

ST-EX880/MS717

SERVICE MANUAL

AEP Model

UK Model

ST-EX880

E Model

Tourist Model

ST-MS717



ST-EX880/MS717 are the tuner section
in DHC-EX880MD/MD717.

Photo: ST-MS717

SPECIFICATIONS

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range

ST-EX880: 87.5 – 108.0 MHz
(50 kHz step)

ST-MS717:

Tourist model: 76.0 – 108.0 MHz
(50 kHz step)

Other models: 87.5 – 108.0 MHz
(50 kHz step)

Antenna FM lead antenna

Antenna terminals 75 ohms unbalanced

Intermediate frequency 10.7 MHz

AM tuner section

Tuning range

ST-EX880: MW: 522 – 1,611 kHz
(with the interval set at
9 kHz)

LW: 144 – 288 kHz
(with the interval set at
3 kHz)

ST-MS717:

AM: 531 – 1,602 kHz
(with the interval set at
9 kHz)

530 – 1,710 kHz
(with the interval set at
10 kHz)

Antenna AM loop antenna,
outdoor antenna
terminals

Intermediate frequency 450 kHz

Dimensions (w/h/d) incl. projecting parts and
controls: Approx. 280 x 90 x
295 mm

Mass Approx. 2.0 kg

Design and specifications are subject to change
without notice.

FM STEREO/FM-AM TIMER TUNER



SONY®

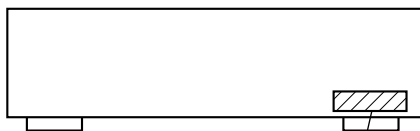
SECTION 1 SERVICING NOTES

TABLE OF CONTENTS

1. SERVICING NOTES	2
2. GENERAL	3
3. DISASSEMBLY	5
4. ELECTRICAL ADJUSTMENTS	6
5. DIAGRAMS	
5-1. Note for Printed Wiring Boards and Schematic Diagrams	7
5-2. Printed Wiring Board – MAIN Section – (ST-EX880)	9
5-3. Printed Wiring Board – MAIN Section – (ST-MS717)	11
5-4. Schematic Diagram – MAIN Section (1/2) –	13
5-5. Schematic Diagram – MAIN Section (2/2) –	15
5-6. Printed Wiring Board – PANEL Section –	17
5-7. Schematic Diagram – PANEL Section –	19
5-8. Schematic Diagram – RDS Section – (ST-EX880)	21
5-9. Printed Wiring Board – RDS Section – (ST-EX880)	21
5-10. Schematic Diagram – POWER Section –	22
5-11. Printed Wiring Boards – POWER Section –	23
5-12. IC Pin Function Description	25
6. EXPLODED VIEWS	29
7. ELECTRICAL PARTS LIST	31

MODEL IDENTIFICATION

– Back Panel –



4-995-091-1□: Hong Kong, Singapore, Malaysia
4-995-091-2□: AEP, UK
4-995-091-3□: Tourist

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK $\triangle$ OR DOTTED LINE WITH MARK $\triangle$ 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.

KEYs FLUORESCENT INDICATOR TUBE/LEDs CHECK MODE (Work a separately)

1. Press **[POWER]** button.
2. Press two buttons **[POWER]** and **[SLEEP]** simultaneously.
3. LEDs are all turned on, the fluorescent indicator tube displays “KEY/FL/LED”, and the check mode is set.
 - ① All LED indicators light on mode
↓
 - ② All Fluorescent indicator tube light on mode
↓
 - ③ ST segment mode
↓
 - ④ RDS segment mode
↓
 - ⑤ Encoder and key check mode

Note:

- 1) All LED light on mode is kept, when buttons which is pressed to enter all LED light on mode, release same time. When release them separate timing, it is moved to next All Fluorescent indicator tube light on mode.
- 2) After all LED light on mode, light on point remove one by one, when any button pressed or **[MULTI CONTROLLER]** knob turned.
- 3) Under KEY check mode, every time buttons pressed numerical value of “KEY=” in FL tube increase. And that time, numerical value of “ECDR=” increase when **[MULTI CONTROLLER]** button turn to + direction, and it decrease turn to – direction.

To exit from this mode, disconnect the power cord.

TUNER CHECK MODE (Work a separately)

1. Press **[POWER]** button.
2. Press two buttons **[POWER]** and **[ENTER/YES]** simultaneously, and the tuner check mode is set.
3. System power on, set up the tuner function, and test condition inactive.
Press two buttons **[POWER]** and **[ENTER/YES]** simultaneously to exit, and system power off.

COLD RESET (Work a complex)

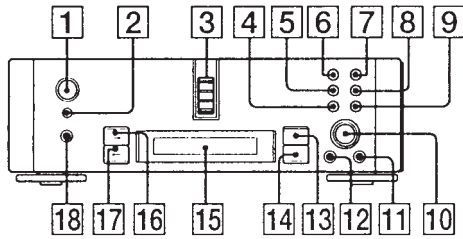
The cold reset clears each unit microcomputer memory to initial conditions.

1. Press **[POWER]** button to turn the set OFF.
2. Press three buttons **[MENU/NO]**, **[PRESET]**, and **[POWER]** simultaneously.
3. A message “COLD SET OK” is displayed on the fluorescent indicator tube two seconds.
4. Press **[POWER]** button to turn the set OFF.
5. Remove power cord after the clock is displayed on the fluorescent indicator tube.
6. Connect power cord, press **[POWER]** button to turn the set ON, and the set is reset.

SECTION 2 GENERAL

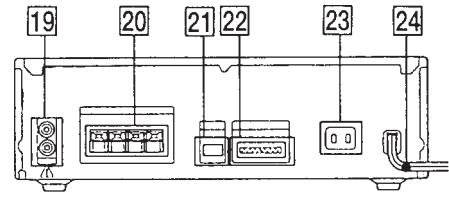
LOCATION OF CONTROLS

– Front Panel –



- 1** I/⏻ (POWER) button
- 2** REMOTE CONTROL receiver
- 3** ONCE, DAILY, REC, SLEEP indicator
- 4** REC button
- 5** DAILY button
- 6** ONCE button
- 7** CLOCK/TIMER SET button
- 8** STEREO/MONO button
- 9** SLEEP button
- 10** MULTI CONTROLLER knob
- 11** ENTER/YES button
- 12** MENU/NO button
- 13** BAND button
- 14** RESET button
- 15** Fluorescent indicator tube
- 16** AUTO/→ button
- 17** MANUAL/← button
- 18** DISPLAY button

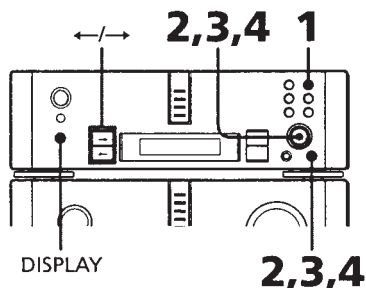
– Rear Panel –



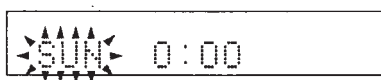
- 19** TUNER OUT terminal
- 20** FM/AM ANTENNA terminal
- 21** AU BUS terminal
- 22** SYSTEM CONTROL terminal
- 23** AC OUTLET (for TA-MS717)
- 24** POWER cord

Step 2: Setting the time

You can set the time while the system is off. You must set the time beforehand to use the timer-recording and other timer functions. The clock is on a 24-hour system for the DHC-EX880MD, and a 12-hour system for DHC-MD717. The DHC-EX880MD is used for illustration purpose.



- 1** Press CLOCK/TIMER SET.
The day indication ("SUN") flashes.



- 2** Turn MULTI CONTROLLER and set the day, then press ENTER/YES.
The hour indication flashes.



- 3** Turn MULTI CONTROLLER and set the hour, then press ENTER/YES.
The minute indication flashes.



- 4** Turn MULTI CONTROLLER and set the minute, then press ENTER/YES.
The clock starts working.

If you made a mistake

Press ← or → until the indication you wish to change (day, hour, minute) flashes, then change the setting.

To change the preset time

You can also set and change the time while the system is on.

- 1** Press CLOCK/TIMER SET.
 - 2** Turn MULTI CONTROLLER until "CLOCK" appears.
 - 3** Press ENTER/YES.
 - 4** Perform steps 2 to 4 of "Setting the time".
- If the system is off, start over from step 1 of "Setting the time".

To show the time

The built-in clock constantly shows the time in the tuner display while the system is off. To show the time while the system is on, press DISPLAY. Each time you press the button, the display changes as follows:

Normal display ↔ Clock display*

* The clock display returns to the normal display after about eight seconds. The time cannot be displayed constantly while the system is on.

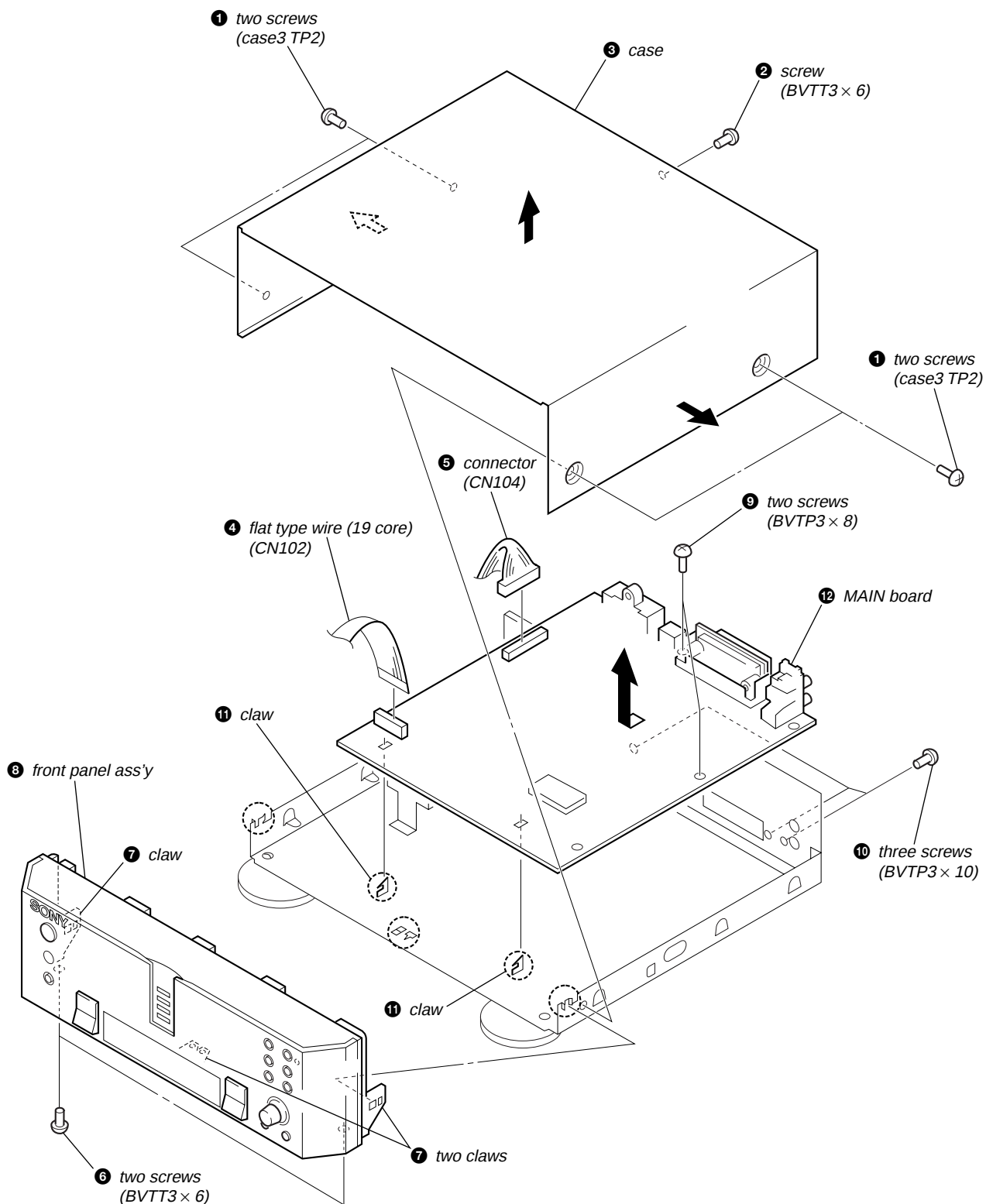
Tip

The upper dot flashes for the first half of a minute (0 to 29 seconds), and the lower dot flashes for the last half of a minute (30 to 59 seconds).

SECTION 3 DISASSEMBLY

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

MAIN BOARD



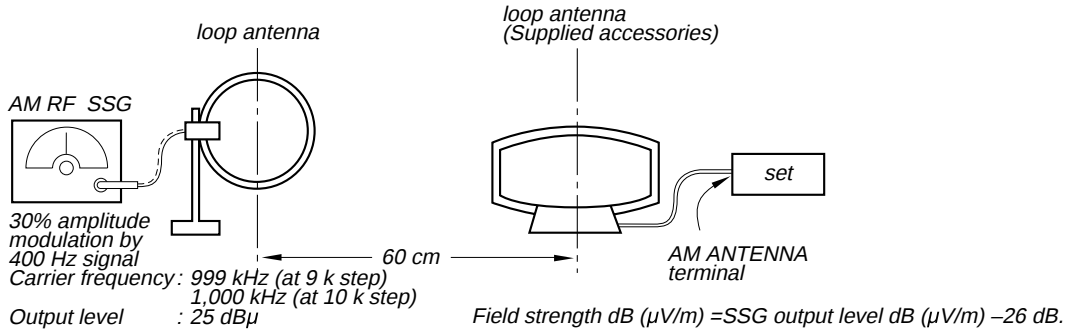
SECTION 4 ELECTRICAL ADJUSTMENTS

0 dB=1 μ V

Note: As a front-end (FE1) is difficult to repair if faulty, replace it with new one.

AM Section Adjustment

Setting:



AM Tuned Level Adjustment

Band: AM or MW

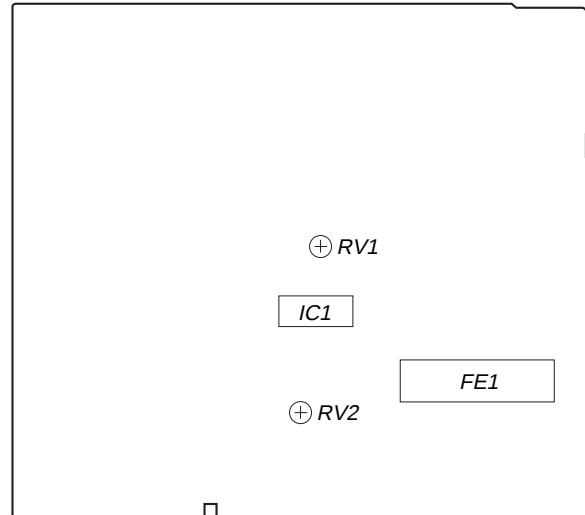
Procedure:

1. Set the output of SSG so that the input level of the set becomes 55 dB μ /m.
2. Tune the set to 999 kHz or 1,000 kHz.
3. Adjust RV1 to the point (moment) when the TUNED indicator will change from going off to going on.

Adjustment Location : MAIN board

Adjustment Location:

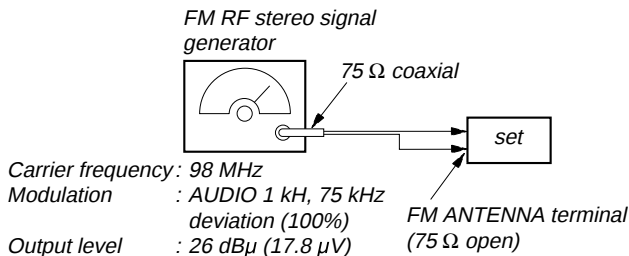
[MAIN BOARD] (Component Side)



FM Section Adjustment

Note: This adjustment should be performed after the AM Tuned Level Adjustment due to the same adjustment element.

Setting:



FM Tuned Level Adjustment

Band: FM

Procedure:

1. Supply a 26 dB μ 98 MHz signal from the ANTENNA terminal.
2. Tune the set to 98 MHz.
3. If the TUNED indicator does not light, adjust RV2 to the point (moment) when the TUNED indicator will change from going off to going on.

Adjustment Location: MAIN board

SECTION 5
DIAGRAMS

5-1. NOTE FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note on Schematic Diagram:

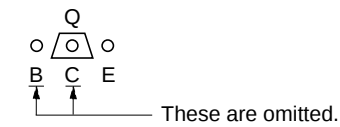
- All capacitors are in μF unless otherwise noted. pF : $\mu\mu\text{F}$ 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- $\triangle$: internal component.
- $\text{---}\text{W}\text{---}$: nonflammable resistor.
- $\text{---}\text{---}$: panel designation.

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

- B+ : B+ Line.
- B- : B- Line.
- --- : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
no mark : FM
() : AM (MW)
<< >> : STAND BY
[] : MUTING ON
- Voltages are taken with a VOM (Input impedance 10 $\text{M}\Omega$).
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope.
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
 $\Rightarrow$: FM
 $\Rightarrow$: AM (MW)

Note on Printed Wiring Boards:

- --- : parts extracted from the component side.
- $\triangle$: internal component.
- Indication of transistor.



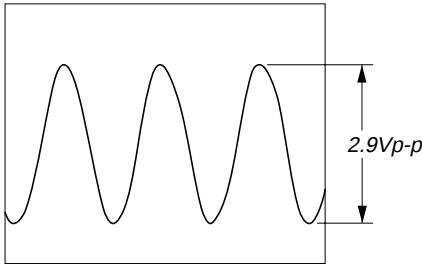
Abbreviation:

- HK : Hong Kong
- JE : Tourist
- MY : Malaysia
- SP : Singapore

• Waveforms

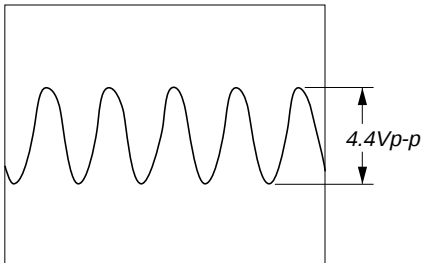
– MAIN Section –

① IC51 ① (XIN)



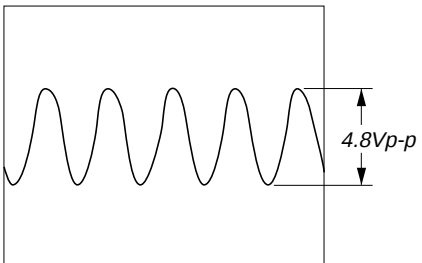
4.5 MHz

② IC201 ④ (X2)



10 MHz

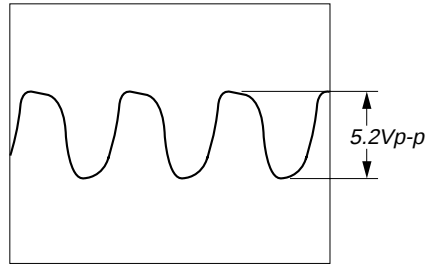
③ IC201 ④ (XT2)



32.768 kHz

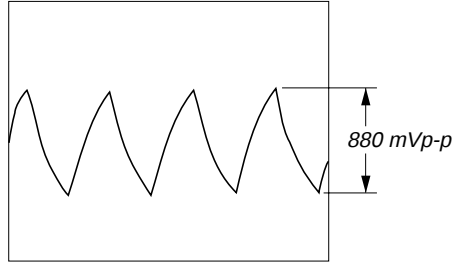
– PANEL Section –

④ IC901 ② (XOUT)



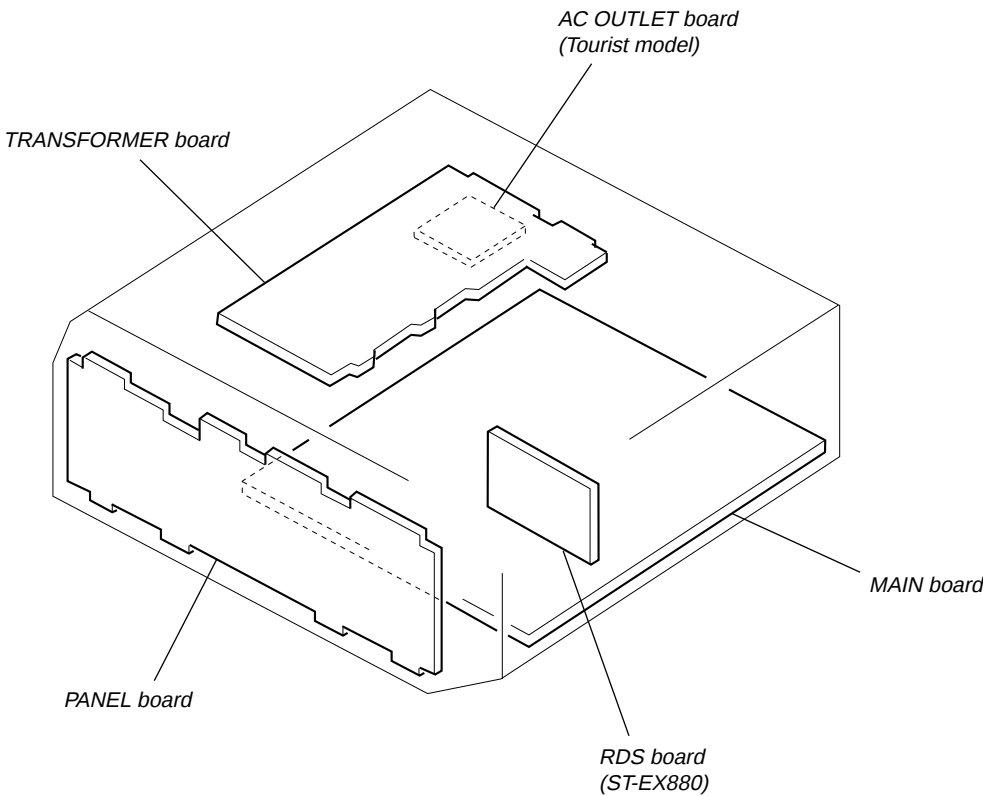
513 kHz

⑤ IC901 ② (XIN)



504 kHz

• Circuit Boards Location

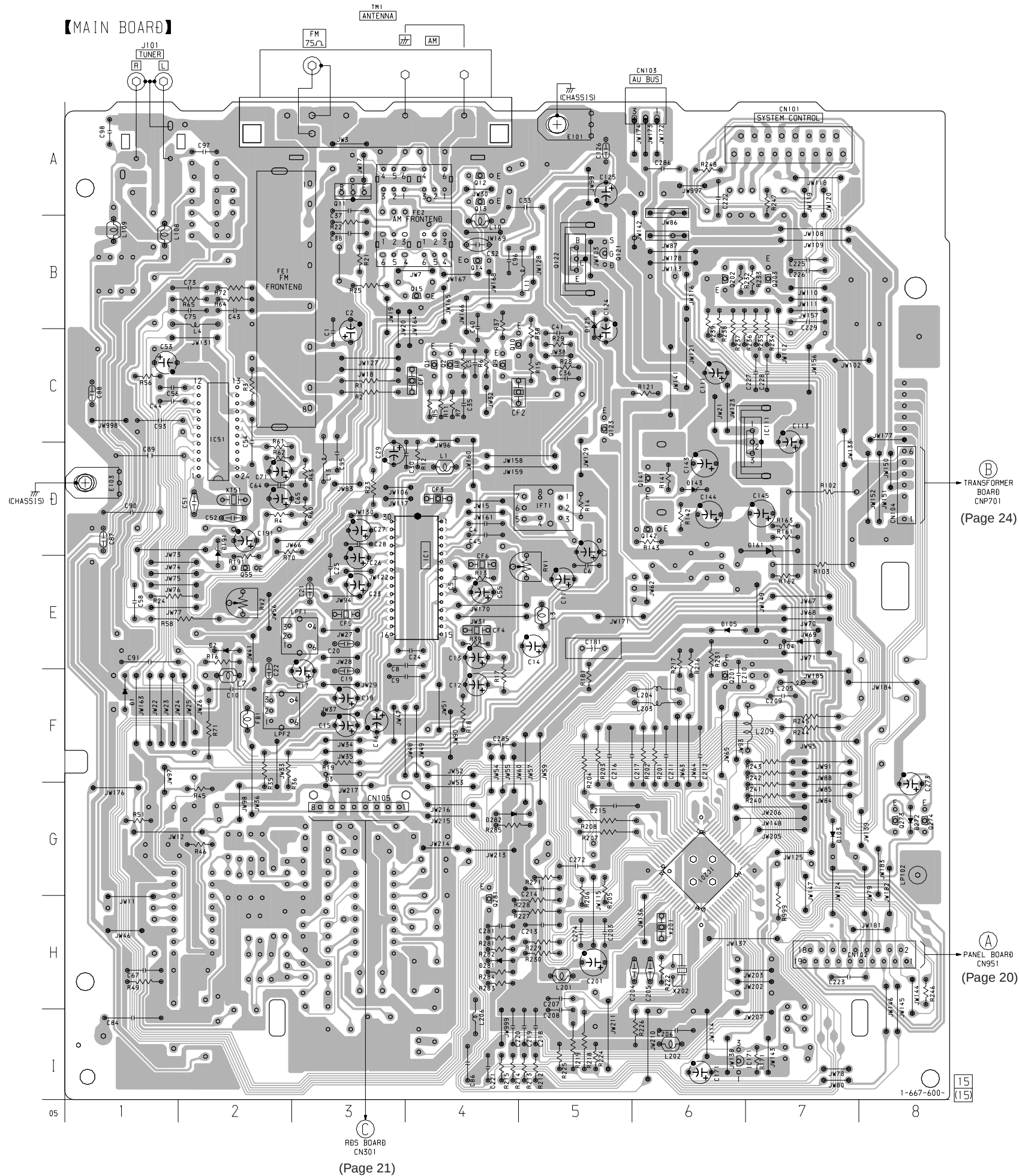


5-2. PRINTED WIRING BOARD – MAIN Section – (ST-EX880)

• See page 7 for Circuit Boards Location.

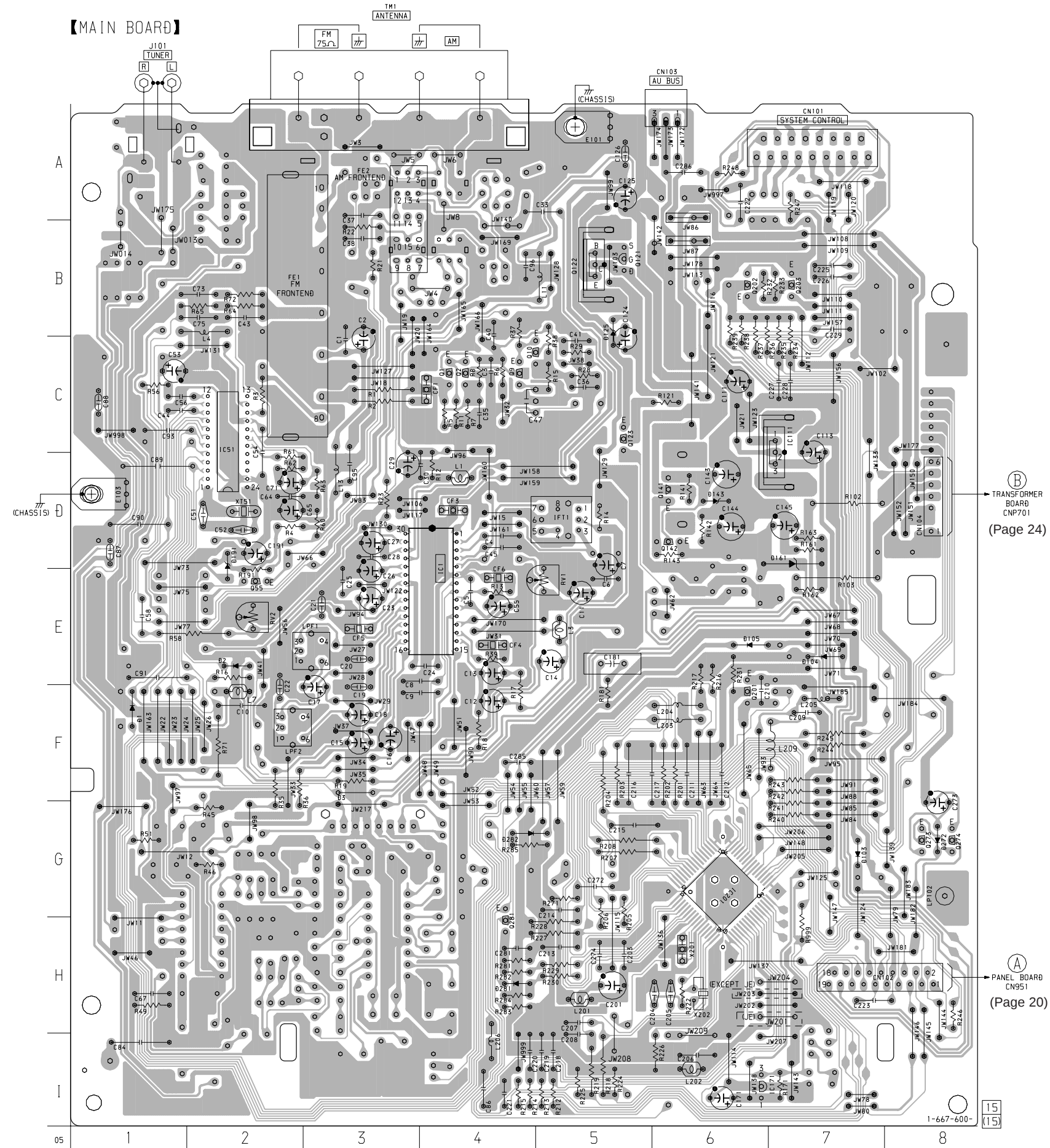
• Semiconductor Location

Ref. No.	Location
D1	F-1
D2	E-2
D103	G-7
D104	E-7
D105	E-6
D125	B-5
D143	D-6
D161	D-7
D191	D-2
D272	G-8
D281	H-4
D282	G-4
IC1	E-4
IC51	C-2
IC111	C-7
IC171	I-6
IC201	G-6
Q1	C-4
Q2	C-4
Q9	C-4
Q10	C-5
Q11	A-3
Q12	A-4
Q13	A-4
Q14	B-4
Q15	B-4
Q55	E-2
Q121	B-5
Q122	B-5
Q123	C-5
Q141	D-6
Q142	D-6
Q201	F-6
Q202	B-6
Q203	B-7
Q273	G-8
Q274	G-8
Q281	H-4



5-3. PRINTED WIRING BOARD – MAIN Section – (ST-MS717)

• See page 7 for Circuit Boards Location.

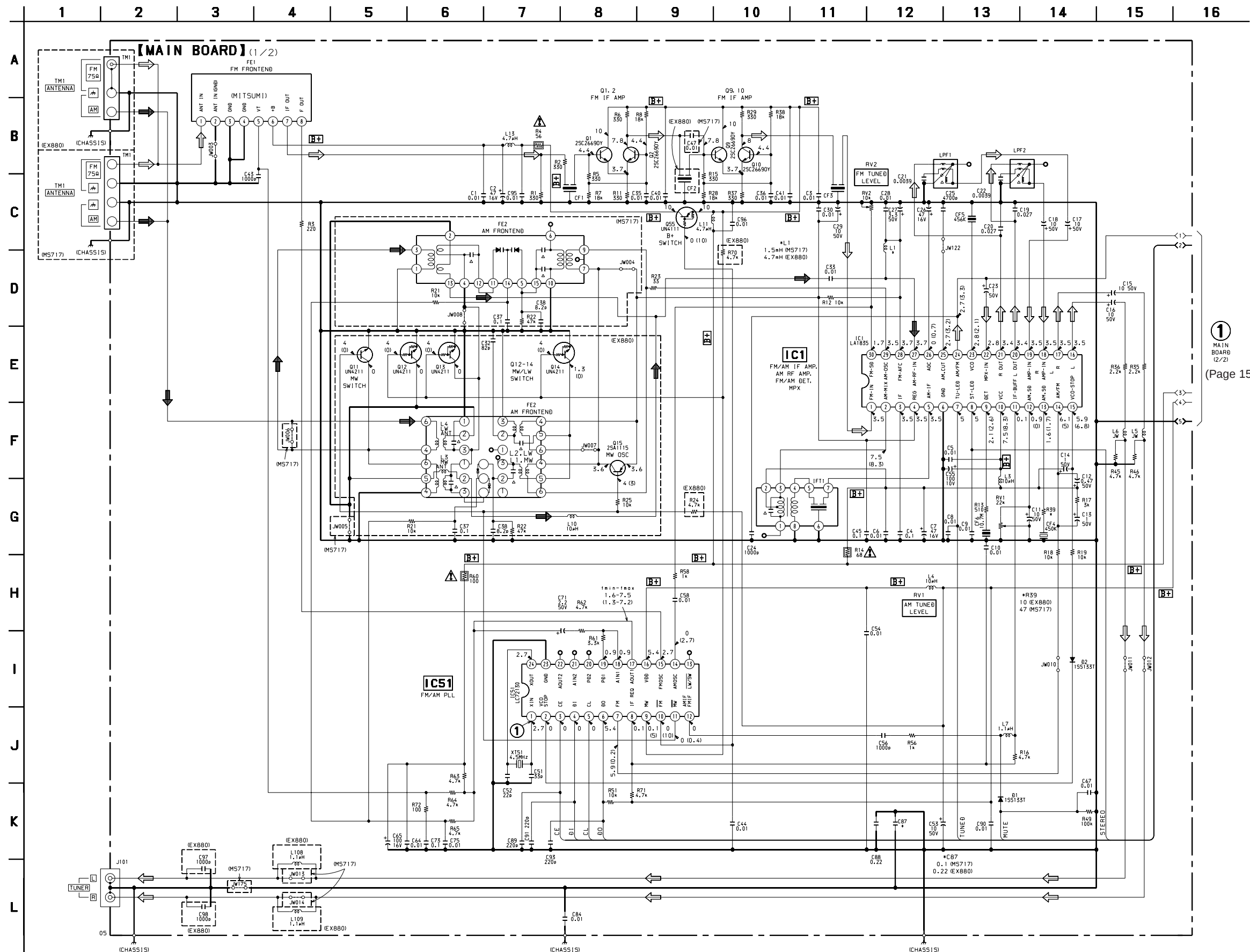


• Semiconductor Location

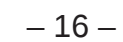
Ref. No.	Location
D1	F-1
D2	E-2
D103	G-7
D104	E-7
D105	E-6
D125	B-5
D143	D-6
D161	D-7
D191	D-2
D272	G-8
D281	H-4
D282	G-4
IC1	E-4
IC51	C-2
IC111	C-7
IC171	I-6
IC201	G-6
Q1	C-4
Q2	C-4
Q9	C-4
Q10	C-5
Q55	E-2
Q121	B-5
Q122	B-5
Q123	C-5
Q141	D-6
Q142	D-6
Q201	F-6
Q202	B-6
Q203	B-7
Q273	G-8
Q274	G-8
Q281	H-4

5-4. SCHEMATIC DIAGRAM – MAIN Section (1/2) –

• See page 8 for Waveforms.

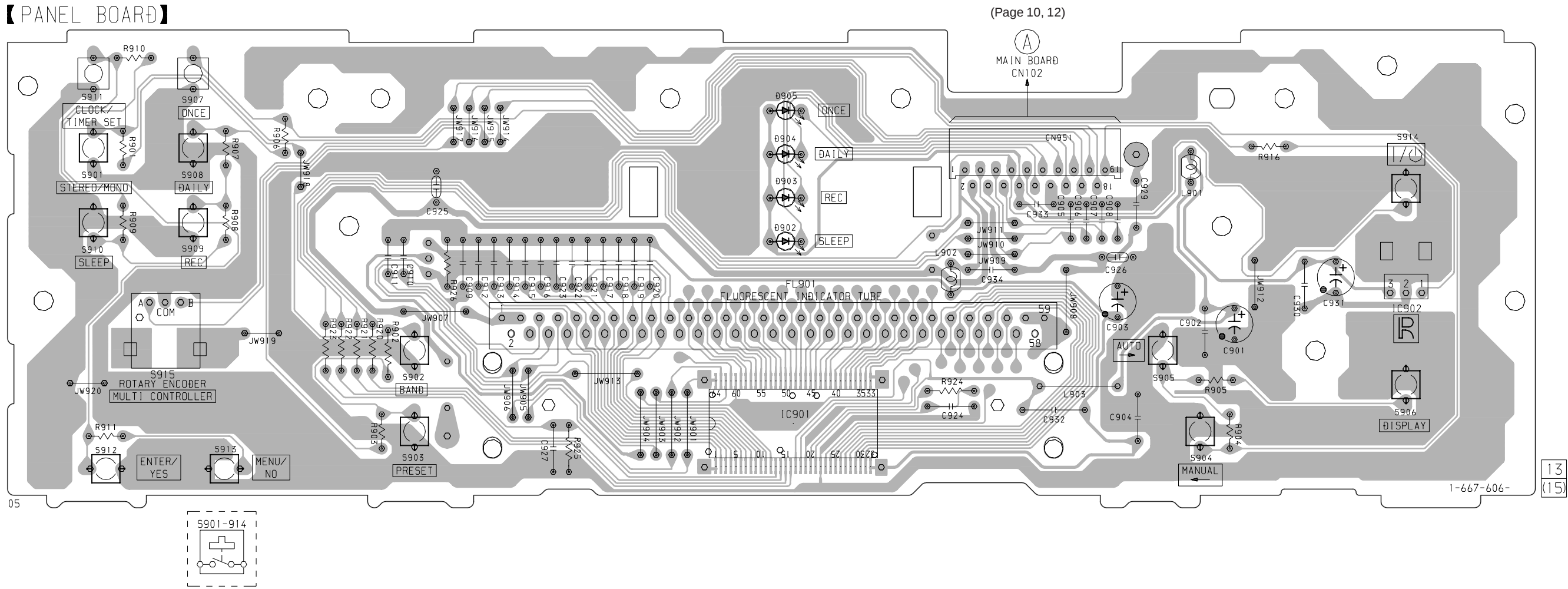


The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.



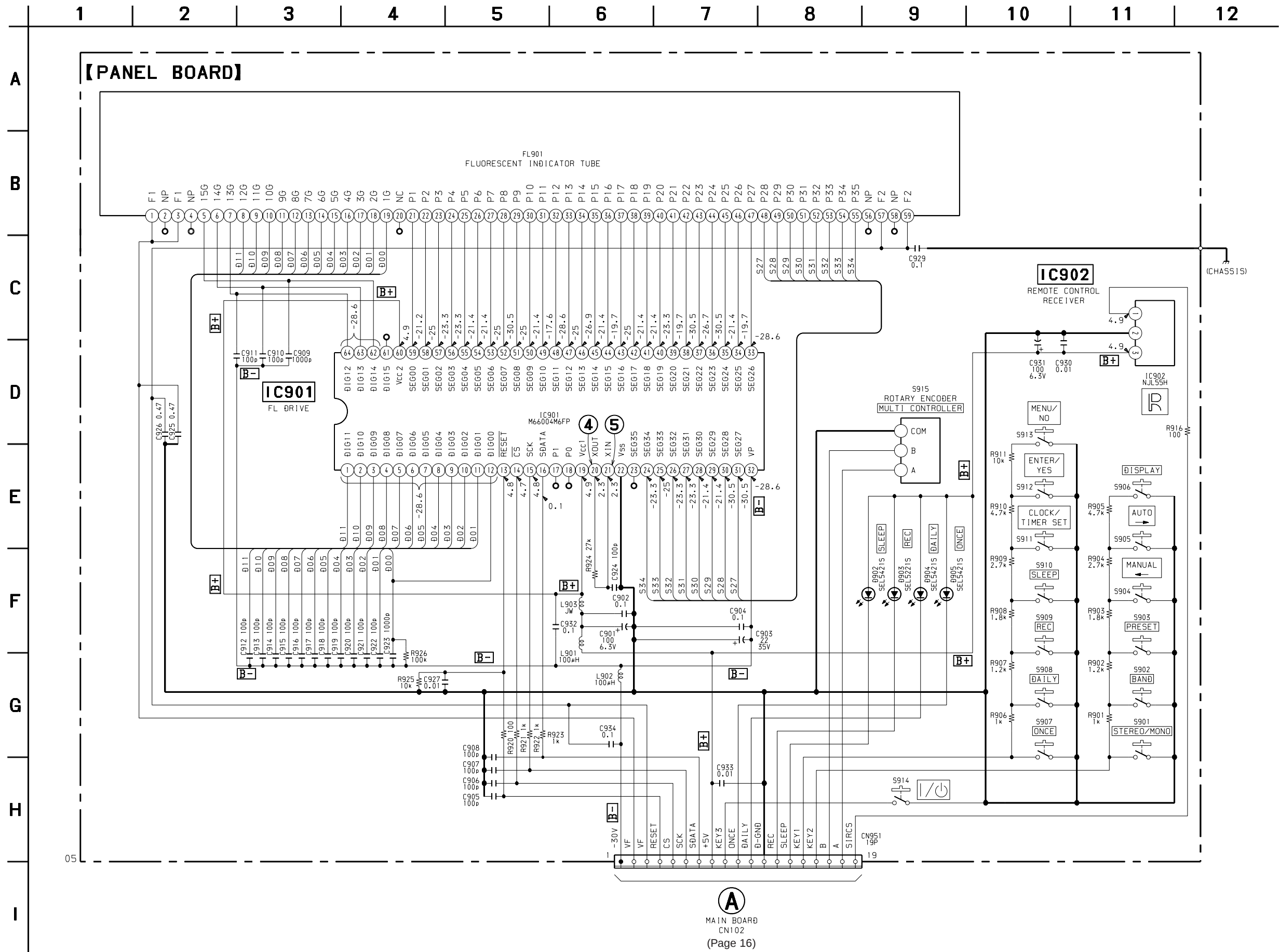
5-6. PRINTED WIRING BOARD – PANEL Section –
• See page 7 for Circuit Boards Location.

【PANEL BOARD】

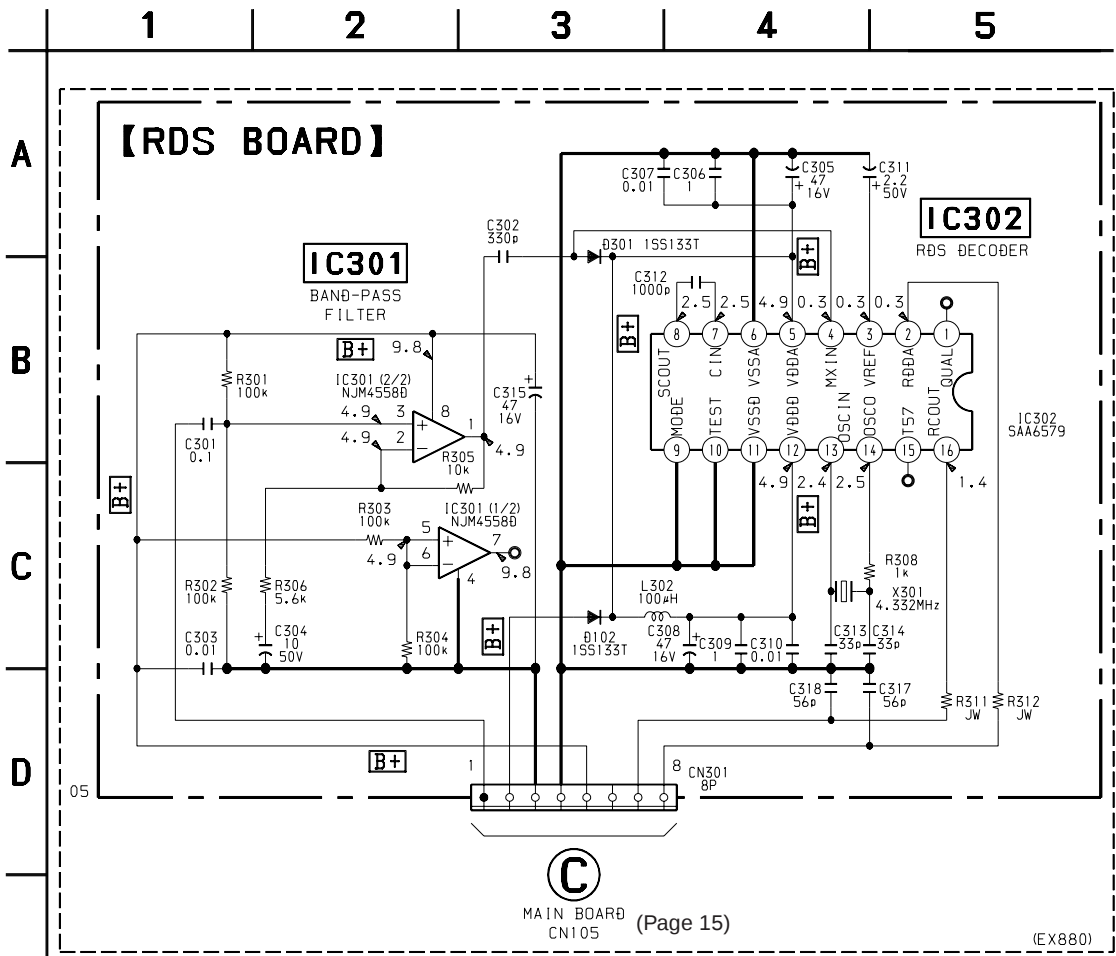


5-7. SCHEMATIC DIAGRAM – PANEL Section –

• See page 8 for Waveforms.

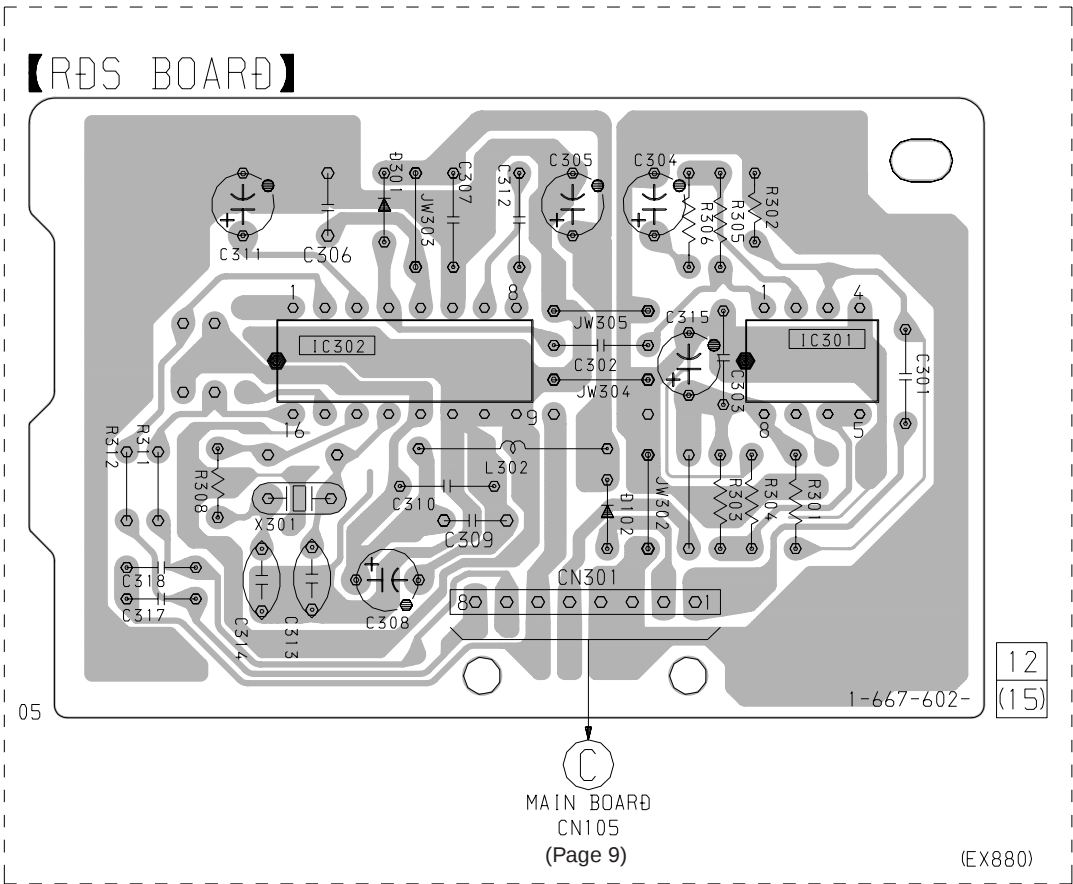


5-8. SCHEMATIC DIAGRAM – RDS Section – (ST-EX880)

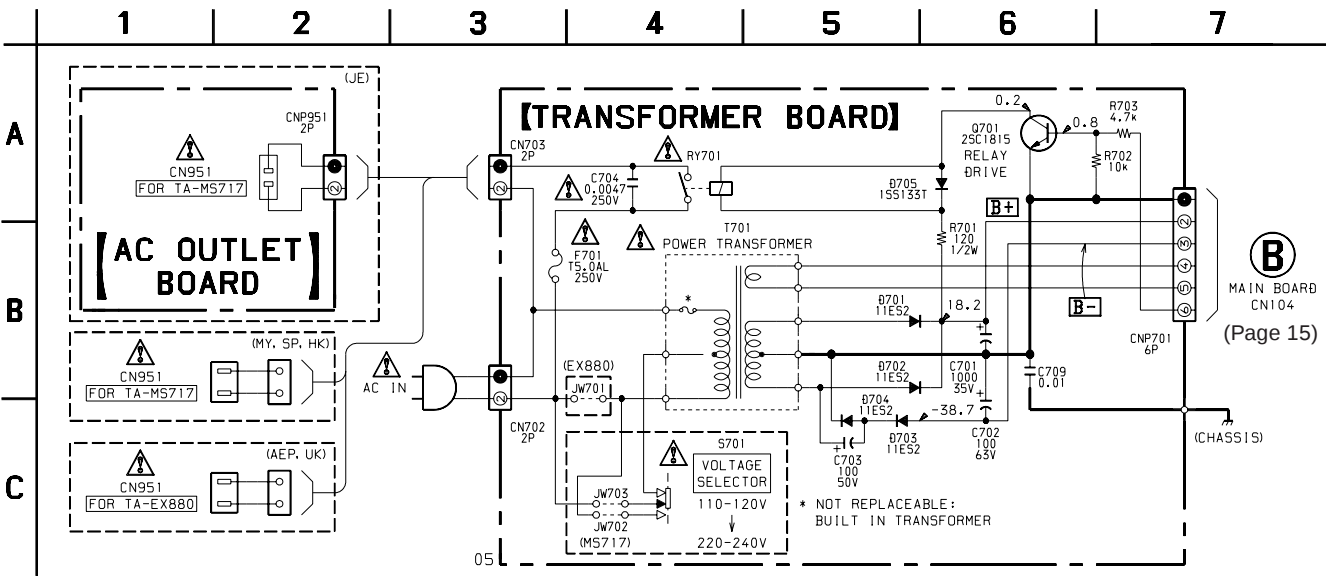


5-9. PRINTED WIRING BOARD – RDS Section – (ST-EX880)

• See page 7 for Circuit Boards Location.



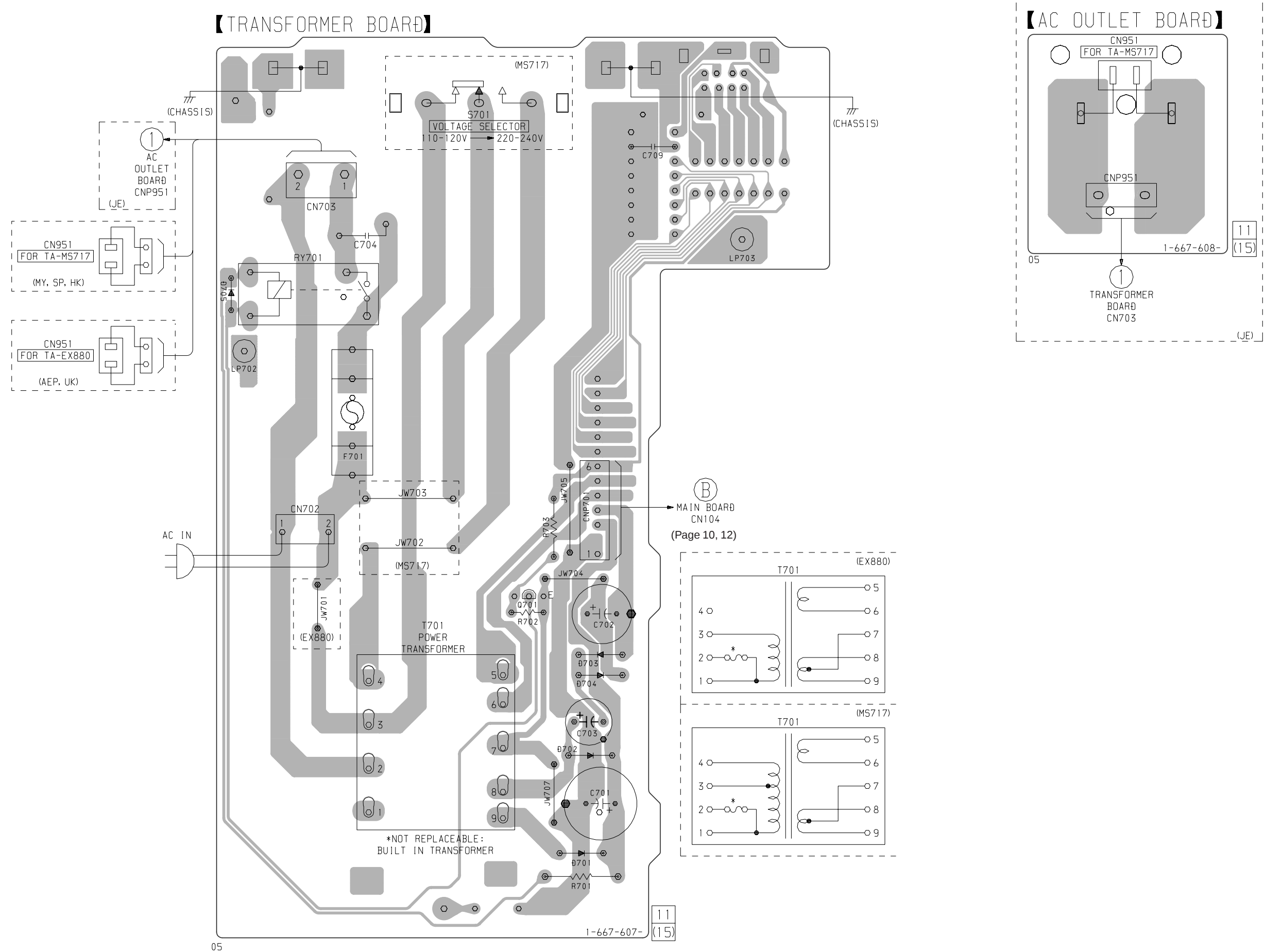
5-10. SCHEMATIC DIAGRAM – POWER Section –



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

5-11. PRINTED WIRING BOARDS – POWER Section –

• See page 7 for Circuit Boards Location.



5-12. IC PIN FUNCTION DESCRIPTION

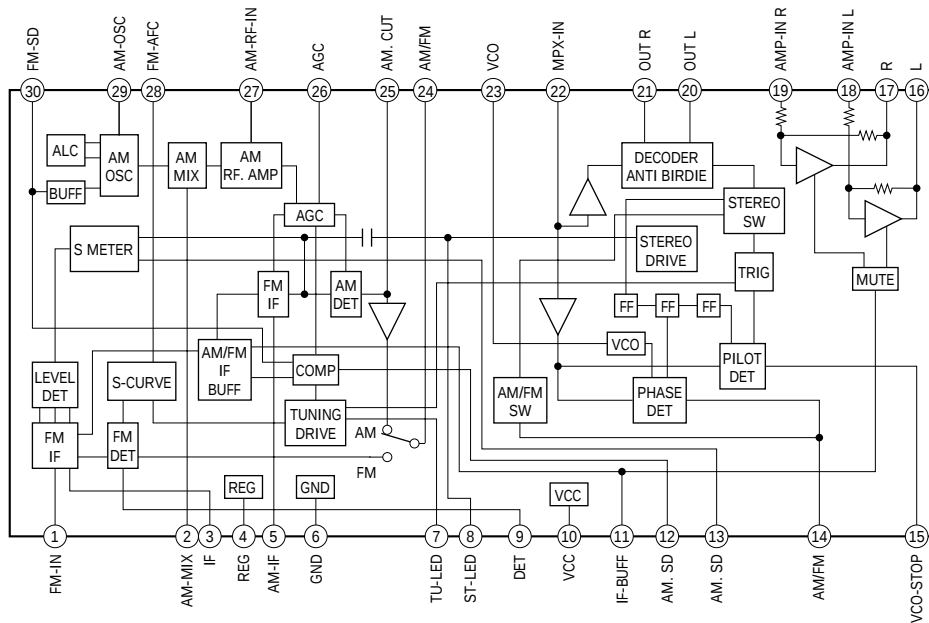
• MAIN BOARD IC201 μPD78016FGC-544-AB8 (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1 to 4	DATA 0 to DATA 3	I/O	Two-way data bus with the system control bus
5	IF+50	I	Fixed at “L” in this set
6	IF−50	O	Fixed at “L” in this set
7, 8	GND	—	Ground terminal
9	VSS	—	Ground terminal
10	<u>POWER</u>	O	Power on/off control signal output for the +10V and +5V power supply “L”: power on, “H”: standby
11	<u>MUTE</u>	O	Tuner muting on/off control signal output terminal “L”: muting on
12	AC RELAY	O	Relay drive signal output for the AC on/off control “L”: standby, “H”: power on
13, 14	NC	O	Not used (open)
15	AM MONO	O	AM forced monaural control signal output terminal “H”: forced monaural Not used (open)
16	AM/FM	O	FM/AM selection signal output terminal Not used (open)
17	IFNG	O	Intermediate frequency count effect signal output terminal “L”: NG, “H”: OK Not used (open)
18	STEREO	I	Stereo detection signal input from the LA1835 (IC1) “L”: stereo
19	SIGNAL	I	FM/AM frequency detection signal input from the LA1835 (IC1) “L”: tuned, “H”: detuned
20	DATA IN	I	PLL serial data input from the FM/AM PLL (IC51)
21	DATA OUT	O	PLL serial data output to the FM/AM PLL (IC51)
22	CLOCK	O	PLL serial data transfer clock signal output to the FM/AM PLL (IC51)
23	CE	O	PLL serial chip enable signal output to the FM/AM PLL (IC51)
24	VSS	—	Ground terminal
25	SIRCS IN	I	Sircs remote control signal input from the remote control receiver (IC902)
26	STAND BY	O	LED drive signal output for the STANDBY indicator Not used (open)
27	ONCE	O	LED drive signal output for the ONCE indicator (D905) “L”: LED on
28	DAILY	O	LED drive signal output for the DAILY indicator (D904) “L”: LED on
29	REC	O	LED drive signal output for the REC indicator (D903) “L”: LED on
30	SLEEP	O	LED drive signal output for the SLEEP indicator (D902) “L”: LED on
31	ENCORDER IN A	I	Jog dial pulse (A) input from the rotary encoder (S915) (for MULTI CONTROLLER)
32	ENCORDER IN B	I	Jog dial pulse (B) input from the rotary encoder (S915) (for MULTI CONTROLLER)
33	AUBUS IN	I	Sircs remote control signal input for the audio bus
34	AUBUS OUT	O	Sircs remote control signal output for the audio bus
35	<u>RESET</u>	I	System reset signal input from the reset signal generator circuit “L”: reset For several hundreds msec. after the power supply rises, “L” is input, then it changes to “H”
36	RDS CLK	I	Serial data transfer clock signal input from the RDS decoder (IC302) Used for the ST-EX880 (ST-MS717: fixed at “L”)
37	CLOCK	I/O	Bus data transfer/reading clock signal in/out terminal for the system control bus
38	BUSY	I/O	Busy signal in/out terminal for the system control bus
39	AC OFF	I	AC off detection signal input terminal “L”: AC off
40	VDD	—	Power supply terminal (+5V)
41	X2	O	Main system clock output terminal (10 MHz)
42	X1	I	Main system clock input terminal (10 MHz)
43	GND IC (VPP)	—	Ground terminal
44	XT2	O	Sub system clock output terminal (32.768 kHz)
45	XT1	I	Sub system clock input terminal (32.768 kHz)
46	AVSS	—	Ground terminal (for A/D converter)

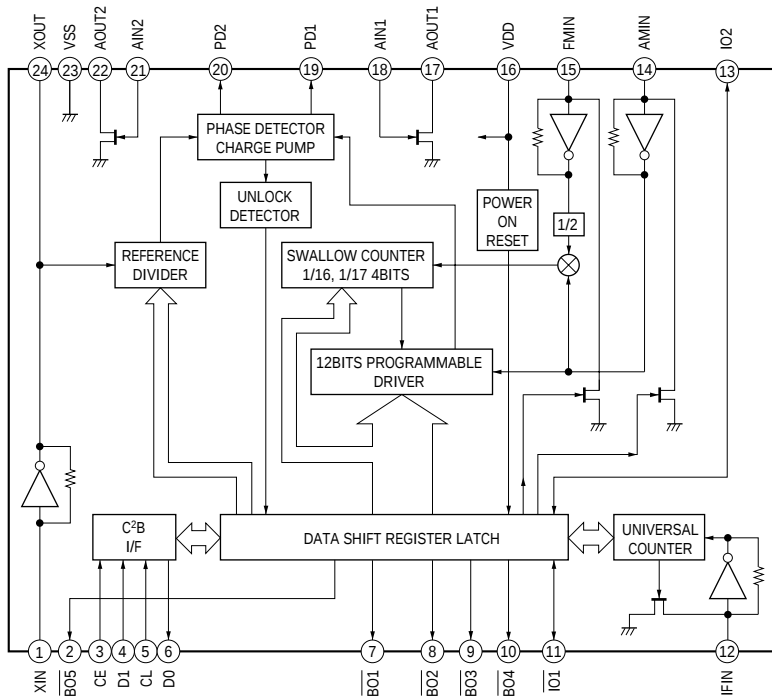
Pin No.	Pin Name	I/O	Function
47	KEY IN 1	I	Key input terminal (A/D input) (S907 to S913) ONCE, DAILY, REC, SLEEP, CLOCK/TIMER SET, ENTER/YES, MENU/NO keys input
48	KEY IN 2	I	Key input terminal (A/D input) (S901 to S906) STEREO/MONO, BAND, PRESET, MANUAL, AUTO, DISPLAY keys input
49	KEY IN 3	I	Key input terminal (A/D input) (S914) I/⏻ (power) key input
50	RDS DATA	I	Serial data input from the RDS decoder (IC302) Used for the ST-EX880 (ST-MS717: fixed at “L”)
51	DESTINATION	I	Input terminal for the destination setting (Tourist model: fixed at “L”, Except Tourist model: open)
52	DESTINATION	I	Input terminal for the destination setting (fixed at “L”)
53	DESTINATION	I	Input terminal for the destination setting (Tourist model: open, Except Tourist model: fixed at “L”)
54	DESTINATION	I	Input terminal for the destination setting (ST-EX880: open, ST-MS717: fixed at “L”)
55	AVDD	—	Power supply terminal (+5V) (for A/D converter)
56	AVREF	I	Reference voltage (+5V) input terminal (for A/D converter)
57	GND	—	Ground terminal
58	SDATA	O	Serial data output to the fluorescent indicator tube driver (IC901)
59	SCK	O	Serial data transfer clock signal output to the fluorescent indicator tube driver (IC901)
60	<u>CS</u>	O	Chip select signal output to the fluorescent indicator tube driver (IC901) “L” active
61	<u>RESET</u>	O	Reset signal output to the fluorescent indicator tube driver (IC901) “L”: reset
62	ERRORS	O	Output terminal of the error monitor Not used (open)
63	CORRECTION	O	Output terminal of the correction monitor Not used (open)
64	RECEIVED	O	Output terminal of the receive monitor Not used (open)

• IC Block Diagrams
– MAIN Board –

IC1 LA1835

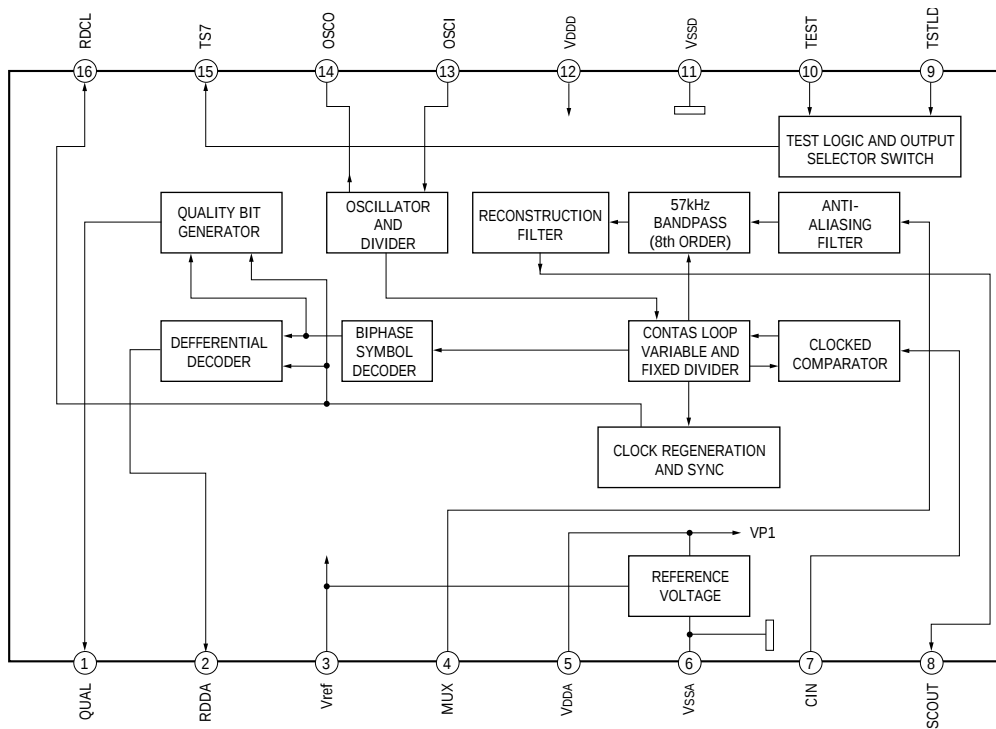


IC51 LC72130



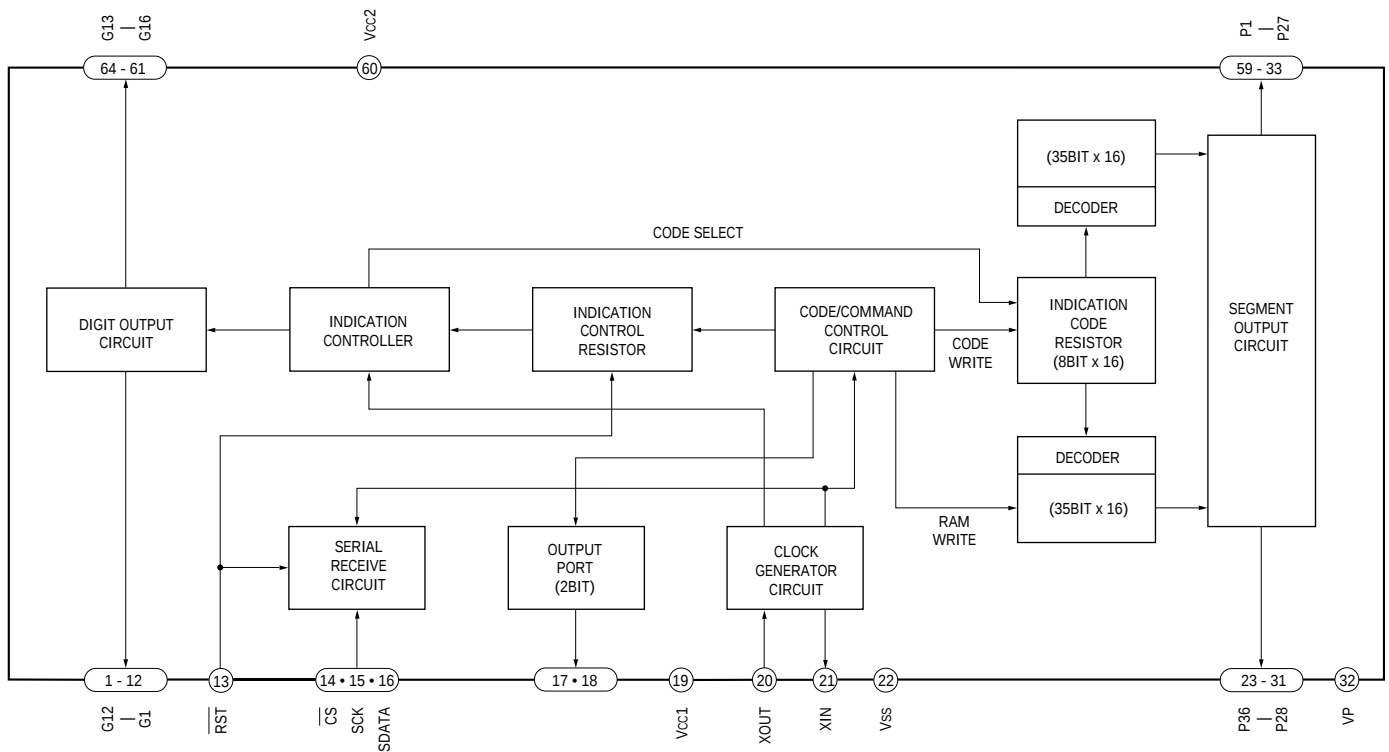
– RDS Board –

IC302 SAA6579 (ST-EX880 ONLY)



– PANEL Board –

IC901 M66004M6FP



SECTION 6

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

- Abbreviation

HK: Hong Kong

MY : Malaysia

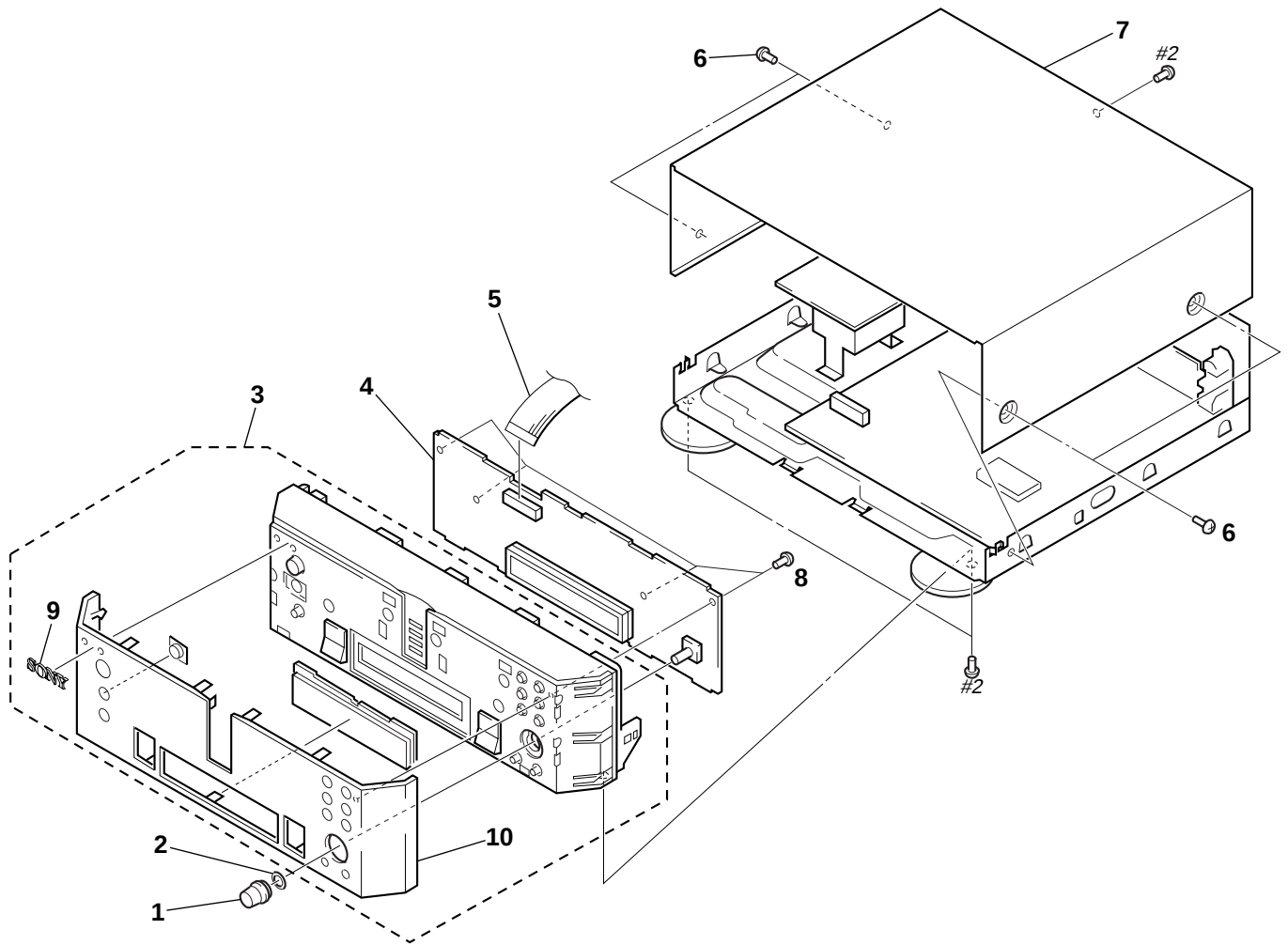
JE : Tourist

SP : Singapore

- 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 the electrical parts list.

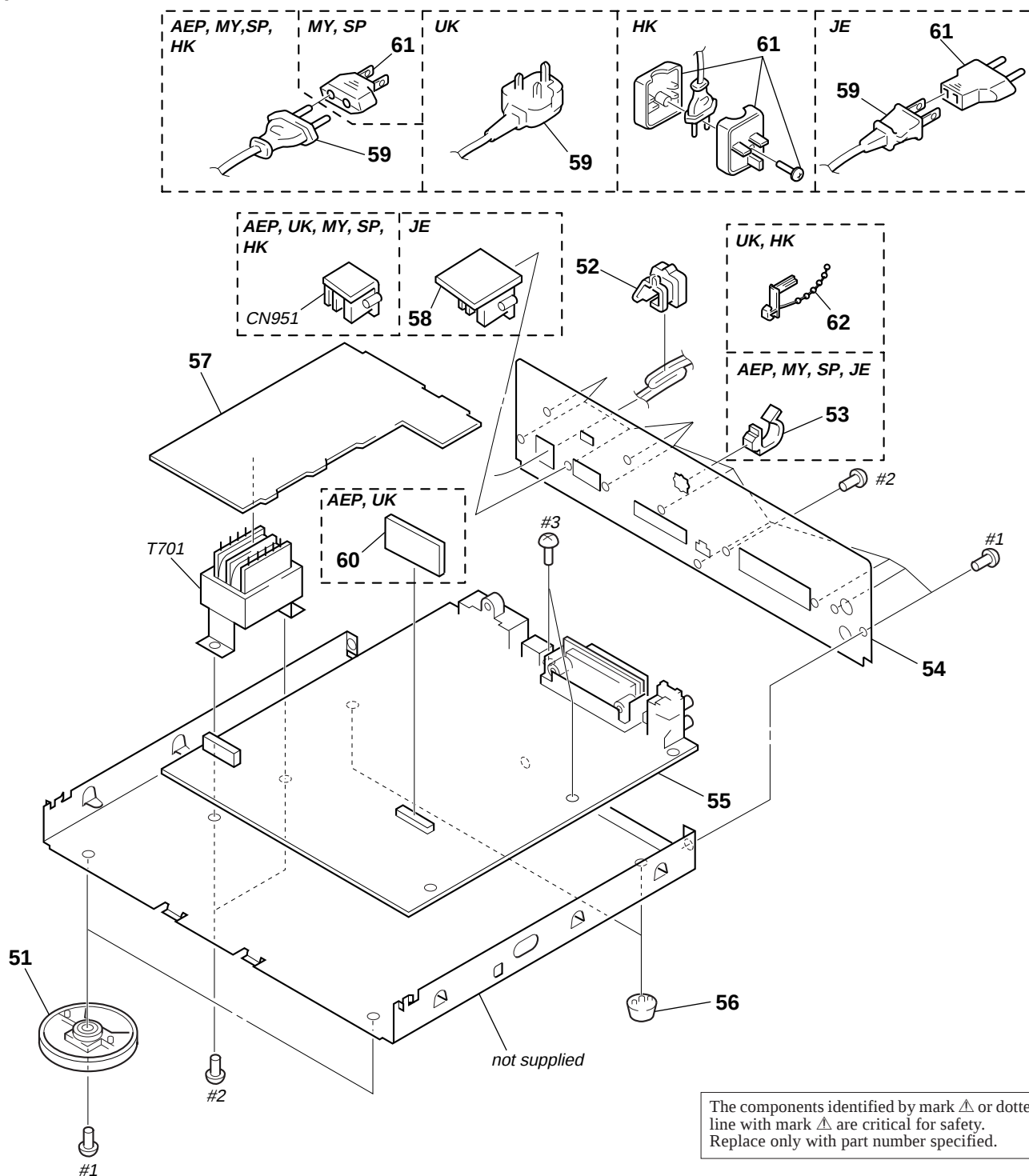
The components identified by mark  or dotted line with mark  are critical for safety. Replace only with part number specified.

(1) CASE, FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	4-995-074-01	KNOB (JOG)		5	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)	
2	4-988-161-01	SPRING, RING		6	3-363-099-01	SCREW (CASE 3 TP2)	
3	X-4949-861-1	PANEL ASSY, FRONT (ST-EX880)		* 7	4-900-196-11	CASE	
3	X-4949-873-1	PANEL ASSY, FRONT (ST-MS717)		8	4-951-620-01	SCREW (2.6X8), +BVTP	
* 4	A-4407-398-A	PANEL BOARD, COMPLETE (JE)		9	4-962-708-01	EMBLEM (4-A), SONY	
* 4	A-4407-880-A	PANEL BOARD, COMPLETE (AEP, UK)		10	4-995-083-21	PLATE (ST), ORNAMENTAL (ST-EX880)	
* 4	A-4407-884-A	PANEL BOARD, COMPLETE (MY, SP, HK)		10	4-995-083-31	PLATE (ST), ORNAMENTAL (ST-MS717)	

(2) CHASSIS SECTION



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	X-4949-526-1	FOOT (F) ASSY		Δ 59	1-558-943-41	CORD, POWER (JE)	
52	3-703-244-00	BUSHING (2104), CORD		Δ 59	1-575-651-21	CORD, POWER (AEP, MY, SP, HK)	
* 53	4-949-235-01	HOOK (AEP, MY, SP, JE)		Δ 59	1-696-571-11	CORD, POWER (UK)	
* 54	4-995-091-11	PANEL (ST), BACK (MY, SP, HK)		* 60	A-4407-877-A	RDS BOARD, COMPLETE (AEP, UK)	
* 54	4-995-091-21	PANEL (ST), BACK (ST-EX880)		Δ 61	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
* 54	4-995-091-31	PANEL (ST), BACK (JE)		Δ 61	1-569-008-11	ADAPTOR, CONVERSION 2P (MY, SP)	
* 55	A-4407-399-A	MAIN BOARD, COMPLETE (MY, SP, HK)		Δ 61	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)	
* 55	A-4407-876-A	MAIN BOARD, COMPLETE (AEP, UK)		62	4-956-370-12	BAND, PLUG FIXED (UK, HK)	
* 55	A-4407-885-A	MAIN BOARD, COMPLETE (JE)		Δ CN951	1-526-794-11	OUTLET, AC (EXCEPT JE)	
56	4-965-822-01	FOOT		Δ T701	1-431-833-11	TRANSFORMER, POWER (ST-EX880)	
* 57	1-667-607-11	TRANSFORMER BOARD		Δ T701	1-431-834-11	TRANSFORMER, POWER (ST-MS717)	
* 58	1-667-608-11	AC OUTLET BOARD (JE)					

SECTION 7 ELECTRICAL PARTS LIST

AC OUTLET

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.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
*	1-667-608-11	AC OUTLET BOARD (JE)					C27	1-126-962-11	ELECT	3.3uF	20%	50V	
		*****					C28	1-162-306-11	CERAMIC	0.01uF	20%	16V	
		< CONNECTOR >					C29	1-126-964-11	ELECT	10uF	20%	50V	
							C30	1-162-306-11	CERAMIC	0.01uF	20%	16V	
CN951	1-540-039-11	OUTLET, AC (NONPOLAR)(1P)					C32	1-102-527-11	CERAMIC	82PF	5%	50V	
												(ST-EX880)	
						C33	1-162-306-11	CERAMIC	0.01uF	20%	16V		
						C35	1-162-306-11	CERAMIC	0.01uF	20%	16V		
*	A-4407-399-A	MAIN BOARD, COMPLETE (MY, SP, HK)					C36	1-162-306-11	CERAMIC	0.01uF	20%	16V	
*	A-4407-876-A	MAIN BOARD, COMPLETE (AEP, UK)					C37	1-164-159-11	CERAMIC	0.1uF		50V	
*	A-4407-885-A	MAIN BOARD, COMPLETE (JE)											
						C38	1-162-198-31	CERAMIC	8.2PF	10%	50V		
						C40	1-162-306-11	CERAMIC	0.01uF	20%	16V		
*	4-924-988-11	PLATE (ST), GROUND					C41	1-162-306-11	CERAMIC	0.01uF	20%	16V	
		7-685-871-01	SCREW +BVT 3X6 (S)					C43	1-162-294-31	CERAMIC	0.001uF	10%	50V
		< CAPACITOR >					C44	1-162-306-11	CERAMIC	0.01uF	20%	16V	
							C45	1-164-159-11	CERAMIC	0.1uF		50V	
C1	1-162-306-11	CERAMIC	0.01uF	20%	16V	C47	1-164-095-11	CERAMIC	0.01uF	10%	16V		
C2	1-126-967-11	ELECT	47uF	20%	16V						(ST-MS717)		
C3	1-162-306-11	CERAMIC	0.01uF	20%	16V	C51	1-102-518-11	CERAMIC	33PF	5%	50V		
C4	1-164-159-11	CERAMIC	0.1uF		50V	C52	1-102-514-11	CERAMIC	22PF	5%	50V		
C5	1-162-306-11	CERAMIC	0.01uF	20%	16V	C53	1-126-964-11	ELECT	10uF	20%	50V		
C6	1-162-306-11	CERAMIC	0.01uF	20%	16V	C54	1-162-306-11	CERAMIC	0.01uF	20%	16V		
C7	1-126-967-11	ELECT	47uF	20%	16V	C55	1-104-665-11	ELECT	100uF	20%	10V		
C8	1-162-306-11	CERAMIC	0.01uF	20%	16V	C56	1-162-294-31	CERAMIC	0.001uF	10%	50V		
C9	1-162-306-11	CERAMIC	0.01uF	20%	16V	C58	1-162-306-11	CERAMIC	0.01uF	20%	16V		
C10	1-162-306-11	CERAMIC	0.01uF	20%	16V	C64	1-162-306-11	CERAMIC	0.01uF	20%	16V		
C11	1-126-964-11	ELECT	10uF	20%	50V	C65	1-126-933-11	ELECT	100uF	20%	16V		
C12	1-126-959-11	ELECT	0.47uF	20%	50V	C67	1-162-306-11	CERAMIC	0.01uF	20%	16V		
C13	1-126-960-11	ELECT	1uF	20%	50V	C71	1-126-961-11	ELECT	2.2uF	20%	50V		
C14	1-126-960-11	ELECT	1uF	20%	50V	C73	1-164-159-11	CERAMIC	0.1uF		50V		
C15	1-126-964-11	ELECT	10uF	20%	50V	C75	1-162-306-11	CERAMIC	0.01uF	20%	16V		
C16	1-126-964-11	ELECT	10uF	20%	50V	C84	1-162-306-11	CERAMIC	0.01uF	20%	16V		
C17	1-126-964-11	ELECT	10uF	20%	50V	C86	1-162-286-31	CERAMIC	220PF	10%	50V		
C18	1-126-964-11	ELECT	10uF	20%	50V	C87	1-136-165-00	FILM	0.1uF	5%	50V		
C19	1-136-158-00	FILM	0.027uF	5%	50V						(ST-MS717)		
C20	1-136-158-00	FILM	0.027uF	5%	50V	C87	1-136-169-00	FILM	0.22uF	5%	50V		
											(ST-EX880)		
C21	1-137-436-11	FILM	0.0039uF	5%	50V	C88	1-136-169-00	FILM	0.22uF	5%	50V		
C22	1-137-436-11	FILM	0.0039uF	5%	50V								
C23	1-126-960-11	ELECT	1uF	20%	50V	C89	1-162-286-31	CERAMIC	220PF	10%	50V		
C24	1-162-294-31	CERAMIC	0.001uF	10%	50V	C90	1-162-306-11	CERAMIC	0.01uF	20%	16V		
C25	1-162-600-11	CERAMIC	0.0047uF	30%	16V	C91	1-162-286-31	CERAMIC	220PF	10%	50V		
						C93	1-162-286-31	CERAMIC	220PF	10%	50V		
C26	1-126-967-11	ELECT	47uF	20%	16V	C95	1-162-306-11	CERAMIC	0.01uF	20%	16V		

MAIN

Ref. No.	Part No.	Description	Remark		
C96	1-162-306-11	CERAMIC	0.01uF	20%	16V
C97	1-162-294-31	CERAMIC	0.001uF	10%	50V
			(ST-EX880)		
C98	1-162-294-31	CERAMIC	0.001uF	10%	50V
			(ST-EX880)		
C111	1-126-960-11	ELECT	1uF	20%	50V
C113	1-104-665-11	ELECT	100uF	20%	10V
C124	1-126-967-11	ELECT	47uF	20%	16V
C125	1-126-933-11	ELECT	100uF	20%	16V
C126	1-136-165-00	FILM	0.1uF	5%	50V
C143	1-126-967-11	ELECT	47uF	20%	50V
C144	1-126-948-11	ELECT	100uF	20%	35V
C145	1-126-967-11	ELECT	47uF	20%	50V
C171	1-126-964-11	ELECT	10uF	20%	50V
C181	1-125-705-11	DOUBLE LAYER	0.22F		5.5V
C191	1-126-964-11	ELECT	10uF	20%	50V
C201	1-104-665-11	ELECT	100uF	20%	10V
C203	1-162-306-11	CERAMIC	0.01uF	20%	16V
C204	1-102-953-00	CERAMIC	18PF	5%	50V
C205	1-102-960-00	CERAMIC	24PF	5%	50V
C206	1-162-306-11	CERAMIC	0.01uF	20%	16V
C207	1-162-282-31	CERAMIC	100PF	10%	50V
C208	1-162-294-31	CERAMIC	0.001uF	10%	50V
C209	1-162-306-11	CERAMIC	0.01uF	20%	16V
C210	1-162-306-11	CERAMIC	0.01uF	20%	16V
C211	1-164-159-11	CERAMIC	0.1uF		50V
C212	1-164-159-11	CERAMIC	0.1uF		50V
C213	1-162-306-11	CERAMIC	0.01uF	20%	16V
C214	1-162-306-11	CERAMIC	0.01uF	20%	16V
C215	1-162-282-31	CERAMIC	100PF	10%	50V
C216	1-162-282-31	CERAMIC	100PF	10%	50V
C217	1-162-282-31	CERAMIC	100PF	10%	50V
C218	1-162-282-31	CERAMIC	100PF	10%	50V
C219	1-162-282-31	CERAMIC	100PF	10%	50V
C220	1-162-282-31	CERAMIC	100PF	10%	50V
C221	1-162-282-31	CERAMIC	100PF	10%	50V
C222	1-162-306-11	CERAMIC	0.01uF	20%	16V
C223	1-162-282-31	CERAMIC	100PF	10%	50V
C225	1-162-282-31	CERAMIC	100PF	10%	50V
C226	1-162-282-31	CERAMIC	100PF	10%	50V
C227	1-162-282-31	CERAMIC	100PF	10%	50V
C228	1-162-282-31	CERAMIC	100PF	10%	50V
C229	1-162-282-31	CERAMIC	100PF	10%	50V
C272	1-164-159-11	CERAMIC	0.1uF		50V
C273	1-126-960-11	ELECT	1uF	20%	50V
C274	1-164-159-11	CERAMIC	0.1uF		50V
C281	1-162-282-31	CERAMIC	100PF	10%	50V
C285	1-162-306-11	CERAMIC	0.01uF	20%	16V
C286	1-162-306-11	CERAMIC	0.01uF	20%	16V
		< FILTER >			
CF1	1-579-374-71	FILTER, CERAMIC (ST-EX880)			
CF1	1-567-389-11	FILTER, CERAMIC (ST-MS717)			
CF2	1-579-554-31	FILTER, CERAMIC (ST-EX880)			
CF3	1-567-389-11	FILTER, CERAMIC (ST-MS717)			
CF3	1-579-554-31	FILTER, CERAMIC (ST-EX880)			
CF4	1-527-981-00	FILTER, CERAMIC			

Ref. No.	Part No.	Description	Remark
CF5	1-577-091-11	OSCILLATOR, CERAMIC	
CF6	1-577-092-11	FILTER, CERAMIC	
		< CONNECTOR >	
* CN101	1-569-624-11	SOCKET, CONNECTOR 17P	(SYSTEM CONTROL)
CN102	1-568-802-11	SOCKET, CONNECTOR 19P	
* CN103	1-565-561-11	PIN, CONNECTOR 3P (AU BUS)	
CN104	1-770-966-11	PIN, CONNECTOR (PCB)(V TYPE)6P	
* CN105	1-770-723-11	CONNECTOR, BOARD TO BOARD 8P	(ST-EX880)
		< DIODE >	
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-911-19	DIODE 1SS119	
D103	8-719-911-19	DIODE 1SS119	
D104	8-719-911-19	DIODE 1SS119	
D105	8-719-911-19	DIODE 1SS119	
D125	8-719-935-69	DIODE HZS11B1LTA	
D143	8-719-986-64	DIODE HZS30-3LTA	
D161	8-719-069-66	DIODE RD4.7F-T7	
D191	8-719-933-33	DIODE HZS6A1L	
D272	8-719-911-19	DIODE 1SS119	
D281	8-719-911-19	DIODE 1SS119	
D282	8-719-911-19	DIODE 1SS119	
		< GROUND TERMINAL >	
E101	1-537-770-21	TERMINAL BOARD, GROUND	
E103	1-537-770-21	TERMINAL BOARD, GROUND	
		< FERRITE BEAD >	
FB1	1-410-397-21	FERRITE BEAD INDUCTOR (ST-EX880)	
		< FRONTEND >	
FE1	1-233-532-11	ENCAPSULATED COMPONENT (MY, SP, HK)	
FE1	1-233-542-11	ENCAPSULATED COMPONENT (AEP, UK)	
FE1	1-693-251-11	FRONT END (JE)	
FE2	1-233-514-11	ENCAPSULATED COMPONENT (ST-EX880)	
FE2	1-239-634-11	ENCAPSULATED COMPONENT, AM.RF	(ST-MS717)
		< IC >	
IC1	8-759-176-03	IC LA1835	
IC51	8-759-288-54	IC LC72130	
IC111	8-759-158-62	IC TA78057S	
IC171	8-759-165-80	IC PST600C-T	
IC201	8-759-533-78	IC uPD78016FGC-544-AB8	
		< IFT >	
IFT1	1-409-636-11	TRANSFORMER, IF (CERAMIC FILTER)	
		< JACK >	
J101	1-774-822-11	JACK, PIN 2P (TUNER)	
		< COIL >	
L1	1-407-500-00	INDUCTOR 4.7mH (ST-EX880)	
L1	1-410-688-31	INDUCTOR 1.5mH (ST-MS717)	
L3	1-410-470-11	INDUCTOR 10uH	

Ref. No.	Part No.	Description	Remark				Ref. No.	Part No.	Description	Remark			
L4	1-410-509-11	INDUCTOR	10uH				R17	1-247-842-11	CARBON	3K	5%	1/4W	
L7	1-410-397-21	FERRITE BEAD	INDUCTOR										
L10	1-410-470-11	INDUCTOR	10uH (ST-EX880)				R18	1-249-429-11	CARBON	10K	5%	1/4W	
L11	1-410-324-11	INDUCTOR	4.7uH				R19	1-249-429-11	CARBON	10K	5%	1/4W	
L13	1-410-324-11	INDUCTOR	4.7uH				R21	1-249-429-11	CARBON	10K	5%	1/4W	
L108	1-410-397-21	FERRITE BEAD	INDUCTOR (ST-EX880)				R22	1-249-437-11	CARBON	47K	5%	1/4W	
L109	1-410-397-21	FERRITE BEAD	INDUCTOR (ST-EX880)				R23	1-249-399-11	CARBON	33	5%	1/4W	
L201	1-408-421-00	INDUCTOR	100uH				R24	1-249-425-11	CARBON	4.7K	5%	1/4W	(ST-EX880)
L202	1-408-421-00	INDUCTOR	100uH				R25	1-249-429-11	CARBON	10K	5%	1/4W	(ST-EX880)
L203	1-410-521-11	INDUCTOR	100uH				R28	1-249-432-11	CARBON	18K	5%	1/4W	
L204	1-410-521-11	INDUCTOR	100uH				R29	1-249-411-11	CARBON	330	5%	1/4W	
L205	1-410-521-11	INDUCTOR	100uH				R35	1-249-421-11	CARBON	2.2K	5%	1/4W	
L206	1-410-521-11	INDUCTOR	100uH				R36	1-249-421-11	CARBON	2.2K	5%	1/4W	
L209	1-410-509-11	INDUCTOR	10uH				R37	1-249-411-11	CARBON	330	5%	1/4W	
< FILTER >													
LPF1	1-239-597-11	FILTER, LOW PASS					R38	1-249-432-11	CARBON	18K	5%	1/4W	
LPF2	1-239-597-11	FILTER, LOW PASS					R39	1-249-393-11	CARBON	10	5%	1/4W	(ST-EX880)
< TRANSISTOR >													
Q1	8-729-230-99	TRANSISTOR	2SC2669-OY				R39	1-249-401-11	CARBON	47	5%	1/4W	(ST-MS717)
Q2	8-729-230-99	TRANSISTOR	2SC2669-OY				R45	1-249-425-11	CARBON	4.7K	5%	1/4W	
Q9	8-729-230-99	TRANSISTOR	2SC2669-OY				R46	1-249-425-11	CARBON	4.7K	5%	1/4W	
Q10	8-729-230-99	TRANSISTOR	2SC2669-OY				R49	1-249-441-11	CARBON	100K	5%	1/4W	
Q11	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)				R51	1-249-429-11	CARBON	10K	5%	1/4W	
Q12	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)				R56	1-249-417-11	CARBON	1K	5%	1/4W	
Q13	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)				R58	1-249-417-11	CARBON	1K	5%	1/4W	
Q14	8-729-900-80	TRANSISTOR	DTC114ES (ST-EX880)				△R60	1-249-405-11	CARBON	100	5%	1/4W	F
Q15	8-729-119-76	TRANSISTOR	2SA1175-HFE (ST-EX880)				R61	1-247-843-11	CARBON	3.3K	5%	1/4W	
Q55	8-729-422-57	TRANSISTOR	UN4111				R62	1-249-425-11	CARBON	4.7K	5%	1/4W	
Q121	8-729-202-67	TRANSISTOR	2SK246-GR3				R63	1-249-425-11	CARBON	4.7K	5%	1/4W	
Q122	8-729-209-15	TRANSISTOR	2SD2012				R64	1-249-425-11	CARBON	4.7K	5%	1/4W	
Q123	8-729-900-80	TRANSISTOR	DTC114ES				R65	1-249-425-11	CARBON	4.7K	5%	1/4W	
Q141	8-729-140-97	TRANSISTOR	2SB734-34				R70	1-249-425-11	CARBON	4.7K	5%	1/4W	(ST-EX880)
Q142	8-729-119-76	TRANSISTOR	2SA1175-HFE				R71	1-249-425-11	CARBON	4.7K	5%	1/4W	
Q201	8-729-900-80	TRANSISTOR	DTC114ES				R72	1-247-807-31	CARBON	100	5%	1/4W	
Q202	8-729-118-00	TRANSISTOR	2SB1116-L				R102	1-249-385-11	CARBON	2.2	5%	1/6W	
Q203	8-729-422-73	TRANSISTOR	UN4212				R103	1-249-385-11	CARBON	2.2	5%	1/6W	
Q273	8-729-422-57	TRANSISTOR	UN4111				R121	1-247-807-31	CARBON	100	5%	1/4W	
Q274	8-729-900-80	TRANSISTOR	DTC114ES				R141	1-249-429-11	CARBON	10K	5%	1/4W	
Q281	8-729-620-05	TRANSISTOR	2SC2603-EF				R142	1-249-441-11	CARBON	100K	5%	1/4W	
< RESISTOR >													
R1	1-249-411-11	CARBON	330	5%	1/4W		R143	1-249-397-11	CARBON	22	5%	1/4W	
R2	1-249-411-11	CARBON	330	5%	1/4W		R161	1-249-441-11	CARBON	100K	5%	1/4W	
R3	1-249-409-11	CARBON	220	5%	1/4W		R162	1-249-413-11	CARBON	470	5%	1/4W	
△R4	1-249-402-11	CARBON	56	5%	1/4W	F	R163	1-249-413-11	CARBON	470	5%	1/4W	
R5	1-249-411-11	CARBON	330	5%	1/4W		R171	1-249-417-11	CARBON	1K	5%	1/4W	
R6	1-249-411-11	CARBON	330	5%	1/4W		R181	1-247-807-31	CARBON	100	5%	1/4W	
R7	1-249-432-11	CARBON	18K	5%	1/4W		R191	1-249-411-11	CARBON	330	5%	1/4W	
R8	1-249-432-11	CARBON	18K	5%	1/4W		R201	1-249-417-11	CARBON	1K	5%	1/4W	
R11	1-249-411-11	CARBON	330	5%	1/4W		R202	1-249-417-11	CARBON	1K	5%	1/4W	
R12	1-249-429-11	CARBON	10K	5%	1/4W		R203	1-249-417-11	CARBON	1K	5%	1/4W	
R13	1-249-442-11	CARBON	510	5%	1/4W		R204	1-247-807-31	CARBON	100	5%	1/4W	
△R14	1-249-403-11	CARBON	68	5%	1/4W	F	R205	1-249-409-11	CARBON	220	5%	1/4W	
R15	1-249-411-11	CARBON	330	5%	1/4W		R206	1-249-411-11	CARBON	330	5%	1/4W	
R16	1-249-425-11	CARBON	4.7K	5%	1/4W		R207	1-249-409-11	CARBON	220	5%	1/4W	
							R208	1-249-409-11	CARBON	220	5%	1/4W	
							R212	1-247-807-31	CARBON	100	5%	1/4W	
							R213	1-247-807-31	CARBON	100	5%	1/4W	

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

MAIN

PANEL

Ref. No.	Part No.	Description			Remark
R214	1-247-807-31	CARBON	100	5%	1/4W
R215	1-247-807-31	CARBON	100	5%	1/4W
R216	1-249-429-11	CARBON	10K	5%	1/4W
R217	1-249-429-11	CARBON	10K	5%	1/4W
R218	1-247-807-31	CARBON	100	5%	1/4W
R219	1-247-807-31	CARBON	100	5%	1/4W
R222	1-247-893-11	CARBON	390K	5%	1/4W
R224	1-249-427-11	CARBON	6.8K	5%	1/4W
R225	1-249-427-11	CARBON	6.8K	5%	1/4W
R226	1-249-427-11	CARBON	6.8K	5%	1/4W
R227	1-249-425-11	CARBON	4.7K	5%	1/4W
R228	1-249-425-11	CARBON	4.7K	5%	1/4W
R229	1-247-807-31	CARBON	100	5%	1/4W
R230	1-247-807-31	CARBON	100	5%	1/4W
R231	1-249-425-11	CARBON	4.7K	5%	1/4W
R232	1-249-425-11	CARBON	4.7K	5%	1/4W
R233	1-249-425-11	CARBON	4.7K	5%	1/4W
R234	1-249-429-11	CARBON	10K	5%	1/4W
R235	1-249-429-11	CARBON	10K	5%	1/4W
R236	1-249-429-11	CARBON	10K	5%	1/4W
R237	1-249-429-11	CARBON	10K	5%	1/4W
R238	1-249-429-11	CARBON	10K	5%	1/4W
R239	1-249-429-11	CARBON	10K	5%	1/4W
R240	1-247-807-31	CARBON	100	5%	1/4W
R241	1-247-807-31	CARBON	100	5%	1/4W
R242	1-247-807-31	CARBON	100	5%	1/4W
R243	1-247-807-31	CARBON	100	5%	1/4W
R244	1-247-807-31	CARBON	100	5%	1/4W
R245	1-247-807-31	CARBON	100	5%	1/4W
R246	1-247-807-31	CARBON	100	5%	1/4W
R247	1-249-393-11	CARBON	10	5%	1/4W
R248	1-247-807-31	CARBON	100	5%	1/4W
R271	1-249-429-11	CARBON	10K	5%	1/4W
R281	1-249-429-11	CARBON	10K	5%	1/4W
R282	1-249-425-11	CARBON	4.7K	5%	1/4W
R283	1-249-393-11	CARBON	10	5%	1/4W
R284	1-249-429-11	CARBON	10K	5%	1/4W
R285	1-249-393-11	CARBON	10	5%	1/4W
R999	1-249-421-11	CARBON	2.2K	5%	1/4W
< VARIABLE RESISTOR >					
RV1	1-238-601-11	RES, ADJ, CARBON 22.0K			
RV2	1-238-600-11	RES, ADJ, CARBON 10.0K			
< TERMINAL >					
TM1	1-537-238-21	TERMINAL BOARD (ANTENNA)(ST-MS717)			
TM1	1-537-488-11	TERMINAL BOARD (ANT)(ANTENNA) (ST-EX880)			
< VIBRATOR >					
X201	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
X202	1-567-098-41	VIBRATOR, CRYSTAL (32.768kHz)			
XT51	1-760-549-31	VIBRATOR, CRYSTAL (4.5MHz)			

Ref. No.	Part No.	Description	Remark		
*	A-4407-398-A	PANEL BOARD, COMPLETE (JE)			
*	A-4407-880-A	PANEL BOARD, COMPLETE (AEP, UK)			
*	A-4407-884-A	PANEL BOARD, COMPLETE (MY, SP, HK)			

*	4-995-119-01	HOLDER (FL)			
		< CAPACITOR >			
C901	1-124-584-00	ELECT	100uF	20%	10V
C902	1-164-159-11	CERAMIC	0.1uF		50V
C903	1-124-248-00	ELECT	22uF	20%	35V
C904	1-164-159-11	CERAMIC	0.1uF		50V
C905	1-162-282-31	CERAMIC	100PF	10%	50V
C906	1-162-282-31	CERAMIC	100PF	10%	50V
C907	1-162-282-31	CERAMIC	100PF	10%	50V
C908	1-162-282-31	CERAMIC	100PF	10%	50V
C909	1-162-294-31	CERAMIC	0.001uF	10%	50V
C910	1-162-282-31	CERAMIC	100PF	10%	50V
C911	1-162-282-31	CERAMIC	100PF	10%	50V
C912	1-162-282-31	CERAMIC	100PF	10%	50V
C913	1-162-282-31	CERAMIC	100PF	10%	50V
C914	1-162-282-31	CERAMIC	100PF	10%	50V
C915	1-162-282-31	CERAMIC	100PF	10%	50V
C916	1-162-282-31	CERAMIC	100PF	10%	50V
C917	1-162-282-31	CERAMIC	100PF	10%	50V
C918	1-162-282-31	CERAMIC	100PF	10%	50V
C919	1-162-282-31	CERAMIC	100PF	10%	50V
C920	1-162-282-31	CERAMIC	100PF	10%	50V
C921	1-162-282-31	CERAMIC	100PF	10%	50V
C922	1-162-282-31	CERAMIC	100PF	10%	50V
C923	1-162-294-31	CERAMIC	0.001uF	10%	50V
C924	1-162-282-31	CERAMIC	100PF	10%	50V
C925	1-136-173-00	FILM	0.47uF	5%	50V
C926	1-136-173-00	FILM	0.47uF	5%	50V
C927	1-162-306-11	CERAMIC	0.01uF	20%	16V
C929	1-164-159-11	CERAMIC	0.1uF		50V
C930	1-162-306-11	CERAMIC	0.01uF	20%	16V
C931	1-124-584-00	ELECT	100uF	20%	10V
C932	1-164-159-11	CERAMIC	0.1uF		50V
C933	1-162-306-11	CERAMIC	0.01uF	20%	16V
C934	1-164-159-11	CERAMIC	0.1uF		50V
		< CONNECTOR >			
* CN951	1-568-862-11	SOCKET, CONNECTOR 19P			
		< DIODE >			
D902	8-719-046-43	DIODE SEL5421E-TP15 (SLEEP)			
D903	8-719-046-44	DIODE SEL5221S (REC)			
D904	8-719-046-43	DIODE SEL5421E-TP15 (DAILY)			
D905	8-719-046-43	DIODE SEL5421E-TP15 (ONCE)			
		< FLUORESCENT INDICATOR TUBE >			
FL901	1-517-708-11	INDICATOR TUBE, FLUORESCENT			
		< IC >			
IC901	8-759-261-63	IC M66004M6FP			
IC902	8-759-459-83	IC NJL55H400A			

PANEL
RDS
TRANSFORMER

Ref. No.	Part No.	Description	Remark		
< COIL >					
L901	1-408-421-00	INDUCTOR	100uH		
L902	1-408-421-00	INDUCTOR	100uH		
< RESISTOR >					
R901	1-249-417-11	CARBON	1K	5%	1/4W
R902	1-249-418-11	CARBON	1.2K	5%	1/4W
R903	1-249-420-11	CARBON	1.8K	5%	1/4W
R904	1-249-422-11	CARBON	2.7K	5%	1/4W
R905	1-249-425-11	CARBON	4.7K	5%	1/4W
R906	1-249-417-11	CARBON	1K	5%	1/4W
R907	1-249-418-11	CARBON	1.2K	5%	1/4W
R908	1-249-420-11	CARBON	1.8K	5%	1/4W
R909	1-249-422-11	CARBON	2.7K	5%	1/4W
R910	1-249-425-11	CARBON	4.7K	5%	1/4W
R911	1-249-429-11	CARBON	10K	5%	1/4W
R916	1-247-807-31	CARBON	100	5%	1/4W
R920	1-247-807-31	CARBON	100	5%	1/4W
R921	1-249-417-11	CARBON	1K	5%	1/4W
R922	1-249-417-11	CARBON	1K	5%	1/4W
R923	1-249-417-11	CARBON	1K	5%	1/4W
R924	1-249-434-11	CARBON	27K	5%	1/4W
R925	1-249-429-11	CARBON	10K	5%	1/4W
R926	1-249-441-11	CARBON	100K	5%	1/4W
< SWITCH >					
S901	1-762-875-21	SWITCH, KEYBOARD (STEREO/MONO)			
S902	1-762-875-21	SWITCH, KEYBOARD (BAND)			
S903	1-762-875-21	SWITCH, KEYBOARD (PRESET)			
S904	1-762-875-21	SWITCH, KEYBOARD (MANUAL ←)			
S905	1-762-875-21	SWITCH, KEYBOARD (AUTO →)			
S906	1-762-875-21	SWITCH, KEYBOARD (DISPLAY)			
S907	1-762-875-21	SWITCH, KEYBOARD (ONCE)			
S908	1-762-875-21	SWITCH, KEYBOARD (DAILY)			
S909	1-762-875-21	SWITCH, KEYBOARD (REC)			
S910	1-762-875-21	SWITCH, KEYBOARD (SLEEP)			
S911	1-762-875-21	SWITCH, KEYBOARD (CLOCK/TIMER SET)			
S912	1-762-875-21	SWITCH, KEYBOARD (ENTER/YES)			
S913	1-762-875-21	SWITCH, KEYBOARD (MENU/NO)			
S914	1-762-875-21	SWITCH, KEYBOARD (I/⏻)			
S915	1-475-421-11	ENCODER, ROTARY (MULTI CONTROLLER)			

*	A-4407-877-A	RDS BOARD, COMPLETE (AEP, UK)			

< CAPACITOR >					
C301	1-164-159-11	CERAMIC	0.1uF		50V
C302	1-162-288-31	CERAMIC	330PF	10%	50V
C303	1-162-306-11	CERAMIC	0.01uF	20%	16V
C304	1-126-964-11	ELECT	10uF	20%	50V
C305	1-126-967-11	ELECT	47uF	20%	16V
C306	1-136-177-00	FILM	1uF	5%	50V
C307	1-162-306-11	CERAMIC	0.01uF	20%	16V
C308	1-126-967-11	ELECT	47uF	20%	16V
C309	1-136-177-00	FILM	1uF	5%	50V
C310	1-162-306-11	CERAMIC	0.01uF	20%	16V
C311	1-126-961-11	ELECT	2.2uF	20%	50V

Ref. No.	Part No.	Description	Remark		
C312	1-162-294-31	CERAMIC 0.001uF 10% 50V			
C313	1-101-884-00	CERAMIC 56PF 5% 50V			
C314	1-101-884-00	CERAMIC 56PF 5% 50V			
C315	1-126-967-11	ELECT 47uF 20% 16V			
C317	1-162-282-31	CERAMIC 100PF 10% 50V			
C318	1-162-282-31	CERAMIC 100PF 10% 50V			
< CONNECTOR >					
* CN301	1-778-770-11	CONNECTOR, BOARD TO BOARD (PLUG)			
< DIODE >					
D102	8-719-911-19	DIODE 1SS119			
D301	8-719-911-19	DIODE 1SS119			
< IC >					
IC301	8-759-634-51	IC M5218AP			
IC302	8-759-169-99	IC SAA6579			
< COIL >					
L301	1-410-521-11	INDUCTOR 100uH			
L302	1-410-521-11	INDUCTOR 100uH			
< RESISTOR >					
R301	1-249-441-11	CARBON 100K 5% 1/4W			
R302	1-249-441-11	CARBON 100K 5% 1/4W			
R303	1-249-441-11	CARBON 100K 5% 1/4W			
R304	1-249-441-11	CARBON 100K 5% 1/4W			
R305	1-249-429-11	CARBON 10K 5% 1/4W			
R306	1-249-426-11	CARBON 5.6K 5% 1/4W			
R308	1-249-417-11	CARBON 1K 5% 1/4W			
< VIBRATOR >					
X301	1-579-900-21	VIBRATOR, CRYSTAL (4.332MHz)			

*	1-667-607-11	TRANSFORMER BOARD			

	1-533-293-11	FUSE HOLDER			
< CAPACITOR >					
C701	1-126-952-11	ELECT 1000uF 20% 35V			
C702	1-128-576-11	ELECT 100uF 20% 63V			
C703	1-126-968-11	ELECT 100uF 20% 50V			
△ C704	1-113-924-11	CERAMIC 0.0047uF 20% 250V			
C709	1-162-306-11	CERAMIC 0.01uF 20% 16V			
< CONNECTOR >					
CN702	1-580-230-11	PIN, CONNECTOR (PC BOARD) 2P			
CN703	1-564-321-00	PIN, CONNECTOR 2P			
< DIODE >					
D701	8-719-200-82	DIODE 11ES2			
D702	8-719-200-82	DIODE 11ES2			
D703	8-719-200-82	DIODE 11ES2			
D704	8-719-200-82	DIODE 11ES2			
D705	8-719-911-19	DIODE 1SS119			

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

ST-EX880/MS717

TRANSFORMER

Ref. No.	Part No.	Description	Remark
		< FUSE >	
△ F701	1-532-505-51	FUSE (T5.0AL/250V)	
		< TRANSISTOR >	
Q701	8-729-119-78	TRANSISTOR 2SC403SP-51	
		< RESISTOR >	
R701	1-260-088-11	CARBON 120 5% 1/2W	
R702	1-249-429-11	CARBON 10K 5% 1/4W	
R703	1-249-425-11	CARBON 4.7K 5% 1/4W	
		< RELAY >	
△ RY701	1-755-127-11	RELAY	
		< SWITCH >	
△ S701	1-572-675-11	SWITCH, POWER VOLTAGE CHANGE (VOLTAGE SELECTOR) (ST-MS717)	
		< TRANSFORMER >	
△ T701	1-431-833-11	TRANSFORMER, POWER (ST-EX880)	
△ T701	1-431-834-11	TRANSFORMER, POWER (ST-MS717)	

		MISCELLANEOUS	

5	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)	
△ 59	1-558-943-41	CORD, POWER (JE)	
△ 59	1-575-651-21	CORD, POWER (AEP, MY, SP, HK)	
△ 59	1-696-571-11	CORD, POWER (UK)	
△ 61	1-569-007-11	ADAPTOR, CONVERSION 2P (JE)	
△ 61	1-569-008-11	ADAPTOR, CONVERSION 2P (MY, SP)	
△ 61	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (HK)	
△ CN951	1-526-794-11	OUTLET, AC (EXCEPT JE)	
△ T701	1-431-833-11	TRANSFORMER, POWER (ST-EX880)	
△ T701	1-431-834-11	TRANSFORMER, POWER (ST-MS717)	

		HARDWARE LIST	

#1	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
#3	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	

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