
	1-21	★86-516-273	P-SPRING, LOAD		1
	1-22	86-516-286	BELT, WORM GEAR		1
	1-23	★86-516-291	E-SPRING, LEVER CAM		1
	1-24	★86-516-263	MOTOR PULLEY		1
	1-25	★86-516-279	TAPE HOLDER		1
	1-26	★86-516-297	C-SPRING, ADJUST		1
	1-27	86-516-304	HOLDER, ROLLER		1
	1-28	86-516-305	ROLLER, C-BOX		1
	1-29	★87-085-186	FOOT		4
	1-30	82-141-245	SCREW	※	1
	1-31	82-141-233	ROLLER, SIDE	※	2
	1-32	★82-141-275	HOLDER S ROLLER R Ass'y F	※	1
	1-33	★82-141-274	HOLDER S ROLLER L Ass'y F	※	1
	1-34	★82-141-273	C-SPRING, EARTH	※	1
	1-35	★82-141-033	STEEL CABINET	※	1
	1-36	★82-141-220	SHAFT R	※	1
	1-37	★82-141-222	RACK, LOAD	※	1
	1-38	★87-085-184	CORD BUSHING (H, U only)		1
		★87-085-185	CORD BUSHING (E, K only)		1
	1-39	★87-034-958	AC POWER CORD (H only)		1
		★87-034-578	AC POWER CORD (U only)		1
		★87-034-877	AC POWER CORD (E only)		1
		★87-034-711	AC POWER CORD (K only)		1
	1-40	82-141-237	ROLLER, SENSOR	※	1
	1-41	82-141-038	CLEANING LID T	※	1
	1-42	★86-516-280	RACK		1

EXPLODED VIEW-2

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-261-070-21	V+2.6-3
B	87-251-036-21	U+2-8
C	87-251-070-21	U+2.6-3
D	87-081-502-01	VT+2.6-6
E	87-067-054-01	VT+3-6 [RED]
F	87-067-054-01	VT+3-6
G	87-081-531-01	QTT+3-6
H	87-343-037-21	UT+2-10
I	87-343-036-21	UT+2-8
J	87-353-074-21	VT+2.6-8
K	87-353-095-21	VT+3-8
L	87-328-094-01	QT+3-6
M	87-323-095-21	QT+3-8
N	87-513-094-01	VFT+3-6
O	87-441-008-01	STE-2.5
P	87-450-414-01	LB-4



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	2-1	82-141-031	TOUCH-KEY, OPEN	※	1
	2-2	★82-141-257	C-SPRING, EARTH	※	1
	2-3	★82-141-026	REAR PLATE, CASSETTE DOOR	※	1
	2-4	★82-534-264	GEAR, OIL-DAMP		1
	2-5	★86-516-261	RACK GEAR Ass'y		1
	2-6	★86-516-272	MECHANISM HOLDER L		1
	2-7	★86-516-287	MECHANISM HOLDER R Ass'y		1
	2-8	★82-141-265	COVER REC. VOL	※	1
	2-9	★82-141-276	HOLDER E LEVER Ass'y F	※	1
	2-10	★86-516-294	T-SPRING, RACK STOPPER		1
	2-11	★82-141-263	LUG TERMINAL A	※	1
	2-12	★87-085-102	NYLON RIVET 3.5-5.5		2
	2-13	★82-197-056	KNOB, BIAS B	FX-90	2
	2-14	★82-142-015	KNOB, SLIDE		3
	2-15	★82-197-218	C-SPRING, FRONT EARTH	FX-90	1
	2-16	★87-085-090	NYLON RIVET (H only)		2

EXPLODED VIEW-3

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-251-036-21	U+2-8
B	87-267-511-31	V+1.4-5
C	87-341-035-21	UT,+2-6
D	87-351-035-01	VT,+2-6
E	87-081-503-01	VT+2.6-8
F	87-081-808-01	PW1.7-3.5-0.25
G	87-067-105-01	PW3.4-8-0.5

A

B

C

D

E

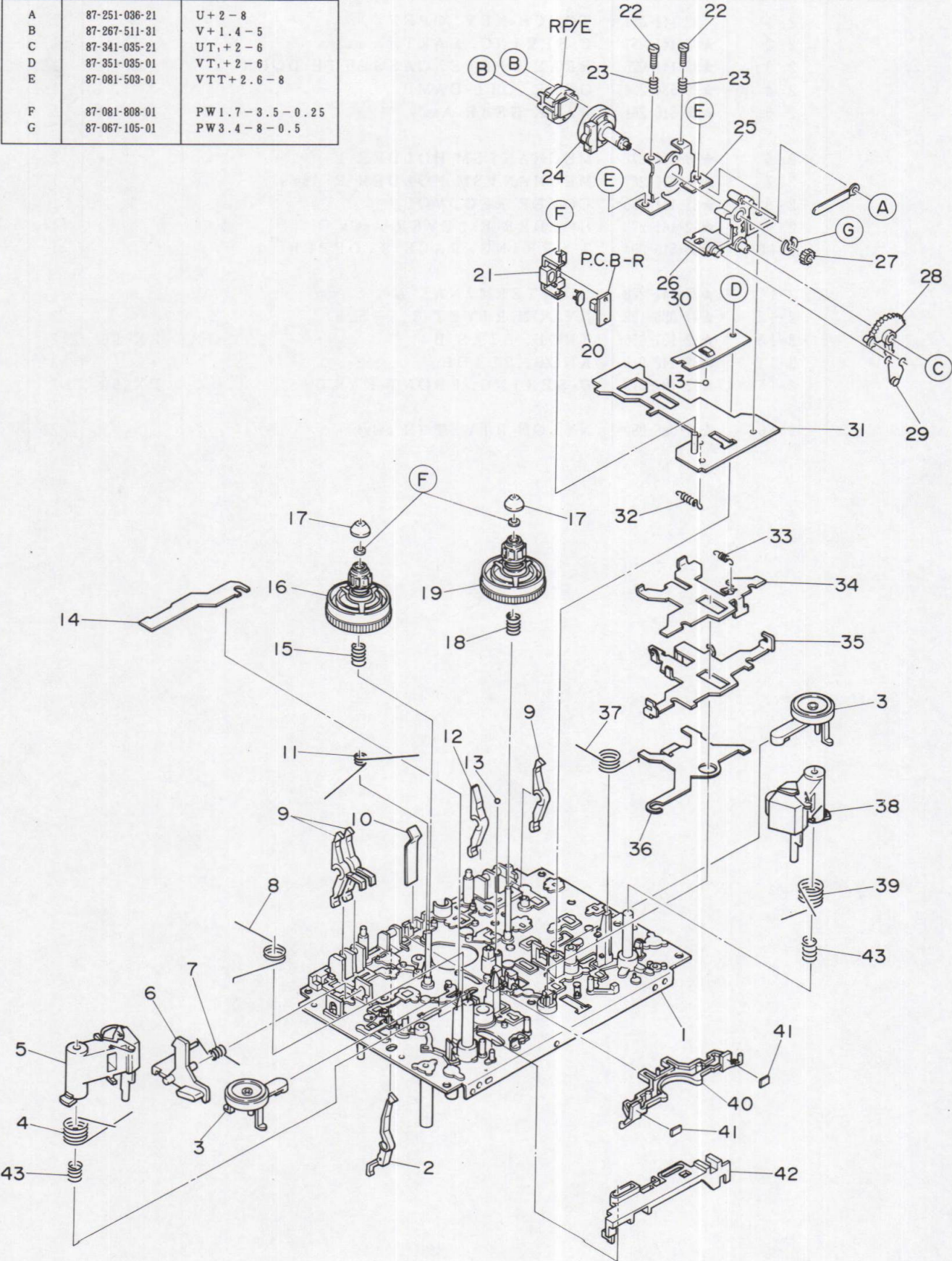
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G

H

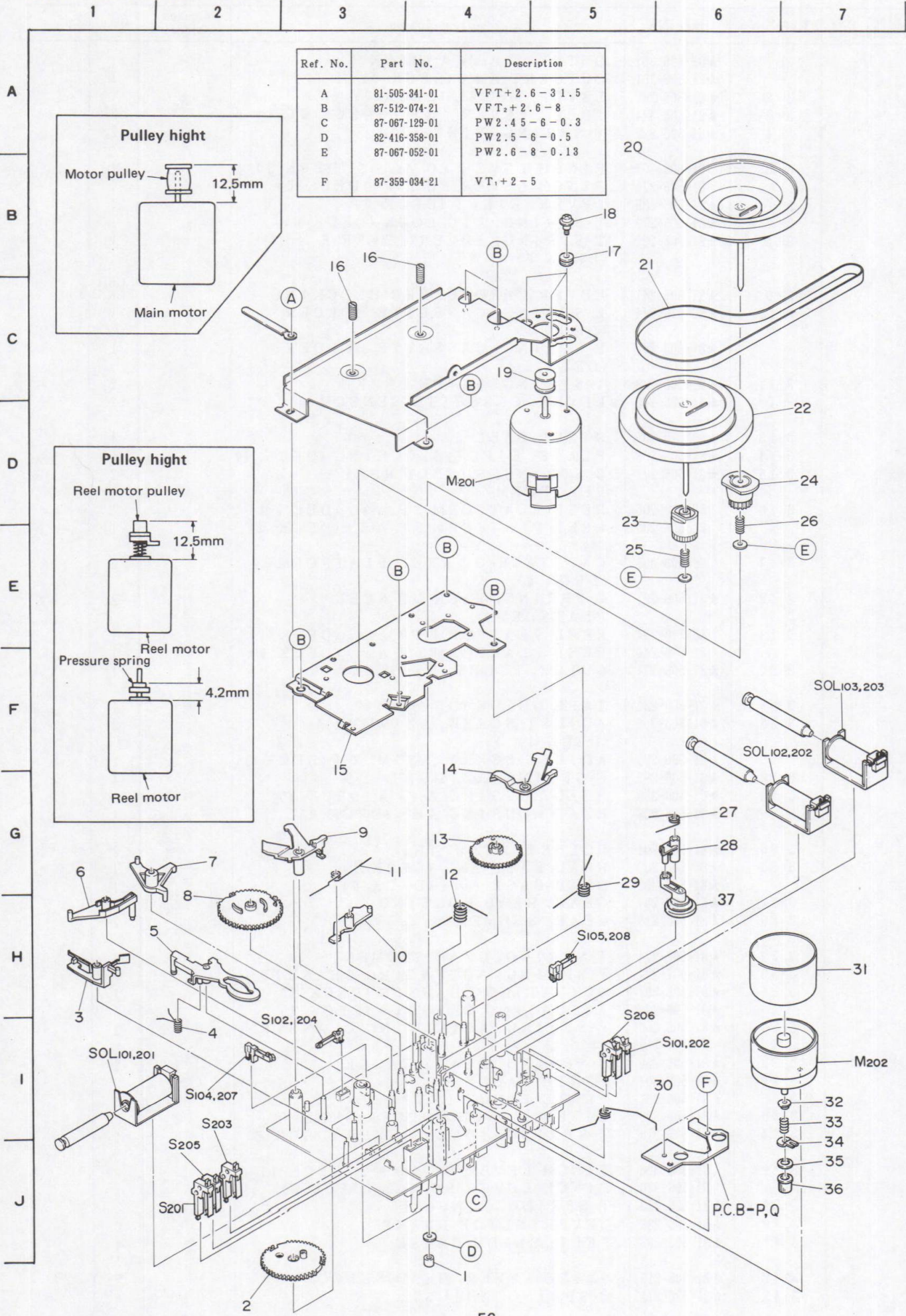
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J



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty	
	3-1	★81-505-367	OUTSERT Ass'y A (DECK I)		1	
		★81-506-201	OUTSERT Ass'y (DECK II)		1	
	3-2	★81-505-242	LEVER, METAL (DECK II)		1	
	3-3	★81-505-344	IDLER LEVER Ass'y 2 (DECK II)		2	
	3-4	★81-506-222	T-SPRING, PINCH FG		2	
	3-5	81-506-307	PINCH LEVER FG Ass'y 2 (DECK I)		1	
		81-506-275	PINCH LEVER FG Ass'y (DECK II)		1	
	3-6	★81-505-239	LEVER, EJECT (DECK II)		1	
	3-7	★81-505-273	T-SPRING, LID LOCK (DECK II)		1	
	3-8	★81-506-220	T-SPRING, IDLER LEVER R (DECK II)		1	
	3-9	★81-505-241	LEVER CHROME, REC BLOCKING			DECK I:1
	3-10	★86-510-244	P-SPRING, CASSETTE HOLDER (DECK I)		1	DECK II:3
		★81-505-260	P-SPRING, CASSETTE HOLDER (DECK II)		1	
	3-11	★81-505-268	T-SPRING, SLIDE BRAKE		2	
	3-12	★81-505-240	LEVER, CASSETTE SENSOR		2	
	3-13	★87-073-005	STEEL BALL 2		4	
	3-14	★81-505-238	PLATE, EJECT BLOCKING (DECK II)		1	
	3-15	★81-505-274	C-SPRING, SUPPLY REEL PLATFORM		2	
	3-16	86-510-205	REEL PLATFORM SP Ass'y (DECK I)		1	
		81-506-239	REEL PLATFORM RP Ass'y (DECK II)		1	
	3-17	82-303-398	CAP, TACK-UP REEL PLATFORM (DECK II)		2	
	3-18	★81-506-227	C-SPRING, TACK-UP REEL PLATFORM		2	
	3-19	86-510-204	REEL PLATFORM TP Ass'y (DECK I)		1	
		81-506-240	REEL PLATFORM FR Ass'y (DECK II)		1	
	3-20	★81-506-274	GUIDE, LIGHT (DECK II)		1	
	3-21	★81-506-236	TAPE GUIDE (DECK II)		1	
	3-22	★81-506-363	ADJUST SCREW, AZIMUTH A (DECK I)		2	
		★81-506-230	ADJUST SCREW, AZIMUTH (DECK II)		2	
	3-23	★81-506-293	C-SPRING, AZIMUTH		4	
	3-24	★81-506-358	HEAD HOUSING Ass'y A (DECK I)		1	
		★81-506-208	HEAD HOUSING Ass'y (DECK II)		1	
	3-25	★81-506-204	HOLDER, AZIMUTH		2	
	3-26	★81-506-209	HEAD BASE Ass'y (DECK I)		1	
		★81-506-362	HEAD BASE Ass'y (DECK II)		1	
	3-27	★81-506-237	GEAR, HEAD HOUSING		2	
	3-28	★81-506-219	GEAR, SEGMENT		2	
	3-29	★81-506-224	T-SPRING, GEAR SEGMENT		2	
	3-30	★81-507-224	P-SPRING, ACTUATING CHASSIS		2	
	3-31	★81-506-297	ACTUATING CHASSIS (DECK I)		1	
		★81-506-238	ACTUATING CHASSIS (DECK II)		1	
	3-32	★81-505-265	E-SPRING, ACTUATING CHASSIS		2	
	3-33	★81-505-266	E-SPRING, PLATE PAUSE		2	
	3-34	★81-506-301	PLATE PAUSE R		2	
	3-35	★81-506-281	PLATE PINCH LEVER R		2	
	3-36	★81-506-203	LEVER, PINCH ROLLER SELECT		2	
	3-37	★81-505-270	T-SPRING, IDLER LEVER (DECK II)		1	
	3-38	81-506-308	PINCH LEVER RG Ass'y 2 (DECK I)		1	
		81-506-276	PINCH LEVER RG Ass'y (DECK II)		1	
	3-39	★81-506-223	T-SPRING, PINCH RG		2	
	3-40	★81-505-236	LEVER, SLIDE BRAKE		2	
	3-41	★81-505-237	FELT, SLIDE BRAKE		4	
	3-42	★81-506-215	SLIDE LEVER, HEAD SELECT		2	
	3-43	★81-506-311	C-SPRING, ADJUST		4	

EXPLODED VIEW-4



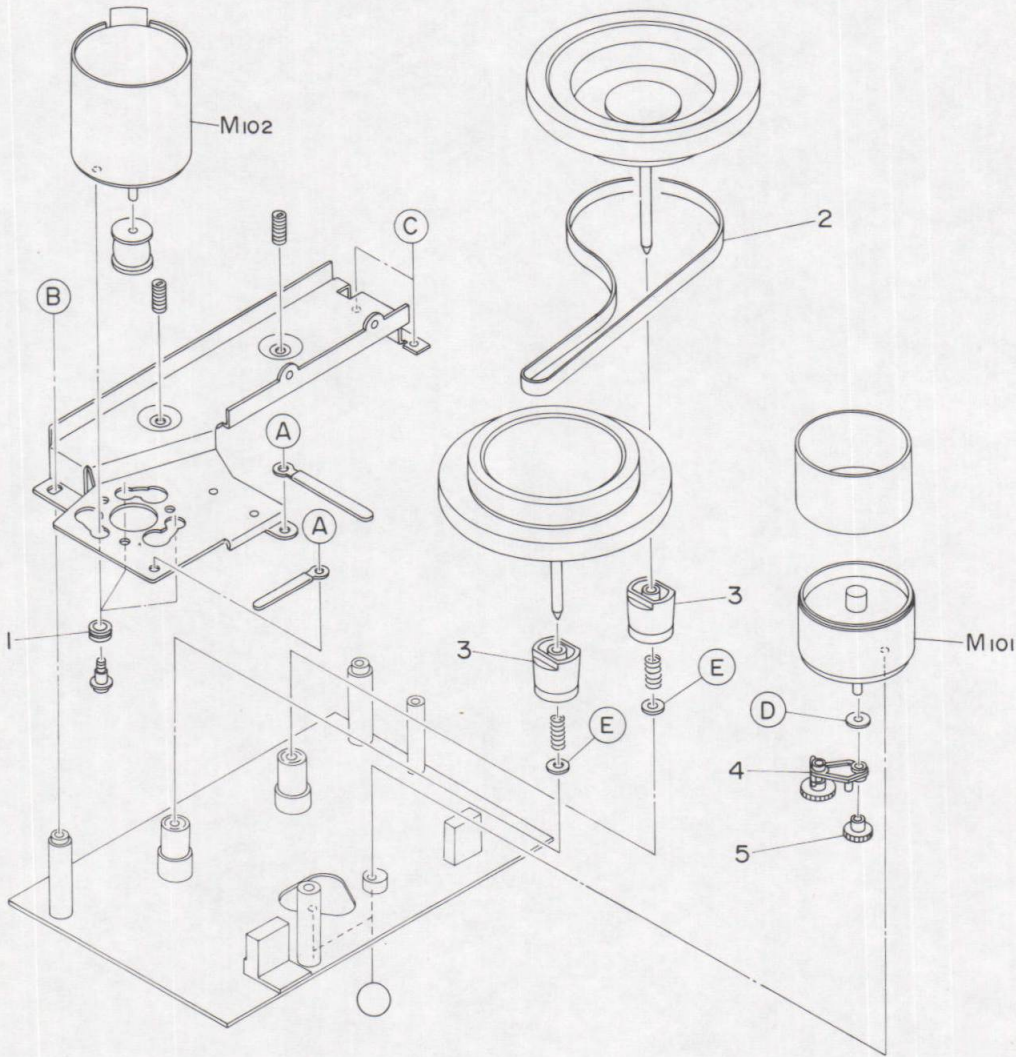
Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	4-1	81-505-246	RUBBER, DRIVE (DECK II)		2
	4-2	★81-506-217	GEAR, REVERSE (DECK I)		1
		★81-506-241	GEAR, REVERSE Q (DECK II)		1
	4-3	★81-506-218	TRIGGER LEVER, REVERSE (DECK I)		1
		★81-506-242	TRIGGER LEVER, REVERSE (DECK II)		1
	4-4	★81-506-221	T-SPRING, LEVER REVERSE		2
	4-5	★81-506-214	LEVER, REVERSE		2
	4-6	★81-506-216	LEVER, ACTUATING RESET		2
	4-7	★81-505-230	LEVER, PLAY		2
	4-8	81-505-234	GEAR, PLAY CAM		2
	4-9	★81-505-231	TRIGGER LEVER, PLAY		2
	4-10	★81-505-232	LEVER, PAUSE		2
	4-11	★81-505-332	T-SPRING, CAM A		2
	4-12	★81-505-283	T-SPRING, LEVER PAUSE		2
	4-13	81-505-235	GEAR, PAUSE CAM		2
	4-14	★81-505-233	TRIGGER LEVER, PAUSE		2
	4-15	★81-505-204	MECHANISM CHASSIS B		2
	4-16	★82-565-373	THRUST SCREW		4
	4-17	★87-085-191	RUBBER CUSHION B		3
	4-18	★87-081-483	MOTOR SCREW, M2.6		6
	4-19	81-506-317	MOTOR PULLEY C		2
	4-20	81-506-205	FLYWHEEL F Ass'y		2
	4-21	81-506-354	MAIN BELT		1
	4-22	81-506-287	FLYWHEEL RB Ass'y		2
	4-23	81-505-225	GEAR, FLYWHEEL (DECK II)		1
	4-24	★81-506-243	GEAR, FLYWHEEL (DECK II)		1
	4-25	★81-506-228	C-SPRING, FLYWHEEL R		2
	4-26	★81-505-261	C-SPRING, FLYWHEEL F		2
	4-27	★81-505-282	T-SPRING, FR IDLER (DECK II)		1
	4-28	★81-505-254	IDLER LEVER FR A (DECK II)		1
	4-29	★81-505-271	T-SPRING, TRIGGER LEVER		2
	4-30	★81-505-269	T-SPRING, PLATE PINCH		2
	4-31	★81-505-606	SHIELD SHEET		1
	4-32~36	09-011-048	REEL MOTOR Ass'y (DECK II)		1
	4-37	81-505-301	FR IDLER Ass'y P		1

AIWA Co., Ltd. Tokyo Japan

EXPLODED VIEW-5 (DECK I)

1	2	3	4	5	6	7
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Ref. No.	Part No.	Description
A	87-081-511-01	VTT+3-6
B	81-505-341-01	VFT+2.6-3 1.5
C	87-512-074-21	VFT ₂ +2.6-8
D	87-081-939-01	PW2.2-8-0.25
E	87-067-052-01	PW2.6-8-0.13



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	5-1	★87-087-029	RUBBER CUSHION		3
	5-2	81-506-318	RUBBER BELT C		1
	5-3	81-505-225	GEAR, FLYWHEEL		2
	5-4	★86-510-300	LEVER FR A Ass'y		1
	5-5	86-510-212	GEAR, MOTOR		1

■ ACCESSORIES/PACKAGE LIST

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty	
	1	82-141-904	INSTRUCTION BOOKLET (EXCEPT UB)	※	1	
		82-141-905	INSTRUCTION BOOKLET (UB only)	※	1	