

AIWA[®] SERVICE MANUAL

S/M Code No. 85-043
DATE OF ISSEI 9/1985-Z

**STEREO RADIO CASSETTE
RECORDER**

MODEL NO.

HS-J08, J500



TYPE. Y

SPECIFICATIONS

<Radio Section>

Frequency range: FM: 88—108 MHz
AM: 530—1,605 kHz
Antenna: FM headphone antenna
AM ferrite bar antenna

<Tape Recorder Section>

Track arrangement: 4-track, 2-channel, stereo
Frequency range: 40 to 12,500 Hz (NORMAL tape)
40 to 16,000 Hz (METAL tape)
Microphone: Built-in electret condenser microphone
Maximum output: 20 mW + 20 mW (EIAJ/17 Ω)
Input terminal: MIC jack, 3.5 ϕ stereo mini \times 1
Output terminal: Phones jack, 3.5 ϕ stereo mini \times 2
Power source: Battery DC 3V R6P (SUM-3, AA, LR-6) \times 2
Domestic AC power (using optional AC adapter)

Battery life:

- Using manganese batteries (R6P, SUM-3, AA)
Approx. 4.5 hours (EIAJ, recording mode)
Approx. 7.5 hours (EIAJ, 1 mW output, playback mode)
- Using alkaline batteries (LR-6, AA)
Approx. 9 hours (EIAJ, recording mode)
Approx. 15 hours (EIAJ, 1 mW output, playback mode)

Dimensions:

81 (W) \times 114 (H) \times 29 (D) mm
(excluding any projecting parts)

Maximum dimensions:

82 (W) \times 115.5 (H) \times 30.9 (D) mm

Weight:

300 g (including batteries)

Accessories:

Stereo headphones \times 1
Belt clip \times 1
Carrying case \times 1
Remote controller \times 1

- Design and specifications are subject to change without notice.
- Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.
- Dolby and the \square symbol are trademarks of Dolby Laboratories Licensing Corporation.

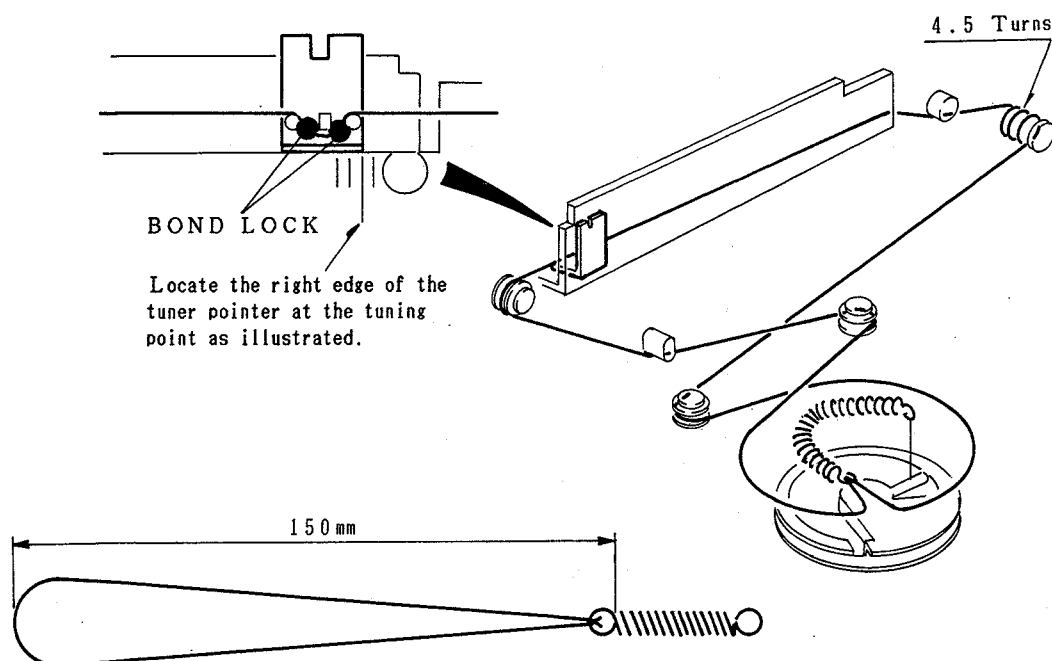
Follow the instructions carefully, which will allow the user to optimise the products' performance and give many years of service.

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

5. 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.

DIAL CORD STRINGING



ELECTRICAL MAIN PARTS LIST

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

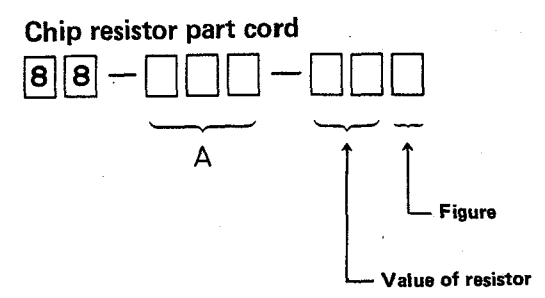
CAPACITORS
No mark, U, UF: μ F
P, PF : pF

COILS
MMH: mH
UH : μ H

FUSE
MMA: mA

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
=== IC ===			C50	* 87-010-184	CAP,CHIP B3300P (K)	C160	* 87-010-197	CAP,CHIP 0.01DM	TH1	* 87-026-222	THERMISTOR HT-50K
	87-020-459	IC,BA1102F	C52	* 87-010-197	CAP,CHIP 0.01DM	C161	* 87-010-182	CAP,CHIP 2200P	VR1	87-021-954	VOLUME 20KA (VOLUME)
	87-020-496	IC,BA3708F	C55	* 87-010-186	CAP,CHIP 4700P	C162	* 87-010-197	CAP,CHIP 0.01DM	VR2	+++	VOLUME 20KA (VOLUME)
	87-020-498	IC,BA3818F	C56	* 87-010-177	CAP,CHIP 0.01DM	C163	* 87-010-196	CAP,CHIP 0.1	=== SWITCH CIRCUIT BOARD SECTION ===		
	87-020-505	IC,CX20023	C57	* 87-010-167	CAP,CHIP 120P	C164	* 87-010-196	CAP,CHIP 0.1	PCB-B	* 84-401-618	SWITCH CIRCUIT BOARD
	87-020-460	IC,CX20111	C101	* 87-010-177	CAP,CHIP 820P	C165	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	D8	* 87-020-510	LED SLM-230M (REC/BATT)
	87-020-447	IC,TA7373F	C102	* 87-010-177	CAP,CHIP 820P	C166	* 87-015-934	CAP,CHIP TANTALUM 2.2-4	D9	* 87-020-509	LED SLM-13M (REV/PLAY)
	87-020-234	IC,TA7688F(S)	C103	* 87-010-186	CAP,CHIP 4700P	C167	* 84-401-634	CAP,ELECT 220-4V	=== MOTOR CIRCUIT BOARD SECTION ===		
	87-020-495	IC,TC9305F	C104	* 87-010-186	CAP,CHIP 4700P	C168	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	M1	84-401-620	MOTOR ASSY (W/PCB-C)
=== TRANSISTOR ===			C105	* 87-010-215	CAP,CHIP 0.047-35	C169	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	=== FLEXIBLE CIRCUIT BOARD SECTION ===		
	89-502-414	FET 2SK-241Y	C106	* 87-010-215	CAP,CHIP 0.047-35	C171	* 84-401-615	CAP,ELECT 47-4	PCB-D	84-401-622	FLEXIBLE CIRCUIT BOARD
	89-502-094	FET 2SK209Y	C107	* 87-010-179	CAP,CHIP B1200P(K)	C172	* 87-010-186	CAP,CHIP 4700P	EH	86-520-325	HEAD EH
	87-026-225	FET 2SJ106 GR	C108	* 87-010-179	CAP,CHIP B1200P(K)	C173	* 87-010-192	CAP,CHIP 0.022	RPH	84-401-621	RPH ASSY (W/PCB-D)
	87-026-233	TRANSISTOR,DTA114T K	C109	* 87-010-198	CAP,CHIP 0.022	C174	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	=== RELAY CIRCUIT BOARD SECTION ===		
	87-026-230	TRANSISTOR,DTA114Y	C110	* 87-010-198	CAP,CHIP 0.022	C175	* 87-010-186	CAP,CHIP 4700P	PCB-E	84-401-603	RELAY CIRCUIT BOARD
	87-026-213	TRANSISTOR,DTC114YK	C111	* 87-010-114	CAP,ELECT 47-4	C176	* 87-010-186	CAP,CHIP 4700P	=== MISCELLANEOUS ===		
	87-026-223	TRANSISTOR,DTC143T K	C112	* 87-010-114	CAP,ELECT 47-4	C180	* 87-018-196	CAP,CHIP 0.1	ECM	* 87-041-044	ECM
	87-026-224	TRANSISTOR,DTC143XK	C113	* 87-010-192	CAP,CHIP 0.022	CF1	* 87-008-284	FILTER PFB 468J	L6	* 84-401-627	ANT,FERRITE BAR
	87-026-210	TRANSISTOR,DTC144K	C114	* 87-010-192	CAP,CHIP 0.022	CF2	* 84-400-602	FM IF SET (10.7MS2Z)	PL1	* 87-045-249	SOLENOID,PL (MD)
	89-111-624	TRANSISTOR,2SA1162Y	C115	* 87-010-184	CAP,CHIP B 3300P(K)	CF3	*	+++	PL2	* 87-045-250	SOLENOID,PL (DIRECTION)
	89-112-134	TRANSISTOR,2SA1213Y	C116	* 87-010-184	CAP,CHIP B 3300P(K)	CF4	* 87-030-103	FILTER BPWB8L 6.5			
	89-208-522	TRANSISTOR,2SB852 KB	C117	* 87-015-934	CAP,CHIP TANTALUM 2.2-4	D101	87-020-027	DIODE,CHIP 1SS184	S7	87-031-908	LEAF SW (HEAD UP)
	89-327-125	TRANSISTOR,2SC2712 GR	C118	* 87-015-934	CAP,CHIP TANTALUM 2.2-4	D102	87-020-027	DIODE,CHIP 1SS184	S8	87-031-907	LEAF SW (CASSETTE)
	89-333-266	TRANSISTOR,2SC3326B	C119	* 87-010-179	CAP,CHIP B1200P (K)	D103	87-020-125	DIODE 1SS181	S9	87-031-908	LEAF SW (MS)
	89-413-284	TRANSISTOR,2SD1328T	C120	* 87-010-179	CAP,CHIP B1200P (K)	D104	87-020-027	DIODE,CHIP 1SS184	S10	87-031-944	SLIDE SW (REMOTE/HOLD)
=== MAIN CIRCUIT BOARD SECTION ===			C121	* 87-010-179	CAP,CHIP B1200P (K)	D105	87-020-027	DIODE,CHIP 1SS184	S12	86-520-357	LEAF SW (REC BLOCKING)
C16	* 87-010-174	CAP,CHIP S 470P	C122	* 87-010-179	CAP,CHIP B1200P (K)	D106	87-020-027	DIODE,CHIP 1SS184			
C17	* 87-010-197	CAP,CHIP 0.01DM	C123	* 87-015-933	CAP,CHIP TANTALUM 1-10	D107	87-020-339	DIODE,CHIP 1SS226			
C18	* 87-010-197	CAP,CHIP 0.01DM	C124	* 87-015-933	CAP,CHIP TANTALUM 1-10	D110	87-020-125	DIODE 1SS181			
C19	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	C125	* 87-010-193	CAP,CHIP 0.033	D111	87-020-027	DIODE,CHIP 1SS184			
C20	* 87-015-933	CAP,CHIP TANTALUM 1-10	C126	* 87-010-193	CAP,CHIP 0.033	J1	87-049-411	JACK 3.5 G (PHONES)			
C21	* 87-010-174	CAP,CHIP S 470P	C127	* 87-010-186	CAP,CHIP 4700P	J2	87-049-411	JACK 3.5 G (PHONES,REMOTE)			
C22	* 84-401-612	CAP,ELECT 10-16V	C128	* 87-010-186	CAP,CHIP 4700P	J3	87-049-549	JACK DC (DC-3V)			
C23	* 87-010-194	CAP,CHIP 0.047	C129	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	J4	87-049-611	JACK 3.5 ST (EXT MIC)			
C24	* 87-010-197	CAP,CHIP 0.01DM	C130	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	L1	* 87-007-179	COIL,CHOKE 0.15UH			
C25	* 84-401-612	CAP,ELECT 10-16V	C131	* 87-010-197	CAP,CHIP 0.01DM	L2	* 87-066-102	COIL,ANT FM			
C26	* 87-010-197	CAP,CHIP 0.01DM	C132	* 87-010-197	CAP,CHIP 0.01DM	L3	* 87-006-094	COIL,OSC FM			
C27	* 87-010-149	CAP,CHIP S 5P	C133	* 87-010-193	CAP,CHIP 0.033	L4	* 87-007-173	COIL,OSC AM FM.4			
C28	* 87-010-189	CAP,CHIP S 27P	C134	* 87-010-193	CAP,CHIP 0.033	L5	* 87-008-304	IFT AM PW-4			
C29	* 87-010-340	CAP,CHIP S 39P	C135	* 87-010-196	CAP,CHIP 0.1	L101	* 87-005-257	COIL,CHIP 1.5U			
C30	* 87-010-197	CAP,CHIP 0.01DM	C136	* 87-010-196	CAP,CHIP 0.1	L102	* 87-003-089	COIL,CHOKE 47UH			
C31	* 87-010-197	CAP,CHIP 0.01DM	C137	* 87-010-174	CAP,CHIP S 470P	L103	* 87-003-089	COIL,CHOKE 47UH			
C32	* 87-010-316	CAP,CHIP S 33P	C138	* 87-010-174	CAP,CHIP S 470P	L104	* 87-007-145	COIL OSC			
C34	* 87-010-150	CAP,CHIP S 6P	C139	* 87-010-196	CAP,CHIP 0.1	L105	* 87-003-089	COIL,CHOKE 47UH			
C35	* 87-010-194	CAP,CHIP 0.047	C140	* 87-010-425	CAP,CHIP 0.22	L106	* 87-033-045	COIL,22UH			
C36	* 87-010-197	CAP,CHIP 0.01DM	C141	* 87-010-214	CAP,CHIP TANTALUM 0.68-16	PR1	* 87-026-240	PHOTO. SENSOR ON2270-R			
C37	* 87-010-218	CAP,TANTALUM 22-4	C142	* 87-010-214	CAP,CHIP TANTALUM 0.68-16	S1	87-031-949	SLIDE SW (F/R)			
C38	* 87-010-425	CAP,CHIP 0.22	C143	* 84-401-617	CAP,ELECT 220-4V	S2	87-031-949	SLIDE SW (PB/REC)			
C39	* 87-010-196	CAP,CHIP 0.1	C144	* 84-401-617	CAP,ELECT 220-4V	S3	87-031-947	SLIDE SW (TAPE)			
C40	* 87-010-194	CAP,CHIP 0.047	C145	* 84-401-634	CAP,ELECT 220-4V	S4	87-031-947	SLIDE SW (REVERSE MODE/OSC)			
C41	* 87-014-047	CAP,PP 390P	C146	* 84-401-615	CAP,ELECT 47-4	S5	87-031-948	SLIDE SW (FUNCTION)			
C42	* 87-010-194	CAP,CHIP 0.047 *	C147	* 84-401-613	CAP,ELECT 22-6.3V	S6	87-031-947	SLIDE SW (DOLBY NR)			
C43	* 87-010-197	CAP,CHIP 0.01DM (U ONLY)	C148	* 87-010-114	CAP,ELECT 47-4	S11	87-031-945	SLIDE SW (BAND)			
C43	* 87-010-189	CAP,CHIP 8200P (EXCEPT U)	C149	* 87-010-114	CAP,ELECT 47-4	S13	87-031-942	LEAF SW (PL)			
C44	* 87-010-197	CAP,CHIP 0.01DM (U ONLY)	C150	* 87-010-075	CAP,ELECT 10-16	SFR1	* 87-021-943	SFR 10K			
C44	* 87-010-189	CAP,CHIP 8200P (EXCEPT U)	C151	* 87-010-226	CAP,TANTALUM 47-4	SFR101	* 87-021-953	SFR 10K			
C45	* 87-010-215	CAP,CHIP 0.047-35	C152	* 84-401-617	CAP,ELECT 220-4V	SFR102	* 87-021-953	SFR 10K			
C46	* 87-010-215	CAP,CHIP 0.047-35	C153	* 87-010-114	CAP,ELECT 47-4	SFR103	* 87-021-949	SFR 300K			
C47	* 87-010-174	CAP,CHIP S 470P	C154	* 87-010-114	CAP,ELECT 47-4	TC1	* 87-011-175	TRIMMER, CHIP 6P			
C48	* 87-010-174	CAP,CHIP S 470P	C155	* 87-010-226	CAP,TANTALUM 47-4	TC2	* 87-011-175	TRIMMER, CHIP 6P			
C49	* 87-010-224	CAP,TANTALUM 100-4	C156	* 87-010-170	CAP,CHIP 220P	TC3	* 87-011-181	PVC MW			
* U:HS-J500 MODEL			C157	* 87-010-179	CAP,CHIP B1200P(K)	TC4	+++	PVC MW			
			C158	* 87-015-785	CAP,CHIP 0.1	VC3	+++	PVC MW			
			C159	* 87-010-424	CAP,CHIP TANTALUM 4.7-4V	VC4	+++	PVC MW			

ADJUSTMENT (HS-J08, J500)

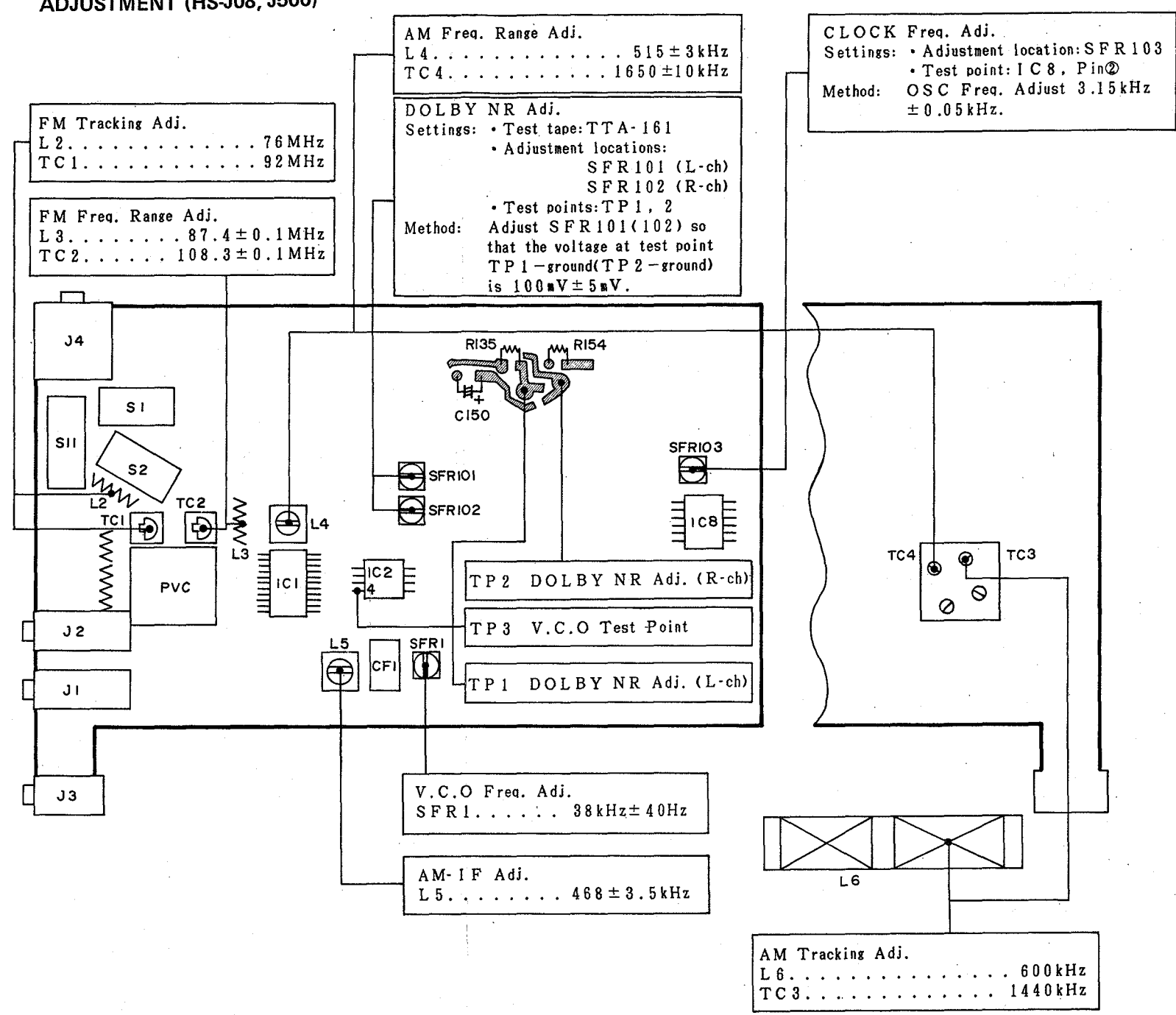


Chip resistor

Power value	Type	Dimensions (mm)			
		Form	L	W	t
1/10 W	A:118		2	1.25	0.45
1/8 W	A:129		3.2	1.6	0.5 ~ 0.7

Example of chip resistor

560Ω 88-129-561
10kΩ 88-129-103

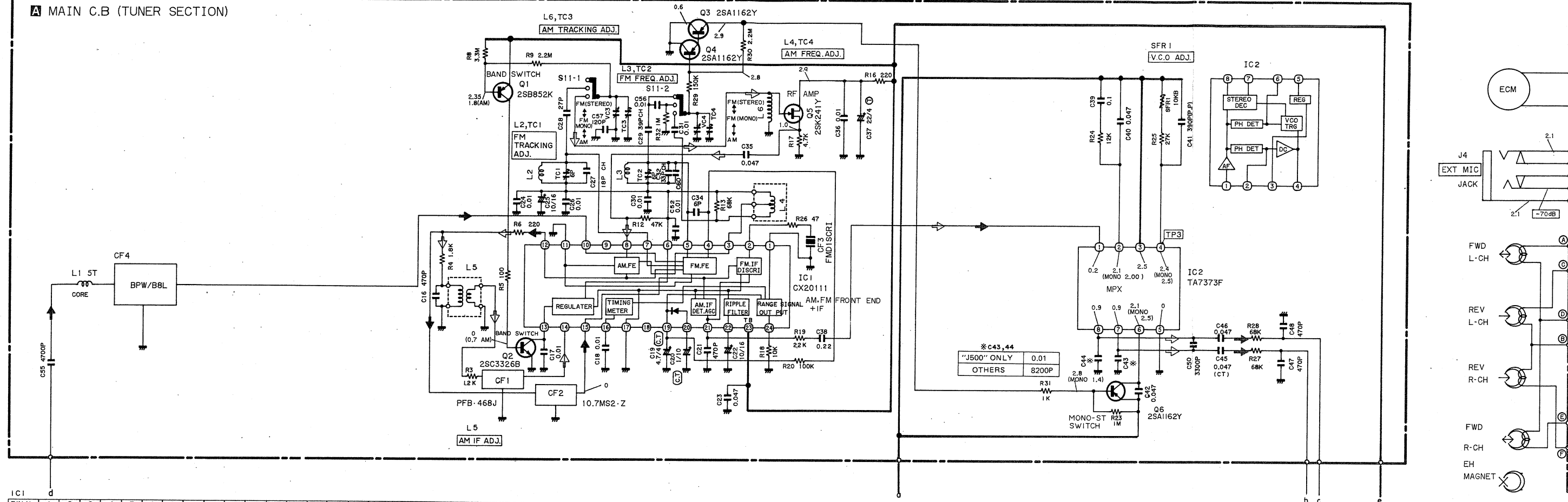


Practical Service Figure

<RADIO SECTION>
Sensitivity:
(IHF, THD 3%) FM 15±4dB (at 98MHz)
(S/N 10dB) AM More than 51dB (at 1000kHz)
Intermediate frequency: FM 10.7MHz
AM 468kHz

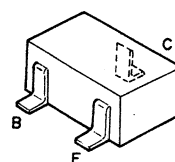
<TAPE RECORDER SECTION>
Tape speed: 4.8cm/s±3%
Record bias frequency: 48kHz
Erasing ratio: More than 50dB
Channel balance: Less than 3dB (at REC/PB)
Distortion: Less than 10% (at REC/PB)
Signal noise ratio: 25±4dB (DC/AC, PB/REC)
Noise level: 0.1±0.1mV
Pinch roller pressure: 190±20g
Take up torque: 30±10 g-cm
FF & rewind torque: 110±40 g-cm

A MAIN C.B. (TUNER SECTION)

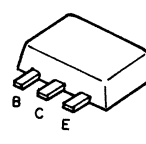


NOTES:

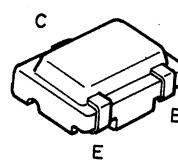
- 1) B (+) power supply
 - 2) Signal path
 - 3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But () is with AM reception or recording. An asterisk (*) indicates that the value was measured with a vacuum-tube voltmeter during recording.
 - 4) Resistors 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
 - Polypropylene film capacitor
 - Tantalum capacitor
- This schematic diagram is subject to change without notice in the interests of improved performance.



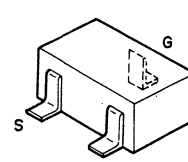
DTA114
DTC114
DTC143
DTC144
2SA1162
2SC2712
2SC3326
2SD1328



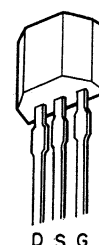
2SA1213



2SB852

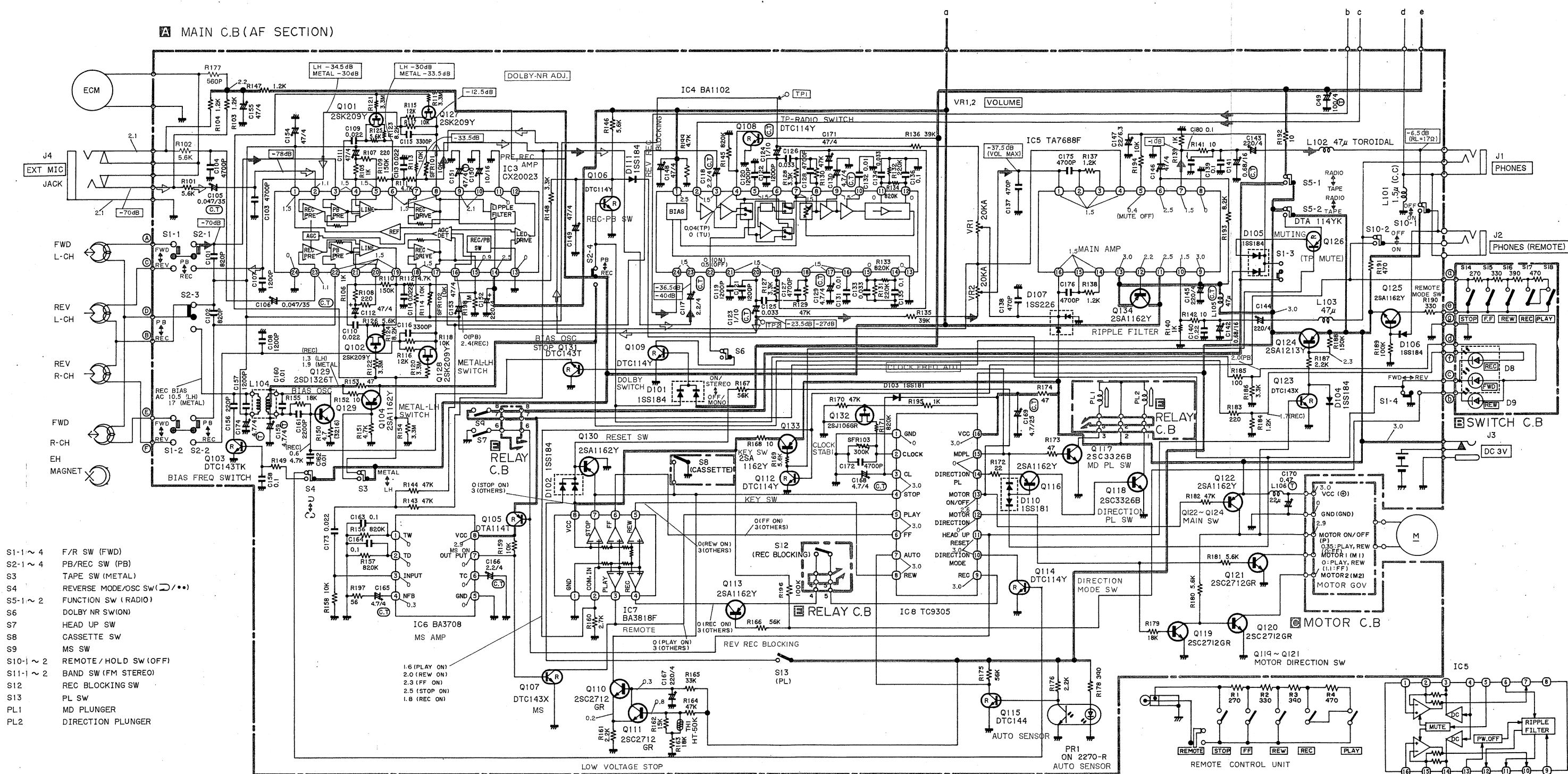


2SK209
2SJ106



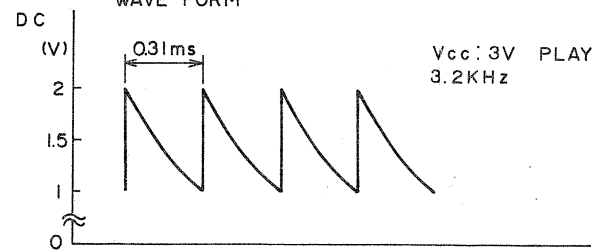
2SK241

- S1-1 ~ 4 F/R SW (FWD)
- S2-1 ~ 4 PB/REC SW (PB)
- S3 TAPE SW (METAL)
- S4 REVERSE MODE/OSC SW
- S5-1 ~ 2 FUNCTION SW (RADIO)
- S6 DOLBY NR SW (ON)
- S7 HEAD UP SW
- S8 CASSETTE SW
- S9 MS SW
- S10-1 ~ 2 REMOTE/HOLD SW (OI)
- S11-1 ~ 2 BAND SW (FM STEREO)
- S12 REC BLOCKING SW
- S13 PL SW
- PL1 MD PLUNGER
- PL2 DIRECTION PLUNGER

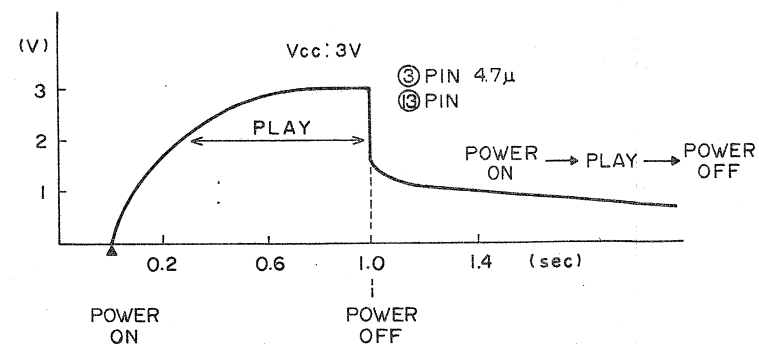


IC8

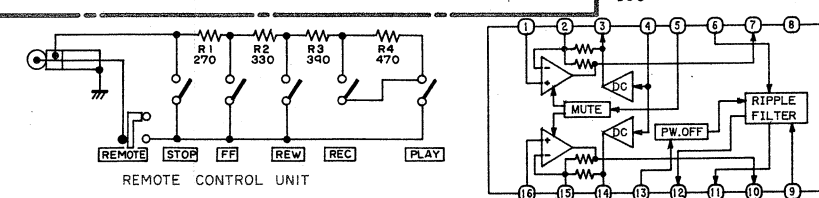
② PIN CLOCK OSCILLATION
WAVE FORM



IC8



IC5



WIRING (HS-J08, J500)

IC 1								
PIN No.	1	2	3	4	5	6	7	8
VOLTAGE	1.0	1.7	2.5	1.7	0	2.5	2.4	2.5

IC 3								
() : MONO								
PIN No.	1	2	3	4	5	6	7	8
VOLTAGE	0.2	2.07 (2.0)	2.5	2.4 (2.5)	0	2.1 (2.5)	0.9	0.9

IC 2												
PIN No.	1	2	3	4	5	6	7	8	9	10	11	12
FM	0	2.1	1.3	1.2	1.3	1.3	1.3	—	0.4	—	0.4	—
AM	0	2.6	1.1	1.1	1.3	1.3	1.3	—	0	—	0.2	—

IC 6												
PIN No.	13	14	15	16	17	18	19	20	21	22	23	24
FM	1.4	0	0	0	—	1.3	1.2	1.1	2.6	2.9	—	—
AM	1.4	0	0	0	—	1.6	1.1	0.9	2.6	2.9	—	—

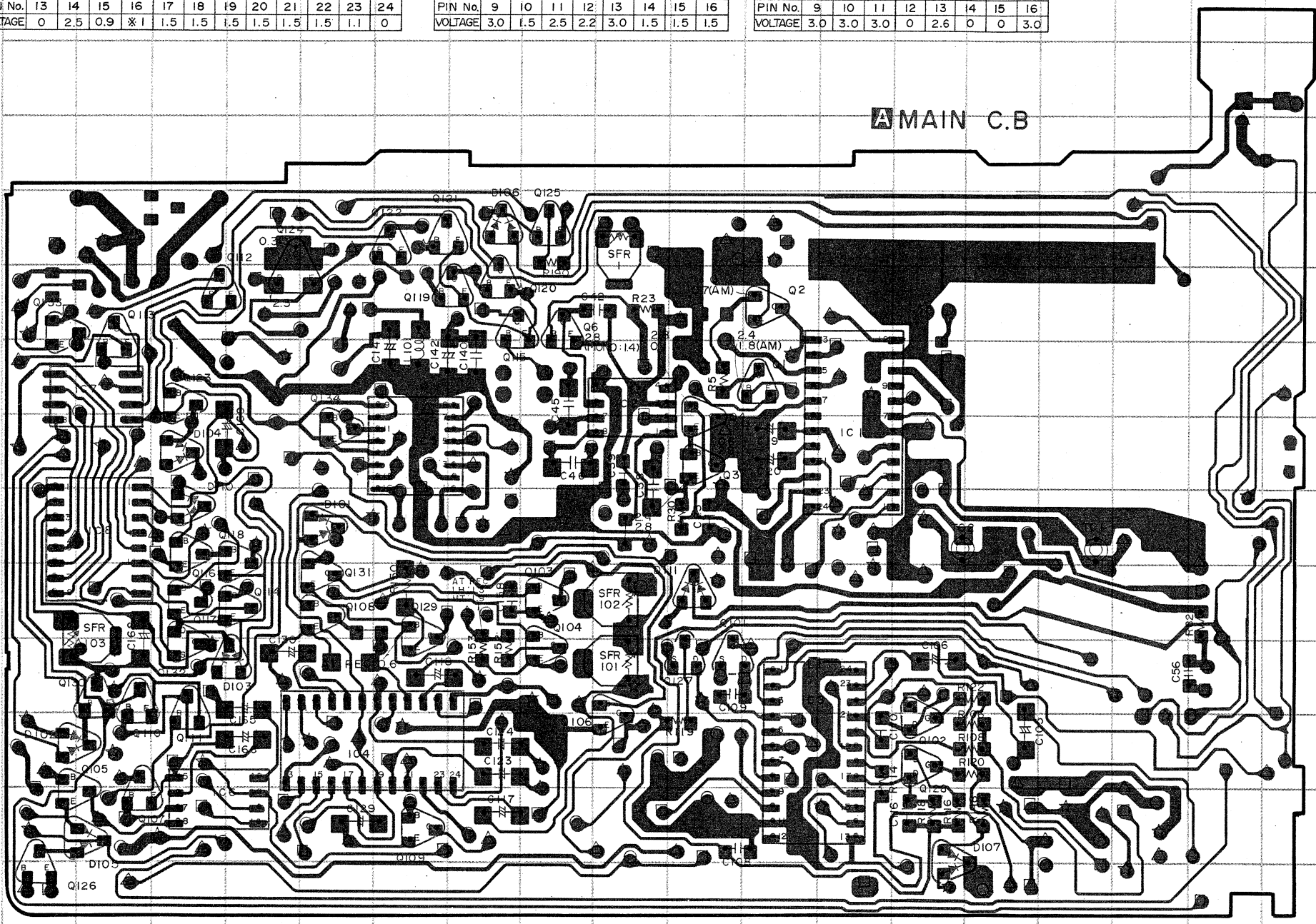
IC 5												*2 0.64 (TP) 0 (TU)				*3 0 (ON) 0.86 (OFF)			
PIN No.	1	2	3	4	5	6	7	8	9	10	11	12							
VOLTAGE	2.5	1.5	1.5	*2	1.5	1.5	1.5	1.5	1.5	1.5	0	0	0						
PIN No.	13	14	15	16	17	18	19	20	21	22	23	24							
VOLTAGE	0	0	0	1.5	1.5	1.5	1.5	1.5	1.5	*3	1.5	1.5							

IC 7								
*5 2.9 (MSON)								
PIN No.	1	2	3	4	5	6	7	8
VOLTAGE	0	0	0	0.3	0	0	0	*5

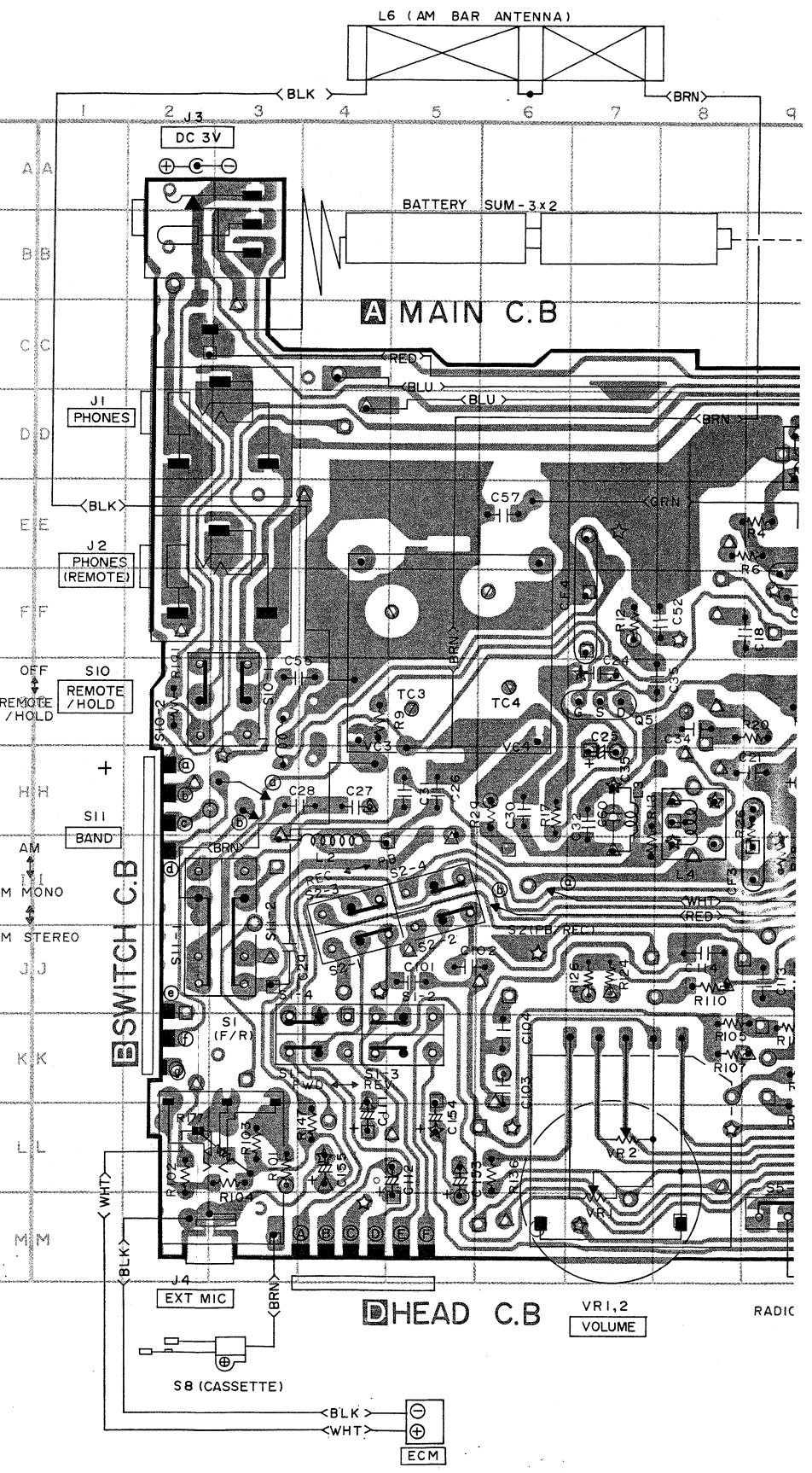
IC 4												
*1 0 (PB) 2.4 (REC)												
PIN No.	1	2	3	4	5	6	7	8	9	10	11	12
VOLTAGE	1.5	1.1	1.5	1.5	1.5	1.5	1.5	1.5	2.1	2.1	0	—
PIN No.	13	14	15	16	17	18	19	20	21	22	23	24
VOLTAGE	0	2.5	0.9	*1	1.5	1.5	1.5	1.5	1.5	1.5	1.1	0

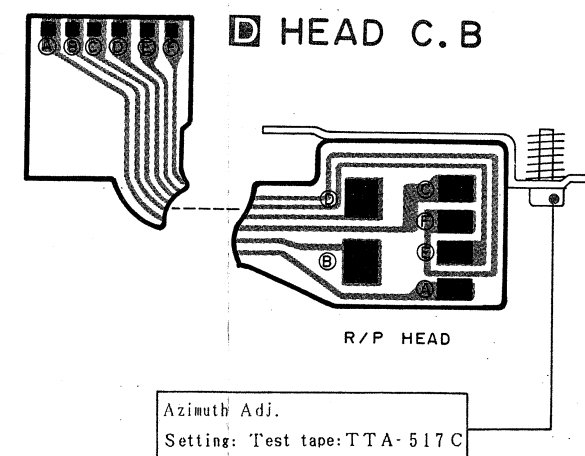
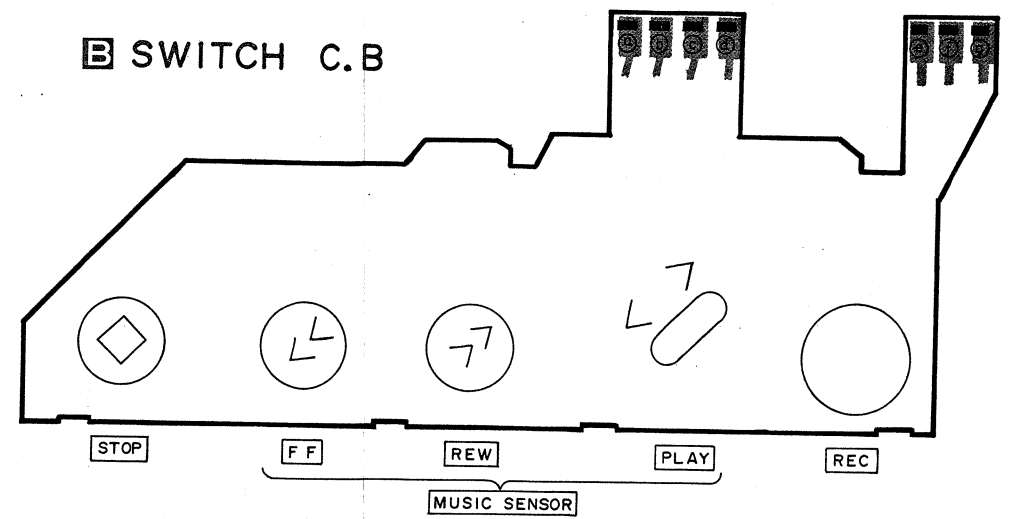
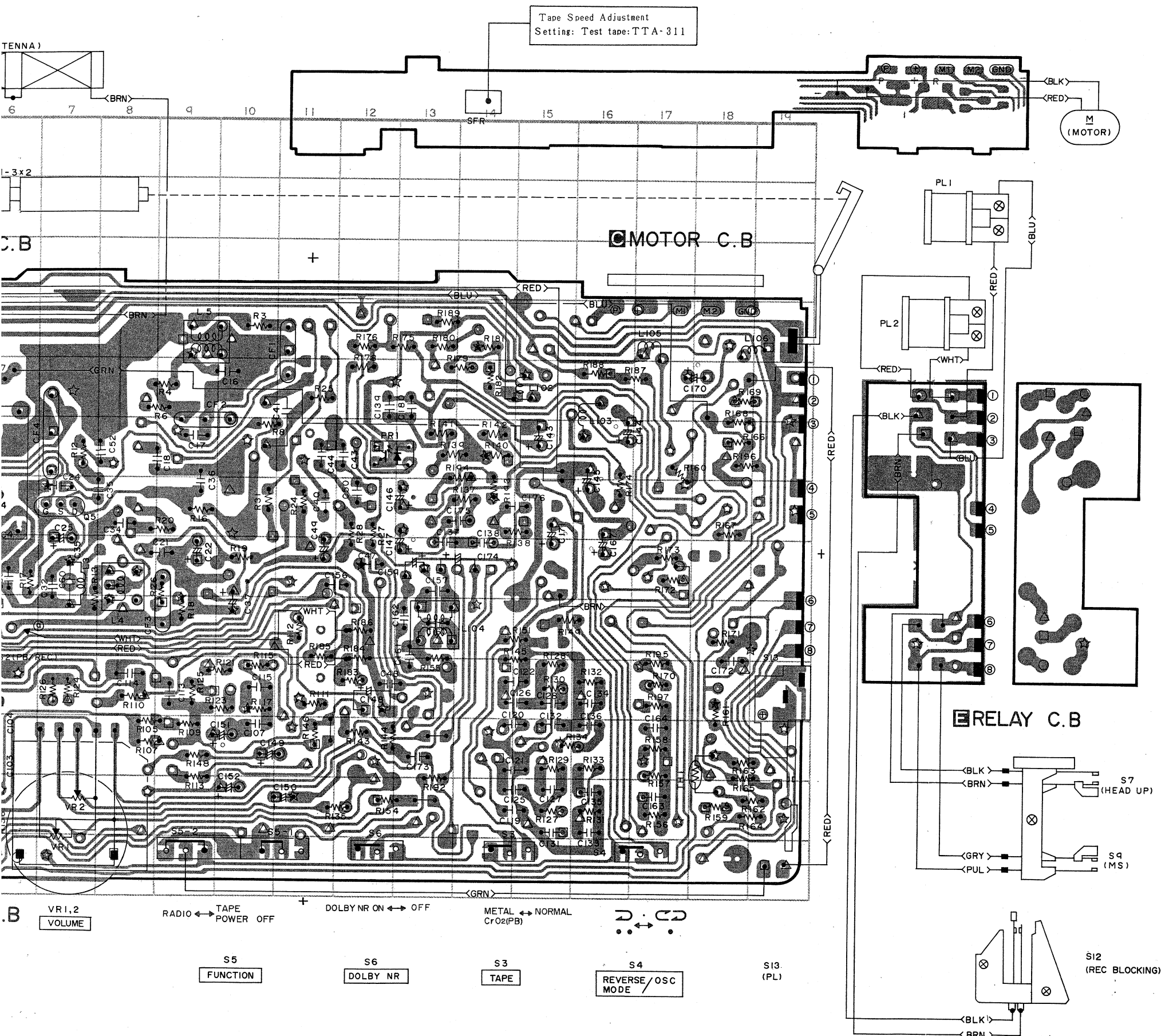
IC 6		13		12		*4 0.4 (MUTE OFF)			
PIN No.	1	2	3	4	5	6	7	8	
VOLTAGE	1.5	1.5	1.5	1.5	*4	2.5	1.5	0	
PIN No.	9	10	11	12	13	14	15	16	
VOLTAGE	3.0	1.5	2.5	2.2	3.0	1.5	1.5	1.5	

IC 9		8		7		6		
PIN No.	1	2	3	4	5	6	7	8
VOLTAGE	0		3.0	3.0	3.0	3.0	3.0	3.0
PIN No.	9	10	11	12	13	14	15	16
VOLTAGE	3.0	3.0	3.0	0	2.6	0	0	3.0



NOTE: — IS CHIP JUMPER (ON)
○, △, □, ☆ THROUGH HOLE CONNECTION





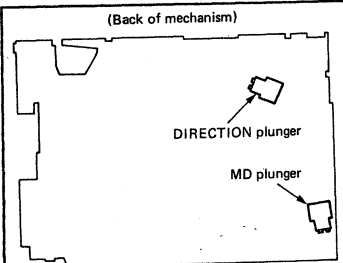
1. Mechanism operating essential points

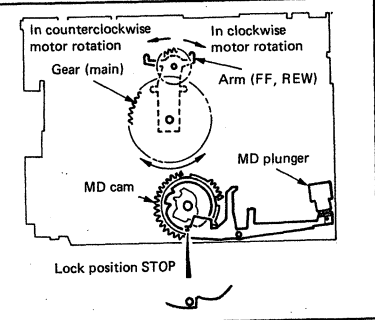
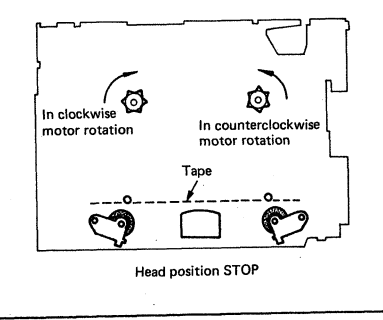
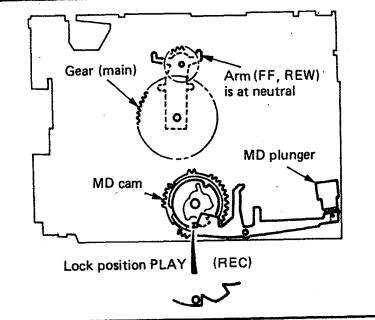
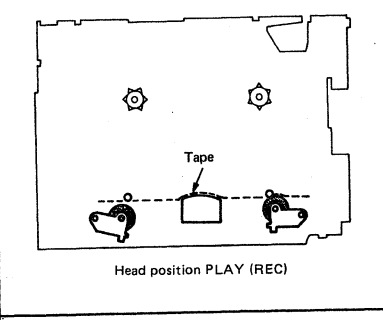
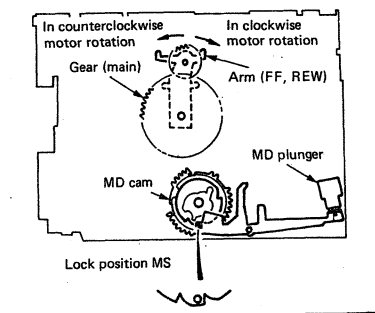
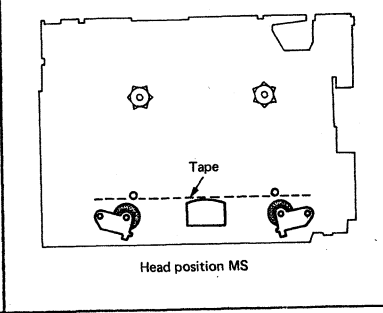
1-1. Motor rotation direction

The motor turns counterclockwise in the FF and CUE modes (as viewed from the pulley side). It turns clockwise in other modes.

1-2. Plunger operation

The plungers used in this unit have coils wound over a permanent magnet, and the magnetism of the permanent magnet is cancelled when current flows through the coil.

(Back of mechanism)	Name	Function
	MD Plunger (PL1)	This plunger switches over the lock position of the MD cam. There are 3 lock positions, and the head position is changed over in 3 steps STOP-PLAY(REC)-MS.
	DIRECTION Plunger (PL2)	This plunger switches over the tape running direction.

	Description	MD CAM AND GND (FF, REW)	HEAD POSITION
STOP FF REW	When the motor turns clockwise with the head position set to "STOP", the unit enters the REW mode to the tape forward running, and, when the motor turns counterclockwise, the unit enters the FF mode. The arm (FF, REW) is moved by the gear rotation, and is changed over to FF or REW mode.		
PLAY (REC)	When the locking of the MD cam is released from the head STOP position, and the lock position advances by one (1), the head position is set to "PLAY(REC)". The arm (FF, REW) is in the neutral position at this time. The motor turns only forward and never turns in reverse.		
MS	When the locking of the MD cam is released with the head position set to "STOP", and the lock position advances by one (1), the head position is set to "MS". The arm (FF, REW) is deviated by the gear (main) rotation, and is changed over to CUE or REVIEW.		

FF, REW, CUE and REVIEW shown above are with tape running forward.

2. LOGIC circuit flow

When each key is pressed, the voltage corresponding to the pressed key is applied to pin ② (COMP. IN) of IC₇ BA3818F. At the same time, Q₁₁₂ and Q₁₁₃ are set to ON, and the +B is applied to pin ④ (Vcc). BA3818F compares the voltage applied to pin ② with the voltage applied to pin ④, and sets the output pin to "LOW" according to its ratio (voltage applied to pin ②/voltage applied to pin ④). (Refer to the description of the BA3818F pins). As a result, 2 output pins are never set to "LOW" simultaneously. This LOW signal becomes the input signal of microprocessor (CPU) IC₈ TC9305F.

IC₈ TC9305F is set to the initial mode (Logic mode: STOP) when power is supplied. When the LOW signal is input, the signal corresponding to the input is output via pins ②~⑤. Pin ② controls the motor rotation direction, pin ③, the motor rotation ON/OFF operation, pin ④, the DIRECTION plunger and pin ⑤, the MD plunger. (Refer to the description of the TC9305F pins).

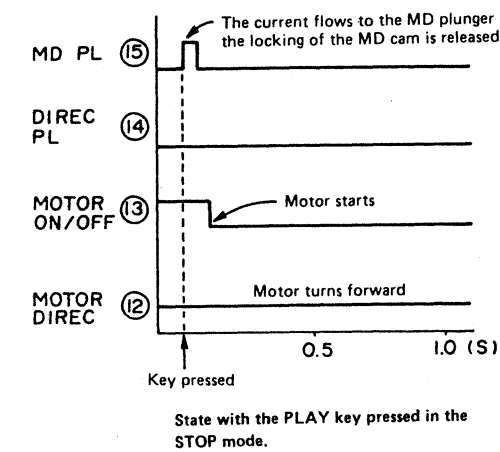


Fig. 1

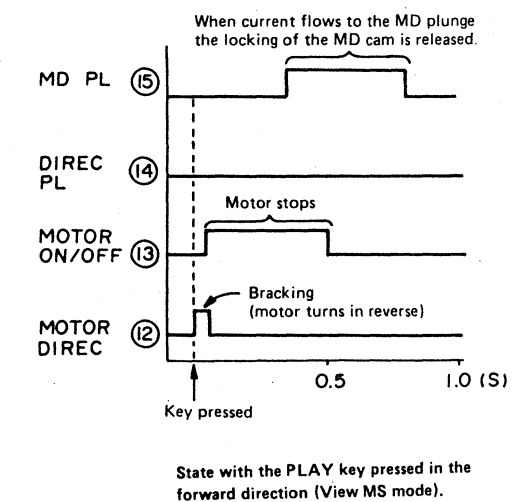


Fig. 2

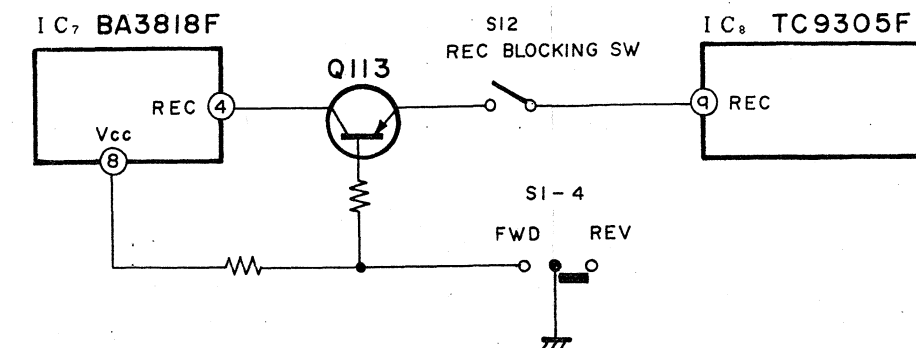
3. Mechanism logic malfunction prevention circuit

Refer to the Service manual of HS-P08, G08, G500.

4. Reverse recording prevention circuit

IC₇ inputs the recording input regardless of the direction in which the tape is running. When IC₈ inputs the recording input with the FWD/REV switch set to the REV position due to a malfunction of the logic mechanism,

the unit may enter the reverse recording mode. To prevent this, the circuit is designed so REC output (pin 4) of IC₇ and REC input (pin 9) of IC₈ are connected only when the FWD/REV switch is in the FWD position.

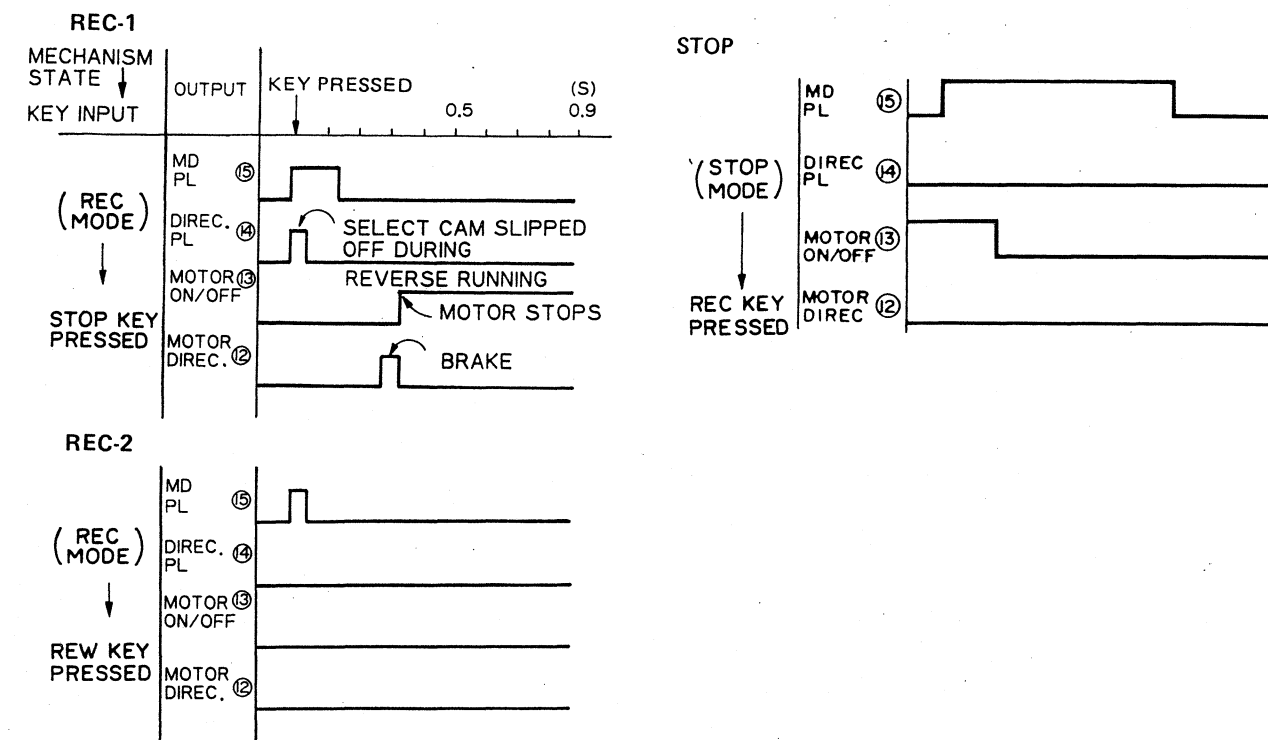


5. TC-9305F pin description

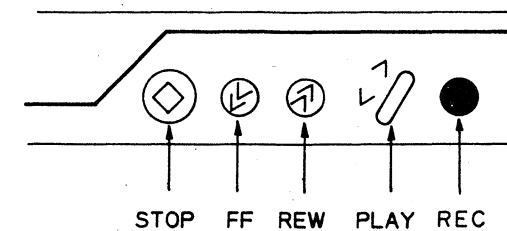
Pin No.	Pin mark	Function
1	GND	GND pin
2	CLOCK	CLOCK oscillation pin Oscillation frequency: 3.2kHz. It is required to keep it at 3.2kHz+10%, -40% to guarantee the operation of the mechanism.
3	CL	CLEAR pin This is reset at "LOW" level.
4	STOP	STOP key input pin Active at "LOW"
5	PLAY	PLAY key input pin Active at "LOW"
6	FF	FF key input pin Active at "LOW"
7	AUTO	TAPE END SENSOR input pin Auto operation (STOP or REVERSE) is performed when the "HIGH" (70% or more of pin ⑩ + B)/"LOW" (30% or less of pin ⑩ + B) change does not occur for 1 sec.
8	REW	REW key input pin Active at "LOW"
9	REC	REC key input pin Active at "LOW". Not used in HS-P08, HS-G08, HS-G500.
10	DIRECTION MODE	DIRECTION MODE select input pin ENDLESS REVERSE at "HIGH" level. One reciprocation of REVERSE at "LOW" level.
11	HEAD UP RESET	HEAD UP RESET input pin When the mechanism is in the HEAD UP mode while the logic of TC9305F is in the STOP, FF or REW mode, this pin is set to "LOW" by S6, and the reset operation is performed to set the mechanism to the STOP mode. (drift between the modes shown above and the mechanism state occurs when the battery is taken out during the set operation.)
12	MOTOR DIRECTION	Motor rotation direction select output pin Set to "HIGH" in FF/CUE modes. Set to "LOW" in other modes.
13	MOTOR ON/OFF	Motor ON/OFF select output pin Motor stops at "HIGH" level.
14	DIRECTION PL	DIRECTION select plunger output pin When the "HIGH" pulse is output, the direction plunger (PL 2) is released and the tape running direction is changed.
15	MD PL	MD plunger output pin When the "HIGH" pulse is output, the MD plunger (PL 1) is released and the mechanism head position is changed.
16	Vcc	Power pin

6. Timing Chart

Refer to the HS-P08, G08, G500 service manual for timing charts other than the following.



* OPERATION KEY NAMES SHOWN THE TIMING CHART ARE AS FOLLOWS.



7. BA3708F pin description

Pin No.	Pin mark	Function
1	TW	Output pulse width pin The output pulse width (Tw) is determined by the externally attached CR. $Tw(ms) \approx 1.6 \times C(\mu F) \times R(K\Omega)$
2	TD	Inter-tune detection time pin The inter-tune detection time (Td) is determined by the externally attached CR. $Td(ms) \approx 1.7 \times C(\mu F) \times R(K\Omega)$
3	INPUT	Input pin
4	NFB	Input amp NFB pin The frequency response and gain are determined by the externally attached CR.
5	GND	GND pin
6	TC	Tune-present detection time pin The tune-present detection time (Tc) is determined by the externally attached C. When the tune length is shorter than Tc, it is not detected as a tune.
7	OUTPUT	Output pin Set to ON in the interval between tunes with open collector.
8	Vcc	Power pin

8. BA3818F pin description

Pin No.	Pin mark	Function
1	GND	GND pin
2	COMP.IN	Input pin The voltage corresponding to the key is applied when the operation key is pressed.
3	PLAY	PLAY key output pin Set to the "LOW" level when the voltage 51%~55% of Vcc is applied to the COMP. IN.
4	REC	REC key output pin Set to the "LOW" level when the voltage 58%~62% of Vcc is applied to the COMP. IN. Not used in HS-P08, HS-G08, HS-G500.
5	REW	REW key output pin Set to the "LOW" level when the voltage 66%~70% of Vcc is applied to the COMP. IN.
6	FF	FF key output pin Set to the "LOW" level when the voltage 73%~77% of Vcc is applied to the COMP. IN.
7	STOP	STOP key output pin Set to the "LOW" level when the voltage 81%~85% of Vcc is applied to the COMP. IN.
8	Vcc	Power pin The reference voltage of every comparator.

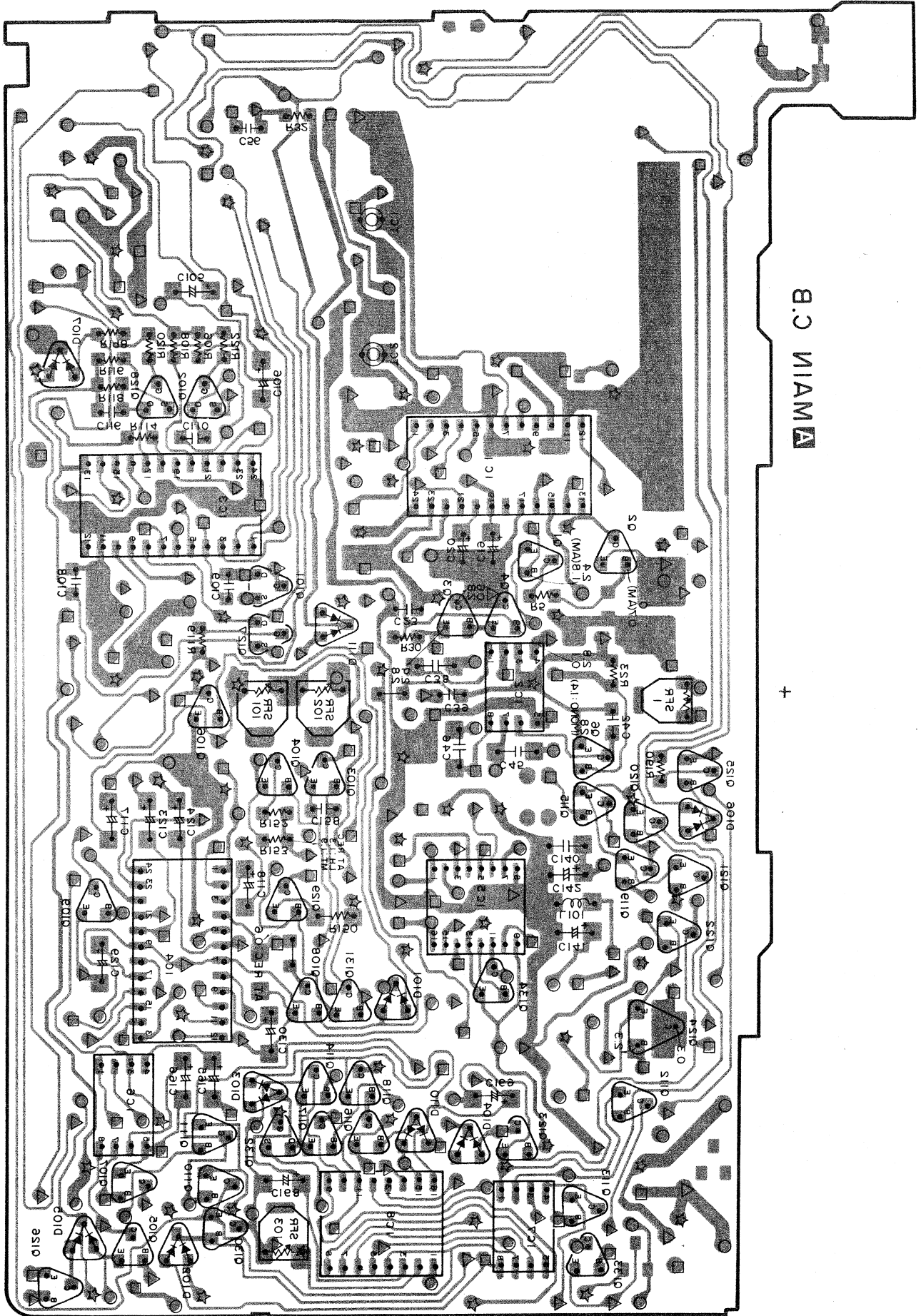
Note: Values shown above are the reference values; they differ depending on the IC.

9. Motor pin description

Pin mark	Function
+B	Power pin
GND	GND pin
MOTOR ON/OFF (PAUSE)	Motor rotation ON/OFF pin Turns at "HIGH". Stops at "LOW".
MOTOR1 MOTOR2	Motor rotation direction select pin Motor turns clockwise with motor 1 set to "HIGH" (viewed from the pulley side) with motor 2 set to "LOW" Motor turns counterclockwise with motor 1 set to "LOW" (viewed from the pulley side) with motor 2 set to "HIGH"

10. Principal switch operations and functions

Switch No.	Pin mark	Function
S ₇	HEAD UP SW	Head position detector switch Set to ON with the head position set to PLAY or MS. Set to OFF with the head position set to STOP. Refer to the circuit description (HEAD UP RESET operation).
S ₁₀	HOLD SW	ON Headphone jack B becomes the remote jack. Only the remote operation keys are accepted.
		OFF Headphone jack B becomes the headphone jack. Only the operation keys of the set are accepted.
S ₈	CASSETTE SW	Set to OFF when the cassette lid is closed. Set to ON when the cassette lid is open. The operation key is not accepted at this time. This switch prevents too much load being applied by forcibly inserting the cassette with the head position set to PLAY.
S ₉	MS SW	MS circuit ON/OFF switch. Set to ON when the head position is set to STOP or MS. Set to OFF when the head position is set to PLAY.
S ₁₃	PL SW	Mechanism/logic malfunction prevention switch. Set to ON while PL1 is attracted. Set to OFF while PL1 is slipped off.
S ₁₂	REC BLOCKING SW	Record blocking switch.

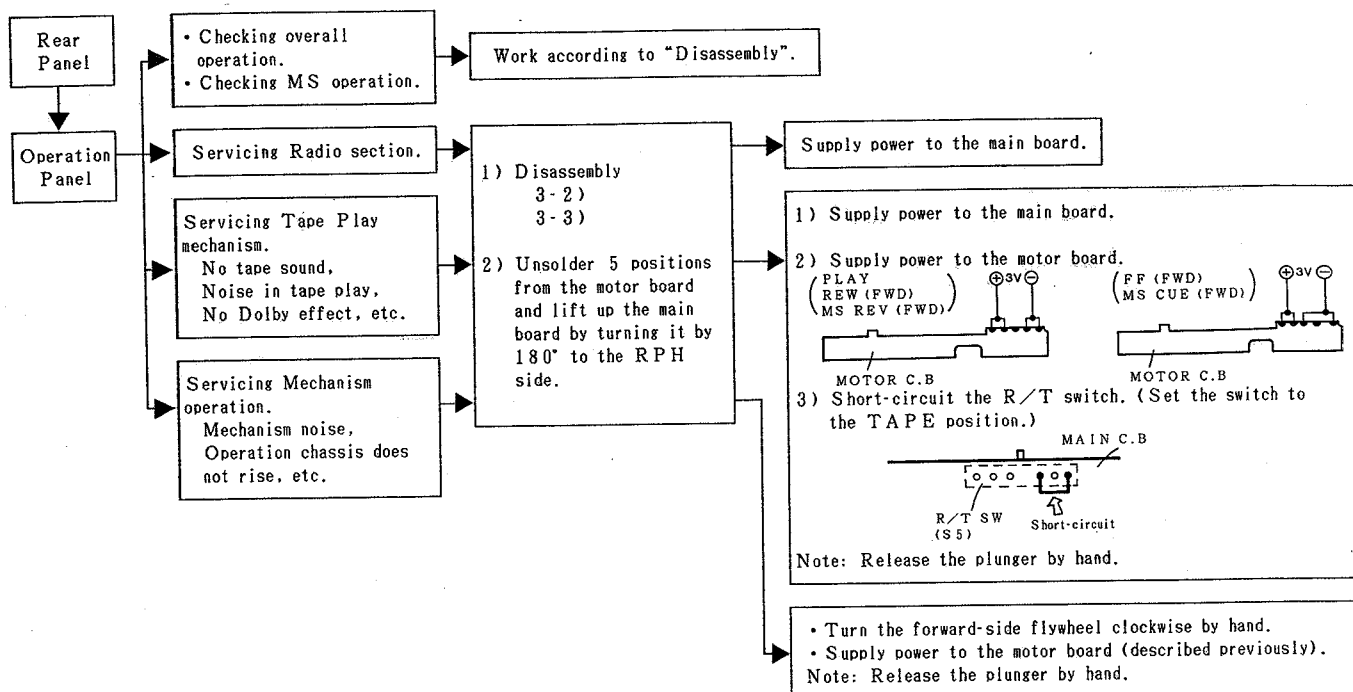


B.C MIAMA

TO USE this pattern view, put the (+) mark upon the one of the wiring view.
 (Cut off line)

DISASSEMBLY INSTRUCTIONS

DISASSEMBLY/SERVICE PROCEDURE



1. Rear Panel Removal

- 1) Remove the tuning knob.
- 2) Remove 6 screws and battery lid, then remove the rear panel in the direction of the arrow. (See Figure-1)

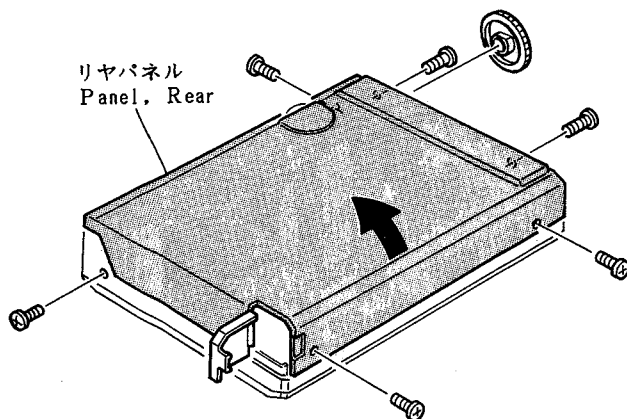


Fig-1

- 3) When removing the rear panel, take care so that the volume control knob is not caught by the rear panel. (See Figure-2)

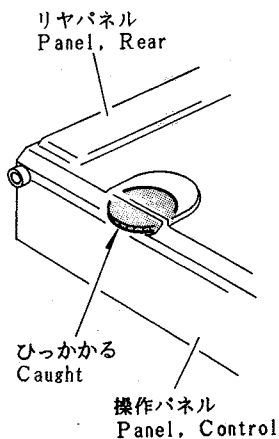


Fig-2

Caution on reinstallation:

Reinstall the rear panel as shown in the figure, taking care of the Band Switch and Remote Switch knobs. (See Figure-3)

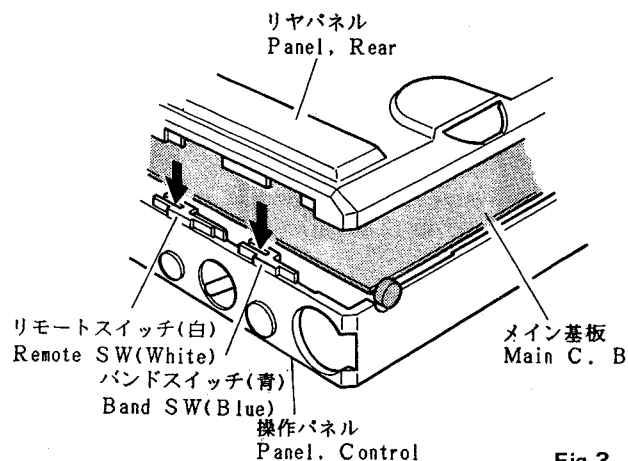


Fig-3

2. Operation Panel Removal

- 1) Remove 2 hinge screws and take out the cassette lid. (See Figure-4)

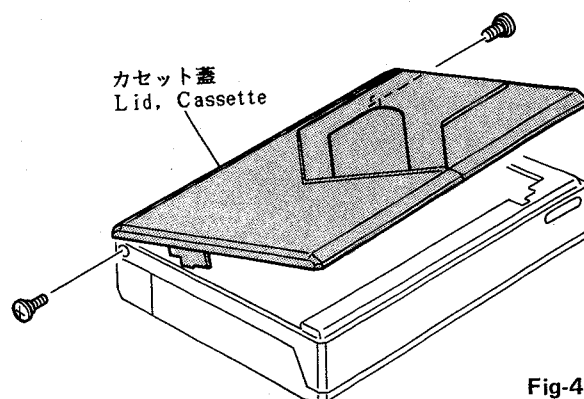


Fig-4

2) Unsolder 7 positions on the operation circuit board.

(See Figure-5)

Set the Remote switch on the main unit to HOLD and operate the unit by the remote controller.

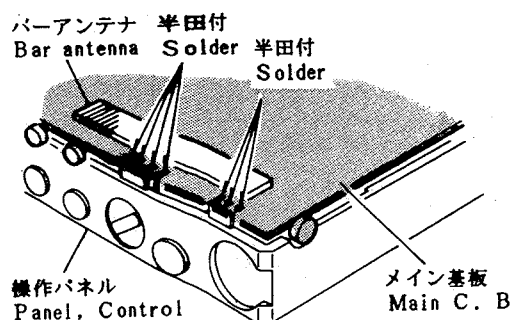


Fig-5

3) Remove 2 screws and take out the operation panel in the direction of the arrow. (See Figure-6)

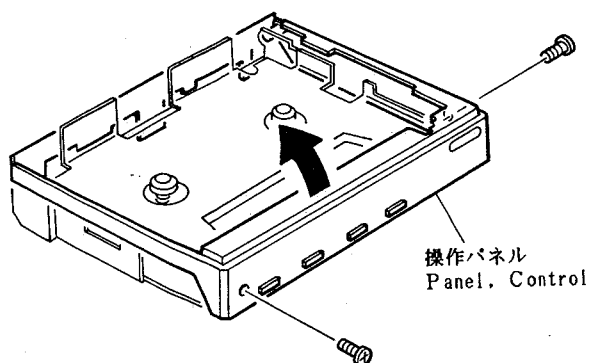


Fig-6

Note 1) Remove the operation panel by bending it in the direction of the arrow. (See Figure-7)

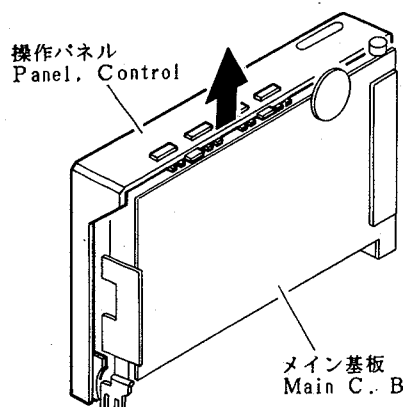


Fig-7

3. Main Circuit Board Removal

1) Remove 3 screws on the cassette decorative plate and loosen the wires at section A. (See Figure-8)

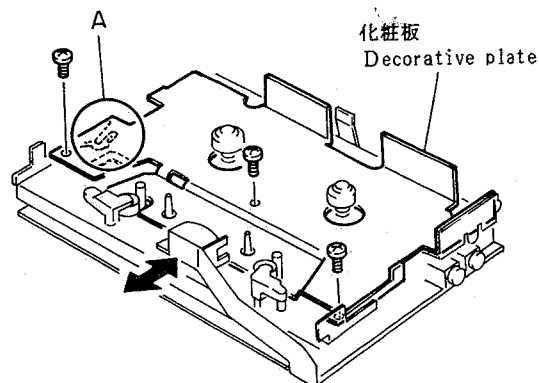


Fig-8

Caution on reinstallation:

Move the head up and down and check that the operation chassis does not touch the wires at section A.

2) Remove 7 screws and unsolder one position.

(See Figure-9)

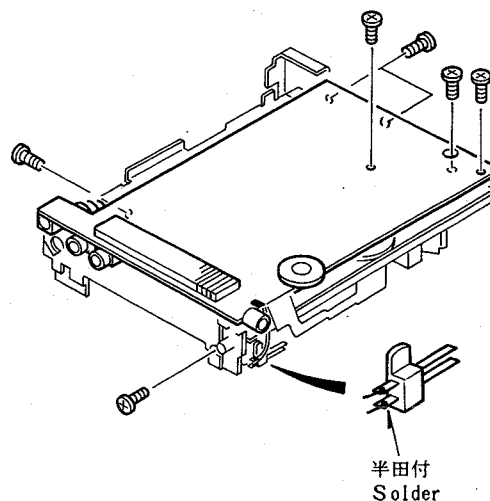


Fig-9

3) Peel off the double side adhesive tape between the mechanism chassis and motor circuit board and lift up the main circuit board in the direction of the arrow. (See Figure-10)

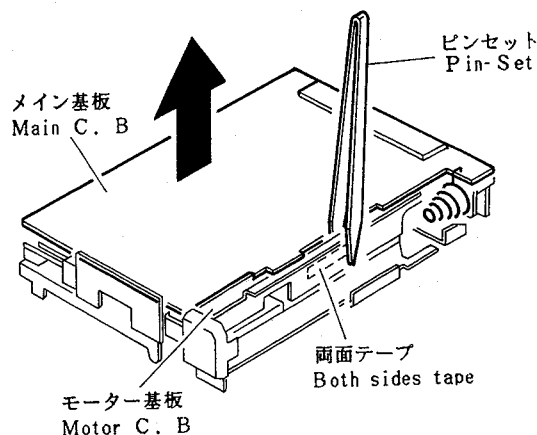


Fig-10

Note) Lift up the circuit board halfway, then peel off the Himeron sheet which bundles the wires.
(See Figure-11)

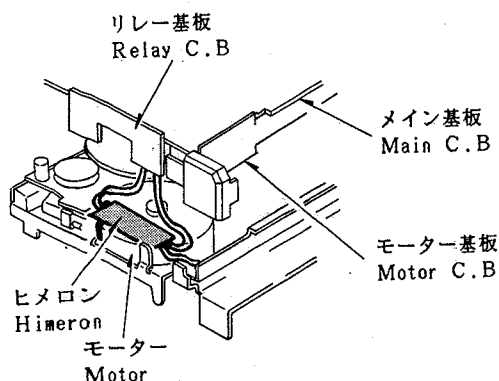


Fig-11

Caution on reinstallation:

Process the wires as follows.

- 1) Paste the double side adhesive tape to the motor and cover. (See Figure-12)
- 2) Fix the wires (REC, BLU) of the MD plunger and wires (RED, BLK) of the motor using the double side adhesive pasted to the motor, and lay out all the wires at position A in the figure. Take care so the wires do not touch the motor pulley and belt.

(See Figure-12, 13)

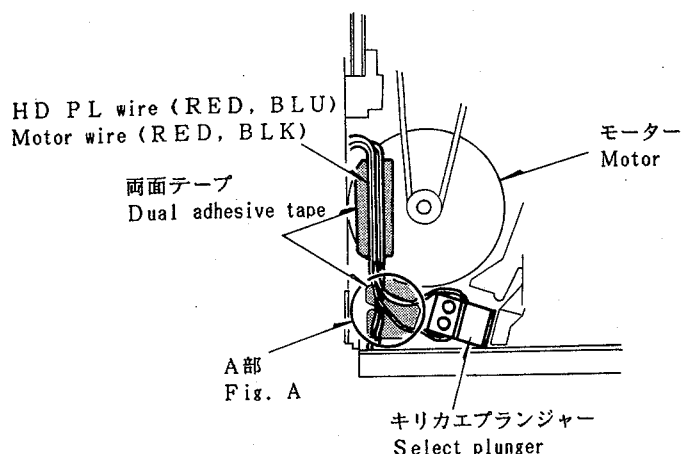


Fig-12

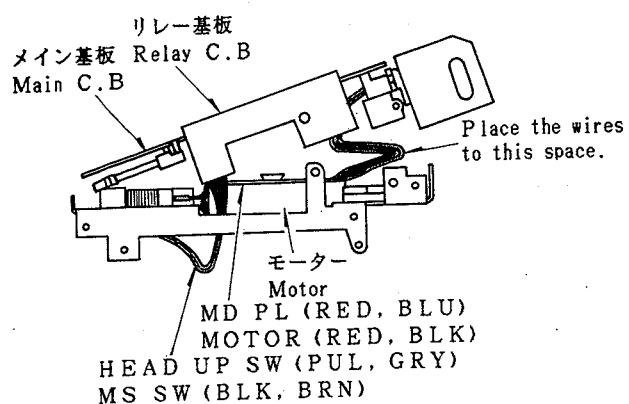


Fig-13

4. Bottom Plate Assembly Removal

- 1) Remove the main circuit board.
- 2) Remove the relay pulley and flywheel L.
(See Figure-14)

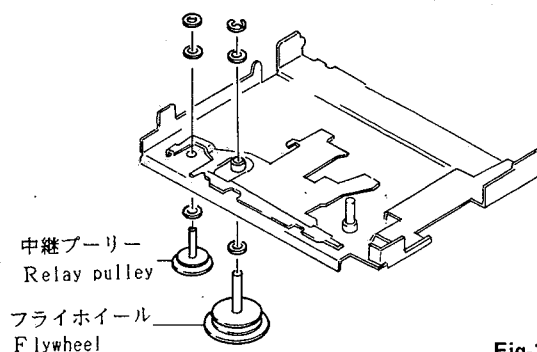


Fig-14

- 3) Remove 5 screws and take out the plate plunger.
(See Figure-15)

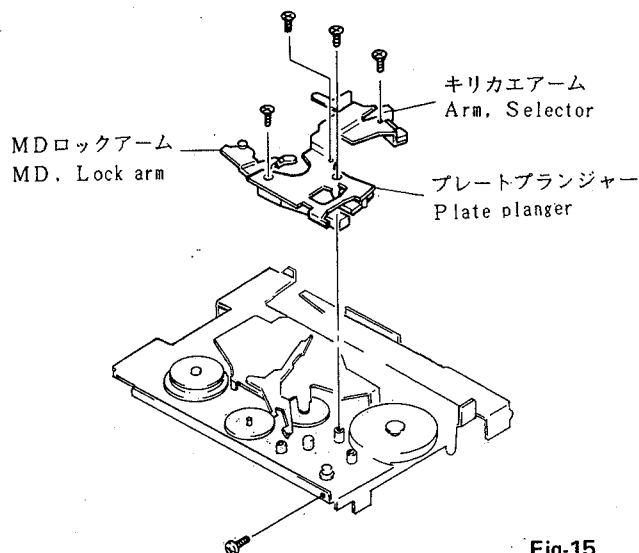


Fig-15

Caution on reinstallation:

Put the MD lock arm and switching arm inside the cam.

- 4) Remove 3 screws. (See Figure-16)

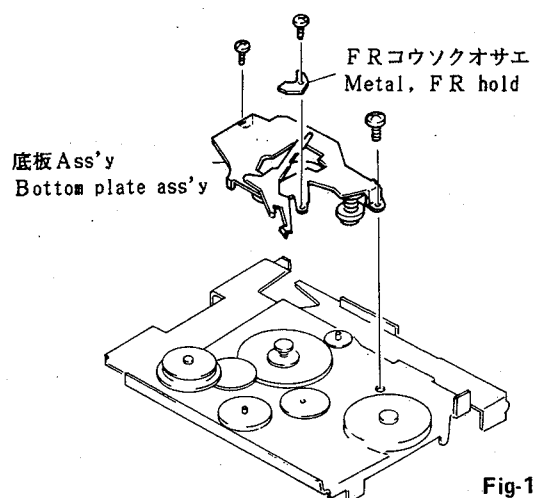
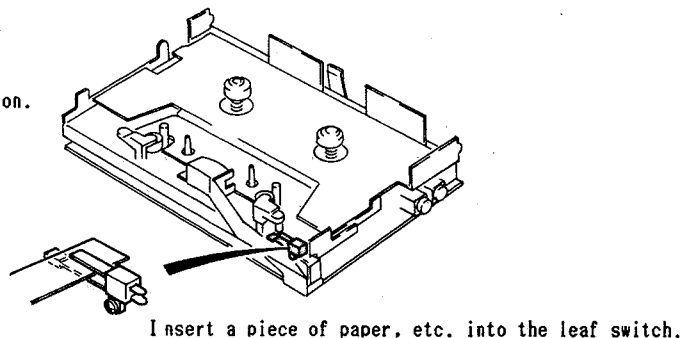
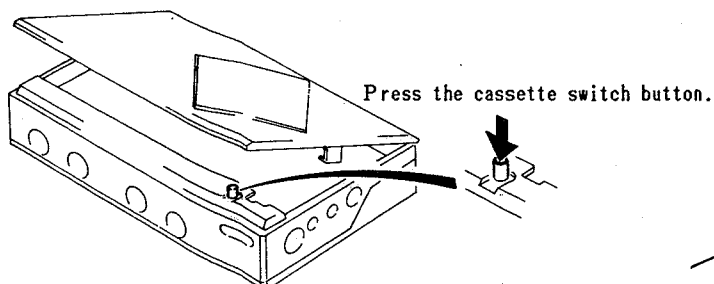


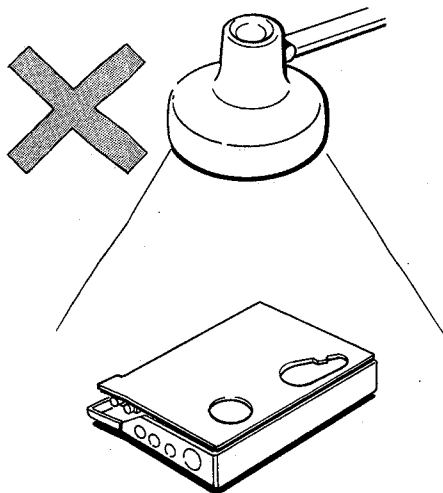
Fig-16

1. Caution on servicing

- 1) Turn OFF cassette switch S 8 when testing the unit with the cassette lid open or external case removed.

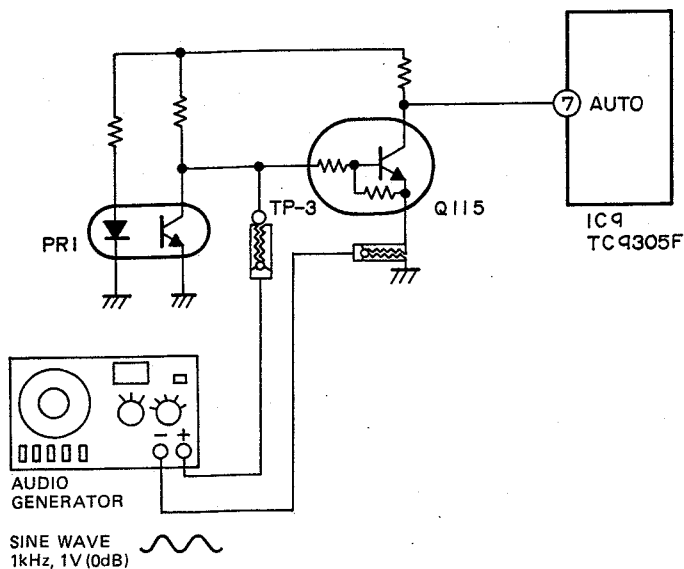


- 2) When checking the circuit board after removing the rear panel take care not to let light strike the board from above. If light enters, the auto reverse circuit works and the reverse operation is repeated.



2. Operation check method with the circuit board removed

When the unit is operated with the circuit board removed from the mechanism, the auto functions (auto-stop, auto-reverse) work as the voltage is not changed by the photo-reflector (P R 1). When operating the unit after removing the circuit board, connect an audio generator to the following positions.



2ME-3-J Mechanism Operation Explanation

The 2ME-3-J mechanism has a recording function added to the 2ME-3 mechanism. The operation explanation mainly covers the recording mechanism. All the figures given here are viewed from the bottom of the unit.

[PLAY]

- 1) When the PLAY button is pressed, the MD lock arm assembly is separated from the MD plunger (in the direction of arrow (1)), the pin in the MD lock arm assembly is released from stopper A and the MD cam turns in the direction of arrow (2). Since the MD lock arm assembly comes into contact with the MD plunger immediately after it starts to operate, the pin moves along the external circumference of the cam and hits stopper B and the MD cam stops turning. (See Figure-1)

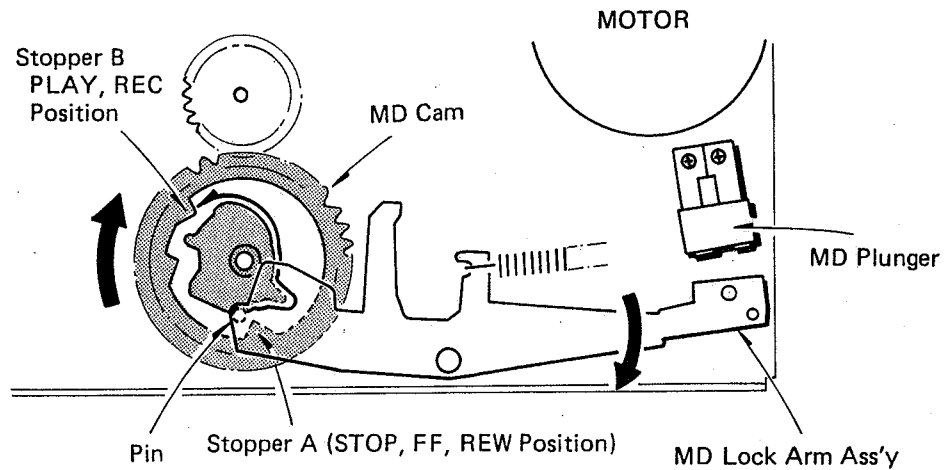


Fig-1

- 2) When the pin in the MD lock arm assembly is released from stopper A, the MD cam turns (in the direction of arrow (1)), and at the same time, the pin in the link MD moves along the cam at the back of the MD cam and lifts up the mechanism chassis in the direction of arrow (2) and stops it, thus the mechanism enters the play mode. (See Figure-2)
- The operation chassis stops moving when the pin in the MD lock arm assembly hits stopper B. (See Figure-1)

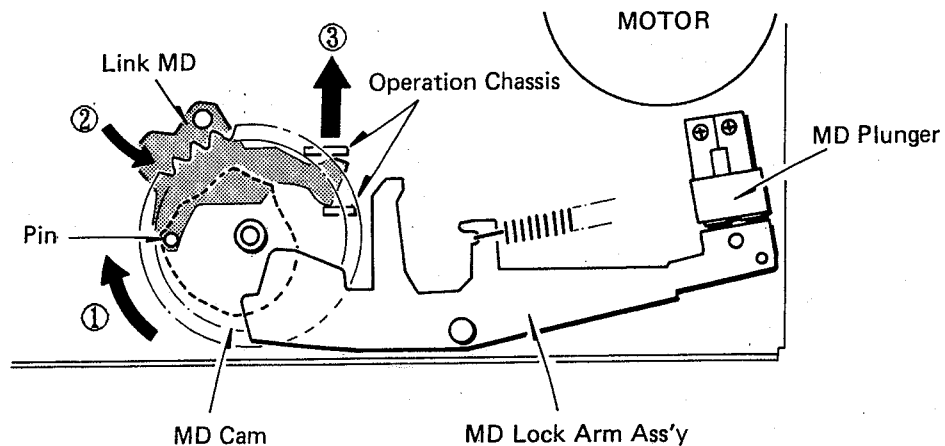
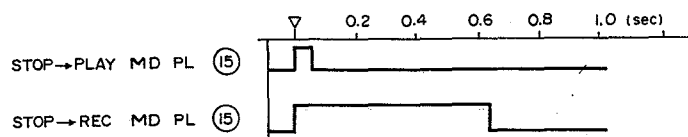


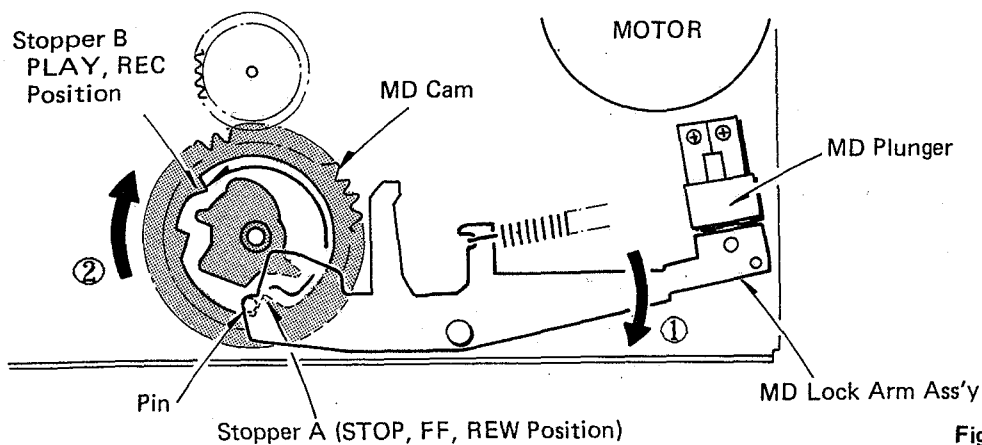
Fig-2

[REC]

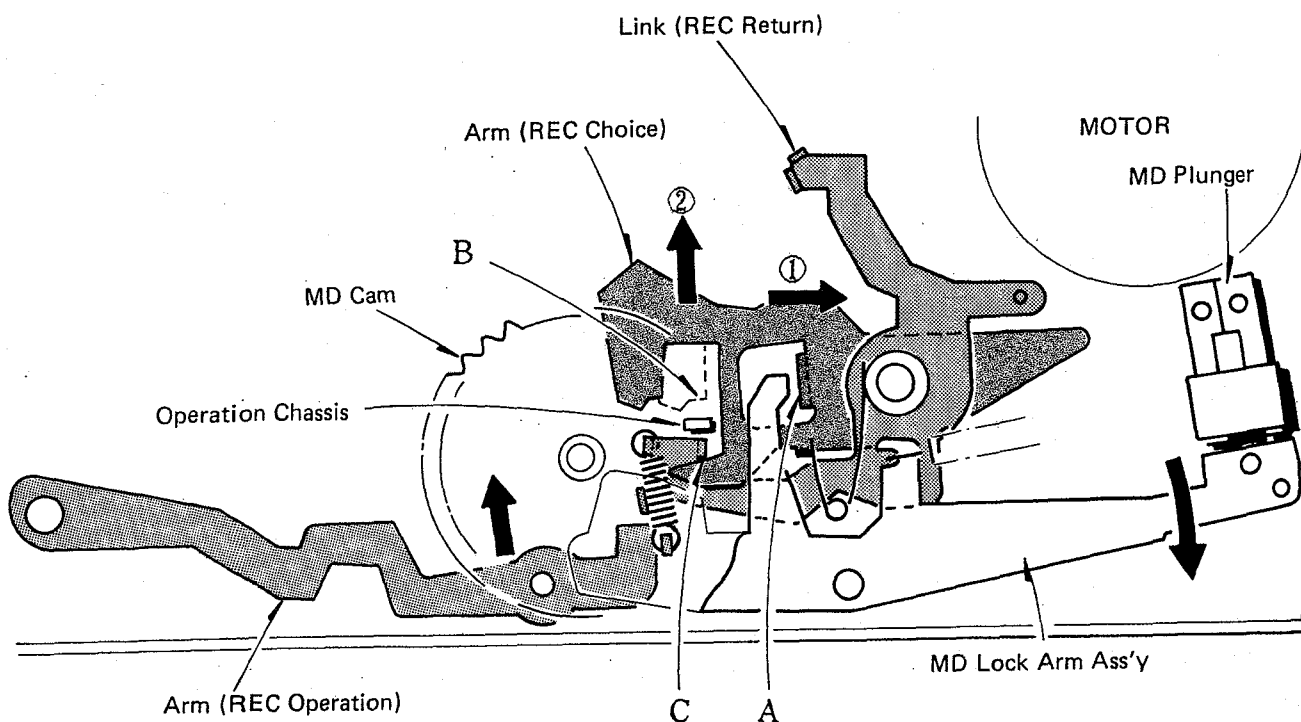
- 1) In the record mode, the MD lock arm assembly is separated from the MD plunger for a longer period compared to the play mode.



- 2) The pin in the MD lock arm assembly released from stopper A moves along the inside of the MD cam and hits stopper B and stops. (See Figure-3)



- 3) In operation 2), since the MD lock arm assembly pushes the arm (REC choice) at section A in the direction of arrow (1), the operation chassis lifts up the arm (REC choice) at section B in the direction (2) when it starts operating. As the arm (REC choice) lifts up the link (REC return) at section C at this time, the arm (REC operation) moves in the direction of arrow (3). (See Figure-4)



- 4) When the arm (REC operation) moves in the direction of the arrow, it acts on the link (EH) interlocked with the arm (REC operation) and the erase head lifts up, thus the unit enters the record mode. (See Figure-5)

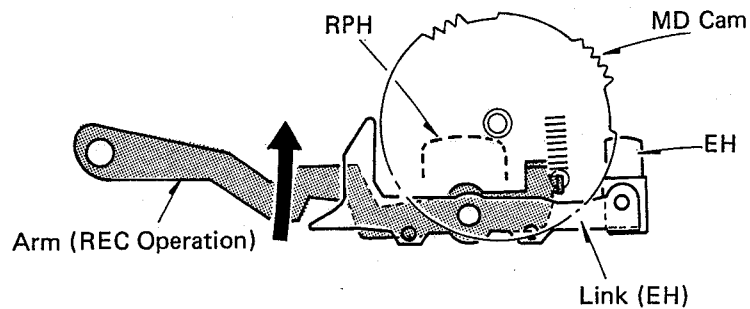


Fig-5

- 5) When the arm (REC choice) moves in the direction of arrow (1), the link (REC return) moves in the direction of arrow (2) and is locked at section A of the lock plate (REC). The link (REC SW) and P spring (REC SW) move together in the order shown by arrows (3)-(5) and change over the R/P switch to the REC side. (See Figure-6)

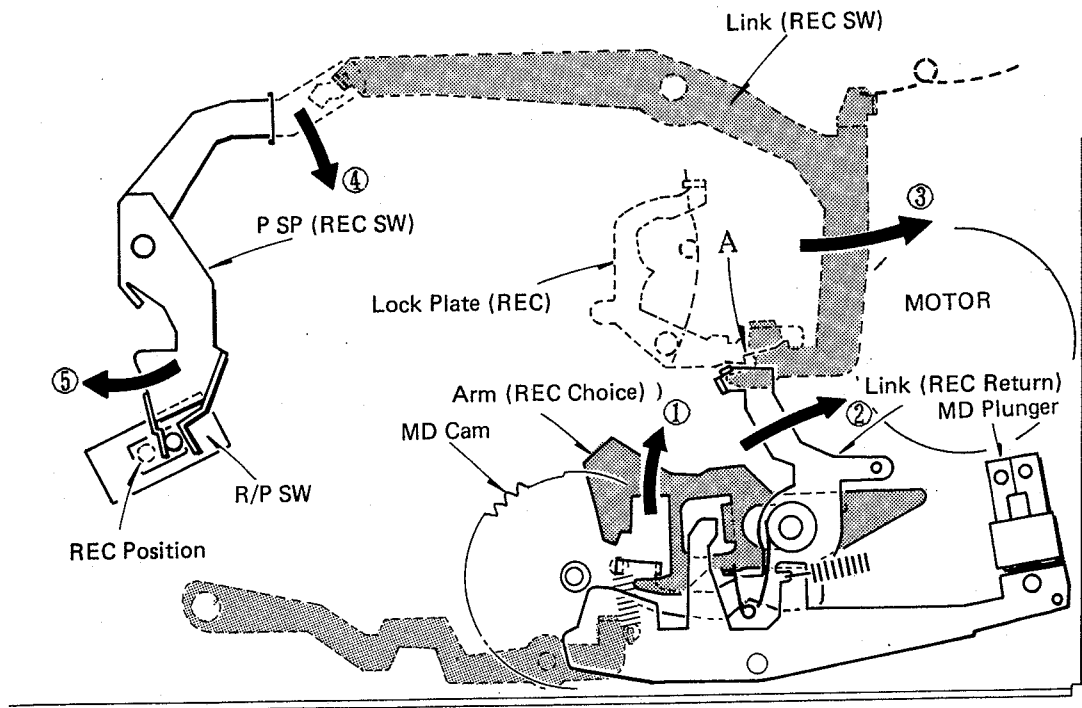


Fig-6

- 6) When the STOP (or REW) button is pressed, as the operation chassis lowers, the lock plate (REC) moves in the direction (1) and the link (REC return) is released (in the direction of arrow (2)), thus the unit enters the stop (or MS) mode. (See Figure-7)

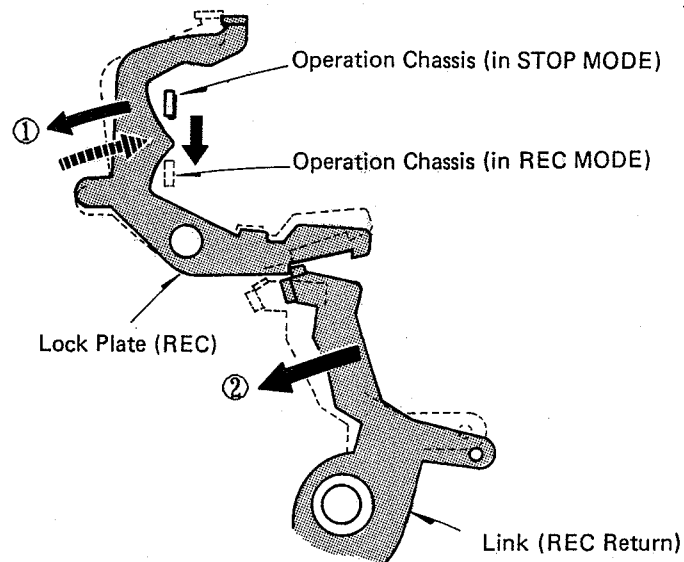
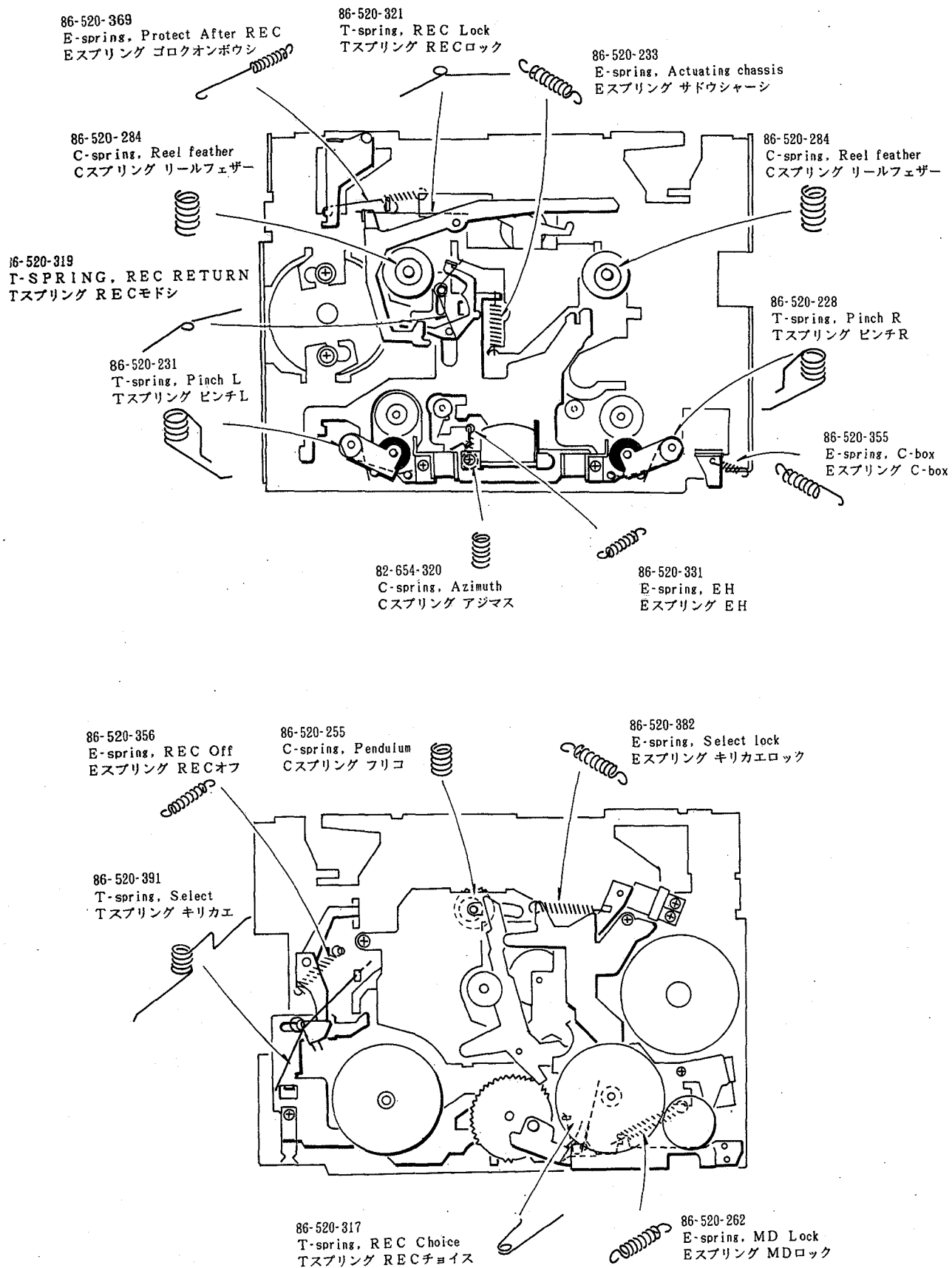


Fig-7

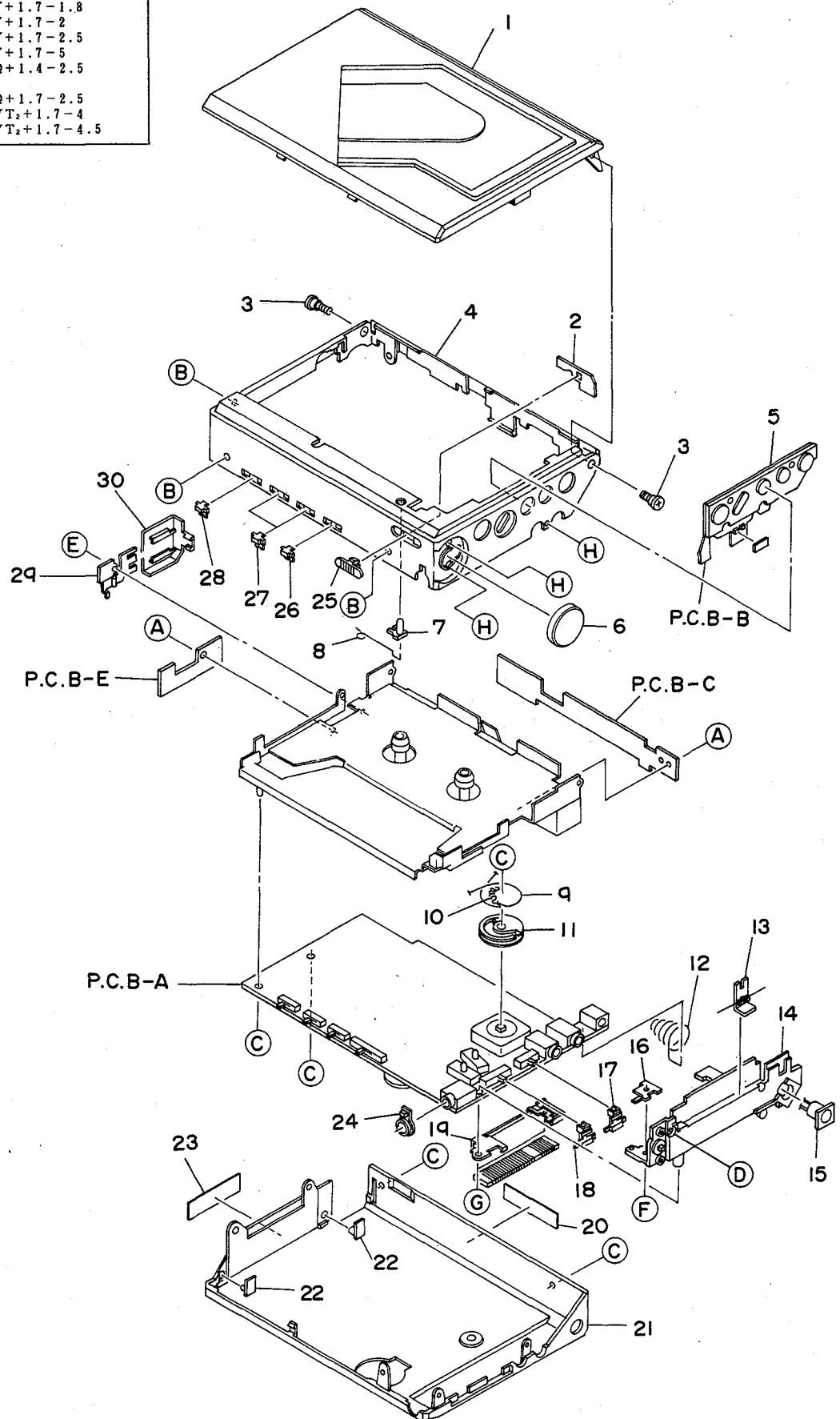
SPRING APPLICATION POSITION



EXPLODED VIEW-I

1 2 3 4 5 6 7

Ref. No.	Part No.	Description
A	87-263-522-31	V+1.7-1.8
B	87-263-523-31	V+1.7-2
C	87-263-525-31	V+1.7-2.5
D	87-263-531-31	V+1.7-5
E	87-232-505-31	Q+1.4-2.5
F	87-233-525-31	Q+1.7-2.5
G	87-353-529-31	VT ₂ +1.7-4
H	87-353-530-31	VT ₂ +1.7-4.5



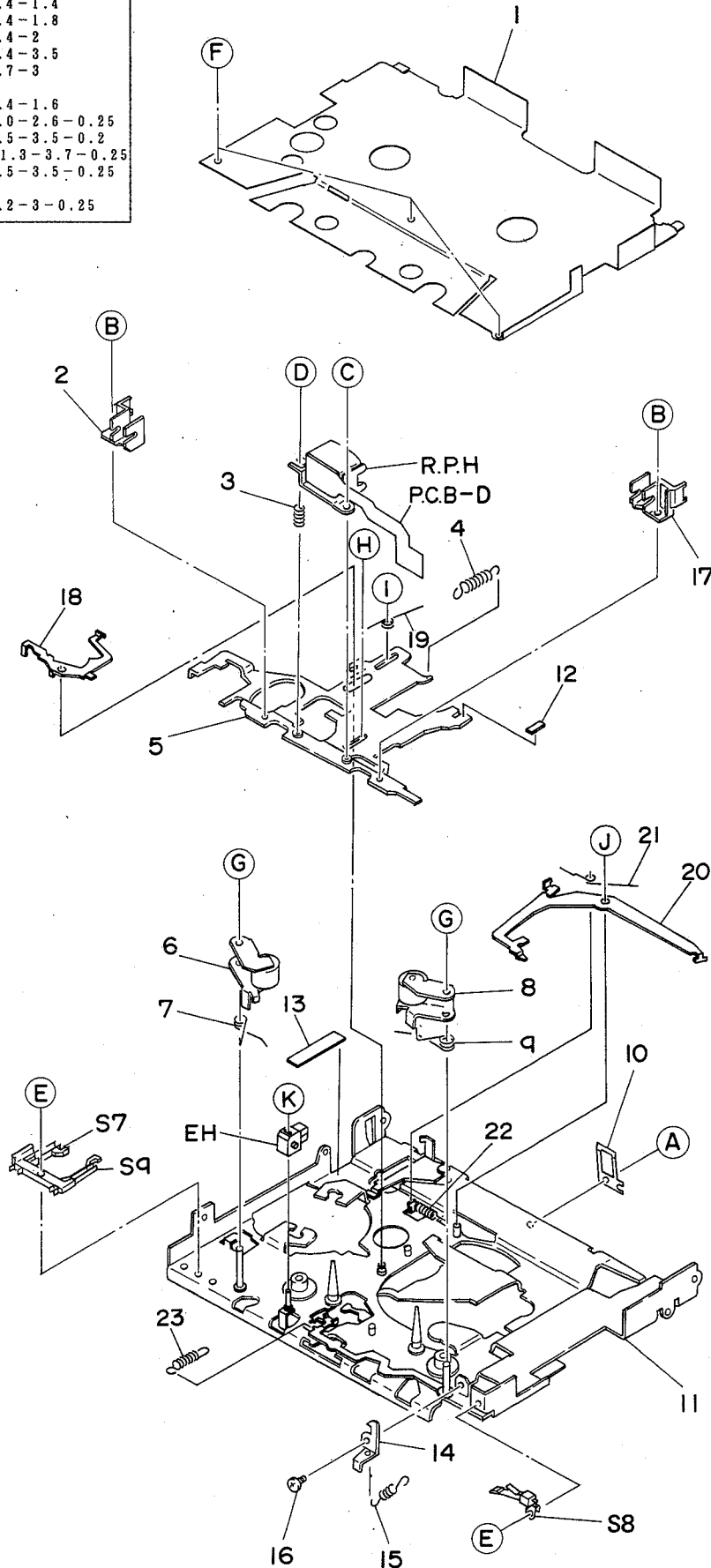
MECHANICAL PARTS LIST

- ※-mark in this part list shows exclusive part.
- ★-mark means less required items availabilities may be limited.
- No availability part is marked with — in Part No. list.
- [S]=SILVER, [R]=RED, [B]=BLACK

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	1-1	09-027-373	CASSETTE LID Ass'y [S]	※	1
		09-027-374	CASSETTE LID Ass'y [R]	※	1
		09-027-375	CASSETTE LID Ass'y [B]	※	1
		09-027-376	CASSETTE LID Ass'y (J 500)	※	1
	1-2	★82-698-212	LEVER, EJECT	HS-G08	1
	1-3	★82-679-215	HINGE SCREW +1.4	HS-P07	2
	1-4	★84-401-026	SIDE CABINET	※	1
	1-5	★84-401-618	CONTROL-KEY REC Ass'y	※	1
	1-6	84-401-008	KNOB, TUNING	※	1
	1-7	★84-401-034	SWITCH BUTTON J	※	1
	1-8	★84-401-216	T-SPRING, CASSETTE BUTTON	※	1
	1-9	★87-096-096	DIAL STRING 0.2φ		1
	1-10	★84-401-214	E-SPRING, RING DIAL	※	1
	1-11	★84-401-226	DIAL DRUM	※	1
	1-12	★84-401-213	C-SPRING, BATTERY	※	1
	1-13	★84-401-009	TUNING POINTER	※	1
	1-14	★84-401-201	TUNER CHASSIS Ass'y	※	1
	1-15	—	HOLDER, ECM		1
	1-16	—	METAL FITTING ECM		1
	1-17	★84-401-023	SLIDE KNOB, REMOTE	※	1
	1-18	★84-401-007	SLIDE KNOB, BAND	※	1
	1-19	—	HOLDER, BAR ANTENNA		1
	1-20	★82-673-131	LABEL, DOLBY	HS-P06	1
	1-21	★84-401-027	REAR CABINET	※	1
	1-22	★82-680-201	RUBBER FOOT	HS-F07	2
	1-23	★84-401-031	PLATE, SPEC. (EXCEPT J 500)	※	1
		★84-401-033	PLATE, SPEC. (J 500)	※	1
	1-24	★82-680-203	RUBBER RING, MIC	HS-F07	1
	1-25	★82-679-024	SLIDE KNOB, LOCK	HS-P07	1
	1-26	★84-401-025	SLIDE KNOB, FUNCTION	※	1
	1-27	★84-401-012	SLIDE KNOB, SELECTOR	※	1
	1-28	★84-401-024	SLIDE KNOB, MODE	※	1
	1-29	84-401-208	BATTERY Ass'y	※	1
	1-30	84-401-006	LID, BATTERY	※	1

EXPLODED VIEW-2

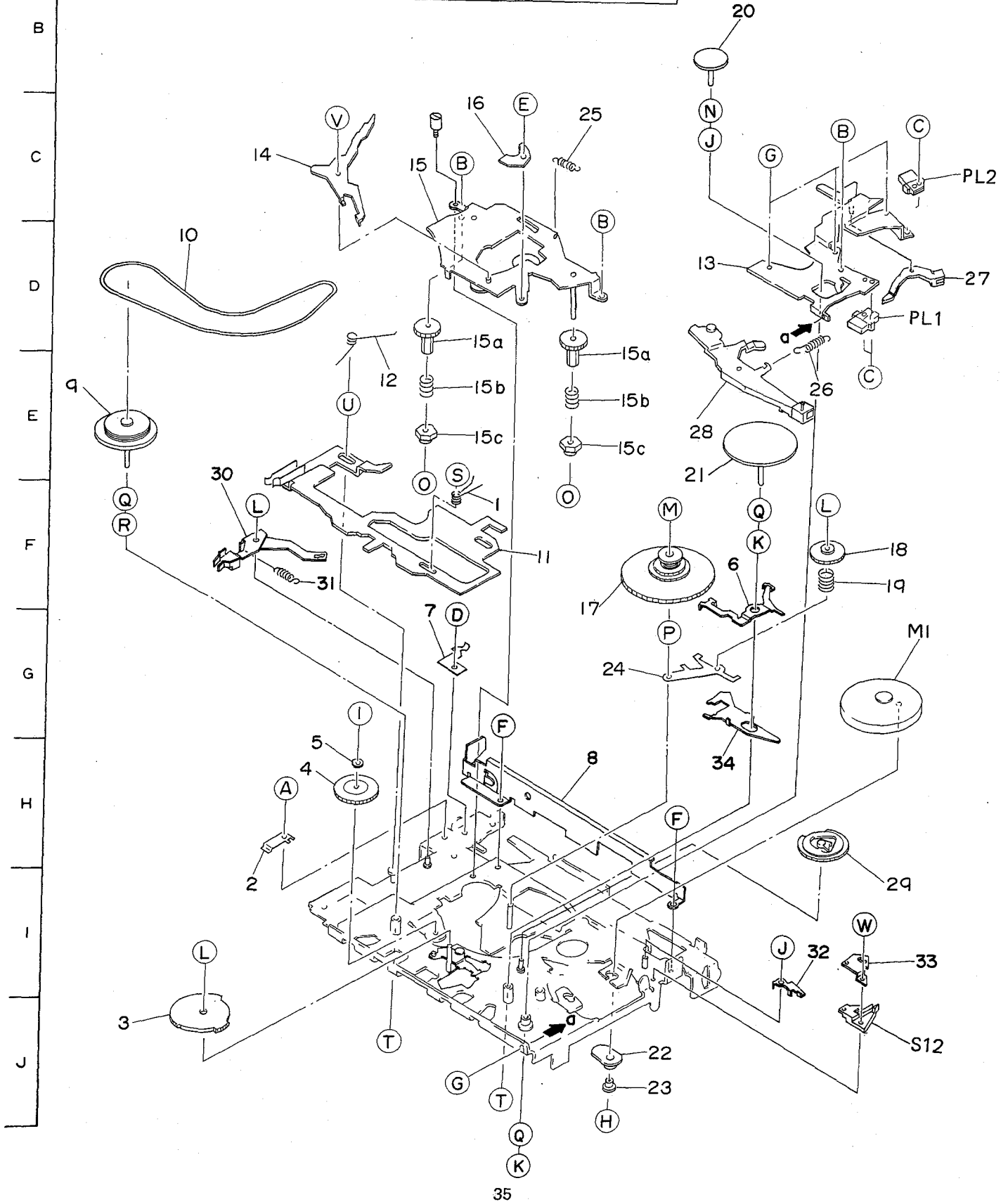
Ref. No.	Part No.	Description
A	87-263-500-31	V+1.4-1.4
B	87-262-502-31	V+1.4-1.8
C	87-262-503-31	V+1.4-2
D	87-264-508-31	V+1.4-3.5
E	87-268-527-31	V+1.7-3
F	87-231-501-31	Q+1.4-1.6
G	87-067-228-01	PW1.0-2.6-0.25
H	87-067-152-01	PW1.5-3.5-0.2
I	87-067-136-01	STE1.3-3.7-0.25
J	87-067-137-11	PW1.5-3.5-0.25
K	87-081-945-01	PW1.2-3-0.25



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty	
	2-1	★84-401-011	DECORATIVE PLATE J, CASSETTE	※	1	
	2-2	★86-520-223	TAPE GUIDE L		1	
	2-3	★82-654-320	C-SPRING, AZIMUTH	HS-P02	1	
	2-4	★86-520-233	E-SPRING, ACTUATING CHASSIS		1	
	2-5	★86-520-218	ACTUATING CHASSIS Ass'y		1	
	2-6	86-520-229	PINCH ARM L Ass'y		1	
	2-7	★86-520-231	T-SPRING, PINCH L		1	
	2-8	86-520-224	PINCH ARM R Ass'y		1	
	2-9	★86-520-228	T-SPRING, PINCH R		1	
	2-10	★82-698-205	P-SPRING, CASSETTE HOLDER	HS-G08	1	
	2-11	★86-520-309	CHASSIS SEMI Ass'y		1	
	2-12	—	NYLON SHEET 2-5-0.8		1	
	2-13	—	HIMERON 8-20		1	
	2-14	★86-520-342	LOCK PLATE, C-BOX		1	
	2-15	★86-520-355	E-SPRING, C-BOX		1	
	2-16	★86-520-341	SCREW, EJECT		1	
	2-17	★86-520-222	TAPE GUIDE R		1	
	2-18	★86-520-320	LOCK PLATE, REC		1	
	2-19	★86-520-321	T-SPRING, REC LOCK		1	
	2-20	★86-520-324	RINK REC SW		1	
	2-21	★86-520-319	T-SPRING, REC RETURN		1	
	2-22	★86-520-369	E-SPRING, REC BLOCKING		1	
	2-23	★86-520-331	E-SPRING, EH		1	

EXPLODED VIEW-3

1			2			3			4			5			6			7		
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
A	87-264-500-31	V+1.4-1.4	I	87-231-508-31	Q+1.4-3.5	Q	87-067-143-01	PW2.1-4-0.13												
B	87-262-503-31	V+1.4-2	J	87-081-945-01	PW1.2-3-0.25	R	81-510-275-11	PW2.1-3.5-0.25												
C	87-067-246-01	V+1.4-3.7	K	86-520-370-01	PW1.9-3.1-0.25	S	87-441-003-01	STE-1.5												
D	87-263-522-31	V+1.7-1.8	L	87-067-137-11	PW1.5-3.5-0.25	T	87-510-300-01	STE-1.5S												
E	87-234-505-31	Q+1.4-2.5	M	87-067-152-01	PW1.5-3.5-0.2	U	87-441-005-01	STE-2												
F	87-233-523-31	Q+1.7-2	N	87-067-253-01	PW1.57-2.8-0.3	V	86-551-472-01	LW1.5-3.5-0.2												
G	87-238-503-31	Q+1.4-2	O	87-067-233-01	PW1.7-3.5-0.25	W	87-261-525-31	V+1.7-2.5												
H	87-233-526-31	Q+1.7-2.8	P	87-067-234-01	PW1.5-3.5-0.3															



Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty
	3-1	★86-520-317	T-SPRING, REC	HS-G 08	1
	3-2	★82-698-215	P-SPRING, CASSETTE		1
	3-3	86-520-240	MD CAM		1
	3-4	86-520-241	GEAR A		1
	3-5	★86-520-242	COLLAR, GEAR A		1
	3-6	★86-520-318	RINK, REC RETURN	※	1
	3-7	★84-401-241	P-SPRING, CLICK J		1
	3-8	—	HOLDER, BATTERY		1
	3-9	86-520-396	FLYWHEEL R M Ass'y		1
	3-10	86-520-385	MAIN BELT J		1
	3-11	★86-520-371	SELECT LEVER Ass'y J		1
	3-12	★86-520-391	T-SPRING, SELECT J		1
	3-13	★86-520-406	PLATE SOLENOID SEMI Ass'y		1
	3-14	★86-520-289	ARM FR, RESTRICTION		1
	3-15	86-520-263	BOTTOM PLATE CHASSIS Ass'y		1
	15 a	★86-520-283	GEAR, REEL PLATFORM		2
	15 b	★86-520-284	C-SPRING, REEL FEATHER		2
	15 c	★86-520-282	REEL FEATHER R		2
	3-16	★86-520-381	METAL, FR HOLD		1
	3-17	86-520-243	GEAR MAIN Ass'y		1
	3-18	86-520-254	GEAR, PENDULUM		1
	3-19	★86-520-255	C-SPRING, PENDULUM		1
	3-20	86-520-256	RELAY PULLEY Ass'y		1
	3-21	86-520-299	FLYWHEEL L Ass'y		1
	3-22	★86-520-349	G CUSHION, MOTOR		2
	3-23	★86-520-352	COLLAR, MOTOR		2
	3-24	★86-520-251	ARM FF REW SEMI Ass'y		1
	3-25	★86-520-382	E-SPRING, SELECT LOCK N		1
	3-26	★86-520-262	E-SPRING, MD LOCK		1
	3-27	★86-520-372	ARM SELECT LOCK N Ass'y		1
	3-28	★86-520-348	MD LOCK ARM Ass'y		1
	3-29	86-520-239	SELECT CAM		1
	3-30	★86-520-322	P-SPRING, REC SWITCH		1
	3-31	★86-520-356	E-SPRING, REC OFF		1
	3-32	★86-520-367	ARM, SWITCH BUSH		1
	3-33	★86-520-378	PLATE COVER		1
	3-34	★86-520-316	ARM, REC		1

■ ACCESSORIES/PACKAGE LIST

Part No. changed to	Ref. No.	Part No.	Description	Common Model	Q'ty	
	1	★84-401-908	INSTRUCTION BOOKLET (J 08 Y only)	※	1	
	2	★84-401-909	INSTRUCTION BOOKLET (J 500 YU only)	※	1	
	3	★82-680-951	MIC (1 POINT MIC) (J 500 YU only)		1	
	4	★84-401-624	RC-8 R	※	1	
	5	★84-401-951	CARRYING CASE Y	※	1	
	6	★87-048-121	HP-M11		1	
	7	★87-080-017	BELT HANGER B Ass'y		1	

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