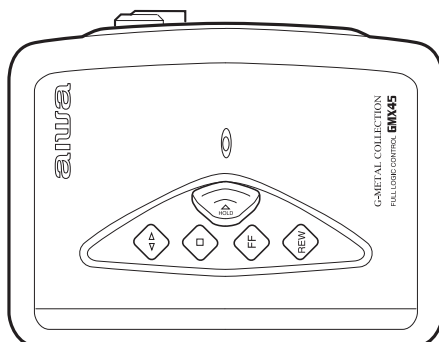


SIMPLE-2



SERVICE MANUAL

STEREO CASSETTE PLAYER

BASIC TAPE MECHANISM : CL-860 D-GRY

A part of contents is adequate.
Re-issuing is under request.

- This Service Manual is the "Revision Publishing" and replaces "Simple Manual" of HS-GMX45 / 50 (Y), (S/M Code No. 09-015-447-1T1).

SPECIFICATIONS

Maximum output

Speaker: 4 mW + 4 mW (EIAJ / 16 ohms)

Load impedance

16 - 80 ohms

Power sources

DC 3 V using two R6 (AA) dry cell batteries, AC house current using the optional AC adaptor AC-D302.

Battery life: (EIAJ, 0.2 mW output)

Approx. 30 hours using two LR6 (AA) alkaline batteries

Maximum outside dimensions

80.1 (W) X 111 (H) X 26.3 (D) mm (excluding projecting parts and controls)
(3¹/₄ X 4³/₈ X 1¹/₁₆ in.)

Weight

Approx. 128 g (4.5 oz) (excluding batteries)

- Design and specifications are subject to change without notice.

ACCESSORIES / PACKAGE LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8A-HKF-951-010	RC UNIT, RC307	<GMX50>
2	87-B30-482-010	HEADPHONE, HP-M041 (T2) SP	<GMX50>
3	87-B30-483-010	HEADPHONE, HP-M007 (T2) SP	<GMX45>
4	8B-HKF-905-010	IB, Y (EGFSI) C 50	<GMX50>
4	8B-HKF-906-010	IB, Y (EDPHNC) C 50	<GMX50>
4	8B-HKF-915-010	IB, Y (EGFSI) C 45	<GMX45>
4	8B-HKF-916-010	IB, Y (EDPHNC) C 45	<GMX45>

ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION	REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
IC				C401	87-A10-201-080		C-CAP,S 0.33-16 K B
	87-002-677-080		IC,TA2002F	C403	87-010-196-080		C-CAP,S 0.1-25 Z F
	87-A20-532-140		C-IC,LB1977M-TLM	C404	87-016-526-080		C-CAP,S 0.47-16 BK
	87-A21-926-040		C-IC,TMP47C443LDM-3B80 (EL)	C405	87-010-992-080		C-CAP,S 0.047-25 K B
	87-A21-566-040		C-IC,S-80820ANNP	C406	87-010-831-080		C-CAP,U 0.1-16 Z F
	87-A21-565-040		C-IC,S-80817ANNP	C407	87-010-992-080		C-CAP,S 0.047-25 K B
TRANSISTOR				C408	87-010-992-080		C-CAP,S 0.047-25 K B
	89-327-125-080		C-TR,2SC2712GR	C409	87-010-992-080		C-CAP,S 0.047-25 K B
	87-A30-085-040		C-TR,CSA1362GR	C410	87-010-831-080		C-CAP,U 0.1-16 Z F
	87-026-581-080		C-TR,RN2405	C701	87-010-831-080		C-CAP,U 0.1-16 Z F
	87-026-267-080		C-TR,RN2407	C702	87-012-141-080		C-CAP,S 0.22-16 Z F
DIODE				C703	87-012-141-080		C-CAP,S 0.22-16 Z F
	87-A40-822-040		C-DIODE,CRS01	C705	87-010-831-080		C-CAP,U 0.1-16 Z F
MAIN C.B				C707	87-010-196-080		C-CAP,S 0.1-25 Z F
C101	87-012-273-080		C-CAP,U 820P-50 K B	C708	87-010-831-080		C-CAP,U 0.1-16 Z F
C102	87-012-273-080		C-CAP,U 820P-50 K B	C709	87-010-831-080		C-CAP,U 0.1-16 Z F
C103	87-012-273-080		C-CAP,U 820P-50 K B	C710	87-010-831-080		C-CAP,S 0.22-16 Z F
C104	87-012-273-080		C-CAP,U 820P-50 K B	C714	87-010-831-080		C-CAP,U 0.1-16 Z F
C105	87-012-276-080		C-CAP,U 1500P-50 K B	C731	87-010-831-080		C-CAP,U 0.1-16 Z F
C106	87-012-276-080		C-CAP,U 1500P-50 K B	C801	87-A10-489-010		CAP,E 220-4 7L SR
C107	87-A10-488-010		CAP,E 47-4 7L SR	D601	87-A91-355-040		C-LED,BR1112H-TR-RED
C108	87-A10-488-010		CAP,E 47-4 7L SR	J101	87-A60-438-010		JACK,3.5 BLK ST W/O SW<GMX45>
C111	87-010-419-010		CAP,E 4.7-16 M 5L SRE	J101	87-A60-437-010		JACK,3.5 BLK ST W/O SW<GMX50>
C112	87-012-142-080		C-CAP,S 0.33-16 Z F	J801	87-A61-124-110		JACK,DC DIA2.75 BLK TC
C113	87-010-805-080		C-CAP,S 1-16 Z F	PS501	87-A92-120-010		SNSR,PHOTO EL-ITR8307T21F43
C114	87-016-396-080		C-CAP,U 0.22-16 F	R713	87-022-245-080		C-RES,U 18K-1/16W F
C117	87-012-278-080		C-CAP,U 2200P-50 K B	R714	87-022-245-080		C-RES,U 18K-1/16W F
C118	87-012-278-080		C-CAP,U 2200P-50 K B	R738	87-010-805-080		C-CAP,S 1-16 Z F<GMX45>
C119	87-010-831-080		C-CAP,U 0.1-16 Z F	S301	87-A90-050-010		SW, SL 2-2-2 NS (BLK)
C120	87-010-831-080		C-CAP,U 0.1-16 Z F	S701	87-A91-780-180		C-SW,TACT LS15B3T
C121	87-010-502-010		CAP,E 100-4 M KS	S702	87-A91-780-180		C-SW,TACT LS15B3T
C122	87-A10-489-010		CAP,E 220-4 7L SR	S703	87-A91-780-180		C-SW,TACT LS15B3T
C123	87-010-502-010		CAP,E 100-4 M KS<GMX50>	S704	87-A91-780-180		C-SW,TACT LS15B3T
C124	87-010-502-010		CAP,E 100-4 M KS<GMX50>	S705	87-036-379-280		C-SW,SL 1-1-2 SS-350-A12B-C-T
C125	87-A10-488-010		CAP,E 47-4 7L SR	S706	87-A91-365-080		C-SW,PUSH 1-1-1 SPVG21
C127	87-010-805-080		C-CAP,S 1-16 Z F	SFR401	87-A91-653-040		C-SFR,K 33K H RH03AEC
C128	87-010-805-080		C-CAP,S 1-16 Z F	TH401	87-A91-675-080		C-THMS,NTH5G16P39B472K 07TH
C303	87-010-196-080		C-CAP,S 0.1-25 Z F	VR101	87-A92-047-010		VR,RTRY 20KCX2 H XV010702GPPV1N
C304	87-010-196-080		C-CAP,S 0.1-25 Z F	X701	87-A70-241-010		VIB,CER 4.000MHZ CSTS0400MG03
				HEAD FLEX C.B			
				PH	8B-HR7-606-010		HEAD ASSY, CL-860

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

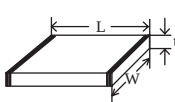
Chip Resistor Part Coding



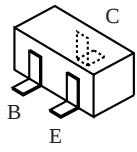
A
抵抗部品コード
Resistor Code

桁表示
Figure
抵抗値
Value of resistor

チップ抵抗 Chip resistor

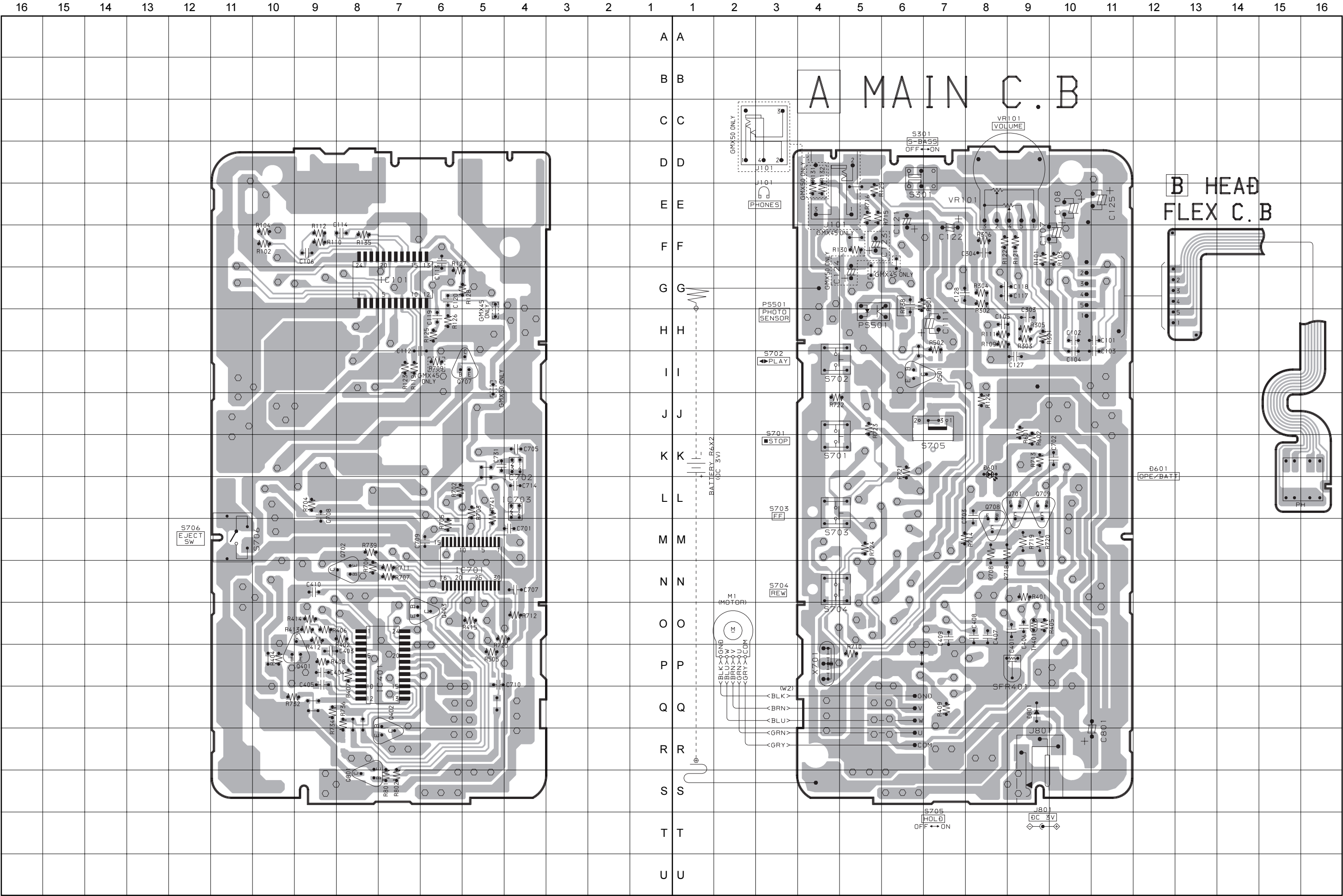
容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法／Dimensions (mm)				抵抗コード : A Resistor Code : A
				外形／Form	L	W	t	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35	104
1/16W	1608	± 5%	CJ		1.6	0.8	0.45	108
1/10W	2125	± 5%	CJ		2	1.25	0.45	118
1/8W	3216	± 5%	CJ		3.2	1.6	0.55	128

TRANSISTOR ILLUSTRATION



2SC2712GR
CSA1362GR
RN2405
RN2407

WIRING (MAIN / HEAD FLEX)

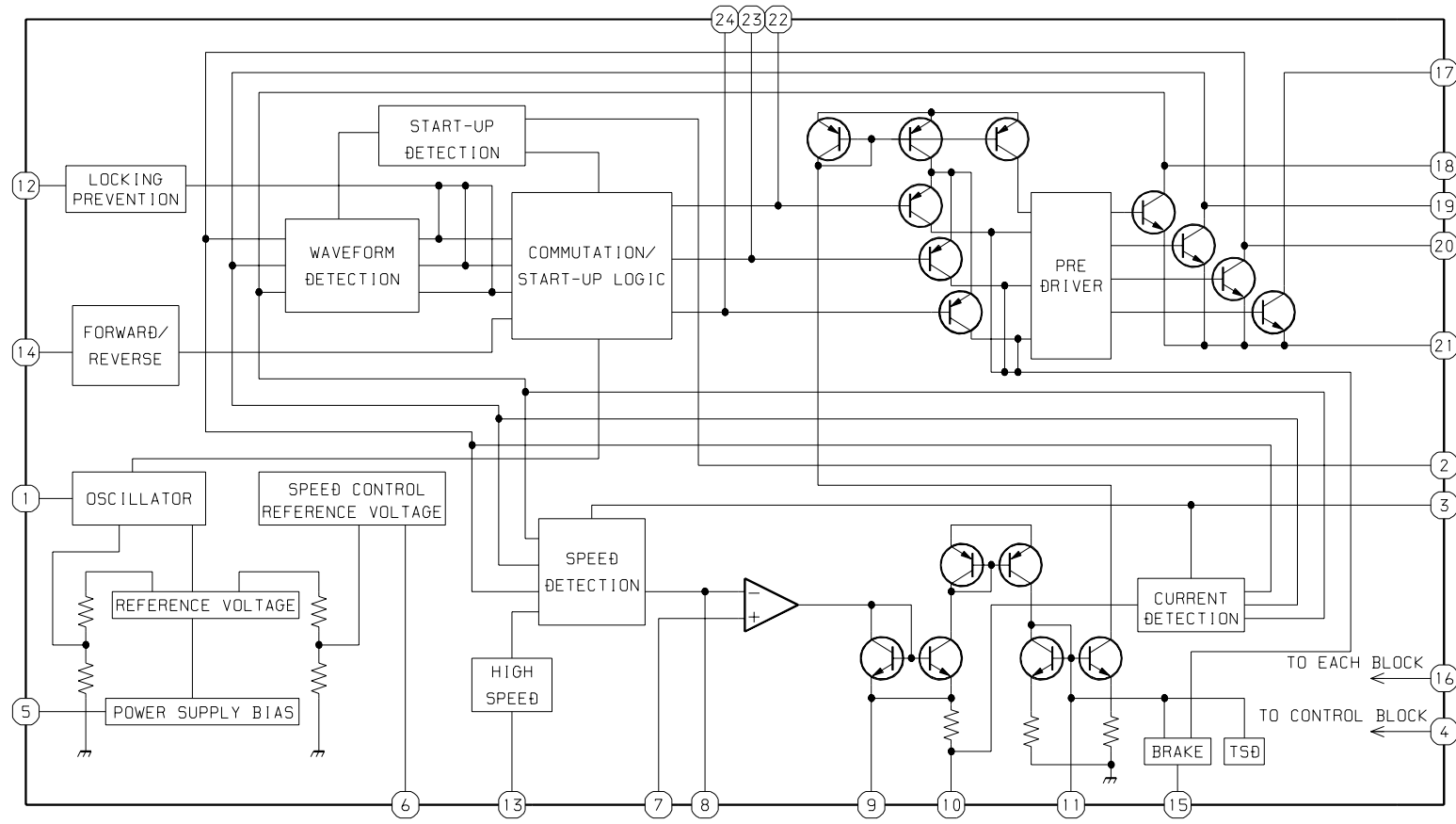


SCHEMATIC DIAGRAM (MAIN / HEAD FLEX)

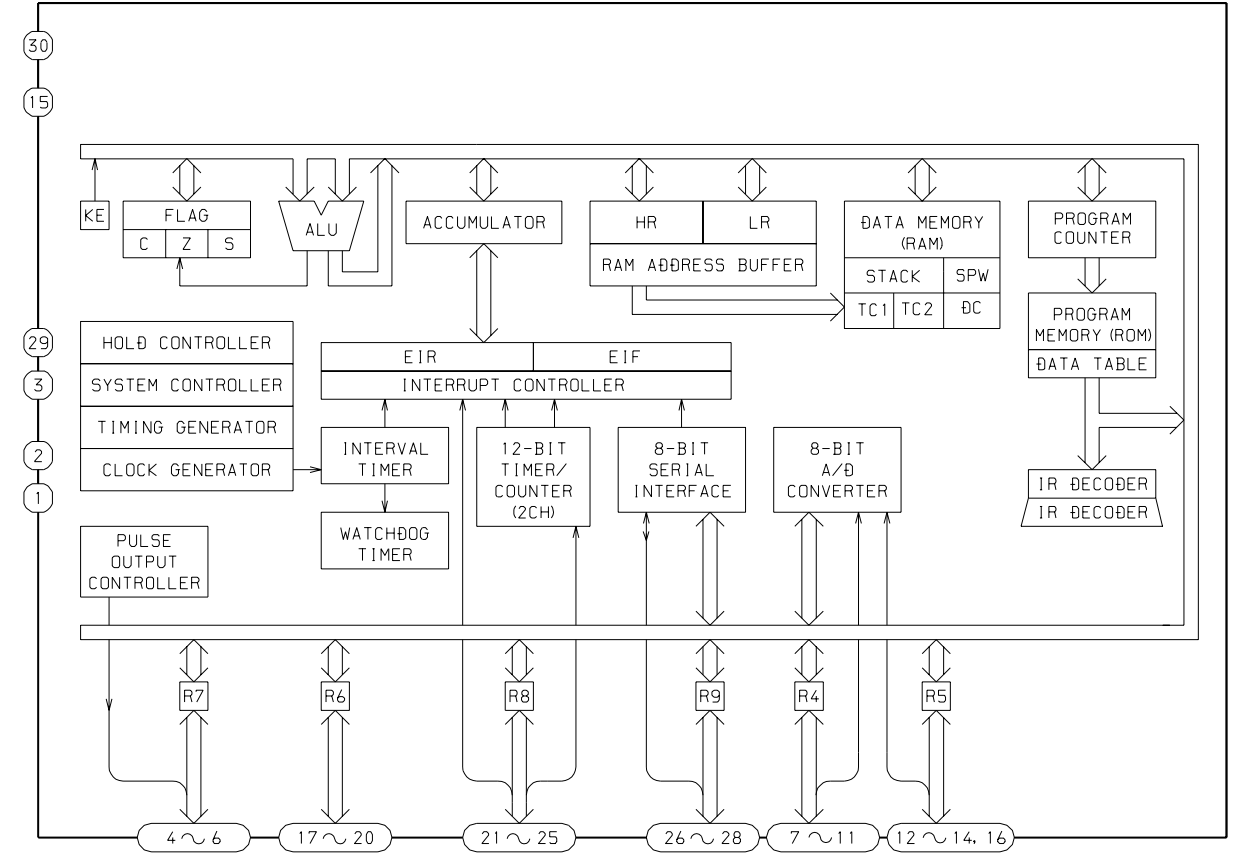


IC BLOCK DIAGRAM

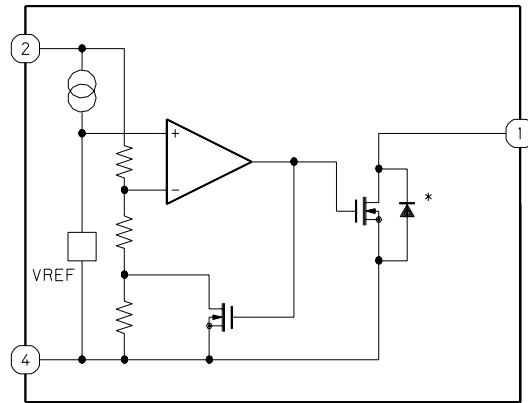
IC, LB1977M-TLM



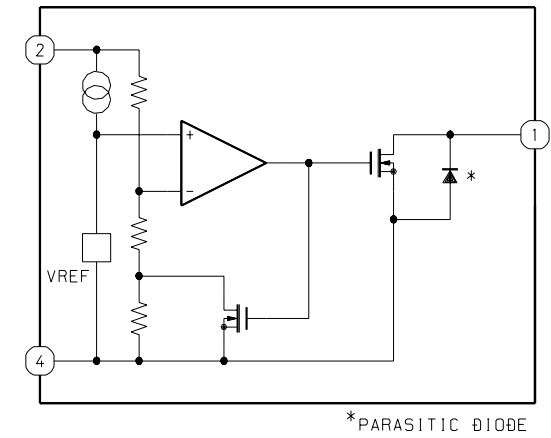
IC, TMP47C443LDM-3B80 (EL)



IC, S-80820ANNP



IC, S-80817ANNP



IC DESCRIPTION

IC, TMP47C443LDM – 3B80(EL)

Pin No.	Pin Name	I/O	Description
1	XOUT	O	Oscillator connection terminal (4MHz ceralock).
2	XIN	I	
3	RESET	I	Reset signal input.
4	EJECT SW	I	EJECT SW input. EJECT: L
5	BUZR	O	Buzzer sound (pulse) output.
6	TEST	I	TEST (mechanism strength test) mode input. TEST: H (Connected to GND)
7	HOLD	I	MAIN key HOLD SW input. HOLD: L
8	NC	—	Connected to GND.
9	L.V. STOP	I	Reduced voltage detection input. L.V.: L
10	MAIN IN	I	MAIN key input (A/D).
11	REMOTE IN	I	REMOTE key input (A/D).
12	MOT HI	O	Motor high-speed initialization output. ON: H
13	NC	—	Not connected.
14	POWER ON	O	AUDIO system power supply output. ON: L
15	GND	—	Power supply terminal (0V).
16	PHOTO OUT	O	P-SNSR (tape rotation detection) waveform monitor ouput.
17	LOAD CTL	O	Current voltage check output. ON: L
18	MOT ON	O	Motor initialization output. ON: L
19	MOT DIR	O	Motor rotating direction output. CW: H, CCW: L
20	BRAKE	O	Motor break output. ON: H
21	NC	—	Not connected.
22	MOT CH	I	Motor initialization detection output. Motor initializing: L (50msec)
23	NC	—	Connected to GND.
24	P-SNSR	I	P-SNSR (tape rotation detection) waveform input.
25	C-SW	I	Cassette detection input. Cassette inserted: L (Connected to GND)
26	AUTO SW	I	AUTO operation judgment input. No AUTO operation: L
27	F/R CTRL	O	FWD/REV control output. FWD: H, REV: L
28	MUTE	O	Muting output. ON: L
29	WAKE UP	I	Microcomputer HOLD (edge release mode) release input.
30	VDD	I	Power supply terminal (+3V).

ADJUSTMENT

<TAPE PLAYER SECTION>

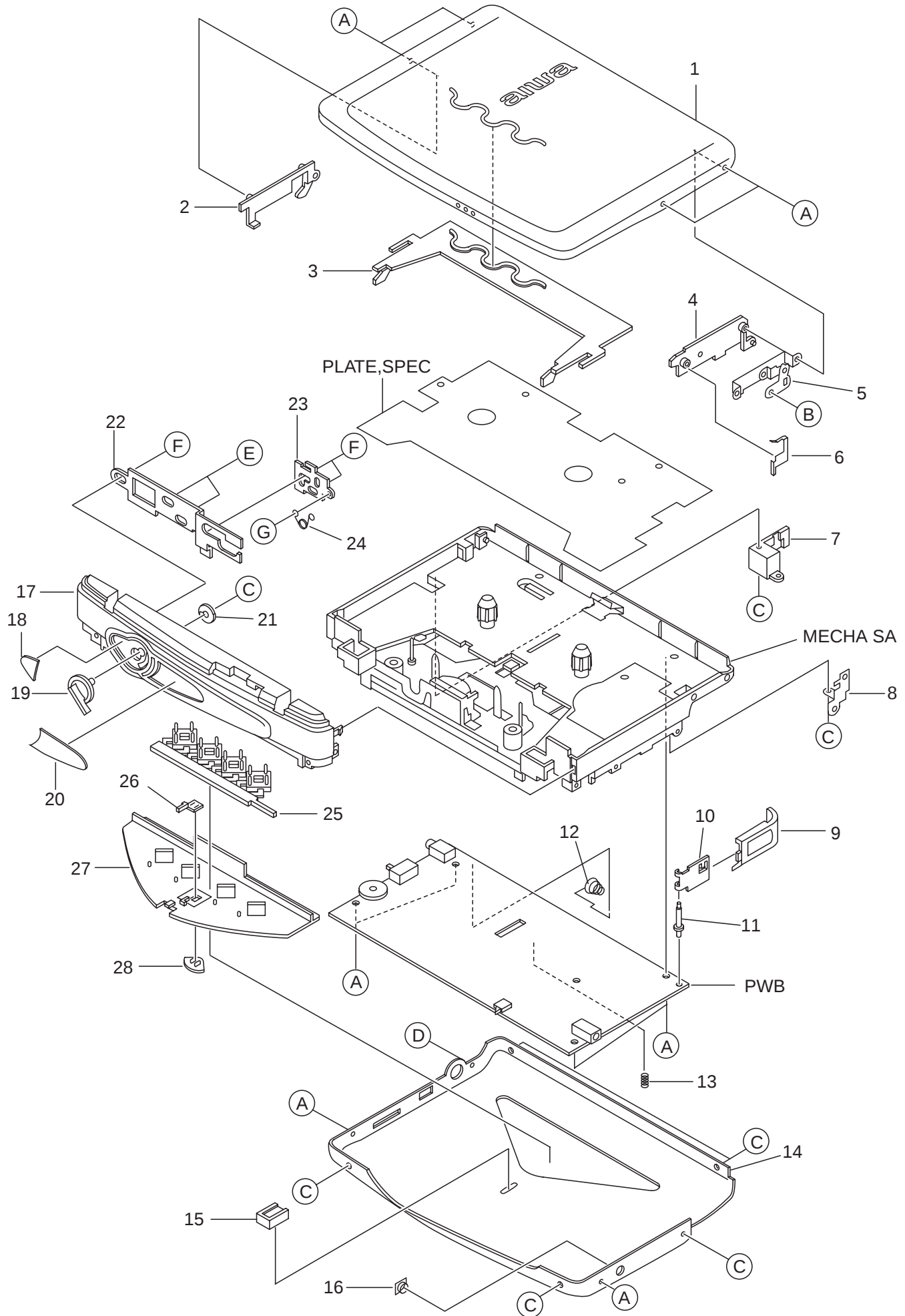
1. Tape Speed (4.8cm/sec) Adjustment

Settings : • Test tape : TTA - 100 (TAPE CENTER)

- Test point : PHONES JACK (J101)
- Adjustment location : SFR 401
- Super bass : OFF
- Volume : MAX

Method : Play back the test tape and adjust SFR 401 so that the frequency is $3010 \text{ Hz} \pm 10 \text{ Hz}$ (FWD) and FWD SPEED $\pm 50 \text{ Hz}$ (REV). Then confirm WOW is less than 0.52%.

MECHANICAL EXPLODED VIEW 1 / 1



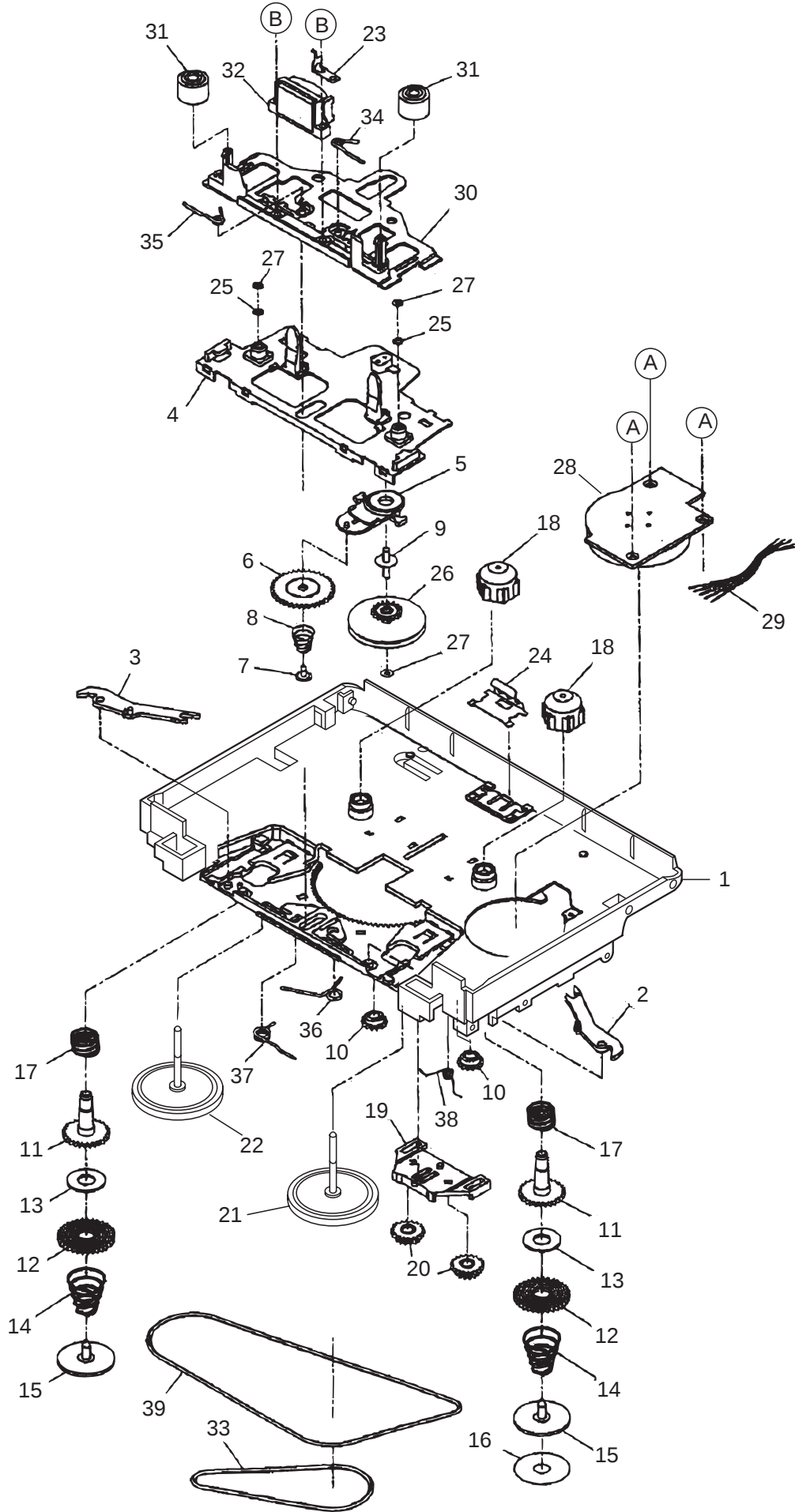
MECHANICAL PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8B-HR7-023-010		LID,ASSY YZ SIL<45Y1BSC,50Y1BSC>
1	8B-HKF-027-010		LID,ASSY GRN<45Y1BGC>
1	8B-HKF-029-010		LID,ASSY BLU<50Y1BLC>
2	8B-HR7-201-010		HLD, CASS L
3	8B-HR7-005-110		WINDOW, CASS<EXCEPT 45Y1BGC>
3	8B-HKF-003-110		WINDOW, CASS GRN<45Y1BGC>
4	8B-HR7-202-010		HLD, CASS R
5	8B-HR7-233-010		HINGE, ASSY
6	8B-HR7-221-010		SPR-P, EARTH
7	8B-HKF-201-010		HLD, HP JACK
8	8B-HR7-220-010		HLD, HINGE
9	8B-HKF-004-010		LID, BATT SIL<45Y1BSC,50Y1BSC>
9	8B-HKF-023-010		LID, BATT GRN<45Y1BGC>
9	8B-HKF-024-010		LID, BATT BLU<50Y1BLC>
10	8B-HR7-214-010		BAT-CONTACT, P
11	8B-HR7-237-110		SHAFT, BAT P
12	8B-HKF-208-010		BAT-CONTACT, M C
13	8B-HR7-231-010		SPR-C, EARTH C
14	8B-HKF-014-010		CABI, REAR SIL GMX45<45Y1BSC>
14	8B-HKF-015-010		CABI, REAR GRN GMX45<45Y1BGC>
14	8B-HKF-001-010		CABI, REAR SIL GMX50<50Y1BSC>
14	8B-HKF-018-010		CABI, REAR BLU GMX50<50Y1BLC>
15	8B-HKF-007-010		LENS, LED
16	8B-HR7-019-010		RING, DC
17	8B-HR7-002-010		PANEL, LOCK DG
18	8B-HR7-011-010		PANEL, OPEN L
19	8B-HR7-010-010		KNOB, RTRY OPEN
20	8B-HR7-012-010		PANEL, OPEN R
21	8B-HR7-207-010		GEAR, OPEN
22	8B-HR7-206-010		LEVER, OPEN
23	8B-HR7-205-010		PLATE, LOCK
24	8B-HR7-229-010		SPR-T, OPEN C
25	8B-HKF-006-010		KEY, CONT
26	8B-HKF-203-010		HLD, KNOB HOLD
27	8B-HKF-005-010		PANEL, KEY
28	8B-HKF-008-010		KNOB, SL HOLD
A	8B-HR7-250-010		S-SCREW, +1.4-4.5-0.3 CR HL
B	87-067-288-010		HINGE SCREW +1.4-1
C	8B-HR7-251-010		S-SCREW, +1.4-3.5-0.3 CR HL
D	8A-HK5-218-010		S-SCREW, +1.4-3-0.4 CR NL
E	8B-HR7-252-010		S-SCREW, HINGE+1.4-2.5 CR HL
F	87-HK5-235-010		S-SCREW, 1.4-0.6-2.5
G	87-067-388-010		S-SCREW, HINGE+1.4-1 BLK

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	HT	Transparent Gray

TAPE MECHANISM EXPLODED VIEW 1 / 1



TAPE MECHANISM PARTS LIST 1 / 1

REF. NO.	PART NO.	KANRI NO.	DESCRIPTION
1	8B-HR7-001-010		FRAME CENTER
2	S8-605-100-000		FWD ARM
3	S8-605-110-000		REV ARM
4	S8-605-140-000		SUB CHASSIS ASSY
5	S8-605-070-000		GEAR PLATE
6	S8-605-060-000		FWD GEAR
7	S8-605-210-000		GEAR PLATE PIN
8	S8-505-220-000		FWD GEAR SP
9	S8-605-230-000		GEAR SHAFT
10	S8-605-330-000		FF GEAR 1
11	S8-605-370-000		REEL GEAR T
12	S8-605-080-000		CLUTCH GEAR
13	S8-605-390-000		FELT
14	S8-605-470-000		CLUTCH SP
15	S8-605-510-000		REEL GEAR BUSH
16	S8-505-290-000		REFLECTING PLATE
17	S8-605-260-000		BACK TENSION SP
18	S8-000-10B-000		REEL CAP
19	S8-605-360-000		FF CEAR HOLDER
20	S8-605-340-000		FF GEAR 2
21	S8-605-03K-000		FLY WHEEL R ASSY
22	S8-605-04K-000		FLY WHEEL L ASSY
23	S8-605-490-000		SPR-P,HEAD
24	8B-HR7-239-010		SPR-P,CASS
25	S1-6X2-5X0-2S0		SOMARAIT W
26	S8-605-380-000		CENTER GEAR
27	S1-15X-26X-025		L W CUT
28	M8-AZS-394-040		MOTOR
29	S8-605-450-000		LEAD WIRE 5P
30	S8-605-020-000		HEAD BASE ASSY
31	S8-605-170-000		PINCH ROLLER
32	8B-HR7-606-010		HEAD ASSY CL-860
33	SV-594-000-000		SUB BELT
34	S8-605-290-000		PINCH SP FWD
35	S8-605-300-000		PINCH SP REV
36	S8-605-320-000		STOPPER SP
37	S8-605-280-000		HEAD BASE SP
38	S8-605-350-000		FF SP
39	SV-582-700-000		MAIN BELT
A	SB-TF1-7X5-0HO		SCREW
B	S3-PW1-4X5-000		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)
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