

TC-WR97ES/WR870

SERVICE MANUAL

US Model
Canadian Model
E Model
 TC-WR97ES
AEP Model
UK Model
 TC-WR870



Photo: TC-WR870

Model Name Using Similar Mechanism	TC-WR820
Tape Transport Mechanism Type	TCM-200R4 /200R9

SPECIFICATIONS

Recording system 4-track 2-channel stereo
 Fast winding time Approx. 90 sec. (with Sony C-60 cassette)
 Bias AC bias
 Signal-to-noise ratio (at peak level)

Dolby NR switch	OFF	B-Type ON	C-Type ON
Cassette			
Type IV (Sony METAL-SLT)	59 dB	67 dB	74 dB
Type II (Sony UX-S)	58 dB	66 dB	73 dB
Type I (Sony HF-S)	56 dB	64 dB	71 dB

Total harmonic distortion 1.0% (with Sony METAL-SLT cassettes)

Frequency response (DOLBY NR OFF)

Type IV cassette (Sony METAL-SLT)	20 - 20,000 Hz (± 3 dB, IEC) 30 - 15,000 Hz [± 3 dB 0VU(-4 dB) recording]
Type II cassette (Sony UX-S)	25 - 17,000 Hz (± 3 dB, IEC)
Type I cassette (Sony HF-S)	25 - 16,000 Hz (± 3 dB, IEC)

Wow and flutter $\pm 0.09\%$ W.Peak (IEC)
 0.06% WRMS (NAB)
 $\pm 0.16\%$ W.Peak (DIN)

Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV
	Input impedance	47 k ohms

Outputs

Line outputs (phono jacks)	Rated output level	0.32 V at a load impedance of 47 k ohms
	Load impedance	Over 10 k ohms
Headphones (stereo phone jack)	Output level	0-1.25 mW at a load impedance of 32 ohms

General

Power requirements

US, Canadian Model:
 120 V AC, 60 Hz
 AEP, Germany Model:
 220 - 230 V AC, 50/60 Hz
 UK Model: 240 V AC, 50 Hz
 E Model: 120, 220, 240 V AC
 adjustable, 50/60 Hz

Power consumption

30 W

Dimensions

Approx. 470 $\times$ 135 $\times$ 355 mm (w/h/d)
 (18 $\frac{1}{8}$ $\times$ 5 $\frac{3}{8}$ $\times$ 14 inches)
 including projecting parts and controls
 Approx. 7.5 kg (16 lbs 9 oz)

Weight

Supplied accessory

Audio connecting cords (2)

Design and specifications subject to change without notice.

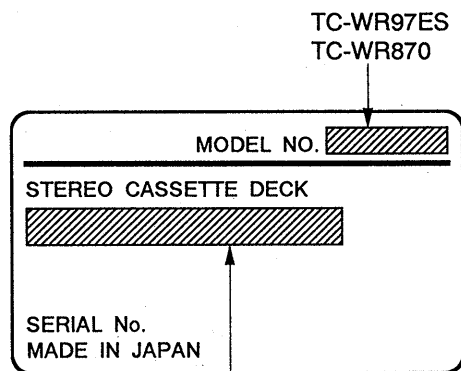
STEREO CASSETTE DECK
SONY[®]

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MODEL IDENTIFICATION

— Specification Label —



US, Canadian Model: AC: 120V 60Hz 30W
 Germany, AEP Models: AC: 220 – 230V~50/60 Hz
 UK Model: AC: 240 V~50 Hz
 E Model: AC: 120, 220, 240 V~50/60 Hz 30W

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

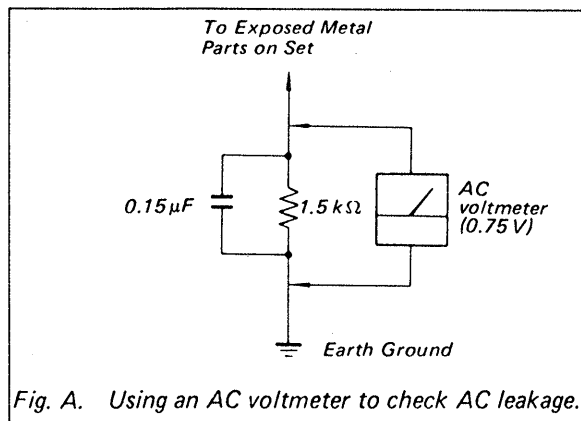


Fig. A. Using an AC voltmeter to check AC leakage.

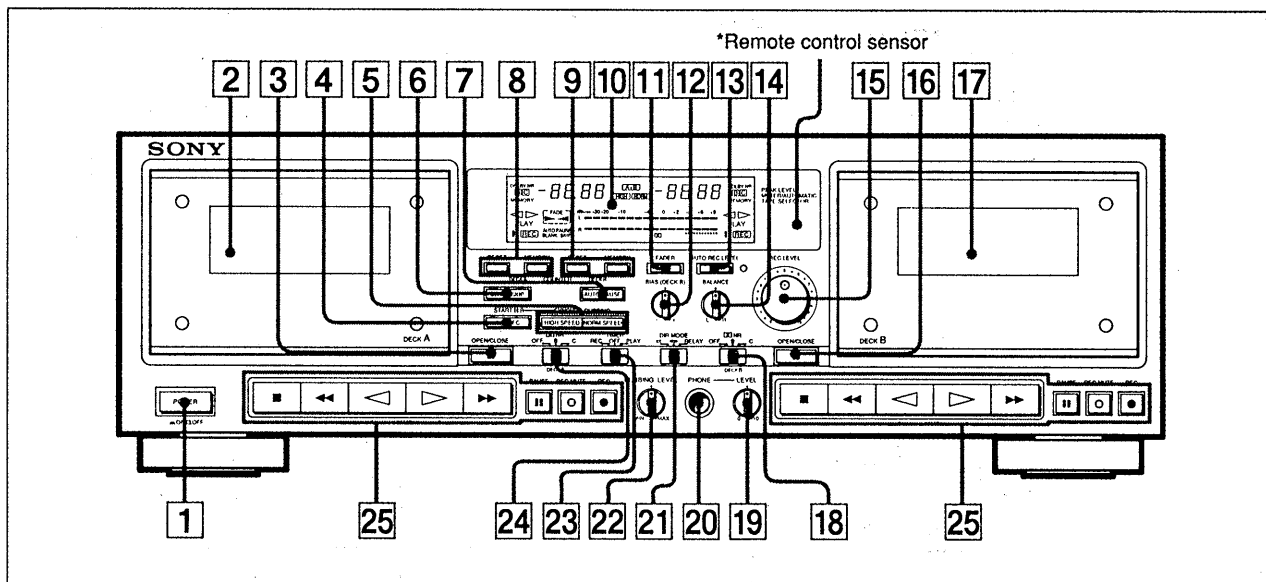
ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

This section is extracted from instruction manual.

SECTION 1 GENERAL

Identification of Front Panel Parts



For details, refer to the page number indicated in ●

- | | |
|---|--|
| <p>1 POWER switch</p> <p>2 Deck A</p> <p>3 ▲ OPEN/CLOSE button (deck A)</p> <p>4 A+B REC (simultaneous recording) button 15</p> <p>5 SYNCHRO DUBBING buttons 18
HIGH SPEED button
NORM (normal) SPEED button</p> <p>6 BLANK SKIP button 9</p> <p>7 AUTO PAUSE button 19</p> <p>8 COUNTER buttons (deck A) 11
RESET button
MEMORY button</p> <p>9 COUNTER buttons (deck B) 11
RESET button
MEMORY button</p> <p>10 Display panel</p> <p>11 FADER button 17</p> <p>12 BIAS control (deck B) 13</p> <p>13 AUTO REC (automatic recording) LEVEL button and indicator 12 13</p> <p>14 BALANCE control 12</p> <p>15 REC (recording) LEVEL control 12 13</p> <p>16 ▲ OPEN/CLOSE button (deck B)</p> <p>17 Deck B</p> | <p>18 □ NR (Dolby noise reduction) switch (deck B) 7 8 12 15 16 18</p> <p>19 Headphones LEVEL control 7</p> <p>20 PHONES (headphones) jack (stereo phone jack) 7</p> <p>21 DIR (direction) MODE switch 7 8 12 15 16 18</p> <p>22 DUBBING LEVEL control 13</p> <p>23 TIMER switch 7 20</p> <p>24 □ NR (Dolby noise reduction) switch (deck A) 7 8 12 15 16 18</p> <p>25 Tape operation buttons
■ (stop) button
◀◀ (leftward fast winding) (AMS**) button
◀ (reverse play) button
▶ (forward play) button
▶▶ (rightward fast winding) (AMS**) button
 PAUSE button
○ REC MUTE (record muting) button 16
● REC (recording) button</p> |
|---|--|

* Remote control sensor

You can remotely control this cassette deck with:

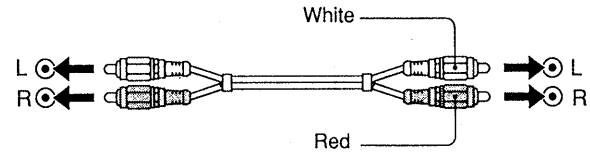
- A remote commander that came with a Sony amplifier or receiver if it has the mark and cassette deck control capability.
- Any optional Sony remote commander with the mark and cassette deck control capability.

**AMS is an abbreviation for Automatic Music Sensor.

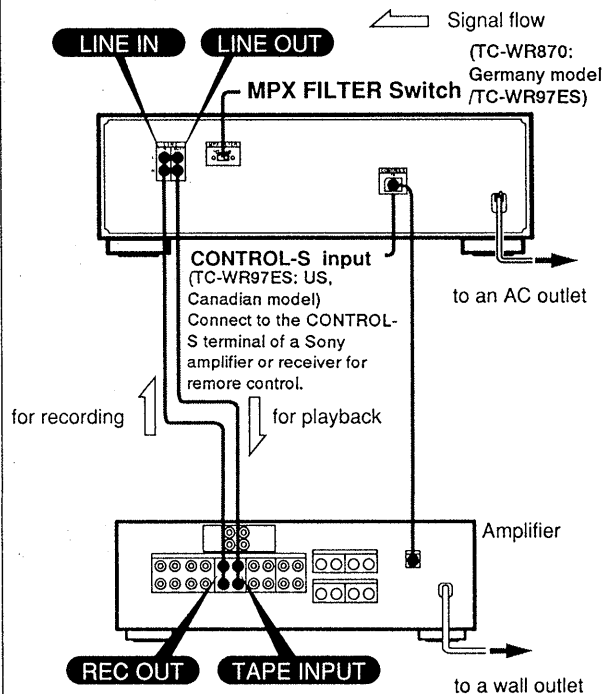
Connections

Notes on Connections

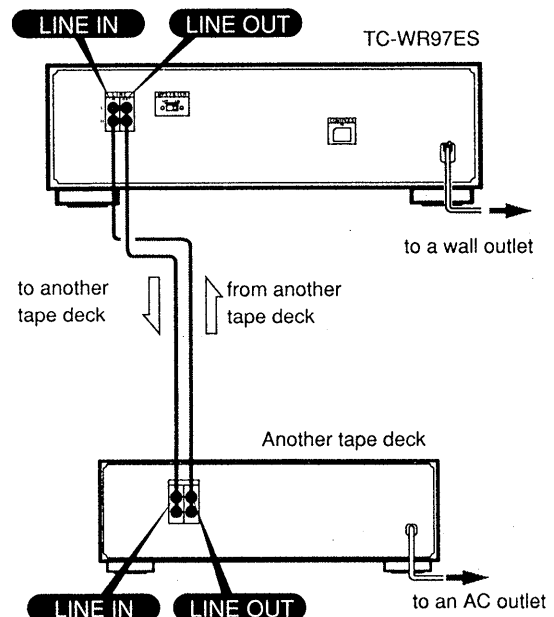
- Turn off the power to all equipment to be connected before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pickup.



Basic Connection



Connection for Tape Dubbing



Note on the CONTROL-S input

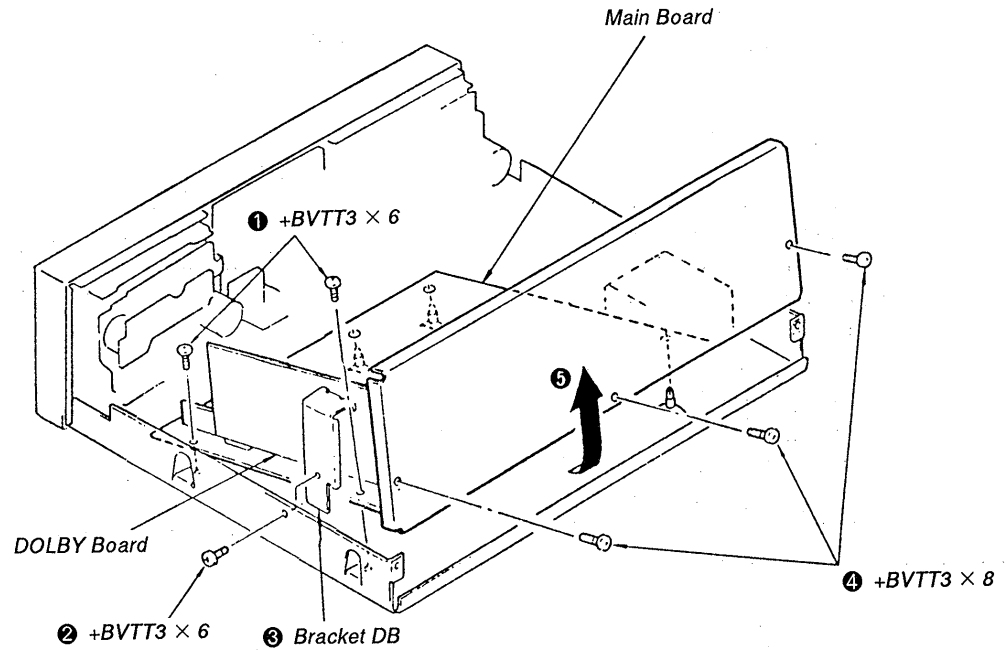
To remote control this unit through a receiver or amplifier, connect the input on this unit to the CONTROL-S output on a Sony receiver or amplifier, with a CONTROL-S cable. When this connection is used, only remote commands sent through the receiver or amplifier will be executed. The remote sensor on this unit will not function.

SECTION 2 DISASSEMBLY

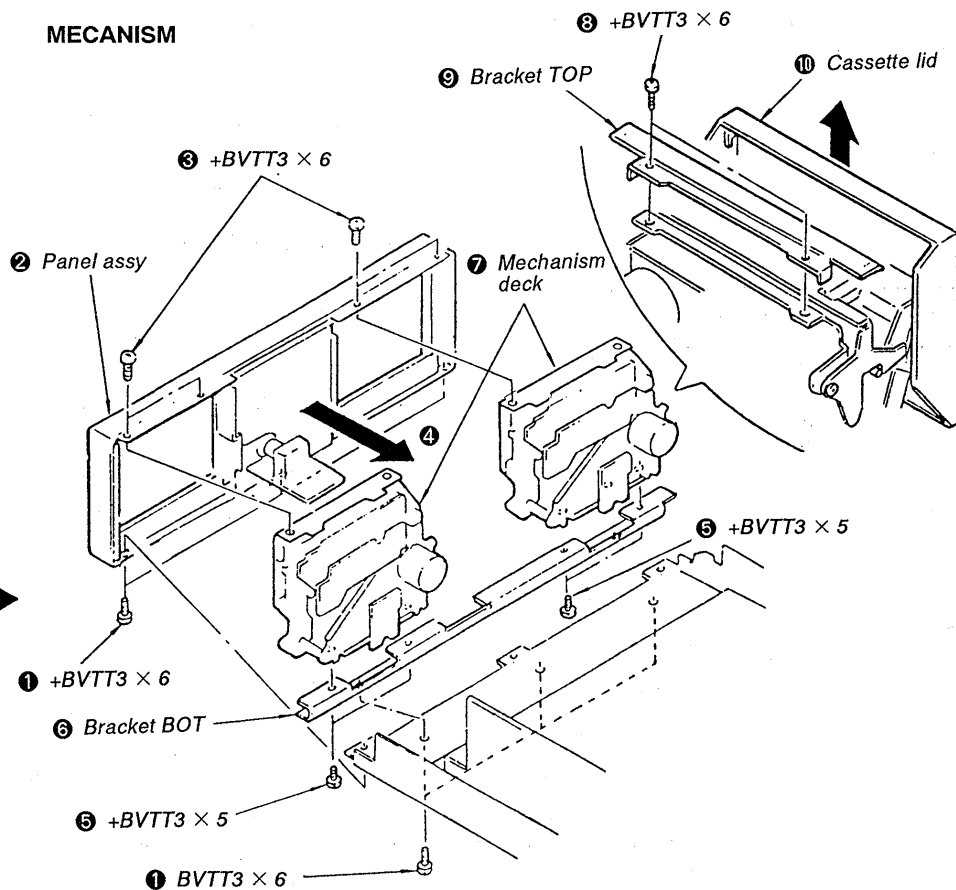
Note: Follow the disassembly procedure in the numerical order given.

Unscrew four screws (M3 × 8)
and remove the upper case.

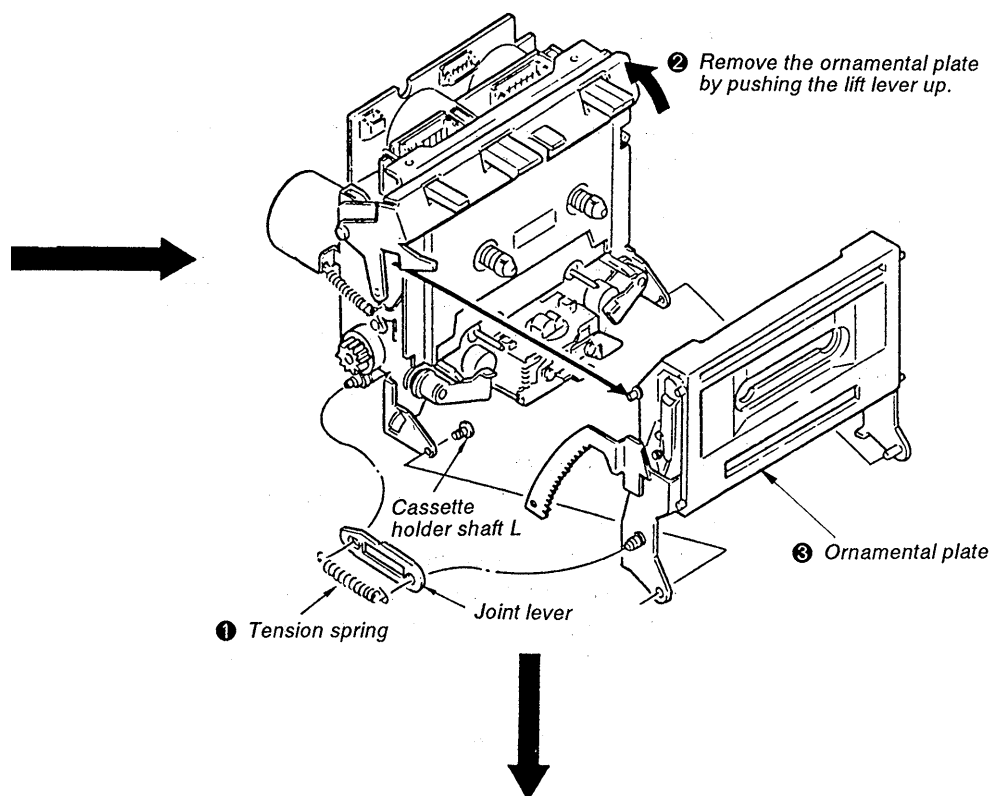
DOLBY BOARD, MAIN BOARD



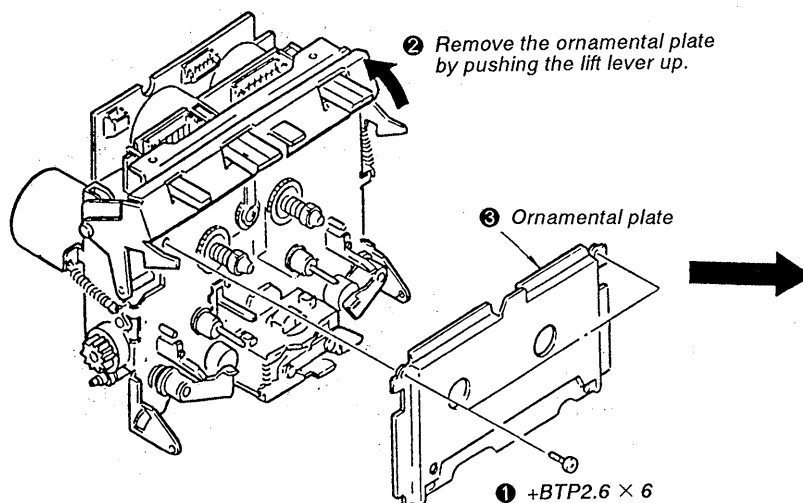
MECANISM



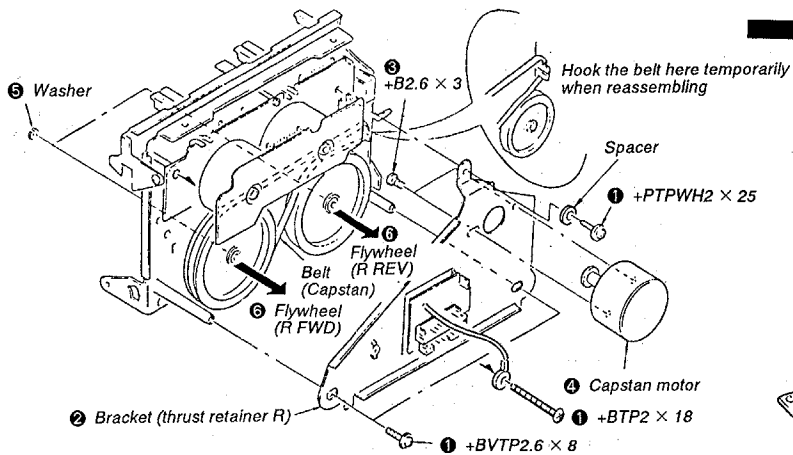
CASSETTE HOLDER



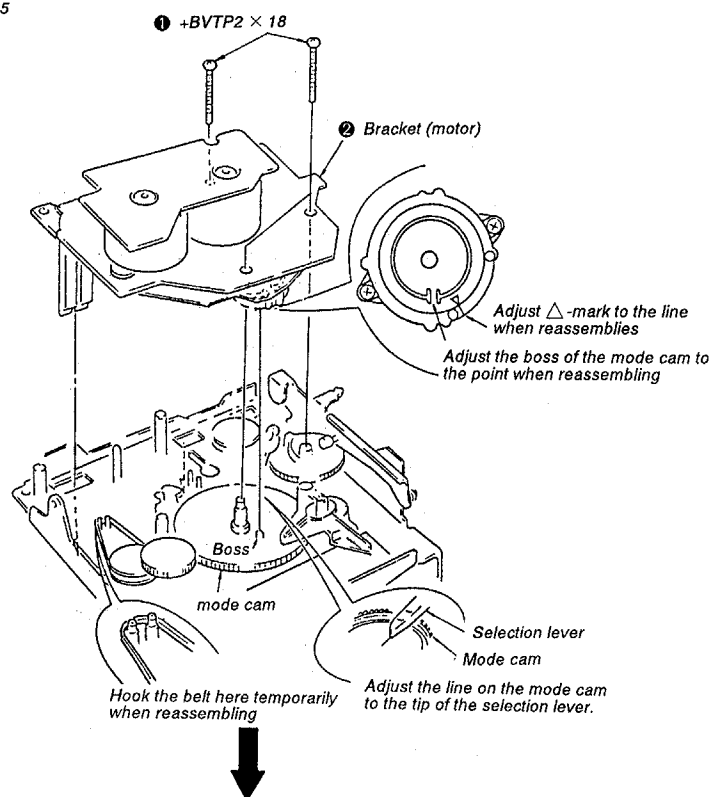
ORNAMENTAL PLATE



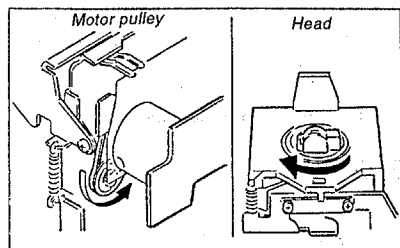
CAPSTAN PLATE, FLYWHEEL



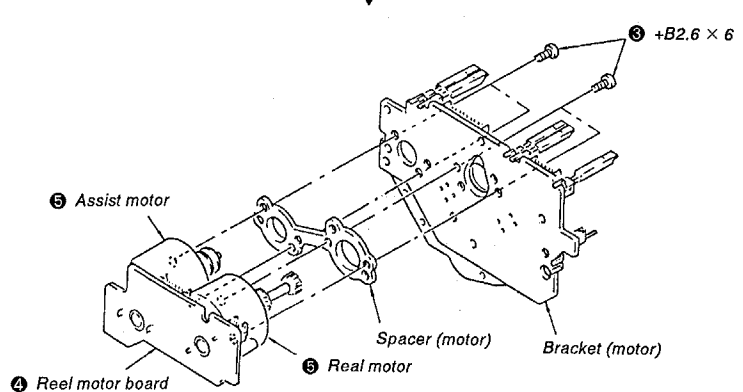
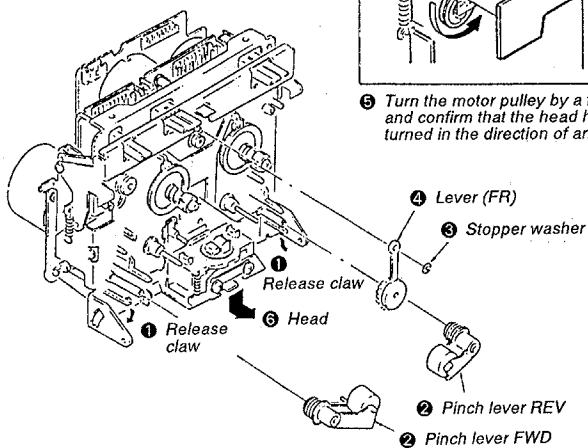
REEL AND ASSIST MOTORS



PINCH LEVER, HEAD



5 Turn the motor pulley by a finger and confirm that the head has turned in the direction of arrow.



SECTION 3

ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

- Clean the following parts with a denatured-alcohol-moistened swab :

record/playback head	pinch roller
erase head	rubber belts
capstan	idler
- Demagnetize the record/playback head with a head demagnetizer.
- Do not use a magnetized screwdriver for the adjustments.
- After the adjustments, apply suitable locking compound to the parts adjusted.
- The adjustments should be performed in the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Torque meter	Meter reading
FWD	CQ-102C	30-60g·cm (0.42-0.83oz·inch)
FWD Back tension	CQ-102C	1-5g·cm (0.014-0.063oz·inch)
REV	CQ-102RC	30-60g·cm (0.42-0.83oz·inch)
REV Back tension	CQ-102RC	1-5g·cm (0.014-0.063oz·inch)
FF, REW	CQ-201B	65-90 g·cm (0.90-1.25 oz·inch)

3-2. ELECTRICAL ADJUSTMENT

Note: The adjustment should be performed in the order given in the service manual. As a rule, adjustments about playback should be performed before those about recording. The adjustments should be performed for both L-CH and R-CH.

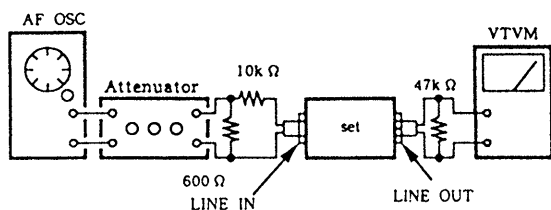
- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch	: OFF
DIRECTION switch	: →
TIMER switch	: OFF
MPX FILTER switch (TC-WR97ES)	: OFF

- Standard Record :

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

—Record Mode—



0 dB = 775mV

Standard Input Level

input terminal	LINE IN
source impedance	10k Ω
input level	0.25V (−10dB)

Standard Output Level

output terminal	LINE OUT
load impedance	47k Ω
output level	0.32 V (−7.7 dB)

Test tape

Type	Signal	Used for
P-4-A100	10kHz, −10dB	Azimuth Adjustment
P-4-L300	315Hz, 0dB	PB Level Adjustment
WS-48B	3kHz, 0dB	Tape Speed Adjustment

The set will get into TEST MODE by shorting the pins of TP801 (TEST) on Main board before turning the power on, and TEST MODE functions as follows :

- High speed playback
Pressing HIGH SPEED (DUBBING) button while playback changes to high speed playback and another press of the button returns the set to normal speed playback.
- Record memory stop
When starting recording, tape counter is reset to zero and counter memory turned on.

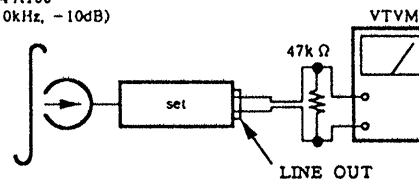
Record/Playback Head Azimuth Adjustment

DECK A DECK B

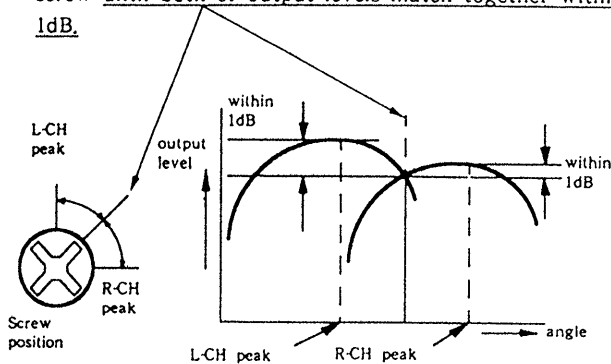
Procedure :

- Mode : FWD playback

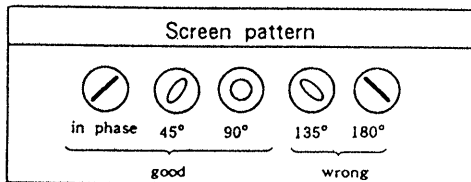
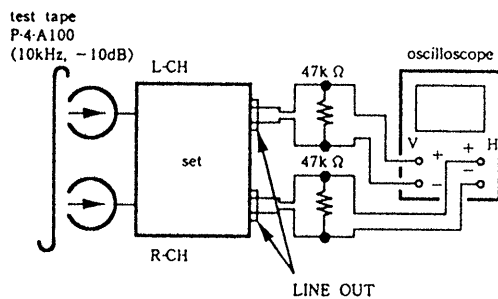
Test tape
P-4-A100
(10kHz, −10dB)



- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1dB.

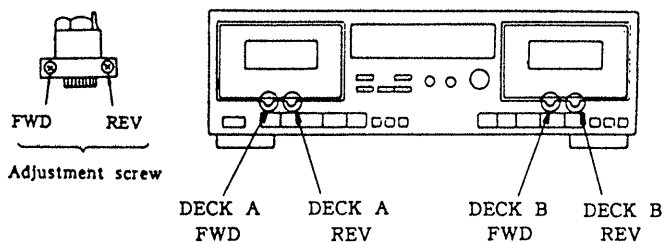


- Phase Check
Mode : playback



- Set in the REV mode and repeat the step 1-3.
- After the adjustment, lock the screws with locking compound.

Adjustment Location : Record/Playback head

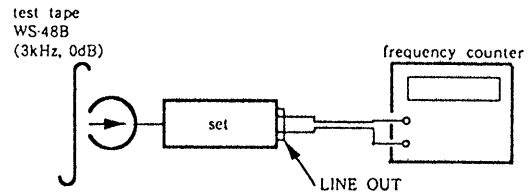


Tape Speed Adjustment DECK A DECK B

Procedure :

Mode : playback

Perform high speed adjustment before normal speed adjustment



(high speed adjustment)

- Short test pin TP801 (TEST) on Main board.
- Set to FWD playback mode.
- Press the HIGH SPEED DUBBING switch.
- Adjust RV871 (DECK A) and RV881 (DECK B) on Main board so that the frequency counter reading becomes $6,000 \pm 30\text{Hz}$.
- After adjustment, disconnect TP801 shorted in step 1.

(normal speed adjustment)

- Set to FWD playback mode.
- Adjust RV872 (DECK A) and RV882 (DECK B) on Main board so that the frequency counter reading becomes $3,000 \pm 15\text{Hz}$.

Frequency difference between the beginning and the end of the tape should be within 5%.

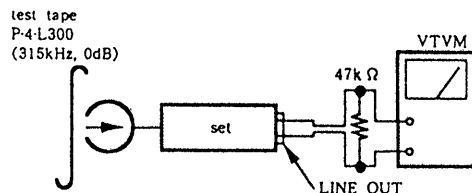
Frequency difference between deck A and deck B should be within 20 Hz (high speed) or 10 Hz (normal speed).

Adjustment Location: Main board

Playback Level Adjustment DECK A DECK B

Procedure :

Mode : playback



Adjust RV131 (L-ch) and RV231 (R-ch) for DECK A and RV151 (L-ch) and RV251 (R-ch) for DECK B so that the reading on VTVM meets the adjustment limits below.

Adjustment Limits :

LINE OUT level: $-7.7 \pm 0.5\text{dB}$ ($0.30 - 0.34\text{ V}$)

Level difference between channels: less than 0.5dB

Check that the LINE OUT level does not change even if Playback and Stop operation is repeated several times.

Adjustment Location : MAIN board

Bias Current Adjustment

Procedure :

1. Set RV121 and RV221 (DECK A), RV141 and RV241 (DECK B) to mechanical center and turn the set recording mode.
2. Connect digital voltmeter as shown by the following table.
3. Adjust the following transformers for the minimum readings on the digital voltmeter.

DECK	Mesurement Point	Adjustment	Value
A	L ① and ②, TP521	T121	less than 80 mV
	R ② and ③, TP521	T221	
B	L ① and ②, TP541	T141	
	R ② and ③, TP541	T241	

Adjustment Location : MAIN board

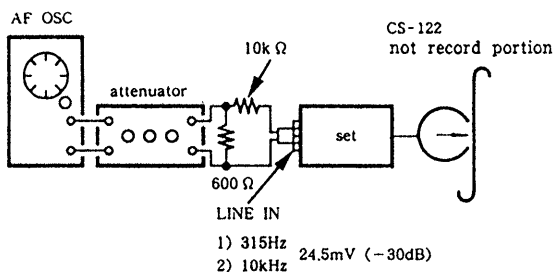
Record Bias Adjustment DECK A DECK B

Setting :

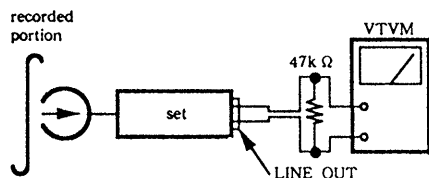
REC LEVEL control : standard Record (See page 8.)
test pin TP801 : short

Procedure :

1. Mode : record



2. Mode : playback



Playback the signal recorded in step 1.

Confirm that the 10kHz playback output is $0 \pm 0.5\text{dB}$ relative to the 315Hz output. If necessary, adjust RV121 (L-ch) and RV221 (R-ch) for DECK A and RV141 (L-ch) and RV241 (R-ch) for DECK B, and repeat the steps given above.

Adjustment Location : MAIN board

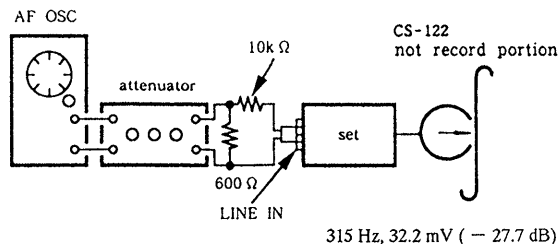
Record Level Adjustment DECK A DECK B

Setting :

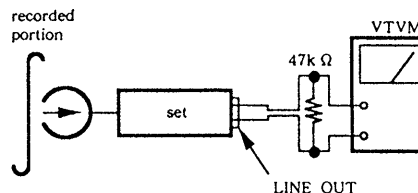
REC LEVEL control : Standard Record (See page 8.)
test pin TP801 : short

Procedure :

1. Mode : record



2. Mode : playback



3. Playback the signal recorded in step1.

Confirm that the signal level is within the adjustment limits below.
If necessary, adjust RV301 (L-ch) and RV401 (R-ch) for DECK A and RV351 (L-ch) and RV451 (R-ch) for DECK B, and repeat the step1-2.

Adjustment Limits: $-27.7\text{ dB} \pm 0.5\text{ dB}$ ($30.4 - 34.2\text{ mV}$)

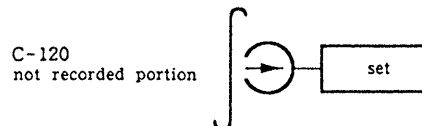
Adjustment Location: Main board (component side)

Quick Reverse Sensitivity Adjustment DECK A DECK B

Conditions :

DIRECTION MODE switch : $\rightleftarrows$

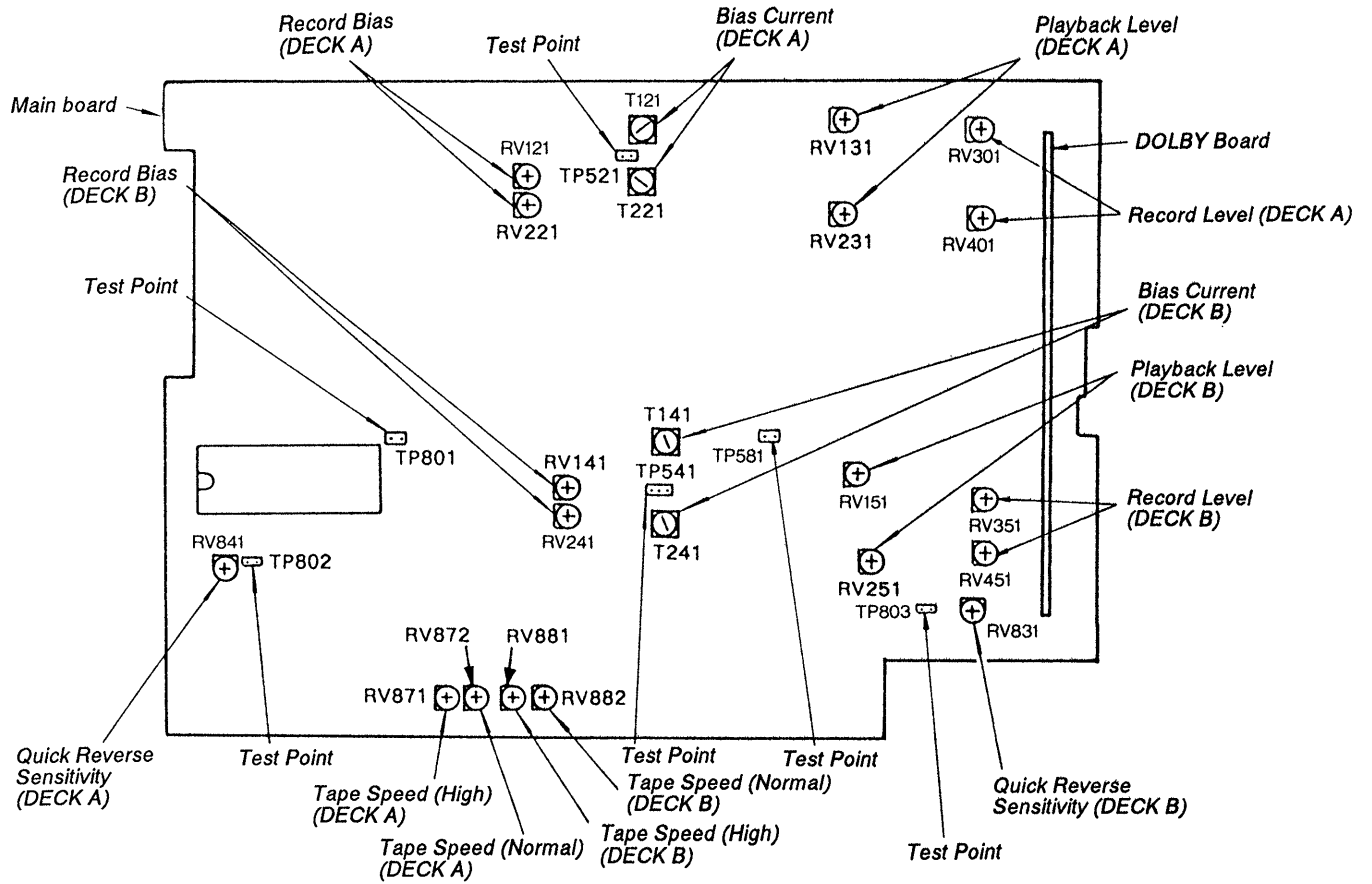
Adjustment procedure :



1. Connect the digital voltmeter to test point TP802 (DECK A) / TP803 (DECK B).
2. Load C-120 tape cassette and playback the leading portion in FWD mode.
3. Adjust the RV841 (DECK A), RV831 (DECK B) for $4.5 \pm 0.5\text{V}$ reading on the digital voltmeter.
4. Playback C-120 tape cassette in FWD mode again.
5. Confirm that the reading on the digital voltmeter is "L" level at the magnetic portion of the tape.
6. Confirm that the tape stop around the tape end (border of the leading and the magnetic portions).

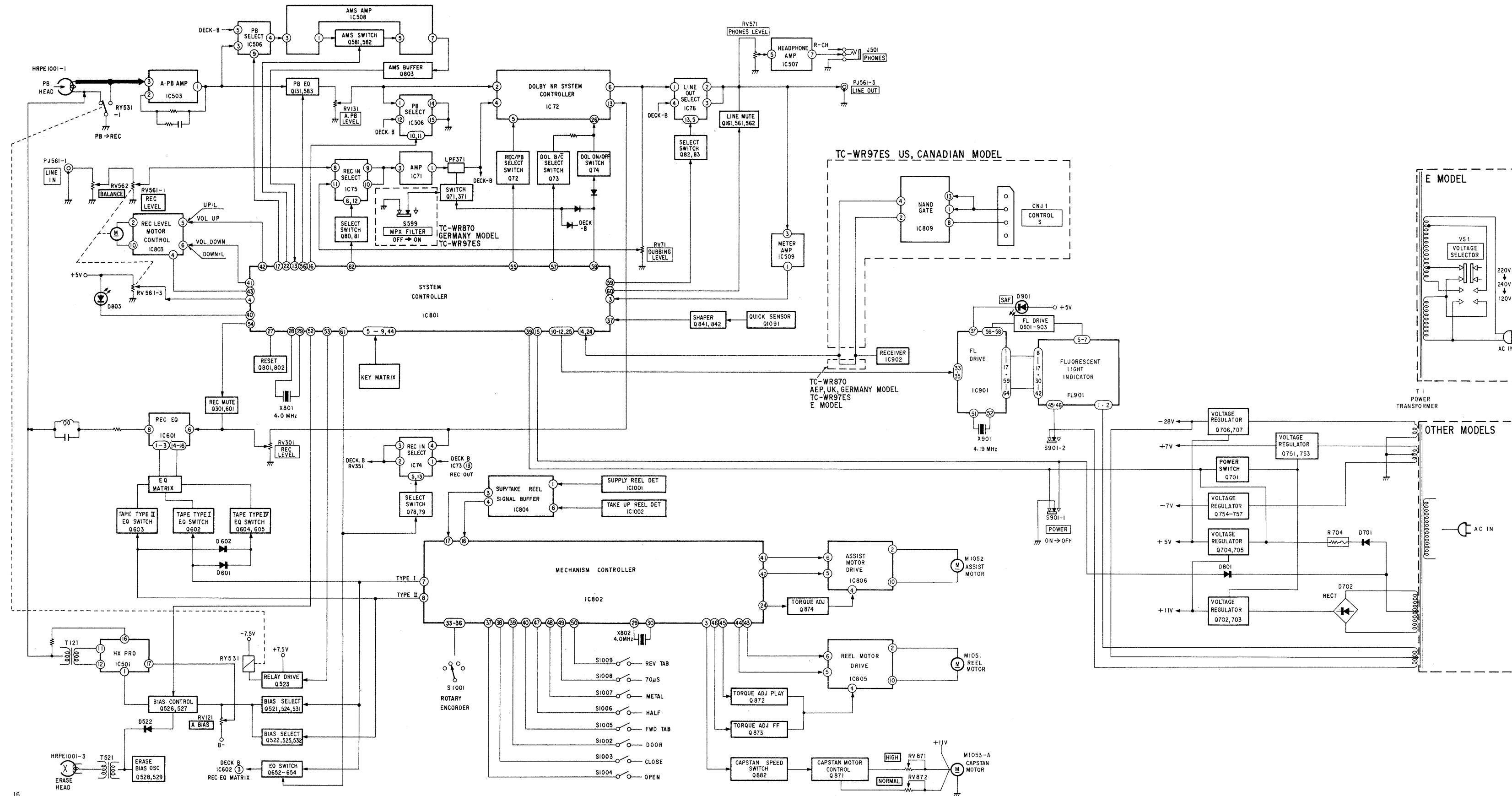
Adjustment Location : MAIN board

Adjustment Parts Location Diagram

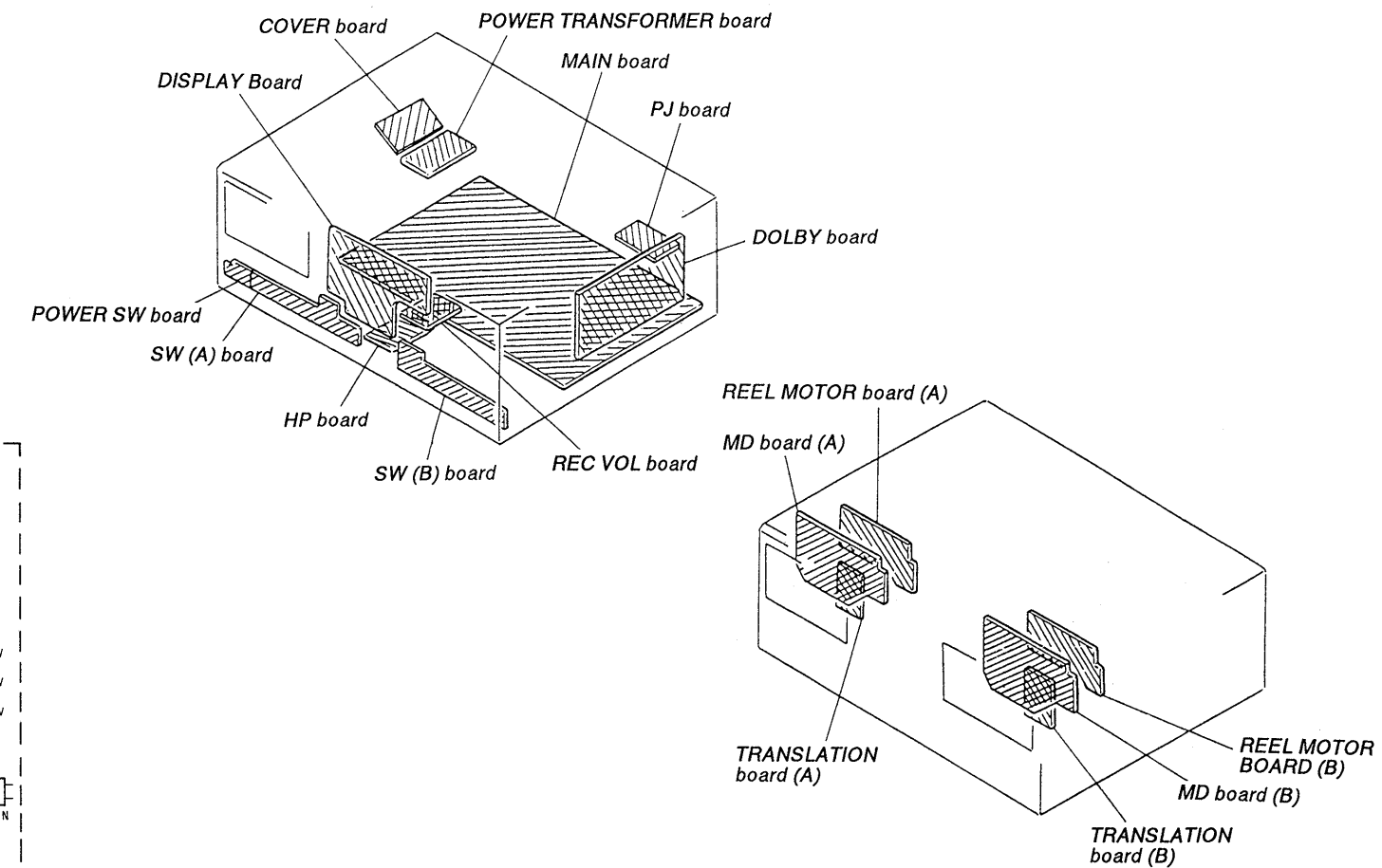


SECTION 4 DIAGRAMS

4-1. BLOCK DIAGRAM

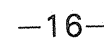


• Circuit Boards Location



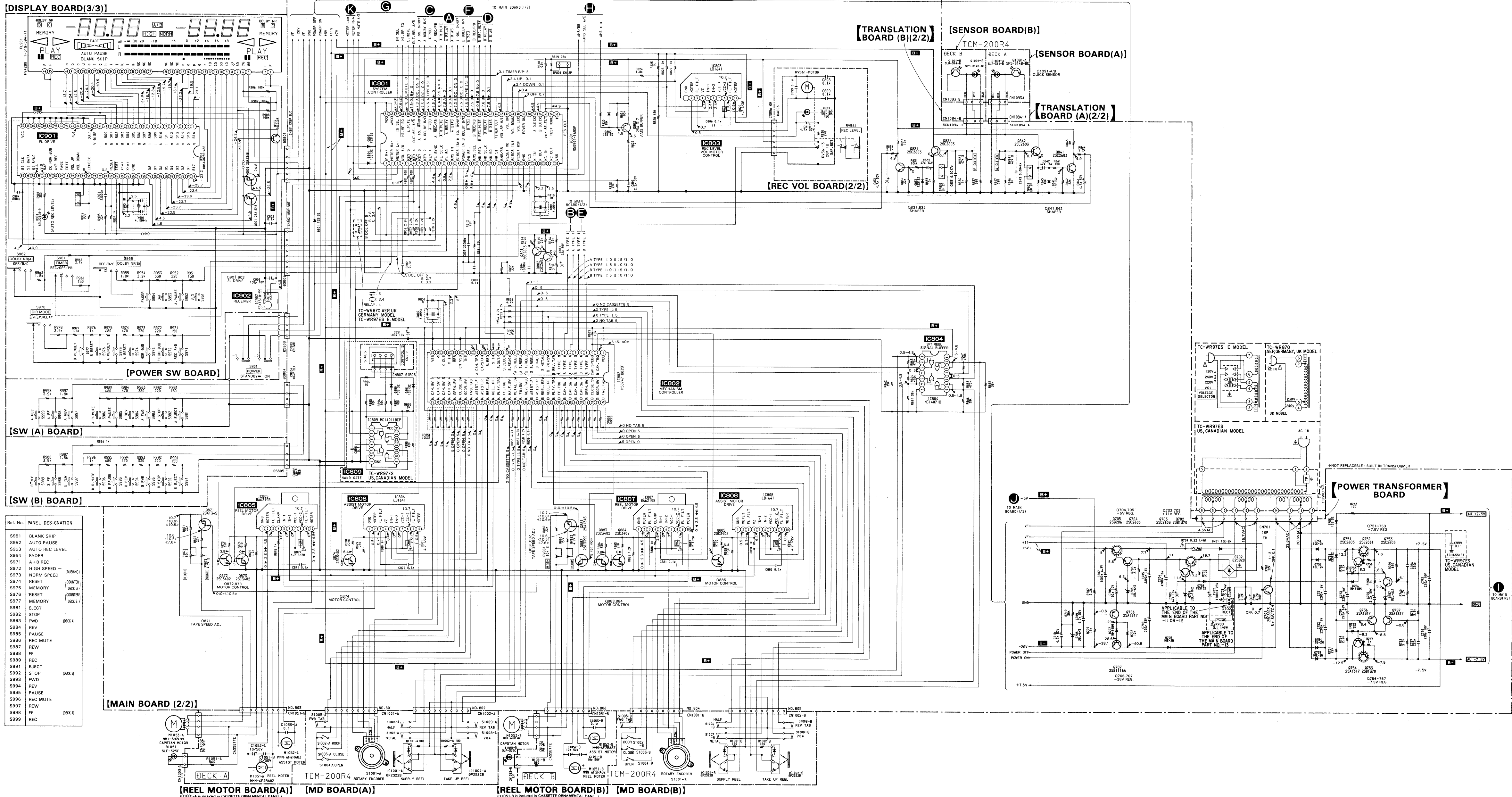
- 19 -

-20-

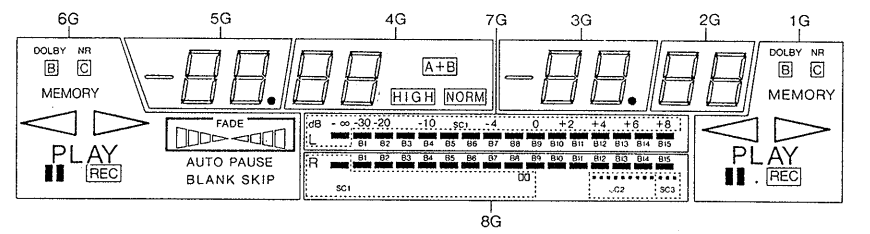




1000



FL 901 Internal Connection

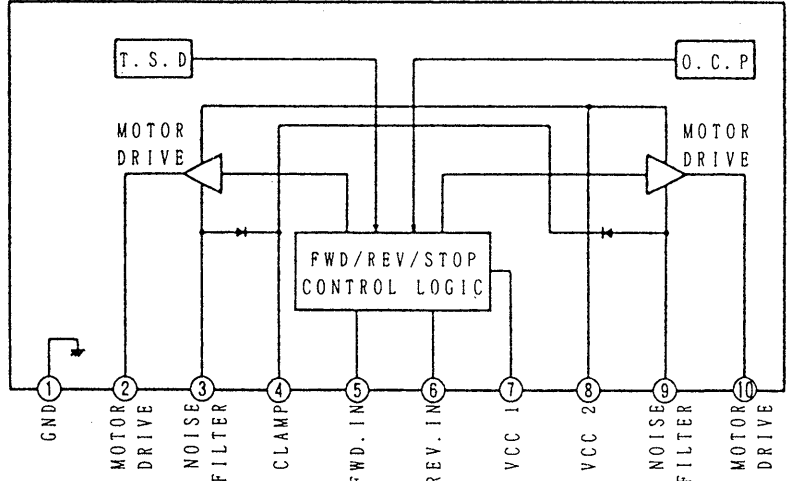


ANODE CONNECTION

	6G	7G	6G	5G	4G	3G	2G	1G	
a	SC1	SC1	DOLBY NR	a	a	a	a	DOLBY NR	
b	(B1)	(B1)	(B1)	b	b	b	b	(B1)	
c	(B4)	(B4)	PLAY	c	c	c	c	PLAY	
d	(B5)	(B5)	(B5)	d	d	d	d	(B5)	
e	(B2)	(B2)	(B2)	e	e	e	e	(B2)	
f	(B3)	(B3)	MEMORY	f	f	f	f	MEMORY	
g	(B7)	(B7)	II	g	g	g	g	II	
h	(B8)	(B8)	III	h	h	h	h	III	
i	(B9)	(B9)	IV	i	i	i	i	IV	
j	(B12)	(B12)	V	j	j	j	j	V	
k	(B14)	(B14)	BLANK SKIP	k	k	k	k	BLANK SKIP	
l	(B13)	(B13)	AUTOPAUSE	l	l	l	l	AUTOPAUSE	
m	(B10)	(B10)	(B10)	m	m	m	m	(B10)	
n	(B11)	(B11)	(B11)	n	n	n	n	(B11)	
o	(B15)	(B15)	(B15)	o	o	o	o	(B15)	
p	SC3	SC3	(A+B)	p	p	p	p	(A+B)	
q	SC2	SC2	(A+B)	q	q	q	q	(A+B)	

IC Block Diagram

IC805, 807 BA6219B
IC803, 806, 808 LB1641



SECTION 5

EXPLODED VIEWS

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.

- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) ... (RED)

↑ ↑
Parts Color Cabinet's Color

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

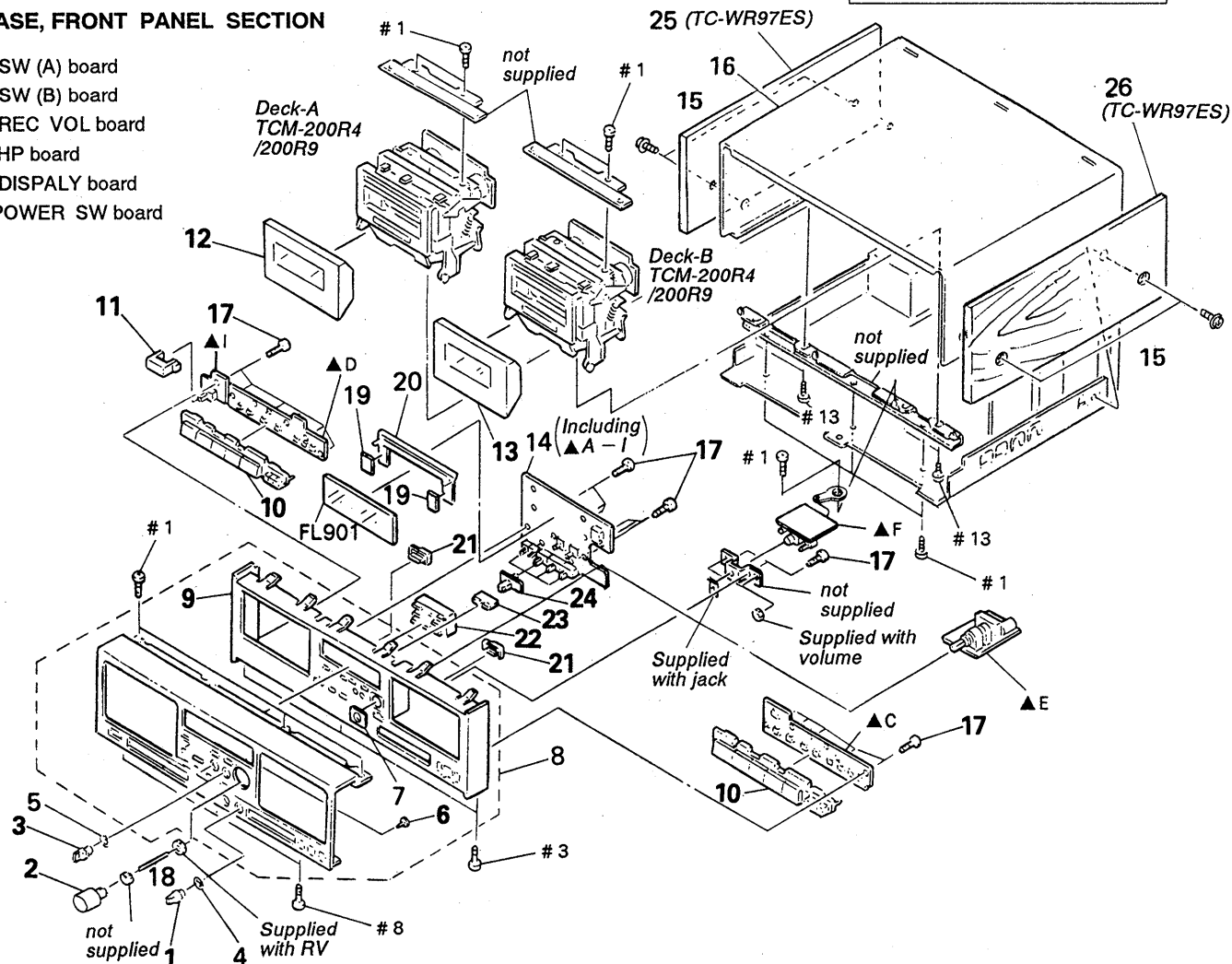
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(1) CASE, FRONT PANEL SECTION

- ▲D: SW (A) board
- ▲C: SW (B) board
- ▲E: REC VOL board
- ▲F: HP board
- ▲B: DISPLAY board
- ▲I: POWER SW board



Ref. No.	Part No.	Description	Remark
1	3-354-931-01	KNOB (DIA. 10)	
2	3-329-983-01	KNOB (REC)	
3	3-354-931-11	KNOB (DIA. 10)	
4	3-356-935-01	SPRING	
5	3-354-981-01	SPRING (SUS). RING	
6	3-354-924-01	PLATE, INDICATION	
7	3-354-923-01	PLATE (VOL). ORNAMENTAL	
8	A-2003-900-A	PANEL ASSY. FRONT (WR97ES)	
8	A-2003-726-A	PANEL ASSY. FRONT (WR870)	
8	A-2003-719-A	PANEL ASSY. FRONT (WR97ES:US, Canadian)	
9	3-354-916-01	PANEL (BASE)	
10	3-365-419-01	BUTTON (A)	
11	3-354-932-01	BUTTON (POWER)	
12	X-3362-816-1	LID (A) ASSY. CASSETTE	
13	X-3362-817-1	LID (B) ASSY. CASSETTE	
14	* A-2006-395-A	PANEL BOARD, COMPLETE (WR870:UK)	
14	* A-2006-534-A	PANEL BOARD, COMPLETE (WR97ES:US, Canadian)	
14	* A-2006-546-A	PANEL BOARD, COMPLETE (WR870:Germany/WR97ES:E)	
14	* A-2006-615-A	PANEL BOARD, COMPLETE (WR870: AEP)	

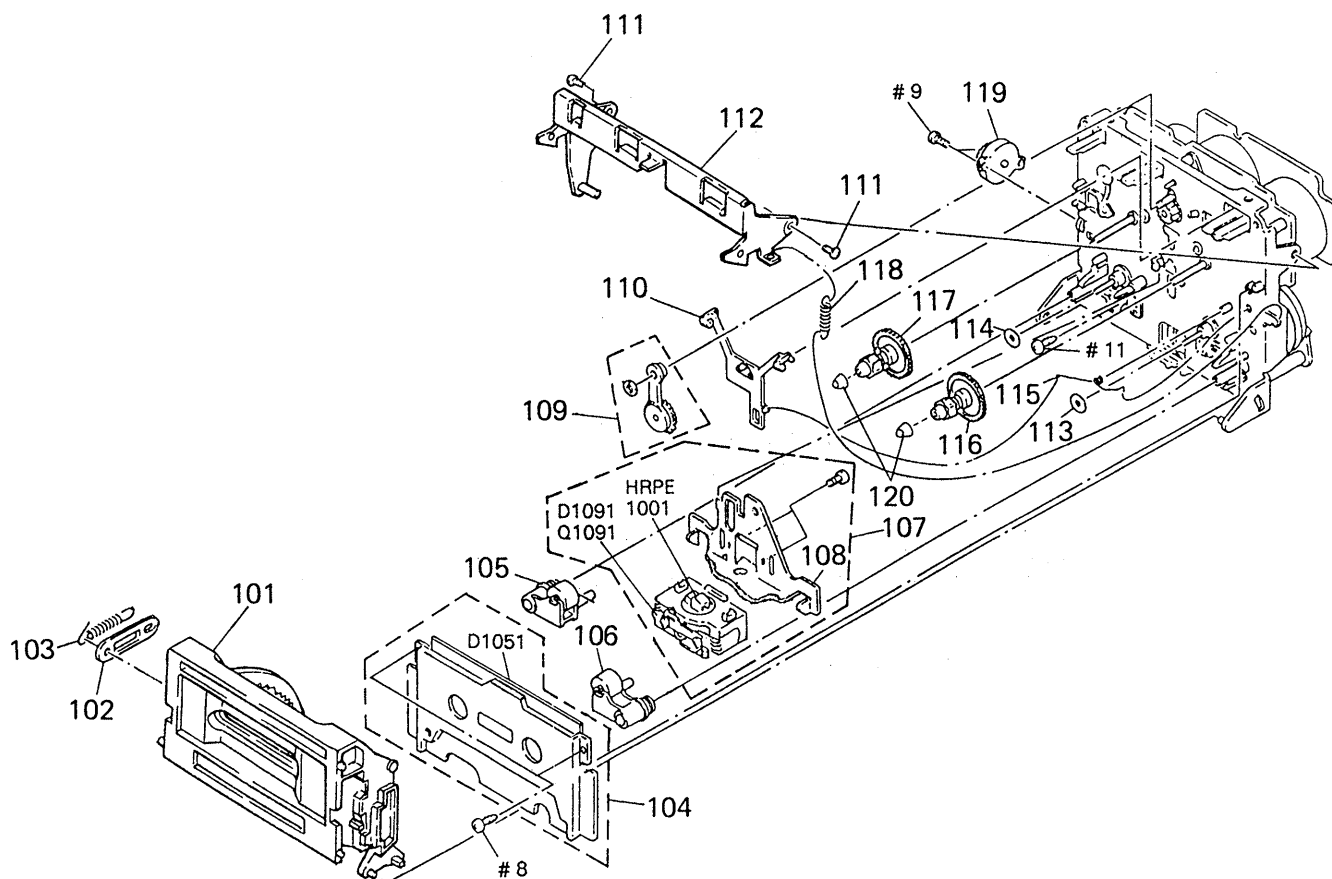
Ref. No.	Part No.	Description	Remark
15	4-933-446-01	SCREW (SIDE PANEL)	
16	4-925-039-61	CASE	
17	4-928-635-01	SCREW, +BV (2.6X8) TAPPING	
18	4-922-979-01	INDICATOR	
19	9-911-844-XX	CUSHION	
20	3-365-420-01	HOLDER, FL TUBE	
21	3-354-930-01	BUTTON (D)	
22	3-354-938-21	BUTTON (B)	
23	3-354-929-01	BUTTON (C)	
24	4-922-518-01	KNOB (TIMER)	
25	X-3340-187-1	PANEL (L) ASSY. SIDE	
26	X-3340-188-1	PANEL (R) ASSY. SIDE	
FL901	1-519-594-11	INDICATOR TUBE, FLUORESCENT	

(3) MECHANISM DECK SECTION 1

TCM-200R4: TC-WR97ES; US, Canadian

TCM-200R9: (TC-WR97ES; E

TC-WR870; AE, UK Germany)



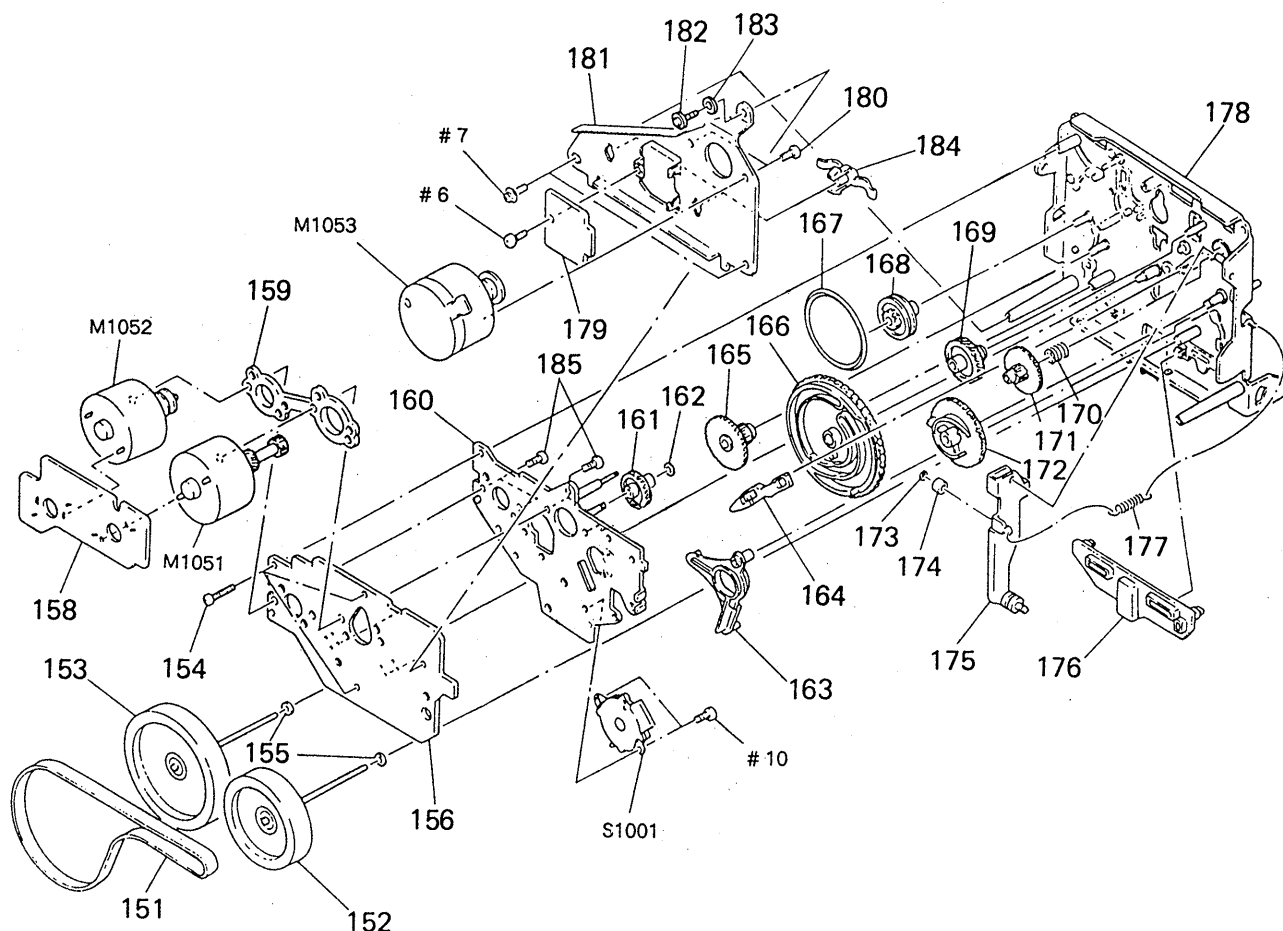
Ref. No.	Part No.	Description	Remark
101	X-3362-814-4	HOLDER (CD) ASSY, CASSETTE	
102	* 3-356-717-01	LEVER (JOINT)	
103	3-356-626-01	SPRING, TENSION	
104	X-3356-613-1	PLATE ASSY, ORNAMENTAL	
105	X-3343-456-1	LEVER (PINCH R) ASSY	
106	X-3343-455-1	LEVER (PINCH F) ASSY	
107	A-2003-722-A	SLIDER (R4) COMPLETE ASSY (TCM-200R4)	
107	A-2003-901-A	SLIDER (R9) COMPLETE ASSY (TCM-200R9)	
108	X-3362-819-2	SLIDER (HEAD CHASSIS R) ASSY	
109	X-3356-641-1	LEVER (FR2) ASSY	
110	3-356-614-01	SLIDER (BRAKE)	
111	3-356-601-11	SCREW, STEP	
112	* X-3356-608-1	LEVER (LIFTER) ASSY	

Ref. No.	Part No.	Description	Remark
113	3-356-713-01	WASHER	
114	3-356-714-01	WASHER	
115	3-356-619-01	SPRING (B), TORSION	
116	X-3356-627-1	GEAR (T) ASSY	
117	X-3356-628-1	GEAR (S) ASSY	
118	3-356-625-01	SPRING, TENSION	
119	3-319-224-31	DAMPER, SMALL	
120	3-362-308-01	CAP (REEL)	
D1051	8-719-980-85	DIODE SLF-325C	
D1091	8-719-950-74	DIODE SLR-314D-B	
Q1091	8-729-809-43	SPS-314B-BE	

(4) MECHANISM DECK SECTION 2

(TCM-200R4: TC-WR97ES; US, Canadian Model)

(TCM-200R9: TC-WR870, TC-WR97ES; E Model)



Ref. No.	Part No.	Description	Remark
151	3-356-604-01	BELT (CAPSTAN)	
152	X-3356-642-1	FLYWHEEL (R FWD) ASSY	
153	X-3356-643-1	FLYWHEEL (R REV) ASSY	
154	3-355-801-01	SCREW (BTP 2X18)	
155	3-356-705-01	WASHER (CAPSTAN)	
156	* 1-632-740-11	MD BOARD	
158	* 1-632-741-11	REEL MOTOR BOARD	
159	* 3-356-628-01	SPACER (MOTOR)	
160	* X-3356-602-4	BRACKET (MOTOR R) ASSY	
161	3-356-702-01	GEAR (COMMUNICATION B)	
162	3-669-465-00	WASHER (1.5), STOPPER	
163	3-356-613-01	LEVER (MODE)	
164	3-356-617-01	LEVER (SELECTION)	
165	3-356-606-01	GEAR (MODE)	
166	3-356-615-01	GEAR (MODE CAM RR)	
167	3-356-603-01	BELT (MODE)	
168	3-356-607-01	PULLEY (MODE)	
169	3-356-703-01	GEAR (COMMUNICATION C)	
170	3-356-605-01	SPRING, COMPRESSION	

Ref. No.	Part No.	Description	Remark
171	3-356-609-01	GEAR (LOADING)	
172	3-356-616-01	GEAR (LOADING CAM)	
173	3-558-708-11	WASHER, STOPPER	
174	3-356-630-01	ROLLER (LOADING)	
175	* X-3356-606-1	LEVER (LOADING) ASSY	
176	3-356-612-01	SLIDER (REVERSE)	
177	3-356-624-01	SPRING, TENSION	
178	X-3356-634-1	CHASSIS (R2) COMPLETE ASSY, MECH	
179	* 1-634-323-11	TRANSLATION BOARD	
180	4-885-599-00	SCREW, FITTING, REINFORCEMENT	
181	* 3-356-629-01	BRACKET (THRUST RETAINER R)	
182	3-356-707-01	SCREW (+PTWH 2X25)	
183	* 3-356-718-01	SPACER (THRUST RETAINER R)	
184	3-575-321-00	RETAINER, THRUST, CAPSTAN	
185	3-363-804-01	SCREW (+P 2.6X6.5)	
M1051	X-3356-638-1	MOTOR (REEL R) ASSY	
M1052	X-3356-604-1	MOTOR (ASSIST) ASSY	
M1053	X-3356-605-1	MOTOR (CAPSTAN R) ASSY	
S1001	1-466-525-11	ENCODER, ROTARY	

SECTION 6

ELECTRICAL PARTS LIST

TRANSLATION

MD

MAIN

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
All resistors are in ohms.
METAL: Metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA...: μ PA...,
uPB...: μ PB..., uPC...: μ PC...,
uPD...: μ PD...
- CAPACITORS
uF: μ F
- COILS
uH: μ H

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When including parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
	* 1-634-323-11	TRANSLATION BOARD *****	
		< CONNECTOR >	
CN1091	* 1-564-709-11	PIN. CONNECTOR (SMALL TYPE) 7P	
CN1092	* 1-564-509-11	PLUG, CONNECTOR 6P	
CN1093	* 1-564-705-11	PIN. CONNECTOR (SMALL TYPE) 3P	
CN1094	* 1-564-506-11	PLUG, CONNECTOR 3P	

	* 1-632-740-11	MD BOARD *****	
	3-356-631-01	HOLDER (SENSOR)	
		< CONNECTOR >	
CN1001	1-506-615-11	PIN. CONNECTOR 9P	
CN1002	* 1-564-502-11	PIN. CONNECTOR 10P	
		< IC >	
IC1001	8-749-920-97	IC PHOTO REFLECTOR GP2S22B	
IC1002	8-749-920-97	IC PHOTO REFLECTOR GP2S22B	
		< RESISTOR >	
R1001	1-249-408-11	CARBON 180 5% 1/4W	
R1002	1-249-408-11	CARBON 180 5% 1/4W	
		< SWITCH >	
S1002	1-570-953-11	SWITCH, PUSH (1 KEY)	
S1003	1-571-958-11	SWITCH, PUSH (1 KEY)	
S1004	1-572-126-11	SWITCH, PUSH (1 KEY)	
S1005	1-572-125-11	SWITCH, LEAF	
S1006	1-572-202-11	SWITCH, LEAF	

Ref.No.	Part No.	Description	Remark
S1007	1-572-125-11	SWITCH, LEAF	
S1008	1-572-125-11	SWITCH, LEAF	
S1009	1-572-125-11	SWITCH, LEAF	
		< CONNECTOR >	
TB1001	* 1-569-066-11	PIN. CONNECTOR 5P	

	* A-2006-390-A	MAIN BOARD, COMPLETE ***** (WR97ES: US, Canadian)	
	* A-2006-394-A	MAIN BOARD, COMPLETE ***** (WR870: UK)	
	* A-2006-535-A	MAIN BOARD, COMPLETE ***** (WR870: Germany/WR97ES: E)	
	* A-2006-616-A	MAIN BOARD, COMPLETE ***** (WR870: AEP)	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
	7-682-548-04	SCREW +BVTT 3X8 (S)	
		< CAPACITOR >	
C121	1-136-153-00	FILM 0.01uF 5% 50V	
C122	1-136-157-00	FILM 0.022uF 5% 50V	
C123	1-136-161-00	FILM 0.047uF 5% 50V	
C124	1-136-272-00	FILM 68PF 5% 630V	
C125	1-136-433-11	FILM 100PF 5% 630V	
C126	1-130-468-00	MYLAR 560PF 5% 50V	
C131	1-136-935-11	FILM 22PF 5% 50V	
C132	1-162-285-31	CERAMIC 180PF 10% 50V	
C133	1-130-469-00	MYLAR 680PF 5% 50V	
C134	1-136-157-00	FILM 0.022uF 5% 50V	
C135	1-124-657-00	ELECT 10uF 20% 50V	
C136	1-136-158-00	FILM 0.027uF 5% 50V	
C141	1-136-153-00	FILM 0.01uF 5% 50V	
C142	1-136-157-00	FILM 0.022uF 5% 50V	
C143	1-136-161-00	FILM 0.047uF 5% 50V	

MAIN

Ref. No.	Part No.	Description	Remark
C144	1-136-272-00	FILM 68PF 5% 630V	
C145	1-136-433-11	FILM 100PF 5% 630V	
C146	1-130-468-00	MYLAR 560PF 5% 50V	
C151	1-136-935-11	FILM 22PF 5% 630V	
C152	1-162-285-31	CERAMIC 180PF 10% 50V	
C153	1-130-469-00	MYLAR 680PF 5% 50V	
C154	1-136-157-00	FILM 0.022uF 5% 50V	
C155	1-124-657-00	ELECT 10uF 20% 50V	
C156	1-136-158-00	FILM 0.027uF 5% 50V	
C191	1-123-382-00	ELECT 3.3uF 20% 100V	
C221	1-136-153-00	FILM 0.01uF 5% 50V	
C222	1-136-157-00	FILM 0.022uF 5% 50V	
C223	1-136-161-00	FILM 0.047uF 5% 50V	
C224	1-136-272-00	FILM 68PF 5% 630V	
C225	1-136-433-11	FILM 100PF 5% 630V	
C226	1-130-468-00	MYLAR 560PF 5% 50V	
C231	1-136-935-11	FILM 22PF 5% 630V	
C232	1-162-285-31	CERAMIC 180PF 10% 50V	
C233	1-130-469-00	MYLAR 680PF 5% 50V	
C234	1-136-157-00	FILM 0.022uF 5% 50V	
C235	1-124-657-00	ELECT 10uF 20% 50V	
C236	1-136-158-00	FILM 0.027uF 5% 50V	
C241	1-136-153-00	FILM 0.01uF 5% 50V	
C242	1-136-157-00	FILM 0.022uF 5% 50V	
C243	1-136-161-00	FILM 0.047uF 5% 50V	
C244	1-136-272-00	FILM 68PF 5% 630V	
C245	1-136-433-11	FILM 100PF 5% 630V	
C246	1-130-468-00	MYLAR 560PF 5% 50V	
C251	1-136-935-11	FILM 22PF 5% 630V	
C252	1-162-285-31	CERAMIC 180PF 10% 50V	
C253	1-130-469-00	MYLAR 680PF 5% 50V	
C254	1-136-157-00	FILM 0.022uF 5% 50V	
C255	1-124-657-00	ELECT 10uF 20% 50V	
C256	1-136-158-00	FILM 0.027uF 5% 50V	
C291	1-123-382-00	ELECT 3.3uF 20% 100V	
C301	1-124-902-00	ELECT 0.47uF 20% 50V	
C303	1-124-927-11	ELECT 4.7uF 20% 100V	
C304	1-124-927-11	ELECT 4.7uF 20% 100V	
C351	1-124-902-00	ELECT 0.47uF 20% 50V	
C353	1-124-927-11	ELECT 4.7uF 20% 100V	
C354	1-124-927-11	ELECT 4.7uF 20% 100V	
C401	1-124-902-00	ELECT 0.47uF 20% 50V	
C403	1-124-927-11	ELECT 4.7uF 20% 100V	
C404	1-124-927-11	ELECT 4.7uF 20% 100V	
C451	1-124-902-00	ELECT 0.47uF 20% 50V	
C453	1-124-927-11	ELECT 4.7uF 20% 100V	
C454	1-124-927-11	ELECT 4.7uF 20% 100V	
C521	1-124-925-11	ELECT 2.2uF 20% 100V	
C522	1-124-902-00	ELECT 0.47uF 20% 50V	

Ref. No.	Part No.	Description	Remark
C523	1-136-230-00	FILM 0.0022uF 5% 100V	
C524	1-136-230-00	FILM 0.0022uF 5% 100V	
C525	1-130-856-00	FILM 0.0068uF 5% 100V	
C526	1-124-907-11	ELECT 10uF 20% 50V	
C527	1-136-558-11	FILM 0.0039uF 5% 630V	
C528	1-124-477-11	ELECT 47uF 20% 25V	
C529	1-124-477-11	ELECT 47uF 20% 25V	
C530	1-107-046-00	MICA 4.7PF 500V	
C535	1-126-176-11	ELECT 220uF 20% 10V	
C536	1-126-176-11	ELECT 220uF 20% 10V	
C541	1-124-925-11	ELECT 2.2uF 20% 100V	
C542	1-124-902-00	ELECT 0.47uF 20% 50V	
C543	1-136-230-00	FILM 0.0022uF 5% 100V	
C544	1-136-230-00	FILM 0.0022uF 5% 100V	
C545	1-130-856-00	FILM 0.0068uF 5% 100V	
C546	1-124-907-11	ELECT 10uF 20% 50V	
C547	1-136-558-11	FILM 0.0039uF 5% 630V	
C548	1-124-477-11	ELECT 47uF 20% 25V	
C549	1-124-477-11	ELECT 47uF 20% 25V	
C550	1-107-046-00	MICA 4.7PF 500V	
C555	1-126-176-11	ELECT 220uF 20% 10V	
C556	1-126-176-11	ELECT 220uF 20% 10V	
C561	1-124-120-11	ELECT 220uF 20% 25V	
C562	1-161-494-00	CERAMIC 0.022uF 25V	
C581	1-124-925-11	ELECT 2.2uF 20% 100V	
C582	1-162-217-31	CERAMIC 56PF 5% 50V	
C583	1-136-157-00	FILM 0.022uF 5% 50V	
C585	1-162-286-31	CERAMIC 220PF 10% 50V	
C586	1-124-925-11	ELECT 2.2uF 20% 100V	
C587	1-124-925-11	ELECT 2.2uF 20% 100V	
C601	1-124-903-11	ELECT 1uF 20% 50V	
C651	1-124-903-11	ELECT 1uF 20% 50V	
C701	1-124-927-11	ELECT 4.7uF 20% 100V	
C702	1-124-772-11	ELECT 10000uF 20% 25V	
C703	1-124-126-00	ELECT 47uF 20% 10V	
C704	1-124-898-11	ELECT 4700uF 20% 16V	
C705	1-124-556-11	ELECT 2200uF 20% 16V	
C706	1-124-443-00	ELECT 100uF 20% 10V	
C707	1-124-471-00	ELECT 1000uF 20% 6.3V	
C708	1-124-919-11	ELECT 220uF 20% 63V	
C709	1-124-927-11	ELECT 4.7uF 20% 100V	
C710	1-124-927-11	ELECT 4.7uF 20% 100V	
C751	1-124-556-11	ELECT 2200uF 20% 16V	
C752	1-124-556-11	ELECT 2200uF 20% 16V	
C753	1-124-120-11	ELECT 220uF 20% 25V	
C754	1-124-120-11	ELECT 220uF 20% 25V	
C755	1-124-925-11	ELECT 2.2uF 20% 100V	
C756	1-162-286-31	CERAMIC 220PF 10% 50V	
C757	1-162-286-31	CERAMIC 220PF 10% 50V	

MAIN

Ref. No.	Part No.	Description	Remark
C758	1-126-176-11	ELECT 220uF	20% 10V
C759	1-126-176-11	ELECT 220uF	20% 10V
C802	1-164-159-11	CERAMIC 0.1uF	50V
C803	1-161-494-00	CERAMIC 0.022uF	25V
C804	1-162-306-11	CERAMIC 0.01uF	20% 16V
C805	1-124-925-11	ELECT 2.2uF	20% 100V
C806	1-164-159-11	CERAMIC 0.1uF	50V
C807	1-164-159-11	CERAMIC 0.1uF	50V
C811	1-126-233-11	ELECT 22uF	20% 50V
C831	1-124-927-11	ELECT 4.7uF	20% 100V
C832	1-124-477-11	ELECT 47uF	20% 25V
C833	1-130-479-00	MYLAR 0.0047uF	5% 50V
C841	1-124-927-11	ELECT 4.7uF	20% 100V
C842	1-124-477-11	ELECT 47uF	20% 25V
C843	1-130-479-00	MYLAR 0.0047uF	5% 50V
C851	1-124-443-00	ELECT 100uF	20% 10V
C871	1-164-159-11	CERAMIC 0.1uF	50V
C872	1-164-159-11	CERAMIC 0.1uF	50V
C881	1-164-159-11	CERAMIC 0.1uF	50V
C882	1-164-159-11	CERAMIC 0.1uF	50V
C898	1-164-159-11	CERAMIC 0.1uF	50V

(WR97ES:US, Canadian)

< CONNECTOR >

CN541	* 1-568-951-11	PIN, CONNECTOR 2P
CN561	* 1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P
CN562	* 1-564-337-00	PIN, CONNECTOR 3P
CN571	* 1-564-707-11	PIN, CONNECTOR (SMALL TYPE) 5P
CN601	* 1-566-220-11	PIN, CONNECTOR 13P
CN602	* 1-566-220-11	PIN, CONNECTOR 13P
CN701	* 1-564-513-11	PLUG, CONNECTOR 10P
CN801	* 1-568-955-11	PIN, CONNECTOR 6P
CN802	* 1-568-935-11	PIN, CONNECTOR 8P
CN803	* 1-568-953-11	PIN, CONNECTOR 4P
CN804	* 1-568-953-11	PIN, CONNECTOR 4P
CN805	* 1-568-953-11	PIN, CONNECTOR (STRAIGHT) 4P
CN806	* 1-564-340-00	PIN, CONNECTOR 6P
CN807	1-565-951-11	SOCKET, CONNECTOR (PC BOARD) 4P

(WR97ES:US, Canadian)

< CIRCUIT BLOCK >

CP851	1-233-199-11	COMPOSITION CIRCUIT BLOCK
CP852	1-233-199-11	COMPOSITION CIRCUIT BLOCK

< DIODE >

D191	8-719-912-20	DIODE 1SS120
D291	8-719-912-20	DIODE 1SS120
D521	8-719-912-20	DIODE 1SS120
D522	8-719-912-20	DIODE 1SS120
D541	8-719-912-20	DIODE 1SS120

Ref. No.	Part No.	Description	Remark
D542	8-719-912-20	DIODE 1SS120	
D561	8-719-912-20	DIODE 1SS120	
D601	8-719-912-20	DIODE 1SS120	
D602	8-719-912-20	DIODE 1SS120	
D701	8-719-200-77	DIODE 10E2N	
D702	8-719-500-36	DIODE D2SB20	
D703	8-719-912-20	DIODE 1SS120	
D704	8-719-001-54	DIODE UZL-11H2	
D705	8-719-200-77	DIODE 10E2N	
D706	8-719-933-41	DIODE HZS6C3L	
D707	8-719-912-20	DIODE 1SS120	
D708	8-719-933-38	DIODE HZS6C3L	
D751	8-719-200-77	DIODE 10E2N	
D752	8-719-200-77	DIODE 10E2N	
D753	8-719-200-77	DIODE 10E2N	
D754	8-719-200-77	DIODE 10E2N	
D755	8-719-912-20	DIODE 1SS120	
D756	8-719-912-20	DIODE 1SS120	
D757	8-719-933-33	DIODE HZS6A1L	
D758	8-719-912-20	DIODE 1SS120	
D801	8-719-912-20	DIODE 1SS120	
D802	8-719-912-20	DIODE 1SS120	
D804	8-719-912-20	DIODE 1SS120	
D805	8-719-912-20	DIODE 1SS120	
D831	8-719-912-20	DIODE 1SS120	
D841	8-719-912-20	DIODE 1SS120	
D890	8-719-912-20	DIODE 1SS120 (WR97ES:US, Canadian)	
D891	8-719-912-20	DIODE 1SS120 (WR97ES:US, Canadian)	

< HEAT SINK >

HS705	* 3-309-144-21	HEAT SINK
HS752	* 4-880-403-11	HEAT SINK
HS755	* 4-880-403-11	HEAT SINK
HS805	* 3-356-925-01	HEAT SINK
HS807	* 3-356-925-01	HEAT SINK

< IC >

IC501	8-759-106-56	IC uPC1297CA
IC502	8-759-106-56	IC uPC1297CA
IC503	8-759-111-44	IC uPC4570C-1
IC504	8-759-111-44	IC uPC4570C-1
IC506	8-759-140-53	IC MC14053BCP
IC508	8-759-945-58	IC RC4558P
IC509	8-759-945-58	IC RC4558P
IC601	8-752-038-02	IC CXA1198AP
IC602	8-752-038-02	IC CXA1198AP
IC603	8-759-208-06	IC TC4051BPHB

MAIN

Ref. No.	Part No.	Description	Remark
IC801	8-759-636-40	IC M50944-169SP	
IC802	8-759-633-86	IC M50747-B83SP	
IC803	8-759-822-09	IC LB1641	
IC804	8-759-240-71	IC TC4071BP	
IC805	8-759-973-95	IC BA6219B	
IC806	8-759-822-09	IC LB1641	
IC807	8-759-973-95	IC BA6219B	
IC808	8-759-822-09	IC LB1641	
IC809	8-759-140-11	IC uPD4011BC (WR97ES:US, Canadian)	
< COIL >			
L131	1-410-780-11	INDUCTOR 27mH	
L151	1-410-780-11	INDUCTOR 27mH	
L231	1-410-780-11	INDUCTOR 27mH	
L251	1-410-780-11	INDUCTOR 27mH	
< JACK >			
PJ561	1-573-070-11	JACK, PIN 4P (LINE IN/OUT)	
< TRANSISTOR >			
Q131	8-729-900-74	TRANSISTOR DTC143TS	
Q151	8-729-900-74	TRANSISTOR DTC143TS	
Q161	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
Q231	8-729-900-74	TRANSISTOR DTC143TS	
Q251	8-729-900-74	TRANSISTOR DTC143TS	
Q261	8-729-922-37	TRANSISTOR 2SD2144S-UVW	
Q301	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q351	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q401	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q451	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q521	8-729-900-65	TRANSISTOR DTA144ES	
Q522	8-729-900-65	TRANSISTOR DTA144ES	
Q523	8-729-900-61	TRANSISTOR DTA114ES	
Q524	8-729-900-89	TRANSISTOR DTC144ES	
Q525	8-729-900-89	TRANSISTOR DTC144ES	
Q526	8-729-900-80	TRANSISTOR DTC114ES	
Q527	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q528	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q529	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q531	8-729-900-89	TRANSISTOR DTC144ES	
Q532	8-729-900-89	TRANSISTOR DTC144ES	
Q533	8-729-900-65	TRANSISTOR DTA144ES	
Q541	8-729-900-65	TRANSISTOR DTA144ES	
Q542	8-729-900-65	TRANSISTOR DTA144ES	
Q543	8-729-900-61	TRANSISTOR DTA114ES	
Q544	8-729-900-89	TRANSISTOR DTC144ES	
Q545	8-729-900-89	TRANSISTOR DTC144ES	
Q546	8-729-900-80	TRANSISTOR DTC114ES	
Q547	8-729-821-04	TRANSISTOR 2SA1317-STU	

Ref. No.	Part No.	Description	Remark
Q548	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q549	8-729-142-46	TRANSISTOR 2SC2001-LK	
Q551	8-729-900-89	TRANSISTOR DTC144ES	
Q552	8-729-900-89	TRANSISTOR DTC144ES	
Q553	8-729-900-65	TRANSISTOR DTA144ES	
Q561	8-729-900-65	TRANSISTOR DTA144ES	
Q562	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q581	8-729-900-65	TRANSISTOR DTA144ES	
Q582	8-729-900-89	TRANSISTOR DTC144ES	
Q601	8-729-900-65	TRANSISTOR DTA144ES	
Q602	8-729-900-89	TRANSISTOR DTC144ES	
Q603	8-729-900-89	TRANSISTOR DTC144ES	
Q604	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q605	8-729-900-89	TRANSISTOR DTC144ES	
Q651	8-729-900-65	TRANSISTOR DTA144ES	
Q652	8-729-900-80	TRANSISTOR DTC114ES	
Q653	8-729-900-89	TRANSISTOR DTC144ES	
Q654	8-729-900-65	TRANSISTOR DTA144ES	
Q701	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q702	8-729-924-90	TRANSISTOR 2SB1370-EF	
Q703	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q704	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q705	8-729-111-55	TRANSISTOR 2SD1312-K	
Q706	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q707	8-729-140-04	TRANSISTOR 2SB1116A-L	
Q751	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q752	8-729-111-55	TRANSISTOR 2SD1312-K	
Q753	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q754	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q755	8-729-924-90	TRANSISTOR 2SB1370-EF	
Q756	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q757	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q801	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q802	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q803	8-729-821-04	TRANSISTOR 2SA1317-STU	
Q831	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q832	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q841	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q842	8-729-620-05	TRANSISTOR 2SC2603-EF	
Q871	8-729-900-65	TRANSISTOR DTA144ES	
Q872	8-729-900-80	TRANSISTOR DTC114ES	
Q873	8-729-900-80	TRANSISTOR DTC114ES	
Q874	8-729-900-80	TRANSISTOR DTC114ES	
Q881	8-729-900-65	TRANSISTOR DTA144ES	
Q882	8-729-900-89	TRANSISTOR DTC144ES	
Q883	8-729-900-80	TRANSISTOR DTC114ES	
Q884	8-729-900-80	TRANSISTOR DTC114ES	
Q885	8-729-900-80	TRANSISTOR DTC114ES	

MAIN

Ref. No.	Part No.	Description	Remark
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< RESISTOR >

R121	1-249-427-11	CARBON	6.8K 5% 1/4W
R122	1-249-435-11	CARBON	33K 5% 1/4W
R123	△ 1-219-153-11	FUSIBLE	10 5% 1/4W F
R124	1-247-883-00	CARBON	150K 5% 1/4W
R131	1-249-428-11	CARBON	8.2K 5% 1/4W
R132	1-249-433-11	CARBON	22K 5% 1/4W
R133	1-249-403-11	CARBON	68 5% 1/4W
R134	1-247-882-11	CARBON	130K 5% 1/4W
R135	1-249-426-11	CARBON	5.6K 5% 1/4W
R136	1-249-420-11	CARBON	1.8K 5% 1/4W
R137	1-247-840-00	CARBON	2.4K 5% 1/4W
R138	1-247-887-00	CARBON	220K 5% 1/4W
R139	1-249-425-11	CARBON	4.7K 5% 1/4W
R141	1-249-427-11	CARBON	6.8K 5% 1/4W
R142	1-249-435-11	CARBON	33K 5% 1/4W
R143	△ 1-219-153-11	FUSIBLE	10 5% 1/4W F
R144	1-247-883-00	CARBON	150K 5% 1/4W
R151	1-249-428-11	CARBON	8.2K 5% 1/4W
R152	1-249-433-11	CARBON	22K 5% 1/4W
R153	1-249-403-11	CARBON	68 5% 1/4W
R154	1-247-882-11	CARBON	130K 5% 1/4W
R155	1-249-426-11	CARBON	5.6K 5% 1/4W
R156	1-249-420-11	CARBON	1.8K 5% 1/4W
R157	1-247-840-00	CARBON	2.4K 5% 1/4W
R158	1-247-887-00	CARBON	220K 5% 1/4W
R159	1-249-425-11	CARBON	4.7K 5% 1/4W
R161	1-249-433-11	CARBON	22K 5% 1/4W
R162	1-249-417-11	CARBON	1K 5% 1/4W
R163	1-249-421-11	CARBON	2.2K 5% 1/4W
R164	1-249-432-11	CARBON	18K 5% 1/4W
R165	1-249-421-11	CARBON	2.2K 5% 1/4W
R191	1-249-429-11	CARBON	10K 5% 1/4W
R192	1-247-864-11	CARBON	24K 5% 1/4W
R193	1-249-434-11	CARBON	27K 5% 1/4W
R194	1-249-408-11	CARBON	180 5% 1/4W
R221	1-249-427-11	CARBON	6.8K 5% 1/4W
R222	1-249-435-11	CARBON	33K 5% 1/4W
R223	△ 1-219-153-11	FUSIBLE	10 5% 1/4W F
R224	1-247-883-00	CARBON	150K 5% 1/4W
R231	1-249-428-11	CARBON	8.2K 5% 1/4W
R232	1-249-433-11	CARBON	22K 5% 1/4W
R233	1-249-403-11	CARBON	68 5% 1/4W
R234	1-247-882-11	CARBON	130K 5% 1/4W
R235	1-249-426-11	CARBON	5.6K 5% 1/4W
R236	1-249-420-11	CARBON	1.8K 5% 1/4W

Ref. No.	Part No.	Description	Remark
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R237	1-247-840-00	CARBON	2.4K 5% 1/4W
R238	1-247-887-00	CARBON	220K 5% 1/4W
R239	1-249-425-11	CARBON	4.7K 5% 1/4W
R241	1-249-427-11	CARBON	6.8K 5% 1/4W
R242	1-249-435-11	CARBON	33K 5% 1/4W
R243	△ 1-219-153-11	FUSIBLE	10 5% 1/4W F
R244	1-247-883-00	CARBON	150K 5% 1/4W
R251	1-249-428-11	CARBON	8.2K 5% 1/4W
R252	1-249-433-11	CARBON	22K 5% 1/4W
R253	1-249-403-11	CARBON	68 5% 1/4W
R254	1-247-882-11	CARBON	130K 5% 1/4W
R255	1-249-426-11	CARBON	5.6K 5% 1/4W
R256	1-249-420-11	CARBON	1.8K 5% 1/4W
R257	1-247-840-00	CARBON	2.4K 5% 1/4W
R258	1-247-887-00	CARBON	220K 5% 1/4W
R259	1-249-425-11	CARBON	4.7K 5% 1/4W
R261	1-249-433-11	CARBON	22K 5% 1/4W
R262	1-249-417-11	CARBON	1K 5% 1/4W
R263	1-249-421-11	CARBON	2.2K 5% 1/4W
R264	1-249-432-11	CARBON	18K 5% 1/4W
R265	1-249-421-11	CARBON	2.2K 5% 1/4W
R291	1-249-429-11	CARBON	10K 5% 1/4W
R292	1-247-864-11	CARBON	24K 5% 1/4W
R293	1-249-434-11	CARBON	27K 5% 1/4W
R294	1-249-408-11	CARBON	180 5% 1/4W
R301	1-249-429-11	CARBON	10K 5% 1/4W
R302	1-249-425-11	CARBON	4.7K 5% 1/4W
R304	1-249-425-11	CARBON	4.7K 5% 1/4W
R305	1-249-425-11	CARBON	4.7K 5% 1/4W
R306	1-249-425-11	CARBON	4.7K 5% 1/4W
R351	1-249-429-11	CARBON	10K 5% 1/4W
R352	1-249-425-11	CARBON	4.7K 5% 1/4W
R354	1-249-425-11	CARBON	4.7K 5% 1/4W
R355	1-249-425-11	CARBON	4.7K 5% 1/4W
R356	1-249-425-11	CARBON	4.7K 5% 1/4W
R401	1-249-429-11	CARBON	10K 5% 1/4W
R402	1-249-425-11	CARBON	4.7K 5% 1/4W
R404	1-249-425-11	CARBON	4.7K 5% 1/4W
R405	1-249-425-11	CARBON	4.7K 5% 1/4W
R406	1-249-425-11	CARBON	4.7K 5% 1/4W
R451	1-249-429-11	CARBON	10K 5% 1/4W
R452	1-249-425-11	CARBON	4.7K 5% 1/4W
R454	1-249-425-11	CARBON	4.7K 5% 1/4W
R455	1-249-425-11	CARBON	4.7K 5% 1/4W
R456	1-249-425-11	CARBON	4.7K 5% 1/4W
R521	1-249-425-11	CARBON	4.7K 5% 1/4W
R522	1-249-422-11	CARBON	2.7K 5% 1/4W
R523	1-249-430-11	CARBON	12K 5% 1/4W
R524	1-249-441-11	CARBON	100K 5% 1/4W

Note:
The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MAIN

Ref. No.	Part No.	Description	Remark		
R526	1-247-844-11	CARBON	3. 6K	5%	1/4W
R527	1-249-421-11	CARBON	2. 2K	5%	1/4W
R528	1-249-429-11	CARBON	10K	5%	1/4W
R529	1-249-437-11	CARBON	47K	5%	1/4W
R530	1-249-437-11	CARBON	47K	5%	1/4W
R531	1-249-389-11	CARBON	4. 7	5%	1/4W
R532	1-249-389-11	CARBON	4. 7	5%	1/4W
R541	1-249-425-11	CARBON	4. 7K	5%	1/4W
R542	1-249-422-11	CARBON	2. 7K	5%	1/4W
R543	1-249-430-11	CARBON	12K	5%	1/4W
R544	1-249-441-11	CARBON	100K	5%	1/4W
R546	1-249-421-11	CARBON	2. 2K	5%	1/4W
R547	1-249-421-11	CARBON	2. 2K	5%	1/4W
R548	1-249-429-11	CARBON	10K	5%	1/4W
R549	1-249-437-11	CARBON	47K	5%	1/4W
R550	1-249-437-11	CARBON	47K	5%	1/4W
R551	1-249-389-11	CARBON	4. 7	5%	1/4W
R552	1-249-389-11	CARBON	4. 7	5%	1/4W
R561	1-249-409-11	CARBON	220	5%	1/4W
R562	1-249-433-11	CARBON	22K	5%	1/4W
R581	1-247-887-00	CARBON	220K	5%	1/4W
R582	1-249-425-11	CARBON	4. 7K	5%	1/4W
R583	1-249-437-11	CARBON	47K	5%	1/4W
R584	1-249-428-11	CARBON	8. 2K	5%	1/4W
R585	1-249-441-11	CARBON	100K	5%	1/4W
R586	1-249-423-11	CARBON	3. 3K	5%	1/4W
R587	1-249-421-11	CARBON	2. 2K	5%	1/4W
R588	1-249-441-11	CARBON	100K	5%	1/4W
R601	1-249-417-11	CARBON	1K	5%	1/4W
R602	1-249-441-11	CARBON	100K	5%	1/4W
R603	1-247-864-11	CARBON	24K	5%	1/4W
R604	1-249-433-11	CARBON	22K	5%	1/4W
R621	1-249-434-11	CARBON	27K	5%	1/4W
R622	1-249-434-11	CARBON	27K	5%	1/4W
R623	1-247-874-11	CARBON	62K	5%	1/4W
R624	1-247-883-00	CARBON	150K	5%	1/4W
R625	1-249-437-11	CARBON	47K	5%	1/4W
R626	1-249-439-11	CARBON	68K	5%	1/4W
R631	1-249-436-11	CARBON	39K	5%	1/4W
R632	1-247-868-11	CARBON	36K	5%	1/4W
R633	1-247-880-11	CARBON	110K	5%	1/4W
R634	1-247-885-00	CARBON	180K	5%	1/4W
R635	1-249-437-11	CARBON	47K	5%	1/4W
R636	1-247-889-00	CARBON	270K	5%	1/4W
R641	1-249-436-11	CARBON	39K	5%	1/4W
R642	1-249-436-11	CARBON	39K	5%	1/4W
R643	1-249-439-11	CARBON	68K	5%	1/4W
R644	1-247-883-00	CARBON	150K	5%	1/4W
R645	1-247-868-11	CARBON	36K	5%	1/4W

Ref. No.	Part No.	Description	Remark		
R646	1-249-441-11	CARBON	100K	5%	1/4W
R651	1-249-417-11	CARBON	1K	5%	1/4W
R652	1-249-441-11	CARBON	100K	5%	1/4W
R653	1-247-864-11	CARBON	24K	5%	1/4W
R655	1-247-887-00	CARBON	220K	5%	1/4W
R656	1-249-429-11	CARBON	10K	5%	1/4W
R662	1-249-434-11	CARBON	27K	5%	1/4W
R663	1-249-434-11	CARBON	27K	5%	1/4W
R664	1-249-439-11	CARBON	68K	5%	1/4W
R665	1-247-885-00	CARBON	180K	5%	1/4W
R666	1-249-437-11	CARBON	47K	5%	1/4W
R667	1-249-439-11	CARBON	68K	5%	1/4W
R668	1-249-436-11	CARBON	39K	5%	1/4W
R669	1-247-868-11	CARBON	36K	5%	1/4W
R670	1-247-883-00	CARBON	150K	5%	1/4W
R671	1-247-887-00	CARBON	220K	5%	1/4W
R672	1-247-870-11	CARBON	43K	5%	1/4W
R673	1-247-889-00	CARBON	270K	5%	1/4W
R674	1-249-436-11	CARBON	39K	5%	1/4W
R675	1-249-436-11	CARBON	39K	5%	1/4W
R676	1-249-440-11	CARBON	82K	5%	1/4W
R677	1-247-885-00	CARBON	180K	5%	1/4W
R678	1-247-868-11	CARBON	36K	5%	1/4W
R679	1-249-441-11	CARBON	100K	5%	1/4W
R681	1-247-858-11	CARBON	13K	5%	1/4W
R682	1-247-866-11	CARBON	30K	5%	1/4W
R683	1-247-858-11	CARBON	13K	5%	1/4W
R684	1-249-438-11	CARBON	56K	5%	1/4W
R685	1-249-435-11	CARBON	33K	5%	1/4W
R686	1-247-885-00	CARBON	180K	5%	1/4W
R687	1-247-864-11	CARBON	24K	5%	1/4W
R688	1-247-870-11	CARBON	43K	5%	1/4W
R689	1-249-435-11	CARBON	33K	5%	1/4W
R690	1-249-438-11	CARBON	56K	5%	1/4W
R691	1-247-866-11	CARBON	30K	5%	1/4W
R692	1-247-887-00	CARBON	220K	5%	1/4W
R693	1-247-862-11	CARBON	20K	5%	1/4W
R694	1-247-870-11	CARBON	43K	5%	1/4W
R695	1-249-429-11	CARBON	10K	5%	1/4W
R696	1-249-437-11	CARBON	47K	5%	1/4W
R697	1-249-435-11	CARBON	33K	5%	1/4W
R698	1-247-885-00	CARBON	180K	5%	1/4W
R700	△ 1-219-119-91	FUSIBLE	0. 1	5%	1/4W F
R701	1-249-433-11	CARBON	22K	5%	1/4W
R702	1-249-421-11	CARBON	2. 2K	5%	1/4W
R703	1-219-154-91	FUSIBLE	0. 12	10%	1/4W
R704	1-219-136-11	FUSIBLE	0. 22	10%	1/4W
R705	1-249-422-11	CARBON	2. 7K	5%	1/4W
R706	1-249-421-11	CARBON	2. 2K	5%	1/4W

Note:

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MAIN

Ref. No.	Part No.	Description	Remark		
R707	1-249-421-11	CARBON	2. 2K	5%	1/4W
R708	1-249-430-11	CARBON	12K	5%	1/4W
R709	1-247-856-00	CARBON	11K	5%	1/4W
R710	1-249-436-11	CARBON	39K	5%	1/4W
R751	1-249-433-11	CARBON	22K	5%	1/4W
R752	1-249-421-11	CARBON	2. 2K	5%	1/4W
R753	1-249-421-11	CARBON	2. 2K	5%	1/4W
R754	1-249-421-11	CARBON	2. 2K	5%	1/4W
R755	1-249-421-11	CARBON	2. 2K	5%	1/4W
R756	1-249-417-11	CARBON	1K	5%	1/4W
R757	1-249-417-11	CARBON	1K	5%	1/4W
R758	1-249-417-11	CARBON	1K	5%	1/4W
R759	1-249-415-11	CARBON	680	5%	1/4W
R760	1-249-422-11	CARBON	2. 7K	5%	1/4W
R761	1-249-424-11	CARBON	3. 9K	5%	1/4W
R762	1-249-423-11	CARBON	3. 3K	5%	1/4W
R763	1-249-405-11	CARBON	100	5%	1/4W
R801	1-249-405-11	CARBON	100	5%	1/4W
R802	1-249-405-11	CARBON	100	5%	1/4W
R806	1-249-421-11	CARBON	2. 2K	5%	1/4W
R807	1-249-421-11	CARBON	2. 2K	5%	1/4W
R808	1-249-421-11	CARBON	2. 2K	5%	1/4W
R809	1-249-421-11	CARBON	2. 2K	5%	1/4W
R810	1-249-421-11	CARBON	2. 2K	5%	1/4W
R811	1-249-433-11	CARBON	22K	5%	1/4W
R812	1-249-433-11	CARBON	22K	5%	1/4W
R813	1-247-903-00	CARBON	1M	5%	1/4W
R814	1-249-425-11	CARBON	4. 7K	5%	1/4W
R815	1-249-433-11	CARBON	22K	5%	1/4W
R816	1-249-433-11	CARBON	22K	5%	1/4W
R817	1-249-424-11	CARBON	3. 9K	5%	1/4W
R818	1-249-433-11	CARBON	22K	5%	1/4W
R819	1-249-433-11	CARBON	22K	5%	1/4W
R820	1-249-429-11	CARBON	10K	5%	1/4W
R821	1-249-441-11	CARBON	100K	5%	1/4W
R822	1-249-417-11	CARBON	1K	5%	1/4W
R823	1-249-437-11	CARBON	47K	5%	1/4W
R824	1-249-420-11	CARBON	1. 8K	5%	1/4W
R825	1-249-417-11	CARBON	1K	5%	1/4W
R826	1-249-429-11	CARBON	10K	5%	1/4W
R827	1-249-429-11	CARBON	10K	5%	1/4W
R828	1-249-415-11	CARBON	680	5%	1/4W
R829	△ 1-249-482-11	CARBON	4. 7	5%	1/2W F
R831	1-249-429-11	CARBON	10K	5%	1/4W
R832	1-249-433-11	CARBON	22K	5%	1/4W
R833	1-249-429-11	CARBON	10K	5%	1/4W
R834	1-249-421-11	CARBON	2. 2K	5%	1/4W
R835	1-249-429-11	CARBON	10K	5%	1/4W
R836	1-249-417-11	CARBON	1K	5%	1/4W

Ref. No.	Part No.	Description	Remark		
R837	1-249-412-11	CARBON	390	5%	1/4W
R841	1-249-429-11	CARBON	10K	5%	1/4W
R842	1-249-433-11	CARBON	22K	5%	1/4W
R843	1-249-429-11	CARBON	10K	5%	1/4W
R844	1-249-421-11	CARBON	2. 2K	5%	1/4W
R845	1-249-429-11	CARBON	10K	5%	1/4W
R846	1-249-417-11	CARBON	1K	5%	1/4W
R847	1-249-412-11	CARBON	390	5%	1/4W
R851	1-247-903-00	CARBON	1M	5%	1/4W
R852	1-249-425-11	CARBON	4. 7K	5%	1/4W
R853	1-249-425-11	CARBON	4. 7K	5%	1/4W
R854	1-249-425-11	CARBON	4. 7K	5%	1/4W
R855	1-249-425-11	CARBON	4. 7K	5%	1/4W
R856	1-249-425-11	CARBON	4. 7K	5%	1/4W
R857	1-249-425-11	CARBON	4. 7K	5%	1/4W
R858	1-249-425-11	CARBON	4. 7K	5%	1/4W
R859	1-249-425-11	CARBON	4. 7K	5%	1/4W
R861	1-249-436-11	CARBON	39K	5%	1/4W
R862	1-249-436-11	CARBON	39K	5%	1/4W
R863	1-247-895-00	CARBON	470K	5%	1/4W
R864	1-247-895-00	CARBON	470K	5%	1/4W
R865	1-249-436-11	CARBON	39K	5%	1/4W
R866	1-249-436-11	CARBON	39K	5%	1/4W
R867	1-247-895-00	CARBON	470K	5%	1/4W
R868	1-247-895-00	CARBON	470K	5%	1/4W
R869	1-249-429-11	CARBON	10K	5%	1/4W
R871	1-249-433-11	CARBON	22K	5%	1/4W
R872	1-249-434-11	CARBON	27K	5%	1/4W
R873	1-249-411-11	CARBON	330	5%	1/4W
R874	1-247-830-11	CARBON	910	5%	1/4W
R875	1-249-418-11	CARBON	1. 2K	5%	1/4W
R876	1-249-417-11	CARBON	1K	5%	1/4W
R877	△ 1-249-482-11	CARBON	4. 7	5%	1/2W F
R878	1-249-421-11	CARBON	2. 2K	5%	1/4W
R879	1-249-419-11	CARBON	1. 5K	5%	1/4W
R880	1-249-417-11	CARBON	1K	5%	1/4W
R881	△ 1-249-482-11	CARBON	4. 7	5%	1/2W F
R882	1-249-433-11	CARBON	22K	5%	1/4W
R883	1-249-434-11	CARBON	27K	5%	1/4W
R884	1-249-411-11	CARBON	330	5%	1/4W
R885	1-247-830-11	CARBON	910	5%	1/4W
R886	1-249-418-11	CARBON	1. 2K	5%	1/4W
R887	△ 1-249-482-11	CARBON	4. 7	5%	1/2W F
R888	1-249-417-11	CARBON	1K	5%	1/4W
R889	1-249-419-11	CARBON	1. 5K	5%	1/4W
R890	1-249-421-11	CARBON	2. 2K	5%	1/4W
R891	1-249-417-11	CARBON	1K	5%	1/4W
R892	△ 1-249-482-11	CARBON	4. 7	5%	1/2W F
R893	1-249-433-11	CARBON	22K	5%	1/4W

Note:

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

MAIN

REEL

PANEL

Ref. No.	Part No.	Description	Remark
R894	1-249-393-11	CARBON 10 5% 1/4W (WR97ES:US, Canadian)	
R895	1-249-429-11	CARBON 10K 5% 1/4W (WR97ES:US, Canadian)	
R896	1-249-429-11	CARBON 10K 5% 1/4W (WR97ES:US, Canadian)	
R897	1-249-405-11	CARBON 100 5% 1/4W (WR97ES:US, Canadian)	
R898	1-249-429-11	CARBON 10K 5% 1/4W (WR97ES:US, Canadian)	
R899	1-249-429-11	CARBON 10K 5% 1/4W (WR97ES:US, Canadian)	

< VARIABLE RESISTOR >

RV121	1-238-601-11	RES, ADJ, CARBON 22K
RV131	1-238-600-11	RES, ADJ, CARBON 10K
RV141	1-238-601-11	RES, ADJ, CARBON 22K
RV151	1-238-600-11	RES, ADJ, CARBON 10K
RV221	1-238-601-11	RES, ADJ, CARBON 22K
RV231	1-238-600-11	RES, ADJ, CARBON 10K
RV241	1-238-601-11	RES, ADJ, CARBON 22K
RV251	1-238-600-11	RES, ADJ, CARBON 10K
RV301	1-238-600-11	RES, ADJ, CARBON 10K
RV351	1-238-600-11	RES, ADJ, CARBON 10K
RV401	1-238-600-11	RES, ADJ, CARBON 10K
RV451	1-238-600-11	RES, ADJ, CARBON 10K
RV831	1-238-602-11	RES, ADJ, CARBON 47K
RV841	1-238-602-11	RES, ADJ, CARBON 47K
RV871	1-238-600-11	RES, ADJ, CARBON 10K
RV872	1-238-599-11	RES, ADJ, CARBON 4.7K
RV881	1-238-600-11	RES, ADJ, CARBON 10K
RV882	1-238-599-11	RES, ADJ, CARBON 4.7K

< RELAY >

RY531	1-515-683-11	RELAY
RY551	1-515-683-11	RELAY

< SWITCH >

S599	1-571-083-11	SWITCH, SLIDE (MPX FILTER) (WR870:Germany/WR97ES)
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< TRANSFORMER >

T121	1-433-382-11	TRANSFORMER, OSCILLATION
T141	1-433-382-11	TRANSFORMER, OSCILLATION
T221	1-433-382-11	TRANSFORMER, OSCILLATION
T241	1-433-382-11	TRANSFORMER, OSCILLATION
T521	1-433-336-11	TRANSFORMER, BIAS OSCILLATION
T541	1-433-336-11	TRANSFORMER, BIAS OSCILLATION

Ref. No.	Part No.	Description	Remark
		< TEST PIN >	
TP521	* 1-564-506-11	PLUG, CONNECTOR 3P	
TP541	* 1-564-506-11	PLUG, CONNECTOR 3P	
TP581	* 1-564-505-11	PLUG, CONNECTOR 2P	
TP801	* 1-564-505-11	PLUG, CONNECTOR 2P	
TP802	* 1-564-505-11	PLUG, CONNECTOR 2P	
TP803	* 1-564-505-11	PLUG, CONNECTOR 2P	

< CERAMIC >

X801	1-577-358-21	VIBRATOR, CERAMIC (4.0MHz)
X802	1-577-358-21	VIBRATOR, CERAMIC (4.0MHz)

* 1-632-741-11 REEL MOTOR BOARD

< CAPACITOR >

C1051	1-124-907-11	ELECT 10uF 20% 50V
C1052	1-124-907-11	ELECT 10uF 20% 50V
C1053	1-164-159-11	CERAMIC 0.1uF 50V

< CONNECTOR >

CN1051	1-564-501-11	PIN, CONNECTOR 8P
CN1052	* 1-564-720-11	PIN, CONNECTOR (SMALL TYPE) 4P
CN1053	* 1-564-718-11	PIN, CONNECTOR (SMALL TYPE) 2P

< RESISTOR >

R1051	1-249-414-11	CARBON 560 5% 1/4W
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* A-2006-395-A PANEL BOARD, COMPLETE (WR870: UK)

* A-2006-534-A PANEL BOARD, COMPLETE
(WR97ES: US, Canadian)

* A-2006-546-A PANEL BOARD, COMPLETE
(WR870: Germany/WR97ES: E)

* A-2006-615-A PANEL BOARD, COMPLETE
(WR870: AEP)

* 3-362-478-01 HOLDER (T), LED

3-365-420-01 HOLDER, FL TUBE

9-911-844-XX CUSHION

< CAPACITOR >

C71	1-124-126-00	ELECT 47uF 20% 10V
C72	1-124-126-00	ELECT 47uF 20% 10V
C73	1-124-126-00	ELECT 47uF 20% 10V
C74	1-124-126-00	ELECT 47uF 20% 10V
C75	1-124-903-11	ELECT 1uF 20% 50V
C171	1-126-157-11	ELECT 10uF 20% 16V
C172	1-162-288-31	CERAMIC 330PF 10% 50V
C271	1-126-157-11	ELECT 10uF 20% 16V
C272	1-162-288-31	CERAMIC 330PF 10% 50V
C371	1-124-927-11	ELECT 4.7uF 20% 100V

PANEL

Ref.No.	Part No.	Description	Remark		
C372	1-124-927-11	ELECT	4.7uF	20%	100V
C373	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C375	1-124-927-11	ELECT	4.7uF	20%	100V
C376	1-136-171-00	FILM	0.33uF	5%	50V
C377	1-136-174-00	FILM	0.56uF	5%	50V
C378	1-130-475-00	MYLAR	0.0022uF	5%	50V
C379	1-130-475-00	MYLAR	0.0022uF	5%	50V
C380	1-124-768-11	ELECT	4.7uF	20%	50V
C381	1-124-927-11	ELECT	4.7uF	20%	100V
C382	1-136-171-00	FILM	0.33uF	5%	50V
C383	1-136-174-00	FILM	0.56uF	5%	50V
C384	1-130-475-00	MYLAR	0.0022uF	5%	50V
C385	1-130-475-00	MYLAR	0.0022uF	5%	50V
C386	1-124-768-11	ELECT	4.7uF	20%	50V
C471	1-124-927-11	ELECT	4.7uF	20%	100V
C472	1-124-927-11	ELECT	4.7uF	20%	100V
C473	1-161-375-00	CERAMIC	0.0022uF	20%	50V
C475	1-124-927-11	ELECT	4.7uF	20%	100V
C476	1-136-171-00	FILM	0.33uF	5%	50V
C477	1-136-174-00	FILM	0.56uF	5%	50V
C478	1-130-475-00	MYLAR	0.0022uF	5%	50V
C479	1-130-475-00	MYLAR	0.0022uF	5%	50V
C480	1-124-768-11	ELECT	4.7uF	20%	50V
C481	1-124-927-11	ELECT	4.7uF	20%	100V
C482	1-136-171-00	FILM	0.33uF	5%	50V
C483	1-136-174-00	FILM	0.56uF	5%	50V
C484	1-130-475-00	MYLAR	0.0022uF	5%	50V
C485	1-130-475-00	MYLAR	0.0022uF	5%	50V
C486	1-124-768-11	ELECT	4.7uF	20%	50V
C571	1-126-157-11	ELECT	10uF	20%	16V
C572	1-126-157-11	ELECT	10uF	20%	16V
C573	1-161-494-00	CERAMIC	0.022uF		25V
C808	1-164-159-11	CERAMIC	0.1uF		50V
C809	1-164-159-11	CERAMIC	0.1uF		50V
C810	1-124-927-11	ELECT	4.7uF	20%	100V
C899	1-164-159-11	CERAMIC	0.1uF		50V
C901	1-161-494-00	CERAMIC	0.022uF		25V
C902	1-164-159-11	CERAMIC	0.1uF		50V
C903	1-124-443-00	ELECT	100uF	20%	10V
C904	1-162-294-31	CERAMIC	0.001uF	10%	50V
C999	1-164-159-11	CERAMIC	0.1uF		50V
(WR97ES:US,Canadian)					
< CONNECTOR >					
CN71	* 1-563-664-11	CONNECTOR 13P			
CN72	* 1-563-664-11	CONNECTOR 13P			
CN73	* 1-564-708-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN74	* 1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
CN75	* 1-564-336-00	PIN, CONNECTOR 2P (WR870:Germany/WR97ES:US,Canadian)			

Ref.No.	Part No.	Description	Remark
CN76	* 1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P	
CN563	* 1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P	
CN572	* 1-564-721-11	PIN, CONNECTOR (SMALL TYPE) 5P	
< DIODE >			
D71	8-719-912-20	DIODE 1SS120	
D72	8-719-912-20	DIODE 1SS120	
D73	8-719-933-54	DIODE HZS9A2L	
D74	8-719-912-20	DIODE 1SS120	
D75	8-719-912-20	DIODE 1SS120	
D76	8-719-933-54	DIODE HZS9A2L	
D901	8-719-301-39	DIODE SEL2210S-D	
< FLUORESCENT INDICATOR >			
FL901	1-519-594-11	INDICATOR TUBE, FLUORESCENT	
< IC >			
IC71	8-759-634-51	IC M5218AP	
IC72	8-752-035-94	IC CXA1331S	
IC73	8-752-035-94	IC CXA1331S	
IC74	8-759-000-49	IC MC14066BCP	
IC75	8-759-000-49	IC MC14066BCP	
IC76	8-759-000-49	IC MC14066BCP	
IC507	8-759-634-50	IC M5218AL	
IC901	8-759-323-40	IC HD614023SA85	
IC902	8-741-100-48	IC SBX1610-59	
< JACK >			
J501	1-507-796-71	JACK (PHONES)	
< FILTER >			
LPF371	1-236-147-11	FILTER, LOW PASS	
LPF471	1-236-147-11	FILTER, LOW PASS	
< TRANSISTOR >			
Q71	8-729-900-65	TRANSISTOR DTA144ES	
Q72	8-729-900-65	TRANSISTOR DTA144ES	
Q73	8-729-900-65	TRANSISTOR DTA144ES	
Q74	8-729-900-80	TRANSISTOR DTC114ES	
Q75	8-729-900-65	TRANSISTOR DTA144ES	
Q76	8-729-900-65	TRANSISTOR DTA144ES	
Q77	8-729-900-80	TRANSISTOR DTC114ES	
Q78	8-729-900-65	TRANSISTOR DTA144ES	
Q79	8-729-900-89	TRANSISTOR DTC144ES	
Q80	8-729-900-65	TRANSISTOR DTA144ES	
Q81	8-729-900-89	TRANSISTOR DTC144ES	
Q82	8-729-900-65	TRANSISTOR DTA144ES	
Q83	8-729-900-89	TRANSISTOR DTC144ES	

PANEL

Ref. No.	Part No.	Description	Remark
Q371	8-729-900-80	TRANSISTOR DTC114ES	
Q471	8-729-900-80	TRANSISTOR DTC114ES	
Q901	8-729-900-61	TRANSISTOR DTA114ES	
Q902	8-729-900-61	TRANSISTOR DTA114ES	
Q903	8-729-620-05	TRANSISTOR 2SC2603-EF	

< RESISTOR >

R71	1-249-425-11	CARBON	4.7K	5%	1/4W
R72	1-215-455-00	METAL	27K	1%	1/6W
R73	1-249-417-11	CARBON	1K	5%	1/4W
R74	1-215-455-00	METAL	27K	1%	1/6W
R75	1-249-417-11	CARBON	1K	5%	1/4W
R76	1-249-433-11	CARBON	22K	5%	1/4W
R77	1-249-429-11	CARBON	10K	5%	1/4W
R78	1-249-433-11	CARBON	22K	5%	1/4W
R79	1-249-433-11	CARBON	22K	5%	1/4W
R80	1-249-429-11	CARBON	10K	5%	1/4W
R81	1-249-433-11	CARBON	22K	5%	1/4W
R82	1-249-435-11	CARBON	33K	5%	1/4W
R83	1-249-435-11	CARBON	33K	5%	1/4W
R84	1-249-435-11	CARBON	33K	5%	1/4W
R001	1-249-673-11	CARBON	1K	5%	1/2W
R002	1-249-673-11	CARBON	1K	5%	1/2W
R171	1-249-432-11	CARBON	18K	5%	1/4W
R172	1-249-421-11	CARBON	2.2K	5%	1/4W
R173	1-249-432-11	CARBON	18K	5%	1/4W
R174	1-249-409-11	CARBON	220	5%	1/4W
R271	1-249-432-11	CARBON	18K	5%	1/4W
R272	1-249-421-11	CARBON	2.2K	5%	1/4W
R273	1-249-432-11	CARBON	18K	5%	1/4W
R274	1-249-409-11	CARBON	220	5%	1/4W
R372	1-249-441-11	CARBON	100K	5%	1/4W
R373	1-249-435-11	CARBON	33K	5%	1/4W
R374	1-249-432-11	CARBON	18K	5%	1/4W
R375	1-249-423-11	CARBON	3.3K	5%	1/4W
R376	1-249-441-11	CARBON	100K	5%	1/4W
R377	1-249-429-11	CARBON	10K	5%	1/4W
R379	1-249-441-11	CARBON	100K	5%	1/4W
R381	1-249-414-11	CARBON	560	5%	1/4W
R382	1-247-864-11	CARBON	24K	5%	1/4W
R383	1-249-441-11	CARBON	100K	5%	1/4W
R384	1-249-414-11	CARBON	560	5%	1/4W
R385	1-247-864-11	CARBON	24K	5%	1/4W
R386	1-249-441-11	CARBON	100K	5%	1/4W
R391	1-247-878-00	CARBON	91K	5%	1/4W
R472	1-249-441-11	CARBON	100K	5%	1/4W
R473	1-249-435-11	CARBON	33K	5%	1/4W

Ref. No.	Part No.	Description	Remark
R474	1-249-432-11	CARBON	18K 5% 1/4W
R475	1-249-423-11	CARBON	3.3K 5% 1/4W
R476	1-249-441-11	CARBON	100K 5% 1/4W
R477	1-249-429-11	CARBON	10K 5% 1/4W
R479	1-249-441-11	CARBON	100K 5% 1/4W
R481	1-249-414-11	CARBON	560 5% 1/4W
R482	1-247-864-11	CARBON	24K 5% 1/4W
R483	1-249-441-11	CARBON	100K 5% 1/4W
R484	1-249-414-11	CARBON	560 5% 1/4W
R485	1-247-864-11	CARBON	24K 5% 1/4W
R486	1-249-441-11	CARBON	100K 5% 1/4W
R491	1-247-878-00	CARBON	91K 5% 1/4W
R545	1-247-842-11	CARBON	3K 5% 1/4W
R830	1-249-410-11	CARBON	270 5% 1/4W
R901	1-249-411-11	CARBON	330 5% 1/4W
R902	1-249-433-11	CARBON	22K 5% 1/4W
R903	1-249-433-11	CARBON	22K 5% 1/4W
R904	1-249-417-11	CARBON	1K 5% 1/4W
R905	1-247-903-00	CARBON	1M 5% 1/4W
R906	1-249-441-11	CARBON	100K 5% 1/4W
R907	1-249-441-11	CARBON	100K 5% 1/4W
R908	1-249-441-11	CARBON	100K 5% 1/4W
R951	1-249-407-11	CARBON	150 5% 1/4W
R952	1-249-409-11	CARBON	220 5% 1/4W
R953	1-249-411-11	CARBON	330 5% 1/4W
R954	1-249-421-11	CARBON	2.2K 5% 1/4W
R955	1-249-420-11	CARBON	1.8K 5% 1/4W
R961	1-249-407-11	CARBON	150 5% 1/4W
R962	1-249-422-11	CARBON	2.7K 5% 1/4W
R963	1-249-420-11	CARBON	1.8K 5% 1/4W
R971	1-249-407-11	CARBON	150 5% 1/4W
R972	1-249-409-11	CARBON	220 5% 1/4W
R973	1-249-411-11	CARBON	330 5% 1/4W
R974	1-249-413-11	CARBON	470 5% 1/4W
R975	1-249-415-11	CARBON	680 5% 1/4W
R976	1-249-417-11	CARBON	1K 5% 1/4W
R977	1-249-420-11	CARBON	1.8K 5% 1/4W
R978	1-249-424-11	CARBON	3.9K 5% 1/4W
R981	1-249-407-11	CARBON	150 5% 1/4W
R982	1-249-409-11	CARBON	220 5% 1/4W
R983	1-249-411-11	CARBON	330 5% 1/4W
R984	1-249-413-11	CARBON	470 5% 1/4W
R985	1-249-415-11	CARBON	680 5% 1/4W
R986	1-249-417-11	CARBON	1K 5% 1/4W
R987	1-249-420-11	CARBON	1.8K 5% 1/4W
R988	1-249-424-11	CARBON	3.9K 5% 1/4W
R991	1-249-407-11	CARBON	150 5% 1/4W
R992	1-249-409-11	CARBON	220 5% 1/4W
R993	1-249-411-11	CARBON	330 5% 1/4W

PANEL

Ref. No.	Part No.	Description	Remark
R994	1-249-413-11	CARBON 470 5% 1/4W	
R995	1-249-415-11	CARBON 680 5% 1/4W	
R996	1-249-417-11	CARBON 1K 5% 1/4W	
R997	1-249-420-11	CARBON 1.8K 5% 1/4W	
R998	1-249-424-11	CARBON 3.9K 5% 1/4W	

< VARIABLE RESISTOR >

RV71	1-241-496-11	RES. VAR. CARBON 20K/20K	
RV541	1-238-952-11	RES. VAR. CARBON 5K (BIAS DECK-B)	
RV561	1-238-908-11	RES. VAR. CARBON 20K/50K/50K (REC LEVEL)	
RV562	1-238-953-11	RES. VAR. CARBON 50K/50K (BALANCE)	
RV571	1-238-085-11	REA. VAR. CARBON 20K/20K (PHONES LEVEL)	

< SWITCH >

S901	1-554-118-00	SWITCH, PUSH (1 KEY) (POWER)	
S951	1-554-303-21	SWITCH, TACTILE (BLANK SKIP)	
S952	1-554-303-21	SWITCH, TACTILE (AUTO PAUSE)	
S953	1-554-303-21	SWITCH, TACTILE (AUTO REC LEVEL)	
S954	1-554-303-21	SWITCH, TACTILE (FADER)	
S955	1-571-520-11	SWITCH, SLIDE (DOLBY NR DECK-B)	
S961	1-571-520-11	SWITCH, SLIDE (TIMER)	
S962	1-571-520-11	SWITCH, SLIDE (DOLBY NR DECK-A)	
S971	1-554-303-21	SWITCH, TACTILE (A+B REC)	
S972	1-554-303-21	SWITCH, TACTILE (HIGH SPEED DUBBING)	
S973	1-554-303-21	SWITCH, TACTILE (NORM SPEED DUBBING)	
S974	1-554-303-21	SWITCH, TACTILE (COUNTER RESET DECK-A)	
S975	1-554-303-21	SWITCH, TACTILE (COUNTER MEMORY DECK-A)	
S976	1-554-303-21	SWITCH, TACTILE (COUNTER RESET DECK-B)	
S977	1-554-303-21	SWITCH, TACTILE (COUNTER MEMORY DECK-B)	
S978	1-571-520-11	SWITCH, SLIDE (DIR MODE)	
S981	1-554-303-21	SWITCH, TACTILE (DECK-A:OPEN/CLOSE)	
S982	1-554-303-21	SWITCH, TACTILE (DECK-A:STOP)	
S983	1-554-303-21	SWITCH, TACTILE (DECK-A:FWD)	
S984	1-554-303-21	SWITCH, TACTILE (DECK-A:REV)	
S985	1-554-303-21	SWITCH, TACTILE (DECK-A:PAUSE)	
S986	1-554-303-21	SWITCH, TACTILE (DECK-A:REC MUTE)	
S987	1-554-303-21	SWITCH, TACTILE (DECK-B:REW)	
S988	1-554-303-21	SWITCH, TACTILE (DECK-B:FF)	
S989	1-554-303-21	SWITCH, TACTILE (DECK-B:REC)	
S991	1-554-303-21	SWITCH, TACTILE (DECK-B:OPEN/CLOSE)	
S992	1-554-303-21	SWITCH, TACTILE (DECK-B:STOP)	
S993	1-554-303-21	SWITCH, TACTILE (DECK-B:FWD)	
S994	1-554-303-21	SWITCH, TACTILE (DECK-B:REV)	
S995	1-554-303-21	SWITCH, TACTILE (DECK-B:PAUSE)	
S996	1-554-303-21	SWITCH, TACTILE (DECK-B:REC MUTE)	
S997	1-554-303-21	SWITCH, TACTILE (DECK-A:REW)	
S998	1-554-303-21	SWITCH, TACTILE (DECK-A:FF)	
S999	1-554-303-21	SWITCH, TACTILE (DECK-A:REC)	

Ref. No.	Part No.	Description	Remark
		< CERAMIC >	
X901	1-577-359-21	VIBRATOR, CERAMIC (4.19MHz)	

MISCELLANEOUS

58	△	1-555-465-00	CORD, POWER (WR97ES:US, Canadian)
59	△	1-569-007-11	ADAPTOR, CONVERSION 2P (WR97ES:E)
CNJ1		1-558-350-21	CORD (WITH CONNECTOR)
D1051		8-719-980-85	DIODE SLF-325C
D1091		8-719-950-74	DIODE SLR-314D-B
M1051		X-3356-638-1	MOTOR (REEL R) ASSY
M1052		X-3356-604-1	MOTOR (ASSIST) ASSY
M1053		X-3356-605-1	MOTOR (CAPSTAN R) ASSY
Q1091		8-729-809-43	SPS-314B-BE
S1001		1-466-525-11	ENCODER, ROTARY
T1	△	1-450-444-11	TRANSFORMER, POWER (WR97ES:US, Canadian)
T1	△	1-450-445-11	TRANSFORMER, POWER (WR97ES:E)
T1	△	1-450-446-11	TRANSFORMER, POWER (WR870)
VS1	△	1-570-307-11	SWITCH, VOLTAGE CHANGE

ACCESSORY & PACKING MATERIAL

1-465-369-11	COMMANDER, REMOTE (RM-J902)	(WR870/WR97ES:E)
1-559-533-11	CORD, CONNECTION	
2-181-754-01	COVER, BATTERY (FOR RM-J902)	(WR870/WR97ES:E)
* 3-354-915-01	CUSHION	
* 3-354-919-21	INDIVIDUAL CARTON	
3-677-503-00	SHEET (LARGE), PROTECTION	(WR97ES:US, Canadian)
3-703-450-01	INSTRUCTION	
3-704-366-01	SCREW (CASE) (M3X8)	
3-753-074-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, PORTUGUESE)	(WR870:AEP, UK)
3-753-074-21	MANUAL, INSTRUCTION (ENGLISH)	(WR97ES:US)
3-753-074-31	MANUAL, INSTRUCTION (ENGLISH, FRENCH)	(WR97ES:Canadian)
3-753-074-41	MANUAL, INSTRUCTION (GERMAN, DUTCH, SWEDISH, ITALIAN)	(WR870:AEP/Germany)
3-753-074-51	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, CHINESE)	(WR97ES:E)

Note:

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Note:

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
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HARDWARE LIST

# 1	7-682-547-04	SCREW +BVTT 3X6 (S)	
# 2	7-682-548-04	SCREW +BVTT 3X8 (S)	
# 3	7-685-645-79	SCREW +BVTP 3X6 TYPE 2 IT-3	
# 4	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
# 5	7-621-849-00	SCREW (BV/RING)	
# 6	7-621-770-67	SCREW +BVTT 2.6X6 (S)	
# 7	7-685-131-19	SCREW +BTP 2.6X4 TYPE2 N-S	
# 8	7-685-133-19	SCREW +BTP 2.6X6 TYPE2 N-S	
# 9	7-621-255-20	SCREW +BVTT 2X4 (S)	
#10	7-621-255-35	SCREW +BVTT 2X5 (S)	
#11	7-621-283-00	SCREW +BVTT 2X5 (S)	
#12	7-685-534-19	SCREW +BTP 2.6X8 (E)	
#13	7-685-870-01	SCREW +BVTT 3X5 (S)	
#14	7-621-775-10	SCREW +B 2.6X4	