

AIWA® SERVICE MANUAL

S/M Code No. 84-002

DATA OF ISSUE 2/1984

TYPE. H, HB, UB, E, EB, K, KB, G

**STEREO INTEGRATED
AMPLIFIER**

MODEL NO.

MX-90



FM/AM STEREO TUNER

MODEL NO.

TX-110



Shown above is TX-70H

STEREO PREAMPLIFIER

MODEL NO.

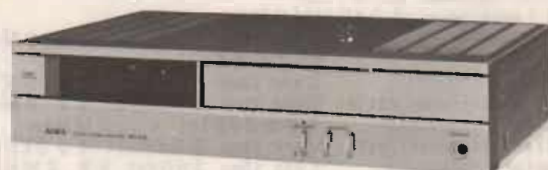
GX-110



**DC STEREO POWER
AMPLIFIER**

MODEL NO.

BX-110



SPECIFICATIONS

MX-90

Power source:	H, HB models AC 120V/220/240V switchable, 50/60Hz UB model AC 120V, 60Hz E, EB models AC 220V, 50/60Hz K, KB, G models AC 240V, 50/60Hz	Total harmonic distortion:	Less than 0.08% (1kHz, 30W, 8Ω)
Power consumption:	H, HB models 85W UB model 70W E, EB, K, KB, G models 160W	Output bandwidth:	40Hz to 50kHz (Less than 0.5%) [Both channels driven, 8Ω]
Dimensions:	330(W)×71(H)×200(D)mm (12-7/8"×2-5/8"×7-7/8")	Frequency response:	40Hz to 50kHz (+0.5/-3dB)
Weight:	3.6kg (7.92lbs.)	Residual noise	Less than AUX 5mV
<POWER AMPLIFIER>		Damping factor:	More than 40 (1kHz 8Ω)
Effective output power:	H, HB models 45W+45W (8Ω, EIAJ 5% 1kHz) E, EB, K, KB, G models 30W+30W (8Ω, T.H.D. 0.05%, 40Hz~20kHz) UB model only <FTC Rule> 35 Watts per channel, Min. RMS at 8 ohms, from 40Hz~ 20kHz, with no more than 0.2% Total Harmonic Distortion	<PREAMPLIFIER>	
		Signal to noise ratio:(Weighted)	PHONO(MM) More than 82dB TUNER, AUX More than 90dB TAPE PLAY More than 90dB
		D. S. L:	60Hz 18dB±3dB
		RIAA deviation:	±0.5dB (30Hz~15kHz)
		Channel separation:	More than 40dB
		Input jacks:	PHONO(MM) 3mV/47kΩ (Sensitivity/input impedance):
			TUNER 150mV/47kΩ CD 150mV/47kΩ AUX 240mV/47kΩ TAPE 150mV/47kΩ MIC 1mV/5kΩ TAPE 150mV/47kΩ SPEAKERS 8Ω~16Ω
		Output jacks:	
		(Level/output impedance):	

TX-110

<GENERAL>		Frequency response:	30Hz~50kHz(+0.5/-3dB)
Power source:	H, HB models AC 120V/220~240V Switchable, 50/60Hz UB model AC 120V, 60Hz E, EB models AC 220V, 50/60Hz K, KB, G models AC 240V, 50/60Hz	Separation:	More than 35dB (at 1kHz)
Power consumption:	10W	Auto stop level:	30+5/0dB (at 98.0MHz)
Dimensions:	330(W)×71(H)×200(D)mm (13"×2-3/4"×7-7/8")	Hi-Blend separation:	13±5dB (at 1kHz, 98.0MHz)
Weight:	1.9kg (4.18lbs.)	<AM TUNER SECTION>	
Output level:	FM 180mV AM 150mV	Frequency ranges:	MW 530~1605kHz LW 144~353kHz (E, EB, K, KB models only)
<FM TUNER SECTION>		Intermediate frequency:	450kHz
Frequency ranges:	87.5~108.0MHz	Sensitivity:	MW 52±3dB (S/N 20dB, bar antenna) (at 603kHz) 50±3dB (at 99.9, 1404kHz)
Intermediate frequency:	10.7MHz	LW	62±3dB (at 144, 200, 353kHz) (E, EB, K, KB models only)
IHF sensitivity:	H, HB, UB models 7±3dB (at 87.5, 98.0, 108.0MHz) E, EB, K, KB, G models 7±3dB (at 88.0, 98.0, 108.0MHz) Less than 36dB (at 98.0MHz)	Image frequency interference ratio:	MW More than 40dB (at 99.9kHz) LW More than 40dB (at 200kHz) (E, EB, K, KB models only)
50dB quieting sensitivity:		Intermediate frequency interference ratio:	MW More than 40dB (at 99.9kHz)
Image frequency interference ratio:	More than 45dB (at 98.0MHz)	Selectivity:	MW More than 25dB (±9kHz)
Intermediate frequency interference ratio:	More than 72dB (at 98.0MHz) (MONO)	Distortion:	MW Less than 1.0% (at 99.9kHz)
SN ratio:	More than 74dB (98.0MHz) (STEREO)	AGC characteristic:	MW 56±10dB (at 99.9kHz)
(Weighted)	More than 66dB (98.0MHz)	SN ratio:	MW More than 48dB (100dB input)
Total harmonic distortion:	(Input level 60dB) (MONO) Less than 0.3% (at 98.0MHz) (STEREO) Less than 0.4% (at 98.0MHz)	Auto stop level:	MW 55±10dB LW 58±10dB (E, EB, K, KB models only)
AM suppression ratio:	More than 50dB (at 98.0MHz)	Loop antenna:	H, HB, UB, G models MW 300μV/m E, EB, K, KB models MW 400μV/m LW 800μV/m
Muting response:	30±3dB (at 98.0MHz)		
Effective selectivity:	More than 70dB (at 400kHz)		
Capture ratio:	Less than 3dB (at 98.0MHz)		

ELECTRICAL MAIN PARTS LIST

"***" shows unavailable Repair Part.

Symbol No.	Part No.	Description	Remark
<MAIN CIRCUIT BOARD SECTION>			
PCB-A	*	Main circuit board	
IC1	87-027-925-01	IC. M5220	
IC2	87-027-978-01	IC. TC9152P	
IC3	87-020-145-01	IC. M54563	
IC7	87-027-895-01	IC. M5218L	
IC8	87-020-090-01	IC. STK-4151-2	
IC9	87-027-787-01	IC. uPC1237H	
Q1,2	89-318-156-01	Transistor. 2SC1815BL	
Q3,4,5,7,31, 32,33,34,42	89-318-155-01	Transistor. 2SC1815GR	
Q6,41	89-413-023-01	Transistor. 2SD1302S	
Q13	89-110-155-01	Transistor. 2SA1015(GR)	
Q35,36	89-320-011-01	Transistor. 2SC2001(K)	
Q40	89-412-653-01	Transistor. 2SD1265(O)	
Q44	89-209-412-31	Transistor. 2SB941(PQ)	
D1,4,5,6,7,8, 9,10,11,12, 41,42,43,44, 45,47,49,51, 52,54,55,57, 63,64,65,66	89-027-097-01	Diode. 1S1555	
D2,13,69	87-027-431-01	Zener diode. RD6.2EB2	
D45	87-027-405-01	Zener diode. RD2.2EB	
D48	87-027-606-01	Zener diode. HZ7C2L	
D53,56,62	87-027-365-01	Diode. S5277B	
D60	87-027-376-01	Diode. 1B4B41	
D61	87-020-144-01	Diode. DBA4D0	
D68	87-027-347-01	Zener diode. HZ18-2L (E, EB, K, KB, G models only)	
D68	87-027-508-01	Zener diode. HZ15-1 (UB model only)	
L1,2	87-005-158-01	Inductor coil 1uH	
RY1	87-045-201-01	Relay G2R 12V	
CB1,2	87-030-077-01	Circuit breaker. 2.2A	
	82-795-613-01	Speaker terminal. 4P	***
J4,5,6	82-798-626-01	Pin jack ass'y (REC/PLAY, CONTROL, TUNER)	***
J7,8,9,10,11, 12,13,14,15	81-731-614-01	Pin Jack ass'y (PHONO, CD, AUX, RECOUT)	***
CON2,3	82-798-643-01	Heatsink	***
CON4	87-049-367-01	Connector ass'y. 10P	***
	87-032-897-01	Connector ass'y. 3P	***
PIN1	87-049-277-01	Pin. 7P	***
<Resistors>			
ΔR228,229	87-029-119-01	100Ω 1/4W Fuse resistor	
ΔR243	87-029-114-01	4.7Ω 1/4W Fuse resistor	
ΔR251,252	87-029-366-01	4.7Ω 1/2W Fuse resistor	
R265	87-025-351-01	33Ω 1W Nonflammable	
(H, HB, E, EB, K, KB, G models only)			
<Capacitors>			
C5,6	87-018-024-01	47pF Ceramic	
C89,90	87-018-032-01	100pF Ceramic	
C123,124	87-018-044-01	1000pF Ceramic	
C152,153	87-015-956-01	6800μF 50V Electrolytic	
C158,159	87-015-989-01	220μF 25V Electrolytic BP	
<PHONO CIRCUIT BOARD SECTION>			
PCB-B	*	Phono circuit board	
J2	87-049-352-01	Jack. 8.3mm/switch (HEADPHONE)	

Symbol No.	Part No.	Description	Remark
<Resistor>			
R231,232	87-025-154-01	270Ω 1W Metal film	
<MIC CIRCUIT BOARD SECTION>			
PCB-C	*	MIC circuit board	
IC4	87-027-895-01	IC. M5218L	
J1	82-675-661-01	Jack. 5.3mm/switch (MIC)	
VR2	87-021-847-01	Volume. 250kΩ-W(BALANCE)	
VR3	87-021-848-01	Volume. 50kΩ-B(MIC VOLUME)	
CON1	82-798-640-01	Connector ass'y 7P	***
<Capacitors>			
C30	87-018-044-11	0.01μF Ceramic	
C32	87-018-042-01	680pF Ceramic	
<FRONT CIRCUIT BOARD SECTION>			
PCB-D	*	Front circuit board	
IC5	87-027-895-01	IC. M5218L	
D15,16,17	87-020-128-01	LED. GL-2PR2(MUT. DSL, REC OUT)	
D23,24,25,26	87-027-543-01	LED. LN317GP(TAPE, TUNER, PHONO, CD)	
D29	87-020-130-01	LED. GL-9PG24	
D30,31,32,33, 34	87-020-127-01	LED. GL-9PR24(LEVEL)	
VR3	87-021-845-01	Slide volume. 100kΩ-W(VOLUME)	
VR4,5,6,7,8, 9,10	87-021-846-01	Slide volume. 250kΩ-W(EQUALIZER VOL)	
SW1	87-031-692-01	Push-switch(POWER)	
SW2,3,4,5,6	87-031-771-01	Tact switch(TUNER, TAPE, PHONE, CD, AUX)	
SW7,8,9	87-031-815-01	Push-switch(MUT. DSL, REC OUT)	
PIN2,3	87-049-366-01	Pin. 20P	***
<Capacitor>			
C73,74,75,76, 80	87-015-698-01	4.7μF 50V Electrolytic	
<GRAPHIC CIRCUIT BOARD SECTION>			
PCB-E	*	GRAPHIC circuit board	
Q11,12,13,14, 15,16,17,18, 19,20,21,22, 23,24	89-318-155-01	Transistor. 2SC1815(GR)	
<Capacitors>			
C43,44	87-015-697-01	3.3μF 50V Electrolytic	
C47,48	87-015-695-01	1μF 50V Electrolytic	
C51,52	87-015-693-01	0.33μF 50V Electrolytic	
C55,56	87-015-691-01	0.1μF 50V Electrolytic	
C57,58	87-018-044-01	1000pF Ceramic	
C61,62	87-018-040-81	470pF Ceramic	
C65,66	87-018-035-81	180pF Ceramic SL	

Symbol No.	Part No.	Description	Remark
<POWER CIRCUIT BOARD SECTION>			
ΔPCB-F	*	Power circuit board (H, HB models only)	
ΔPCB-F	*	Power circuit board (UB, E, EB, K, KB, G models only)	
ΔF1	87-035-256-01	Fuse. 3.15A (H, HB models only)	
ΔF1	87-035-302-01	Fuse. 3.15A (UB model only)	
ΔF1	87-035-224-01	Fuse. 1.6A "T" (E, EB, K, KB, G models only)	
ΔF2	87-035-252-01	Fuse. 1.6A (H, HB models only)	
ΔS1	87-031-586-01	Rotary switch(VOLTAGE SELECTOR) (H, HB models only)	
	87-098-045-01	Fuse label 3.15A (H, HB, UB models only)	
	87-098-018-01	Fuse label 1.6A "T" (E, EB, K, KB, G models only)	***
	87-098-042-01	Fuse label 1.6A (H, HB models only)	***
	87-033-147-01	Fuse clamp	
<MISCELLANEOUS>			
ΔT1	82-798-617-01	Power transformer (H, HB models only)	
ΔT1	82-798-618-01	Power transformer (UB models only)	
ΔT1	82-798-619-01	Power transformer (E, EB models only)	
ΔT1	82-798-620-01	Power transformer (K, KB, G models only)	
Δ	87-034-962-01	AC power cord (H model only)	
Δ	87-034-992-01	AC power cord (HB model only)	
Δ	87-034-578-01	AC power cord (UB model only)	
Δ	82-788-674-01	AC power cord (E, EB models only)	
Δ	87-034-708-01	AC power cord (K, KB, G models only)	
Δ	87-085-184-01	Cord bushing (H, HB models only)	
Δ	87-085-189-01	Cord bushing (UB model only)	
Δ	87-085-185-01	Cord bushing (E, EB, KB, G models only)	

Note: Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board A 82-798-602-11

PCB-A 82-798-604-11

PCB-B 82-798-605-11

PCB-F 82-798-608-11 (H, HB models only)

PCB-F 82-798-607-11 (U, E, EB, K, KB, G models only)

Combination circuit board B 82-798-609-11

PCB-C 82-798-612-11

PCB-D 82-798-610-11

PCB-E 82-798-611-11

ELECTRICAL MAIN PARTS LIST "★★★" shows unavailable Repair Part.

Symbol No.	Part No.	Description	Remark
< TUNER CIRCUIT BOARD SECTION >			
PCB-A	*	Tuner circuit board	
IC1	87-020-140-01	IC. 1.78M12	
IC2	87-027-993-01	IC. μ PC1167C2	
IC3	87-027-996-01	IC. LA1245	
IC4	87-020-139-01	IC. LA3390	
IC5.6	87-027-840-01	IC. M54519P	
Q1	87-026-165-01	FET. 3SK73(GR)	
Q2.3	89-319-233-01	Transistor. 2SC1923(O)	
Q4.5.15	89-501-615-01	FET. 2SK161(GR)	
Q6	89-318-154-01	Transistor. 2SC1815(Y)	
Q7.12	89-502-464-01	FET. 2SK246(Y)	
Q8.9	89-318-155-01	Transistor. 2SC1815(GR)	
Q10	89-110-154-01	Transistor. 2SA1015(Y)	
Q11.13	89-320-011-01	Transistor. 2SC2001(K)	
Q14	89-318-464-01	Transistor. 2SC1846(R)	
Q16.17	89-320-011-01	Transistor. 2SC2001(K) (E. EB. K. KB models only)	
D1.2.3.4	87-027-900-01	Diode. 1SV147	
D101.102.104.105.106	87-027-097-01	Diode. 1S1555	
D103	87-027-376-01	Diode. 1B4B41	
D107	82-769-617-01	Diode. KV-1236Z-2	
D108	87-027-097-01	Diode. 1S1555 (E. EB. K. KB models only)	
L1	82-791-630-01	FM antenna coil	
L2	82-791-631-01	FM antenna coil	
L3.5.6	82-791-629-01	FM antenna coil	
L4	82-791-627-01	FM antenna coil	
L7.9	87-005-151-01	Choke coil. 2.2 μ H	
L8	82-791-633-01	FM OSC coil	
TC1.2	87-011-142-01	Trimmer. 10P	
TC201	87-011-108-01	Trimmer. 8P	
TC202	87-011-131-01	Trimmer. 30P (E. EB. K. KB models only)	
LPF1.2	82-794-684-01	Low-pass filter	
CF1.2.3	82-785-669-01	Ceramic filter. MA8H(R)	
CF4	82-795-675-01	Ceramic filter. MA. 450(129)	
CF5	82-794-670-01	Ceramic filter. BFU450C4N	
T1	82-794-683-01	FM IFT. 6T	
T2	82-794-695-01	FM quad coil(P)	
T3	82-794-696-01	FM quad coil(S)	
T4	82-794-699-01	MW antenna coil	
T5	82-794-687-01	MW OSC coil	
T7	82-794-700-01	LW antenna coil (E. EB. K. KB models only)	
T8	82-794-688-01	LW OSC coil (E. EB. K. KB models only)	
J1.2	82-799-632-01	Antenna terminal ass'y (OUTPUT, REMOTE, AM ANT, FM ANT) (H. HB. UB. G models only)	
J1.2	82-799-631-01	Antenna terminal ass'y (OUTPUT, REMOTE, AM ANT, FM ANT) (E. EB. models only)	
J1.2	82-799-634-01	Antenna terminal ass'y (OUTPUT, REMOTE, AM ANT, FM ANT) (K. KB models only)	
SW20	82-795-624-01	Slide switch (AM STEP) (H. HB. G models only)	
SFR1	87-021-742-01	Semi-fixed resistor. 10k Ω -B	
SFR2	87-021-743-01	Semi-fixed resistor. 22k Ω -B	
SFR3	87-021-689-01	Semi-fixed resistor. 47k Ω -B	
CN1	87-049-275-01	Pin. 5P	★★★
CN2.3	87-032-967-01	Pin. 7P	★★★
CN4.5	87-032-966-01	Pin. 6P	★★★

Symbol No.	Part No.	Description	Remark
< Capacitors >			
C1.11	87-018-014-01	18pF Ceramic	
C2.8.10.14.	87-018-047-01	0.01 μ F 16V Ceramic	
		15.16.17.18.	
		101.102.103.	
		105.106.107.	
		111.132.133.	
		144.146.147.	
		205.209.211.	
		212.217.219.	
		221	
C3.6	87-018-010-01	12pF Ceramic	
C4	87-018-002-01	2.2pF Ceramic	
C5	87-018-005-01	4.7pF Ceramic	
C7	87-018-032-01	100pF Ceramic	
C9	87-018-001-01	1pF Ceramic	
C12	87-018-026-01	56pF Ceramic	
C104.201.214.215	87-012-105-01	0.022 μ F Ceramic	
C110	87-018-038-01	330pF Ceramic	
C116	87-014-057-01	1000pF PP	
C118.120	87-014-056-01	910pF PP	
C124.126	87-018-045-01	2200pF Ceramic	
C131.145.213.218	87-018-044-01	1000pF Ceramic	
C139	87-010-043-01	47 μ F 35V Electrolytic (UB model only)	
C140	87-010-045-01	100 μ F 25V Electrolytic (UB model only)	
C203	87-018-018-01	27pF Ceramic (H. HB. UB. G models only)	
C203	87-018-017-01	24pF Ceramic (E. EB. K. KB models only)	
C204	87-014-049-01	470pF PP	
C223	87-014-049-01	470pF PP (E. EB. K. KB models only)	
C224	87-018-030-01	82pF Ceramic (E. EB. K. KB models only)	
< CONTROL CIRCUIT BOARD SECTION >			
PCB-B	*	Control circuit board	
IC1	87-020-232-01 (87-027-997-01)	IC. μ PD1704C-026 (IC. μ PD1704C-018)	
IC2	87-027-994-01	IC. AN6873	
IC3	87-020-129-01	IC. LB1423	
IC4	87-027-752-01	IC. 553AC	
IC5.6	87-020-096-01	IC. M4066BP	
Q301	89-318-154-01	Transistor. 2SC1815(Y)	
Q302.303	89-110-154-01	Transistor. 2SA1015(Y)	
Q304	89-110-154-01	Transistor. 2SA1015(Y) (H. HB. UB. G models only)	
D301	87-020-130-01	LED. GL-9PG24 (POWER)	
D302.303.304.305.306	87-020-127-01	LED. GL-9PR24 (SIGNAL 1~5)	
D307	87-020-152-01	LED. GL-9PG24 (FM STEREO)	
D308.309	87-020-153-01	LED. GL-9PG26 (FM MUTE, HI-BLEND)	
D310.311.312.313.314.315.316.317.318.319.320.321.322.328.329.330	87-027-097-01	Diode. 1S1555	

Symbol No.	Part No.	Description	Remark
D326.327.	87-027-097-01	Diode. 1S1555 (H. HB. UB. G models only)	
FL	82-795-620-01	FL. 9MT21ZK	
X1	82-769-613-01	Crystal. 4.5M	
TC301	87-011-131-01	Trimmer. 30P	
SW1.2.3.4.5.6.7.8.9.10.11.12.13.14.15	87-031-771-01	Tact switch (PRESET, STATION 1~6, MEMORY/TIME SET, TIME/FREQ, SLEEP, TIMER, STANDBY, FM, AM, DOWN, UP)	
SW13.16	87-031-771-01	Tact switch (MW, LW) (E. EB. K. KB models only)	
SW17.18	87-031-760-01	Push switch (FM MUTE, HI-BLEND)	
SW19	87-031-750-01	Push switch (POWER)	
< Capacitors >			
C301	87-015-990-01	2200 μ F 6.3V Electrolytic	
C302	87-018-020-01	33pF Ceramic	
C300.305.307.308.309.310.318.319.320	87-018-047-01	0.01 μ F 16V Ceramic	
C311.312.313.314.315.316.317	87-018-040-01	470pF Ceramic	
< POWER CIRCUIT BOARD SECTION > = "E. EB. K. KB. G" models			
APCB-C	82-799-613-01	Power circuit board	
AJ3.4.5	87-049-414-01	AC outlet (E. EB models only)	
AJ3.4.5	87-049-416-01	AC outlet (K. KB. G models only)	
AF1	87-035-139-01	Fuse. "T" 2.5A (E. EB models only)	
A	87-033-147-01	Fuse clamp (E. EB models only)	
< MISCELLANEOUS >			
AT1	82-799-604-01	Power transformer (H. HB models only)	
AT1	82-799-602-01	Power transformer (UB model only)	
AT1	82-799-603-01	Power transformer (E. EB. K. KB. G models only)	
ASW21	87-031-617-01	Slide switch (AC VOLTAGE SELECTOR) (H. HB models only)	
A	87-034-956-01	AC power cord (H model only)	
A	87-034-958-01	AC power cord Black (HB model only)	
A	87-034-578-01	AC power cord Black (UB model only)	
A	87-034-877-01	AC power cord (E. EB models only)	
A	87-034-975-01	AC power cord (K. KB models only)	
A	87-034-892-01	AC power cord (G model only)	
AJ3.4.5	87-049-365-01	AC outlet 3P UNSW (H. HB. UB models only)	
A	87-085-184-01	Cord bushing (H. HB. UB models only)	
A	87-085-185-01	Cord bushing (E. EB. K. KB. G models only)	

Note; Combination Circuit Board
The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board 82-799-610-21
PCB-A 82-799-611-21
PCB-B 82-799-612-21

ELECTRICAL MAIN PARTS LIST

"***" shows unavailable Repair Part.

Symbol No.	Part No.	Description	Remark
<MAIN CIRCUIT BOARD SECTION>			
PCB-A	*	Main circuit board	
IC1	87-027-925-01	IC, M5220	
IC2	87-027-978-01	IC, TC9152P	
IC3	87-020-145-01	IC, M54563	
IC4	87-020-216-01	IC, M51133P	
IC5	87-027-895-01	IC, M5218L	
IC6	87-027-828-01	IC, TC9134P	
IC7,8,9	87-027-723-01	IC, TC4049BP	
IC10	87-027-948-01	IC, M54514AP	
Q1,2	89-318-156-01	Transistor, 2SC1815(BL)	
Q3,4,5,6,9, 10,11,12,13, 14,17,18,20, 24,55,56,57, 58,61,62	89-318-155-01	Transistor, 2SC1815(GR)	
Q7	89-413-023-01	Transistor, 2SD1302S	
Q15,16	89-320-011-01	Transistor, 2SC2001K	
Q19,23	89-414-064-51	Transistor, 2SD1406(Y, GR)	
Q21	89-107-335-01	Transistor, 2SA733K	
Q22	89-210-154-51	Transistor, 2SB1015(Y, GR)	
Q25	89-502-464-01	FET, 2SK246Y	
Q59,60	89-110-155-01	Transistor, 2SA1015(GR)	
D1,40	87-027-606-01	Zener diode, HZ7C2L	
D2,3,4,5,6,7, 8,9,10,11, 12,14,15,16, 17,18,19,21, 22,23,24,25, 26,29,30,32, 41,42,64	87-027-097-01	Diode, 1S1555	
D13,31,63	87-027-332-01	Zener diode, HZ6B1L	
D28	87-027-416-01	Zener diode, HZ3C2	
D34	87-027-376-01	Diode, 1B4B41	
D35,37,38	87-027-365-01	Diode, S5277B	
D36	87-027-449-01	Zener diode, HZ15-3L	
D39	87-027-364-01	Zener diode, HZ12A3L	
J1,2,3,4,5,6, 7,8,9	81-731-614-01	Pin jack ass'y(PHONO, CD, AUX, REC OUT, SIGNAL EARTH, PLAYER SYNC)	
J10,11,12,13, 14,15,16	81-731-616-01	DIN jack ass'y(TUNER, REC/PLAY, CONTROL, TUNER, CONTROL, DECK CONTROL, PLAYER START/CUT, OUTPUT)	
X1	87-008-246-01	Ceramic resonator CSB455EB	***
PIN1	87-032-897-01	Pin, 3P	***
PIN2	87-049-276-01	Pin, 6P	***
PIN3	87-032-903-01	Pin, 3P	***
PIN4,7	87-049-277-01	Pin, 7P	***
PIN5,6	87-049-278-01	Pin, 8P	***
<Capacitors>			
C1,2	87-018-036-01	220pF Ceramic	
C3,4	87-015-953-01	4.7μF 35V Electrolytic LL	
C5,6,25,26	87-018-024-01	47pF Ceramic	
C52,53	87-018-032-01	100pF Ceramic	
C54,55,56	87-015-421-01	0.22μF 25V Aluminum solid	
C73,149	87-018-047-01	0.01μF 16V Ceramic	
<FRONT CIRCUIT BOARD SECTION>			
PCB-B	*	Front circuit board	
Q41,42,43,44, 45,46,47,48,	89-318-155-01	Transistor, 2SC1815(GR)	

Symbol No.	Part No.	Description	Remark
49,50,51,52, 53,54		<Capacitors>	
C89,90	87-015-697-01	3.3μF 50V Electrolytic	
C93,94	87-015-695-01	1μF 50V Electrolytic	
C97,98	87-015-693-01	0.33μF 50V Electrolytic	
C101,102	87-015-691-01	0.1μF 50V Electrolytic	
C103,104	87-018-044-01	1000pF Ceramic	
C107,108	87-018-040-01	470pF Ceramic	
C111,112	87-018-035-01	180pF Ceramic	
<GEQ CIRCUIT BOARD SECTION>			
PCB-C	*	GEQ circuit board	
IC13	87-027-895-01	IC, M5218L	
D50,51,52,53, 54	87-027-097-01	Diode, 1S1555	
D55,56,57,58, 59	87-027-543-01	LED, LN317GP(TAPE, TUNER, PHONO, CD, AUX)	
D60,61,62	87-020-128-01	LED, GL2PR2(DSL, REC OUT, MUTING)	
VR3,4,5,6,7, 8,9	87-021-846-01	Slide volume, 250kΩ-W(GRAPHIC EQUALIZER: 40Hz, 125Hz, 330Hz, 1kHz, 2.5kHz, 6.3kHz, 15kHz)	
SW1	87-031-692-01	Push-switch(POWER)	
SW2,3,4	81-731-635-01	Push-switch(MUTING, DSL, REC OUT)	
SW5,6,7,8,9	87-031-771-01	Tact switch(TAPE, TUNER, PHONO, CD, AUX)	
CON2	81-731-621-01	Connector ass'y, 6P	***
CON4	81-731-652-01	Connector ass'y, 7P	***
CON5	81-731-622-01	Connector ass'y, 8P	***
<Capacitors>			
C81,82,85,86	87-015-698-01	4.7μF 50V Electrolytic	
C83,84	87-015-681-01	10μF 16V Electrolytic	
<MIC CIRCUIT BOARD SECTION>			
PCB-D	*	MIC circuit board	
IC12	87-027-895-01	IC, M5218L	
VR1	87-021-848-01	Volume, 50kΩ-B(MIC VOL)	
VR2	81-731-636-01	Volume, 100kΩ-RW(BALANCE)	
J17	87-049-353-01	Jack, 6.3mm W-switch(MIX MIC)	
CON6	81-731-622-01	Connector ass'y, 8P	***
<Capacitors>			
C133	87-018-042-01	680pF Ceramic	
C135	87-018-044-01	1000pF Ceramic	
<LED CIRCUIT BOARD SECTION>			
PCB-E	*	LED circuit board	
IC11	87-020-217-01	IC, BA684A	
D70,71,72,73 74,75,76,77	87-020-219-01	LED, GL-3PG2(LEVEL INDICATOR)	
D78	87-020-218-01	LED, GL-3PR2(RECEIVED)	
SW10,11	87-031-771-01	Tact switch(VOLUME DOWN, VOLUME UP)	
CON7	81-731-620-01	Connector ass'y, 7P	***

Symbol No.	Part No.	Description	Remark
<Capacitor>			
C130	87-018-047-01	0.01μF 16V Ceramic	
<SWITCH CIRCUIT BOARD SECTION> = "H, HB" models			
APCB-F	*	Switch circuit board	
ASWJ2	87-031-551-01	Rotary switch(AC VOLTAGE SELECTOR)	
ΔJ18	87-049-017-01	AC outlet	***
Δ	82-304-743-01	1P terminal	***
<FUSE CIRCUIT BOARD SECTION> = "E, EB" models			
APCB-G	81-731-644-11	Fuse circuit board	
ΔF1	87-035-139-01	Fuse, "T" 2.5A	***
Δ	87-033-147-01	Fuse clamp	***
ΔJ18	87-049-414-01	AC outlet	***
Δ	82-304-743-01	1P terminal	***
<COMMAND CIRCUIT BOARD SECTION>			
PCB-H	81-731-655-01	Command circuit board	
IC1	87-027-831-01	TC9132P	
Q1	89-206-412-01	Transistor, 2SB641(R)	
Q2	89-406-372-01	Transistor, 2SD637(R)	
D1,2	87-027-849-01	LED, LN66 (LED SE303A)	
X1	87-008-246-01	Ceramic resonator, CS-B455EB1	
<KEY SWITCH CIRCUIT BOARD SECTION>			
PCB-I	81-731-656-01	Key switch circuit board	
SW4,5,6,7, 11,13,14, 17,18,19, 20,21,22, 23,24,25, 26,27,28, 30,31	86-198-601-01	Rubber switch [TAPE, PHONO, AUX, CD, REV PLAY(◀), START/ CUT, PLAY(▶), PAUSE, STOP, TUNER REC, VOLUME UP(▶), VOLUME DOWN(◀), FM, TUNING DOWN, UP, LW (EB, K, KB models only) ◀◀, ▶▶, MUTING, POWER, AM(MW)]	
<MISCELLANEOUS>			
ΔT1	81-731-606-01	Power transformer(H, HB models only)	
ΔT1	81-731-607-01	Power transformer(UB model only)	
ΔT1	81-731-608-01	Power transformer(E, EB models only)	
ΔT1	81-731-609-01	Power transformer(K, KB, G models only)	
Δ	87-034-962-01	AC power cord H50(H, HB models only)	
Δ	87-034-578-01	AC power cord U black(UB model only)	
Δ	82-788-674-01	AC power cord E50(E, EB models only)	
Δ	82-788-673-01	AC power cord K50(K, KB, G models only)	
ΔJ18	87-049-017-01	AC outlet(UB model only)	
ΔJ18	87-032-996-01	AC outlet(K, KB, G models only)	
Δ	87-085-184-01	Cord bushing(H, HB, UB models only)	
Δ	87-085-185-01	Cord bushing(E, EB, K, KB, G models only)	
CPI, CON3	81-731-633-01	Photo transistor amp. unit EUR-3619A	

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board A 81-731-640-11

PCB-A 81-731-641-11

PCB-E 81-731-642-11

PCB-F 81-731-643-11

Combination circuit board B 81-731-647-11

PCB-B 81-731-649-11

PCB-C 81-731-648-11

PCB-D 81-731-650-11

ELECTRICAL MAIN PARTS LIST

"***" shows unavailable Repair Part.

Symbol No.	Part No.	Description	Remark
<MAIN CIRCUIT BOARD SECTION>			
PCB-A	*	Main circuit board	
IC1.2	87-020-162-01	IC. STK1070	
IC5	87-027-787-01	IC. μ PC1237H	
Q11.12	89-318-154-01	Transistor. 2SC1815(Y)	
Q13	89-334-210-01	Transistor. 2SC3421	
Q14	89-113-580-01	Transistor. 2SA1358	
Q15	89-110-154-01	Transistor. 2SA1015(Y)	
D2.6	87-027-469-01	Zener diode. HZ16-2	
D9.10	87-027-097-01	Diode. 1S1555	
D15.16.17.18	87-027-402-01	Zener diode. HZ24-2L	
D19.20.21.22	87-027-626-01	Diode. S5277D	
D25.28	87-027-365-01	Diode. S5277B	
D23	87-027-788-01	Diode. D5FB20	
D24	87-027-376-01	Diode. 1B4B41	
L1.2	87-005-158-01	Inductor coil. 1 μ H	
RY-1	87-045-223-01	RelayG4W. 24V-2	
RY-2	87-045-224-01	RelayG2R. 24V-2	
J1	81-730-623-01	Jack Ass'y (INPUT. SPEAKER)	
SW1	87-031-822-01	Push-switch (INDICATOR)	
SW3.4	87-031-805-01	Push-switch (SPEAKER A. B)	
PIN1	87-032-897-01	Pin. 3P	***
PIN2	82-481-649-01	Pin. 2P	***
CON3	87-049-362-01	Connector ass'y. 7P	***
<Resistors>			
R57.58	87-025-120-01	10 Ω 1W Metal film	
R59.60	87-025-193-01	10 Ω 2W Metal film	
Δ R123	87-029-361-01	3.3 Ω 1/2W Fuse resistor	
<Capacitors>			
C53.54	87-015-914-01	47 μ F 100V Electrolytic	
C55.56	87-015-916-01	22 μ F 100V Electrolytic	
C57.58	87-015-945-01	15.000 μ F 56V Electrolytic	
C60	87-015-450-01	220 μ F 25V Electrolytic BP	
C61	89-652-615-01	1000 μ F Ceramic	
<INDICATOR CIRCUIT BOARD SECTION>			
PCB-B	*	Indicator circuit board	
IC3.4	87-020-161-01	IC. AN6891	
Q16.17	89-318-154-01	Transistor. 2SC1815(Y)	
Q18	89-206-051-21	Transistor. 2SB605K(L)	
Q19	89-405-711-21	Transistor. 2SD571K(L)	
D11.12.13.14.27	87-027-097-01	Diode. 1S1555	
D26	87-027-499-01	Zener diode. HZ15-3	
D31.32.33.34.35.36.37.38.39.40.41.42	87-020-164-01	LED. Red. GL-106-R5	
D43.44.45.46.47.48.49.50.51.52	87-020-165-01	LED. Red. GL-105-R5	
D53.54	87-020-163-01	LED. Green. GL-9NG23	
D55	87-020-128-01	LED. Red. GL-2PR2	
Δ SW2	87-031-692-01	Push-switch (POWER)	
PIN3	87-049-361-01	Pin. 7P	***
<Capacitors>			
C35.36.37.38.39.40	87-015-698-01	4.7 μ F 50V Electrolytic	

Symbol No.	Part No.	Description	Remark
<DRIVER-1 CIRCUIT BOARD SECTION>			
PCB-C	*	Driver-1 circuit board	
Q1	89-503-890-01	FET. 2SK389	
Q3	89-318-154-01	Transistor. 2SC1815(Y)	
Q5	89-333-810-01	Transistor. 2SC3381	
Q7	89-111-246-01	Transistor. 2SA1124R	
Q9	89-326-326-01	Transistor. 2SC2632(R)	
D1.5	87-027-469-01	Zener diode. HZ16-2	
D3.7	87-027-097-01	Diode. 1S1555	
SFR1	87-021-856-01	Semi-fixed resistor. 100 Ω -B	
PIN4.5.6	87-049-113-01	Pin. 3P	***
<Capacitor>			
C1	87-015-141-01	10 μ F 16V Electrolytic BP	
<DRIVER-2 CIRCUIT BOARD SECTION>			
PCB-D	*	Driver-2 circuit board	
Q2	89-503-890-01	FET. 2SK389	
Q4	89-318-154-01	Transistor. 2SC1815Y	
Q6	89-333-810-01	Transistor. 2SC3381	
Q8	89-111-246-01	Transistor. 2SA1124R	
Q10	89-326-326-01	Transistor. 2SC2632R	
D2.6	87-027-469-01	Zener diode. HZ16-2	
D4.8	87-027-097-01	Diode. 1S1555	
SFR2	87-021-856-01	Semi-fixed resistor. 100 Ω -B	
PIN7.8.9	87-049-113-01	Pin. 3P	***
<Capacitor>			
C2	87-015-141-01	10 μ F 16V Electrolytic BP	
<JACK CIRCUIT BOARD SECTION>			
PCB-E	*	Jack circuit board	
J2	87-049-360-01	Jack. 6.3 ϕ (PHONES)	
<Resistor>			
R75.76	87-025-055-01	270 Ω 2W Metal film	
<FUSE-1 CIRCUIT BOARD SECTION> - "UB" MODEL			
PCB-F	*	Fuse-1 circuit board	
Δ F1	87-035-313-01	Fuse. 5A	***
	87-098-324-01	Fuse label	***
Δ	87-033-147-01	Fuse clamp	***
Δ	82-304-743-01	1P terminal	
<SWITCH CIRCUIT BOARD SECTION> - "H,HB" MODELS			
Δ PCB-G	*	Switch circuit board	
Δ F1	87-035-312-01	Fuse. 7A	
	87-098-074-01	Fuse label. 7A	
Δ F2	87-035-256-01	Fuse. 3.15A	
	87-098-045-01	Fuse label. 3.15A	***
Δ SW5	87-031-586-01	Rotary switch (VOLTAGE SELECTOR)	
Δ	87-033-147-01	Fuse clamp	***
Δ	82-304-743-01	1P terminal	

Symbol No.	Part No.	Description	Remark
<FUSE-2 CIRCUIT BOARD SECTION> - "E,EB,K,KB,G" MODELS			
Δ PCB-H	*	Fuse-2 circuit board	
Δ F1	87-035-190-01	Fuse. "T" 2A	
Δ	87-098-019-01	Fuse label. "T" 2A	
Δ	87-033-147-01	Fuse clamp	
Δ	82-304-743-01	1P terminal	***
<MISCELLANEOUS>			
Δ T1	81-730-606-01	Power transformer (H,HB, models only)	
Δ T1	81-730-607-01	Power transformer (UB model only)	
Δ T1	81-730-608-01	Power transformer (E,EB models only)	
Δ T1	81-730-609-01	Power transformer (K,KB,G models only)	
Δ	87-034-962-01	AC power cord (H model only)	
Δ	87-034-992-01	AC power cord (HB model only)	
Δ	87-034-578-01	AC power cord (UB model only)	
Δ	82-788-674-01	AC power cord (E,EB models only)	
Δ	87-034-708-01	AC power cord (K,KB,G models only)	
Δ	87-085-184-01	Cord bushing (H,HB,UB models only)	
Δ	87-085-185-01	Cord bushing (E,EB,K,KB,G models only)	
	82-798-601-01	Heatsink (H,HB,UB models only)	
	81-730-624-01	Heatsink. EL (E,EB,K,KB,G models only)	
	81-730-625-01	Heatsink. ER (E,EB,K,KB,G models only)	



Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

C-MOS IC handling precaution

The C-MOS IC's construction makes this part susceptible to damage by static electricity and so take sufficient care in regard to following articles.

1. Need to be put on conductive sheet, to be put in a metallic box and to be wrapped by aluminium foil for transportation and deposit.
2. To use solder iron less than 40W (less than 260 $^{\circ}$ C) of power consumption for soldering. But do not overheat more than 10 second.
3. Do not perform a conductivity test with a tester, etc. Refer to the circuit voltages of each part.
4. The ICs on the electrical parts which are indicated by an C-MOS IC symbol mark (Φ).

Note; Combination Circuit Board

The parts on the electrical parts list which are indicated by an asterisk (*) are supplied as one single combined circuit board. Therefore, they will not be supplied separately. If this becomes necessary, please order the entire circuit board.

Combination circuit board 81-730-610-11

PCB-A 81-730-611-11

PCB-B 81-730-612-01

PCB-C 81-730-616-01

PCB-D 81-730-617-01

PCB-E 81-730-613-01

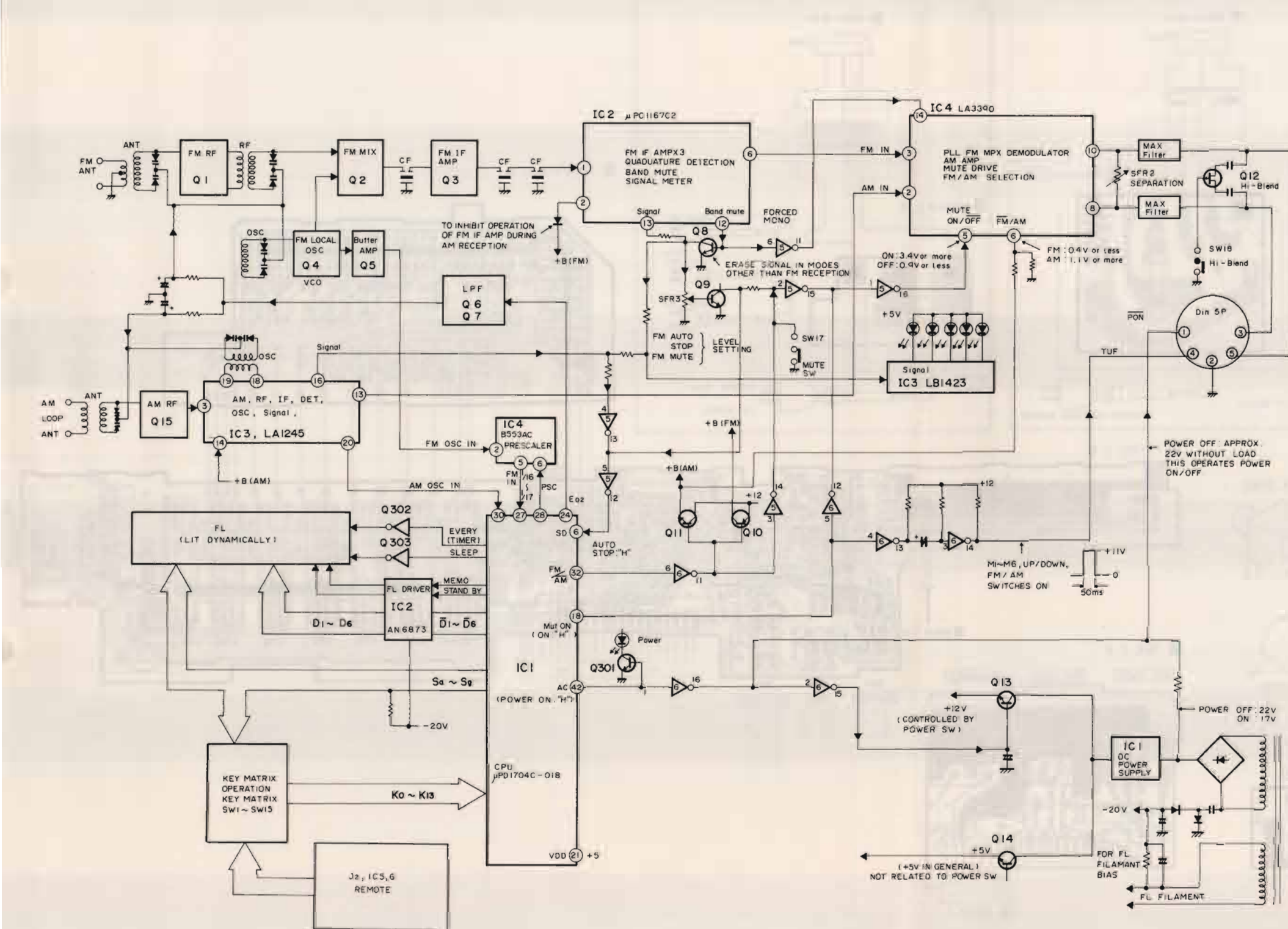
PCB-F 81-730-614-01 (UB model only)

PCB-G 81-730-615-01 (H,HB models only)

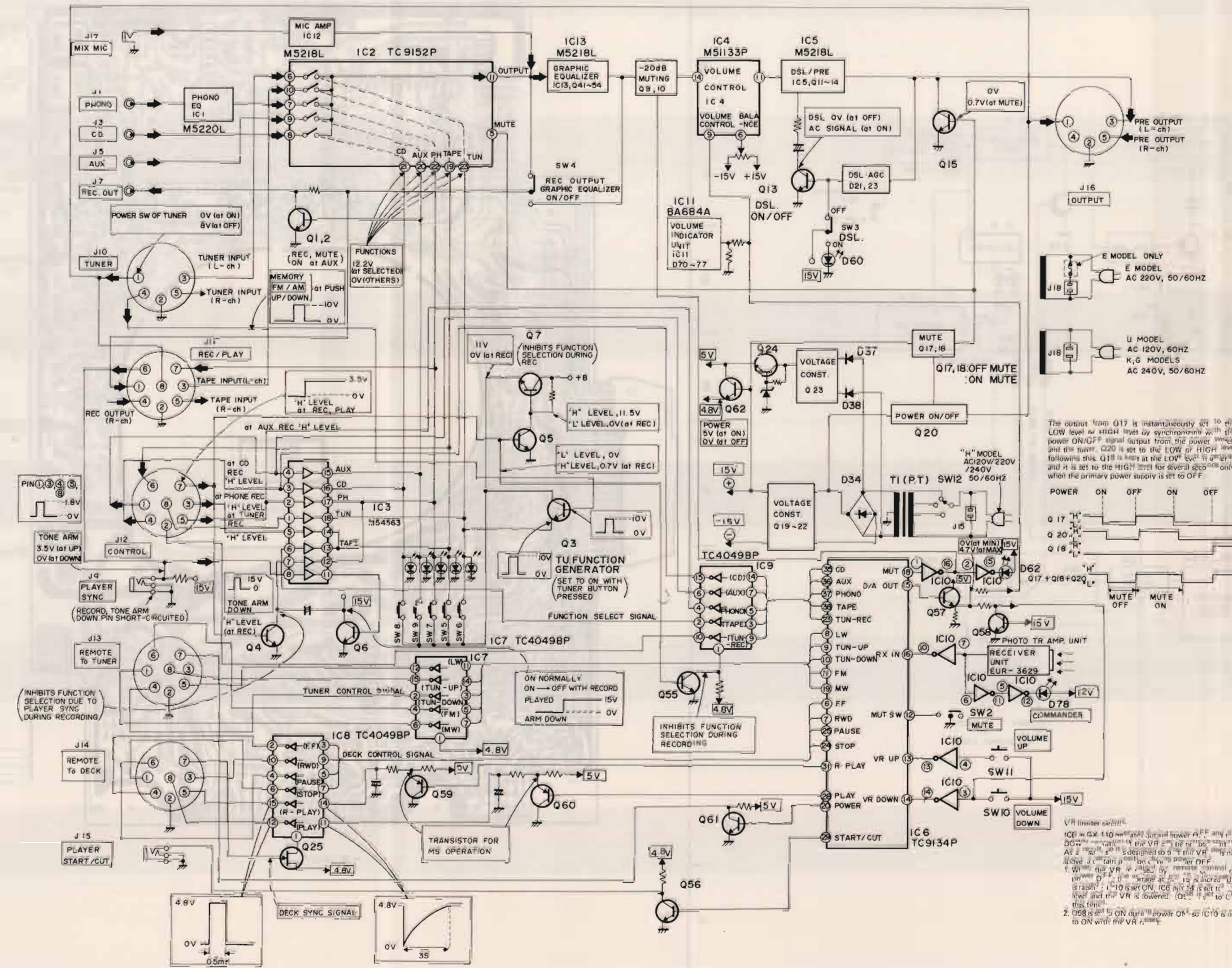
PCB-H 81-730-618-01 (E,EB,K,KB,G models only)

BLOCK DIAGRAM

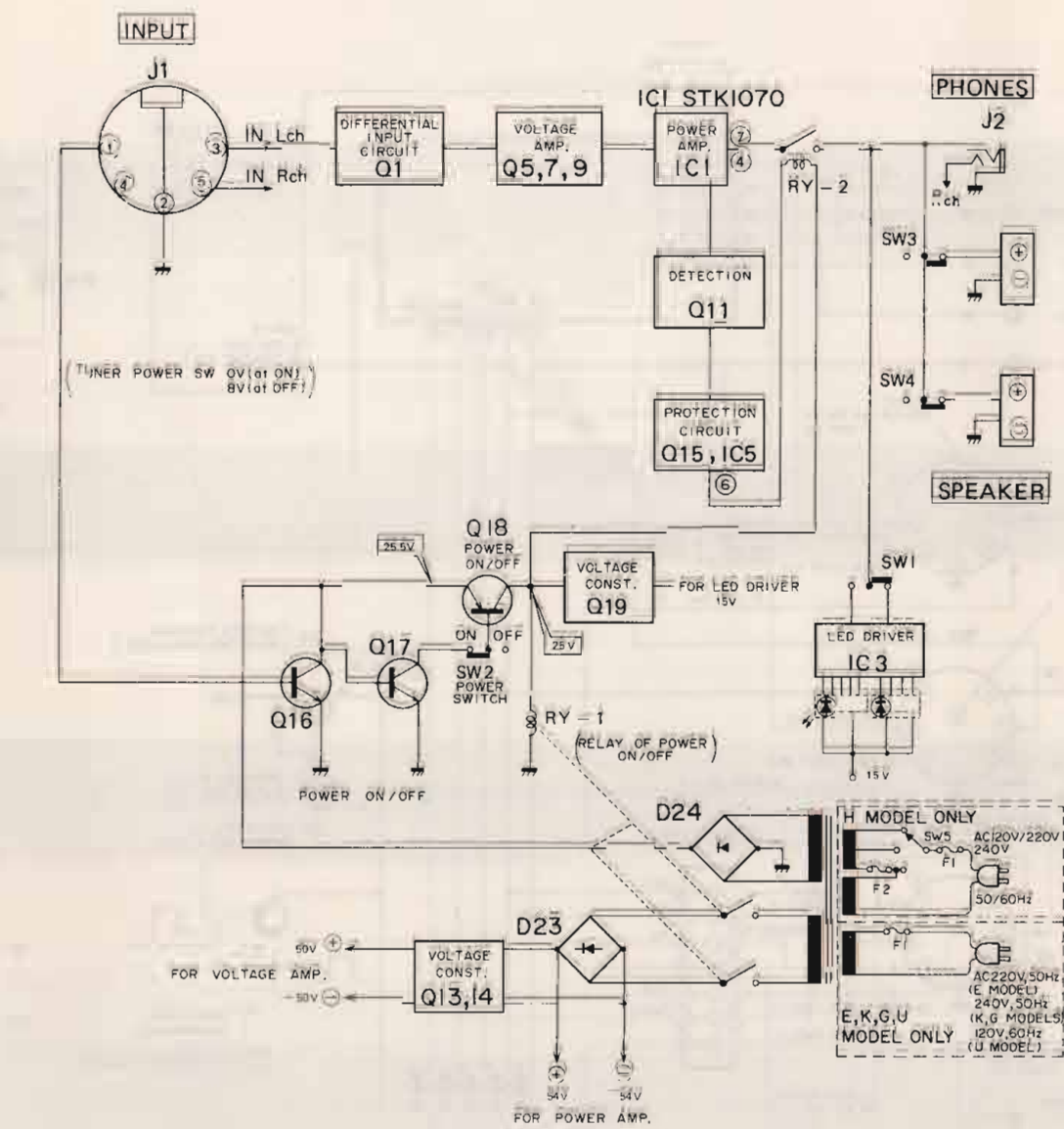
•TX-110



•GX-110

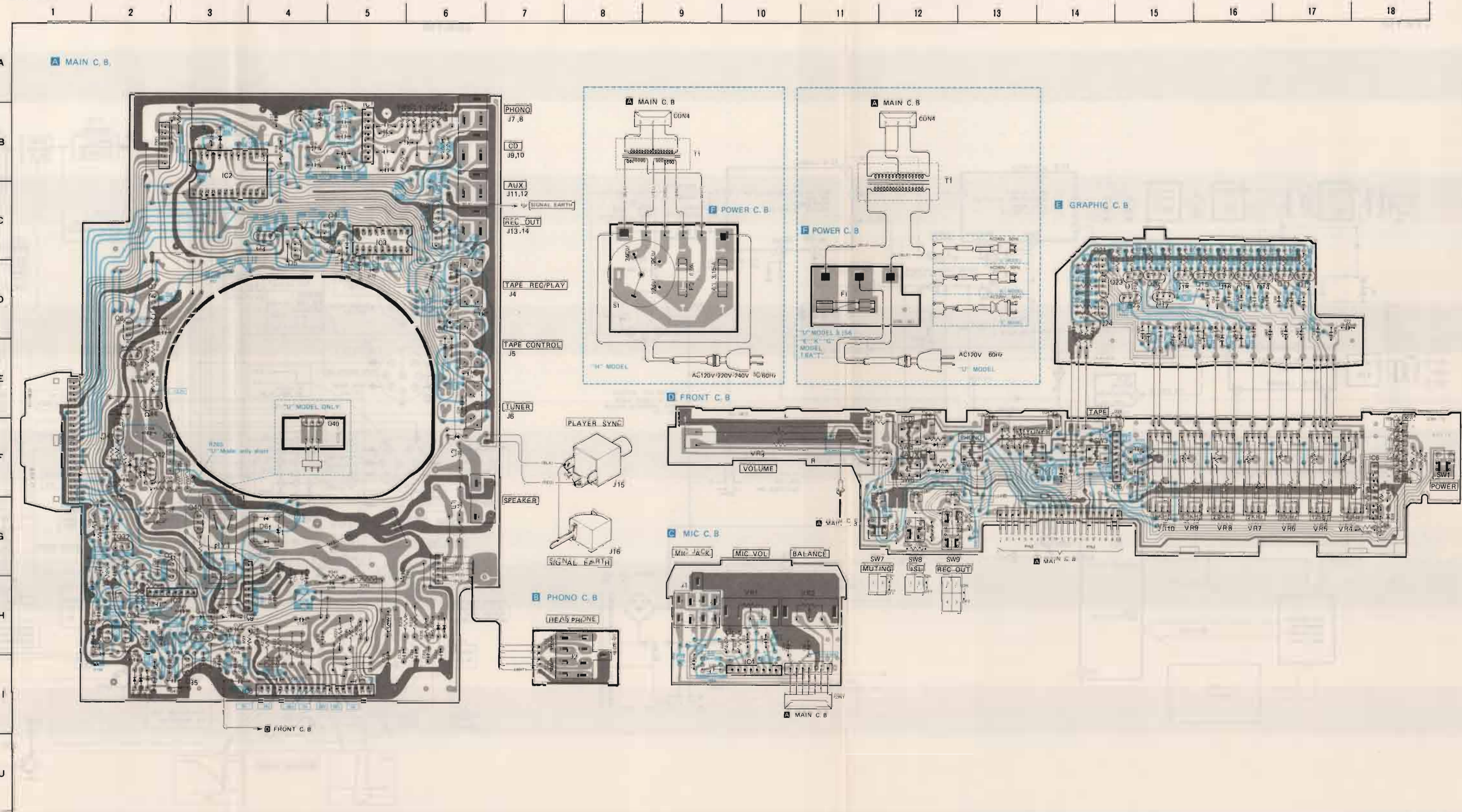
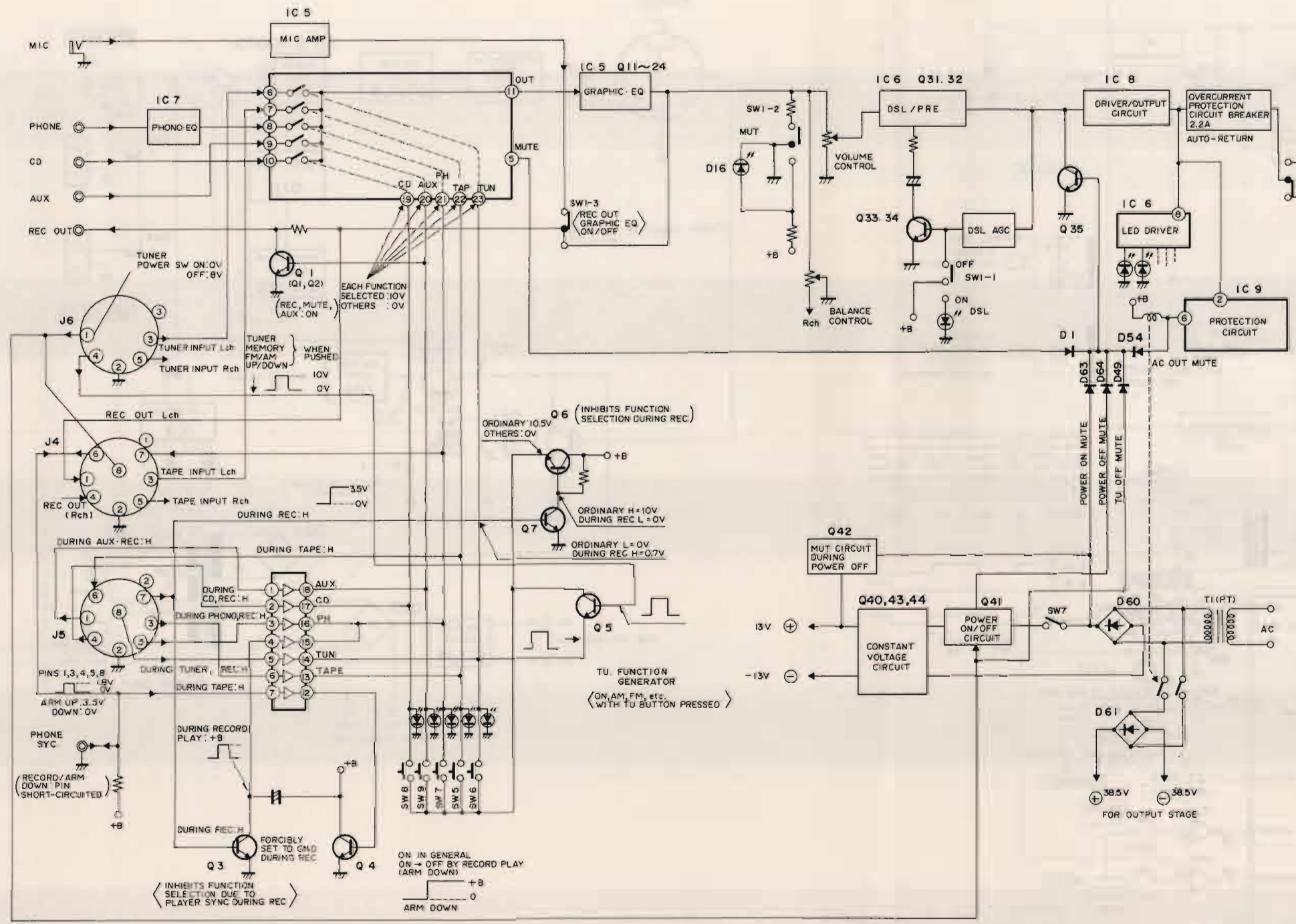


•BX-110

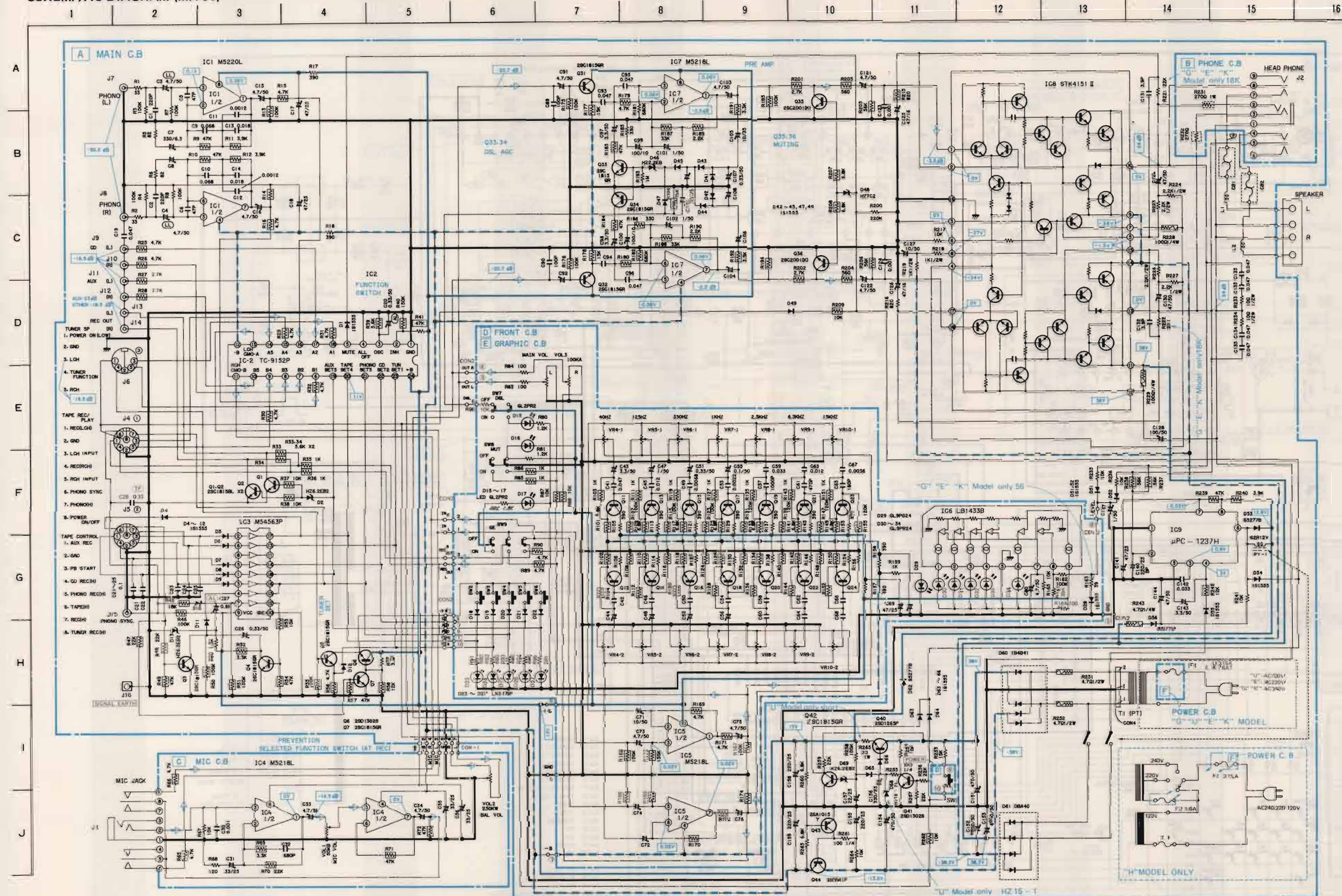


•MX-90

WIRING (MX-90)



SCHEMATIC DIAGRAM (MX-90)



NOTES:

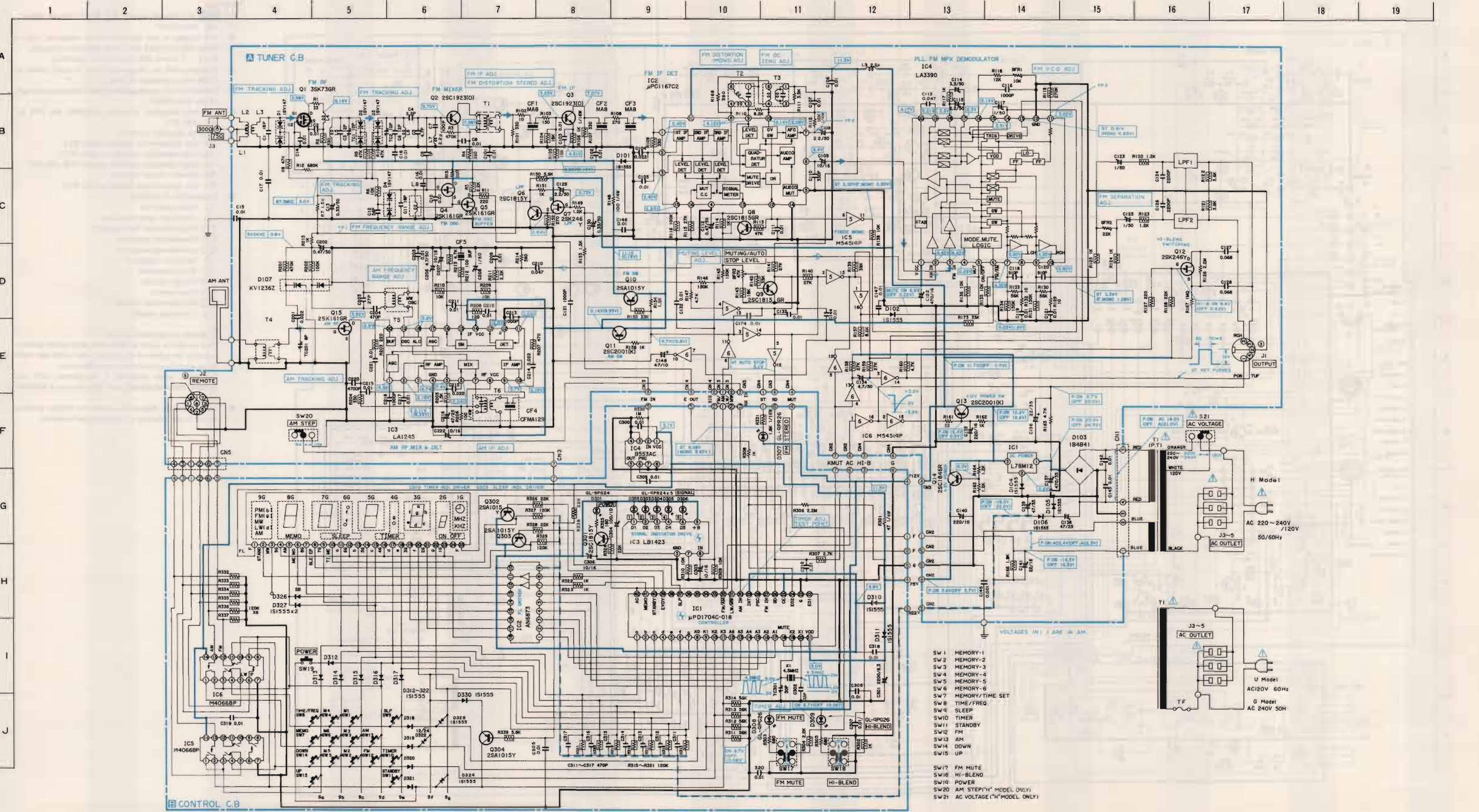
- 1) B (+) power supply
- 2) Signal path
- 3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But () is with AM reception or recording.
- 4) Resistors with no designation have a rated power of 1/4W and a tolerance of $\pm 5\%$.
- 5) Capacitors with no designation have a dielectric strength of less than 50WV.
- 6) The only capacitor tolerance indicated are $\pm 5\%$ (J) and $\pm 10\%$ (K).
- 7) Ceramic capacitor symbols:
 - For temperature compensation (SL)
 - High dielectric constant system (YY)
 - High dielectric constant system (YW, YP, YZ)
 - Semiconductor ceramic
 - For temperature compensation (SH)
- 8) Explanation of symbols
 - Mylar capacitor
 - Aluminum solid capacitor
 - Polypropylene film capacitor
 - Bi-polarized capacitor
 - Low-leakage capacitor
 - Tantalum capacitor
 - Styrol capacitor
 - Printed resistor
 - Fuse resistor
 - Nonflammable resistor
 - Low noise resistor

Safety component symbol

This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- This schematic diagram is subject to change without notice in the interests of improved performance.

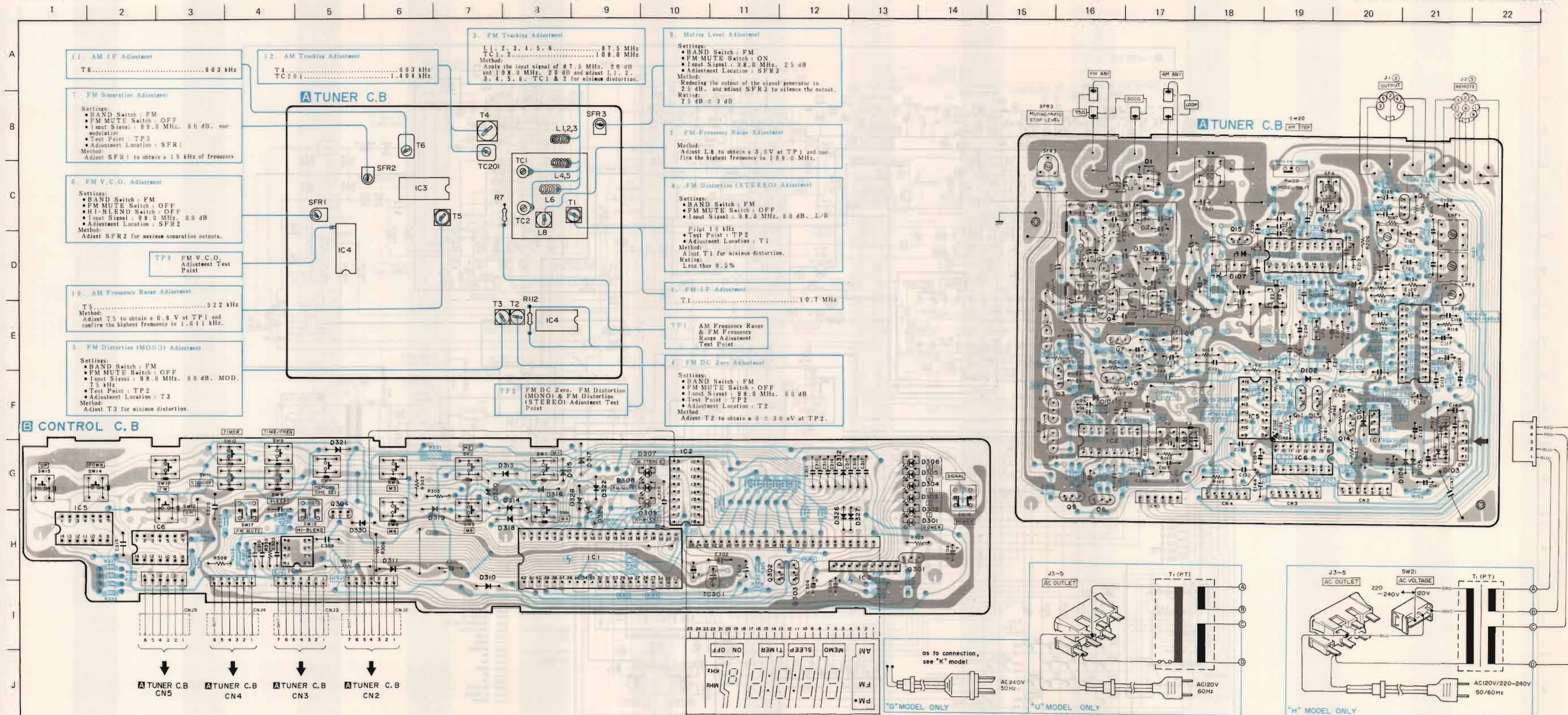
SCHEMATIC DIAGRAM (TX-110 H, U, G)

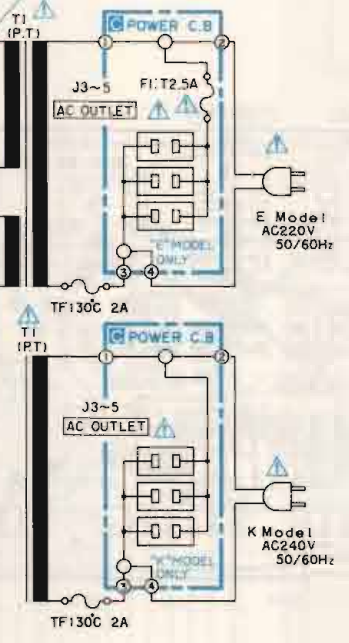
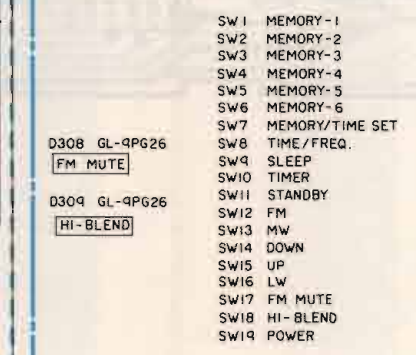


NOTES (1) Earth pattern Printed resistor pattern Component side pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals. But () is with AM reception.

The ICs on the electrical parts which are indicated by an C- MOS IC symbol mark ().

WIRING (TX-110 H, U, G)

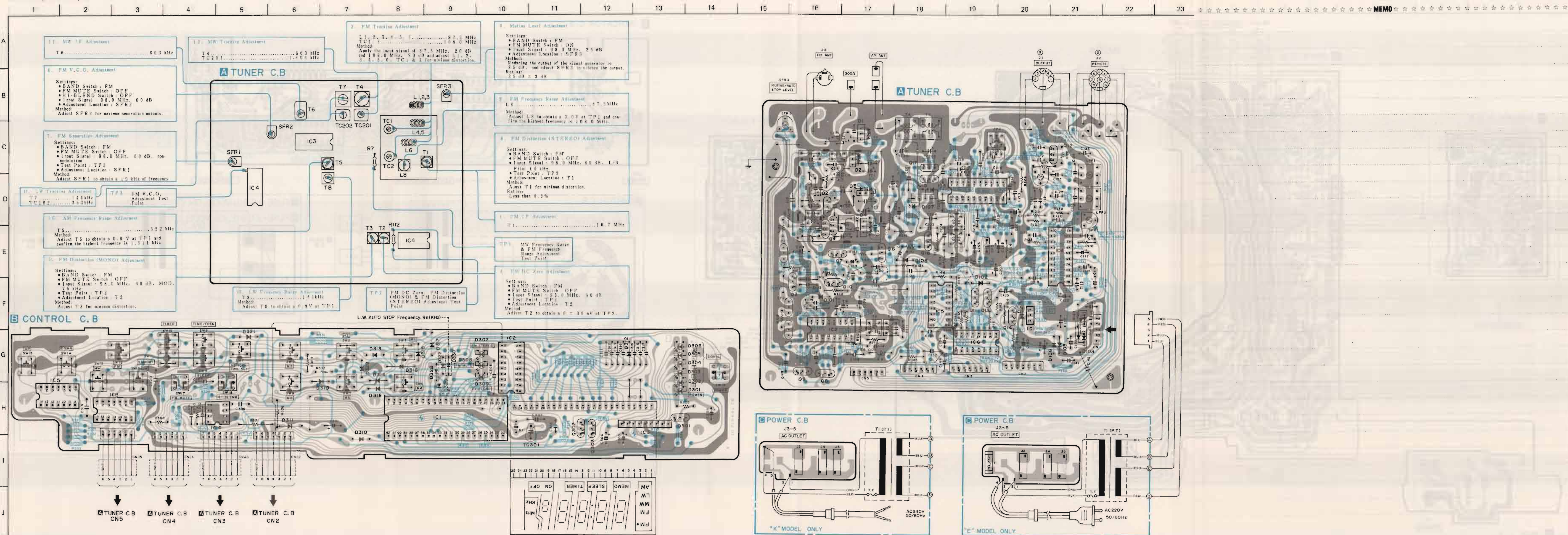




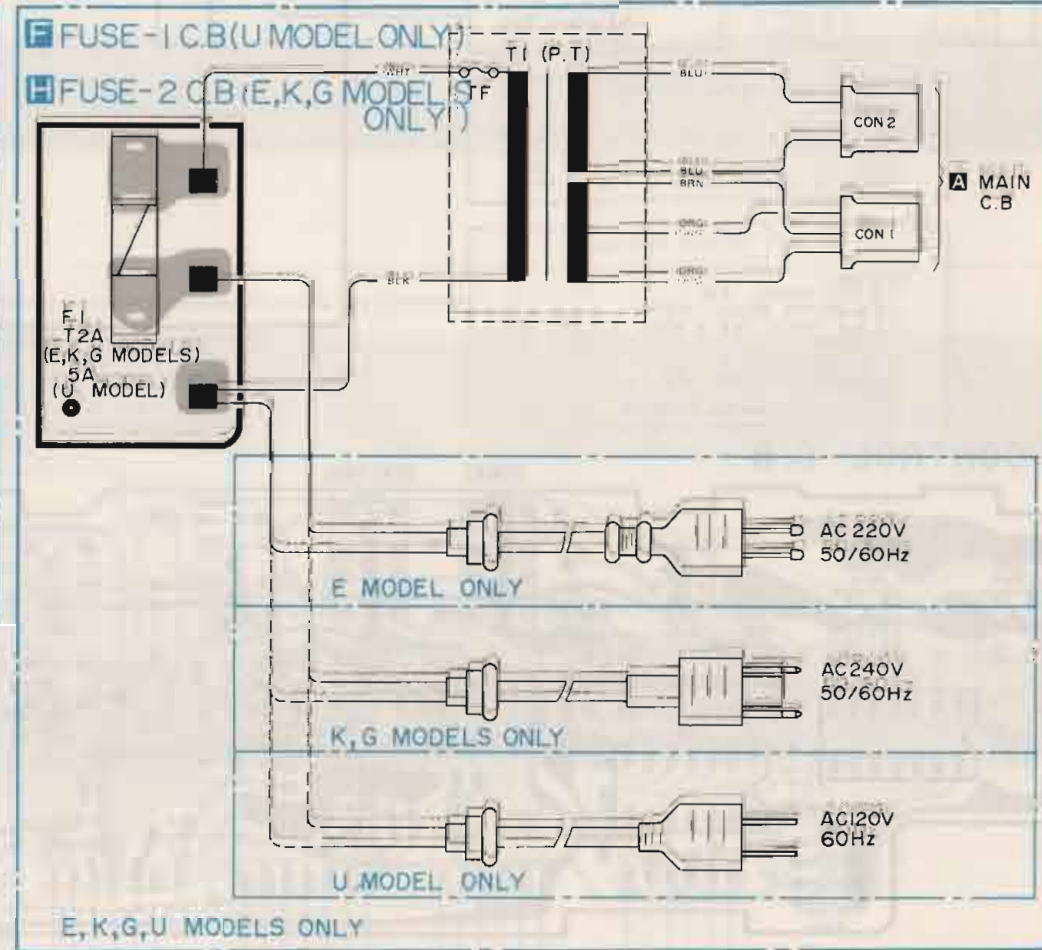
NOTES (1) Earth pattern Printed resistor pattern Component side pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when there are no signals.
But () is with AM reception.

WIRING (TX-110 E, K)

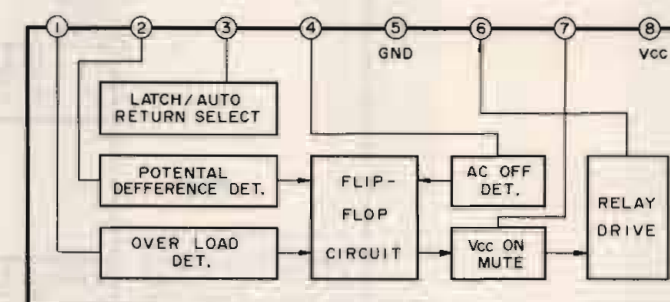
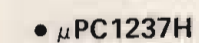
6/8
S/M Code No. 84-002



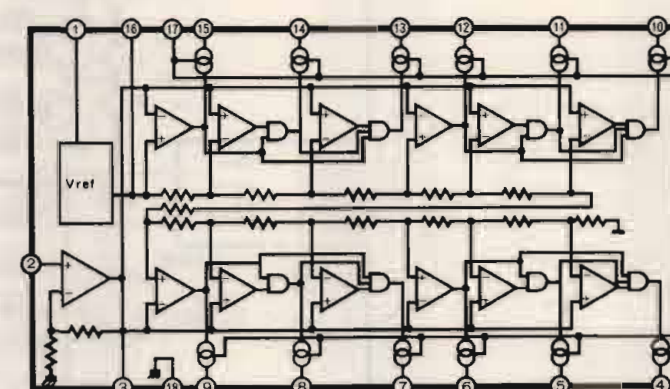
Safety component symbol
This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special



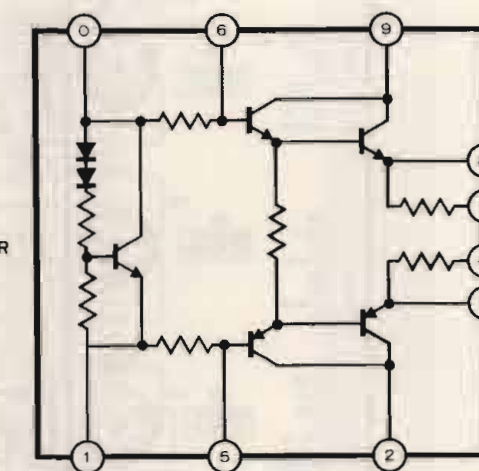
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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IC AN6891



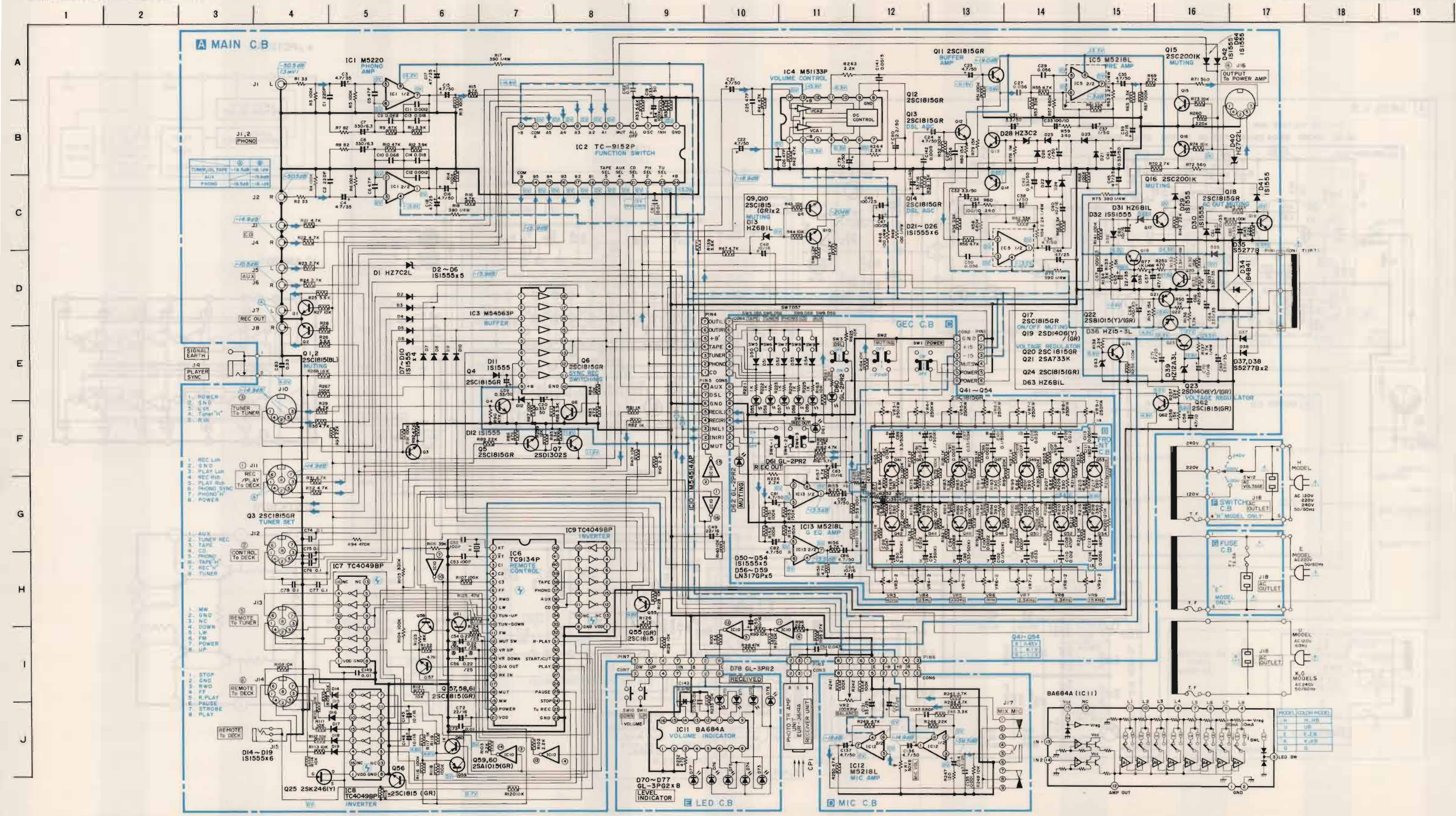
IC STK1070



SW1-1 ~ 2	INDICATOR
SW2	POWER
SW3	SPEAKER A
SW4	SPEAKER B
SW5	VOLTAGE SELECTOR (H MODEL ONLY)

	COLORS
H	H, HB
U	UB
E	EB
K	K, KB
G	G

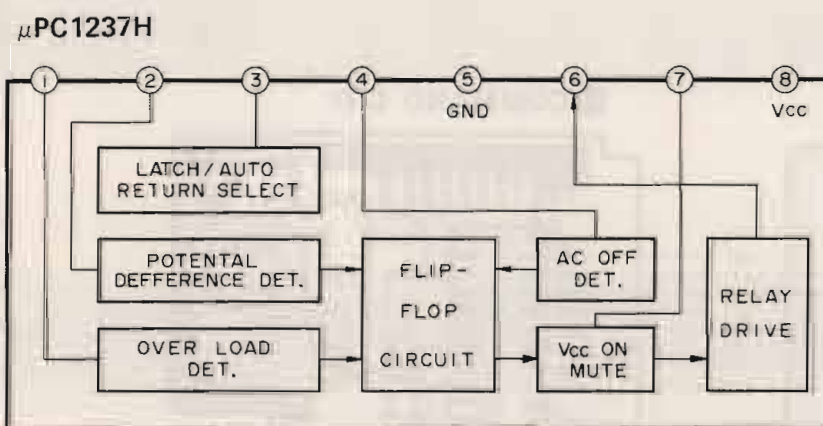
SCHEMATIC DIAGRAM (GX-110)



Circuit description

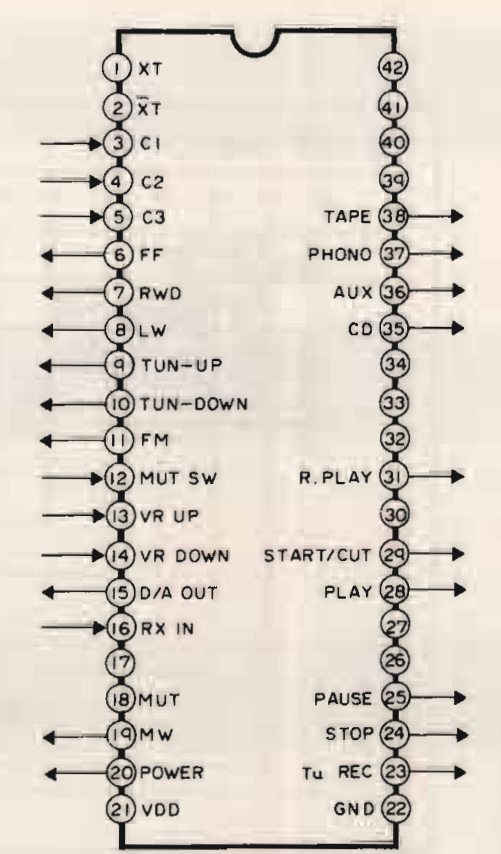
• μ PC1237H Pin description

Pin No.	Pin names	Function
①	Overload detection	Detection of speaker pins short-circuited
②	Middle point potential detection	Relay OFF at approx 0.6 V (BX-110 SP pin $\pm$ 2 V) (MX-90 SP pin $\pm$ 1.5 V)
③	Auto-return selection	Auto-return when it is grounded, and non-return when it is connected to the capacitor.
④	AC detection	Set relay to OFF when power switch is set to OFF.
⑤	GND	GND
⑥	Relay drive	Drives protection relay.
⑦	Power ON. MUTE	Time constant circuit pin from the timer power ON until the relay is ON.
⑧	Vcc	+B



1. DESCRIPTION OF IC TC9134P

1-1. Pin names



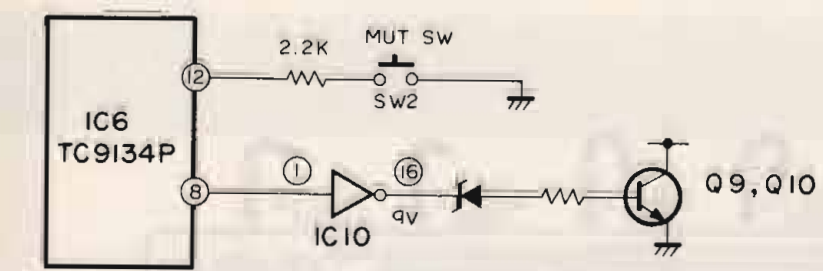
* The arrows show the signal direction

1-2. Description of pins

Pin No.	Pin names	Function
1, 2	X _T , X _T	Timing oscillator pins. 4.50 kHz
3	C ₁	0
4	C ₂	1
5	C ₃	1
6	FF(DECK)	Continuous signal output pins. This output is kept at "LOW" level while the reception signal is input.
7	RWD(DECK)	5 V
8	LW(TUNER)	0 V
9	UP(TUNER)	
10	DOWN(TUNER)	
11	FM(TUNER)	
12	MUT SW	The MUTE signal output pin 18 is inverted with the MUTE switch input pin set to "LOW" level.
13	VR UP	D/A converter external control input pins. Pin 13 is the volume UP control pin; the voltage at pin 13 is raised when pin 13 is set to "LOW" level.
14	VR DOWN	Pin 14 is the volume DOWN control pin; the voltage at pin 14 drops when pin 14 is set to "LOW" level.

Pin No.	Pin names	Function												
15	D/A OUT	Volume control voltage output pin. The voltage is output by diving V _{DD} by 32.												
16	Rx. IN	Reception signal input pin. This pin inputs the command signal with the carrier signal eliminated.												
17	-	(Blank pin)												
18	MUT	MUTE signal output pin. This is controlled by pin 12. <table><tr><td></td><td>MUT OFF</td><td>MUT ON</td></tr><tr><td>IC6, ⑩</td><td>HIGH/LOW</td><td>HIGH/LOW</td></tr><tr><td>IC6, ⑩</td><td>HIGH(3.5 V)</td><td>LOW(0 V)</td></tr><tr><td>IC10, ⑩</td><td>LOW(0 V)</td><td>HIGH(9 V)</td></tr></table>		MUT OFF	MUT ON	IC6, ⑩	HIGH/LOW	HIGH/LOW	IC6, ⑩	HIGH(3.5 V)	LOW(0 V)	IC10, ⑩	LOW(0 V)	HIGH(9 V)
	MUT OFF	MUT ON												
IC6, ⑩	HIGH/LOW	HIGH/LOW												
IC6, ⑩	HIGH(3.5 V)	LOW(0 V)												
IC10, ⑩	LOW(0 V)	HIGH(9 V)												
19	MW(TUNER)	Single-shot signal (single pulse) output pin. When a command signal is input, a "LOW" level pulse is output from only the designated pin.												
20	POWER	5 V												
23	TUNER REC(DECK)	0 V												
24	STOP(DECK)	140ms												
25	PAUSE(DECK)													
26, 27	-	(Blank pin)												
28	PLAY(DECK)													
29	START/CUT (PLAYER)													
30	-	(Blank pin)												
31	R·PLAY(DECK)													
32~34	-	(Blank pin)												
35	CD(FUNCTION)													
36	AUX(FUNCTION)													
37	PHONO (FUNCTION)													
38	TAPE(FUNCTION)													
39~42	-	(Blank pin)												
21	V _{DD}	Power voltage pin.												
22	GND	GND pin.												

1-3. Description of muting



	MUT OFF	MUT ON
IC6 ⑫	HIGH/LOW	HIGH/LOW
IC6 ⑩	HIGH(3.5V)	LOW(0V)
IC10 ⑩	LOW(0V)	HIGH(9V)

1-3-1. Description of pins and SW2

SW2 ... This is a non-locking switch; pin ⑩ is set to "LOW" level (0 V) only when this switch is pressed.

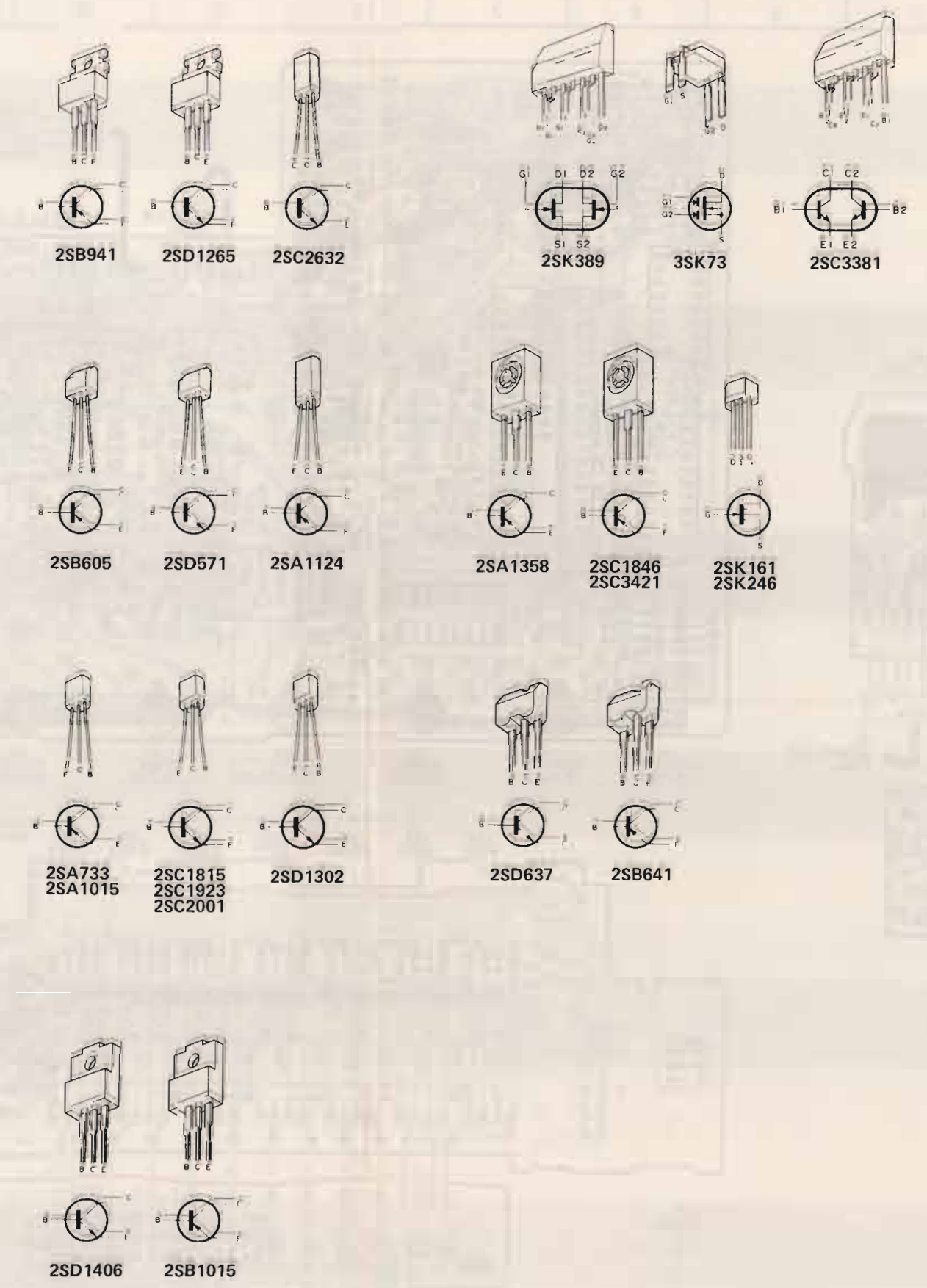
Pin ⑩ ... This is the pin ⑩ control pin and is set to "HIGH" level (5 V) in general; pin ⑩ is changed over "HIGH" level → "LOW" level → "HIGH" level → "LOW" level ... every time this pin is set to "LOW" level.

Pin ⑩ ... The inside of pin ⑩ is flip-flop circuit, and is changed "HIGH" level → "LOW" level → "HIGH" level → "LOW" level ... every time pin ⑩ is set to "LOW" level.

1-3-2. Description of MUTE operation

Pin ⑩ is set to "HIGH" level at first(when the AC cord is plugged), and in the MUTE OFF mode. When the MUTE switch is pressed to set pin ⑩ to "LOW" level (5 V), pin ⑩ is set to the "LOW" level and the unit enters the MUTE ON mode. When the MUTE switch pressed then, pin ⑩ is set to "HIGH" level and the unit enters the MUTE OFF mode.

* When the remote control operation is performed, pin ⑩ is set to "HIGH" level and "LOW" level alternately every time the MUTE button is pressed.



GX-110

Power source: H, HB models
AC 120/220/240 V
Switchable, 50/60 Hz
UB model
AC 120 V, 60 Hz
E, EB models
AC 220 V, 50/60 Hz
K, KB, G models
AC 240 V, 50/60 Hz
10 W

Power consumption: 330(W)×71(H)×200(D)mm
Dimensions: (12-7/8"×2-5/8"×7-7/8")
Weight: 2.1kg(4.62lbs.)
S/N ratio: PHONO(MM), TUNER, AUX
(IHF-A) CD, TAPE, INPUT
76±3dB
50±3dB

Distortion: MIC
Less than 0.5%
(1kHz, 0.75V)

Frequency response: 35~50,000 Hz(+0.5/-3dB)
RIAA deviation: ±0.5dB(30Hz~15kHz, 0dB)
(1kHz, 0dB)

Muting level: 20±3dB
DSL response: 18±3dB(50Hz)
PHONO MAX, allowance input: 100±20mV(REC OUT)
(1kHz, 0.1%)
Graphic EQ: +10±3dB

response: -10±3dB
(40Hz, 125Hz, 330Hz, 1kHz, 2.5kHz, 6.3kHz, 15kHz)

Channel separation: PHONO, AUX, TUNER
(1kHz) 50±2dB

Input sensitivity/impedance:
PHONO(MM) 3mV/47kΩ
TUNER, CD 180mV/47kΩ
TAPE 180mV/47kΩ
AUX 300mV/47kΩ
MIC 1mV/10kΩ
Output/impedance: TAPE 150mV/47kΩ
Headphones 8Ω~16Ω
Speakers 8Ω~16Ω

<WIRELESS TRANSMITTER SECTION>
Power source: DC3V(SUM-3 "AA" cells)
Current consumption: Below 50mA(Balanced, during use); 30μA(When not in use)
Dimensions: 63(W)×22(H)×141.5(D)mm
(2-1/2"×7/8"×5-1/2")
Weight: 100g(0.22lbs.)
Transmission field: ±4.5"
Transmission distance: approx. 6m(20 feet)
Clock frequency: 38kHz±1%

BX-110

Power source: H, HB models
AC 120/220/240 V
switchable, 50/60 Hz
UB model
AC 120 V, 60 Hz
E, EB models
AC 220 V, 50/60 Hz
K, KB, G models
AC 240 V, 50/60 Hz

Power consumption: H, HB models
115W
UB models
100W
E, EB, K, KB, G models
270W

Dimensions: 330(W)×71(H)×200(D)mm
(12-7/8"×2-5/8"×7-7/8")
Weight: 4.8kg(10.57lbs.)
Power output: H, HB, E, EB, K, KB, G models
60W+60W(8Ω, T. H. D.
0.01%, 20Hz~20kHz)
<FTC Rule UB model only>
60Watts per channel, Min.
RMS at 8Ω, from 20Hz~
20kHz, with no more than
0.02% Total Harmonic
Distortion.

Distortion: Less than 0.008%
Intermodulation: Less than 0.02%(50W, 8Ω)
distortion:
Damping factor: More than 30
S/N ratio: More than 110dB
Frequency response: 10~50,000 Hz(-1dB)
Output bandwidth: 10~50,000 Hz(Less than 0.05%)
[Both channels driven, 8Ω]

Residual noise: Less than 1mV
Input/impedance: 700mV/47kΩ
Output: A or B 8Ω~16Ω
A + B 16Ω

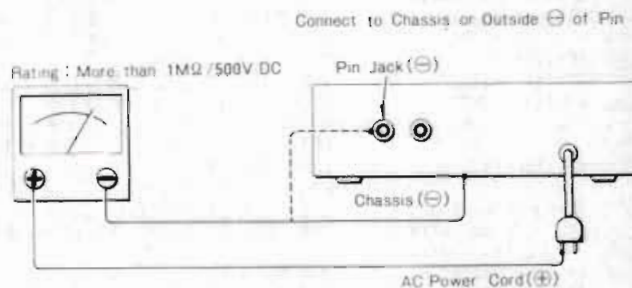
- The specifications and external appearance of this set are subject to change without prior notice.

Follow the instructions carefully, which will allow the user to optimise the products' performance and give many years of service.

1. No scratch and melting shall be made to covered lead-wires of an a.c. primary circuit including mains leads.
2. No illegibility shall be given to the specification plate, the caution labels, the fuse labels and others.
3. When, on pattern sides of circuit boards, additional repair-parts have been made up, the parts shall be firmly glued to circuit boards or other components, unless the parts can be attached firmly.
4. The following matters shall be maintained as they are, when repairing.
 - 1) Soldering of lead-wire ends
 - * Care should be taken of the space distance in an a.c. primary circuit as well as soldering.
 - 2) Wiring and holding of lead-wires with wire-clips and binders
 - 3) Materials of lead-wires
 - * e.g.: For UL models, lead-wires to be used shall be approved or accepted by the UL.
 - 4) Location of all kinds of insulators
 - 5) Setting of voltage selector switch
 - * Set the Voltage Selector Switch to 240V, 220V, or 120V. According to your Local Voltage.

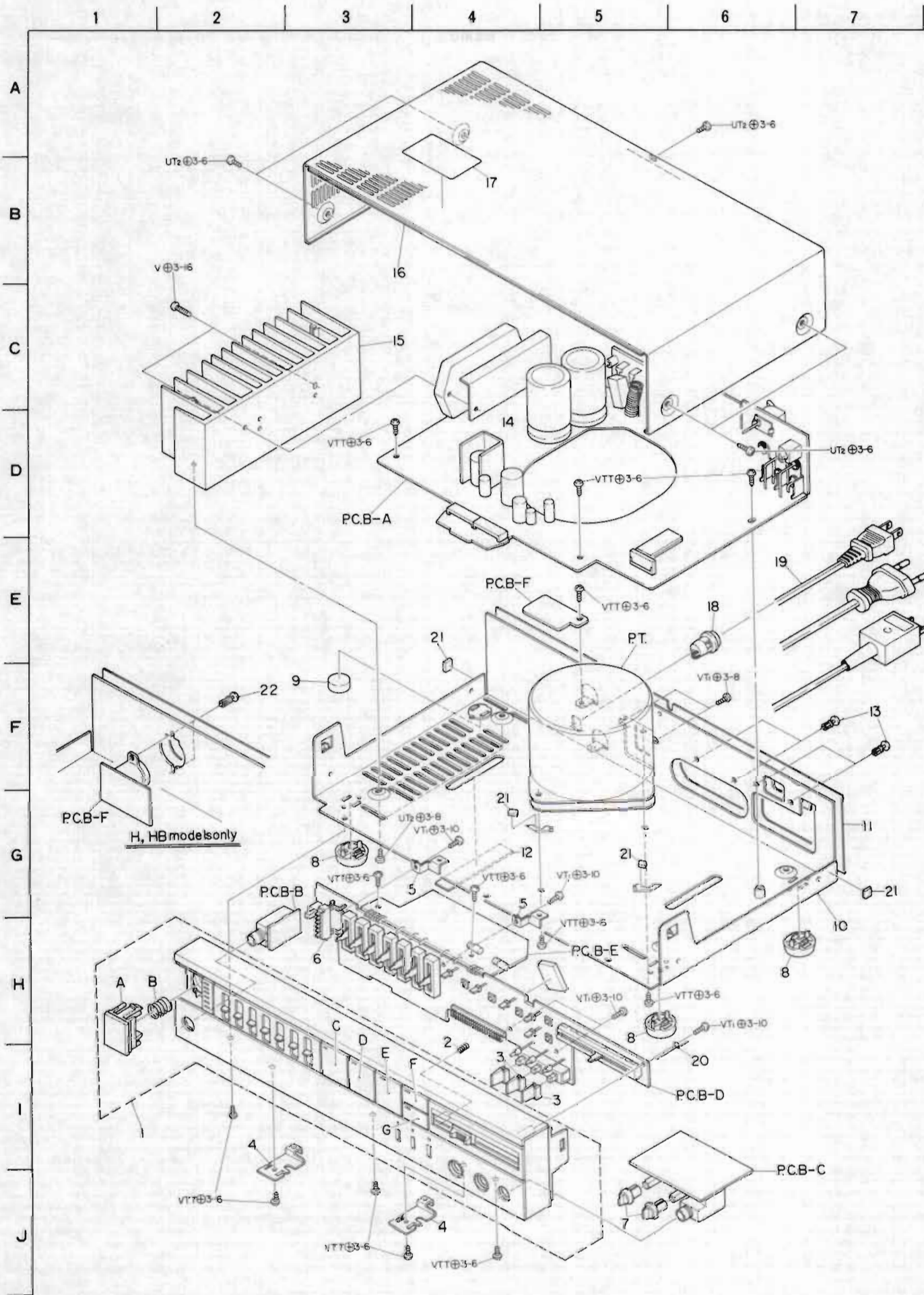
5. After repaired, the insulation resistance or leakage current shall be measured with $500 \pm 5V$ D.C and shall be not less than $1M\Omega$.

Measuring Point



☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆ **MEMO** ☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

EXPLODED VIEW (MX-90)



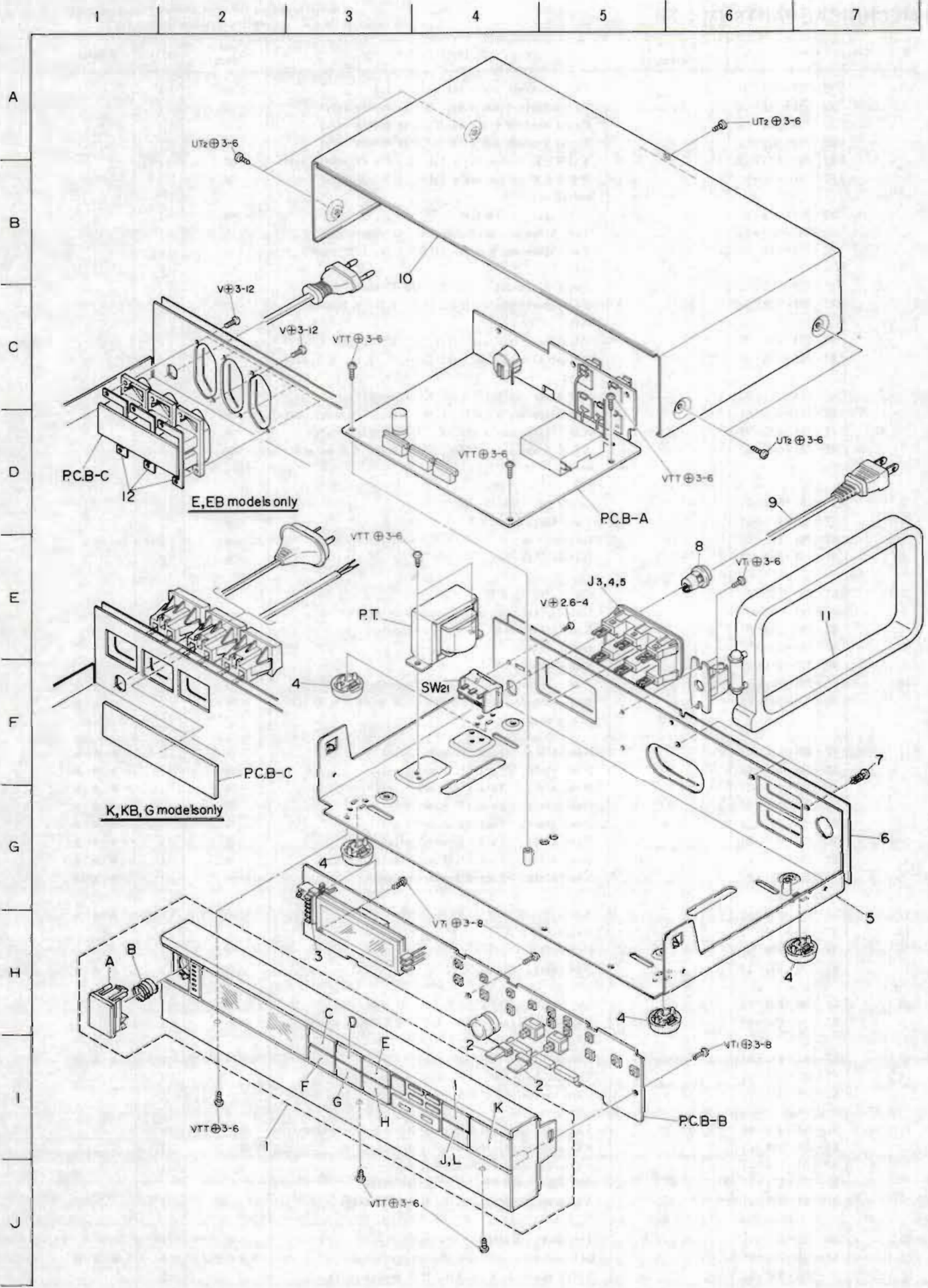
PARTS LIST

MECHNICAL PARTS (MX-90)

■ * mark in this part list shows exclusive part.
■ "★★★" shows unavailable Repair Part.

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-798-004-01		Front cabinet ass'y (H model only)	※	1	
	82-798-046-01		Front cabinet ass'y (E, K, G models only)	※	1	
	82-798-034-01		Front cabinet ass'y (HB, UB models only)	※	1	
	82-798-072-01		Front cabinet ass'y (EB, KB models only)	※	1	
	A	82-798-036-11	POWER button ass'y (H, E, K, G models only)	※	1	
		82-798-062-01	POWER button ass'y (HB, UB, EB, KB models only)	※	1	
	B	82-798-209-01	C-spring, POWER	※	1	
	C	82-798-037-01	Tape hinge ass'y (H, E, K, G models only)	※	1	
		82-798-057-01	Tape hinge ass'y (HB, UB, EB, KB models only)	※	1	
	D	82-798-040-01	Tuner hinge ass'y (H, E, K, G models only)	※	1	
		82-798-060-01	Tuner hinge ass'y (HB, UB, EB, KB models only)	※	1	
	E	82-798-039-01	PHONO hinge ass'y (H, E, K, G models only)	※	1	
		82-798-059-01	PHONO hinge ass'y (HB, UB, EB, KB models only)	※	1	
	F	82-798-041-01	CD hinge ass'y (H, E, K, G models only)	※	1	
		82-798-061-01	CD hinge ass'y (HB, UB, EB, KB models only)	※	1	
G	82-798-038-01		AUX hinge ass'y (H, E, K, G models only)	※	1	
	82-798-058-01		AUX hinge ass'y (HB, UB, EB, KB models only)	※	1	
2	82-197-212-01		C-spring, Earth	FX-90	1	
3	82-798-023-11		Push-button, MUT	※	3	
4	82-798-207-01		Holder, A	※	2	
5	82-798-206-01		Holder, G	※	2	
6	82-798-210-01		Guide B, LED	※	1	
7	82-798-043-01		Knob I, (H, E, K, G models only)	※	2	
	82-798-070-01		Knob (HB, UB, EB, KB models only)	※	2	
8	87-085-186-01		Foot	※	3	
9	82-798-024-01		Rubber foot	※	1	
10	82-798-204-01		Amp. chassis ass'y (H, HB models only)	※	1	★★★
	82-798-202-01		Amp. chassis ass'y (UB, E, EB, K, KB, G models only)	※	1	★★★
11	82-798-026-01		Name plate, Jack (H model only)	※	1	★★★
	82-798-066-01		Name plate, Jack (HB model only)	※	1	★★★
	82-798-065-01		Name plate, Jack (UB model only)	※	1	★★★
	82-798-029-01		Name plate, Jack (E model only)	※	1	★★★
	82-798-067-01		Name plate, Jack (EB model only)	※	1	★★★
	82-798-030-01		Name plate, Jack (K model only)	※	1	★★★
	82-798-068-01		Name plate, Jack (KB model only)	※	1	★★★
	82-798-031-01		Name plate, Jack (G model only)	※	1	★★★
12	82-798-232-01		Sheet, IC	※	1	★★★
13	87-085-102-01		Nylon rivet 3.5-5.5		4	
14	82-798-208-01		Holder, IC	※	1	
15	82-798-601-11		Heat sink, Main	※	1	★★★
16	82-798-022-01		Cabinet, Steel (H, E, K, G models only)	※	1	
	82-798-050-01		Cabinet, Steel (HB, UB, EB, KB models only)	※	1	
17	87-057-642-01		Label, TEMP	MX-100	1	★★★
18	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
19	87-034-962-01		AC power cord (H model only)		1	
	87-034-992-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	82-788-674-01		AC power cord (E, EB models only)		1	
	87-034-708-01		AC power cord (K, KB, G models only)		1	
20	82-798-212-01		T-spring, Earth	※	1	
21	82-798-208-01		G cushion	SA-P50	4	★★★
22	87-085-090-01		Nylon rivet 3-6.5 (H, HB models only)		2	

EXPLODED VIEW (TX-110)

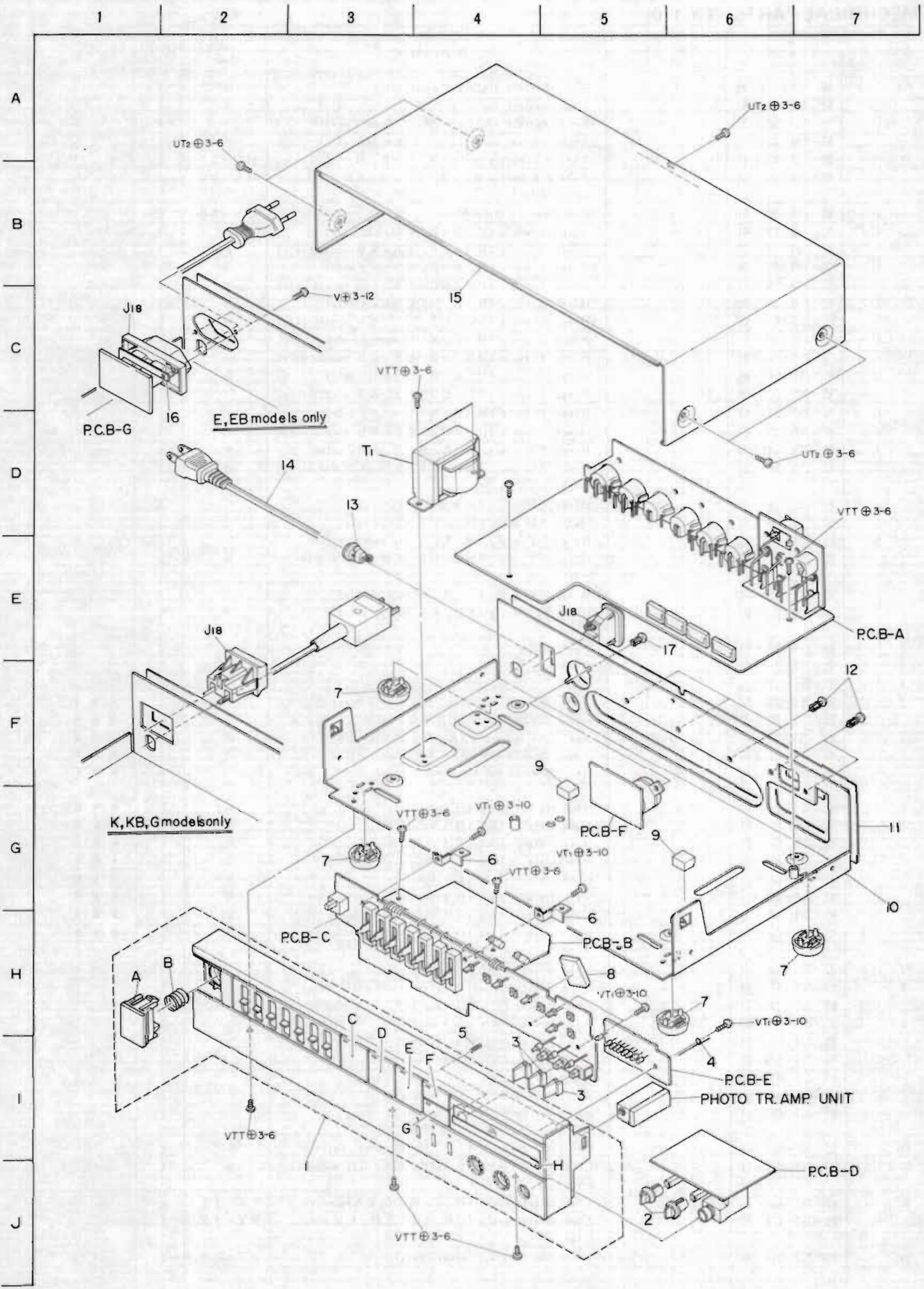


PARTS LIST

MECHNICAL PARTS (TX-110)

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-799-004-11		Front cabinet ass'y (H model only)	※	1	
	82-799-036-01		Front cabinet ass'y (HB, UB models only)	※	1	
	82-799-005-11		Front cabinet ass'y (E, K, G models only)	※	1	
	82-799-074-01		Front cabinet ass'y (EB, KB models only)	※	1	
	A 82-798-036-11		POWER button ass'y (H, E, K, G models only)	MX-90	1	
	82-798-062-01		POWER button ass'y (HB, UB, EB, KB models only)	MX-90	1	
	B 82-798-209-01		C-spring, POWER	MX-90	1	
	C 82-799-038-01		Hinge 1 ass'y (H, E, K, G models only)	※	1	
	82-799-061-01		Hinge 1 ass'y (HB, UB, EB, KB models only)	※	1	
	D 82-799-039-01		Hinge 2 ass'y (H, E, K, G models only)	※	1	
E	82-799-062-01		Hinge 2 ass'y (HB, UB, EB, KB models only)	※	1	
	82-799-040-01		Hinge 3 ass'y (H, E, K, G models only)	※	1	
	82-799-063-01		Hinge 3 ass'y (HB, UB, EB, KB models only)	※	1	
	F 82-799-041-01		Hinge 4 ass'y (H, E, K, G models only)	※	1	
	82-799-064-01		Hinge 4 ass'y (HB, UB, EB, KB models only)	※	1	
	G 82-799-042-01		Hinge 5 ass'y (H, E, K, G models only)	※	1	
	82-799-065-01		Hinge 5 ass'y (HB, UB, EB, KB models only)	※	1	
	H 82-799-043-01		Hinge 6 ass'y (H, E, K, G models only)	※	1	
	82-799-066-01		Hinge 6 ass'y (HB, UB, EB, KB models only)	※	1	
	I 82-799-044-01		Hinge FM ass'y (H, E, K, G models only)	※	1	
J	82-799-067-01		Hinge FM ass'y (HB, UB, EB, KB models only)	※	1	
	82-799-045-01		Hinge AM ass'y (H model only)	※	1	
	82-799-068-01		Hinge AM ass'y (HB, UB models only)	※	1	
	K 82-799-046-11		Hinge UP ass'y (H, E, K, G models only)	※	1	
	82-799-070-01		Hinge UP ass'y (HB, UB, EB, KB models only)	※	1	
	L 82-799-050-01		Hinge MW ass'y (E, K, G models only)	※	1	
	82-799-069-01		Hinge MW ass'y (EB, KB models only)	※	1	
2	82-799-025-11		Push-button	※	2	
3	82-798-210-01		Guide, LED	MX-90	1	
4	87-085-186-01		Foot		4	
5	82-799-204-01		Amp. chassis ass'y (H, HB models only)	※	1	★ ★ ★
	82-799-202-01		Amp. chassis ass'y (UB model only)	※	1	★ ★ ★
	82-799-206-01		Amp. chassis ass'y (E, EB models only)	※	1	★ ★ ★
	82-799-212-01		Amp. chassis ass'y (K, KB models only)	※	1	★ ★ ★
	82-799-208-01		Amp. chassis ass'y (G model only)	※	1	★ ★ ★
6	82-799-028-01		Name plate, Jack (H model only)	※	1	★ ★ ★
	82-799-081-01		Name plate, Jack (HB model only)	※	1	★ ★ ★
	82-799-080-01		Name plate, Jack (UB model only)	※	1	★ ★ ★
	82-799-031-01		Name plate, Jack (E model only)	※	1	★ ★ ★
	82-799-082-01		Name plate, Jack (EB model only)	※	1	★ ★ ★
	82-799-032-01		Name plate, Jack (K model only)	※	1	★ ★ ★
	82-799-083-01		Name plate, Jack (KB model only)	※	1	★ ★ ★
	82-799-033-01		Name plate, Jack (G model only)	※	1	★ ★ ★
7	87-085-102-01		Nylon rivet 3.5-5.5		3	
8	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
9	87-034-956-01		AC power cord (H model only)		1	
	87-034-958-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	87-034-877-01		AC power cord (E, EB models only)		1	
	87-034-975-01		AC power cord (K, KB models only)		1	
	87-034-892-01		AC power cord (G model only)		1	
10	82-799-026-01		Cabinet, Steel (H, E, K, G models only)	※	1	
	82-799-072-01		Cabinet, Steel (HB, UB, EB, KB models only)	※	1	
11	82-791-652-01		Loop antenna ass'y (H, E, K, G models only)	TX-70	1	
	82-795-670-01		Loop antenna ass'y (HB, UB, EB, KB models only)	RX-30	1	
12	82-773-216-01		Plate nut (E, EB models only)	AT-9500	3	

EXPLODED VIEW (GX-110)

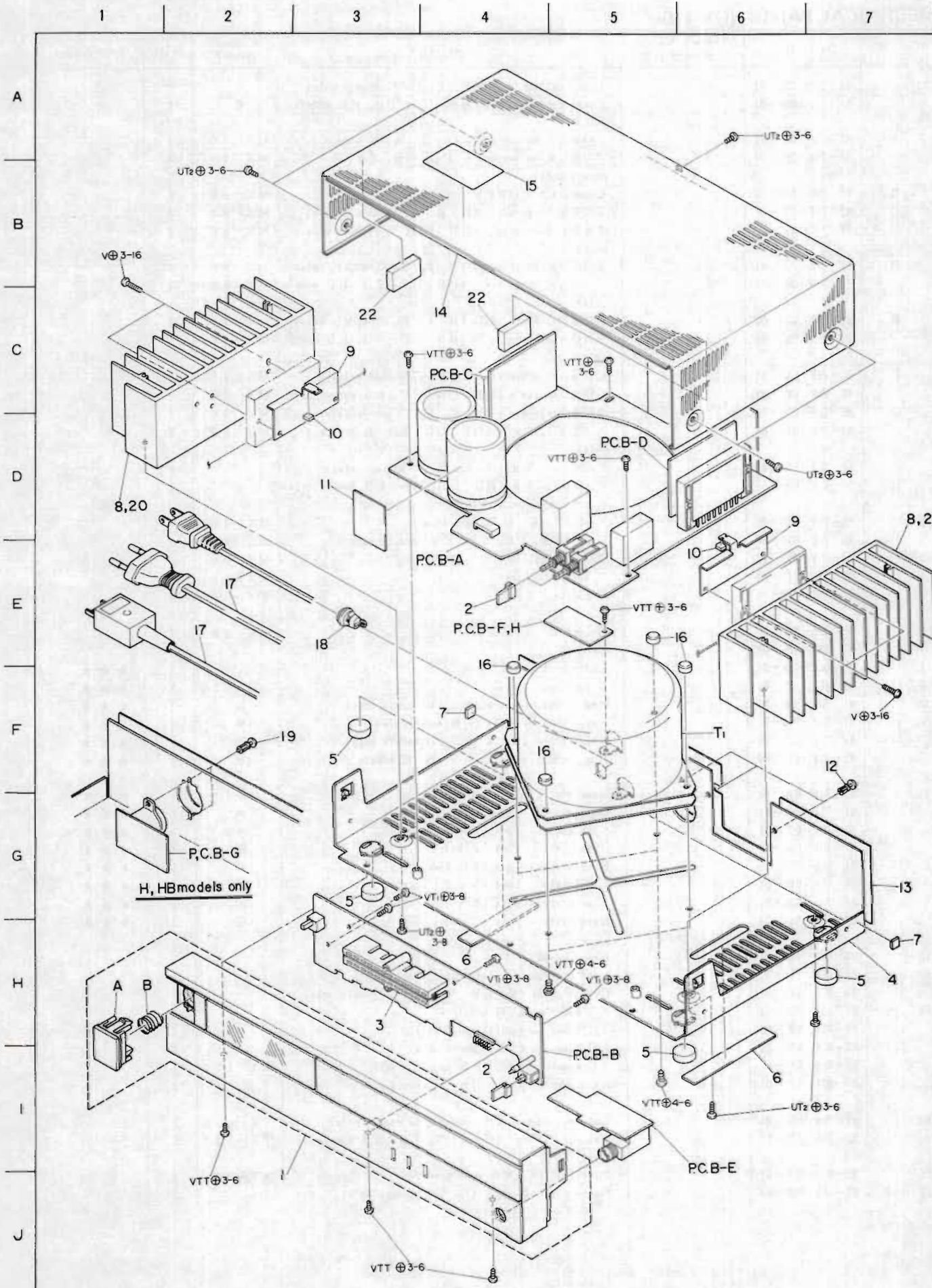


PARTS LIST

MECHANICAL PARTS (GX-110)

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-731-002-01		Front cabinet ass'y (H, E, K, G models only)	※	1	
	81-731-004-01		Front cabinet ass'y (HB, UB, EB, KB models only)	※	1	
A	82-798-036-11		POWER button ass'y (H, E, K, G models only)	MX-90	1	
	82-798-062-01		POWER button ass'y (HB, UB, EB, KB models only)	MX-90	1	
B	82-798-209-01		C-spring, POWER	MX-90	1	
C	82-798-037-01		TAPE hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-057-01		TAPE hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
D	82-798-040-01		TUNER hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-060-01		TUNER hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
E	82-798-039-01		PHONO hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-059-01		PHONO hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
F	82-798-041-01		CD hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-061-01		CD hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
G	82-798-038-01		AUX hinge ass'y (H, E, K, G models only)	MX-90	1	
	82-798-058-01		AUX hinge ass'y (HB, UB, EB, KB models only)	MX-90	1	
H	81-731-019-01		Push-key, VR (H, E, K, G models only)	※	1	
	81-731-024-01		Push-key, VR (HB, UB, EB, KB models only)	※	1	
2	82-798-043-01		Knob (H, E, K, G models only)	MX-90	2	
	82-798-070-01		Knob (HB, UB, EB, KB models only)	MX-90	2	
3	82-798-023-11		Push-button, MUT	MX-90	3	
4	82-798-212-01		T-spring, Earth	MX-90	1	
5	82-197-212-01		C-spring, Earth	FX-90	1	
6	82-798-206-01		Holder G	MX-90	2	
7	87-085-186-01		Foot		4	
8	87-063-116-01		Cushion 30-15		1	★ ★ ★
9	82-157-226-01		G cushion, Main	SD-L50	2	★ ★ ★
10	81-731-206-01		Amp. chassis ass'y (H, HB models only)	※	1	★ ★ ★
	81-731-210-01		Amp. chassis ass'y (UB model only)	※	1	★ ★ ★
	81-731-204-01		Amp. chassis ass'y (E, EB models only)	※	1	★ ★ ★
	81-731-216-01		Amp. chassis ass'y (K, KB, G models only)	※	1	★ ★ ★
11	81-731-015-01		Name plate, Jack (H model only)	※	1	★ ★ ★
	81-731-026-01		Name plate, Jack (HB model only)	※	1	★ ★ ★
	81-731-025-01		Name plate, Jack (UB model only)	※	1	★ ★ ★
	81-731-012-01		Name plate, Jack (E model only)	※	1	★ ★ ★
	81-731-027-01		Name plate, Jack (EB model only)	※	1	★ ★ ★
	81-731-013-01		Name plate, Jack (K model only)	※	1	★ ★ ★
	81-731-028-01		Name plate, Jack (KB model only)	※	1	★ ★ ★
	81-731-014-01		Name plate, Jack (G model only)	※	1	★ ★ ★
12	87-085-102-01		Nylon rivet 3.5-5.5		5	
13	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
14	87-034-962-01		AC power cord (H model only)		1	
	87-034-992-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	82-788-674-01		AC power cord (E, EB models only)	MX-100	1	
	87-034-708-01		AC power cord (K, KB, G models only)		1	
15	82-799-026-01		Cabinet, Steel (H, E, K, G models only)	TX-110	1	
	82-799-072-01		Cabinet, Steel (HB, UB, EB, KB models only)	TX-110	1	
16	82-773-216-01		Plate nut (E, EB models only)	AT-9500	1	
17	87-085-090-01		Nylon rivet 3-6.5 (H, HB models only)		2	

EXPLODED VIEW (BX-110)



PARTS LIST

MECHANICAL PARTS (BX-110)

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-730-004-11		Front Cabinet ass'y (H, E, K, G models only)	※	1	
	81-730-031-01		Front Cabinet ass'y (HB, UB, EB, KB models only)	※	1	
	A 82-798-036-11		POWER button ass'y (H, E, K, G models only)	MX-90	1	
	82-798-062-01		POWER button ass'y (HB, UB, EB, KB models only)	MX-90	1	
	B 82-798-209-01		C-spring, POWER	MX-90	1	
2	82-798-023-11		Push-button, MUT	MX-90	3	
3	81-730-206-01		Guide, LED	※	2	★ ★ ★
4	81-730-204-01		Amp. chassis ass'y (H, HB models only)	※	1	★ ★ ★
	81-730-202-01		Amp. chassis ass'y (UB, E, EB, K, KB, G models only)	※	1	★ ★ ★
5	82-798-024-01		Rubber foot	MX-90	4	
6	82-798-232-01		Sheet, IC	MX-90	2	★ ★ ★
7	82-749-208-01		G cushion	SA-P50	2	★ ★ ★
8	82-798-601-11		Heat sink, Main (H, HB, UB models only)	MX-90	2	★ ★ ★
9	82-781-206-01		Plate nut	SA-P80	2	
10	81-730-209-01		G cushion 6-6-3	※	2	★ ★ ★
11	81-730-208-11		Sheet 30-36-0.1	※	1	★ ★ ★
12	87-085-102-01		Nylon rivet 3.5-5.5		3	
13	81-730-013-01		Name plate, Jack (H model only)	※	1	★ ★ ★
	81-730-027-01		Name plate, Jack (HB model only)	※	1	★ ★ ★
	81-730-026-01		Name plate, Jack (UB model only)	※	1	★ ★ ★
	81-730-014-01		Name plate, Jack (E model only)	※	1	★ ★ ★
	81-730-028-01		Name plate, Jack (EB model only)	※	1	★ ★ ★
	81-730-015-01		Name plate, Jack (K model only)	※	1	★ ★ ★
	81-730-029-01		Name plate, Jack (KB model only)	※	1	★ ★ ★
	81-730-016-01		Name plate, Jack (G model only)	※	1	★ ★ ★
	81-730-010-01		Cabinet, Steel (H, E, K, G models only)	※	1	
	81-730-025-01		Cabinet, Steel (HB, UB, EB, KB models only)	※	1	
15	87-057-642-01		Label, TEMP (H, HB, UB models only)		1	★ ★ ★
	87-057-712-01		Label, TEMP (E, EB, K, KB, G models only)		1	★ ★ ★
16	82-752-206-01		Cover, Nut	SA-P50	4	★ ★ ★
17	87-034-962-01		AC power cord (H model only)		1	
	87-034-992-01		AC power cord (HB model only)		1	
	87-034-578-01		AC power cord (UB model only)		1	
	82-788-674-01		AC power cord (E, EB models only)	MX-100	1	
	87-034-708-01		AC power cord (K, KB, G models only)		1	
18	87-085-184-01		Cord bushing (H, HB, UB models only)		1	
	87-085-185-01		Cord bushing (E, EB, K, KB, G models only)		1	
19	87-085-090-01		Nylon rivet (H, HB models only)		2	
20	81-730-624-01		Heat sink L (E, EB, K, KB, G models only)	※	1	★ ★ ★
21	81-730-625-01		Heat sink R (E, EB, K, KB, G models only)	※	1	★ ★ ★
22	81-730-211-01		G cushion	※	2	★ ★ ★

TX-110

Part No.	Description
87-261-071-21	V + 2 . 6 - 4
87-261-097-21	V + 3 - 1 2
87-355-094-21	VT ₁ + 3 - 6
87-350-095-01	VT ₁ + 3 - 8
87-081-511-01	VTT + 3 - 6
87-340-094-01	UT ₂ + 3 - 6

MX-90

Part No.	Description
87-261-100-21	V + 3 - 1 5
87-350-095-01	VT ₁ + 3 - 8
87-351-096-21	VT ₁ + 3 - 1 0
87-081-511-01	VTT + 3 - 6
87-340-094-01	UT ₂ + 3 - 6
87-343-095-21	UT ₂ + 3 - 8

GX-110

Part No.	Description
87-268-097-11	V + 3 - 1 2
87-351-096-21	VT ₁ + 3 - 1 0
87-081-511-01	VTT + 3 - 6
87-340-094-01	UT ₂ + 3 - 6

BX-110

Part No.	Description
87-261-100-21	V + 3 - 1 6
87-350-095-01	VT ₁ + 3 - 8
87-081-511-01	VTT + 3 - 6
87-081-931-01	VTT + 4 - 6
87-340-094-01	UT ₂ + 3 - 6
87-343-095-21	UT ₂ + 3 - 8

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ACCESSORIES/PACKAGE LIST

MX-90

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-798-853-01		Printed indiv., Packing	※	1	★ ★ ★
2	81-730-852-11		Cushion L. Printed indiv.		1	★ ★ ★
3	81-730-853-21		Cushion R. Printed indiv.		1	★ ★ ★
4	87-056-610-01		Poly-vinyl sack (for case)		1	★ ★ ★
5	82-798-854-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★ ★ ★
6	82-798-855-01		Carton, Outer (UB model only)	※	1/2	★ ★ ★
7	87-056-651-01		Color label, Black (HB, UB, EB, KB models only)		1	★ ★ ★
8	82-798-904-01		Instructions booklet	※	1	
9	87-056-009-51		Distributors list (H, HB, E, EB, K, KB, G models only)		1	★ ★ ★
10	87-051-171-11		Poly-vinyl sack (for instruction)		1	★ ★ ★
11	87-056-059-01		Guarantee card (G model only)		1	★ ★ ★
12	87-056-045-01		Guarantee card (UB model only)		1	★ ★ ★
13	87-056-050-01		Safety instruction (UB model only)		1	★ ★ ★
14	87-056-008-11		Label, AC power cord (K, KB models only)		1	
15	87-056-084-01		Limited, Warranty (UB model only)		1	

TX-110

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	82-799-855-01		Printed indiv., Packing	※	1	★ ★ ★
2	82-799-852-01		Cushion L. Printed indiv.	※	1	★ ★ ★
3	82-799-853-11		Cushion R. Printed indiv.	※	1	★ ★ ★
4	82-799-856-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★ ★ ★
5	82-799-857-01		Carton, Outer (UB model only)	※	1/2	★ ★ ★
6	87-056-610-01		Poly-vinyl sack (for case)		1	★ ★ ★
7	87-056-651-01		Color label, Black (HB, UB, EB, KB models only)		1	★ ★ ★
8	82-799-904-01		Instruction booklet	※	1	
9	87-051-171-11		Poly-vinyl sack (for instruction)		1	★ ★ ★
10	87-056-009-51		Distributors list (H, HB, E, EB, K, KB, G models only)		1	★ ★ ★
11	87-056-059-01		Guarantee card (G model only)		1	★ ★ ★
12	87-056-045-01		Guarantee card (UB model only)		1	★ ★ ★
13	87-056-008-11		Label, AC power cord (K, KB models only)		1	★ ★ ★
14	87-056-050-01		Safety instruction (UB model only)		1	★ ★ ★
15	87-056-084-01		Limited, Warranty (UB model only)		1	★ ★ ★
16	82-791-652-01		Loop antenna ass'y (H, E, K, G models only)	TX-70	1	
17	82-795-670-01		Loop antenna ass'y (HB, UB, EB, KB models only)		1	
18	87-032-845-01		Siemens plug (H, HB models only)		1	
19	87-043-065-01		FM feeder antenna		1	
20	87-034-968-01		Connection cord CW-255 GSK		1	

GX-110

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-731-853-01		Printed indiv., Packing	※	1	★ ★ ★
2	82-799-852-01		Cushion L. Printed indiv.	TX-110	1	★ ★ ★
3	82-799-853-11		Cushion R. Printed indiv.	TX-110	1	★ ★ ★
4	81-731-854-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★ ★ ★
5	81-731-855-01		Carton, Outer (UB model only)	※	1/2	★ ★ ★
6	81-731-856-01		Sleeve, Corrugated board	※	1	★ ★ ★
7	85-263-854-01		Bag, Air-cap (for remote control)		1	★ ★ ★
8	87-056-610-01		Poly-vinyl sack (for case)		1	★ ★ ★
9	87-056-651-01		Color label, Black (HB, UB, EB, KB models only)		1	★ ★ ★
10	81-731-904-01		Instructions booklet	※	1	
11	87-051-171-11		Poly-vinyl sack (for instruction)		1	★ ★ ★
12	87-056-009-51		Distributors list (H, HB, E, EB, K, KB, G models only)		1	★ ★ ★
13	87-056-050-01		Safety instruction (UB model only)		1	★ ★ ★
14	87-056-084-01		Limited, Warranty (UB model only)		1	★ ★ ★
15	87-056-059-01		Guarantee card (G model only)		1	★ ★ ★
16	87-056-045-01		Guarantee card (UB model only)		1	★ ★ ★
17	81-731-638-01		Remote control T-110 (H, K, G models only)	※	1	
18	81-731-653-01		Remote control T-110 Black (HB, UB, KB models only)	※	1	
19	81-731-654-01		Remote control T-110A Black (EB model only)	※	1	
20	81-731-639-01		Remote control T-110A (E model only)	※	1	
21	85-439-002-01		Synacrate cord, CW-150K		1	
	87-056-008-11		Label, AC power cord (K, KB models only)			★ ★ ★

BX-110

Ref. No.	Part No.	Part No. changed to	Description	Common Model	Q'ty	Remark
1	81-730-855-01		Printed indiv., Packing	※	1	★ ★ ★
2	81-730-852-11		Cushion L. Printed indiv.	※	1	★ ★ ★
3	81-730-853-21		Cushion R. Printed indiv.	※	1	★ ★ ★
4	81-730-856-01		Carton, Outer (H, HB, E, EB, K, KB, G models only)	※	1/4	★ ★ ★
5	81-730-857-01		Carton, Outer (UB model only)	※	1/2	★ ★ ★
6	81-730-858-01		Auxiliary cushion	※	1	★ ★ ★
7	87-056-610-01		Poly-vinyl sack (for case)		1	★ ★ ★
8	87-056-651-01		Color label Black (HB, UB, EB, KB models only)		1	★ ★ ★
9	81-730-904-01		Instructions booklet	※	1	
10	87-051-171-11		Poly-vinyl sack (for instruction)		1	★ ★ ★
11	87-056-009-51		Distributors list (H, HB, E, EB, K, KB, G models only)		1	★ ★ ★
12	87-056-059-01		Guarantee card (G model only)		1	★ ★ ★
13	87-056-045-01		Guarantee card (UB model only)		1	★ ★ ★
14	87-056-084-01		Limited, Warranty (UB model only)		1	★ ★ ★
15	87-056-074-01		Poly-vinyl sack (for guarantee card)		1	★ ★ ★
16	87-056-008-11		Label, AC power cord (K, KB models only)		1	★ ★ ★
17	87-056-050-01		Safety instruction (UB model only)		1	★ ★ ★
18	87-034-968-01		Connection cord CW-255GSK		1	

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