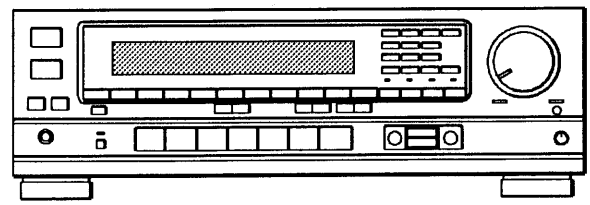
S/M Code No.90 – 002 DATE OF ISSUE 5/1990 – T

AIWA®

AXR-002

SERVICE MANUAL



STEREO RECEIVER

• TYPE. U

AIWA Co., Ltd.

Tokyo Japan

Printed in Japan

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 8-ohm load, both channels driven, from 20 – 20,000 Hz, rated 120 watts (AXR-005), 100 watts (AXR-004) or 55 watts (AXR-002) per channel minimum RMS power, with no more than 0.008% (AXR-005), 0.03% (AXR-004) or 0.08% (AXR-002) total harmonic distortion from 250 milliwatts to rated output.

Other Specifications

Amplifier section

		AXR-005	AXR-004	AXR-002
Dynamic power output	8 ohms, at 1 kHz IHF	195 + 195 watts	140 + 140 watts	70 + 70 watts
	4 ohms, at 1 kHz IHF	250 + 250 watts	190 + 190 watts	90 + 90 watts
Power output of surround amplifier (8 ohms, at 1 kHz)		20 watts (10 + 10 watts)		
Harmonic distortion at rated output		Less than 0.008%	Less than 0.03%	Less than 0.08%
Intermodulation (IM) distortion at rated output		Less than 0.008%	Less than 0.03%	Less than 0.08%
Frequency response	PHONO RIAA equalization curve	±0.5 dB		
	CD, DAT, TAPE 1, 2 VIDEO 1, 2, 3*	10 Hz - 70 kHz $^{+0}_{-1}$ dB		10 Hz - 50 kHz $^{+0}_{-3}$ dB
Residual noise		Less than 70 μV		Less than 80 μV
Damping factor (8 ohms, at 1 kHz)		50		40
Input sensitivity/ inpedance	PHONO MM	2.5 mV, 50 kilohms		
	DAT, CD, VIDEO 1, 2, 3* TAPE 1, 2	150 mV 50 kilohms		
S/N	PHONO MM	87 dB 79 dB** (A, 2.5 mV)		74 dB 72 dB** (A, 2.5 mV)
	DAT, CD, VIDEO 1, 2, 3* TAPE 1, 2	105 dB 85 dB** (A, 150 mV)		100 dB 80 dB** (A, 150 mV)
Output sensitivity/ impedance	DAT OUT TAPE OUT 1, 2 VIDEO 1	150 mV 10 kilohms		
	SPEAKERS	Accepts speakers of 8 - 16 ohms		
	HEAD-PHONES	Accepts headphones of high and low impedance		
MUTING		–20 dB		
Graphic Equalizer		7-band, ±10 dB at 63 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, and 14 kHz		5-band, ±10 dB at 63 Hz, 250 Hz, 1 kHz, 3.3 kHz, and 10 kHz

*AXR-005 only
**'78 IHF

Video section

	AXR-005	AXR-004	AXR-002
Inputs	VIDEO-1, -2, -3: 1 Vp-p 75 ohms	VIDEO-1, -2: 1 Vp-p 75 ohms	
Outputs	VIDEO-1, MONITOR: 1 Vp-p 75 ohms		

FM tuner section

		AXR-005	AXR-004	AXR-002
Frequency range		87.5 - 108.0 MHz		
Antenna terminals		75 ohms coaxial	300 ohms, balanced 75 ohms, unbalanced	
Sensitivity at 50 dB		18.3 dBf, 45 μV (mono) 38.3 dBf, 45 μV (stereo)		
Usable sensitivity		11.2 dBf, 2 μV (IHF)		
S/N	Mono	84 dB	80 dB	
	Stereo	78 dB	74 dB	
Harmonic distortion at 1 kHz	Mono	0.2%	0.3%	
	Stereo	0.4%	0.5%	
IM distortion	Mono	0.2%	0.3%	
	Stereo	0.4%	0.5%	
Separation		45 dB at 1 kHz		
Frequency response		30 Hz - 15 kHz $^{+0}_{-1.5}$ dB	30 Hz - 15 kHz $^{+0}_{-2}$ dB	
Selectivity		65 dB at 300 kHz	60 dB at 400 kHz	
Capture ratio		1.2 dB		
AM suppression ratio		60 dB	54 dB	
Image response ratio		80 dB	70 dB	
IF response ratio		90 dB	70 dB	
Sprious response ratio		100 dB	80 dB	
RF intermodulation at 800 kHz		65 dB	60 dB	
Auto tuning threshold	Low	30 dBf		
	High	50 dBf		

AM tuning section

	AXR-005	AXR-004	AXR-002
Frequency range	530 - 1710 kHz (with 10 kHz interval) 531 - 1710 kHz (with 9 kHz interval)		
Antenna	Loop antenna		
Usable sensitivity	50 dB/m (at 1,000 kHz or 999 kHz)		
S/N	54 dB (at 50 mV/m)		
Harmonic distortion	0.5% (50 mV/m, 400 Hz)		
Selectivity	35 dB (9 kHz), 40 dB (10 kHz)		
Auto tuning threshold	55 dB/m		

General

		AXR-005	AXR-004	AXR-002
System	Tuner section	PLL quartz-locked digital synthesizer system		
	Preamplifier section	Low-noise NF type equalizer		
	Power amplifier section	Pure-complimentary SEPP		Quasi-complimentary SEPP
Power requirements		120 V AC, 60 Hz		
Power consumption		USA model: 210 watts		120 watts
AC outlets		Two switched, total 100 watts		
Dimensions		430 × 130 × 350 mm (17 × 5 1/8 × 14 1/8 inches)		430 × 130 × 295 mm (17 × 5 1/8 × 11 3/8 inches)
Weight		9.6 kg (21 lb 3 oz)	9.5 kg (21 lb)	6.7 kg (14 lb 13 oz)

• Design and specifications are subject to change without notice.

ELECTRICAL MAIN PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
===IC===		
	98-749-920-590	IC, AIQH3020S
	98-759-321-450	IC, HD614042FJ72
	98-759-821-450	IC, LA1851N
	98-759-820-620	IC, LB1639
	98-759-820-910	IC, LC7218
	98-759-820-600	IC, LC7520
	98-759-820-590	IC, LC7565
	98-759-805-140	IC, LC7822
	98-759-946-490	IC, LVA512A
	98-749-941-910	IC, STK4191V
	98-759-112-930	IC, UPC4570HA-1
	98-759-140-530	IC, UPD4053BC
	98-759-145-010	IC, UPD75212AGF-511-3BE
===TRANSISTOR===		
	98-729-224-630	FET, 2SK246BL
	98-729-114-220	TRANSISTOR, 2SA1142
※	98-729-119-760	TRANSISTOR, 2SA1175
※	98-729-173-380	TRANSISTOR, 2SA733
	98-729-108-140	TRANSISTOR, 2SA988-F
	98-729-173-130	TRANSISTOR, 2SB731
	98-729-119-780	TRANSISTOR, 2SC2785
※	98-729-900-800	TRANSISTOR, 2SC3402
※	98-729-900-800	TRANSISTOR, DTC114ES
	98-729-201-840	TRANSISTOR, 2SC3112B
	98-729-107-840	TRANSISTOR, 2SC3623A-L
	98-729-107-260	TRANSISTOR, 2SD1585-K
※	98-729-115-440	TRANSISTOR, BNIF4M
※	98-729-900-630	TRANSISTOR, DTA124ES
※	98-729-900-360	TRANSISTOR, BAIF4M
※	98-729-900-360	TRANSISTOR, DTC124ES
===DIODE===		
※	98-719-230-020	DIODE, 30DF2
※	98-719-200-070	DIODE, 30D2FC
	98-719-000-060	DIODE, MC921
※	98-719-521-100	DIODE, S1VB10
※	98-719-511-400	DIODE, S1VB40
	98-719-010-020	DIODE, US1060M
	98-719-994-110	DIODE, ZENER HZ4ALL
※	98-719-933-410	DIODE, ZENER HZS6C3L
※	98-719-000-730	DIODE, ZENER UZL6H3
	98-719-002-460	DIODE, ZENER UZL27M
	98-719-002-010	DIODE, ZENER UZL16M
	98-719-014-820	DIODE, ZENER UZP6.8B
===TUNER CIRCUIT BOARD SECTION===		
CF1	*91-567-389-110	FILTER, CERAMIC
CF2	*91-567-389-110	FILTER, CERAMIC
CF21	*91-577-075-110	OSCILLATOR, CERAMIC
CFT21	*91-404-853-110	TRANSFORMER, IF(CERAMIC FILTER)
FE1	*91-463-862-210	FRONT END, FM
FE61	*91-236-461-110	ENCAPSULATED COMPONENT
L1	*91-410-521-110	COIL, 100UH
L21	*91-410-171-110	COIL, 1mH
LPF21	*91-235-164-000	FILTER LOW PASS
LPF22	*91-235-164-000	FILTER LOW PASS
RV21	*91-238-013-110	ADJ, CARBON 2.2K
RV22	*91-238-017-110	ADJ, CARBON 22K
RV24	*91-238-017-110	ADJ, CARBON 22K
RV25	*91-238-017-110	ADJ, CARBON 22K
T21	*91-404-807-110	TRANSFORMER, DISCRMINATOR
TM1	*91-536-708-000	TERMINAL BOARD, PUSH 4P (ANTENNA)
XT81	* 91-577-126-110	VIBRATOR, CRYSTAL 7.2MHz

REF. NO.	PART NO.	DESCRIPTION
===MAIN CIRCUIT BOARD SECTION===		
CF481	*98-527-822-110	OSCILLATOR, CERAMIC 4MHz
CNJ20	*91-565-213-110	PIN, CONNECTOR 4P(CONTROL S OUT)
L701	*91-420-872-110	COIL, AIR CORE
L751	*91-420-872-110	COIL, AIR CORE
PJ401	*91-565-320-110	JACK, PIN 6P(PHONO IN/CD IN, DAT REC OUT)
PJ402	*91-565-320-110	JACK, PIN 6P(DAT IN, TAPE1 REC OUT/IN)
PJ403	*91-565-320-110	JACK, PIN 6P(VIDEO2 AUDIO IN, VIDEO1 AUDIO IN/OUT)
PJ404	*91-565-258-110	JACK, PIN 4P(TAPE2 REC OUT/IN)
⚠R801	*91-207-685-000	RES, 82 5W
⚠R804	*91-206-665-000	RES, METAL 1.1K 2W
RY401	91-515-726-110	RELAY
RY701	91-515-533-110	RELAY
===DISPLAY CIRCUIT BOARD SECTION===		
CF301	*91-567-170-110	OSC, CERAMIC 4.19MHz
D311	98-719-301-520	DIODE, SEL2810A-C(TUNING)
D312	98-719-301-520	DIODE, SEL2810A-C(INDEX)
D313	98-719-301-520	DIODE, SEL2810A-C(EQUALIZER)
D314	98-719-301-520	DIODE, SEL2810A-C(SURROUND ON OFF)
D315	98-719-303-000	DIODE, SEL2510(MONITOR TAPE2)
FL301	91-519-521-110	INDICATOR TUBE, FLUORESCENT
L301	*91-410-328-310	COIL, 10UH
RB301	*91-233-081-110	CR BLOCK
RB302	*91-233-081-110	CR BLOCK
RB303	*91-233-081-110	CR BLOCK
RB304	*91-233-081-110	CR BLOCK
RB305	*91-233-081-110	CR BLOCK
RB306	*91-232-997-110	CR BLOCK
S301	91-544-303-210	SWITCH, KEY BOARD(3)
S302	91-544-303-210	SWITCH, KEY BOARD(2)
S303	91-544-303-210	SWITCH, KEY BOARD(1)
S304	91-544-303-210	SWITCH, KEY BOARD(TUNING DIRECT)
S305	91-544-303-210	SWITCH, KEY BOARD(6)
S306	91-544-303-210	SWITCH, KEY BOARD(5)
S307	91-544-303-210	SWITCH, KEY BOARD(4)
S308	91-544-303-210	SWITCH, KEY BOARD(EQ PGM SET)
S309	91-544-303-210	SWITCH, KEY BOARD(9)
S300	91-544-303-210	SWITCH, KEY BOARD(8)
S311	91-544-303-210	SWITCH, KEY BOARD(7)
S312	91-544-303-210	SWITCH, KEY BOARD(MEMORY)
S313	91-544-303-210	SWITCH, KEY BOARD(SHIFT)
S314	91-544-303-210	SWITCH, KEY BOARD(0)
S315	91-544-303-210	SWITCH, KEY BOARD(TUNING)
S316	91-544-303-210	SWITCH, KEY BOARD(INDEX)
S317	91-544-303-210	SWITCH, KEY BOARD(EQUALIZER)
S319	91-544-303-210	SWITCH, KEY BOARD(SURROUND)
S320	91-544-303-210	SWITCH, KEY BOARD(◁)
S321	91-544-303-210	SWITCH, KEY BOARD(▽)
S322	91-544-303-210	SWITCH, KEY BOARD(△)
S323	91-544-303-210	SWITCH, KEY BOARD(▷)
S324	91-544-303-210	SWITCH, KEY BOARD(FM/AM)
S325	91-544-303-210	SWITCH, KEY BOARD(FM MODE)
S326	91-544-303-210	SWITCH, KEY BOARD(INDEX SELECT)
S327	91-544-303-210	SWITCH, KEY BOARD(PRESET EQ LINK ON/OFF)
S328	91-544-303-210	SWITCH, KEY BOARD(RESET TUNING +)
S329	91-544-303-210	SWITCH, KEY BOARD(RESET TUNING -)
S330	91-544-303-210	SWITCH, KEY BOARD(INDEX TUNING +)
S331	91-544-303-210	SWITCH, KEY BOARD(INDEX TUNING -)
S332	91-544-303-210	SWITCH, KEY BOARD(PHONO)
S333	91-544-303-210	SWITCH, KEY BOARD(TUNER)
S334	91-544-303-210	SWITCH, KEY BOARD(CD)
S335	91-544-303-210	SWITCH, KEY BOARD(DAT)

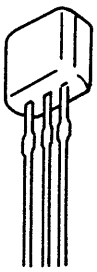
※The ┌ ┐ marked parts are compatible with each other.

REF. NO.	PART NO.	DESCRIPTION
S336	91-544-303-210	SWITCH, KEY BOARD(VIDEO1)
S337	91-544-303-210	SWITCH, KEY BOARD(VIDEO2/CDV)
S341	91-544-303-210	SWITCH, KEY BOARD(TAPE1)
S342	91-544-303-210	SWITCH, KEY BOARD(EQUALIZER MODE▽)
S343	91-544-303-210	SWITCH, KEY BOARD(EQUALIZER MODE△)
S340	91-544-303-210	SWITCH, KEY BOARD(SURROUND ON/OFF)
S344	91-544-303-210	SWITCH, KEY BOARD(DISPLAY RTA/EQ)
S345	91-544-303-210	SWITCH, KEY BOARD(EQUALIZER ON/OFF)
S346	91-544-303-210	SWITCH, KEY BOARD(EQUALIZER PEAK HOLD)
S347	91-544-303-210	SWITCH, KEY BOARD(EQ MEMORY SET)
S348	91-544-303-210	SWITCH, KEY BOARD(EDIT AUDIO)
S349	91-544-303-210	SWITCH, KEY BOARD(EQ MEMORY WRITE)
S351	91-544-303-210	SWITCH, KEY BOARD(MONITOR TAPE 2)
S352	91-544-303-210	SWITCH, KEY BOARD(SYSTEM POWER)
		===POWER CIRCUIT BOARD SECTION===
⚠CNJ901	*91-540-059-110	OUTLET, AC(POLAR)(AC OUTLET)
⚠F901	91-576-030-110	FUSE, GLASS TUBE(5A/125V)
⚠F902	91-576-030-110	FUSE, GLASS TUBE(5A/125V)
⚠RY901	91-515-720-110	RELAY
⚠T901	91-448-517-210	POWER TRANSFORMER
⚠VZ901	91-807-293-110	VARIST(SNR-14A 140K)
		===VIDEO CIRCUIT BOARD SECTION===
L211	*91-410-509-110	COIL, 10UH
L212	*91-410-509-110	COIL, 10UH
PJ201	*91-565-319-110	JACK PIN 2P(VIDEO1 VIDEO IN, MONITOR VIDEO OUT)
PJ202	*91-565-319-110	JACK PIN 2P(VIDEO2 VIDEO IN, VIDEO1 VIDEO OUT)
		===BALANCE CIRCUIT BOARD SECTION===
D316	98-719-301-52	DIODE, SEL2810A-C(MUTING)
D318	98-719-301-52	DIODE, SEL2810A-C(DBFB)
RV501	*91-238-115-110	RES, VAR, CARBON 250K/259K(BALANCE)
S441	91-554-303-210	SWITCH, KEY BOARD(MUTING -20dB)
S442	91-554-303-210	SWITCH, KEY BOARD(DBFB)
		===IC CIRCUIT BOARD SECTION===
R707	*91-217-151-000	RES, METAL PLATE 0.22 2W
R757	*91-217-151-000	RES, METAL PLATE 0.22 2W
		===VOLUME CIRCUIT BOARD SECTION===
RV502	91-238-616-110	RES, VAR, CARBON 100K×2(VOLUME)
		===MOTOR CIRCUIT BOARD SECTION===
RV502	91-238-616-110	MOTOR(INCLUDING VOL MOTOR)
		===SP-SW CIRCUIT BOARD SECTION===
S701	91-571-485-110	SWITCH, PUSH(2 KEY)(SPEAKER)
		===H/P TRANSLATION CIRCUIT BOARD SECTION===
		===H/P CIRCUIT BOARD SECTION===
J701	*91-507-863-510	JACK, LARGE TYPE(HEADPHONES)
		===SP-TM CIRCUIT BOARD SECTION===
TM701	*91-536-706-000	TERMINAL BOARD(SP)(SPEAKER)
		===VR LED CIRCUIT BOARD SECTION===
D319	98-719-303-000	DIODE, SEL2510(VOLUME)
		===TM CIRCUIT BOARD SECTION===
		===MISCELLANEOUS===
⚠	*91-557-577-000	CORD, POWER
⚠	*91-703-244-000	BUSHING, AC CORD
⚠T902	91-449-636-110	POWER TRANSFORMER

E C B

2SA1142

2SB731



E C B

2SC2785

E C B

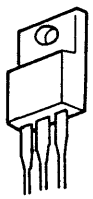
2SA1175

2SA733

2SA988

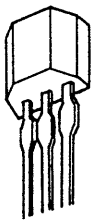
2SC3112

2SC3623



B C E

2SD1585



B C E

2SC3402

BA1F4M

BN1F4M

DTA124

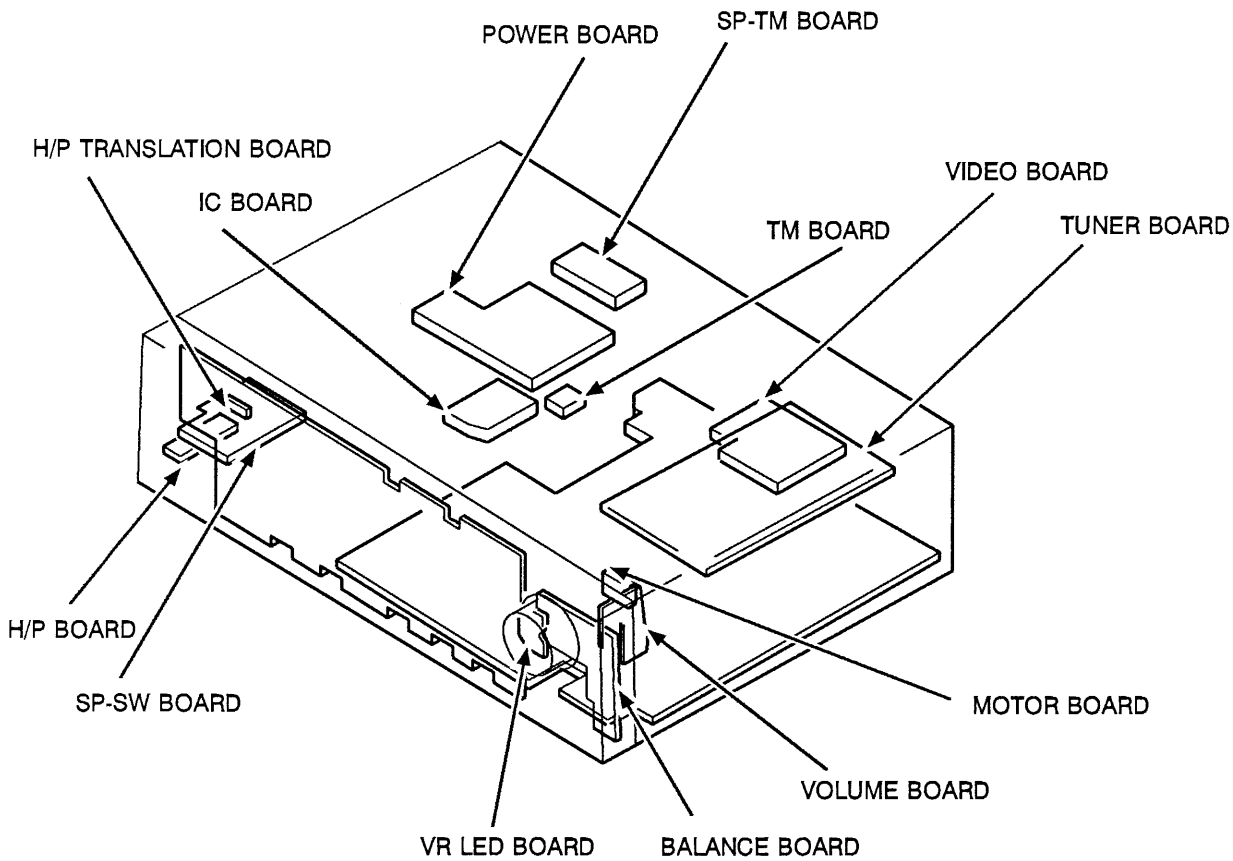
DTC114

DTC124

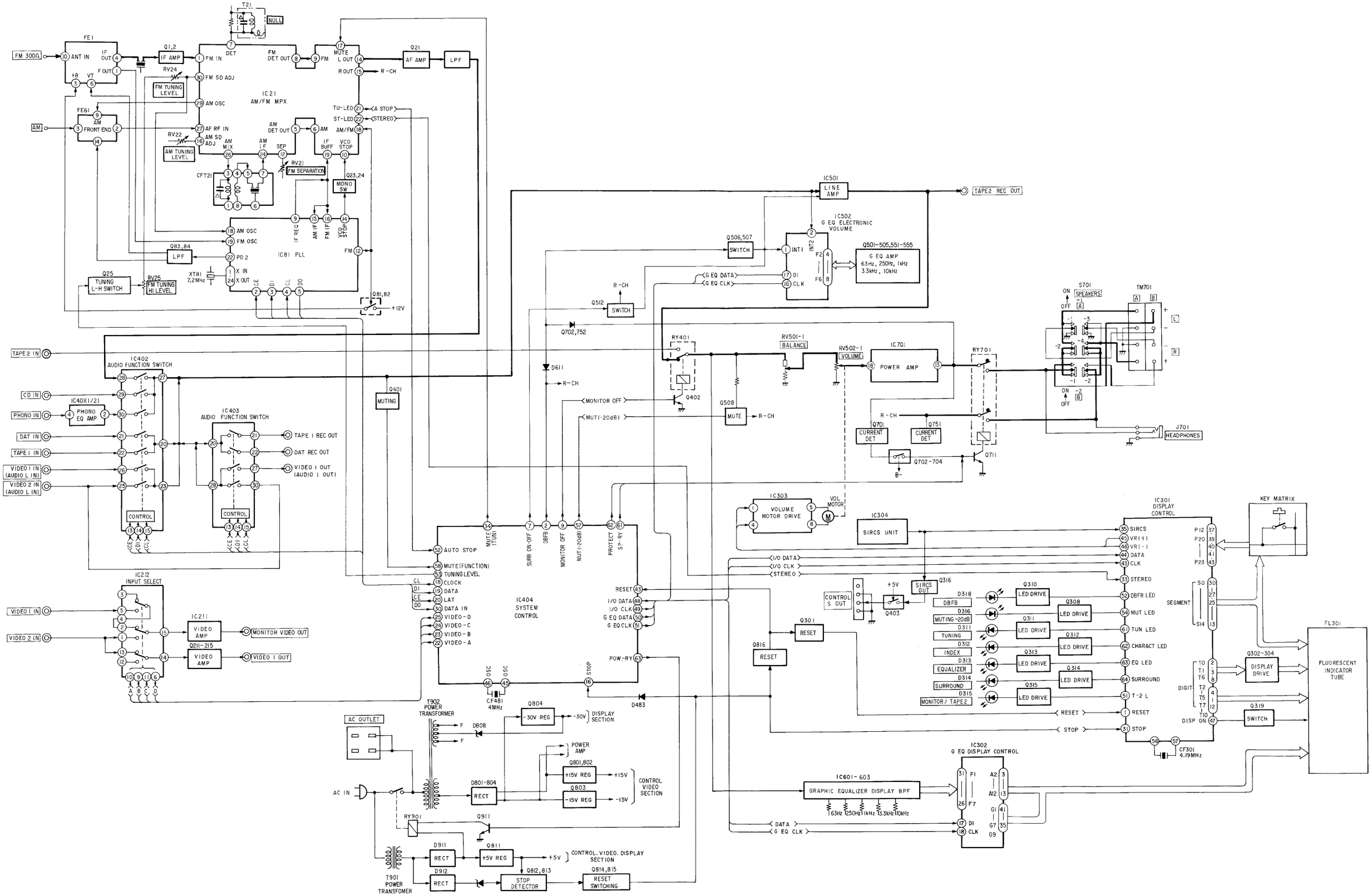
S G D

2SK246

CIRCUIT BOARDS LOCATION



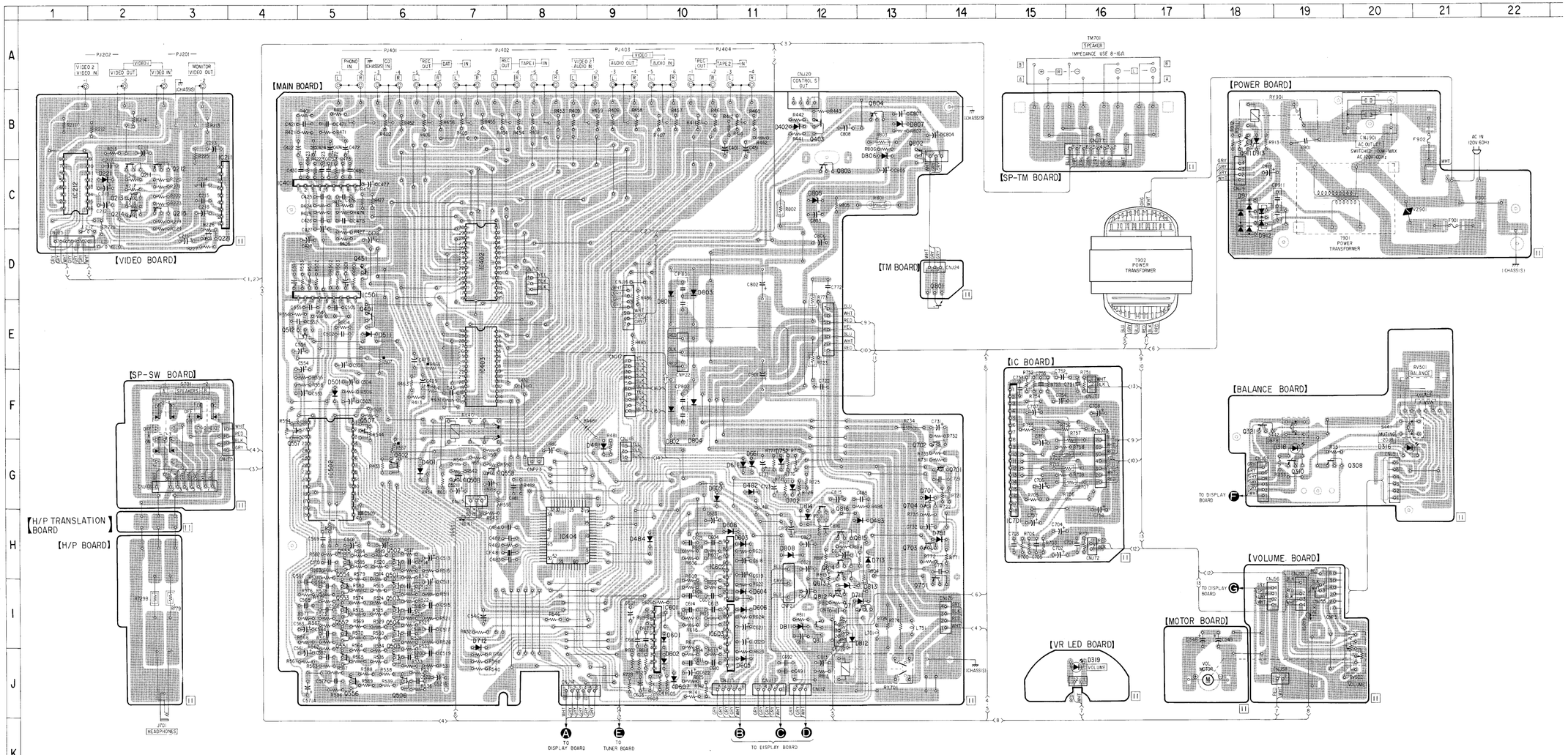
BLOCK DIAGRAM



WIRING – 1 (MAIN SECTION)

● **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D211	C-2	Q215	C-3
D316	G-20	Q221	D-3
D318	G-19	Q308	G-19
D319	J-16	Q310	G-19
D401	G-6	Q321	F-18
D402	B-12	Q401	E-5
D481	G-9	Q402	G-6
D482	G-11	Q403	B-12
D483	H-13	Q451	D-5
D484	H-10	Q501	I-6
D501	F-5	Q502	H-6
D511	E-6	Q503	I-6
D601	I-10	Q504	I-6
D602	J-10	Q505	J-6
D603	H-11	Q506	J-6
D604	I-11	Q507	F-5
D605	J-11	Q508	G-7
D606	I-11	Q512	E-5
D607	J-10	Q551	J-5
D608	H-11	Q552	I-5
D609	G-10	Q553	I-5
D611	G-11	Q554	I-5
D661	G-11	Q555	H-5
D701	G-13	Q556	J-5
D702	G-12	Q557	F-4
D711	I-13	Q558	G-7
D712	J-7	Q701	G-14
D713	H-13	Q702	G-14
D751	H-14	Q703	H-13
D752	G-11	Q704	G-13
D801	D-10	Q711	I-13
D802	F-10	Q751	I-14
D803	D-10	Q801	D-14
D804	F-10	Q802	B-13
D805	C-12	Q803	C-12
D806	B-13	Q804	B-13
D807	B-13	Q811	I-12
D808	H-12	Q812	I-12
D811	I-12	Q813	I-12
D812	I-12	Q814	H-12
D813	I-12	Q815	H-12
D814	H-12	Q816	H-12
D911	C-18	Q911	B-18
D912	C-18		
D913	B-18		
IC211	C-3		
IC212	C-1		
IC401	C-5		
IC402	D-7		
IC403	E-7		
IC404	H-8		
IC501	D-5		
IC502	G-5		
IC601	I-10		
IC602	H-11		
IC603	I-11		
IC701	G-15		
Q211	C-2		
Q212	C-3		
Q213	C-2		
Q214	C-2		



SCHEMATIC DIAGRAM – 1 (MAIN SECTION) Refer to page 14 for Note.

【VIDEO BOARD】

【MAIN BOARD】

【BALANCE BOARD】

【MOTOR BOARD】

【VOLUME BOARD】

【VR LED BOARD】

【IC BOARD】

【H/P BOARD】

【SP-TM BOARD】

【SP-SW BOARD】

【TM BOARD】

【POWER BOARD】

IC211 VIDEO AMP

IC212 INPUT SELECT

IC404 SYSTEM CONTROL

IC401 PHONO EQ AMP

IC402 AUDIO FUNCTION SWITCH

IC403 AUDIO FUNCTION SWITCH

IC601 μPC4570HA GEQ DISPLAY BPF

IC602 IC603 μPC4570HA GEQ DISPLAY BPF

IC501 μPC4570HA LINE AMP

IC502 GEQ ELECTRONIC VOLUME

IC701 POWER AMP

Q401,451 MUTING

Q402 RELAY DRIVE

Q403 SWITCHING

Q507 SWITCH

Q506 MUTING

Q557 SWITCH

Q556 MUTING

Q512 SWITCH

Q508,558 MUTE

Q501-505,551-555 GEQ

Q701,751 CURRENT DET

Q702,703,704 SWITCH

Q801-804 VOL REG

Q814,815 RESET SWITCHING

Q812,813 STOP DETECTOR

Q816 RESET

Q811 V REG

Q901 POWER RELAY DRIVE

T901 POWER TRANSFORMER

T902 POWER TRANSFORMER

D801-804 RECT

D911 RECT

PJ401-1 PHONO IN

PJ401-3 CD IN

PJ402-5 TAPE1 IN

PJ402-3 TAPE1 REC OUT

PJ402-1 DAT IN

PJ401-5 DAT REC OUT

PJ403-5 VIDEO1 AUDIO IN

PJ403-3 VIDEO1 AUDIO OUT

PJ405-1 VIDEO2 AUDIO IN

PJ404-3 TAPE2 IN

PJ404-1 TAPE2 REC OUT

PJ404-2 TAPE2 REC OUT

PJ404-4 TAPE2 IN

PJ403-2 VIDEO2 AUDIO IN

PJ403-4 VIDEO1 AUDIO OUT

PJ403-6 VIDEO1 AUDIO IN

PJ401-6 DAT REC OUT

PJ402-2 DAT IN

PJ402-4 TAPE1 REC OUT

PJ402-6 TAPE1 IN

PJ401-4 CD IN

PJ401-2 PHONO IN

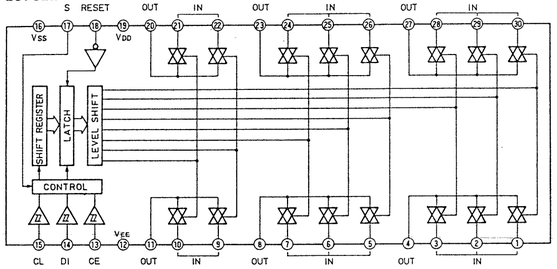
CNJ20 CONTROL S OUT

AC IN 120V 60Hz

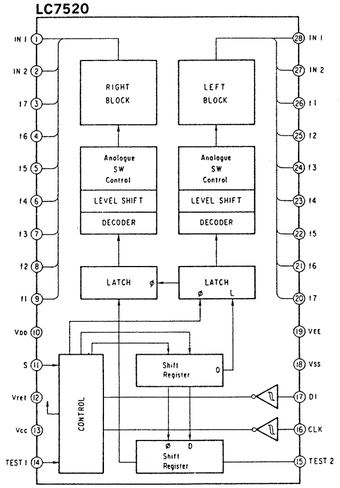
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

IC BLOCK DIAGRAM

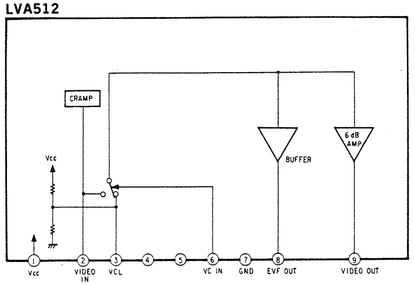
IC402, 403
LC7822



IC502
LC7520



IC211
LVA512

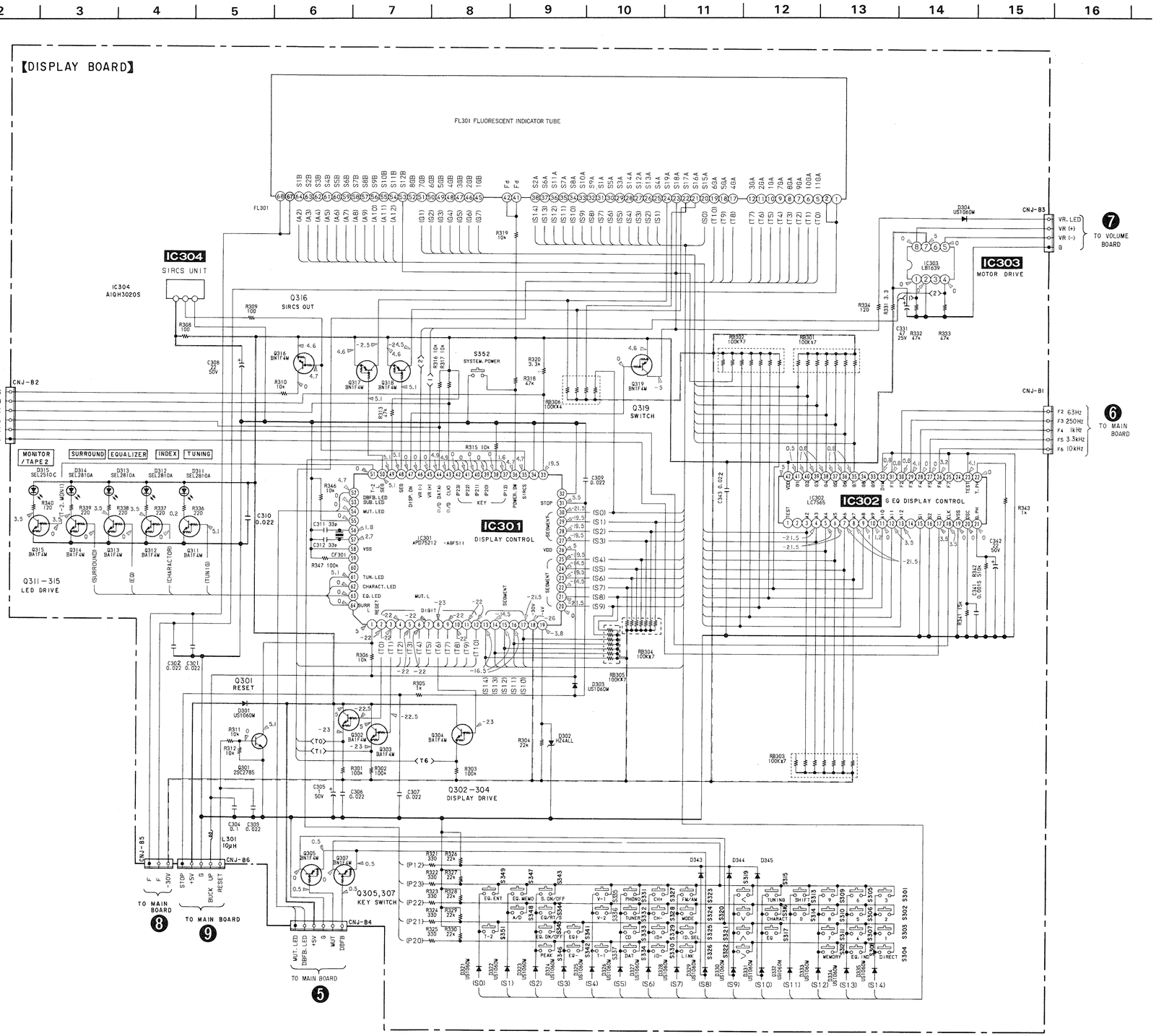


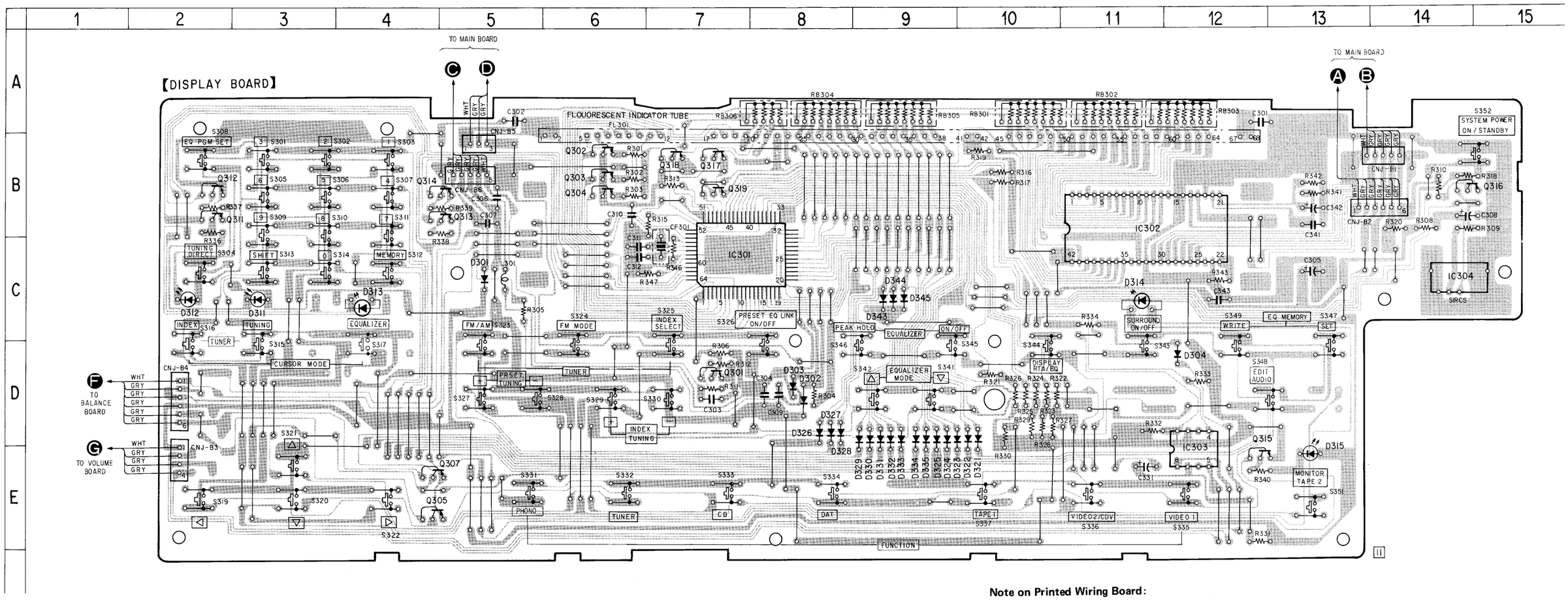
Note on Schematic Diagram:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- ▭ : nonflammable resistor.
- ▭ : B+ Line
- ▭ : B− Line
- ▭ : adjustment for repair.
- AC voltage readings in the bias oscillator with a VTVM.
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM

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

SCHEMATIC DIAGRAM – 2 (DISPLAY SECTION)





Note on Printed Wiring Board:

- ○—— : parts extracted from the component side.

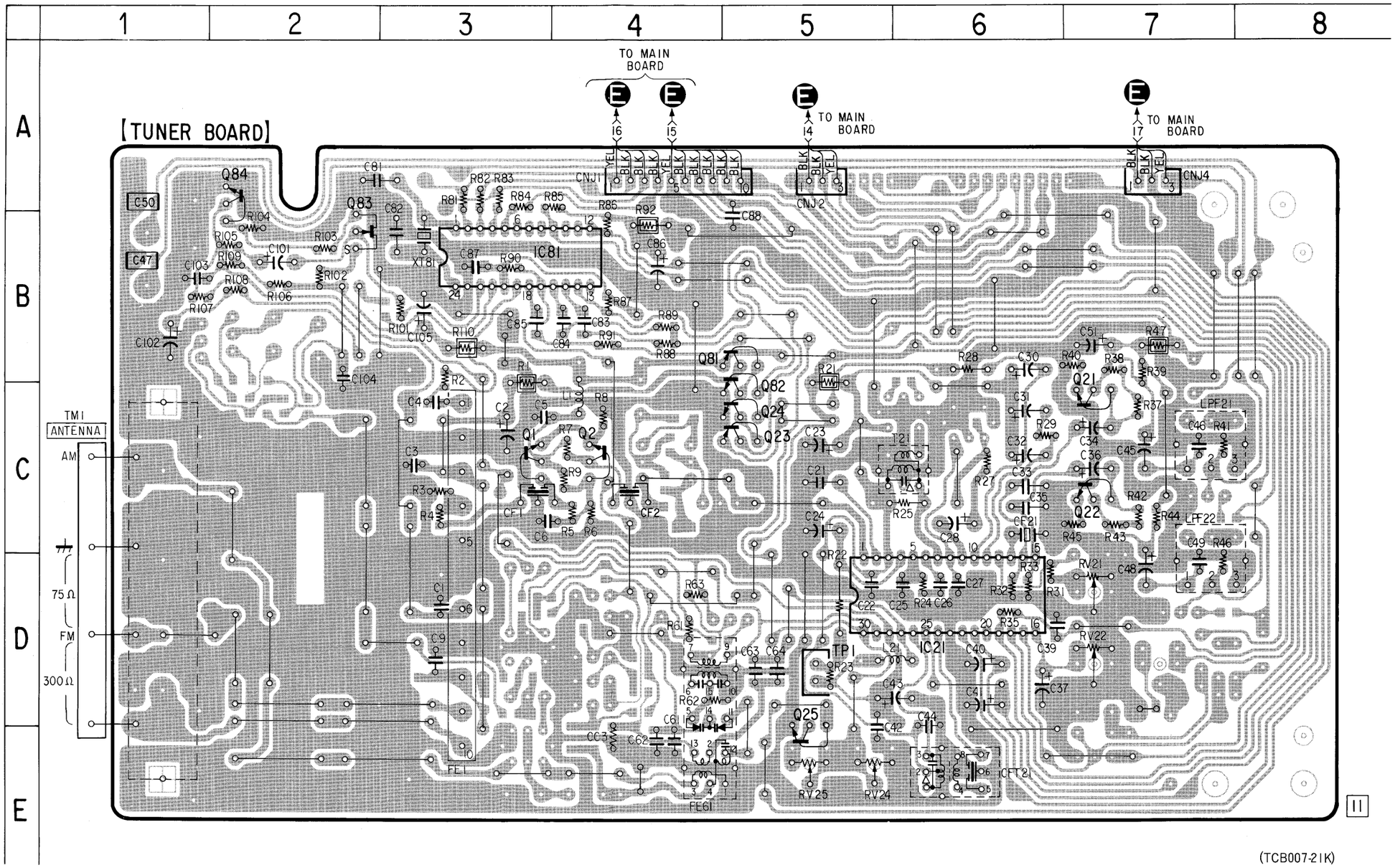
• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D301	C-5	D345	C-9
D302	D-8		
D303	D-8	IC301	C-7
D304	D-12	IC302	B-11
D311	C-3	IC303	D-12
D312	C-2	IC304	C-14
D313	C-4		
D314	C-11	Q301	D-7
D315	D-13	Q302	B-6
D321	D-10	Q303	B-6
D322	D-10	Q304	B-6
D323	D-9	Q305	E-4
D324	D-9	Q307	E-4
D325	D-9	Q311	B-2
D326	D-8	Q312	B-2
D327	D-8	Q313	B-4
D328	D-8	Q314	B-4
D329	D-9	Q315	E-12
D330	D-9	Q316	B-15
D331	D-9	Q317	B-7
D332	D-9	Q318	B-7
D333	D-9	Q319	B-7
D334	D-9		
D335	D-9		
D343	C-9		
D344	C-9		

WIRING – 3 (TUNER SECTION)

● Semiconductor Location

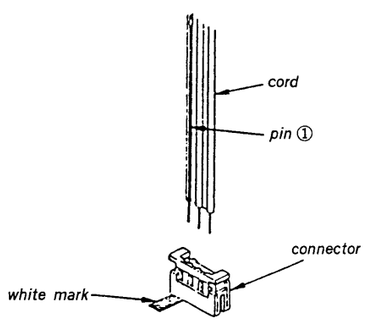
Ref. No.	Location
IC21	D-6
IC81	B-3
Q1	C-3
Q2	C-4
Q21	C-7
Q22	D-7
Q23	C-5
Q24	C-5
Q25	D-5
Q81	B-5
Q82	C-5
Q83	B-2
Q84	A-2



(TCB007-21K)

[Note on inserting the Cord to the Connector on Tuner Board]

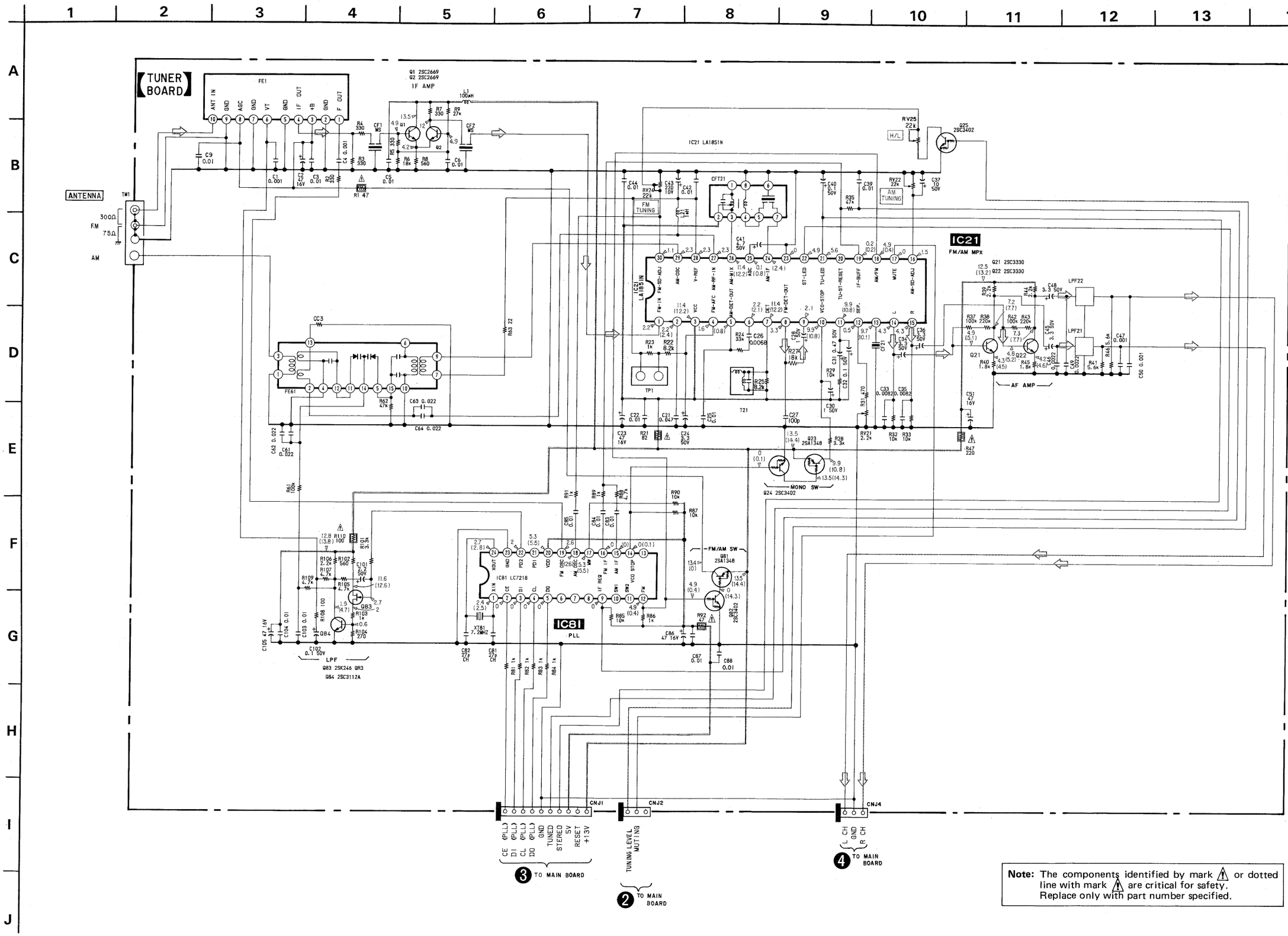
- Insert the cord to the connector fitting Pin ① of the cord in accordance with the white mark on the board at the connector as shown in the figure.
- In case of 3pin cord, insert the cord fitting each color of the connector on Tuner Board and Main Board.



Note on Printed Wiring Board:

- o—— : parts extracted from the component side.

SCHEMATIC DIAGRAM – 3 (TUNER SECTION) Refer to page 14 for Note.



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

IC DESCRIPTION

Pin Description IC404 (HD614042)

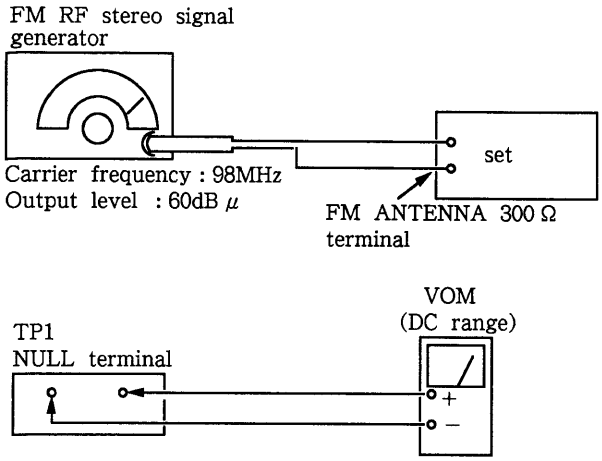
Pin No.	Symbol	ACT	I/O		Pin No.	Symbol	ACT	I/O
1	–	–	–		33	GND	–	–
2	D. B. F. B	H	O		34	T – MUTE	H	O
3	SUBSONIC	H	O		35	TC9176 (LAT)	H	O
4	SURR. A	L	O		36	–	–	–
5	SURR. B	L	O		37	–	–	–
6	+ 5V	–	–		38	GND	–	–
7	SURR. ON/OFF	H	O		39	–	–	–
8	TAPE – 2 ON	L	O		40	–	–	–
9	TAPE – 2 OFF	L	O		41	7/5 (EQ)	H/L	I
10	+ 5V	–	–		42	–	–	–
11	+ 5V	–	–		43	RESET	–	–
12	–	–	–		44	TEST	–	–
13	– 15V	–	–		45	OSC 1	–	–
14	GND	–	–		46	OSC 2	–	–
15	GND	–	–		47	GND	–	–
16	STOP	L	I		48	I/O DATA	L	I/O
17	GND	–	–		49	I/O CLK	L	I/O
18	S – CLK	H	O		50	EQ DATA	L	O
19	S – DATA	H	O		51	EQ CLK	L	O
20	S – LAT (T. F)	H	O		52	AUTO STOP	L	I
21	DOL – LAT	H	O		53	TUN – LEVEL	H	O
22	VIDEO – A	H	O		54	REAR SP – RY	–	O
23	VIDEO – B	H	O		55	(M – VOL +)	H	O
24	VIDEO – C	H	O		56	(M – VOL –)	H	O
25	VIDEO – D	H	O		57	– 20dB MUTE	H	O
26	Vcc	–	–		58	FUNC MUTE	H	O
27	GND	–	–		59	T – 2MUTE	H	O
28	GND	–	–		60	P MUTE	H	O
29	GND	–	–		61	SP – RY	H	O
30	S – DATA (T)	H	I		62	PROT – IN	L	I
31	GND	–	–		63	POW – RY	H	O
32	GND	–	–		64	DISP ON	H	O

ADJUSTMENT

< FM SECTION >

• FM Discriminator (NULL) Adjustment

Setting :



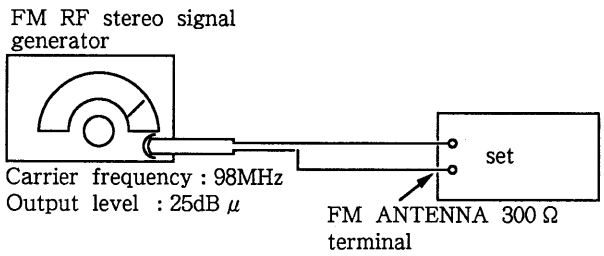
Procedure :

1. Tune the set to 98MHz.
2. Adjust T21 for 0V reading on the VOM.

Note : FM Tuning Level adjustment should be made after FM discriminator adjustment.

• FM Tuning Level Adjustment

Setting :

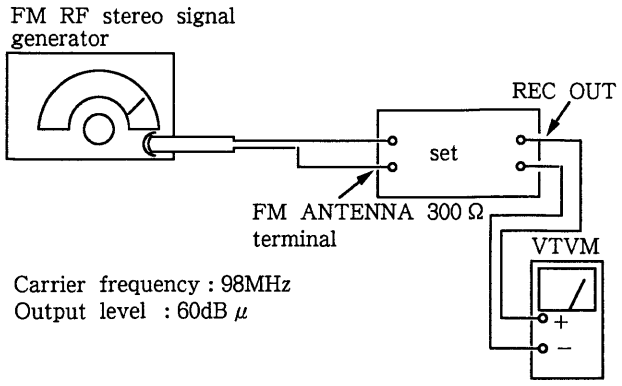


Procedure :

1. Tune the set to 98MHz.
2. Adjust RV24 so that the TUNED LED goes on.

• FM Stereo Separation Ajustment

Setting :



Procedure :

Tune the set to 98MHz.

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L − CH	L − CH	ⓐ
R − CH	L − CH	ⓑ Adjust RV21 for minimum reading.
R − CH	R − CH	ⓒ
L − CH	R − CH	ⓓ Adjust RV21 for minimum reading.

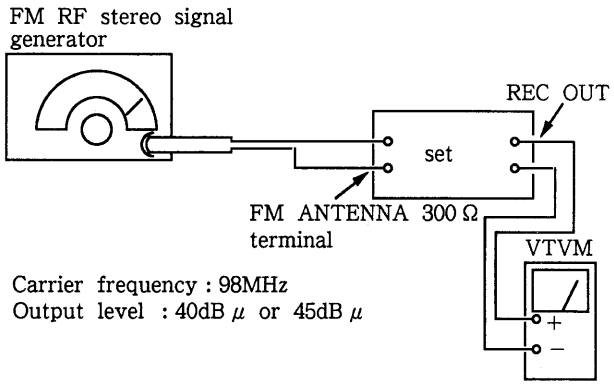
L − CH Stereo separation : ⓐ−ⓑ

R − CH Stereo separation : ⓒ−ⓓ

The separations of both channels should be equal.

• Auto Stop Level Adjustment

Setting :



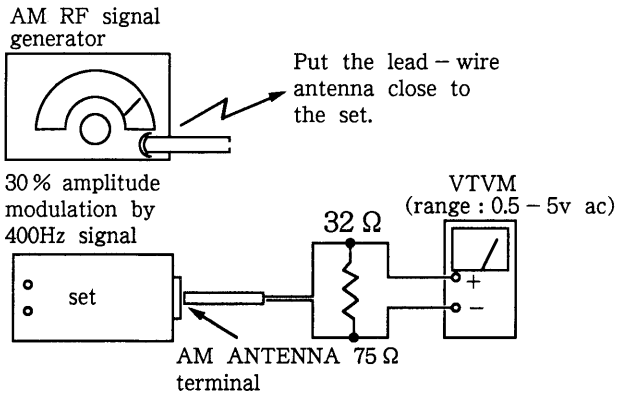
Procedure :

1. Turn the High/Low select switch to High.
2. Adjust RV25 so that the TUNED LED goes on.

< AM SECTION >

• AM Tuning Level Adjustment

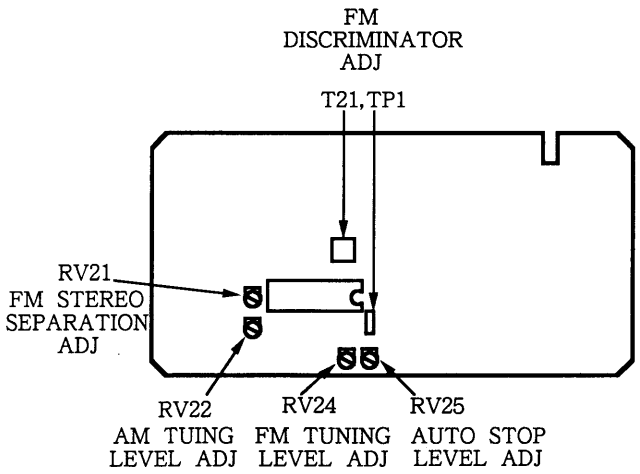
Setting :



Procedure :

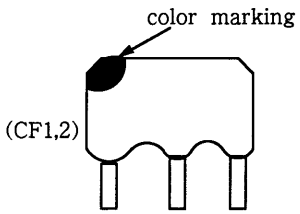
1. Tune the set to 1.050kHz.
2. Adjust the RV22 so that the TUNED LED goes on.

Adjustment Location : tuner board



Note on Ceramic Filter (CF1,2) Replacement.

This set employs two ceramic filters (CF1,2) which should have the same color marking to identify their center frequency. Therefore FM IF offset adjustment by Pattern (※A, ※B) connection is necessary to match the center frequency of the ceramic filters used with FM intermediate frequency.



○ : connect
X : not connect

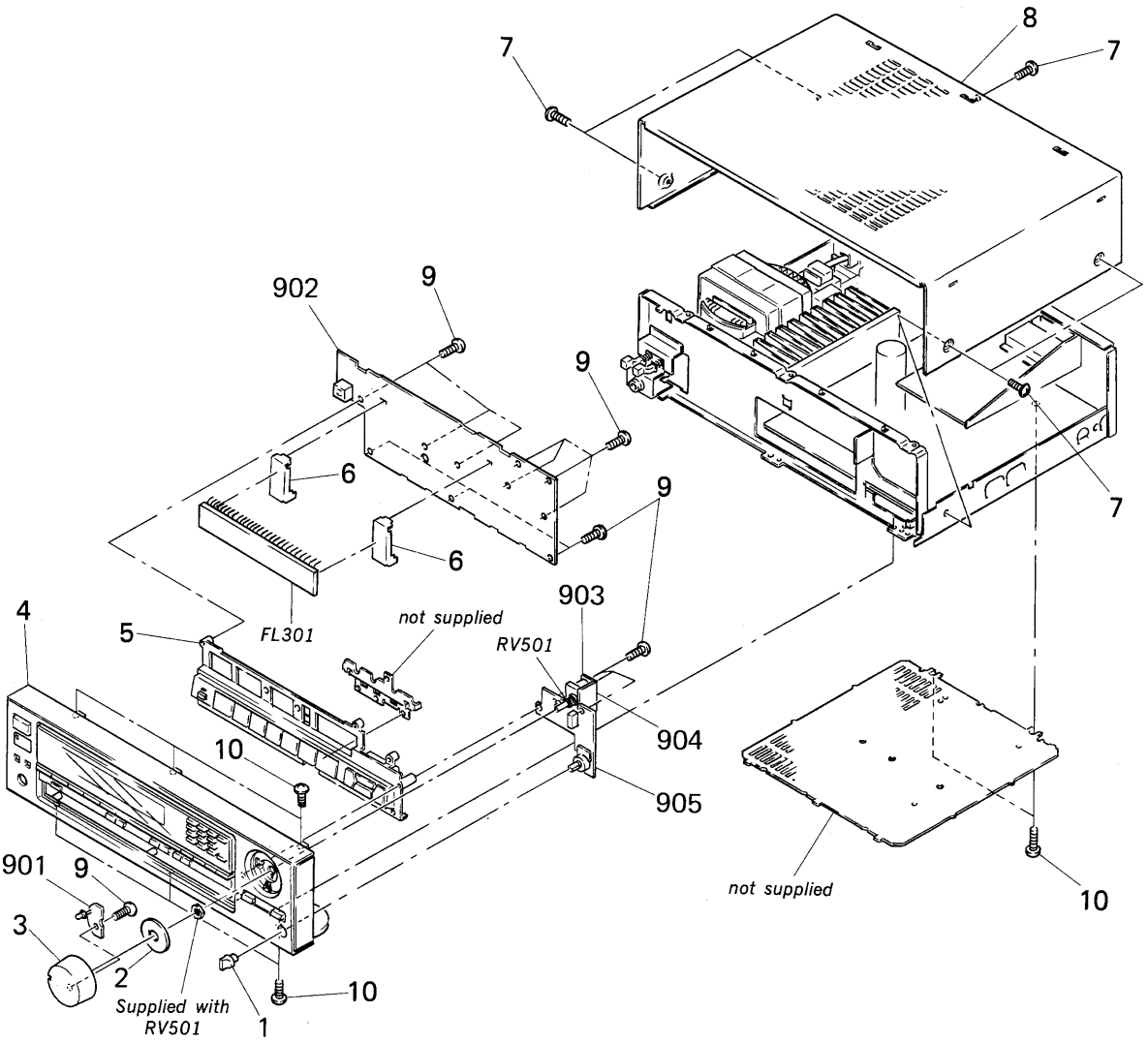
Ceramic		Connection		FM intermediate frequency
Color mark	Center frequency	※A	※B	
White	10.750	○	X	10.750
Red	10.700	X	X	10.700
Black	10.650	○	○	10.650

EXPLODED VIEW – 1

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ ↑
  Cabinet's Color Parts Color

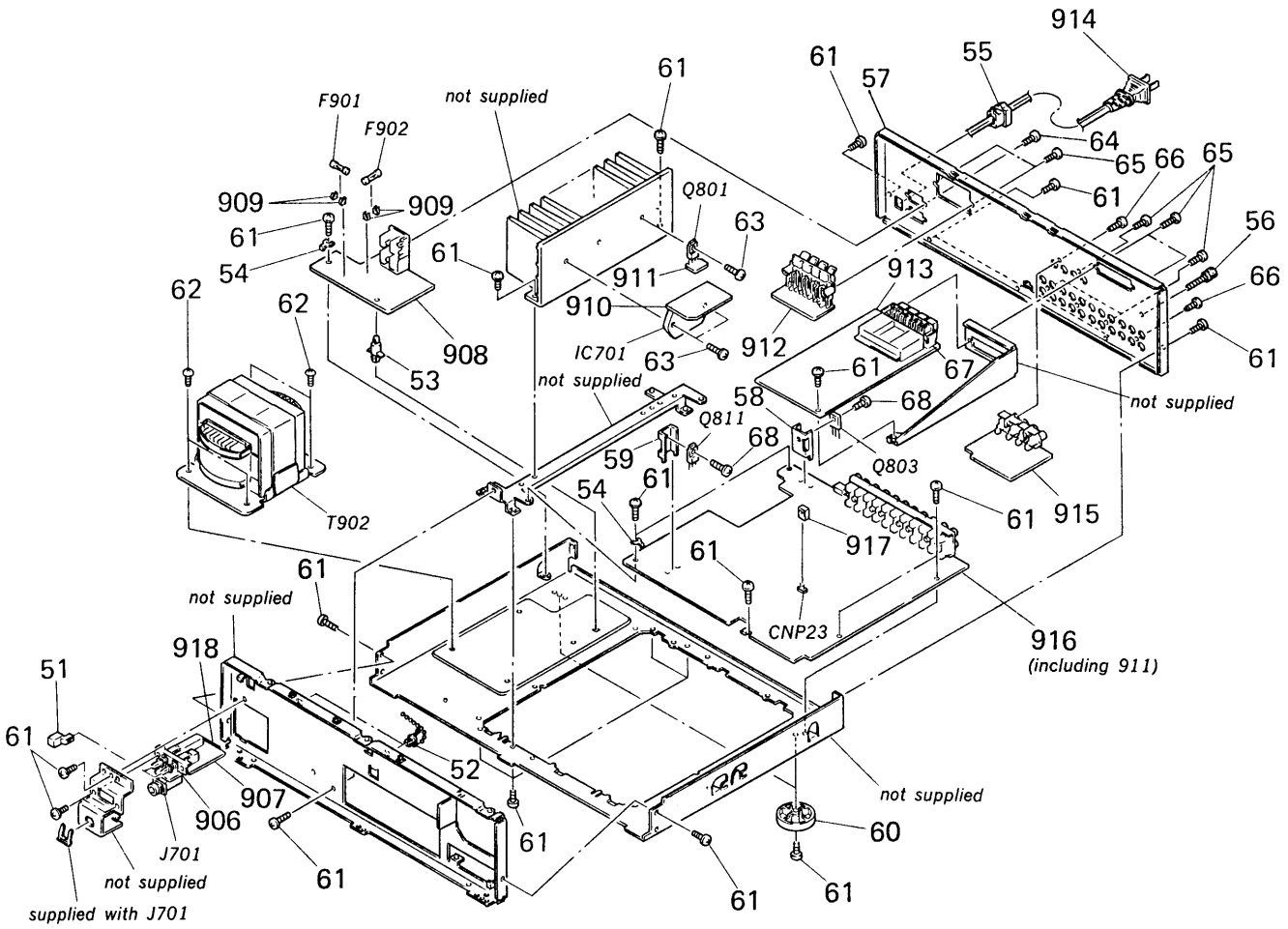
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.



MECHANICAL PARTS LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1-1	★94-931-065-010	KNOB, BAL 10		1
	1-2	★94-931-603-110	SPACER		1
	1-3	★94-925-121-010	KNOB, V2		1
	1-4	★9A-432-331-8A0	FRONT PANEL ASSY		1
	1-5	+ + +	ESCUTCHEON ASSY		1
	1-6	★94-924-989-110	HOLDER, FL TUBE		2
	1-7	★93-704-366-010	SCREW, CASE M3 – 8		5
	1-8	★94-929-294-110	CASE		1
	1-9	★97-685-535-190	SCREW, TAPPING+B2.6 – 10		14
	1-10	★97-685-872-010	SCREW +BVTT 3 – 8		8

EXPLODED VIEW – 2



PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	2-51	★94-906-872-010	KNOB,SQUARE		1
	2-52	---	CLAMP		2
	2-53	---	HOLDER,PC BOARD		1
	2-54	---	PLATE,GROUND		2
	2-55	★93-703-244-000	BUSHING,AC CORD		1
	2-56	★93-706-165-010	FEEDER ROCK SCREW		1
	2-57	★94-931-078-210	PANEL,BACK		1
	2-58	---	HEAT SINK		1
	2-59	---	HEAT SINK		1
	2-60	★9X-488-593-610	FOOT ASSY		2
	2-61	★97-685-872-010	SCREW +BVTT 3-8		24
	2-62	★97-685-881-010	SCREW +BVTT 4-8 S		4
	2-63	★97-685-650-210	SCREW +BVTP 3-16 TYPE2 SLIT		3
	2-64	★97-685-546-190	SCREW +BTP 3-8 TYPE2 N-S		1
	2-65	★97-685-647-190	SCREW +BVTP 3-10 TYPE2 SLIT		6
	2-66	★94-909-982-110	SCREW,TAPPING		2
	2-67	---	PLATE ST,GROUND		1
	2-68	★97-685-646-110	SCREW +BVTT 3-6		2

■ ACCESSORIES／PACKAGE LIST

PART NO. CHANGED TO	REF. NO.	PART NO.	DESCRIPTION	COMMON MODEL	Q'TY
	1	★ 93－751－148－010	INSTRUCTION BOOKLET	※	1
	2	★ 91－501－224－000	ANTENNA,FEEDER		1
	3	★ 91－501－374－110	ANTENNA,LOOP		1
	4	★ 91－465－307－110	REMOTE COMMANDER	※	1