

AIWA[®]

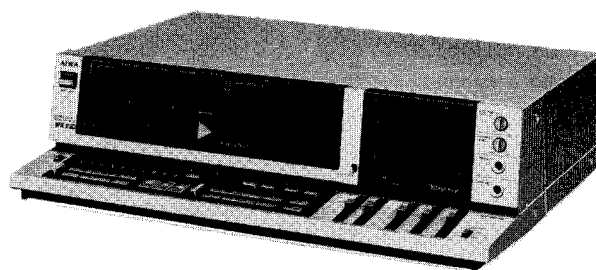
SERVICE MANUAL

S/M Code No. 83-028
DATE OF ISSUE 12/1983

STEREO CASSETTE
DECK

MODEL NO.

AD-WX220

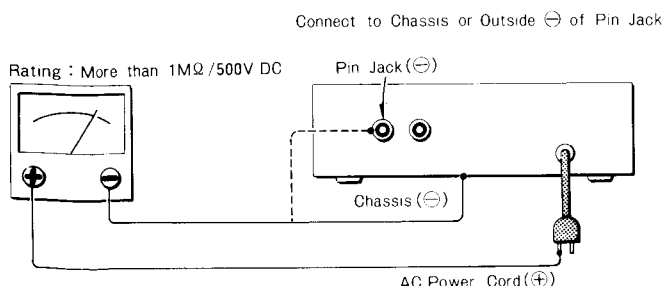


TYPE. H,HB,U,UB,E,EB,K,G,Z,ZB

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) 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.
 - 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
 - 3) idlers and pinch roller, especially.
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.

Measuring Point



SPECIFICATIONS

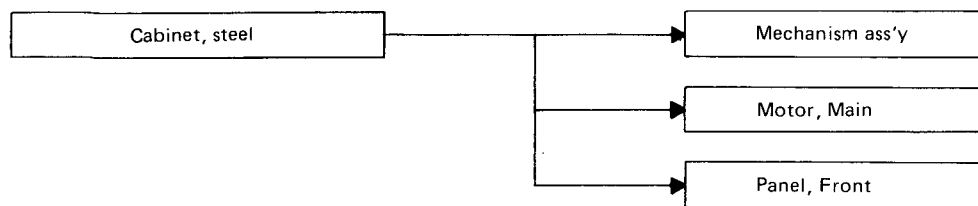
GENERAL

Power source:	H, HB models AC 120V/220V/240V Switchable 50/60 Hz U, UB models AC 120V, 60 Hz E, EB, Z, ZB models AC 220V, 50/60 Hz K, G models AC 240V, 50/60 Hz	Channel separation: (1 kHz, 0VU) Erasing ratio: (METAL, 125 Hz) Level drift: (10 kHz, 0VU) Bias frequency: Dubbing frequency/Sensitivity:	More than 30 dB More than 60 dB (Front side) More than 55 dB (Rear side) Less than ± 1 dB 100 kHz REC/PB input (LINE), Normal-speed dubbing (Front side) 2 $\pm$ 1.5 dB (10 kHz/1 kHz, DOLBY NR OFF) 0.5 $\pm$ 2.0 dB (at 1 kHz) Double-speed dubbing (Front side) 2.5 $\pm$ 3.0 dB (10 kHz/1 kHz, DOLBY NR OFF) 0 $\pm$ 2.0 dB (at 1 kHz) Double-speed dubbing (Rear side) 0.5 $\pm$ 3.0 dB (10 kHz/1 kHz, DOLBY NR OFF) 0 $\pm$ 2.0 dB (at 1 kHz)
Power consumption:	45W	Frequency response:	METAL : 20 ~ 18,000 Hz CrO ₂ : 20 ~ 17,000 Hz NORMAL : 20 ~ 16,000 Hz
Dimensions:	420(W) x 110(H) x 317(D) mm (16-1/2" x 4-3/8" x 12-1/2")	Motor:	DC servomotor x 2 DC motor x 2
Weight:	5.6 kg (12.33 lbs.)	Heads:	Playback head: SH head (I DECK) Record/playback head: SH head (II DECK) Erase head: Double-gap ferrite head
Track type:	4 track 4 channels	Input/impedance:	MIC maximum input sensitivity: -70 dB/5.6 k Ω LINE IN maximum input sensitivity: -26 dB/50 k Ω
Tape speed:	4.8 cm/s. (1-7/8 ips) 9.5 cm/s. (at dubbing)	Output/impedance/load impedance:	LINE OUT standard output level: 380 mV (0VU/3.2 k Ω /47 k Ω) Suitable load impedance: PHONE 0.8 mV/8 Ω TTA-119MX (METAL) TTA-119G (CrO ₂) TTA-119J (NORMAL)
Wow and flutter:	Less than 0.038% (WRMS)	TEST TAPE:	
Automatic stop system:	Full auto stop		
Automatic shut-off action time:	Less than 3s.		
Pinch roller pressure:	240 $\pm$ 30 g (2.35 $\pm$ 0.29 N)		
Take-up torque:	32 $\pm$ 8 g-cm (0.31 $\pm$ 0.078 mN $\cdot$ m) -7 -0.069 mN $\cdot$ m)		
FF & rewind torque:	150 $\pm$ 30 g-cm (1.47 $\pm$ 0.29 mN $\cdot$ m)		
FF & rewind time:	75 $\pm$ 10s. (C-60)		
Back tension:	1.5 ~ 4 g-cm (0.015 ~ 0.039 mN $\cdot$ m) (I DECK) 2.5 ~ 4.5 g-cm (0.025 ~ 0.044 mN $\cdot$ m) (II DECK)		
Counter indication error:	0 $\pm$ 2.5		
Playback output:	510 $\pm$ 50 mV (LINE)		
Playback noise:	Less than 1.5 mV (CrO ₂ , DOLBY C NR ON) Less than 3.5 mV (NORMAL, DOLBY C NR OFF)		
REC/PB output:	0VU $\pm$ 1.5 dB (II DECK) -0.5		
REC/PB distortion:	Less than 3.0% (LINE IN, REC/PB, METAL, CrO ₂ , NORMAL) Less than 4.0% (Back side dubbing, METAL, CrO ₂ , NORMAL)		
REC/PB SN ratio:	More than 43/49 dB (METAL, CrO ₂ , DOLBY C NR OFF/ON) More than 42/49 dB (NORMAL, DOLBY NR C OFF/ON) More than 42/49 dB (METAL, CrO ₂ , DOLBY C NR OFF/ON) More than 45/60 dB (NORMAL, DOLBY C NR OFF/ON)		
	(400 Hz, 0VU) (Un weighted) (WTD-A)		

- Specifications and external appearance are subject to change without due to product improvement.
- Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
- Dolby and the  symbol are trademarks of Dolby Laboratories Licensing Corporation.

DISASSEMBLY INSTRUCTIONS

Exploded process



1. Removing Steel Cabinet

- 1) Remove the 8 screws. (See Figure-1)

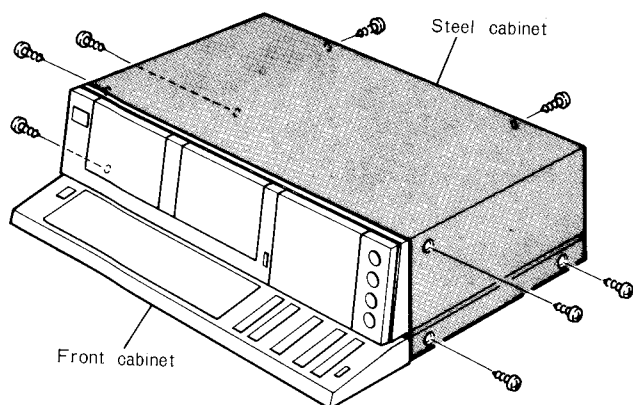


Fig. 1

3. Removing I and II Mechanism ass'y

- 1) Remove the 4 screws. (See Figure-3)

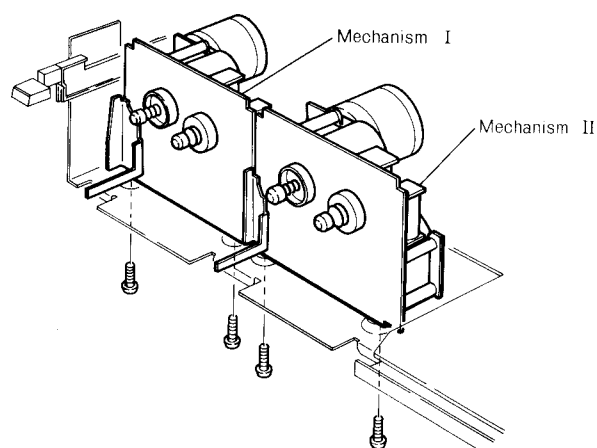


Fig. 3

2. Removing Front Panel

- 1) Remove the 9 screws. (See Figure-2)

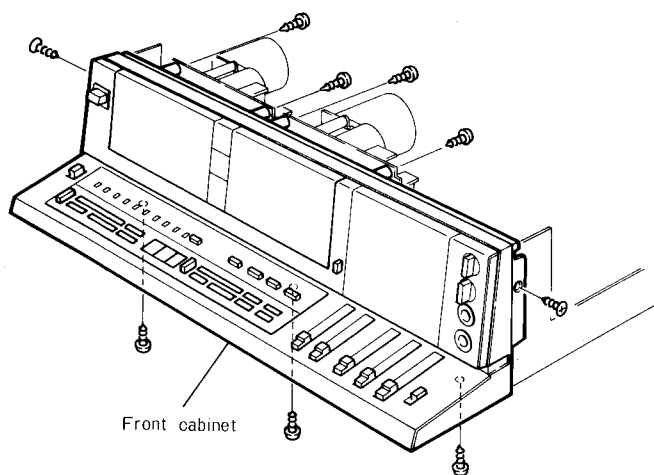


Fig. 2

4. Removing Main Motor

- 1) Remove the single screw in the direction of the arrow. (See Figure-4)

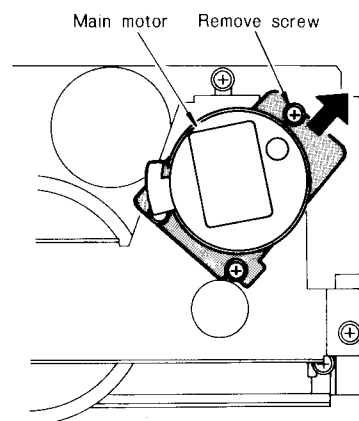
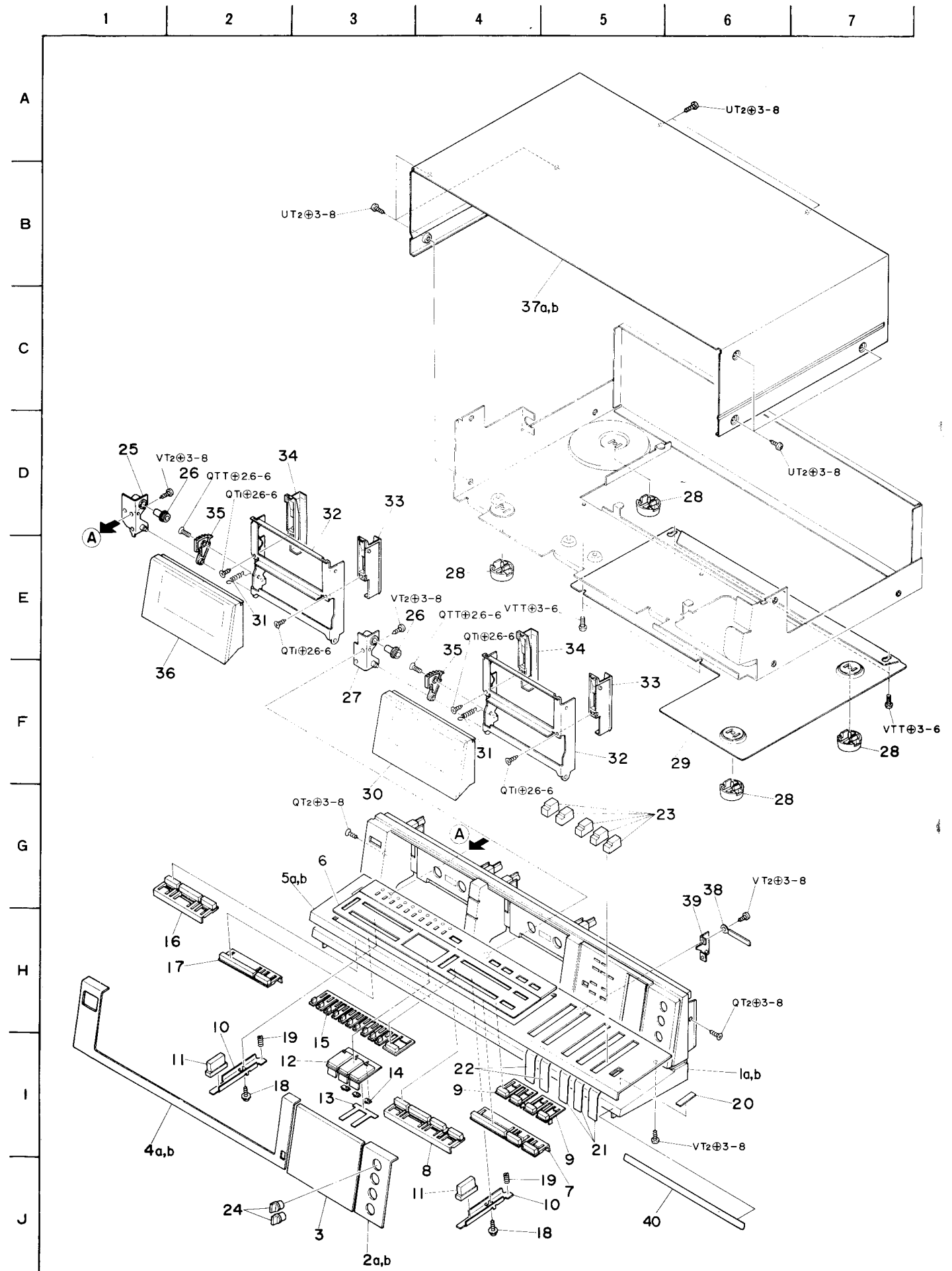


Fig. 4

EXPLODED VIEW-I



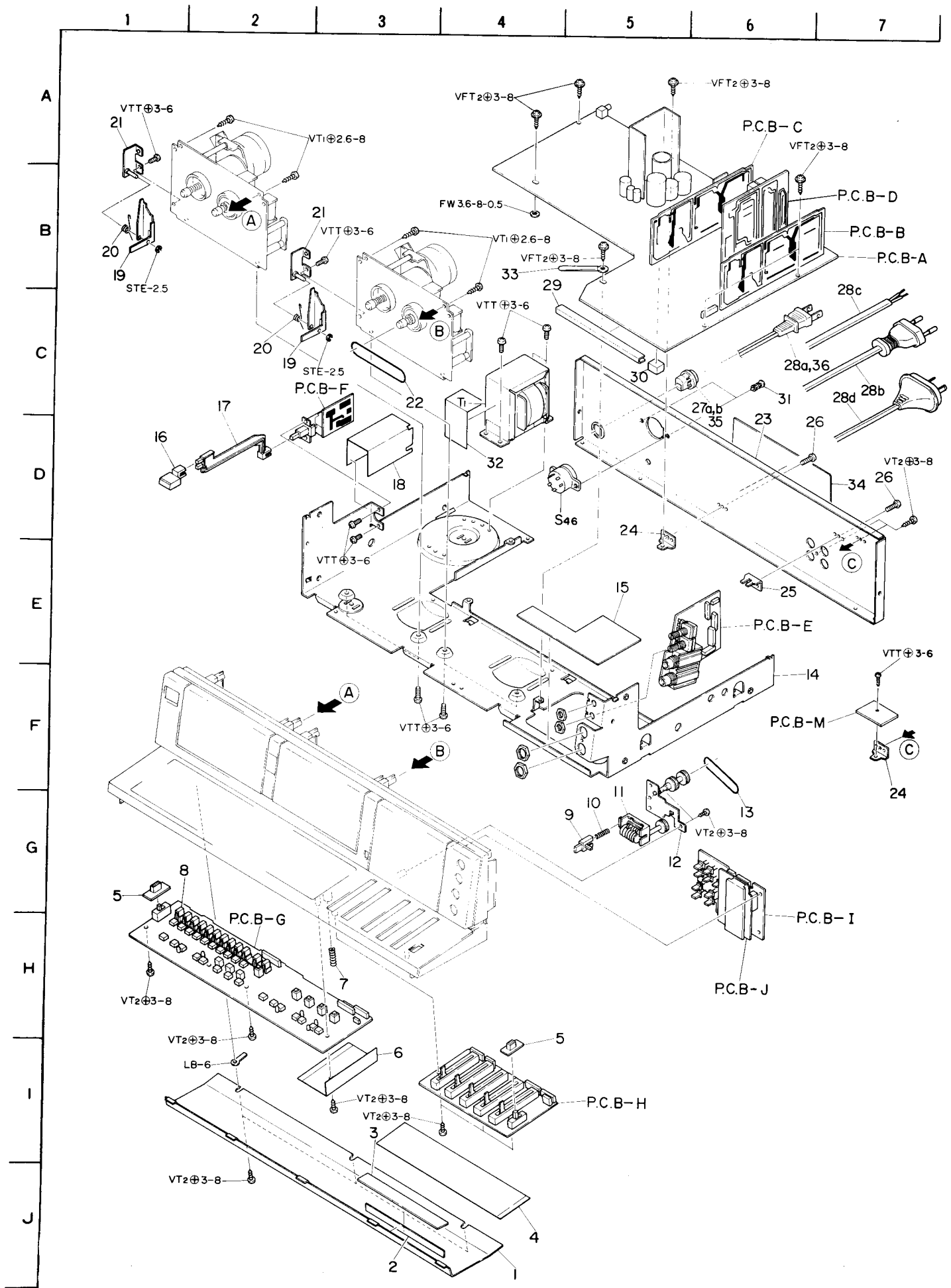
PARTS LIST

MECHANICAL PARTS LIST

■* mark in this part list shows exclusive part

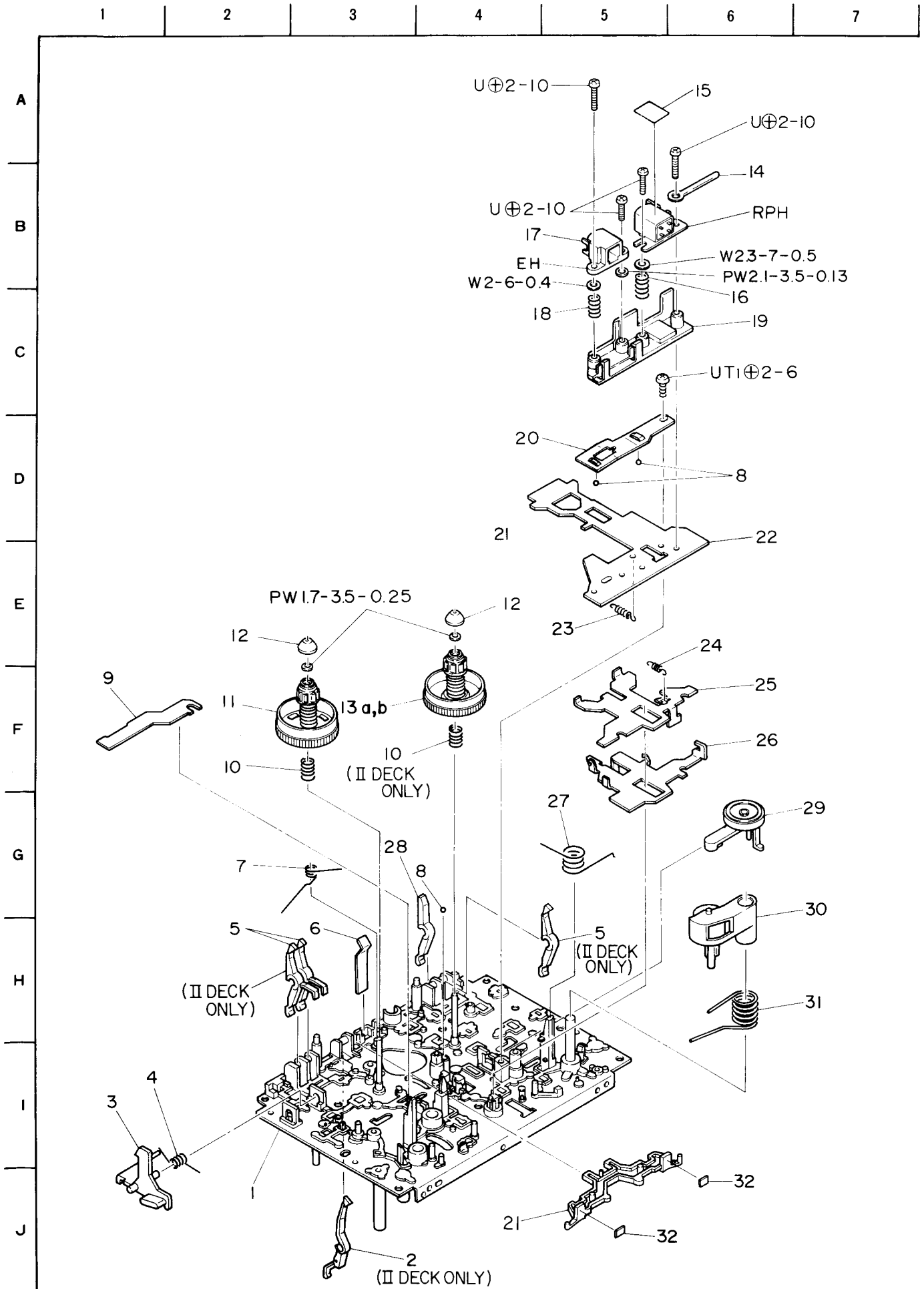
Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty
1-1a~19	82-196-002-11		Front cabinet ass'y (H, U, E, K, G, Z models only)	*	1
1-1b~19	82-196-068-01		Front cabinet ass'y (HB, UB, EB, ZB models only)	*	1
1-1a	82-196-003-11		Cabinet, Front (H, U, E, K, G, Z models only)	*	1
b	82-196-069-01		Cabinet B, Front (HB, UB, EB, ZB models only)	*	1
1-2a	82-196-025-01		Panel R, Front (H, U, E, K, G, Z models only)	*	1
b	82-196-071-01		Panel R, Front (HB, UB, EB, ZB models only)	*	1
1-3	82-196-004-01		Window, Meter	*	1
1-4a	82-196-055-01		Panel L, Front (H, U, E, K, G, Z models only)	*	1
b	82-196-070-01		Panel L, Front (HB, UB, EB, ZB models only)	*	1
1-5a	82-196-058-01		Control panel sub ass'y (H, U, E, K, G, Z models only)	*	1
b	82-196-074-01		Control panel sub ass'y (HB, UB, EB, ZB models only)	*	1
1-6	82-196-005-21		Panel, Control	*	1
1-7	82-196-010-01		Touch-key stop sub ass'y	*	1
1-8	82-196-008-01		Touch-key play sub ass'y	*	1
1-9	82-196-013-01		Touch-key, Dolby A	*	2
1-10	82-196-214-01		Eject lever A	*	2
1-11	82-196-016-01		Eject knob	*	2
1-12	82-196-014-01		Touch-key, Dubbing	*	1
1-13	82-196-229-01		Blind sheet	*	1
1-14	82-123-016-01		Guide, Light	LX-100	1
1-15	82-196-012-01		Touch-key, Memory	*	1
1-16	82-196-009-01		Touch-key play sub ass'y 2	*	1
1-17	82-196-011-01		Touch-key stop sub ass'y 2	*	1
1-18	87-511-094-21		VFT ₁ + 3 - 6	*	2
1-19	82-196-227-01		C-spring, Eject	*	2
1-20	82-196-339-01		Fiver 6-25	*	3
1-21	82-196-054-01		Sheet, Slide volume 2	*	3
1-22	82-196-052-01		Sheet, Slide volume	*	2
1-23	82-196-026-11		Knob, Slide volume	*	5
1-24	82-155-008-01		Knob, PB	AD-M800	2
1-25	82-196-210-01		Cassette box B holder ass'y	*	1
1-26	82-534-264-01		Gear, Oil dump	*	2
1-27	82-196-205-01		Cassette box A holder ass'y	*	1
1-28	87-055-055-01		Rubber foot	*	4
1-29	82-196-023-01		Cabinet, Bottom	*	1
1-30	82-196-020-01		Cassette window B ass'y	*	1
1-31	82-196-225-01		E-spring, Cassette box	*	2
1-32	82-196-202-01		Cassette box ass'y	*	2
1-33	82-196-029-01		Holder R, Cassette	*	2
1-34	82-196-028-01		Holder L, Cassette	*	2
1-35	82-161-325-11		Gear, Oil dump	*	2
1-36	82-196-017-01		Cassette window A ass'y	*	1
1-37a	82-188-035-11		Cabinet, steel (H, U, E, K, G, Z models only)	AD-F990	1
b	82-196-073-01		Cabinet B, Steel (HB, UB, EB, ZB models only)	*	1
1-38	87-038-039-01		Wire binder	*	1
1-39	82-196-212-01		Cassette box holder C ass'y	*	1
1-40	82-196-061-11		Sheet, BIAS instruction	*	1

EXPLODED VIEW-2



Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty
2-1	82-196-015-11		Cabinet A, Bottom	*	1
2-2	82-196-236-11		Film sheet A	*	1
2-3	82-196-238-06		Sheet 30-110, Bottom cabinet	*	2
2-4	82-196-231-01		Cover A	*	1
2-5	82-196-045-01		Knob, Slide switch	*	2
2-6	82-196-242-01		Shield plate, Circuit board	*	1
2-7	82-196-235-11		C-spring, Earth	*	1
2-8	82-196-223-01		Guide, LED	*	1
2-9	82-196-032-01		Knob, Counter reset	*	1
2-10	82-196-224-01		C-spring, Counter reset	*	1
2-11	87-040-167-01		Counter		1
2-12	82-196-220-11		Counter holder ass'y	*	1
2-13	82-422-279-01		Belt, Counter		1
2-14	82-196-201-11		Chassis, Amp.	*	1
2-15	82-196-232-01		Cover B	*	1
2-16	84-700-003-01		Push-button, POWER		1
2-17	82-587-206-01		Rod 87.8	CS-880	1
2-18a	82-196-234-01		Cover, POWER (H, HB models only)	*	1
b	82-196-244-01		Cover, POWER (U, UB, E, EB, K, G, Z, ZB models only)	*	1
2-19	82-196-215-01		Eject lever B	*	2
2-20	82-196-228-01		T-spring, Eject	*	2
2-21	82-196-217-01		Eject lever holder ass'y	*	2
2-22	82-196-240-01		Belt ϕ 45.2	*	1
2-23a~28a	82-196-059-11		Rear panel ass'y (H, HB models only)	*	1
2-23b~26	82-196-062-01		Rear panel ass'y (U, UB models only)	*	1
2-23c~28b	82-196-063-11		Rear panel ass'y (E, EB models only)	*	1
2-23d~28c	82-196-064-11		Rear panel ass'y (K model only)	*	1
2-23e~28d	82-196-066-01		Rear panel ass'y (G model only)	*	1
2-23f~28b	82-196-067-01		Rear panel ass'y (Z, ZB models only)	*	1
2-23a	82-196-046-11		Panel, Rear (H, HB models only)	*	1
b	82-196-050-01		Panel, Rear (U, UB models only)	*	1
c	82-196-048-01		Panel, Rear (E, EB models only)	*	1
d	82-196-049-01		Panel, Rear (K model only)	*	1
e	82-196-051-01		Panel, Rear (G model only)	*	1
f	82-196-065-01		Panel, Rear (Z, ZB models only)	*	1
2-24	82-184-223-01		Holder 2, Circuit board	FX-100	2
2-25	82-196-233-01		Holder H, Circuit board	*	1
2-26	87-081-502-01		VTT + 2.6-6		3
2-27a	87-085-184-01		Cord bushing (H, HB models only)		1
b	87-085-185-01		Cord bushing (E, EB, K, G, Z, ZB models only)		1
2-28a	87-034-958-01		AC power cord (H, HB models only)		1
b	87-034-877-01		AC power cord (E, EB, Z, ZB models only)		1
c	87-034-975-01		AC power cord (K model only)		1
d	87-034-892-01		AC power cord (G model only)		1
2-29	82-196-237-01		Felt 15-110	*	1
2-30	82-190-213-01		G cushion 18-8	AD-F660	1
2-31	87-085-090-01		Nylon rivet 3-6.5 (H, HB model only)		2
2-32	82-790-650-01		Insulation sheet (K, Z, ZB models only)	MX-70	1
2-33	87-038-039-01		Wire binder		1
2-34	82-196-056-01		Name plate, Spec. (U, UB model only)	*	1
2-35	87-085-184-01		Cord bushing (U, UB models only)		1
2-36	87-034-951-01		AC power cord (U, UB models only)		1

EXPLODED VIEW-3



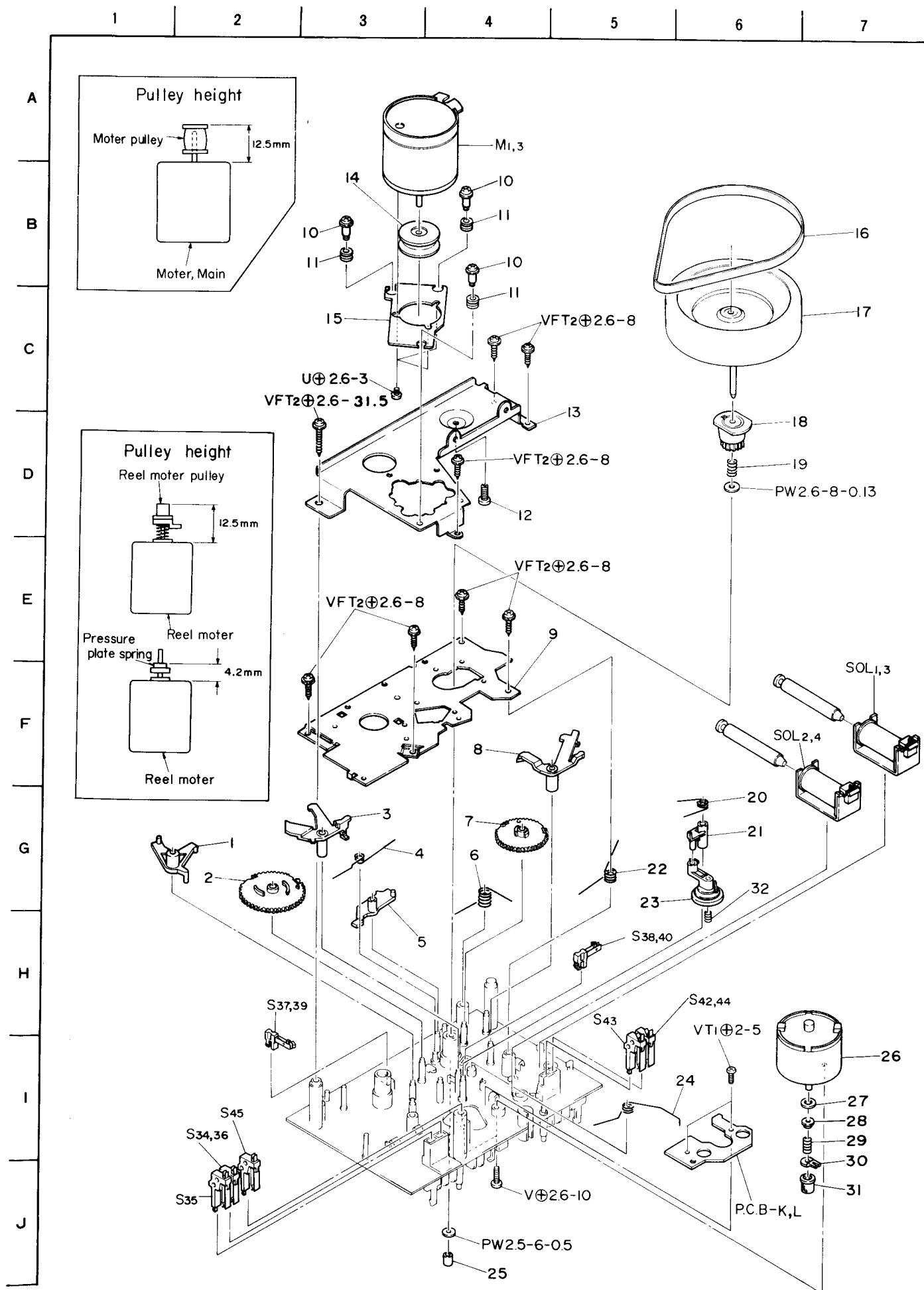
The following parts list shows the common parts of I and II Decks, and also the exclusive parts of B Deck.

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty
3-1	81-505-297-31		Outsert chassis ass'y		2
3-2	81-505-242-11		Lever, Metal (II DECK model only)		1
3-3	81-505-239-01		Eject lever		2
3-4	81-505-273-01		T-spring, Lid lock		2
3-5	81-505-241-21		Lever, REC blocking		I: 1/II: 3
3-6	81-505-260-01		P-spring, Pressure cassette		2
3-7	81-505-268-01		T-spring, Slide brake		2
3-8	87-073-005-01		Steel ball $\phi 2$		6
3-9	81-505-238-01		Blocking lever, Eject		2
3-10	81-505-274-01		C-spring, Supply reel platform		I: 1/II: 2
3-11	81-505-275-01		Supply reel platform ass'y		2
3-12	82-303-398-01		Cap, Take-up reel platform		4
3-13a	81-505-276-21		Take-up reel platform ass'y (I DECK model only)		1
b	81-505-338-01		Take-up reel platform ass'y (II DECK model only)		1
3-14	87-038-056-01		Wire binder		2
3-15	87-057-645-01		Lable SH, Head		2
3-16	81-505-262-01		C-spring, RPH		2
3-17	82-598-622-01		EH dummy (I DECK model only)		1
3-18	81-505-285-01		C-spring, EH		2
3-19	81-505-279-11		Head base 3H		2
3-20	81-505-259-01		P-spring, Actuating chassis		2
3-21	81-505-236-01		Lever, Slide brake		2
3-22	81-505-266-11		Actuating chassis		2
3-23	81-505-333-01		E-spring, Actuating chassis		2
3-24	81-505-266-01		E-spring, PAUSE plate		2
3-25	81-505-207-01		PAUSE plate		2
3-26	81-505-208-01		Plate, Pinch lever		2
3-27	81-505-270-01		T-spring, Idler lever		2
3-28	81-505-240-01		Lever, Cassette sensor		2
3-29	81-505-216-31		Idler lever ass'y		2
3-30	81-505-210-21		Pinch lever ass'y		2
3-31	81-505-302-01		T-spring, Pinch FP		2
3-32	81-505-237-01		Felt, Slide brake		4

Part No.	Description
87-251-037-21	U+2-10
87-251-070-21	U+2.6-3
87-261-075-21	V+2.6-10
87-351-034-11	VT ₁ +2-5
87-351-074-21	VT ₁ +2.6-8
87-321-073-21	QT ₁ +2.6-6
87-341-035-21	UT ₁ +2-6
87-340-095-01	UT ₂ +3-8
87-353-095-21	VT ₂ +3-8
87-081-511-01	VTT+3-6
87-081-525-01	QTT+2.6-6
87-323-095-21	QT ₂ +3-8

Part No.	Description
87-512-074-01	VFT ₂ +2.6-8
81-505-229-01	VFT ₂ +2.6-30
87-513-095-01	VFT ₂ +3-8
87-081-808-01	PW1.7-3.5-0.25
87-067-015-01	PW2.1-3.5-0.13
82-416-358-01	PW2.5-6-0.5
87-067-052-01	PW2.6-8-0.13
87-081-998-01	FW3.1-6-1.0
87-081-911-01	FW3.6-8-0.5
87-410-305-01	W2-6-0.4
87-410-308-01	W2.3-7-0.5
87-441-008-01	STE-2.5

EXPLODED VIEW-4



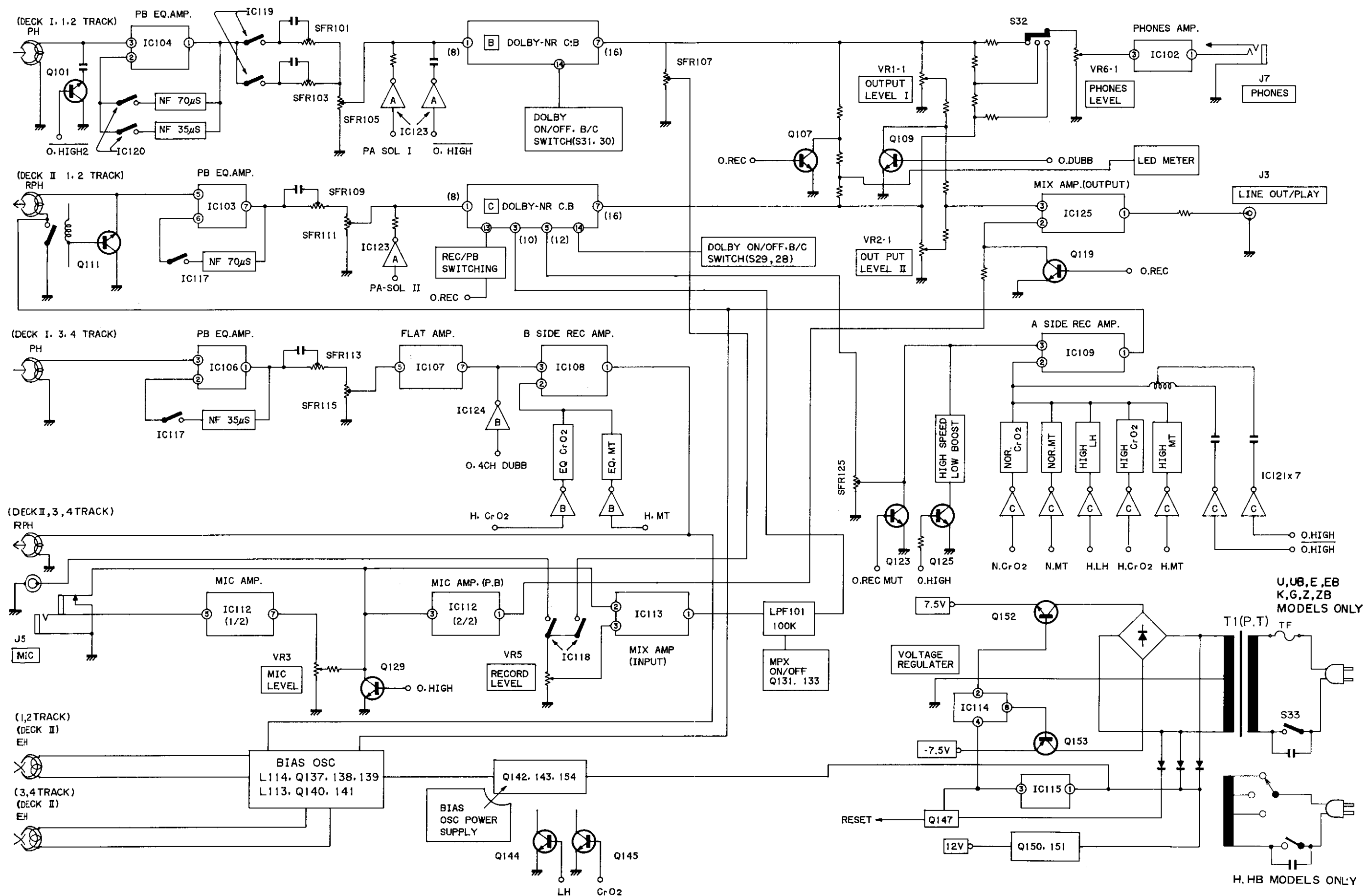
Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty
4-1	81-505-230-01		Lever, PLAY		2
4-2	81-505-234-11		Gear, PLAY cam		2
4-3	81-505-231-01		Trigger lever, PLAY		2
4-4	81-505-332-01		T-spring, Cam		2
4-5	81-505-232-01		Lever, PAUSE		2
4-6	81-505-283-01		T-spring, PAUSE lever		2
4-7	81-505-235-01		Gear, PAUSE cam		2
4-8	81-505-233-01		Trigger lever, PAUSE		2
4-9	81-505-204-11		Chassis B, Mechanism		2
4-10	87-081-483-01		Motor screw, M2.6		6
4-11	87-087-029-01		Rubber cushion		6
4-12	82-794-219-01		Screw, Thrust		2
4-13	82-196-230-11		Holder W, Motor	*	2
4-14	81-505-300-01		Pulley 2-16.8, Motor		2
4-15	82-598-228-01		Plate, Motor	CA-W10	2
4-16	82-180-223-01		Rubber belt, Main	SD-L80	2
4-17	81-505-316-11		Flywheel C ass'y		2
4-18	81-505-225-01		Gear, Flywheel		2
4-19	81-505-261-01		C-spring, Flywheel F		2
4-20	81-505-282-01		T-spring, FR idler		2
4-21	81-505-254-11		Lever A, FR idler		2
4-22	81-505-271-01		T-spring, Trigger lever		2
4-23	81-505-301-11		FR idler P ass'y		2
4-24	81-505-269-01		T-spring, Pinch plate		2
4-25	81-505-246-11		Rubber, Drive		2
4-26~31	09-047-198-01		Reel motor ass'y		2
4-26	81-505-604-11		Reel motor		2
4-27	81-505-328-01		Felt 4.5-7.2-1		2
4-28	82-505-289-01		Pressure plate spring		2
4-29	81-505-290-01		C-spring, FR idler C		2
4-30	81-505-257-01		Pulley, Reel motor		2
4-31	81-505-335-01		Spacer C		2

ACCESSORIES/PACKAGE LIST

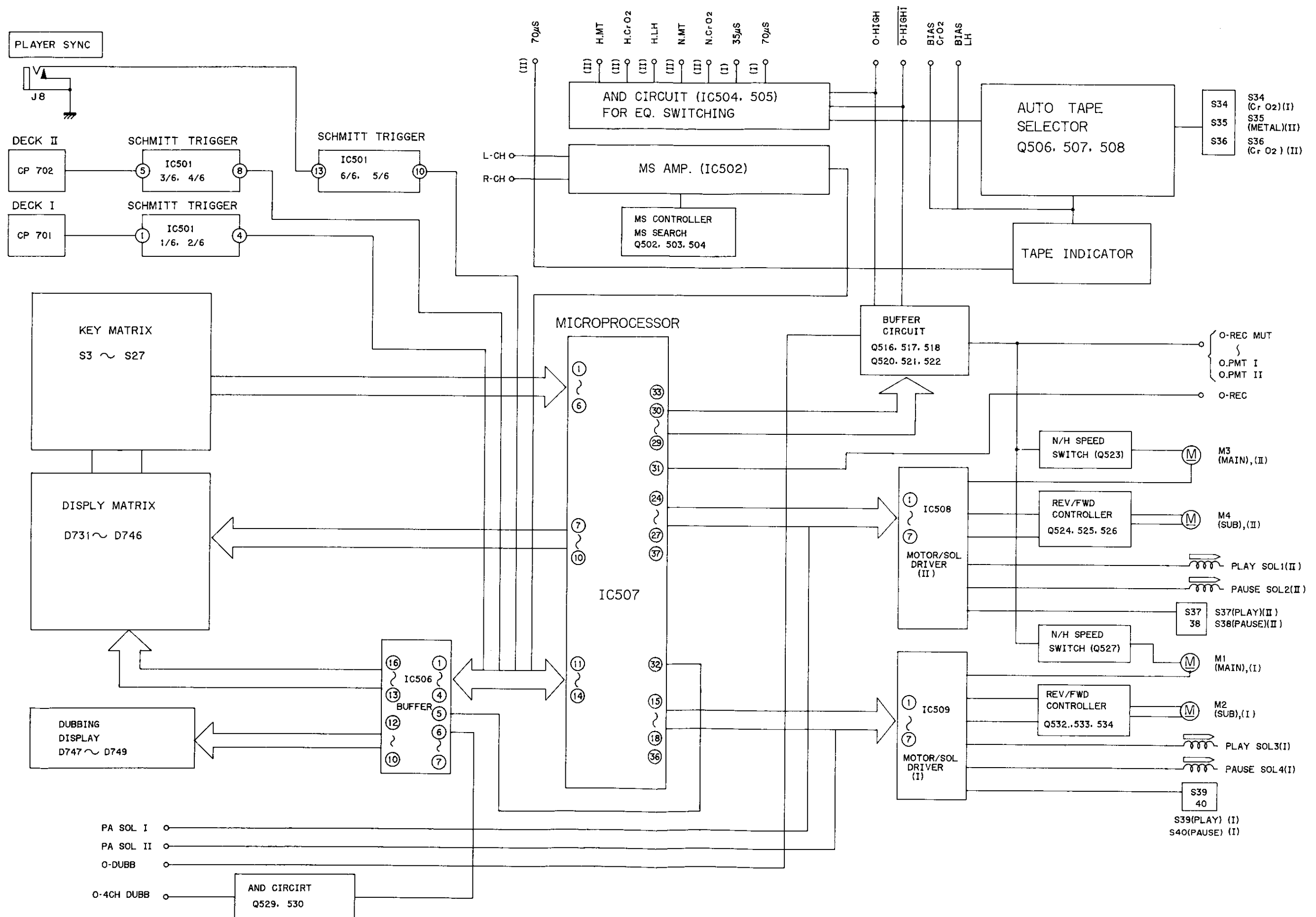
Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty
1	82-196-854-01		Printed indiv., Packing	*	1
2	82-196-852-01		Front cushion, Printed indiv.	*	1
3	82-196-853-01		Rear cushion, Printed indiv.	*	1
4	82-190-855-01		Pad, Auxiliary	AD-FF60	1
5 a	82-196-855-01		Outer carton (H, HB, E, EB, K, G, Z, ZB models only)	*	1
b	82-196-856-01		Outer carton (U, UB, models only)	*	1
6	87-051-131-11		Poly-Dinyl sack (H, HB, U, UB models only)		1
7	87-051-135-11		Poly-vinyl sack (E, EB, K, G, Z, ZB models only)		1
8	87-056-627-01		Poly-Vinyl sack		1
9	87-056-651-01		Color label, Black (HB, UB, EB, ZB models only)		1
10	82-196-904-01		Instructions booklet	*	1
11	82-598-916-01		Caution label Dubbing (K model only)		1
12	87-051-171-11		Poly-Vinyl sack		1
13	87-056-008-11		Label, AC power cord (K model only)		1
14	87-056-009-51		Distributors list (H, HB, E, EB, K, G, Z, ZB models only)		1
15 a	87-056-045-01		Guarantee card (U, UB models only)		1
b	87-056-059-01		Guarantee card (G model only)		1
16	87-056-050-11		Safety instruction (U, UB models only)		1
17	87-056-084-01		Waranty card (U, UB models only)		1
18	87-032-845-01		Siempns plug (H, HB models only)		1
19	87-034-978-01		Connection cord, CW-254BSK		1

AIWA Co., Ltd. Tokyo Japan

BLOCK DIAGRAM-1



BLOCK DIAGRAM-2



ELECTRICAL MAIN PARTS LIST

Symbol No.	Part No.	Description
≪ MAIN CIRCUIT BOARD SECTION ≫		
PCB-A	*	Main circuit board
IC103, 104, 106	87-027-814-01	IC, NJM4562D-D
IC107, 108, 113, 125	87-027-895-01	IC, M5218L
IC114	87-027-986-01	IC, NJM4560S
IC115	87-020-111-01	IC, L78M05
IC117, 118, 119, 120	87-020-096-01	IC, M4066BP
IC123, 124	87-027-948-01	IC, M54514AP
IC501, 502	87-027-538-01	IC, μ PD4069
IC503	87-027-739-01	IC, NJM4556D-D
④ IC504, 505	87-027-565-01	IC, CMOS TC4081BP
IC506	87-027-840-01	IC, M54519P
④ IC507	82-196-601-01	IC, LC-6502C
IC508, 509	87-027-909-01	IC, M54523P
Q101, 102, 103, 114, 115, 127, 131, 132, 133, 134, 135, 136, 142, 144, 145, 151, 502, 503, 504, 509, 510, 511, 512, 513, 514, 515, 519, 530, 535	89-318-155-01	Transistor, 2SC1815 (GR)
Q105, 106, 117, 118, 119, 121, 122, 129, 137, 138, 139, 140, 141, 523, 527	89-320-011-01	Transistor, 2SC2001 (K)
Q111, 112	89-406-555-01	Transistor, 2SD655E
Q113, 143, 501, 505, 506, 507, 508, 516, 517, 518, 520, 521, 522, 528, 529	89-110-155-01	Transistor, 2SA1015 (GR)
Q150	89-408-804-51	Transistor, 2SD880 (Y, GR) (U, UB, G, Z, ZB models only)
Q150	89-412-653-41	Transistor, 2SD1265 (OP) (H, HB, E, EB, K models only)
Q152	89-318-464-51	Transistor, 2SC1846R (R, S) (H, HB, U, UB, G models only)
Q152	89-325-906-71	Transistor, 2SC2590 (R, S) (E, EB, K, Z, ZB models only)
Q153	89-108-854-51	Transistor, 2SA885R (R, S)
Q154	89-408-805-01	Transistor, 2SD880 (GR)
Q524, 526, 532, 533	89-109-521-01	Transistor, 2SA952K
Q525, 534	89-408-804-51	Transistor, 2SD880Y (Y, GR)
D102	87-027-606-01	Zener diode, HZ7C2L
D103, 115, 503, 512	87-020-095-01	Diode, MC921
D109, 111, 116, 130,	87-027-097-01	Diode, 1S1555

Symbol No.	Part No.	Description
501, 502, 504, 505, 511, 513, 514, 515, 516, 517, 518, 519, 521, 522, 523, 524, 527, 528		
D114	87-027-301-01	Zener diode, HZ3A1
D118	87-027-555-01	Zener diode, HZ5C2
D119	87-020-123-01	Diode, DS446
D122	87-027-283-01	Zener diode, 05Z13U
D123, 124	87-027-537-01	Diode, S5277B LB
D125	87-027-376-01	Diode, 1B4B41
D526	88-052-188-11	Diode, 1S188FM
L101, 102, 105, 106, 107, 108	82-196-603-01	Trap coil, 100 μ H
L103, 104	87-003-091-01	Coil, 2.2mH
L111, 112	87-003-051-01	Choke coil, 470 μ H
L113	82-196-605-01	OSC coil, A2
L114	82-196-606-01	OSC coil, B2
L501	82-196-649-01	OSC coil, LC6502C
LPF101, 102	82-196-657-01	Low-pass filter, LP100K
RY101	87-045-202-01	Lead relay, RP-13A
J8	87-049-054-01	Jack, 2.5 ϕ (PLAYER SYNC)
J1, 2, 3, 4	87-049-301-01	Pin jack, 4P (LINE IN/REC L, LINE IN/REC R, LINE OUT/PLAY L, LINE OUT/PLAY R)
SFR101, 102, 103, 104, 109, 110, 113, 114, 117, 118, 121, 122	87-021-745-01	Semi-fixed resistor, 47k Ω -B
SFR105, 106, 111, 112, 115, 116, 125, 126	87-021-744-01	Semi-fixed resistor, 33k Ω -B
SFR107, 108	87-021-634-01	Semi-fixed resistor, 10k Ω -B
SFR501, 502	87-021-735-01	Semi-fixed resistor, 220 Ω -B
PIN	87-033-144-01	Pin
PIN	82-196-656-01	Pin, 3P
PIN1	87-049-275-01	Pin, 5P
PIN2, 14, 15, 20, 21, 27, 28	87-049-273-01	Pin, 3P
PIN3, 4, 10	87-049-277-01	Pin, 7P
PIN5, 9, 22, 23, 24	87-049-276-01	Pin, 6P
PIN8	87-049-279-01	Pin, 9P
PIN11, 19	87-049-281-01	Pin, 11P
PIN12, 16, 17	87-049-280-01	Pin, 10P
PIN13, 25, 26	87-049-274-01	Pin, 4P
PIN18	87-049-278-01	Pin, 8P
CON2	82-196-639-01	Connector ass'y, 3P
CON16	82-196-629-01	Connector ass'y, 10P
CON17	82-196-635-01	Connector ass'y, 10P
CON18	82-196-628-01	Connector ass'y, 8P
CON19	82-196-634-01	Connector ass'y, 11P
CON29	82-196-653-01	Connector ass'y, 3P
		< Resistors >
△ R419	87-029-367-01	15 Ω 1/2W Fuse resistor

Symbol No.	Part No.	Description
△ R420	87-029-108-01	1 Ω 1/2W Fuse resistor
△ R443	87-029-089-01	4.7 Ω 1/4W Fuse resistor
		< Capacitors >
C111, 112, 141, 142, 169, 170	87-014-119-01	0.027 μ F PP
C113, 114, 143, 144, 171, 172	87-015-425-01	1 μ F 25V Aluminum solid
C251, 252	87-014-055-01	820pF PP
C255, 266	82-304-706-01	2200pF 630V PP
≪ DOLBY-NR CIRCUIT BOARD SECTION ≫		
	82-191-630-01	Dolby-unit (W/PCB-B, C)
≪ REC AMP CIRCUIT BOARD SECTION ≫		
PCB-D	*	REC AMP circuit board
IC109	87-027-895-01	IC, M5218L
IC121, 122	87-027-948-01	IC, M54514AP
Q123, 124	89-320-011-01	Transistor, 2SC2001 (K)
Q125, 126, 147, 148, 149	89-318-155-01	Transistor, 2SC1815 (GR)
Q146	89-110-155-01	Transistor, 2SA1015 (GR)
D117	87-027-097-01	Diode, 1S1555
L109, 110	82-196-604-01	Coil, 2.2/6.8mH
CON1	82-196-655-01	Connector ass'y, 5P
	82-188-618-01	Pin, 5P
≪ JACK CIRCUIT BOARD SECTION ≫		
PCB-E	*	Jack circuit board
IC102	87-020-052-01	IC, NJM4556S
IC112	87-027-895-01	IC, M5218L
J5, 7	82-196-602-01	Jack, 6.3 ϕ (MIX MIC, PHONES)
VR6-1, 6-2	82-196-610-01	Volume, 10k Ω -A (PHONES LEVEL)
VR7	82-196-611-01	Volume, 10k Ω -B (BIAS FINE NORMAL/CrO ₂)
CON4	82-196-654-01	Connector ass'y, 7P
≪ SWITCH CIRCUIT BOARD SECTION ≫		
PCB-F	*	Switch circuit board
△ S33	87-031-753-01	Push switch (POWER)
	82-304-743-01	1P terminal
		< Capacitors >
△ C1	87-019-110-01	0.01 μ F Spark killer (H, HB models only)
△ C1	87-109-112-01	0.01 μ F Spark killer (U, UB, E, EB, K, Z, ZB models only)
≪ KEY SWITCH CIRCUIT BOARD SECTION ≫		
PCB-G	*	Key switch circuit board
Q104, 701, 704	89-406-365-01	Transistor, 2SD636 (S)
D101, 113, 703~730, 750	87-027-097-01	Diode, 1S1555
D701	87-020-091-01	LED, LN322GP (PROGRAM)
D702	87-020-092-01	LED, LN422YP (MS)
D731, 732	87-020-102-01	LED, GL-4PG5 (II DECK PLAY, I DECK/PROGRAM)
D733, 734, 737, 738, 740, 741, 742, 744, 745, 746	87-020-093-01	LED, LN222RP (PROGRAM 1~10)
D735, 736	87-020-103-01	LED, GL-4HY5 (I, II DECK PAUSE)

Symbol No.	Part No.	Description
D739, 743	87-020-101-01	LED, GL-4PR5 (II DECK REC MUTE, RECORD)
D747, 748, 749	87-027-772-01	LED, GL-9PR4 (DUBBING A, B, A+B)
S1	87-031-807-01	Slide switch (TIMER)
S2, 28, 29, 30, 31	87-031-806-01	Push-switch (MS SELECTOR, II DECK Dolby-NR B/C ON/OFF, I DECK DOLBY-NR B/C, ON/OFF)
S3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27	87-031-771-01	Tact switch (I DECK REW/REV, I DECK PLAY/PROGRAM I DECK F. FWD/CUE, I DECK STOP, I DECK PAUSE, II DECK REW/REV, II DECK PLAY II DECK II DECK F. FWD/CUE, II DECK STOP, II DECK PAUSE, II DECK RECORD, II DECK REC MUTE, DUBBING A, B, A+B, PROGRAM 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)
CON6	82-196-645-01	Connector ass'y, 6P
CON10	82-196-646-01	Connector ass'y, 7P
CON11	82-196-647-01	Connector ass'y, 11P
CON12	82-196-651-01	Connector ass'y, 10P
CON13	82-196-652-01	Connector ass'y, 4P
≪ VOLUME CIRCUIT BOARD SECTION ≫		
PCB-H	*	Volume circuit board
Q107, 108	89-318-155-01	Transistor, 2SC1815 (GR)
Q109, 110	89-320-011-01	Transistor, 2SC2001 (K)
D108	87-027-097-01	Diode, 1S1555
S32	87-031-807-01	Slide switch (PHONES MONITOR)
VR1-1/1-2, 2-1/2-2	82-196-607-01	Slide volume, 10k Ω -A (OUTPUT LEVEL I DECK L/R, OUTPUT LEVEL II DECK L/R)
VR3	82-196-608-01	Slide volume, 10k Ω -A (MIC LEVEL)
VR4, 5	82-196-609-01	Slide volume, 30k Ω -A (RECORD LEVEL)
CON3	82-196-642-01	Connector ass'y, 7P
CON7	82-196-640-01	Connector ass'y, 3P
CON8	82-196-643-01	Connector ass'y, 9P
CON9	82-196-641-01	Connector ass'y, 6P
≪ LED-1 CIRCUIT BOARD SECTION ≫		
PCB-I	*	LED-1 circuit board
D104, 106, 506, 510	87-027-542-01	LED, LN217RP (I, II DECK, C, METAL CrO ₂ /METAL)
D105, 107, 508, 509	87-027-543-01	LED, LN317GP (I, II DECK NORMAL)
D507	87-027-671-01	LED, LN417YP (II DECK, CrO ₂)
CON5	82-196-644-01	Connector ass'y, 6P
PIN6	87-049-316-01	Pin, 6P
PIN7	87-049-068-01	Pin, 3P
≪ LED METER CIRCUIT BOARD SECTION ≫		
	82-196-612-01	Indicator module (w/PCB-J)
≪ LED-2 CIRCUIT BOARD SECTION ≫		
PCB-K	81-505-605-01	LED-2 circuit board
CP-701	87-027-644-01	Photo sensor, NJL-5141EA
≪ LED-3 CIRCUIT BOARD SECTION ≫		
PCB-L	81-505-605-01	LED-3 circuit board
CP702	87-027-644-01	Photo sensor, NJL-5141EA

≪ TRA
PCB-M
L3

≪ MIS

△ T1

△ T1

△ T1

△ T1

△ S46

RPH

EH

PH

SOL1, 2

M1, 3

M2, 4

D120

D121

S34, 36

S35, 42

44, 45

S37, 38

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Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
501, 502, 504, 505, 511, 513, 514, 515, 516, 517, 518, 519, 521, 522, 523, 524, 527, 528			 R420	87-029-108-01	1Ω 1/2W Fuse resistor
D114	87-027-301-01	Zener diode, HZ3A1	 R443	87-029-089-01	4.7Ω 1/4W Fuse resistor
D118	87-027-555-01	Zener diode, HZ5C2			< Capacitors >
D119	87-020-123-01	Diode, DS446	C111, 112, 141, 142, 169, 170	87-014-119-01	0.027μF PP
D122	87-027-283-01	Zener diode, 05Z13U	C113, 114, 143, 144, 171, 172	87-015-425-01	1μF 25V Aluminum solid
D123, 124	87-027-537-01	Diode, S5277B LB	C251, 252	87-014-055-01	820pF PP
D125	87-027-376-01	Diode, 1B4B41	C255, 266	82-304-706-01	2200pF 630V PP
D526	88-052-188-11	Diode, 1S188FM			« DOLBY-NR CIRCUIT BOARD SECTION »
L101, 102, 105, 106, 107, 108	82-196-603-01	Trap coil, 100μH		82-191-630-01	Dolby-unit (W/PCB-B, C)
L103, 104	87-003-091-01	Coil, 2.2mH			« REC AMP CIRCUIT BOARD SECTION »
L111, 112	87-003-051-01	Choke coil, 470μH	PCB-D	*	REC AMP circuit board
L113	82-196-605-01	OSC coil, A2	IC109	87-027-895-01	IC, M5218L
L114	82-196-606-01	OSC coil, B2	IC121, 122	87-027-948-01	IC, M54514AP
L501	82-196-649-01	OSC coil, LC6502C	Q123, 124	89-320-011-01	Transistor, 2SC2001 (K)
LPF101, 102	82-196-657-01	Low-pass filter, LP100K	Q125, 126, 147, 148, 149	89-318-155-01	Transistor, 2SC1815 (GR)
RY101	87-045-202-01	Lead relay, RP-13A	Q146	89-110-155-01	Transistor, 2SA1015 (GR)
J8	87-049-054-01	Jack, 2.5φ (PLAYER SYNC)	D117	87-027-097-01	Diode, 1S1555
J1, 2, 3, 4	87-049-301-01	Pin jack, 4P (LINE IN/REC L, LINE IN/REC R, LINE OUT/PLAY L, LINE OUT/PLAY R)	L109, 110	82-196-604-01	Coil, 2.2/6.8mH
			CON1	82-196-655-01	Connector ass'y, 5P
SFR101, 102, 103, 104, 109, 110, 113, 114, 117, 118, 121, 122	87-021-745-01	Semi-fixed resistor, 47kΩ-B		82-188-618-01	Pin, 5P
SFR105, 106, 111, 112, 115, 116, 125, 126	87-021-744-01	Semi-fixed resistor, 33kΩ-B			« JACK CIRCUIT BOARD SECTION »
SFR107, 108	87-021-634-01	Semi-fixed resistor, 10kΩ-B	PCB-E	*	Jack circuit board
SFR501, 502	87-021-735-01	Semi-fixed resistor, 220Ω-B	IC102	87-020-052-01	IC, NJM4556S
PIN	87-033-144-01	Pin	IC112	87-027-895-01	IC, M5218L
PIN	82-196-656-01	Pin, 3P	J5, 7	82-196-602-01	Jack, 6.3φ (MIX MIC, PHONES)
PIN1	87-049-275-01	Pin, 5P	VR6-1, 6-2	82-196-610-01	Volume, 10kΩ-A (PHONES LEVEL)
PIN2, 14, 15, 20, 21, 27, 28	87-049-273-01	Pin, 3P	VR7	82-196-611-01	Volume, 10kΩ-B (BIAS FINE NORMAL/CrO ₂)
PIN3, 4, 10	87-049-277-01	Pin, 7P	CON4	82-196-654-01	Connector ass'y, 7P
PIN5, 9, 22, 23, 24	87-049-276-01	Pin, 6P			« SWITCH CIRCUIT BOARD SECTION »
PIN8	87-049-279-01	Pin, 9P	PCB-F	*	Switch circuit board
PIN11, 19	87-049-281-01	Pin, 11P	 S33	87-031-753-01	Push switch (POWER)
PIN12, 16, 17	87-049-280-01	Pin, 10P		82-304-743-01	1P terminal
PIN13, 25, 26	87-049-274-01	Pin, 4P			< Capacitors >
PIN18	87-049-278-01	Pin, 8P	 C1	87-019-110-01	0.01μF Spark killer (H, HB models only)
CON2	82-196-639-01	Connector ass'y, 3P	 C1	87-109-112-01	0.01μF Spark killer (U, UB, E, EB, K, Z, ZB models only)
CON16	82-196-629-01	Connector ass'y, 10P			« KEY SWITCH CIRCUIT BOARD SECTION »
CON17	82-196-635-01	Connector ass'y, 10P	PCB-G	*	Key switch circuit board
CON18	82-196-628-01	Connector ass'y, 8P	Q104, 701, 704	89-406-365-01	Transistor, 2SD636 (S)
CON19	82-196-634-01	Connector ass'y, 11P	D101, 113, 703~730, 750	87-027-097-01	Diode, 1S1555
CON29	82-196-653-01	Connector ass'y, 3P	D701	87-020-091-01	LED, LN322GP (PROGRAM)
		< Resistors >	D702	87-020-092-01	LED, LN422YP (MS)
 R419	87-029-367-01	15Ω 1/2W Fuse resistor	D731, 732	87-020-102-01	LED, GL-4PG5 (II DECK PLAY, I DECK/PROGRAM)
			D733, 734, 737, 738, 740, 741, 742, 744, 745, 746	87-020-093-01	LED, LN222RP (PROGRAM 1~10)
			D735, 736	87-020-103-01	LED, GL-4HY5 (I, II DECK PAUSE)

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
D739, 743	87-020-101-01	LED, GL-4PR5 (II DECK REC MUTE, RECORD)			« TRAP CIRCUIT BOARD SECTION »
D747, 748, 749	87-027-772-01	LED, GL-9PR4 (DUBBING A, B, A+B)	PCB-M	*	Trap circuit board
S1	87-031-807-01	Slide switch (TIMER)	L3	82-371-622-01	Coil, 23mH
S2, 28, 29, 30, 31	87-031-806-01	Push-switch (MS SELECTOR, II DECK DOLBY-NR B/C ON/OFF, I DECK DOLBY-NR B/C, ON/OFF)			« MISCELLANEOUS »
S3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27	87-031-771-01	Tact switch (I DECK REW/REV, I DECK PLAY/PROGRAM STOP, I DECK PAUSE, II DECK REW/REV, II DECK PLAY II DECK STOP, II DECK PAUSE, II DECK RECORD, II DECK REC MUTE, DUBBING A, B, A+B, PROGRAM 1, 2, 3, 4, 5, 6, 7, 8, 9, 10)	 T1	82-196-614-01	Power transformer (U, UB models only)
CON6	82-196-645-01	Connector ass'y, 6P	 T1	82-196-615-01	Power transformer (H, HB models only)
CON10	82-196-646-01	Connector ass'y, 7P	 T1	82-196-616-01	Power transformer (E, EB, Z, ZB models only)
CON11	82-196-647-01	Connector ass'y, 11P	 T1	82-196-617-01	Power transformer (K, G models only)
CON12	82-196-651-01	Connector ass'y, 10P	 S46	87-031-586-01	Rotary switch (VOLTAGE SELECTOR) (H, HB models only)
CON13	82-196-652-01	Connector ass'y, 4P	RPH	87-046-238-01	REC/PB head (II DECK)
		« VOLUME CIRCUIT BOARD SECTION »	EH	87-046-236-01	Erase head (II DECK)
PCB-H	*	Volume circuit board	PH	87-046-237-01	PB head (I DECK)
Q107, 108	89-318-155-01	Transistor, 2SC1815 (GR)		82-598-622-01	Dummy head (I DECK)
Q109, 110	89-320-011-01	Transistor, 2SC2001 (K)	SOL1, 2, 3, 4	81-507-237-01	Solenoid, 9ME-C
D108	87-027-097-01	Diode, 1S1555	M1, 3	87-045-213-01	DC motor
S32	87-031-807-01	Slide switch (PHONES MONITOR)	M2, 4	81-505-604-11	Reel motor
VR1-1/1-2, 2-1/2-2	82-196-607-01	Slide volume, 10kΩ-A (OUTPUT LEVEL I DECK L/R, OUTPUT LEVEL II DECK L/R)	D120	87-020-108-01	LED, SLF-601C
VR3	82-196-608-01	Slide volume, 10kΩ-A (MIC LEVEL)	D121	87-020-109-01	LED, SLF-201C
VR4, 5	82-196-609-01	Slide volume, 30kΩ-A (RECORD LEVEL)	S34, 36	81-505-602-01	Leaf switch (I DECK, II DECK CrO ₂)
CON3	82-196-642-01	Connector ass'y, 7P	S35, 42, 43, 44, 45	81-505-607-01	Leaf switch (II DECK METAL, I DECK CASSETTE, II DECK CASSETTE, II DECK REC ENAB, II DECK REC ENAB)
CON7	82-196-640-01	Connector ass'y, 3P			« LED-1 CIRCUIT BOARD SECTION »
CON8	82-196-643-01	Connector ass'y, 9P	 T1	87-034-958-01	AC power cord (H, HB models only)
CON9	82-196-641-01	Connector ass'y, 6P	 T1	87-034-951-01	AC power cord (U, UB models only)
		« LED-2 CIRCUIT BOARD SECTION »	 T1	87-034-877-01	AC power cord (E, EB, Z, ZB models only)
PCB-I	*	LED-1 circuit board	 T1	87-034-975-01	AC power cord (K model only)
D104, 106, 506, 510	87-027-542-01	LED, LN217RP (I, II DECK, C, METAL CrO ₂ /METAL)	 T1	87-034-892-01	AC power cord (G model only)
D105, 107, 508, 509	87-027-543-01	LED, LN317GP (I, II DECK NORMAL)	 T1	87-085-184-01	Cord bushing (H, HB, U, UB models only)
D507	87-027-671-01	LED, LN417YP (II DECK, CrO ₂)	 T1	87-085-185-01	Cord bushing (E, EB, K, G, Z, ZB models only)
CON5	82-196-644-01	Connector ass'y, 6P	CON14	82-196-637-01	Connector ass'y, 3P
PIN6	87-049-316-01	Pin, 6P	CON15	82-196-630-01	Connector ass'y, 3P
PIN7	87-049-068-01	Pin, 3P	CON20, 21	82-196-638-01	Connector ass'y, 3P
		« LED-3 CIRCUIT BOARD SECTION »	CON22	82-196-632-01	Connector ass'y, 6P
PCB-L	81-505-605-01	LED-3 circuit board	CON23	82-196-633-01	Connector ass'y, 6P
CP702	87-027-644-01	Photo sensor, NJL-5141EA	CON24	82-196-631-01	Connector ass'y, 4P
			CON25	82-196-627-01	Connector ass'y, 4P
			CON26	82-196-626-01	Connector ass'y, 4P
			CON28	82-196-636-01	Connector ass'y, 3P



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.

DESCRIPTION OF IC PINS

Description of IC LC6502C

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 (Φ).

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 82-196-618-21

PCB-A 82-196-619-21

PCB-D 82-196-625-21

PCB-E 82-196-620-21

PCB-F 82-196-622-21

PCB-M 82-196-661-21

Combination circuit board B 82-196-648-11

PCB-G 82-196-623-11

PCB-H 82-196-624-11

PCB-I 82-196-621-11

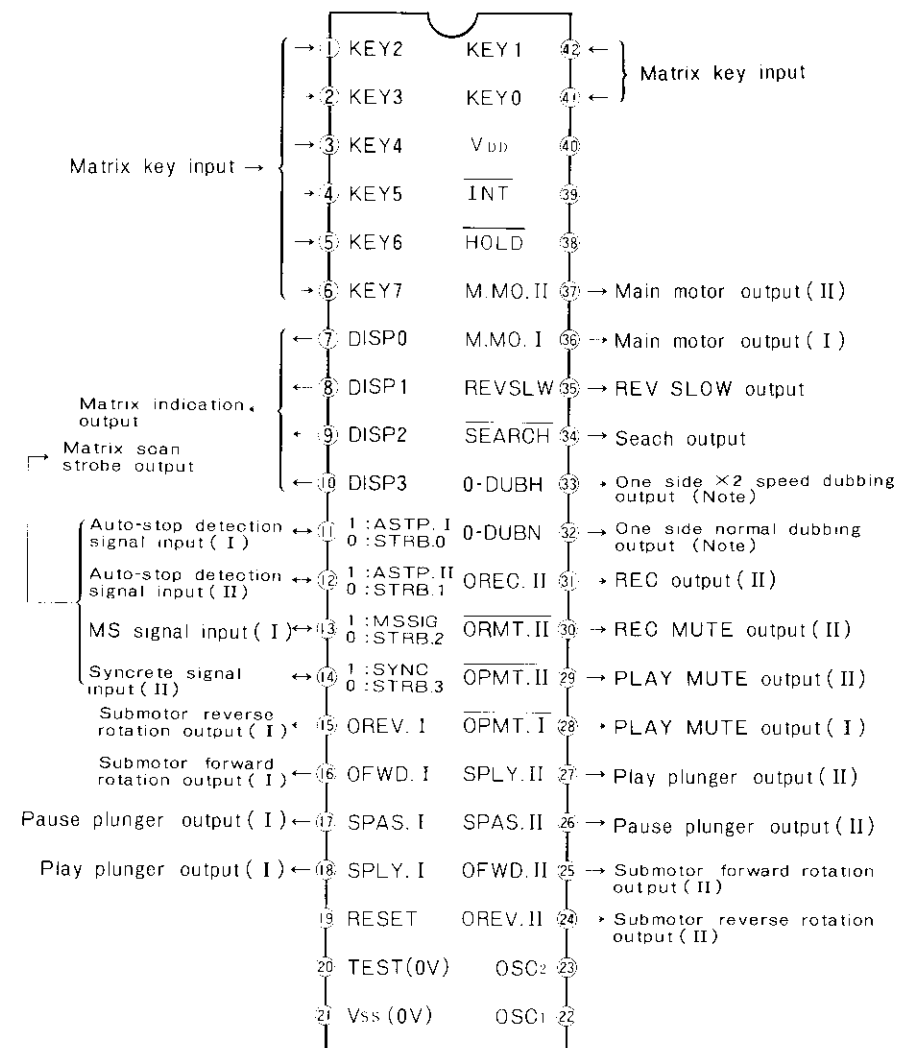
• Ceramic capacitor

87-018-□□□-01

Capacitor	Part No.
27pF	018
100pF	032
150pF	034
180pF	035
270pF	037
390pF	039
680pF	042
1000pF	044
2200pF	045
4700pF	046
0.01μF	047

0.0015μF

89-663-635-010



The direction of the arrow shows the signal flow.

(Note) Both pins 32, 33 are set to "H" level during both side X 2 speed dubbing.

Description of pins

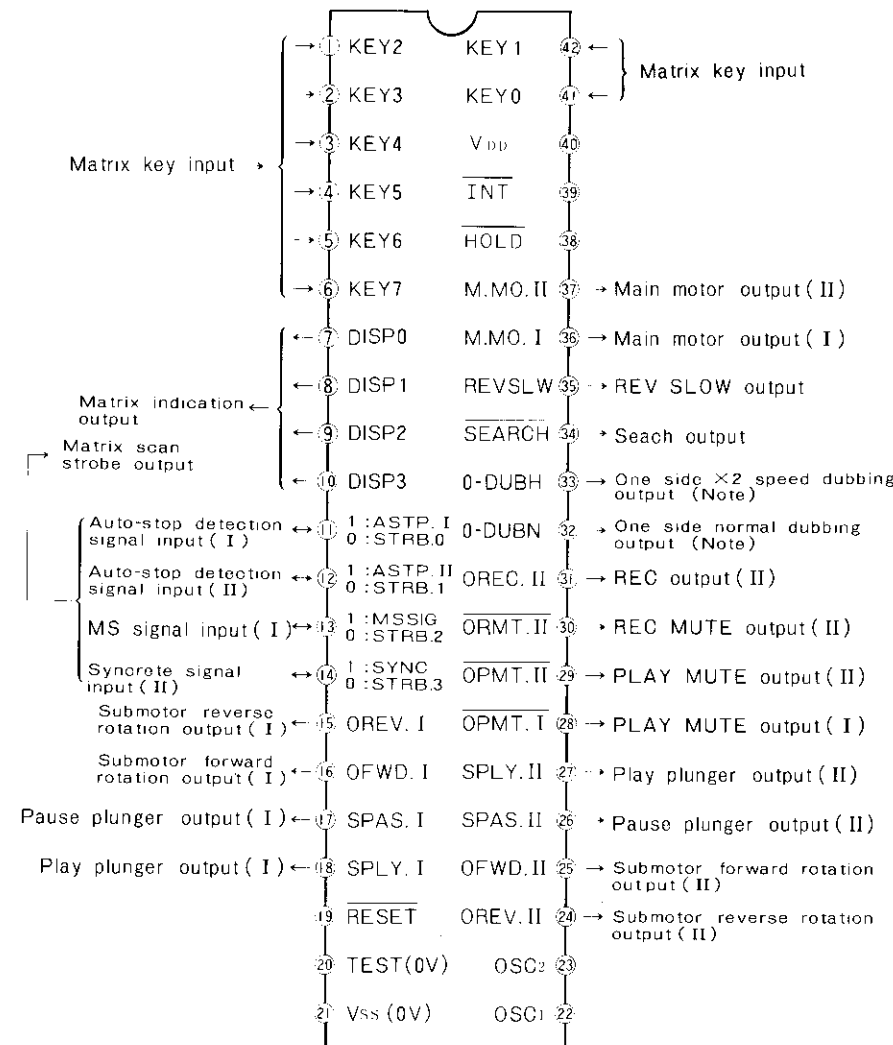
"H" level: +5[V], "L" level: 0[V] * OPMT I outputs "L" level during the MS search mode.

Pin No.	Terminal Symbol	Function			
		When STRB 0 is set to "H" level	When STRB 1 is set to "H" level	When STRB 2 is set to "H" level	When STRB 3 is set to "H" level
41	KEY 0	RWD key input (I)	RWD key input (II)	Cassette detection input (I)	MS key input No. 3
42	KEY 1	PLAY key input (I)	PLAY key input (II)	Cassette detection input (II)	MS key input No. 4
1	KEY 2	FF key input (I)	FF key input (II)	One side constant speed dubbing key input	MS key input No. 5
2	KEY 3	STOP key input (I)	STOP key input (II)	One side x2 speed dubbing key input	MS key input No. 6
3	KEY 4	PAUSE key input (I)	PAUSE key input (II)	MS select switch input	MS key input No. 7
4	KEY 5	Timer PLAY/REPEAT switch input (I)	REC key input (II)/Accidental erasure prevention key input (II)	Both side x2 speed dubbing key input	MS key input No. 8
5	KEY 6	Timer REC switch input (II)	REC MUTE key input (II)	MS key input No. 1	MS key input No. 9
6	KEY 7	Rear surface accidental erasure prevention key input (II)	Short-circuited by diode	MS key input No. 2	MS key input No. 10

Pin No.	Terminal Symbol	When STRB 0 is set to "H" level	When STRB 1 is set to "H" level	Function
7	DISP 0	PLAY indication (II)	PLAY indication (I)	
8	DISP 1	PAUSE indication (II)	PAUSE indication (I)	
9	DISP 2	REC MUTE indication (II)	MS indication No. 1	
10	DISP 3	REC indication (II)	MS indication No. 2	
11	ASTP. I	This pin is used to input the pulse from the reel disk		
12	ASTP. II	This pin is used to input the pulse from the reel disk		
13	MSSIG	This pin is used to detect inter-tune gaps in the MS and It is judged that a tune is present when this pin is set to "L" level.		
14	SYNC	This pin is used for syncretic recording. Pause is released Set to REC PAUSE with "L" level = "H" level during		
11	STRB 0			Pins 11 ~ 14 are the input/output pins. (The above) These pins are set to high-impedance in the input mode of the matrix key, matrix indication in the output mode. They are effective during the "H" level, and Micro starting at STRB 0 as shown in the diagram below, de
12	STRB 1			
13	STRB 2			
14	STRB 3			
15	OREV I, OREV II	These pins are the submotor reverse outputs (deck I and REV modes.		
16	OFWD I, OFWD II	These pins are the submotor forward outputs (deck I and CUE modes.		
17	SPAS I, SPAS II	These are the pause plunger outputs (deck I, deck II PAUSE, CUE and REV modes.		
18	SPLY I, SPLY II	These are the play plunger outputs (deck I, deck II (REC) PLAY PAUSE, CUE and REV modes.		
29	OPMT I, OPMT II	These pins are set to the (REC) PLAY, CUE and deck II) applied, and set to "H" level when the mechanism is stabilized and muting re		
30	ORMT. II	This pin is set to the REC PLAY mode with the "H" level when the mechanism is stabilized and muting re		
31	OREC. II	This pin is the REC/PLAY select output and output PAUSE modes.		
32	0-DUBN	This is the one-side normal dubbing output and output and both side x2 speed dubbing.		
33	0-DUBH	This is the one-side x2 speed dubbing output, and dubbing and both side x2 speed dubbing.		
34	SEARCH	This is used for time constant selection during the PROGRAM MS PLAY mode and "L" level during the		
35	REVSLW	This is the output to reduce the submotor speed of "H" level). This is set to "H" level during the CUE rect detection of the start of tunes.		
36	M.MO.I, M.MO.II	These are the main motor outputs (deck I, deck II These pins are set to "L" level only during the STOP		
19	RESET	This pin is set to "H" level with delay determined by power supply (VDD) so that the Micro processor is re		
20	TEST, VSS	Connect these pins to GND [0 (V)].		
38	HOLD, INT, VDD	Connect these pins to +5 [V].		

DESCRIPTION OF IC PINS

Description of IC LC6502C



The direction of the arrow shows the signal flow.

(Note) Both pins ②③ are set to "H" level during both side x 2 speed dubbing.

Description of pins

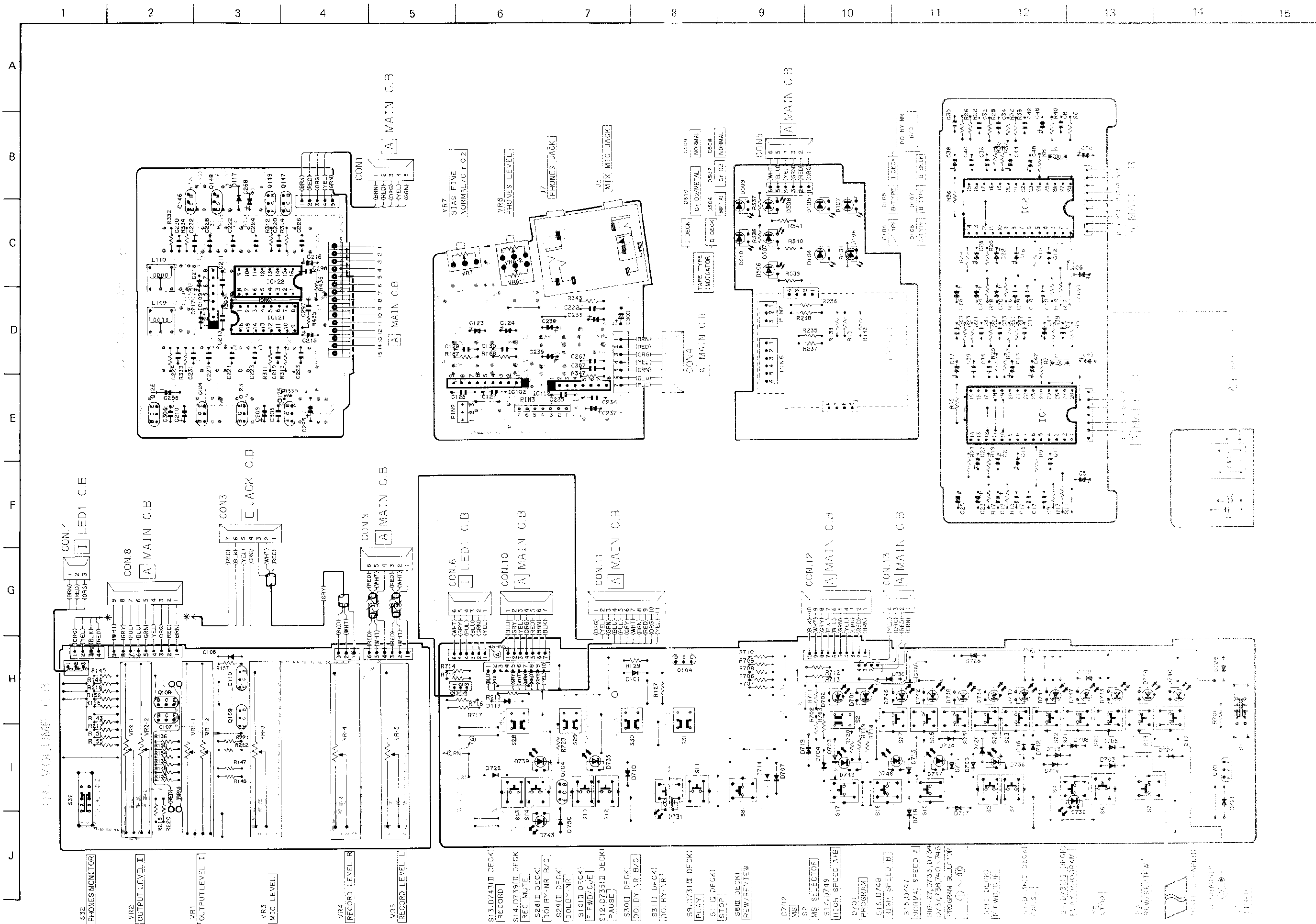
"H" level: +5[V], "L" level: 0[V] * OPMT I outputs "L" level during the MS search mode.

Pin No.	Terminal Symbol	Function			
		When STRB 0 is set to "H" level	When STRB 1 is set to "H" level	When STRB 2 is set to "H" level	When STRB 3 is set to "H" level
④①	KEY 0	RWD key input (I)	RWD key input (II)	Cassette detection input (I)	MS key input No. 3
④②	KEY 1	PLAY key input (I)	PLAY key input (II)	Cassette detection input (II)	MS key input No. 4
①	KEY 2	FF key input (I)	FF key input (II)	One side constant speed dubbing key input	MS key input No. 5
②	KEY 3	STOP key input (I)	STOP key input (II)	One side x2 speed dubbing key input	MS key input No. 6
③	KEY 4	PAUSE key input (I)	PAUSE key input (II)	MS select switch input	MS key input No. 7
④	KEY 5	Timer PLAY/REPEAT switch input (I)	REC key input (II)/Accidental erasure prevention key input (II)	Both side x2 speed dubbing key input	MS key input No. 8
⑤	KEY 6	Timer REC switch input (II)	REC MUTE key input (II)	MS key input No. 1	MS key input No. 9
⑥	KEY 7	Rear surface accidental erasure prevention key input (II)	Short-circuited by diode	MS key input No. 2	MS key input No. 10

Pin No.	Terminal Symbol	Function			
		When STRB 0 is set to "H" level	When STRB 1 is set to "H" level	When STRB 2 is set to "H" level	When STRB 3 is set to "H" level
⑦	DISP 0	PLAY indication (II)	PLAY indication (I)	MS indication No. 3	MS indication No. 7
⑧	DISP 1	PAUSE indication (II)	PAUSE indication (I)	MS indication No. 4	MS indication No. 8
⑨	DISP 2	REC MUTE indication (II)	MS indication No. 1	MS indication No. 5	MS indication No. 9
⑩	DISP 3	REC indication (II)	MS indication No. 2	MS indication No. 6	MS indication No. 10
⑪	ASTP. I	This pin is used to input the pulse from the reel disk of deck (I) to detect the auto-stop mode.			
⑫	ASTP. II	This pin is used to input the pulse from the reel disk of deck (II) to detect the auto-stop mode.			
⑬	MSSIG	This pin is used to detect inter-tune gaps in the MS and PROGRAM-MS modes. It is judged that a tune is present when this pin is set to "H" level, and judged as no tune when it is set to "L" level.			
⑭	SYNC	This pin is used for syncrete recording. Pause is released with "H" level ⇒ "L" level during REC PAUSE. Set to REC PAUSE with "L" level ⇒ "H" level during recording.			
⑪	STRB 0	Pins 11 ~ 14 are the input/output pins. (The above functions are provided as input.) These pins are set to high-impedance in the input mode and are used as the dynamic scan strobe signal of the matrix key, matrix indication in the output mode. They are effective during the "H" level, and Micro processor outputs a "H" level for 3.2ms in sequence starting at STRB 0 as shown in the diagram below, during operation. 			
⑫	STRB 1				
⑬	STRB 2				
⑭	STRB 3				
⑮	OREV I, OREV II	These pins are the submotor reverse outputs (deck I, deck II) and output "H" levels only during RWD and REV modes.			
⑯	OFWD I, OFWD II	These pins are the submotor forward outputs (deck I, deck II) and output "H" levels only during FF and CUE modes.			
⑰	SPAS I, SPAS II	These are the pause plunger outputs (deck I, deck II) and output "H" level only during the (REC) PLAY, PAUSE, CUE and REV modes.			
⑱	SPLY I, SPLY II	These are the play plunger outputs (deck I, deck II) and output "H" level only during the (REC) PLAY, (REC) PLAY PAUSE, CUE and REV modes.			
⑳	OPMT I, OPMT II	These pins are set to the (REC) PLAY, CUE and REV modes with the PLAY MUTE outputs (deck I, deck II) applied, and set to "H" level when the mechanism is stabilized and muting released.			
㉑	ORMT. II	This pin is set to the REC PLAY mode with the REC MUTE output (deck II) applied, and set to "H" level when the mechanism is stabilized and muting released.			
㉒	OREC. II	This pin is the REC/PLAY select output and outputs "H" level only during the REC PLAY, REC PLAY PAUSE modes.			
㉓	0-DUBN	This is the one-side normal dubbing output and outputs "H" level only during one-side normal dubbing and both side x2 speed dubbing.			
㉔	0-DUBH	This is the one-side x2 speed dubbing output, and output "H" level only during the one-side x2 speed dubbing and both side x2 speed dubbing.			
㉕	SEARCH	This is used for time constant selection during the PROGRAM MS mode. Outputs "H" level during the PROGRAM MS PLAY mode and "L" level during the search mode.			
㉖	REVSLW	This is the output to reduce the submotor speed during the REV MS search mode. (Reduces speed at "H" level). This is set to "H" level during the CUE MS search mode and during the REV mode for correct detection of the start of tunes.			
㉗	M.MO.I, M.MO.II	These are the main motor outputs (deck I, deck II); the motor turns with these pins set to "H" level. These pins are set to "L" level only during the STOP, PAUSE, FF and RWD modes.			
㉘	RESET	This pin is set to "H" level with delay determined by the time constant component of the CR from the power supply (VDD) so that the Micro processor is reset.			
㉙	TEST, VSS	Connect these pins to GND [0 (V)].			
㉚	HOLD, INT, VDD	Connect these pins to +5 [V].			

(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.

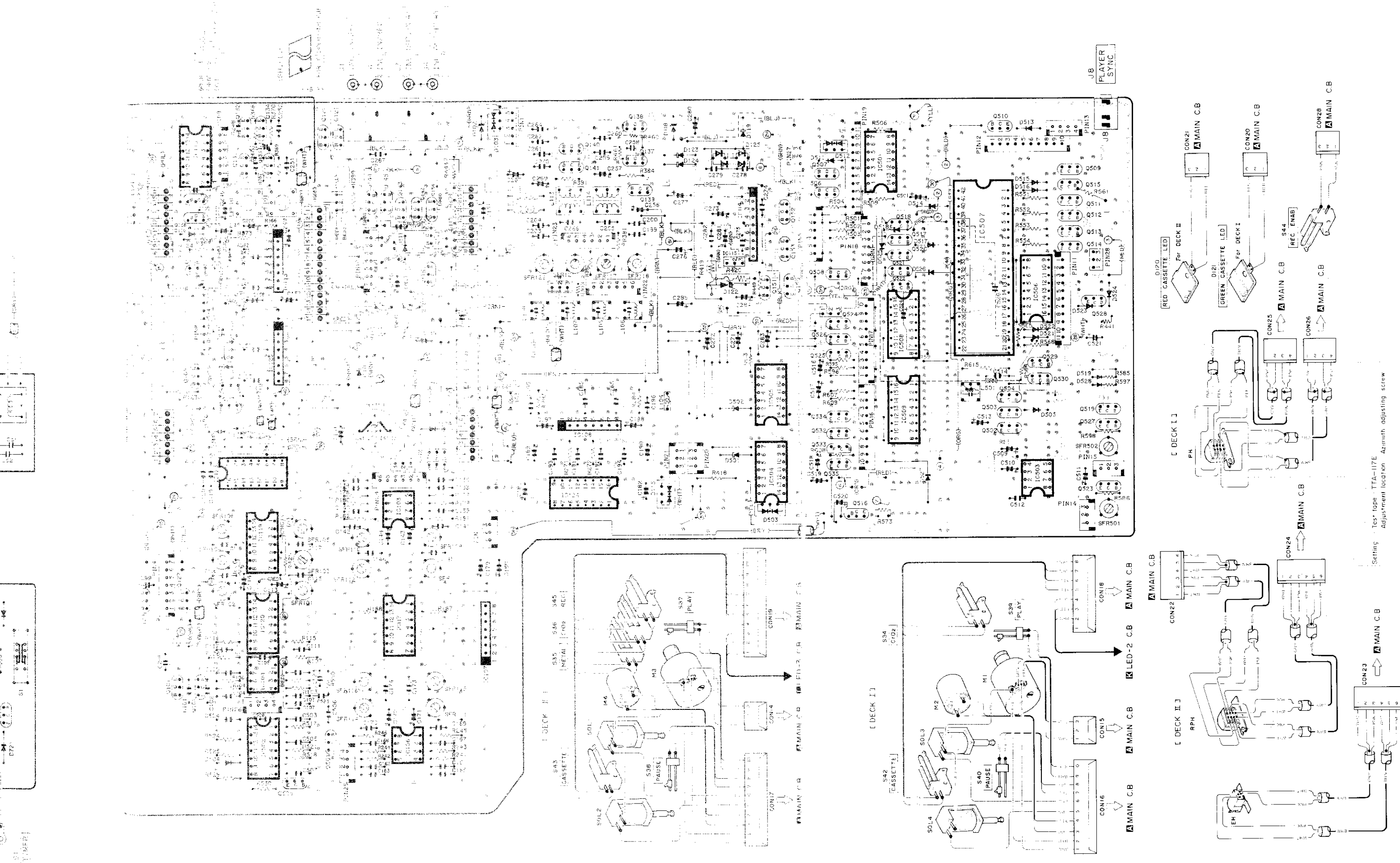
WIRING-1



315

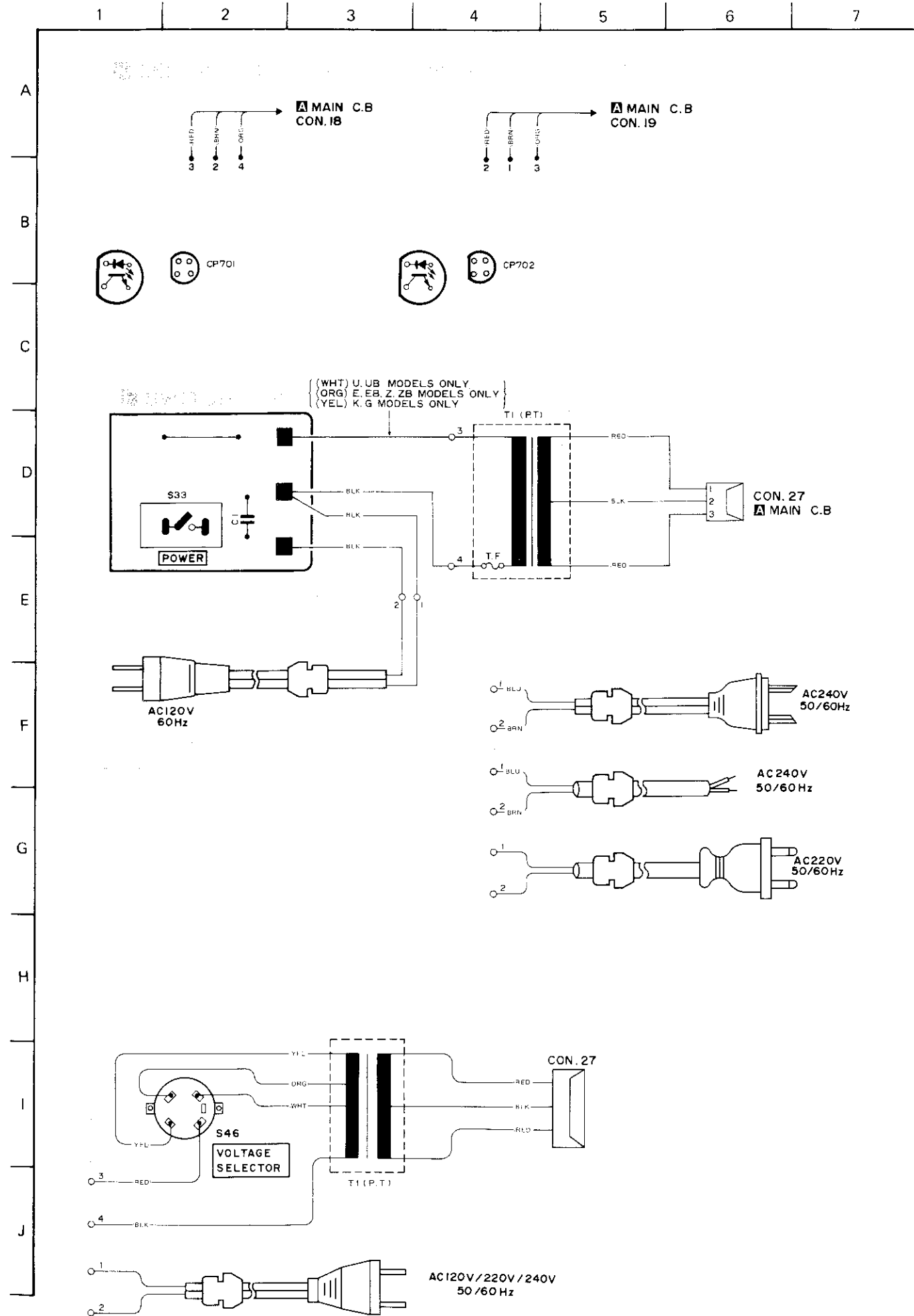
safety complications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

* The ICs on the electrical parts which are indicated by an CMOS IC symbol mark ()

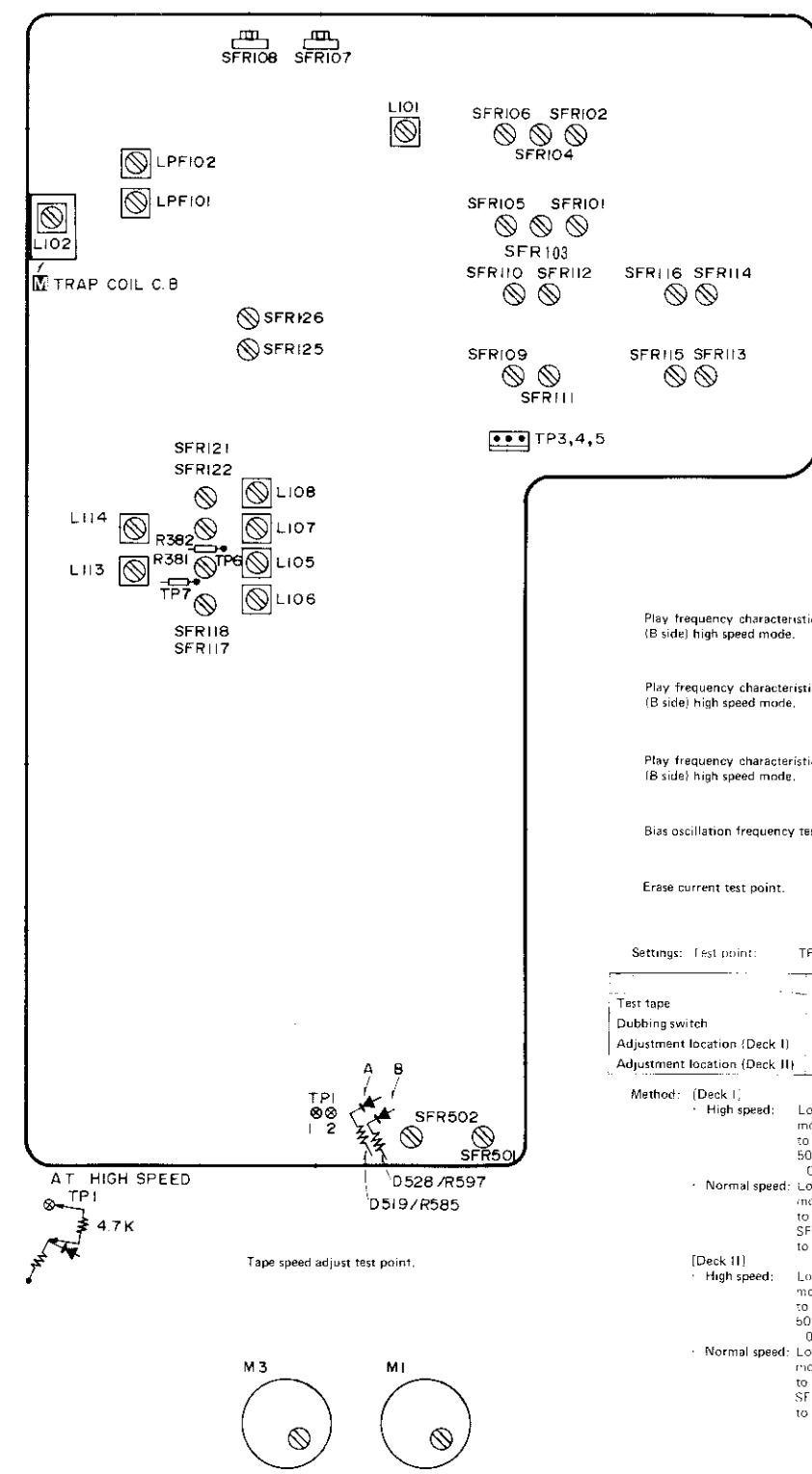


WIRING-2

ADJUSTMENT



- Settings: Test tape: TTA 161
Record volume: Dubbing level
Dubbing switch: A
Adjustment location: SFR107 (L ch), SFR108 (R ch)
Method: Load a test tape in Deck II and adjust so that the LINE OUT output 510mV in the normal speed mode.
- Settings: Test tape: TTA 161
Adjustment location: (Deck I) SFR106 (L ch), SFR106 (R ch)
(Deck II) SFR111 (L ch), SFR112 (R ch)
Method: Adjust so that the LINE OUT output is set to 510mV ± 0.5 dB in Deck I and Deck II. When Deck II is adjusted, Deck I also changes, so repeat adjustment.
- Settings: Test tape: TTA-317E
Test point: LINE OUT
Adjustment location: (Deck I) SFR103 (L ch), SFR104 (R ch)
(Deck II) SFR109 (L ch), SFR110 (R ch)
Method: Play back the test tape and adjust so that the output is 0 ± 0.5 dB based on the 1kHz output.
- Settings: Test tape: TTA-119MX
Dubbing switch: ON, C
Adjustment location: L101 (L ch), L102 (R ch)
Method: Load a test tape in Deck II, set to the record mode and adjust so that the bias leakage from the LINE OUT output is minimum with the Dolby NR switch set to ON, C.
- Settings: Test tape: TTA-119J
Input signal: 1kHz, 0VU
Adjustment location: SFR125 (L ch), SFR126 (R ch)
Method: Set Deck II to the record mode, load a test tape and record at 1kHz, 0VU. Play back on Deck I and adjust so that the LINE OUT output is 380mV ± 0.5 dB.
Ratings: CrO₂ tape (TTA-119J): 380mV ± 1.5 dB
METAL tape (TTA 119MX): 380mV ± 1.5 dB
- Settings: Test tape: TTA-119J
Input signal: LINE IN 0VU 1kHz/10kHz
Adjustment location: SFR121 (L ch), SFR122 (R ch)
Method: Set Deck II to the record mode and adjust the REC VR so that the LINE OUT output is 380mV. Record the 1kHz/10kHz signals and adjust so that the difference between two outputs is 0.0 ± 0.5 dB when they are played back on Deck I.
Ratings: CrO₂ tape (TTA-119J): 0 ± 1 dB
METAL tape (TTA 119MX): 0 ± 1 dB
- Settings: Dubbing switch: A - B
Test point: TP7
Adjustment location: L114
Method: Adjust so that the voltage at the test point is maximum.
- Settings: Test tape: TTA-119MX
Test point: TP6
Adjustment location: L113
Method: Load a test tape in Deck II and adjust so that the bias leakage from the LINE OUT is minimum. Adjust so that the oscillation frequency of TP6 is 100kHz.
- Settings: Test tape: TTA-317H (or TTA 317F)
TTA 119J
Dubbing switch: A - B
Adjustment location: SFR117 (L ch), SFR118 (R ch)
Method: Load a test tape TTA-317H (TTA 317F) in Deck I so that the track B can be seen. Load test tape TTA-119J in Deck I and dubbing the 1kHz/10kHz signal in the high speed mode. Next, play back TTA-119J via Deck I and adjust so that the difference between two outputs is 0 ± 0.5 dB.
Ratings: CrO₂ (TTA-119J): 0 ± 3 dB
METAL tape (TTA 119MX): 0 ± 3 dB



Settings: Test point: TP1, TP2

	High speed	Normal speed
Test tape	TTA 111H, TTA 119J	TTA 111H, TTA 119J
Dubbing switch	B, (A+B)	A
Adjustment location (Deck I)	SFR502	SFR501
Adjustment location (Deck II)	SFR501	SFR502

Method: [Deck I]
• High speed: Load TTA 111H, set the play mode and set the dubbing switch to "HIGH SPEED". Adjust SFR 502 so that the speed is set to 0.2 $\pm$ 0.5%.
• Normal speed: Load TTA 111H, set the play mode and set the dubbing switch to "NORMAL SPEED". Adjust SFR501 so that the speed is set to 0.8 $\pm$ 0.5%.

[Deck II]
• High speed: Load TTA 111H, set the play mode and set the dubbing switch to "HIGH SPEED". Adjust SFR 501 so that the speed is set to 0.2 $\pm$ 0.5%.
• Normal speed: Load TTA 111H, set the play mode and set the dubbing switch to "NORMAL SPEED". Adjust SFR 502 so that the speed is set to 0.8 $\pm$ 0.5%.

SCHEMATIC DIAGRAM-3

Settings: Test tape: TTA-317R for TTA-317L
Dubbing switch: B
Adjustment location: SFR101 (L ch), SFR102 (R ch)

Method: Load a test tape in Deck I and set the dubbing switch to "B" or short circuit the test pin. Play back the 2kHz/20kHz signal (high speed model) (1kHz/10kHz signal in normal speed model) and adjust so that the output difference of the LINE OUT outputs is $\pm 1.5\text{dB}$.

Settings: Test tape: TTA-371, TTA-119J
Dubbing switch: A+B
Adjustment location: SFR115 (L ch), SFR116 (R ch)

Method: Load a test tape TTA-371 in Deck I. Load TTA-119J in Deck II, record/play the 1kHz signal and adjust so that the LINE OUT output is $0 \pm 0.5\text{dB}$.

Rating: GCR tape (TTA-119G): $0 \pm 2.5\text{dB}$
METAL tape (TTA-119MX): $0 \pm 2.5\text{dB}$

Settings: Test tape: TTA-171, TTA-119J
Dubbing switch: A+B
Adjustment location: SFR113 (L ch), SFR114 (R ch)

Method: Load a test tape with track B facing upward in Deck I and set the dubbing switch to A+B. Play back the 2kHz signal (high speed model) (1kHz signal in the normal speed model), and adjust so that the LINE OUT output is $340 \sim 360\text{mV}$.

Characteristics test point during
le. track B

Characteristics test point during
le. track B

Characteristics test point during
le. track B

by test point.

TP1, TP2

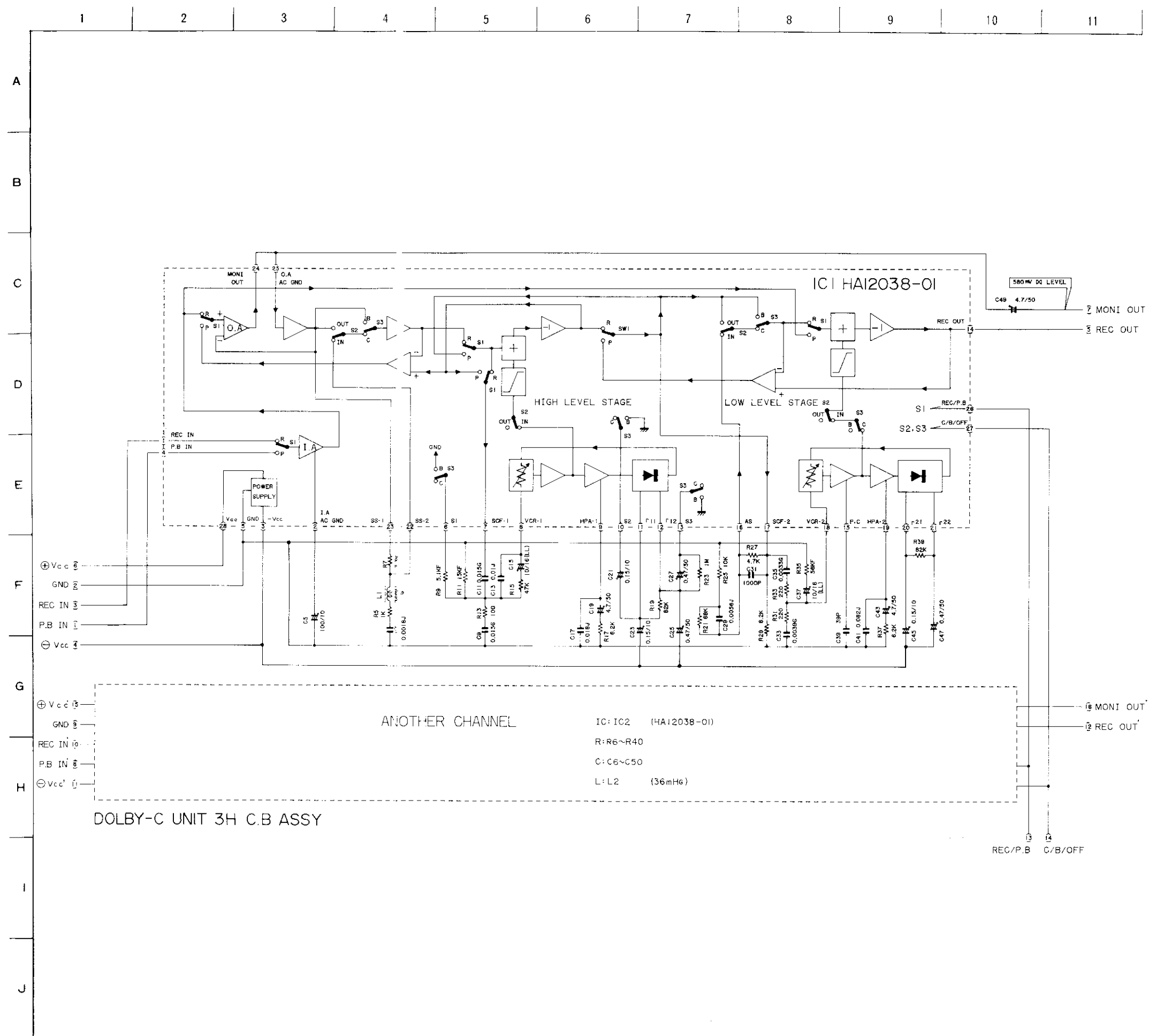
	High speed	Normal speed
TTA-111H	TTA-111H	TTA-111H
B (A+B)	A	A
SFR502	SFR502	SFR502
SFR501	SFR501	SFR501

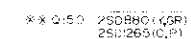
Load TTA-111H, set the play mode and set the dubbing switch to "HIGH SPEED". Adjust SFR502 so that the output is set to $-0.8 \sim -0.5\%$.

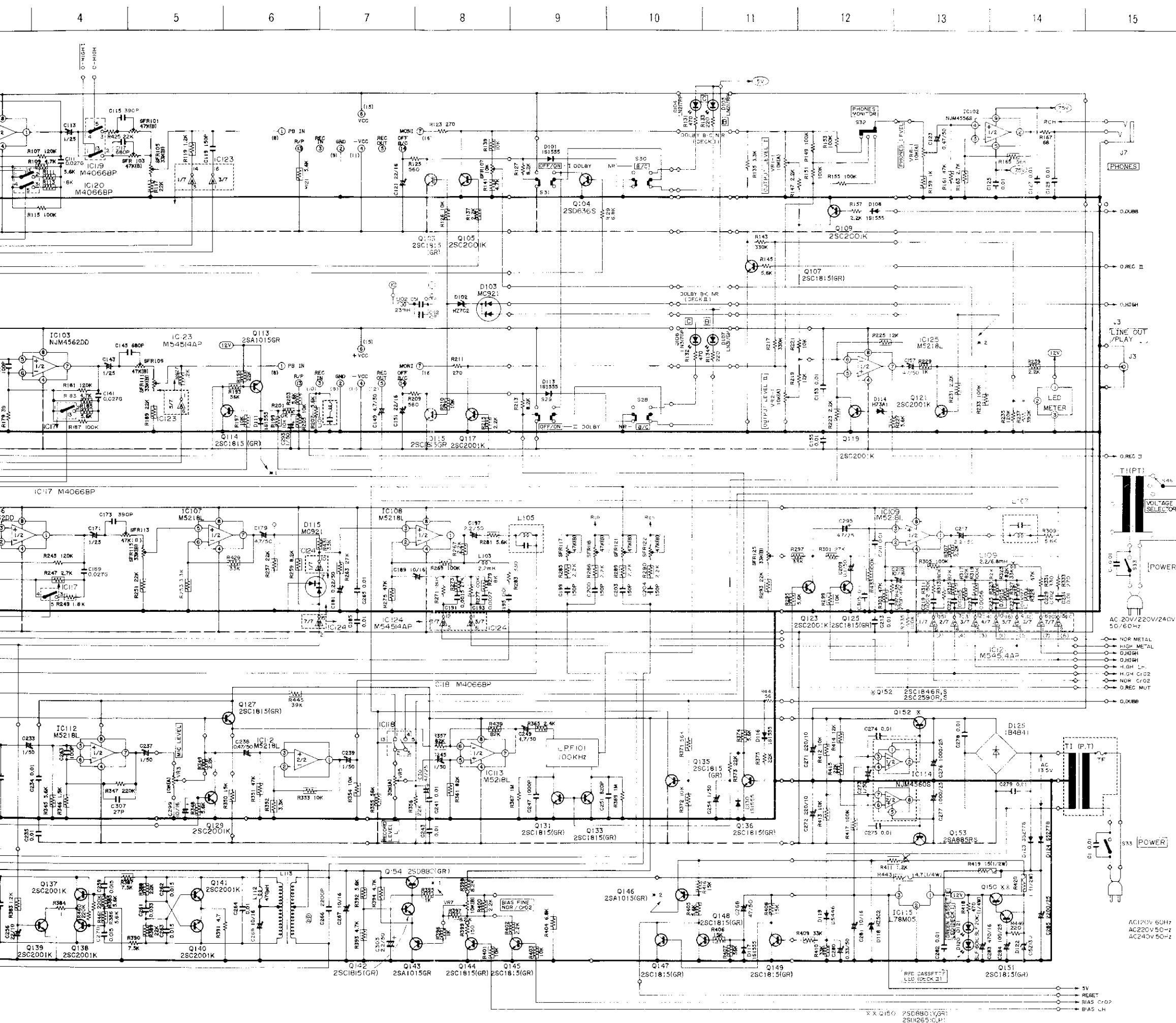
Load TTA-111S, set the play mode and set the dubbing switch to "NORMAL". Adjust SFR502 so that the output is set to $-0.8 \sim -0.5\%$.

Load TTA-111H, set the play mode and set the dubbing switch to "HIGH SPEED". Adjust SFR501 so that the output is set to $-0.8 \sim -0.5\%$.

Load TTA-111S, set the play mode and set the dubbing switch to "NORMAL". Adjust SFR501 so that the output is set to $-0.8 \sim -0.5\%$.







NOTES:

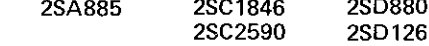
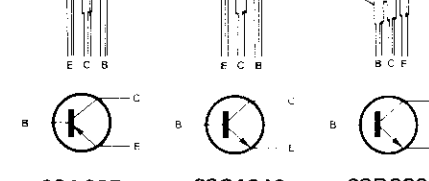
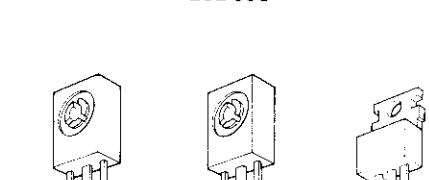
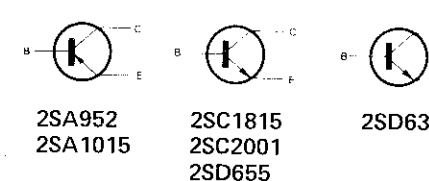
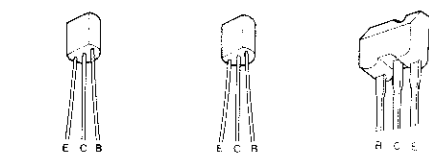
- 1) B (+) power supply B (-) power supply
- 2) Signal path
Rec path
- 3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But () is with recording.
An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
- 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
 - Printed resistor
 - Fuse resistor
 - Nonflammable resistor

Safety component symbol

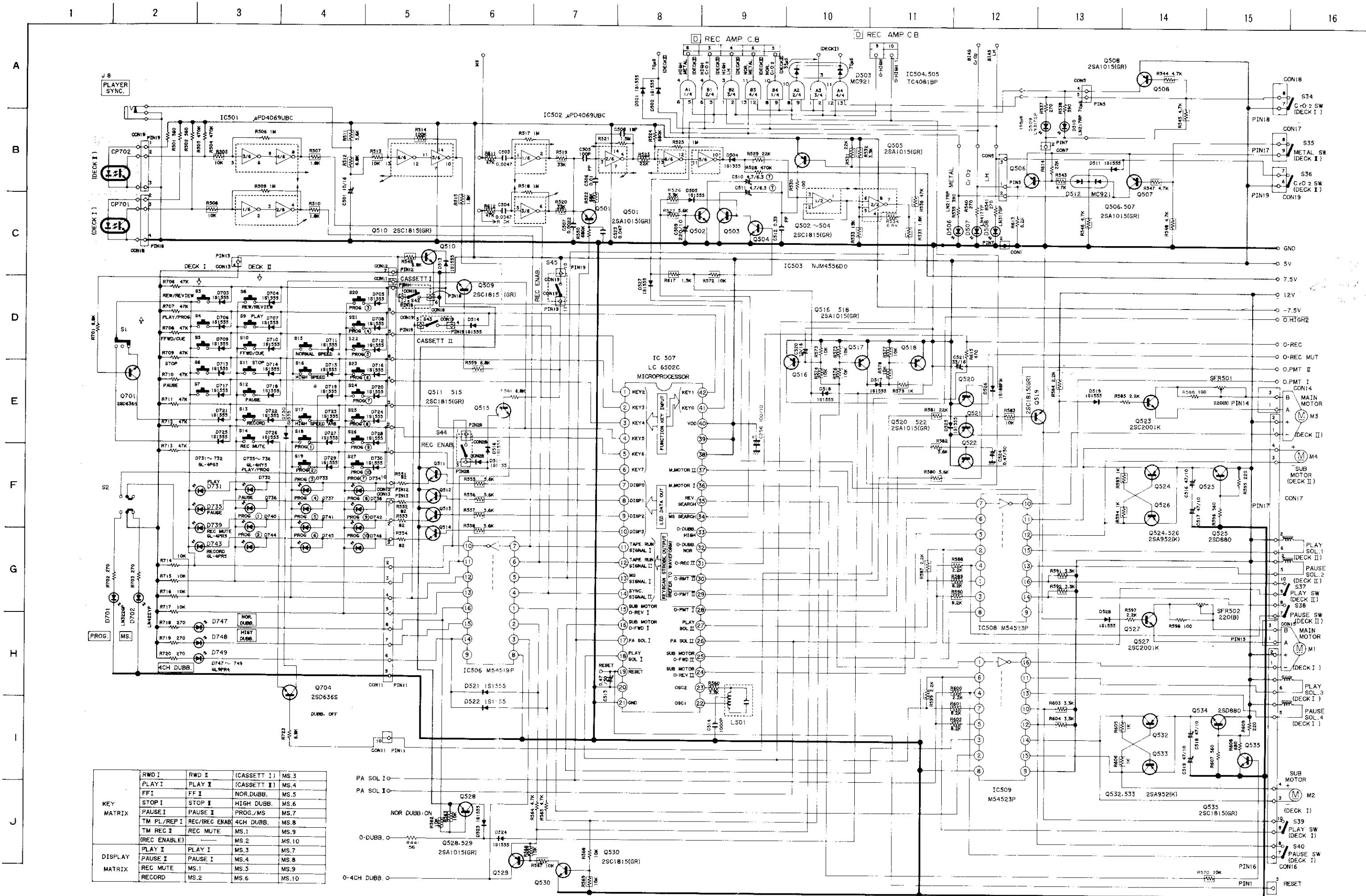
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

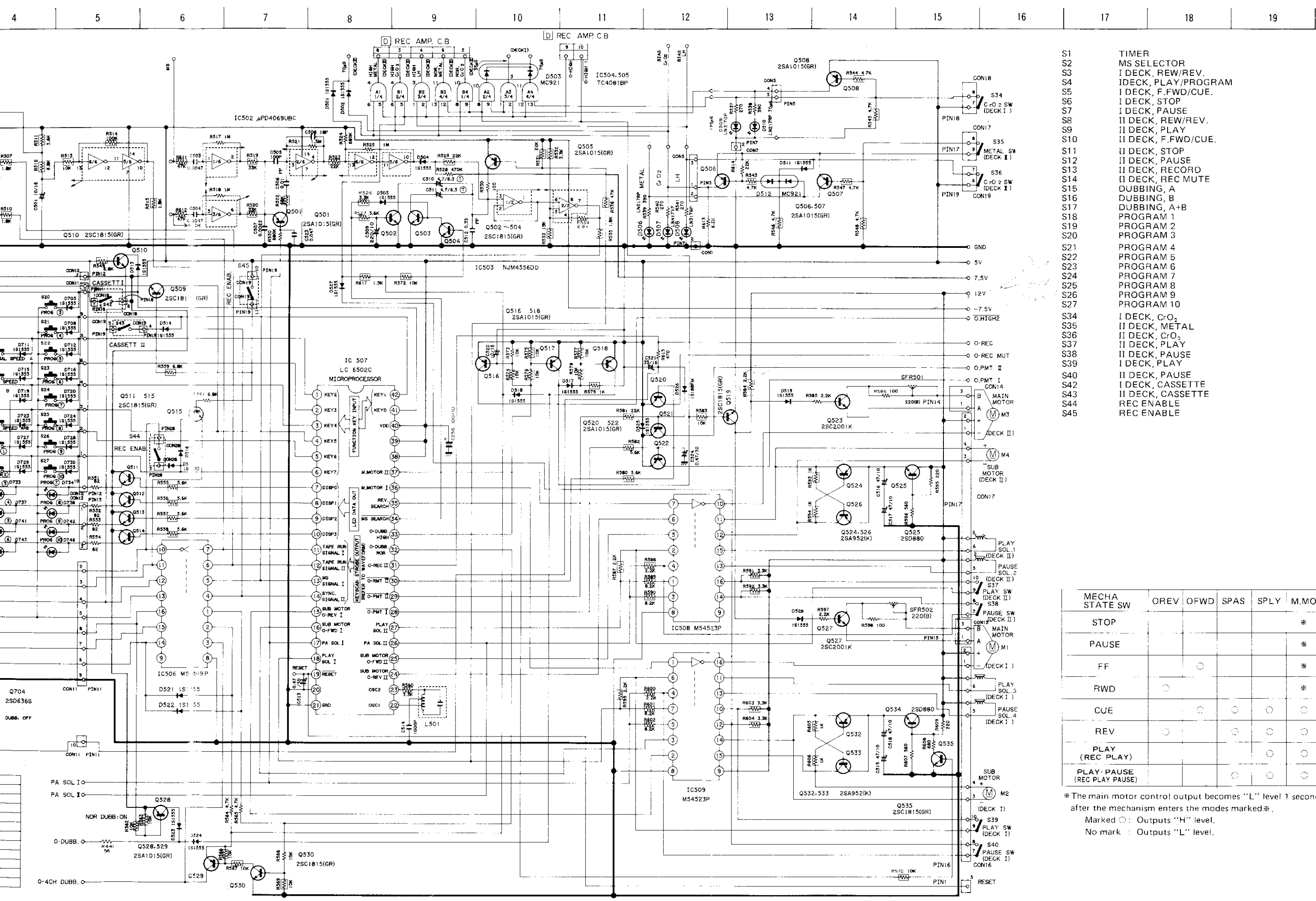
- This schematic diagram is subject to change without notice in the interests of improved performance.

- S28 II DECK, DOLBY-NR B/C (B)
S29 II DECK, DOLBY-NR ON/OFF (OFF)
S30 I DECK, DOLBY-NR B/C (B)
S31 I DECK, DOLBY-NR ON/OFF (OFF)
S32 PHONES MONITOR (I)
S33 POWER
S41 (RELAY SW)
S46 VOLTAGE SELECTOR (H, HB models only)



SCHEMATIC DIAGRAM-2





- S1 TIMER
- S2 MS SELECTOR
- S3 I DECK, REW/REV.
- S4 I DECK, PLAY/PROGRAM
- S5 I DECK, F.FWD/CUE.
- S6 I DECK, STOP
- S7 I DECK, PAUSE
- S8 II DECK, REW/REV.
- S9 II DECK, PLAY
- S10 II DECK, F.FWD/CUE.
- S11 II DECK, STOP
- S12 II DECK, PAUSE
- S13 II DECK, RECORD
- S14 II DECK, REC MUTE
- S15 DUBBING, A
- S16 DUBBING, B
- S17 DUBBING, A+B
- S18 PROGRAM 1
- S19 PROGRAM 2
- S20 PROGRAM 3
- S21 PROGRAM 4
- S22 PROGRAM 5
- S23 PROGRAM 6
- S24 PROGRAM 7
- S25 PROGRAM 8
- S26 PROGRAM 9
- S27 PROGRAM 10
- S34 I DECK, CrO₂
- S35 II DECK, METAL
- S36 II DECK, CrO₂
- S37 II DECK, PLAY
- S38 II DECK, PAUSE
- S39 I DECK, PLAY
- S40 II DECK, PAUSE
- S42 I DECK, CASSETTE
- S43 II DECK, CASSETTE
- S44 REC ENABLE
- S45 REC ENABLE

MECHA STATE SW	OREV	OFWD	SPAS	SPLY	M.MO
STOP					*
PAUSE					*
FF					*
RWD					*
CUE					
REV					
PLAY (REC PLAY)					
PLAY-PAUSE (REC PLAY PAUSE)					

* The main motor control output becomes "L" level 1 second after the mechanism enters the modes marked*.
Marked ○ : Outputs "H" level.
No mark : Outputs "L" level.