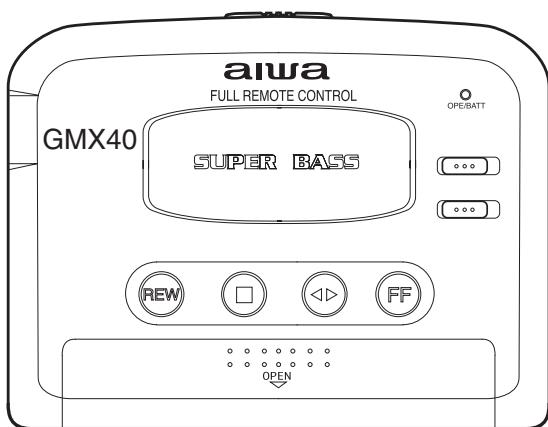




**HS-GMX40**

Y



# SERVICE MANUAL

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STEREO  
CASSETTE PLAYER

BASIC TAPE MECHANISM : CL-850-5 L-SIL

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**aiwa**  
S/M Code No. 09-012-425-6N1



## SPECIFICATIONS

<b>Maximum output:</b>	4 mW + 4 mW (EIAJ 16 ohms)
<b>Load impedance:</b>	16 – 80 ohms
<b>Power sources:</b>	DC 3 V using two R6 (AA) dry cell batteries, AC house current using the optional AC adaptor AC-D302
<b>Battery life (EIAJ 1 mW output):</b>	Approx. 24 hours using two LR6 (AA) alkaline batteries
<b>Maximum outside dimensions:</b>	112.9 (W) x 84 (H) x 29.3 (D) mm (excluding projecting parts and controls) (4 $\frac{1}{2}$ x 3 $\frac{3}{8}$ x 1 $\frac{3}{16}$ in.)
<b>Weight:</b>	Approx. 124 g (4.3 oz) (excluding batteries)

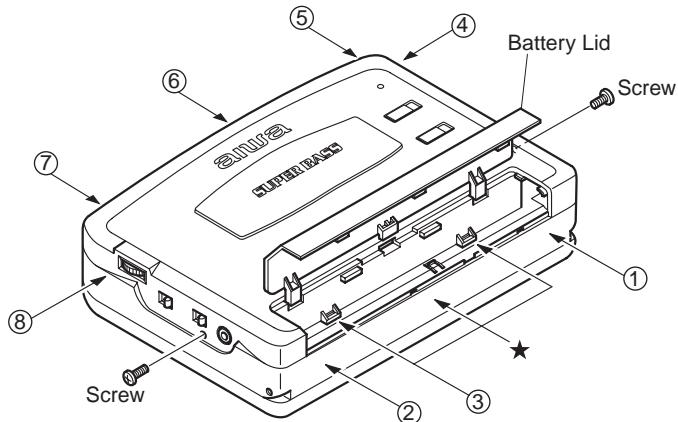
- Design and specifications are subject to change without notice.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.  
“DOLBY” and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

## ACCESSORIES / PACKAGE LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HKF-927-010	IB,Y(EGFSI)C	GMX40
1	8A-HKF-928-010	IB,Y(EDPHNC)C	GMX40
2	87-B30-395-010	HEADPHONE,HP-M007(T2)<[ST]>	
2	87-B30-155-210	HEADPHONE,HP-M006BL(T)<[L]>	

## DISASSEMBLY INSTRUCTIONS

- 1) Remove the 2 screws.
- 2) Open the battery lid.
- 3) Release the hooks in the order of ① - ⑧ .  
\* Releasing hook ③ : After releasing hooks ① and ② , push the center frame (with the ★ marks) to release hook ③ .



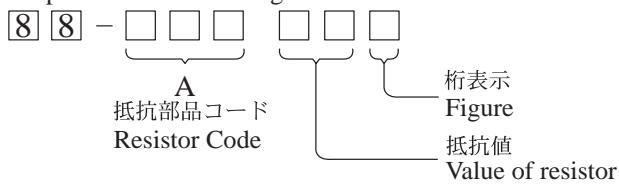
# ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC				C410	87-010-831-080	C-CAP,U 0.1-16 Z F	
	87-002-677-080	C-IC,TA2002F		C701	87-010-831-080	C-CAP,U 0.1-16 Z F	
	87-017-805-080	C-IC,AN7375NS		C702	87-012-141-080	C-CAP,U 0.22-16 Z F	
	87-A20-532-140	C-IC,LB1977M-TLM		C705	87-010-831-080	C-CAP,U 0.1-16 Z F	
	87-A21-567-040	C-IC,TMP47C443LDM-1B45 (EL)		C706	87-010-805-080	C-CAP,S 1-16 Z F	
	87-A21-566-040	C-IC,S-80820ANNP		C707	87-010-196-080	C-CAP,0.1-25	
	87-A21-565-040	C-IC,S-80817ANNP		C708	87-010-831-080	C-CAP, U 0.1-16 Z F	
TRANSISTOR				C709	87-A10-263-080	CAP, U 0.1-16 Z F	
				C801	87-A10-489-040	CAP,E 220-4 7L SR	
				D601	87-A91-355-040	C-LED,BR1112H-TR-RED	
DIODE				J101	87-A60-438-010	JACK,3.5 BLK ST W/O SW(1537)	
	89-111-625-080	C-TR,2SA1162GR		J801	87-A61-124-110	JACK,DC DIA2.75 BLK TC	
	89-113-625-080	C-TR,2SA1362GR		PS501	87-A90-440-010	SNSR,PHOTO GP2S24N2-B	
	87-026-581-080	C-TR,RN2405		R103	87-022-279-080	C-RES,U 470-1/16W F	
	87-A30-085-040	C-TR,CSA1362GR		R104	87-022-279-080	C-RES,U 470-1/16W F	
	87-A30-060-080	C-TR,KTC3875GR		R109	87-022-292-080	C-RES, U 330K-1/16W F	
	87-A30-072-080	C-TR,RT1P 144C		R110	87-022-292-080	C-RES, U 330K-1/16W F	
				R713	87-022-245-080	C-RES,U 18K-1/16W F	
MAIN C.B				S101	87-A90-050-010	SW, SL 2-2-2 NS (BLK)	
	87-A40-822-040	C-DIODE,CRS01		S201	87-036-379-280	C-SW,SL1-1-2 SS-350-A12B-C-T	
				S301	87-A90-050-010	SW, SL 2-2-2 NS (BLK)	
				S701	87-A90-665-380	C-SW,TACT LS7A2M	
				S702	87-A90-665-380	C-SW,TACT LS7A2M	
				S703	87-A90-665-380	C-SW,TACT LS7A2M	
				S704	87-A90-665-380	C-SW,TACT LS7A2M	
C101	87-012-275-080	C-CAP,U 1200P-50 B		S705	87-036-379-280	C-SW,SL1-1-2 SS350	
C102	87-012-275-080	C-CAP,U 1200P-50 B		S706	87-A91-365-080	C-SW,PUSH 1-1-1 SPVG21	
C103	87-012-275-080	C-CAP,U 1200P-50 B		SFR401	87-A91-653-040	C-SFR,K 33K H RH03AEC	
C104	87-012-275-080	C-CAP,U 1200P-50 B		TH401	87-A91-675-080	C-THMS,NTH5G16P39B472K 07H	
C105	87-016-114-080	C-CAP,U 0.01-25 B		VR101	87-A91-650-010	VR,RTRY 50KCX2 H XV0102G	
C106	87-016-114-080	C-CAP,U 0.01-25 B					
C107	87-010-501-040	CAP,E 47-4V		W2	8A-HR8-603-010	RBN-CORD,4P MOTOR	
C108	87-010-501-040	CAP,E 47-4V		X701	87-A70-241-010	VIB,CER 4.000MHZ CSTS0400MG03	
C111	87-015-688-040	CAP,E 4.7-35 M 7L SRA					
C112	87-012-142-080	C-CAP,S 0.33-16					
C113	87-010-805-080	C-CAP,S 1-16					
C114	87-012-141-080	C-CAP,0.22-16 Z F					
C117	87-012-278-080	C-CAP,U 2200P-50 B					
C118	87-012-278-080	C-CAP,U 2200P-50 B					
C119	87-010-831-080	C-CAP,U 0.1-16 Z F					
C120	87-010-831-080	C-CAP,U 0.1-16 Z F					
C121	87-010-502-040	CAP,E 100-4 M K S					
C122	87-010-503-040	CAP,E 220-4 M 5L					
C125	87-010-501-040	CAP,E 47-4 M K S					
C201	87-016-087-080	C-CAP,S 0.47-16 Z F					
C202	87-016-087-080	C-CAP,S 0.47-16 Z F					
C203	87-010-831-080	C-CAP,U 0.1-16 Z F					
C204	87-010-831-080	C-CAP,U 0.1-16 Z F					
C205	87-012-282-080	C-CAP,U 4700P-50					
C206	87-012-282-080	C-CAP,U 4700P-50					
C207	87-016-369-080	C-CAP,S 0.033-25 B K					
C208	87-016-369-080	C-CAP,S 0.033-25 B K					
C209	87-012-282-080	C-CAP,U 4700P-50					
C210	87-012-282-080	C-CAP,U 4700P-50					
C211	87-010-805-080	CAP,S 1-16					
C212	87-010-805-080	CAP,S 1-16					
C213	87-010-805-080	CAP,S 1-16					
C214	87-010-805-080	CAP,S 1-16					
C215	87-010-831-080	C-CAP,U 0.1-16 Z F					
C216	87-A10-488-040	CAP,E 47-4 7L SR					
C303	87-010-196-080	C-CAP,0.1-25					
C304	87-010-196-080	C-CAP,0.1-25					
C401	87-A10-201-080	C-CAP,S 0.33-16 K B					
C403	87-010-805-080	C-CAP,S 1-16 Z F					
C404	87-016-526-080	C-CAP,S 0.47-16 K B					
C405	87-010-992-080	C-CAP,S 0.047-25 B					
C406	87-010-831-080	C-CAP,U 0.1-16 Z F					
C407	87-010-992-080	C-CAP,U 0.047-25 K B MK21					
C408	87-010-992-080	C-CAP,U 0.047-25 K B MK212					
C409	87-010-992-080	C-CAP,U 0.047-25 K B MK212					

## ○チップ抵抗部品コード／CHIP RESISTOR PART CODE

チップ抵抗部品コードの成り立ち

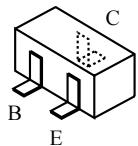
Chip Resistor Part Coding



チップ抵抗  
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)			抵抗コード Resistor Code : A	
				外形／Form	L	W		
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

## TRANSISTOR ILLUSTRATION



2SA1362

2SA1162

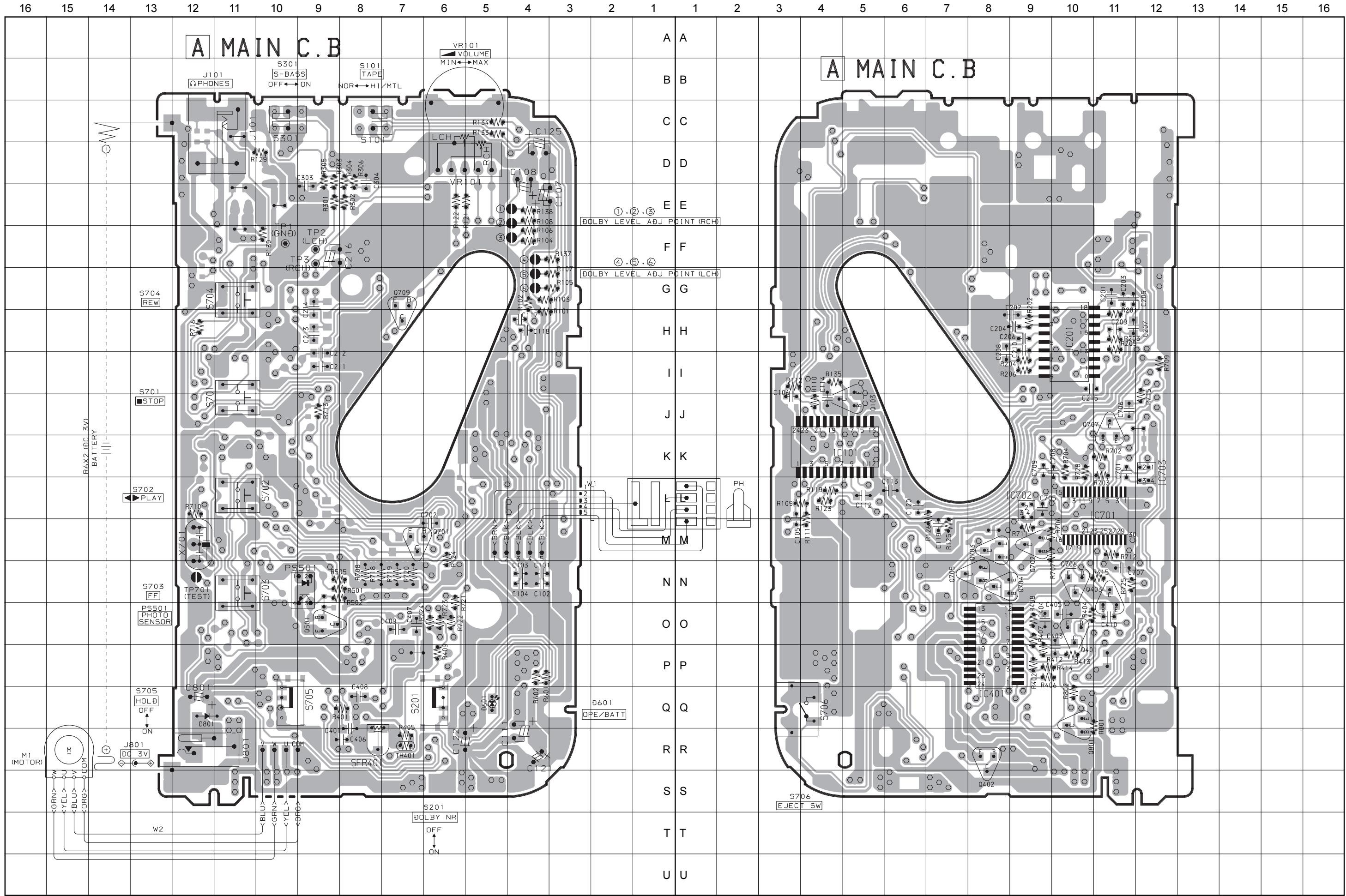
CSA1362

KTC3875

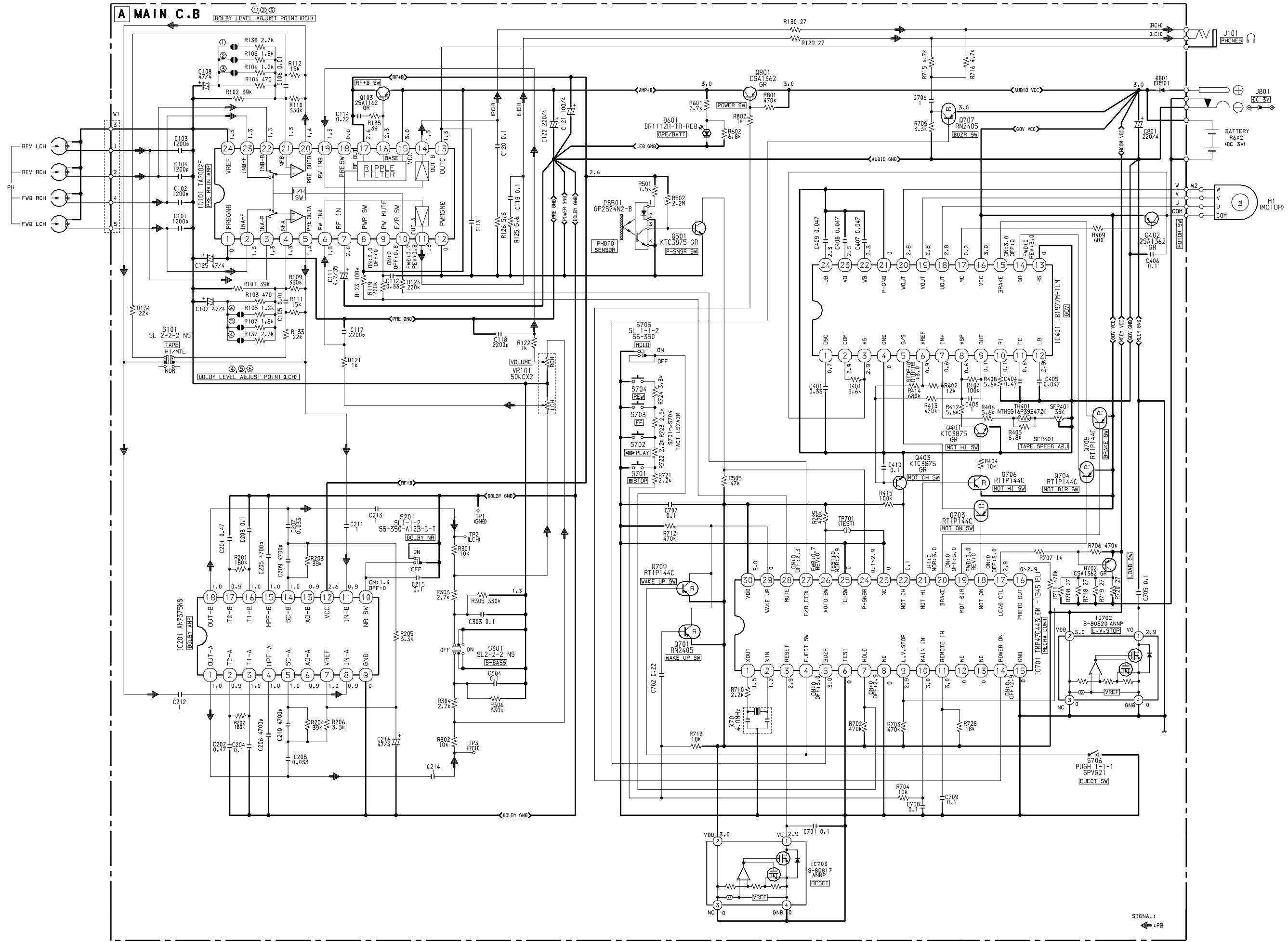
RN2405

RT1P144C

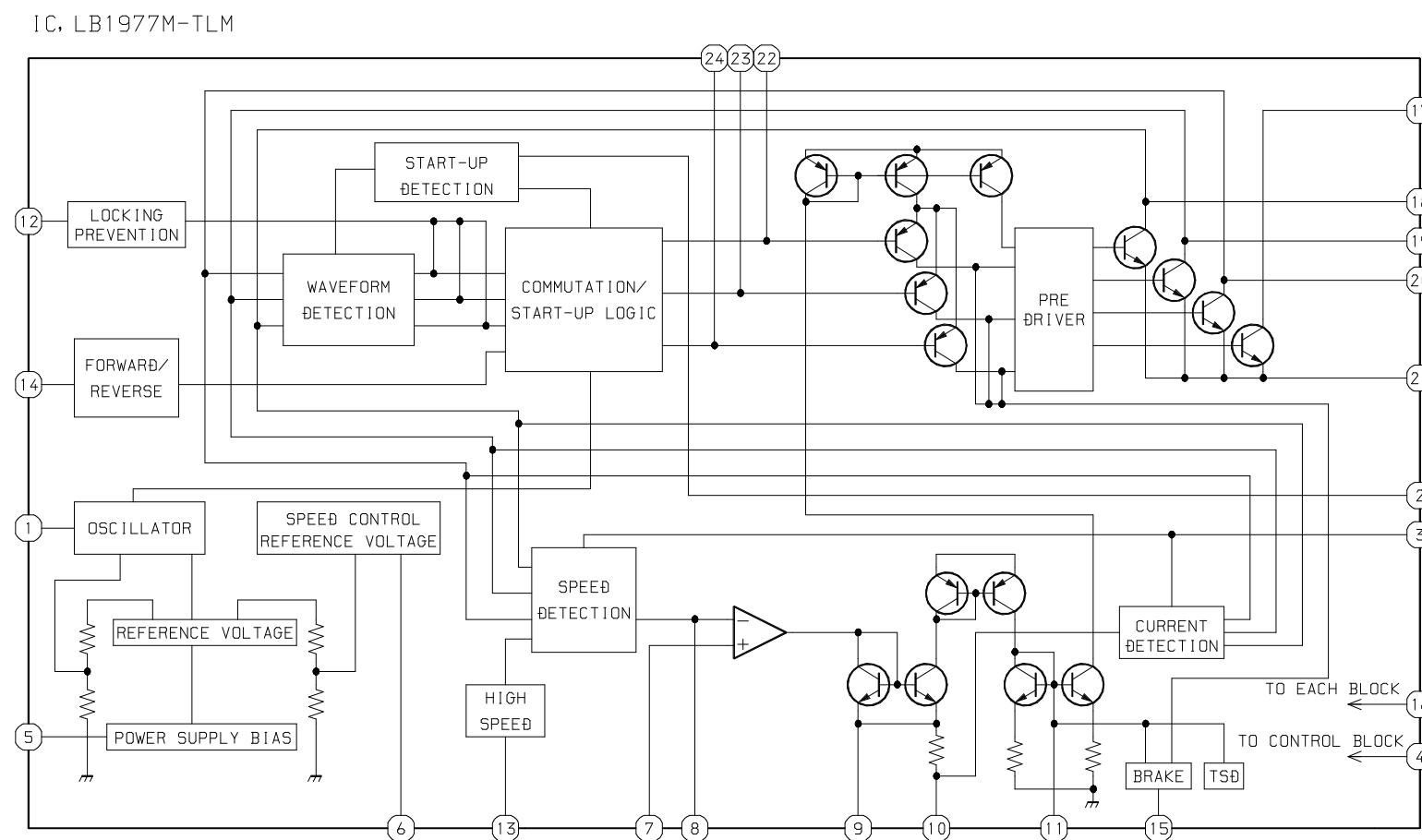
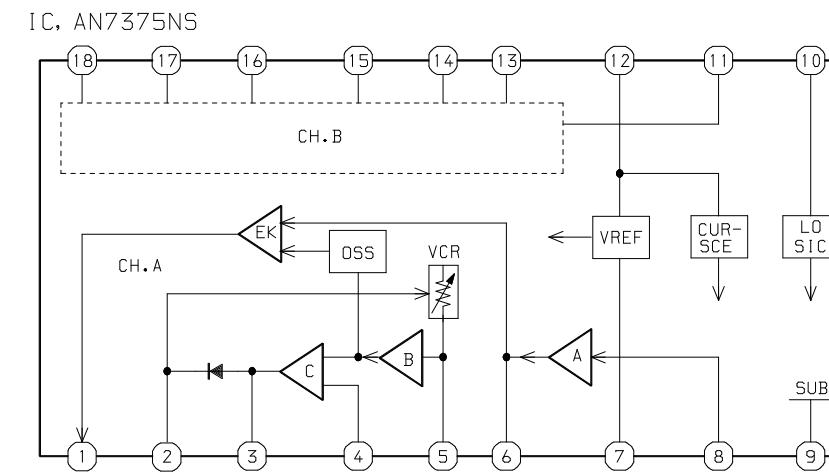
## WIRING



# SCHEMATIC DIAGRAM



## IC BLOCK DIAGRAM



**IC DESCRIPTION**  
IC, TMP47C443LDM-1B45(EL)

Pin No.	Pin Name	I/O	Description
1	XOUT	O	Connected to 4MHz crystal oscillator.
2	XIN	I	
3	RESET	I	Input reset signal.
4	EJECT SW	I	Input EJECT SW. "H": OFF, "L": ON.
5	BUZR	O	Output buzzer sound.
6	TEST	I	Input test mode. "H": Test ON. (Connected to GND).
7	HOLD	I	Input HOLD SW. "H": OFF, "L": ON.
8	NC	-	Connected to GND.
9	L.V.STOP	I	Input reducing voltage detection. "L": Mecha STOP.
10	MAIN IN	I	Input key from main unit (A/D).
11	REMOTE IN	I	Input key from remote controller (A/D).
12 ~ 13	NC	-	Not connected.
14	POWER ON	O	Output power for audio circuit. "L": ON.
15	GND	-	Connected to GND.
16	PHOTO OUT	O	Microcomputer detection P-SNSR level output pin.
17	LOAD CTL	O	Output for voltage supply checking. "L": Check.
18	MOT ON	O	Output motor activation. "L": ON.
19	MOT DIR	O	Output motor rotating direction. "L": Counterclockwise.
20	BRAKE	O	Output motor brake. "L": ON.
21	MOT HI	O	Output motor hi-speed activation. "L": ON.
22	MOT CH	I	Input motor activation detection.
23	NC	-	Connected to GND.
24	P-SNSR	I	Input sensor waveform.
25	C-SW	I	Input cassette tape detection. "H": Not exist, "L": Exist. (Connected to GND).
26	AUTO SW	I	Input AUTO SW. "H": AUTO operation, "L": NO AUTO operation.
27	F/R CTRL	O	Output FWD, REV control. "L": REV.
28	MUTE	O	Output muting. "L":ON.
29	WAKE UP	I	Input micro-computer OSC ON.
30	VDD	-	Power supply (+3V).

## ADJUSTMENT

### 1. Tape Speed Adjustment

- Settings :
- Test tape : TTA – 100 (Tape center)
  - Test point : Phones Jack (J101)
  - Adjustment location : SFR401
  - Dolby NR : OFF
  - Super Bass : OFF
  - Direction : FWD
  - Tape selector : NORM
  - Volume : MAX

Method : Play back the test tape and adjust SFR401 so that the frequency becomes  $3015\text{ Hz} \pm 10\text{ Hz}$ . Then confirm WOW is less than 0.52%.

### 2. Dolby Level Adjustment

- Setting :
- Test tape : TTA – 200
  - Test point : TP2(LCH), TP3(RCH),  
TP1(GND)
  - Direction : FWD, REV
  - Tape selector : NORM
  - Dolby NR : OFF
  - Super Bass : OFF
  - Volume : MIN
  - Adjustment points : Dolby level adjust point  
 $\textcircled{1}, \textcircled{2}, \textcircled{3}, \textcircled{4}, \textcircled{5}, \textcircled{6}$

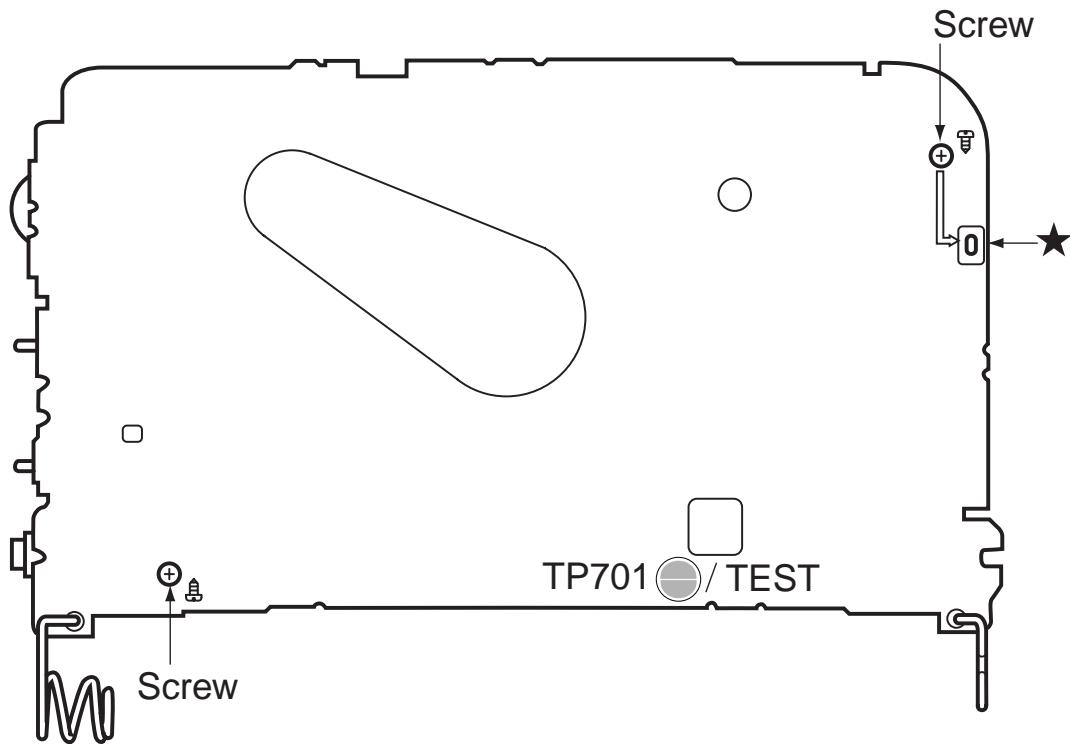
Method : Connect  $10\mu\text{F}/16\text{V}$  coupling capacitors between test points and test equipment (connect the positive terminals to the test points). Short the Dolby level adjust point via solder as shown in the table so that the Dolby level becomes  $100\text{ mV} \pm 1.0\text{ dB}$  in both the forward and reverse directions.

Dolby Level Adjust List (For RCH and LCH)

Solder point			Increase level
$\textcircled{1}, \textcircled{4}$	$\textcircled{2}, \textcircled{5}$	$\textcircled{3}, \textcircled{6}$	
Solder	Open	Open	1.4 dB
Open	Solder	Open	2.0 dB
Open	Open	Solder	2.9 dB
Solder	Solder	Open	3.1 dB
Solder	Open	Solder	3.9 dB
Open	Solder	Solder	4.4 dB
Solder	Solder	Solder	5.2 dB

## TEST MODE

This model has a test mode function in the disassembled condition.



### 1. How to use the test mode:

- Short the test land in the MAIN C.B.
- Auto-stop function is not detected by micro-computer while test mode is active.

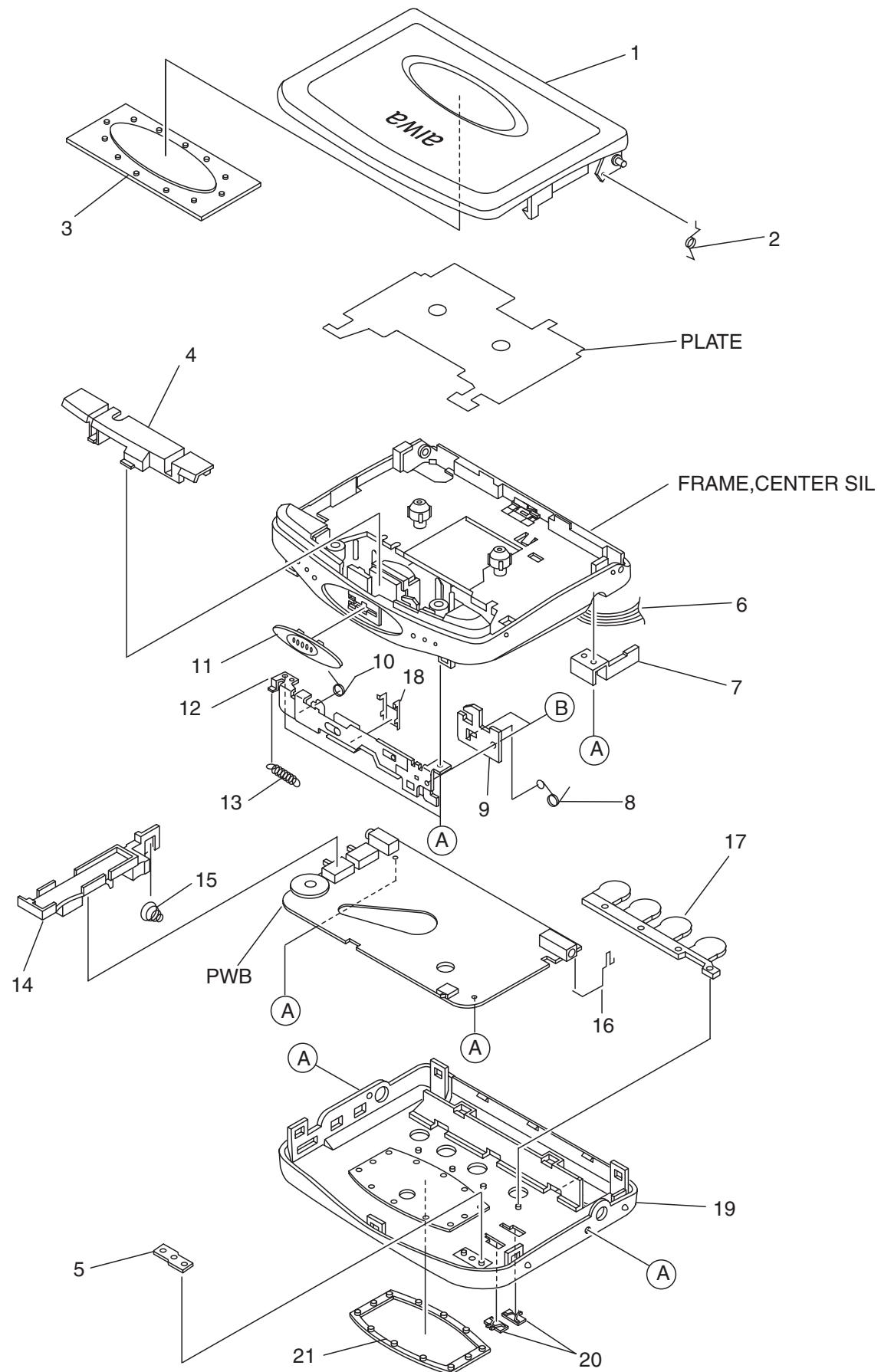
Note: Make sure that the test land is opened after the test mode is de-activated.

(Auto-stop function is not available with shorted land condition.)

### 2. How to disassemble the circuit board.

- Removes the soldering part in the MAIN C.B (with the ★ mark).
- Removes two screws.

# MECHANICAL EXPLODED VIEW 1 / 1



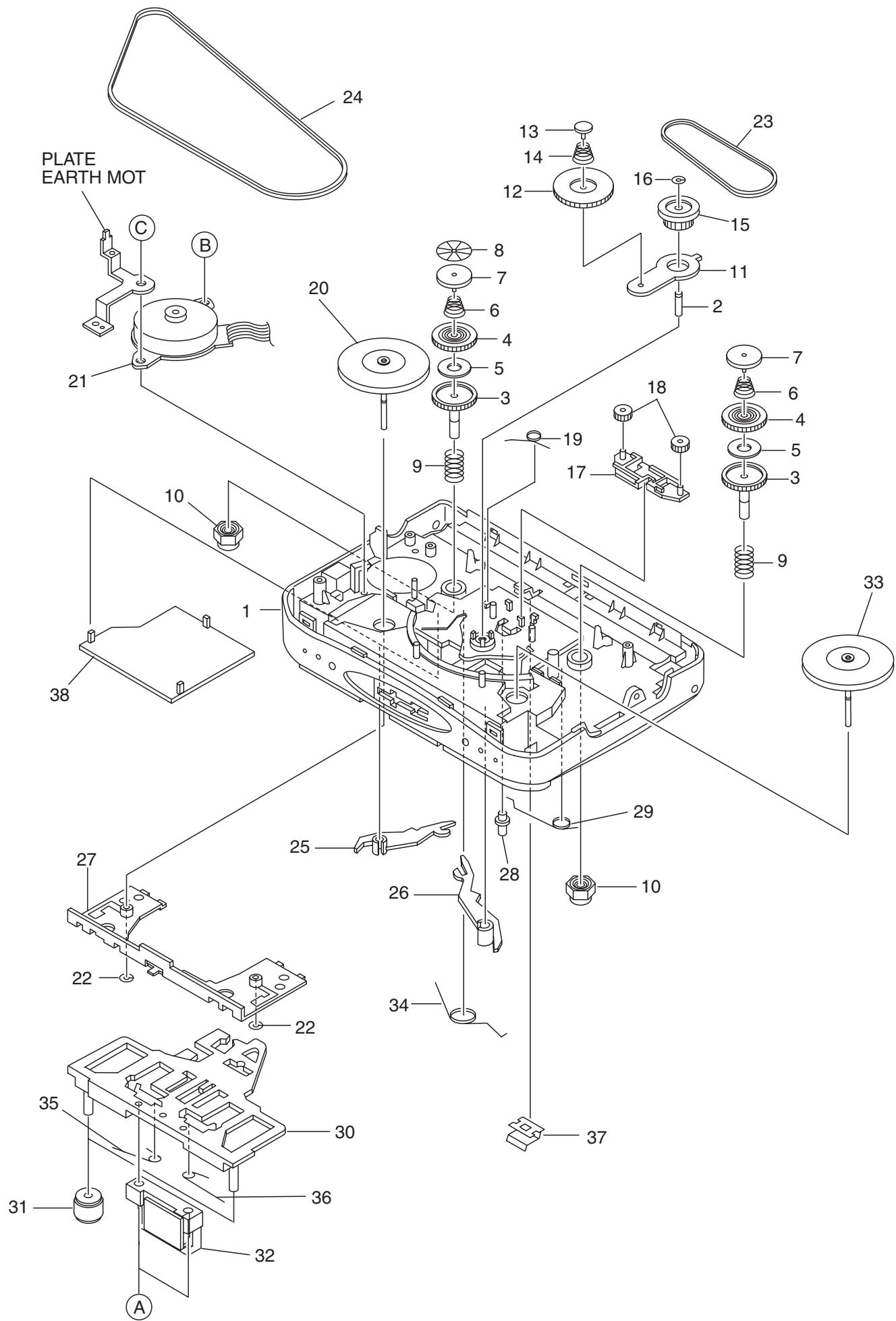
# MECHANICAL PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HKF-046-010		LID,CASS P L-SIL EG<[ST]>
1	8A-HKF-051-010		LID,CASS P M-BLU EG<[L]>
2	8A-HR8-213-010		SPR-T,CASS
3	8A-HR8-002-010		WINDOW,CASS
4	8A-HR8-058-010		PLATE,HEAD L-SIL
5	8A-HKF-004-010		LENS,LED P
6	8A-HR8-603-010		RBN-CORD,4P MOTOR
7	8A-HR8-216-110		HLDL,DC
8	8A-HR8-210-010		SPR-T,LOCK
9	8A-HR8-208-010		PLATE,LOCK
10	8A-HR8-211-010		SPR-T,RTRY
11	8A-HR8-005-210		KNOB,SL OPEN
12	8A-HR8-201-010		LEVER,ASSY REV
13	8A-HR8-212-010		SPR-E,EJECT
14	8A-HR8-215-010		HLDL,HP
15	8A-HR8-218-010		BAT-CONTACT,M
16	8A-HR8-217-010		BAT-CONTACT,P
17	8A-HR8-009-010		KEY,CONT
18	8A-HR8-209-010		HLDL,WIRE
19	8A-HKF-047-010		CABI,ASSY GMX40 L-SIL<[ST]>
19	8A-HKF-052-010		CABI,ASSY GMX40 M-BLU<[L]>
20	8A-HKF-050-010		KNOB,SL L-SIL<[ST]>
20	8A-HKF-055-010		KNOB,SL M-BLU<[L]>
21	8A-HKF-003-010		PANEL,REAR
A	87-067-535-010		SCREW VT+1.4-3.5
B	87-067-388-010		SCREW

## COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange	GM	Metallic Green
YM	Metallic Yellow	DM	Metallic Orange	PT	Transparent Pink
LA	Aqua Blue	GL	Light Green		

# TAPE MECHANISM EXPLODED VIEW 1 / 1



# TAPE MECHANISM PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HR8-056-010		FRAME, CENTER L-SIL
2	S8-505-240-000		GEAR SHAFT
3	S8-505-070-000		REEL GEAR T
4	S8-505-080-000		CLUTCH GEAR
5	S8-505-300-000		FELT
6	S8-505-200-000		CLUTCH SP
7	S8-505-120-000		REEL GEAR BUSH
8	S8-505-290-000		REFLECTING PLATE
9	S8-505-210-000		BRACK TENSION SP
10	S8-000-100-000		REEL CAP
11	S8-505-090-000		FWD GEAR PLATE
12	S8-505-060-000		FWD GEAR
13	S8-505-250-000		GEAR PLATE PIN
14	S8-505-220-000		FWD GEAR SP
15	S8-505-050-000		CENTER GEAR
16	S1-2X2-5X0-25L		L CUT W
17	S8-505-320-000		FF GEAR HOLDER
18	S8-505-330-000		FF GEAR
19	S8-505-310-000		GEAR HOLDER SP
20	S8-550-3K0-000		FLYWHEEL R ASSY
21	87-A91-563-010		MOTOR (IBIGB02)
22	S1-2X2-5X0-1LC		L CUT W
23	SV-500-000-000		SUB BELT
24	SV-190-000-000		MAIN BELT
25	S8-505-100-000		FWD ARM
26	S8-505-110-000		REV ARM
27	S8-505-260-000		SUB CHASSIS
28	S8-505-160-000		REV SELECT
29	S8-505-190-000		SELECT SP
30	S8-505-020-000		HEAD BASE
31	S7-000-080-000		PINCH ROLLER
32	87-A91-019-010		HEAD ASSY(PH8ZM-3)
33	S8-550-4K0-000		FLYWHEEL L ASSY
34	S8-300-160-000		HEAD BASE SP
35	S8-300-170-000		PINCH SP FWD
36	S8-500-090-000		PINCH SP REV
37	8A-HR8-214-010		SPR-P CASS
38	S8-505-130-000		COVER
A	S1-PB1-7X5-500		SCREW 1.7-5.5
B	S3-PY1-7X2-500		SCREW 1.7-2.5
C	S3-PB1-7X3-000		SCREW



**アイワ株式会社** 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)  
**AIWA CO.,LTD.** 2-11, IKENOHATA 1-CHOME, TAITO-KU, TOKYO 110, JAPAN TEL:03 (3827) 3111