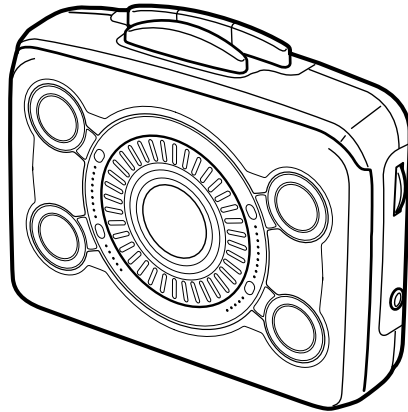




HS-EM20 Y



SERVICE MANUAL

STEREO
CASSETTE PLAYER

BASIC TAPE MECHANISM : 4ZM-2 P3NC2

aiwa

S/M Code No. 09-011-422-9N1



SPECIFICATIONS

Maximum output: 4 mW + 4 mW (EIAJ 16 ohms)
Power source: DC 3V using two R6 (size AA) batteries
Maximum dimensions: 116.6 (W) x 92 (H) x 35 (D) mm
(4 ⁵/₈ x 3 ⁵/₈ x 1 ⁷/₁₆ in.)
Weight Approx. 116.8g (4 oz) (excluding batteries)

- Design and specifications are subject to change without notice.

ACCESSORIES / PACKAGE LIST

REF.NO.	PARTNO.	KANRI NO.	DESCRIPTION
1	8A-HG8-909-010	IB,Y (EGFSI)	EM20-C
1	8A-HG8-910-010	IB,Y(EDPOHCZ)	EM20 -C
2	84-447-019-310		CLIP,BELT
3	87-B30-396-010		HEADPHONE,HP-M006(T2)

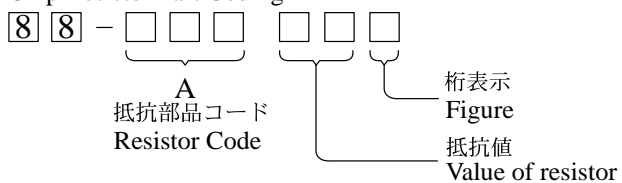
ELECTRICAL MAIN PARTS LIST 1/1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC				C304	87-A11-596-080		C-CAP,S 0.068-16 K B
	87-A21-684-040		C-IC,TA2145AF	C305	87-A11-733-080		C-CAP,S 1-16 Z F
TRANSISTOR				C306	87-A11-733-080		C-CAP,S 1-16 Z F
	87-026-264-080		C-TR,RN1411	C307	87-A11-587-080		C-CAP,S 0.039-16 K B
	87-026-268-080		C-TR,RN2411	C308	87-A11-587-080		C-CAP,S 0.039-16 K B
	89-327-125-080		CHIP TR,2SC2712GR	C309	87-A11-560-080		C-CAP,S 3900P-50 K B
DIODE				C310	87-A11-560-080		C-CAP,S 3900P-50 K B
	87-020-027-080		CHIP-DIODE 1SS184	C311	87-A11-563-080		C-CAP,S 5600P-50 K B
MAIN C.B				C312	87-A11-563-080		C-CAP,S 5600P-50 K B
C1	87-A11-556-080		C-CAP,S 2200P-50 K B	C313	87-015-676-040		E/CAP 47/6.3
C2	87-A11-556-080		C-CAP,S 2200P-50 K B	C315	87-A11-581-080		C-CAP,S 0.027-16 K B
C3	87-010-500-040		CAPE 33-4	C316	87-A11-581-080		C-CAP,S 0.027-16 K B
C4	87-015-675-040		CAP,E 33-6.3 M SRA	C317	87-A11-733-080		C-CAP,S 1-16 Z F
C5	87-A11-565-080		C-CAP,S 8200P-50 K B	C318	87-A11-733-080		C-CAP,S 1-16 Z F
C6	87-A11-565-080		C-CAP,S 8200P-50 K B	C319	87-A11-733-080		C-CAP,S 1-16 Z F
C7	87-A11-551-080		C-CAP,S 1000P-50 K B	C320	87-A11-733-080		C-CAP,S 1-16 Z F
C8	87-A11-551-080		C-CAP,S 1000P-50 K B	J1	85-HRL-623-010		JACK,3.5 ST BLK
C9	87-A11-569-080		C-CAP,S 0.012-50 K B	R53	87-A00-530-080		C-RES,S 180-1/10W F
C10	87-A11-569-080		C-CAP,S 0.012-50 K B	SFR51	87-024-197-010		SEMI-FIXED RESISTOR, 1K
C11	87-A11-553-080		C-CAP,S 1500P-50 K B	SW1	87-A90-133-110		SW,LEAF LSA1120JAU
C12	87-A11-553-080		C-CAP,S 1500P-50 K B	SW2	87-A90-917-010		C-SW,SL 1-1-2 SS-350-B12W-C-L
C14	87-010-498-040		CAP,E 10-16 GAS	VR1	87-A90-981-010		VR,RTRY 20KBX1
C15	87-A11-718-080		C-CAP,S 0.1-25 Z F	FRONT C.B			
C16	87-A11-733-080		C-CAP,S 1-16 Z F	SW301	87-A91-285-110		C-SW,SL 1-1-4 SS-350-B14B-C-L
C17	87-A10-489-040		CAP,E 220-4 7L SR				
C18	87-A10-489-040		CAP,E 220-4 7L SR				
C20	87-A11-726-080		C-CAP,S 0.33-16 Z F				
C21	87-A11-726-080		C-CAP,S 0.33-16 Z F				
C51	87-A11-733-080		C-CAP,S 1-16 Z F				
C52	87-A11-733-080		C-CAP,S 1-16 Z F				
C53	87-A10-489-040		CAP,E 220-4 7L SR				
C301	87-A11-559-080		C-CAP,S 3300P-50 K B				
C302	87-A11-559-080		C-CAP,S 3300P-50 K B				
C303	87-A11-596-080		C-CAP,S 0.068-16 K B				

○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

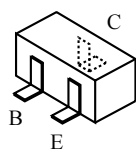
Chip Resistor Part Coding



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 : A Resistor Code : A	
				外形/Form	L	W		t
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

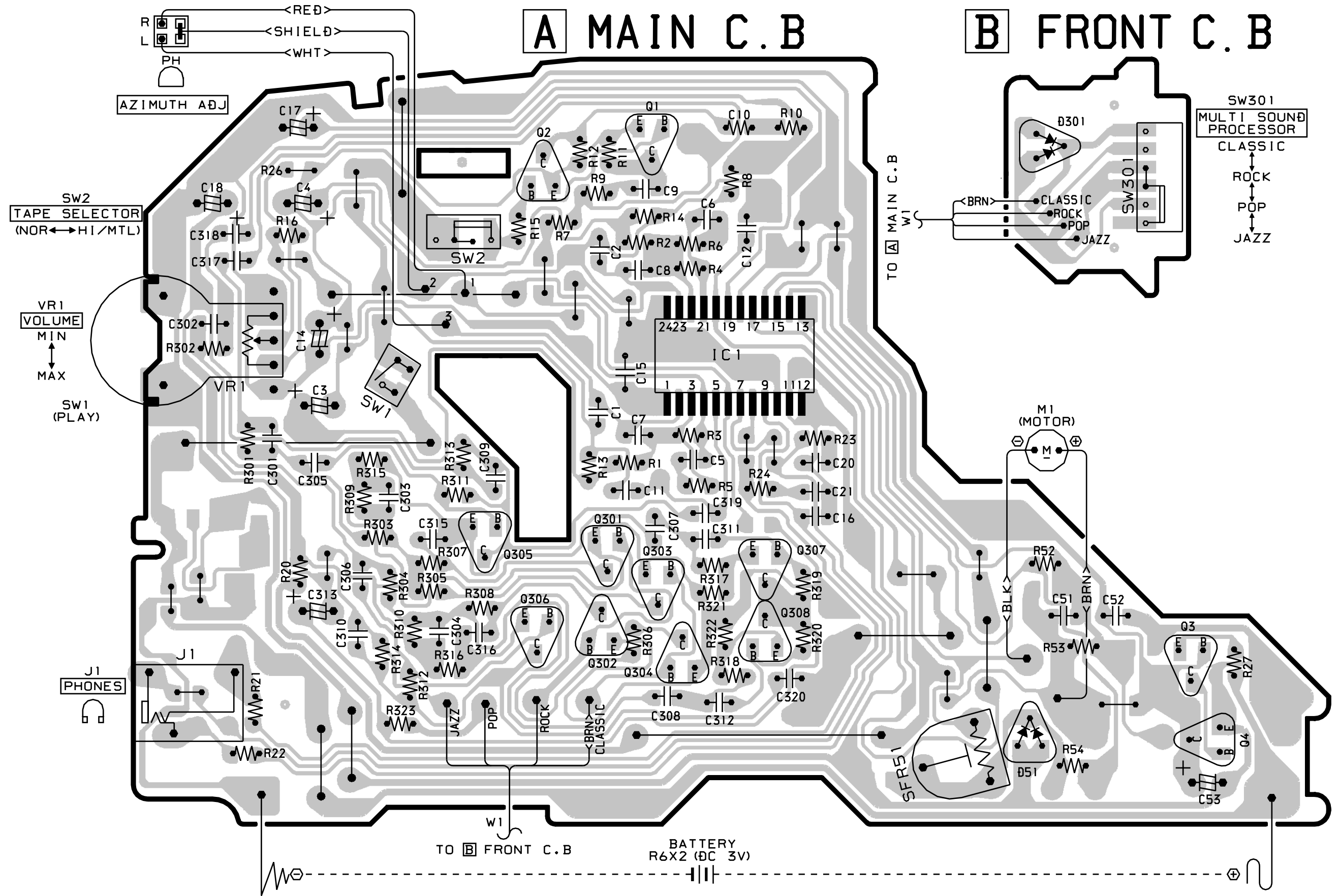
TRANSISTOR ILLUSTRATION



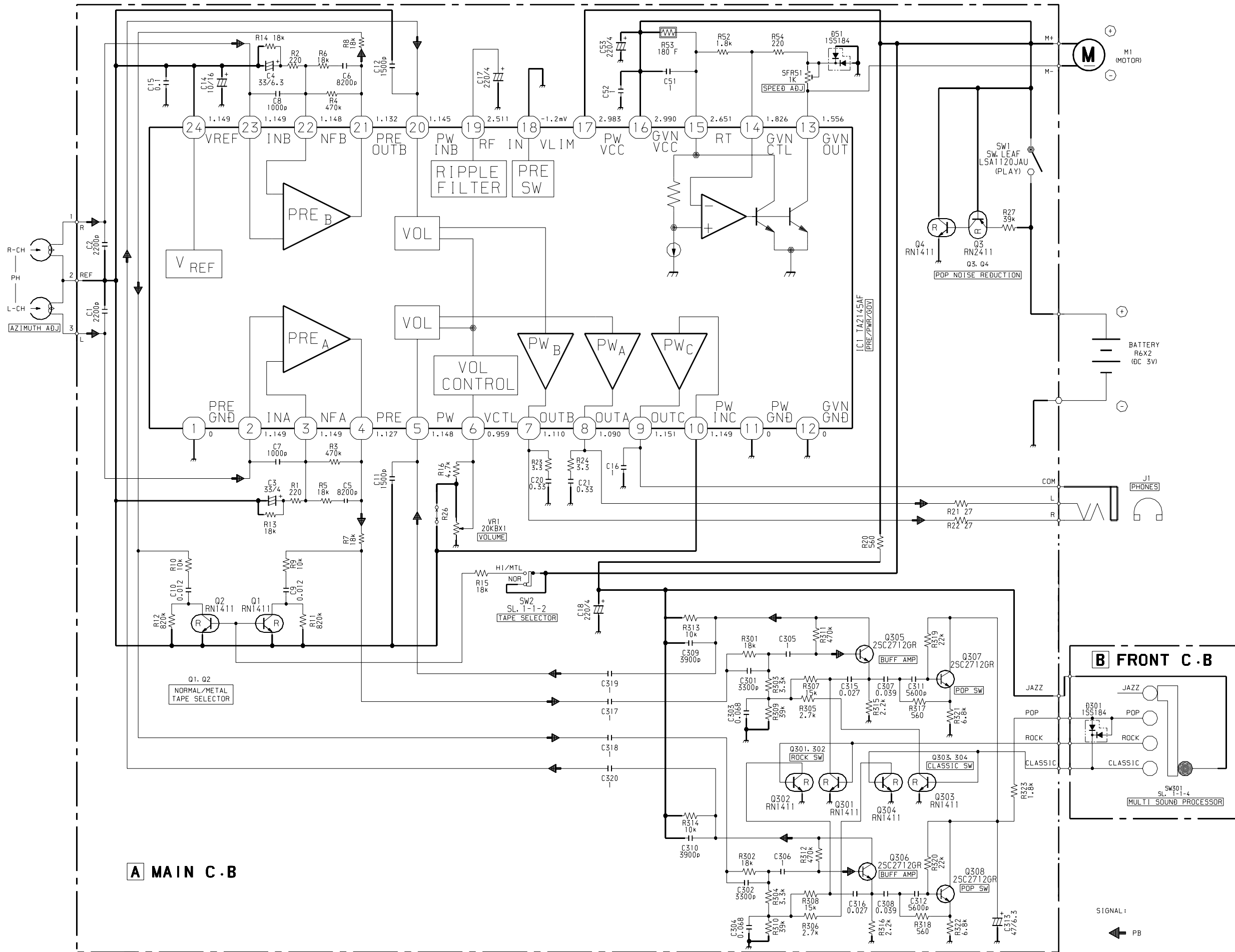
2SC2712
 RN1411
 RN2411

A MAIN C.B

B FRONT C.B



SCHEMATIC DIAGRAM



ADJUSTMENT

1. Tape Speed Adjustment

- Settings:
- Test tape : TTA-100
(Tape center)
 - Test point : PHONES (J1)
 - Adjustment location : SFR51
 - MSP : CLASSIC
 - Tape selector : NORM
 - Volume : Non-clip
(MAX-10dB)

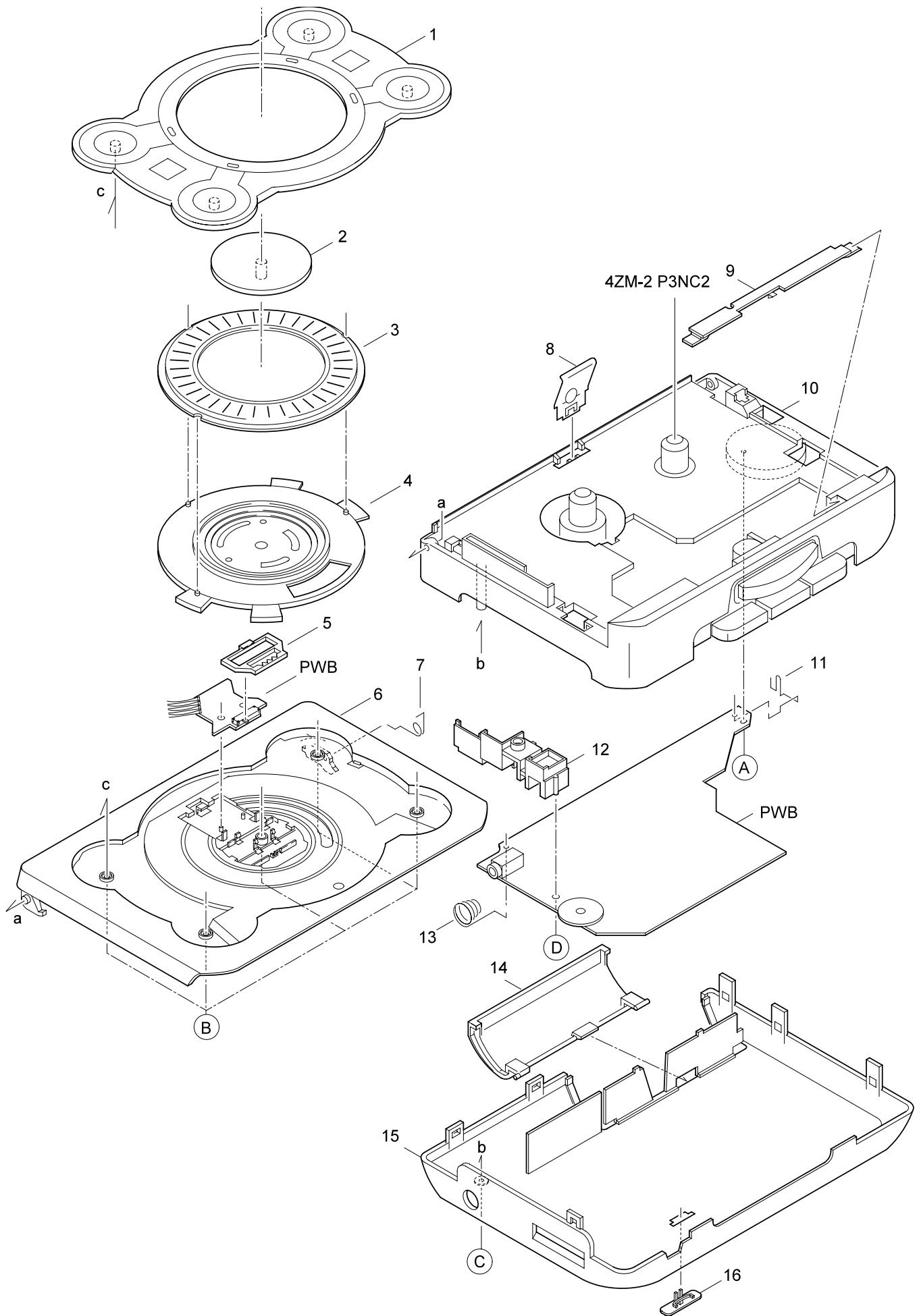
Method: Play back the test tape and adjust SFR51 so that the frequency becomes $3000\text{Hz} \pm 10\text{Hz}$.
Then confirm WOW is less than 0.50%.

2. Azimuth Adjustment

- Settings:
- Test tape : TTA-330/TTA-420
 - MSP : CLASSIC
 - Tape selector : NORM
 - Volume : MAX
 - Adjustment location : Head azimuth adjustment
screw

Method: Play back(FWD) the test tape and adjust screw so that the 8kHz signal output is maximum.

MECHANICAL EXPLODED VIEW 1 / 1



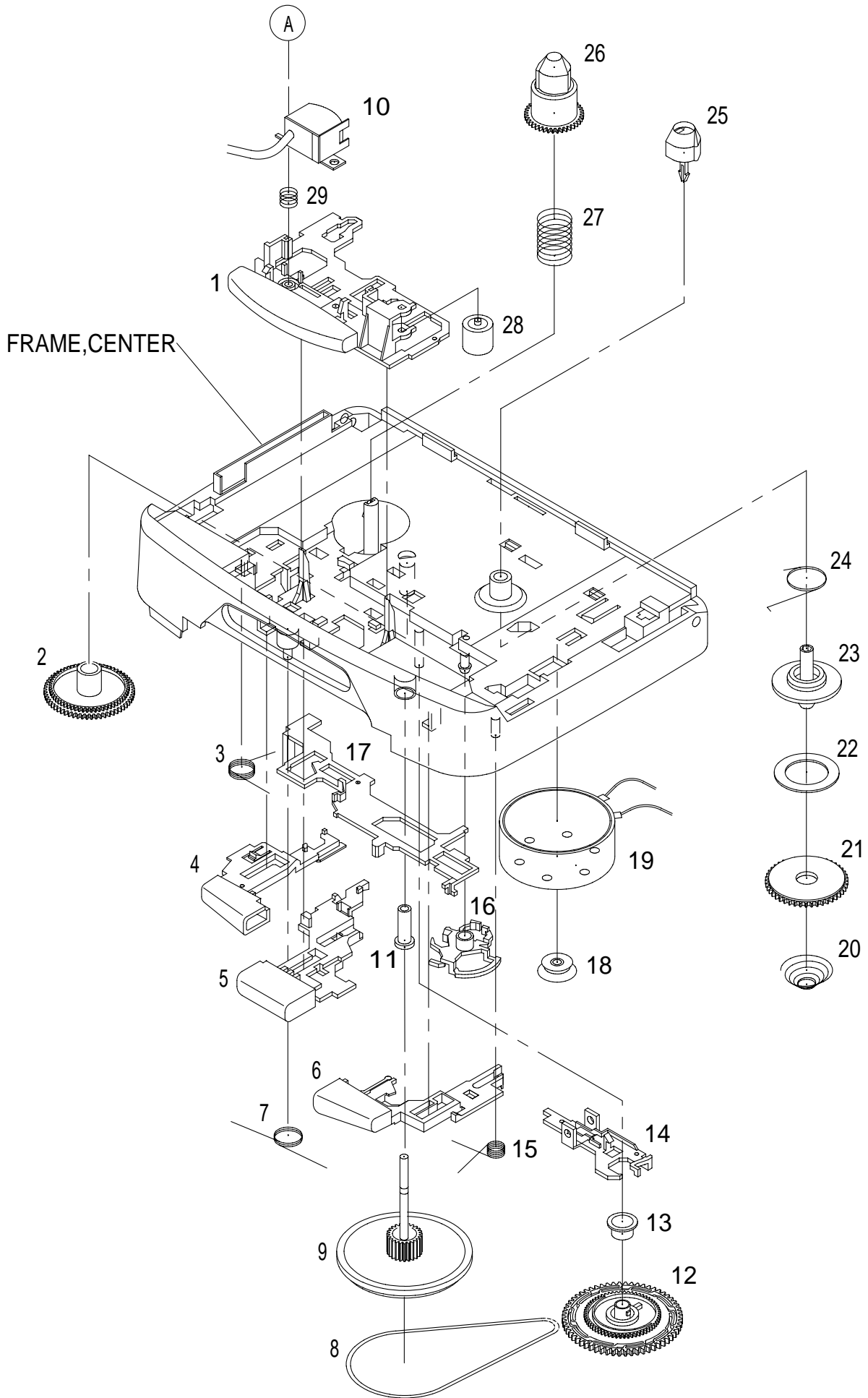
MECHANICAL PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HG8-002-110		PANEL, MSP
2	8A-HG8-005-010		CAP, MSP
3	8A-HG8-003-010		KNOB, RTRY MSP
4	8A-HG8-004-010		PLATE, INDICATOR
5	8A-HG8-201-010		RACK, MSP
6	8A-HG8-017-010		LID, CASS EM J224B<[L]Y>
6	8A-HG8-018-010		LID, CASS EM J008N<[S]Y>
7	86-HRM-205-010		SPR-T, CLICK
8	8A-HRL-202-010		SPR-P, CASS
9	87-HRR-206-010		PLATE, HEAD J034<[S]Y>
9	88-HKB-205-010		PLATE, HEAD VIO<[L]Y>
10	88-HKA-027-010		FRAME, CENTER VIO<[L]Y>
10	88-HRJ-038-010		FRAME, CENTER J034<[S]Y>
11	86-HKA-202-010		BAT-CONTACT, (+)
12	8Z-HG8-202-010		HLDR, DC JACK
13	8Z-HG8-203-010		BAT, CONTACT (-)
14	8Z-HG8-018-010		LID, BATT J049N<[S]Y>
14	88-HG8-025-010		LID, BATT J-224B<[L]Y>
15	8Z-HG8-027-010		CABI, REAR YZ J049N<[S]Y>
15	8A-HG8-013-010		CABI, REAR EM J224B<[L]Y>
16	8Z-HGA-013-010		KNOB, SL DOLBY J049N<[S]Y>
16	8Z-HGA-017-010		KNOB, SL DOLBY J224B<[L]Y>
A	87-264-525-310		SCREW, V+1.7-2.5
B	87-067-732-010		TAPPING SCREW, VT1.4-3
C	87-067-691-010		SCREW VT+1.7-6
D	87-067-384-010		SCREWVT1.4-3.5HL

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	84-ZM2-012-010		LEVER, PLAY G
2	84-ZM2-211-01K		GEAR, CONNECT
3	84-ZM2-222-010		SPR-T, PLAY
4	84-ZM2-015-010		LEVER, STOP G
5	84-ZM2-014-010		LEVER, REW G
6	84-ZM2-013-010		LEVER, FF G
7	84-ZM2-223-010		SPR-T, REW STOP
8	84-ZM2-232-010		BELT, MAIN
9	09-001-421-010		FLY-WHL, P ASSY
10	87-A90-272-010		HEAD, PH MS25P ETH
11	84-ZM2-220-01K		BRG, P
12	84-ZM2-210-01K		GEAR, AUTO
13	84-ZM2-218-01K		CAP, GEAR AUTO
14	84-ZM2-208-01K		LEVER, SHIFT
15	84-ZM2-224-010		SPR-T, FF LOCK
16	84-ZM2-207-01K		LEVER, AUTO
17	84-ZM2-206-01K		LEVER, LOCK
18	84-ZM2-219-01K		PULLEY, MOTOR
19	87-045-385-010		MOT (BCY3B11)
20	84-ZM2-226-010		SPR-C, CLUTCH
21	84-ZM2-212-01K		GEAR, CLUTCH
22	84-ZM2-231-010		FELT, CLUTCH
23	84-ZM2-217-01K		SHAFT, REEL
24	84-ZM2-225-010		SPR-T, AUTO FIND
25	84-ZM2-216-01K		REEL TABLE, R
26	84-ZM2-215-01K		REEL TABLE, L
27	84-ZM2-228-010		SPR-C, BT
28	84-ZM2-233-110		PINCH ROL ASSY
29	84-ZM2-227-010		SPR-C, AZIMUTH
A	84-ZM2-242-019		S-SCREW, AZIMUTH-2-5.9

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