

CASIO®

Service Manual

(without price)

AP-65R

MAY. 2001



AP-65R

ELECTRONIC KEYBOARD

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SAFETY NOTICE

CAUTION!

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended
by the appliance manufacturer. Discard used batteries
according to manufacturer's instructions.

SPECIFICATIONS

GENERAL

Keyboard:	88 piano keys (with touch response on/off; ExLight/Light/Normal/Heavy touch)
Tones:	232 (128 General MIDI, 64 variation, 8 drum, 32 TONE button tones); with layer and split
Rhythm Instrument Tones:	53
Polyphony:	32 notes maximum (16 for certain tones)
Digital Effects:	10 (REVERB 1, 2, 3; CHORUS; TREMOLO; PHASE SHIFTER; ORGAN SPEAKER; ENHANCER; FLANGER; EQ LOUDNESS)
Auto Accompaniment	
Rhythm Patterns:	78 (72 + 6 user rhythms)
Tempo:	Variable (226 steps, ♩ = 30 to 255)
Chords:	3 fingering methods (CASIO CHORD, FINGERED, FULL RANGE CHORD)
Metronome:	6 types
Rhythm Controller:	Start/Stop, Intro, Normal/Normal Fill-In, Variation/Variation Fill-In, Synchro/Ending
One Touch Presets:	Recalls settings for tone, tempo, layer, and Auto Harmonize in accordance with rhythm.
Auto Harmonize:	Automatic addition of notes that harmonize with melody note in accordance with specified Auto Accompaniment chords.
Song Sequencer	
Songs:	2
Recording Tracks:	6 (2 through 6 are melody tracks)
Recording Method:	Real-time
Memory Capacity (total for two songs):	Approximately 4,900 notes
Punch In:	Supported
Pattern Sequencer	
Number of Patterns:	6
Memory Capacity:	Approximately 7,000 notes
Elements:	Intro, Normal, Variation, Normal Fill-In, Variation Fill-In, Ending
Parts:	Chord 1, 2, 3; Bass; Rhythm
Recording Method:	Real-time
Registration Memory	
Number of Setups:	20 (5 setups x 4 banks)
Memory Contents:	Tone, Rhythm, Tempo, Split on/off, Split point, Layer on/off, Auto Harmonize on/off, Mixer settings, Keyboard channel on/off, Digital effect on/off, Digital effect settings, Accompaniment mode, Touch Response settings, Transpose, Tuning
Demo Tunes:	12
Mixer	
Channels:	16
Modes:	Internal, External
Parameters:	Program change number, volume, expression, pan, coarse tuning, fine tuning, Effect Send
MIDI:	16-channel multi-timbre receive, General MIDI Level 1

Other Functions

Transpose: 25 steps (–12 semitones to +12 semitones)
Tuning: Adjustable (A4 = approximately 440Hz ± 50 cents)

Pedals: Damper, Soft, Sostenuto

Floppy Disk Drive

Type: 3.5" FDD
Formats: 2DD (720KB MS-DOS format)
2HD (1.44MB MS-DOS format)

Functions: Save and load of user rhythms, sequencer, and registration data; playback of SMF; disk formatting; file delete; accompaniment pattern style conversion

Input/Output:

- Headphones: Standard stereo jacks × 2
- LINE OUT (R)(L): Standard monaural jacks × 2
Output impedance: 1.1 Kh
Output voltage: 3.5 V (RMS) MAX
- LINE IN (R)(L): Standard monaural jacks × 2
Input impedance: 32.0 Kh
Input voltage: 200 mV
- MIDI (OUT) (IN)

Speakers: ø 16.0cm × 2, ø 5.0cm × 2 (Output: 30.0 W + 30.0 W)

Power Supply: AP-60R/AP-65R: 120V
AP-60RV/AP-65RV: 220 - 240V

Power Consumption: AP-60R/AP-65R: 91.0W
AP-60RV/AP-65RV: 97.0W

Dimensions: • CELVIANO (without stand): 137.6 × 59.2 × 21.9 cm (54 3/16 × 23 5/16 × 8 5/8 inch)
• CELVIANO: 137.6 × 59.2 × 85.0 cm (54 3/16 × 23 5/16 × 33 1/2 inch)

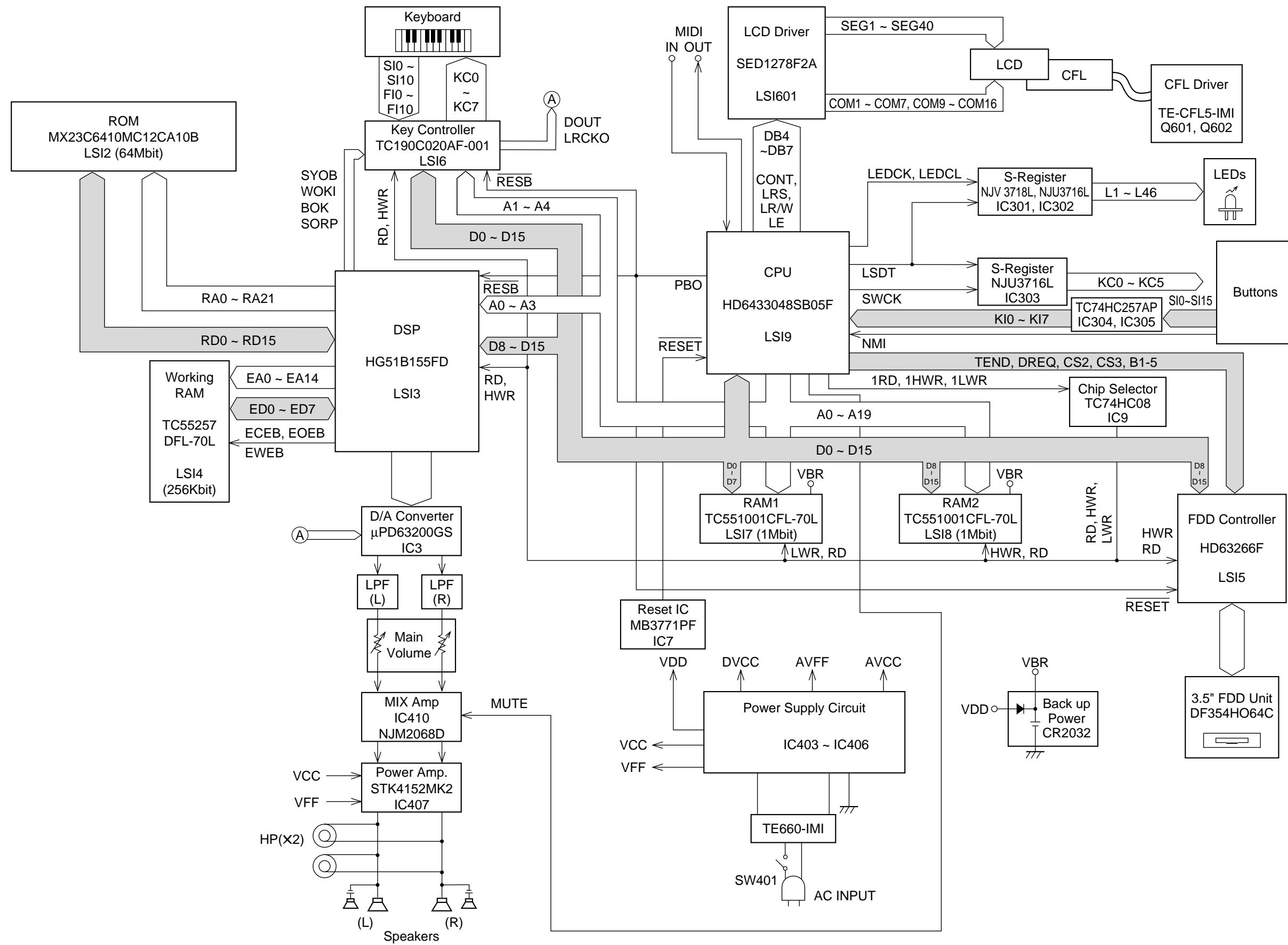
Weight: • CELVIANO (without stand): approximately 53.0 kg (117.0 lbs)
• CELVIANO: approximately 66.0 kg (145.7 lbs)

- Design and specifications are subject to change without notice.
- AP-60R and AP-65R have hardwired power cords.
- AP-60RV and AP-65RV have detachable power cords.

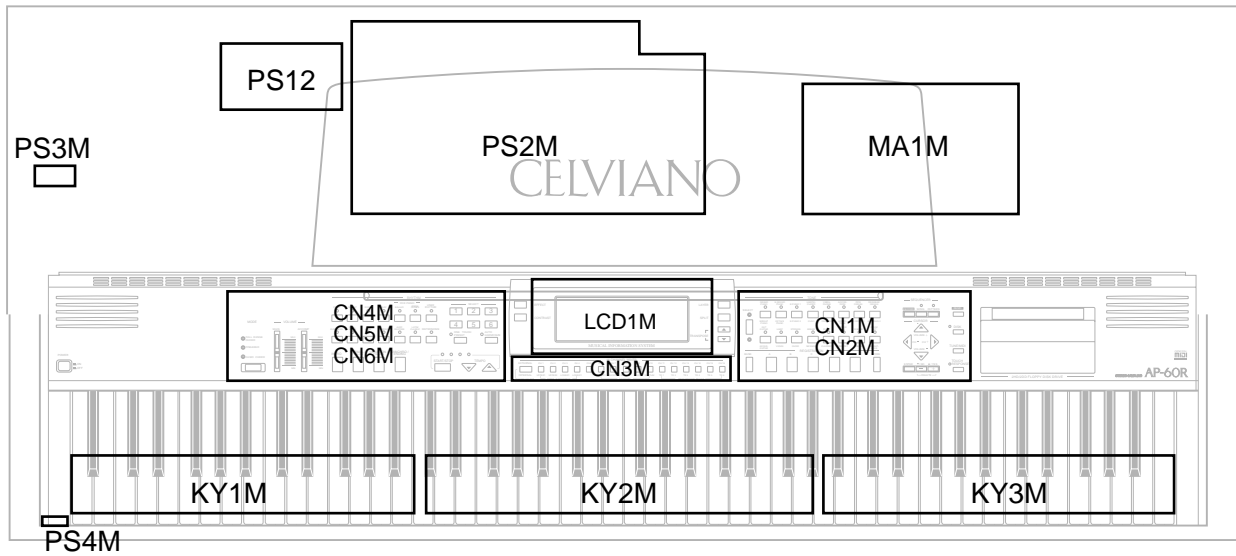
■ DEMO tune

Tune Number	Title	Composer	Time
1	Main Theme (Original)	TECH-NOTE INTERNATIONAL LTD.	2'13"
2	Etude Op10-Nr12	F. Chopin	2'32"
3	Lullaby of Birdland	G. Sherring	2'18"
4	Piano Sonata op.31 no.2 "Tempest" 3rd movement	L. Beethoven	2'00"
5	Quick Tapper (Original)	TECH-NOTE INTERNATIONAL LTD.	1'08"
6	Wohltemperierte Klavier I Praeludium 3	J.S. Bach	1'20"
7	I Could have danced all night	F. Loewe	1'16"
8	Libertango	A. Piazzolla	1'35"
9	Balloons on the Highway (Original)	Ed Alstrom	1'25"
10	"O mio babbino caro" from "Gianni Schicchi"	G. Puccini	1'24"
11	Someday My Prince will come	F. Churchill	1'37"
12	Brazileira from "Scaramouche"	D. Milhaud	2'10"

BLOCK DIAGRAM



PCB LAYOUT



PCB	JCM660	Components
Main PCB	MA1M	CPU, DSP, Sound Source ROM Working storage RAM, Effect RAM Reset IC, DAC, Filter, Key controller, Power amp, Power supply circuit
Jack PCBs	PS2M	LINE IN/OUT jack, MIDI jacks
	PS3M	Phone jacks
	PS4M	Power indicator
Console PCBs	CN1M,CN2M	Tone, Registration, Sequencer, Cursor, Demo
	CN3M	CHANNEL buttons (CH1 to CH16)
	CN4M,CN5M,CN6M	Mode, Volume, Rhythm, Select, Tempo
LCD PCB	LCD1M	LCD driver, CFL drever
Power PCB	JCM431-PS12	Fuse, Noise filter

DISASSEMBLY INSTRUCTIONS

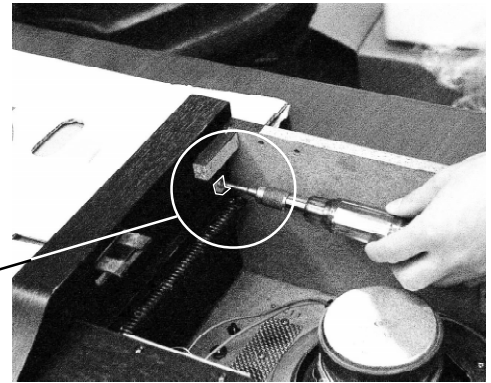
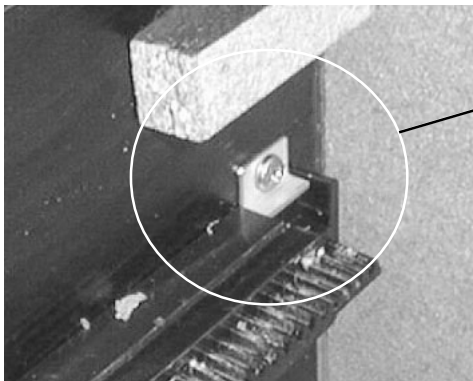
1. Removal of top board

- 1-1. Remove 8 screws affixing the top board on the back.
- 1-2. Slide the top board forward and remove it from the main unit.

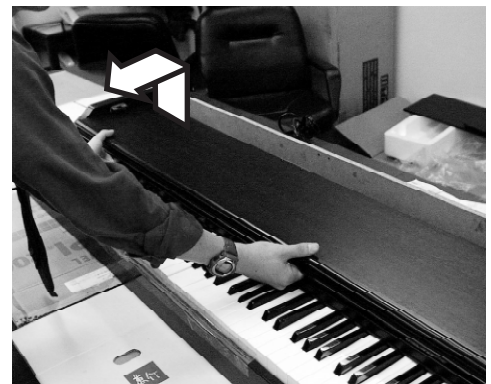


2. Removal of keyboard cover

- 2-1. Lift up the keyboard cover full open position.
- 2-2. Unscrew the L-shaped stopper metal located on the inner left corner.



- 2-3. Lift up the keyboard cover gear from the opening where stopper metal is fixed, then remove the keyboard cover.



3. Removal of console panel

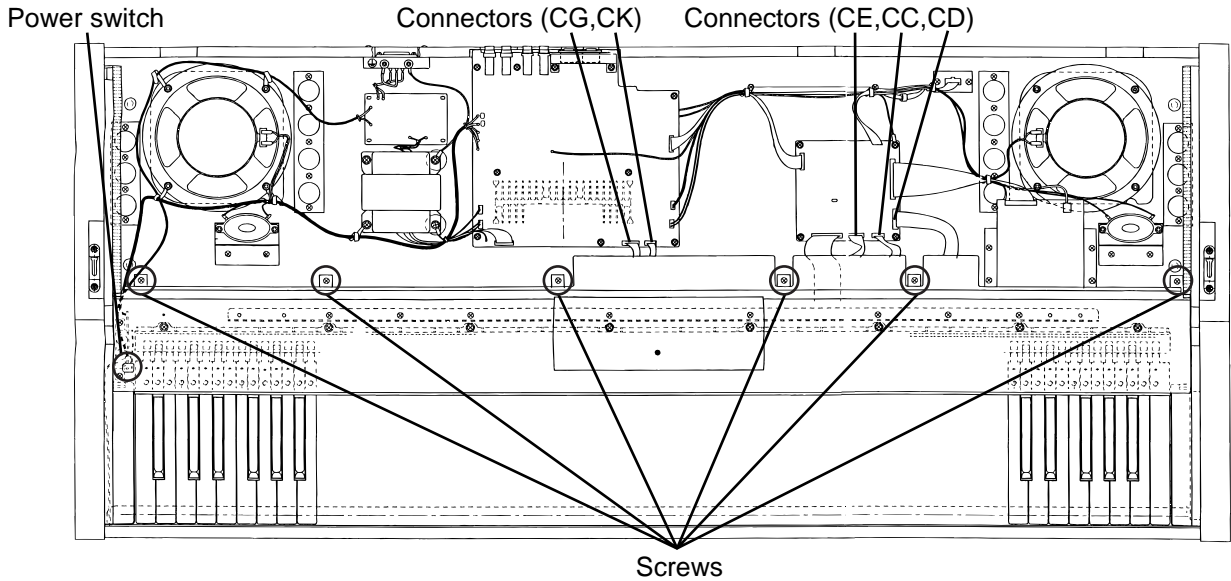
3-1. Remove 6 screws of the console panel.

3-2. Disconnect connector CC,CD,CE on PCB MA1M, connector CG,CK on PCB PS2M.

3-3. Lift the console panel and turn it over and remove the power switch, which is affixed by 2 screws.

Then remove the side panel.

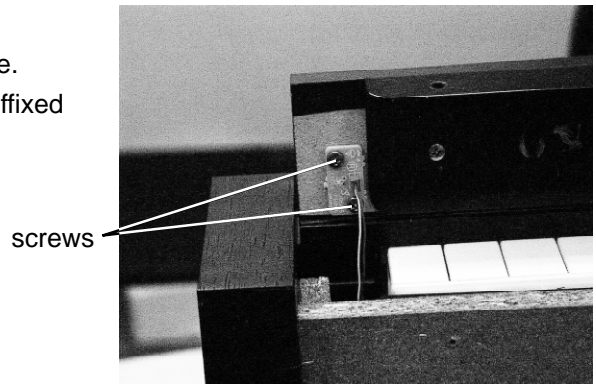
Caution: Be careful not to scratch the side panels.



4. Removal of front cover

4-1. Remove 6 screws from the front end of the lower case.

4-2. Lift the front cover and remove the pilot lamp that is affixed by 2 screws. Then remove the front cover.

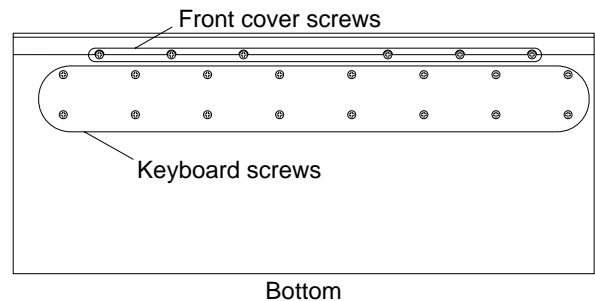
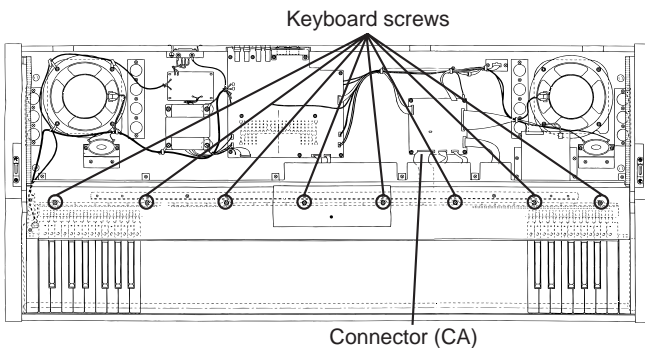


5. Removal of keyboard unit

5-1. Disconnect connector CA on the PCB MA1M.

5-2. Remove 24 screws that affix the keyboard unit (16 on the bottom of the case and 8 on the keyboard unit).

5-3. Lift and remove the keyboard unit.



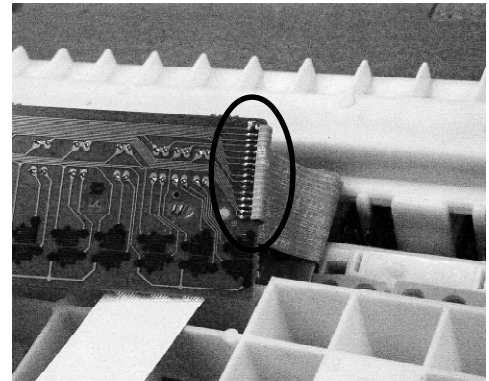
6. Removal of keys

- 6-1. While prying the side partition plastics with tweezers, lift the edge of the key toward front.



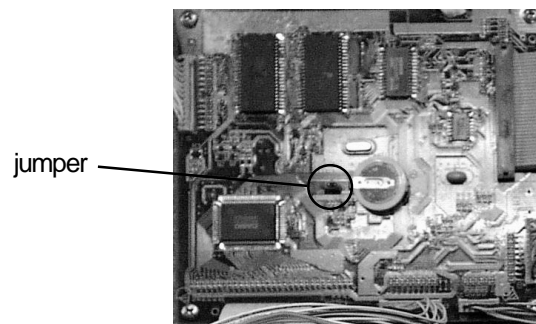
7. Removal of keyboard PCB

- 7-1. Lay the keyboard so that keyboard PCBs face upward.
- 7-2. Remove screws on keyboard PCBs (10 screws on PCBs KY1M and KY3M, 12 screws on KY2M).
- 7-3. Unsolder the cable.



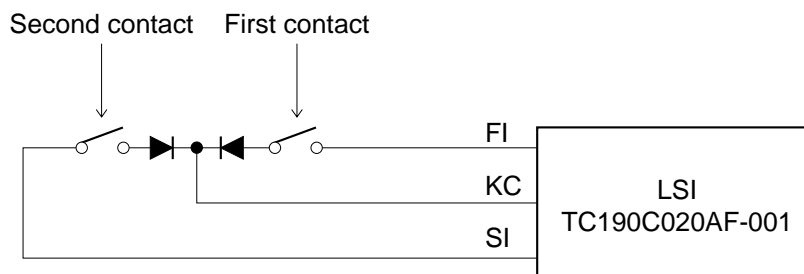
8. Notes on replacing the main PCB.

- A lithium battery is set on the main PCB for memory protection.
- When you replace the main PCB, disconnect the jumper to open battery circuit.
- Since there is no jumper on a new main PCB, be sure to set a jumper.



CIRCUIT DESCRIPTION

KEYMATRIX



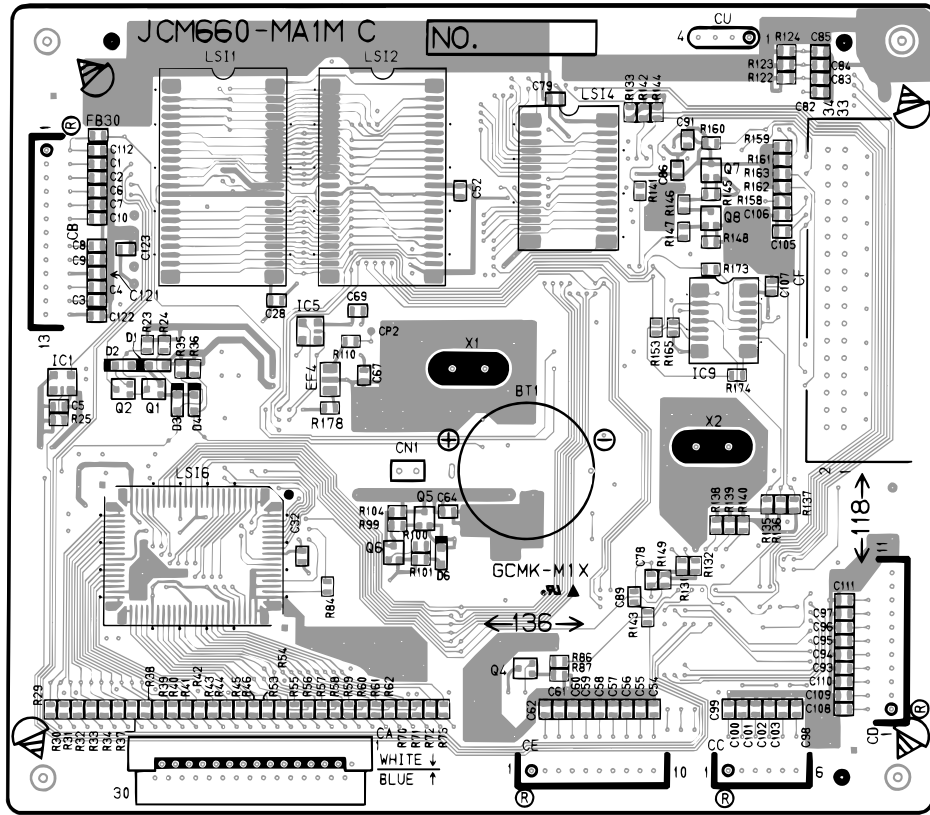
	KC0	KC1	KC2	KC3	KC4	KC5	KC6	KC7
FI0	A0 ①	A0 # ①	B0 ①	C1 ①	C1 # ①	D1 ①	D1 # ①	E1 ①
SI0	A0 ②	A0 # ②	B0 ②	C1 ②	C1 # ②	D1 ②	D1 # ②	E1 ②
EI1	F1 ①	F1 # ①	G1 ①	G1 # ①	A1 ①	A1 # ①	B1 ①	C2 ①
SI1	F1 ②	F1 # ②	G1 ②	G1 # ②	A1 ②	A1 # ②	B1 ②	C2 ②
FI2	C2 # ①	D2 ①	D2 # ①	E2 ①	F2 ①	F2 # ①	G2 ①	G2 # ①
SI2	C2 # ②	D2 ②	D2 # ②	E2 ②	F2 ②	F2 # ②	G2 ②	G2 # ②
FI3	A2 ①	A2 # ①	B2 ①	C3 ①	C3 # ①	D3 ①	D3 # ①	E3 ①
SI3	A2 ②	A2 # ②	B2 ②	C3 ②	C3 # ②	D3 ②	D3 # ②	E3 ②
FI4	F3 ①	F3 # ①	G3 ①	G3 # ①	A3 ①	A3 # ①	B3 ①	C4 ①
SI4	F3 ②	F3 # ②	G3 ②	G3 # ②	A3 ②	A3 # ②	B3 ②	C4 ②
FI5	C4 # ①	D4 ①	D4 # ①	E4 ①	F4 ①	F4 # ①	G4 ①	G4 # ①
SI5	C4 # ②	D4 ②	D4 # ②	E4 ②	F4 ②	F4 # ②	G4 ②	G4 # ②
FI6	A4 ①	A4 # ①	B4 ①	C5 ①	C5 # ①	D5 ①	D5 # ①	E5 ①
SI6	A4 ②	A4 # ②	B4 ②	C5 ②	C5 # ②	D5 ②	D5 # ②	E5 ②
FI7	F5 ①	F5 # ①	G5 ①	G5 # ①	A5 ①	A5 # ①	B5 ①	C6 ①
SI7	F5 ②	F5 # ②	G5 ②	G5 # ②	A5 ②	A5 # ②	B5 ②	C6 ②
FI8	C6 # ①	D6 ①	D6 # ①	E6 ①	F6 ①	F6 # ①	G6 ①	G6 # ①
SI8	C6 # ②	D6 ②	D6 # ②	E6 ②	F6 ②	F6 # ②	G6 ②	G6 # ②
FI9	A6 ①	A6 # ①	B6 ①	C7 ①	C7 # ①	D7 ①	D7 # ①	E7 ①
SI9	A6 ②	A6 # ②	B6 ②	C7 ②	C7 # ②	D7 ②	D7 # ②	E7 ②
FI10	F7 ①	F7 # ①	G7 ①	G7 # ①	A7 ①	A7 # ①	B7 ①	C8 ①
SI10	F7 ②	F7 # ②	G7 ②	G7 # ②	A7 ②	A7 # ②	B7 ②	C8 ②

BUTTON MATRIX

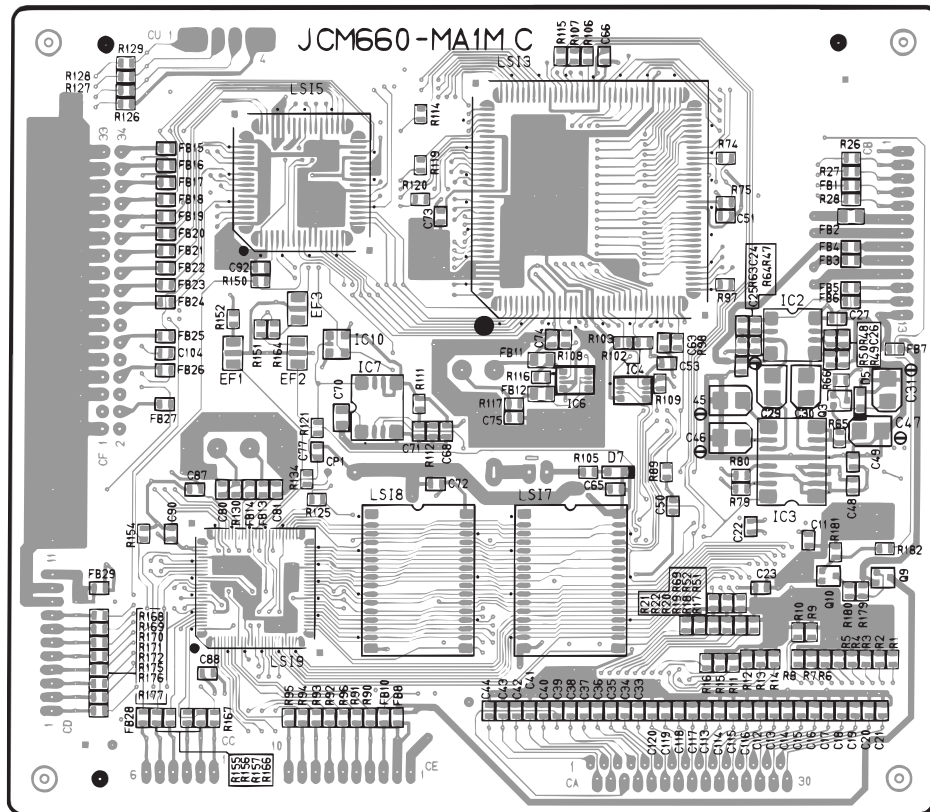
	KC0	KC1	KC2	KC3	KC4	KC5
SI0	MODE	BALLAD	POPS	SELECT	GRAND PIANO BRIGHT PIANO	GUT GUITAR ACOUS GUITAR
SI1	AUTO HARMONIZE	POPS/OLDIES	16BEAT	BANK	E.GRAND PIANO OCTAVE PIANO	HARP VIOLIN
SI2	ONE TOUCH PRESET	JAZZ/RAGTIME	ROCK	A	E.PIANO 1 E.PIANO 2	STRINGS CHOIR
SI3	INTRO	LATIN/CLASSIC	JAZZ	B	HARPSI CHORD CLAVI	BRASS NEWAGE
SI4	NORMAL/FILL/IN	–	EUROPIAN	C	VIBRAPHONE CELESTA	FLUTE CLARINET
SI5	VARIATION/ FILL-IN	OSER/RYTHM	BALL ROOM	D	ACCORDION HONKY-TONK	TENOR SAX TRUMPET
SI6	SYNCRO/ ENDING	–	LATIN	E	PIPE ORGAN E.ORGAN 2	DRUM SET BRIGHTNESS
SI7	STRAT/STOP	METRONOME	VARIOUS	STROE	DRAWBAR ORGAN E.ORGAN 2	DRUM SET BRIGHTNESS
SI8	TEMPO DOWN	4	1	RECORD	ch–	–/NO
SI9	TEMPO UP	5	2	PATTERN	VOLUME +	+/YES
SI10	–	6	3	SONG	ch+	ENTER
SI11	LAYER	CONTRAST	EFFECT	DEMO	VOLUME–	TOUCH RESPONS
SI12	SPLIT	TRANSPOSE DOWN	TRANSPOSE UP	DISK	–	TUNE/MIDI
SI13	–	EXTERNAL/ INTERNAL	ch1	ch2	ch3	ch4
SI14	ch5	ch6	ch7	ch8	ch9	ch10
SI15	ch11	ch12	ch13	ch14	ch15	ch16

PRINT CIRCUIT BOARD

Main PCB JCM660-MA1M

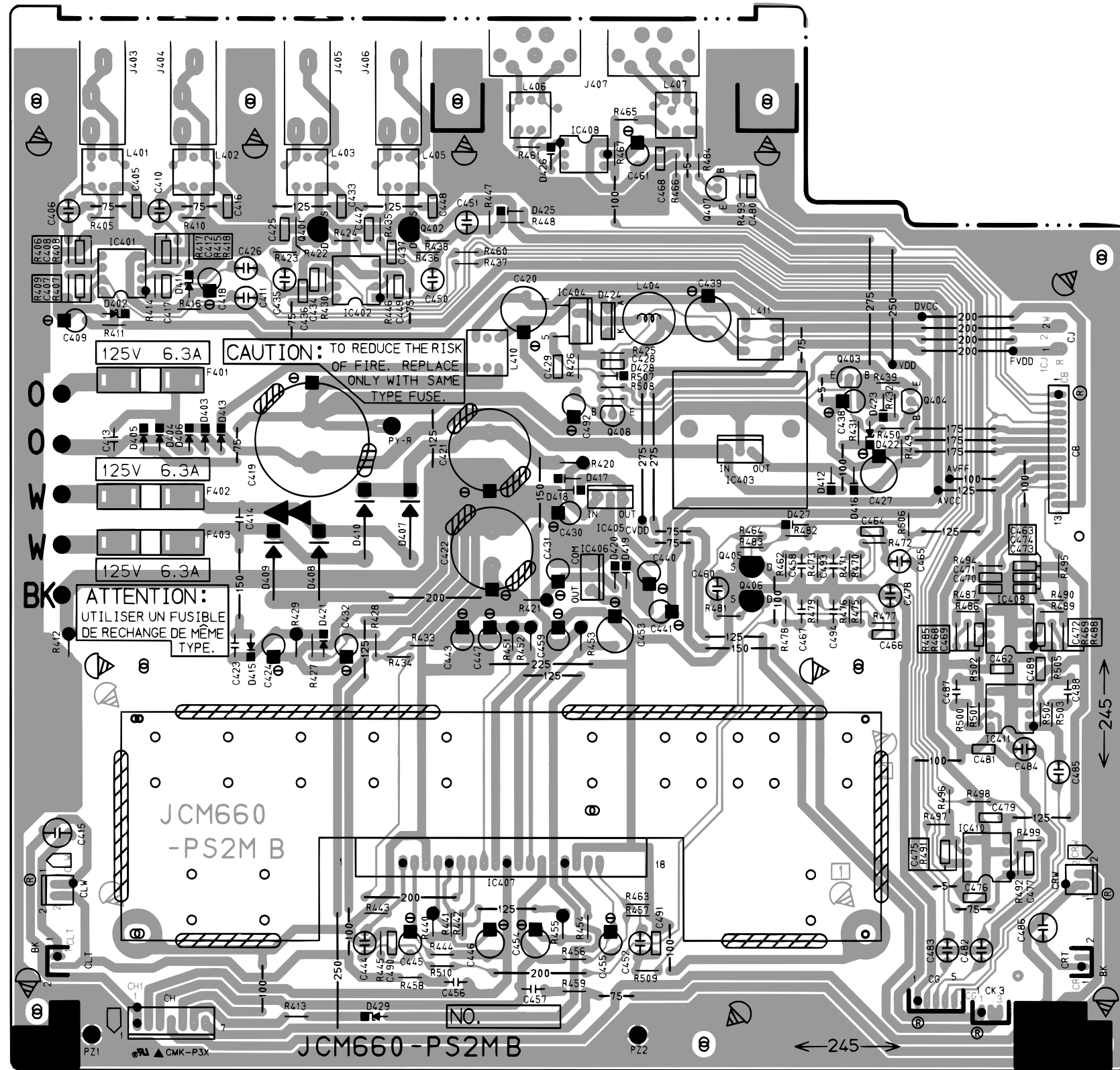


Top View



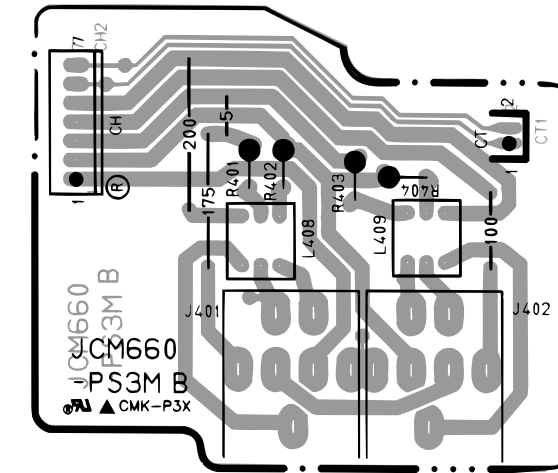
Bottom View

Sub PCB JCM660-PS2M



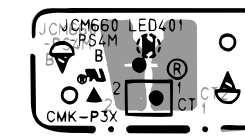
Top View

Sub PCB JCM660-PS3M



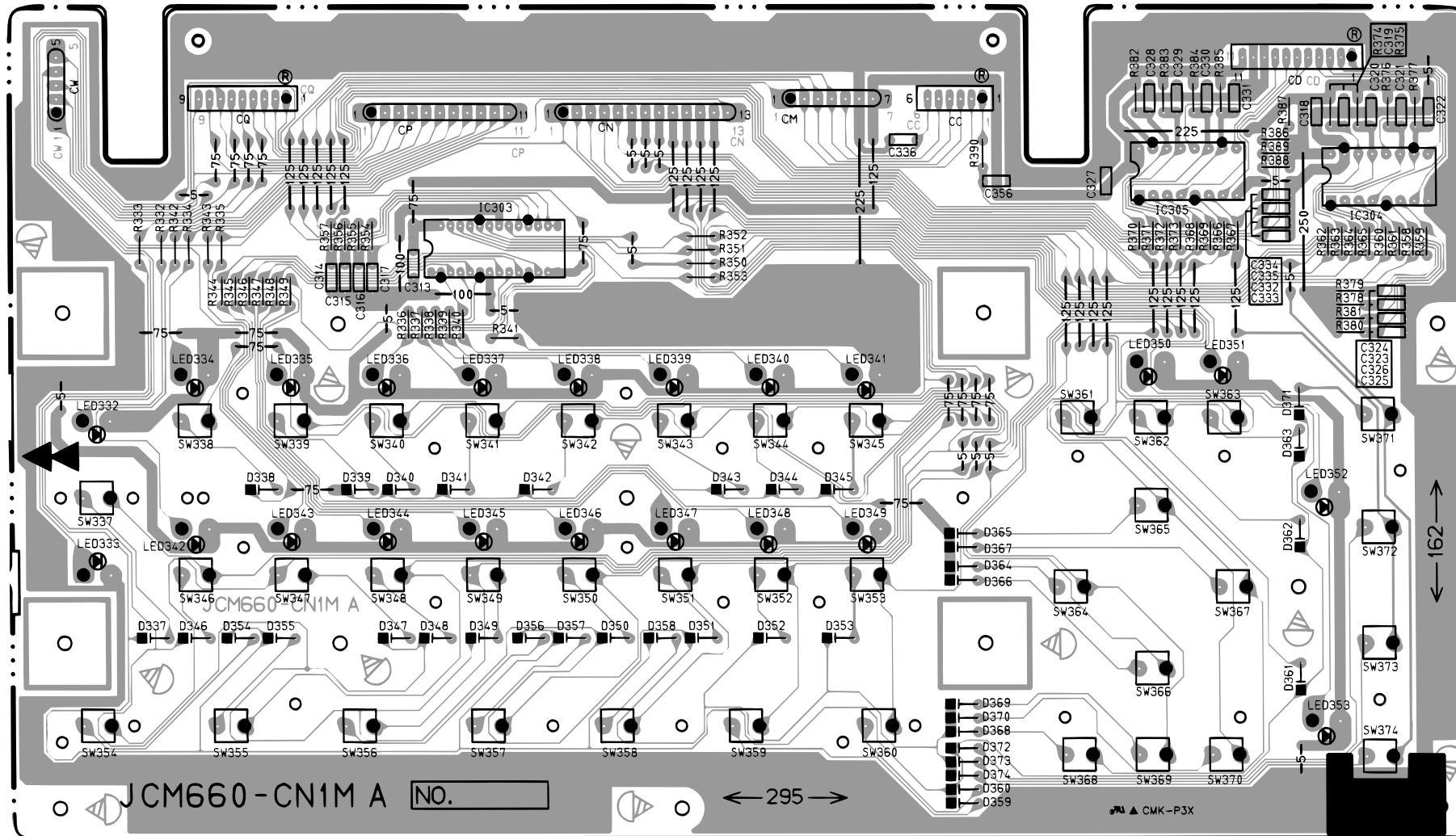
Top View

Sub PCB JCM660-PS4M



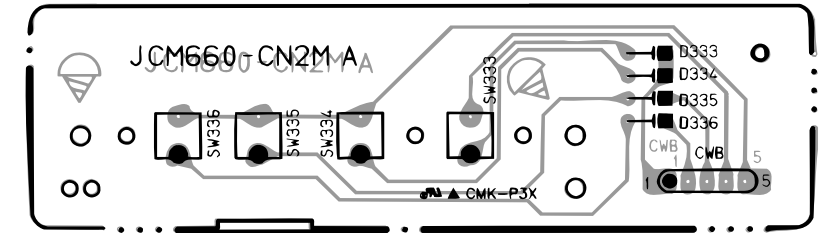
Top View

Console PCB JCM660-CN1M



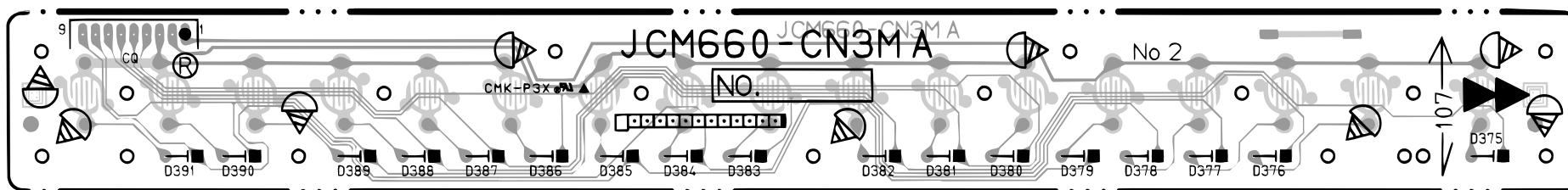
Top View

Console PCB JCM660-CN2M



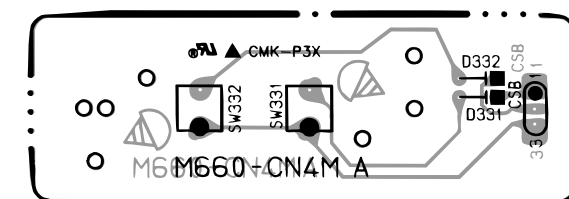
Top View

Console PCB JCM660-CN3M



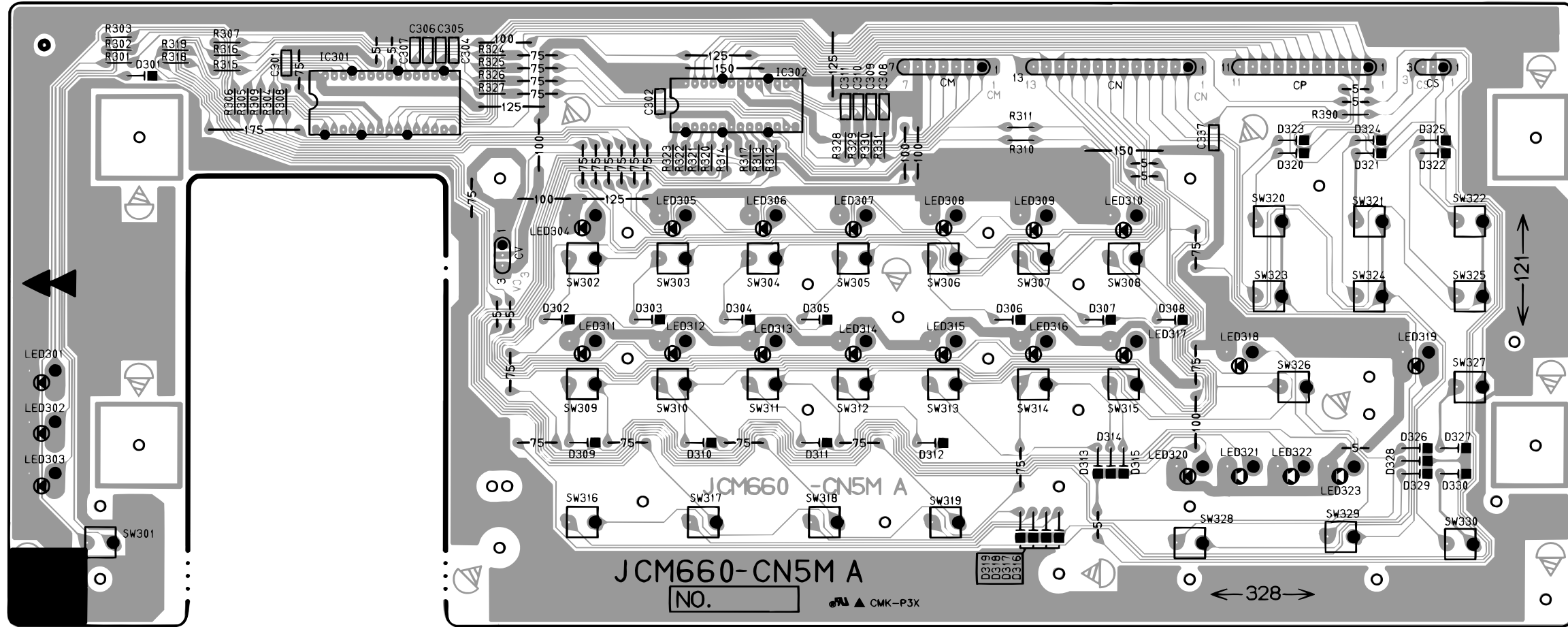
Top View

Console PCB JCM660-CN4M



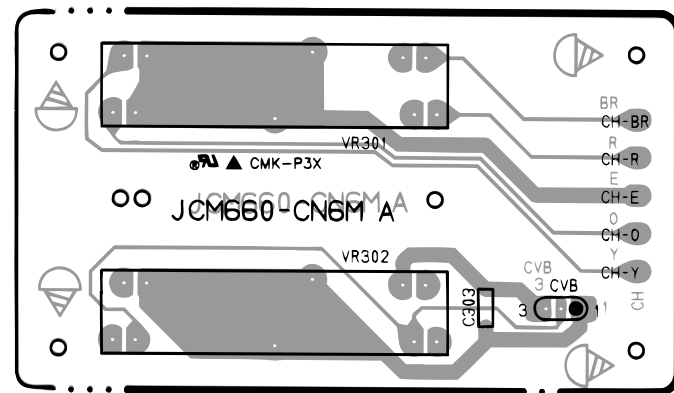
Top View

Console PCB JCM660-CN5M



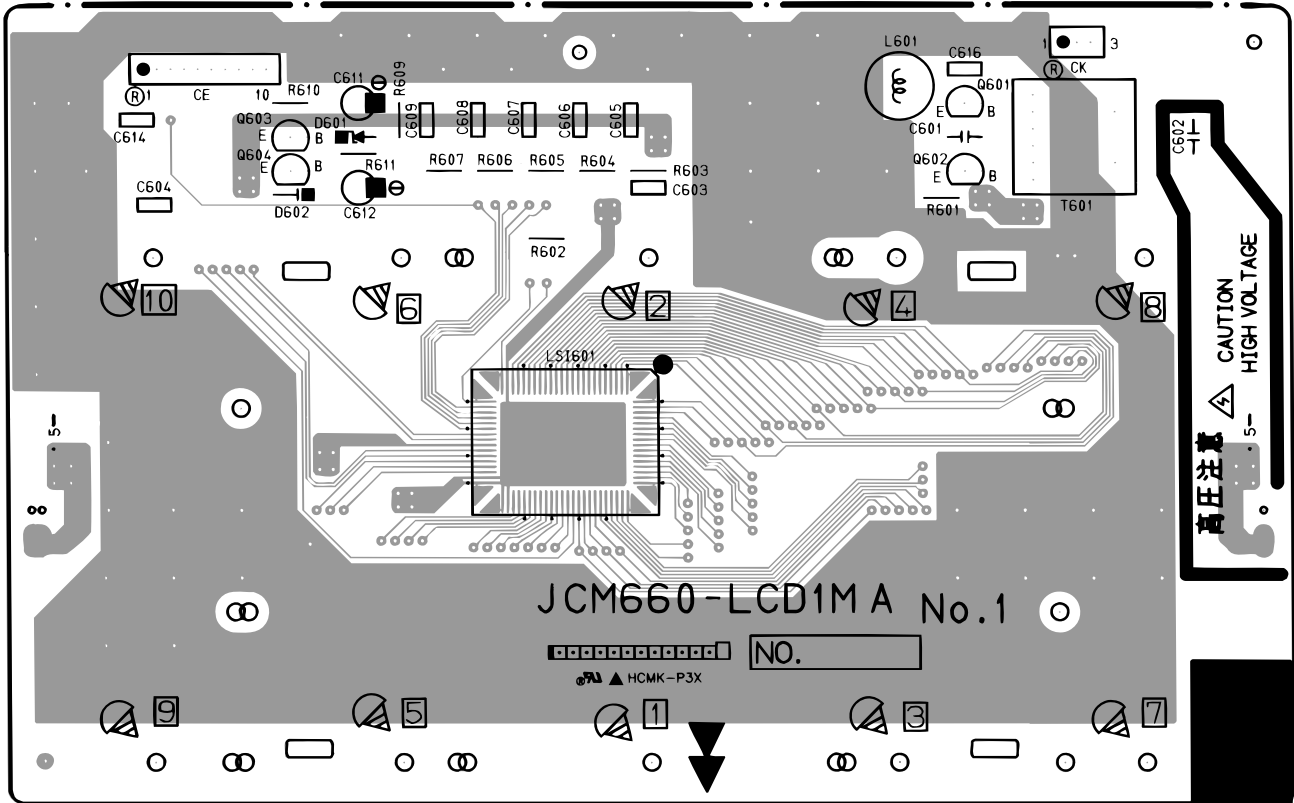
Top View

Console PCB JCM660-CN6M

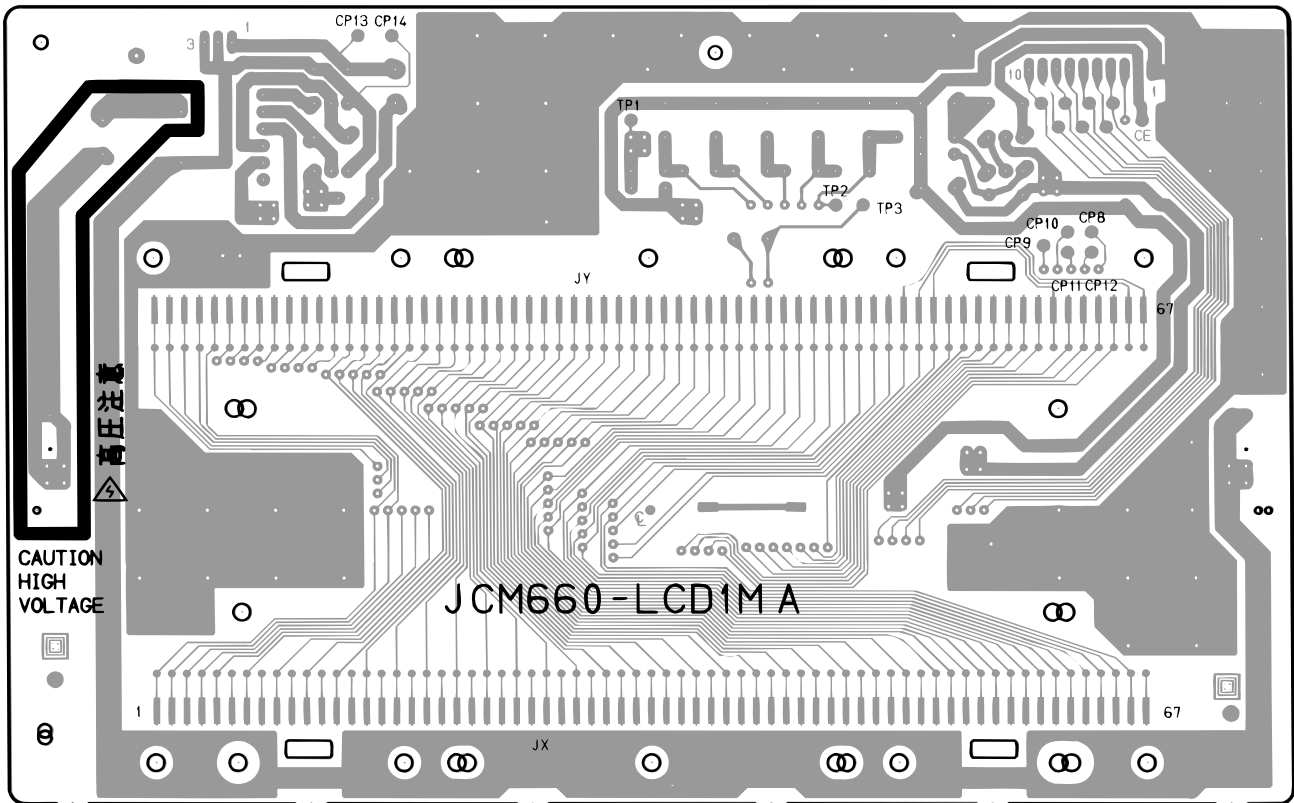


Top View

LCD PCB JCM660-LCD1M



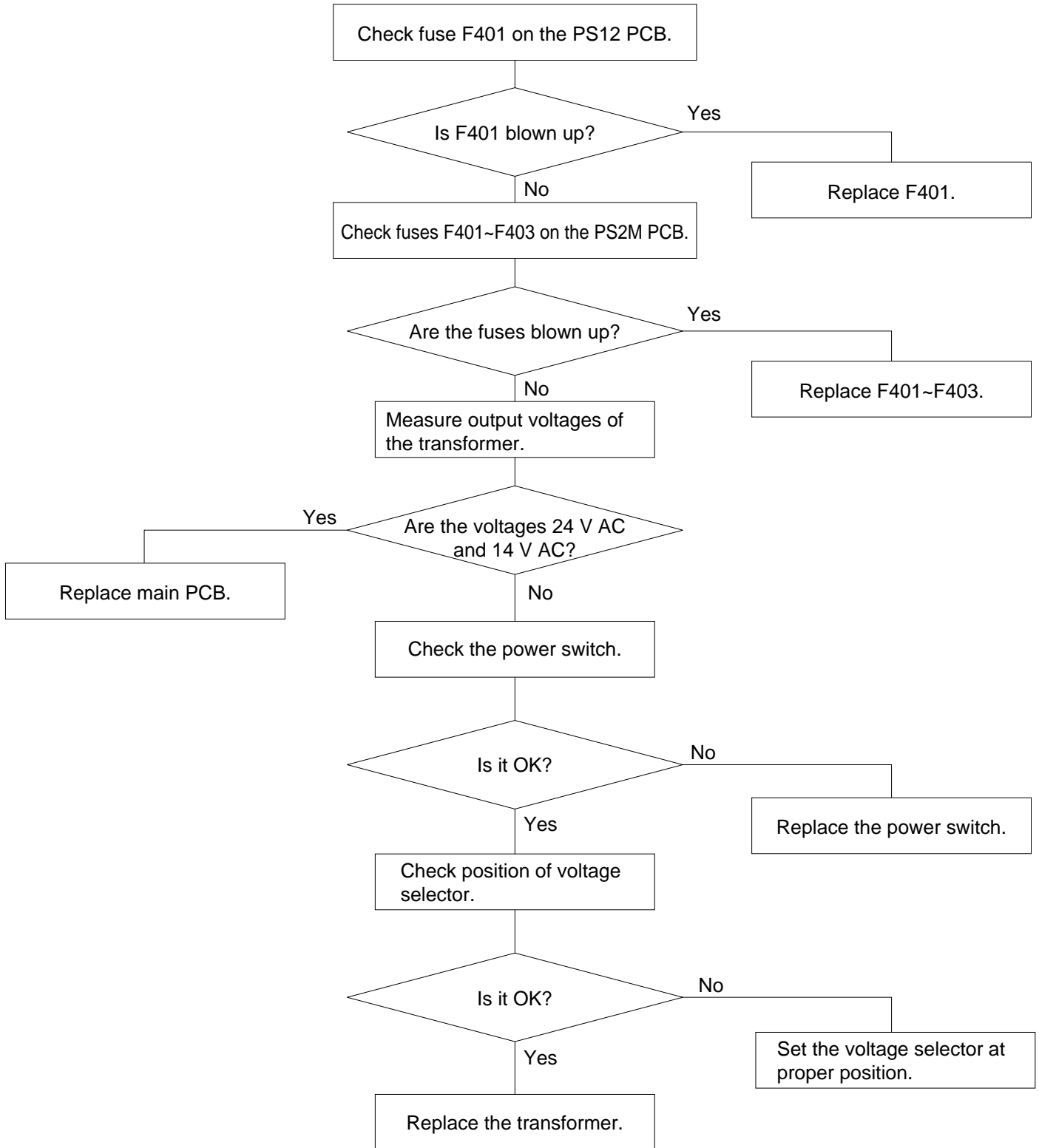
Top View



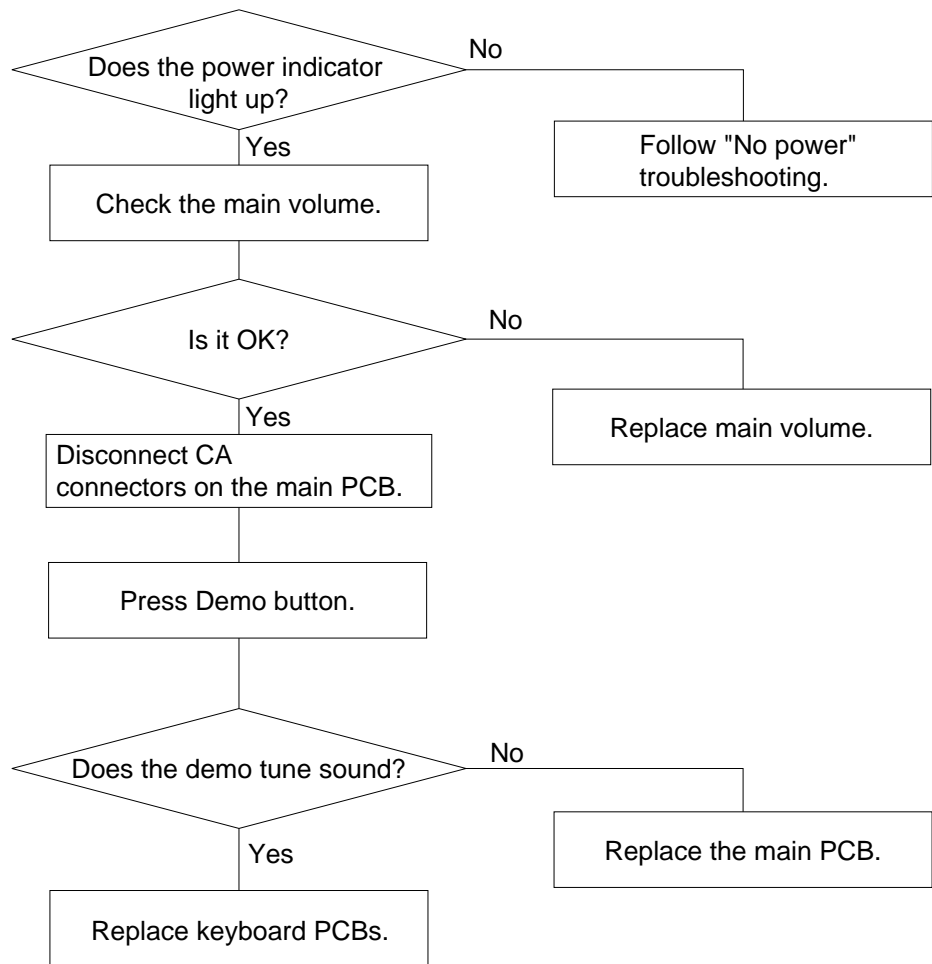
BottomView

TROUBLESHOOTING

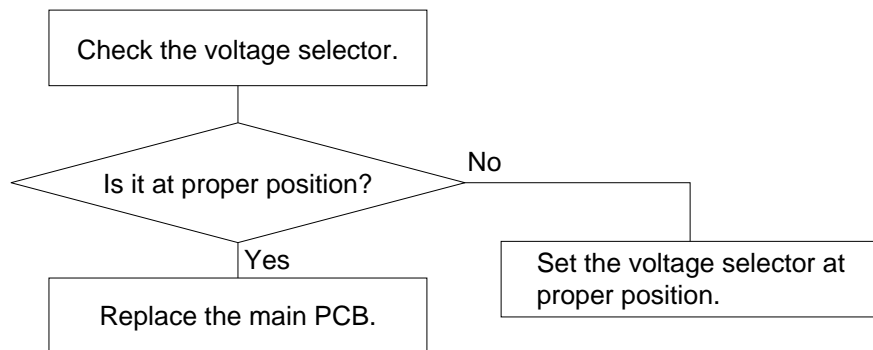
1. No power



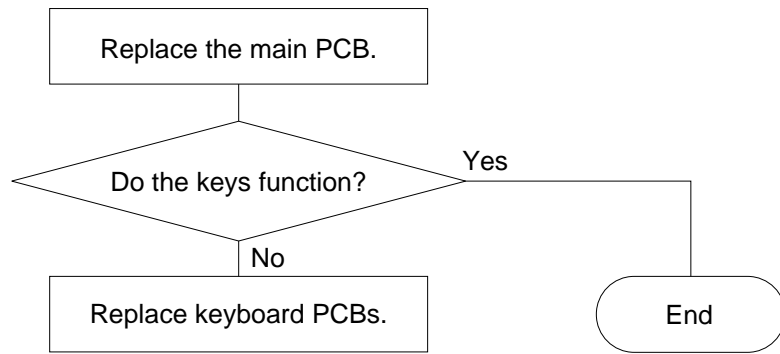
2. No sound



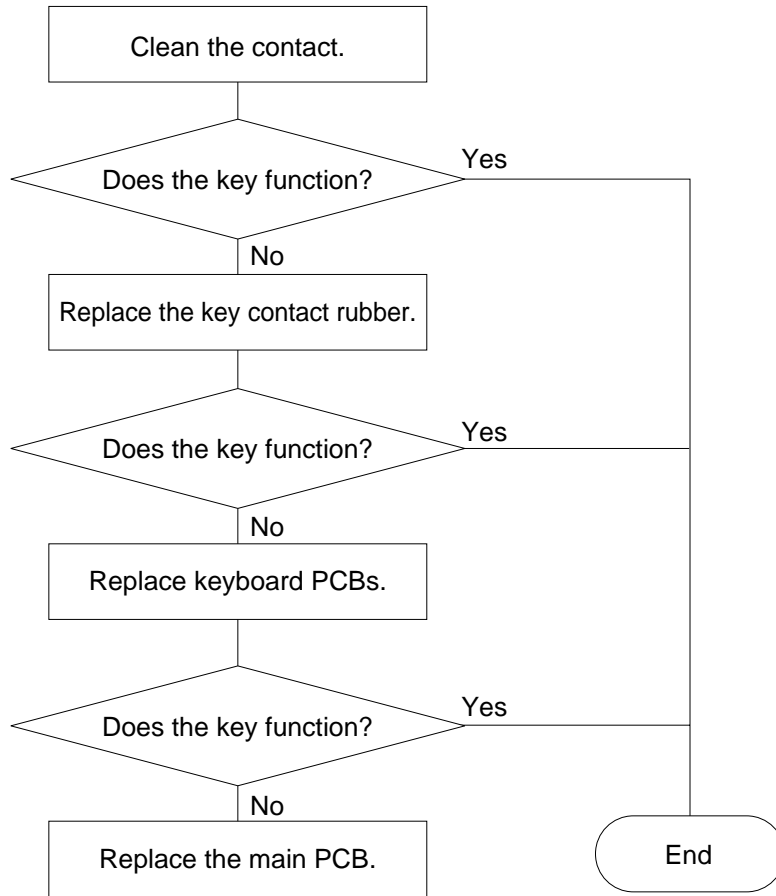
3. Distorted sound



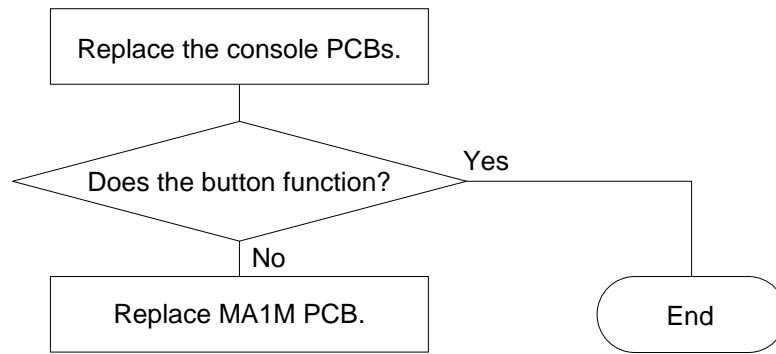
4. Certain keys do not function



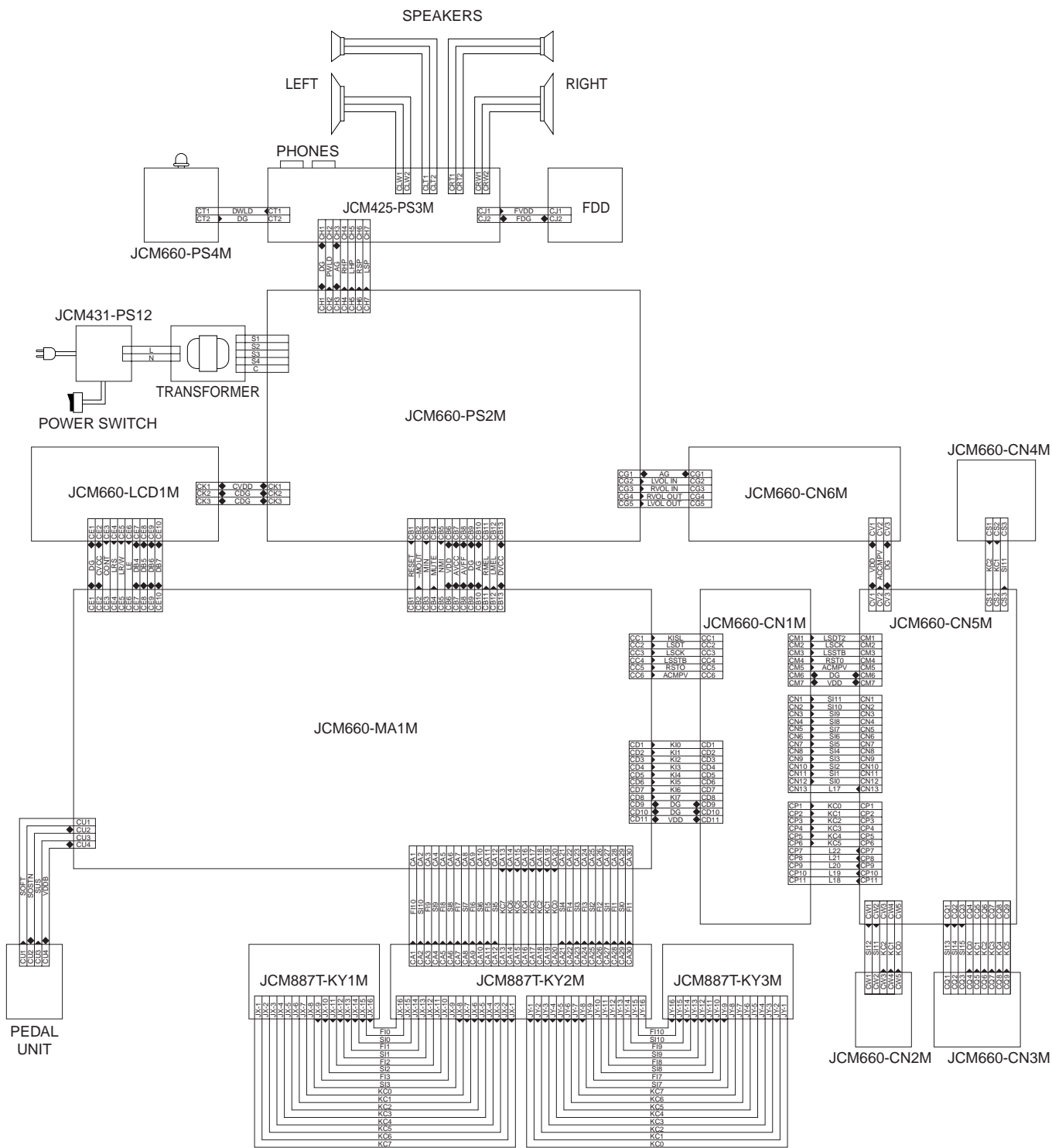
5. A certain key does not function



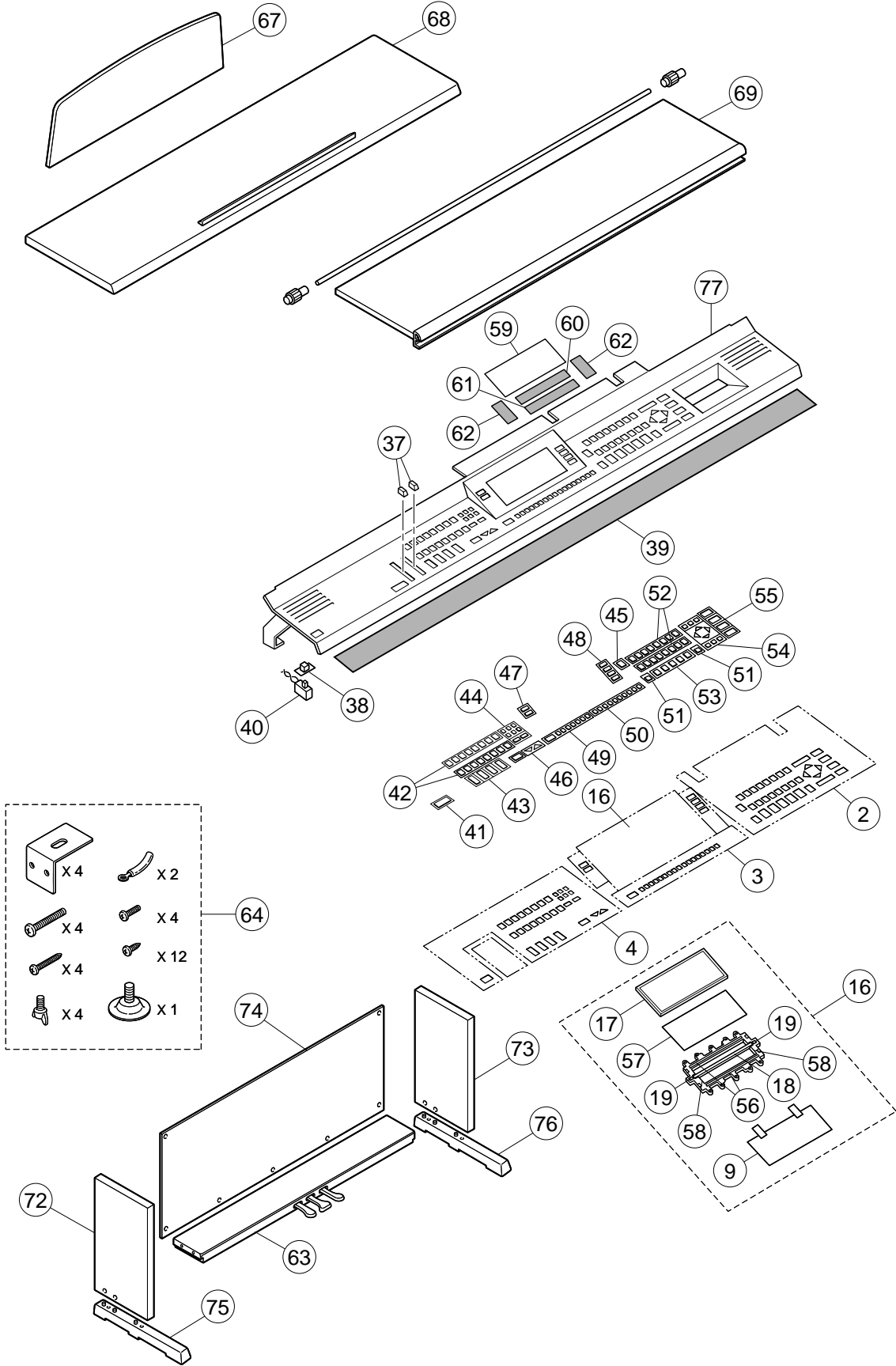
6. A certain button does not function

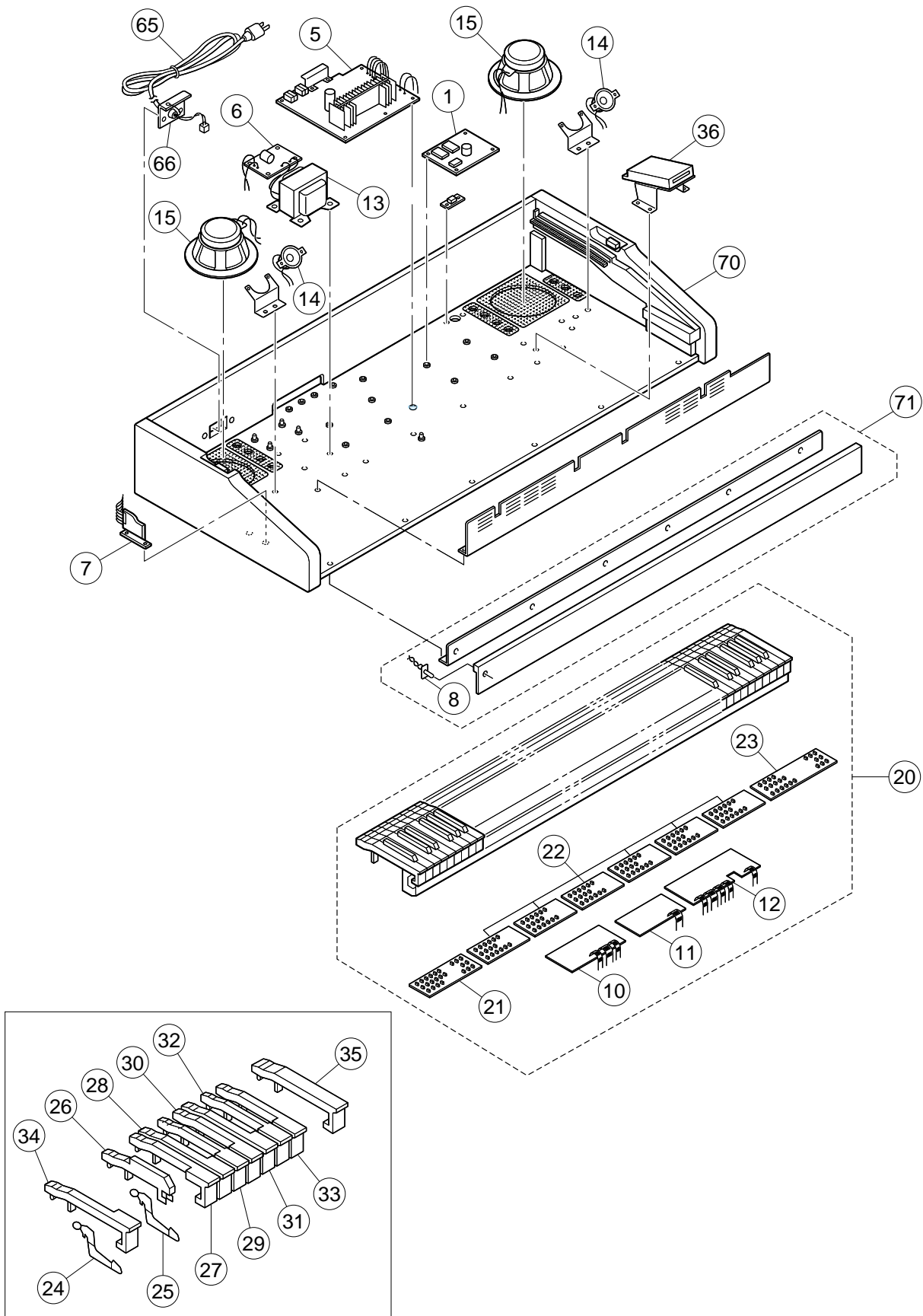


WIRING DIAGRAM



EXPLODED VIEW





PARTS LIST

AP-65R

Notes: This parts list does not include the cosmetic parts, which parts are marked with item No. "R-X" in the exploded view.

Contact our spare parts department if you need these parts for refurbish.

1. Prices and specifications are subject to change without prior notice.
2. As for spare parts order and supply, refer to the "GUIDEBOOK for Spare parts Supply", published separately.
3. The numbers in item column correspond to the same numbers in drawing.

N	Item	Code No.	Part Name	Specification	Q	Price Code	R	Remarks
Main PCB								
	1	1005 6788	PCB ASSY/M660-MA1M	TK-M241139*2(M661)	1	DW	A	
	BT1	3815 0707	BATTERY/LITHIUM	CR2032-1HM	1	AI	B	
	D1-D4,D7	2390 1820	DIODE	1SS355TE-17	5	AA	B	
	D5	2360 2856	DIODE/ZENER	UDZTE-17 5.6B	1	AA	B	
	D6	2360 3057	DIODE/ZENER	UDZTE-173.3B	1	AA	B	
	EF1-EF4	3025 1862	FILTER/EMI	NFM51R00P206	4	AC	B	
	IC1,IC5	2105 2821	IC/C-MOS	TC7S04F(TE85R)	2	AC	B	
	IC10	2105 1120	IC/C-MOS	TC7S08F(TE85R)	1	AB	B	
	IC2	2114 5898	IC/MONOLITHIC	NJM2068M(TE1)	1	AD	B	
	IC3	2105 6665	LSI	UPD63200GS-E1	1	AX	B	
	IC4	2105 5719	IC/C-MOS	TC7W32FU(TE12L)	1	AE	B	
	IC6	2105 6083	IC/C-MOS	TC7WU04FU(TE12L)	1	AD	B	
	IC7	2114 4060	IC/MONOLITHIC	MB3771PF-EF	1	AK	B	
	IC9	2101 0642	IC/C-MOS	TC74HC08AF(TP1)	1	AC	B	
	LSI1	1005 2094	LSI	MSM533202E98GSKDR1	1	BT	A	
	LSI2	1003 6763	LSI	MSM533202E93GSKDR1	1	BT	A	
	LSI3	2011 7434	LSI	HG51B155FD	1	BU	A	
	LSI4	2012 5572	LSI	TC55257DFL-70L(EL)	1	AS	A	
	LSI5	2010 9990	LSI	HD63266F	1	BT	A	
	LSI6	2012 5987	LSI	TC190C020AF-001	1	BC	A	
	LSI7,LSI8	2012 6186	LSI	TC551001CF-70L(EL)	2	BK	A	
N	LSI9	1005 2057	LSI	HD6433048SB05F	1	CB	A	
N	Q1,Q2,Q5,Q7,Q9	2250 1169	TRANSISTOR	2SA1576AT106S	5	AA	B	
N	Q3,Q4,Q6,Q8,Q10	6930 0299	TRANSISTOR	2SC4081T106S	5	AA	B	
	X1	2590 2788	OSCILATOR/CRYSTAL	AT-49-24.576MHZ	1	AS	B	
	X2	2590 2748	OSCILATOR/CERAMIC	CSA16.00MXZ243	1	AD	B	
Console PCB								
N	2	1006 3964	PCB ASSY / M660-CN1,2M	TK-M241141*1(M661)	1	CY	A	
N	3	1006 3963	PCB ASSY / M660-CN3M	TK-M341061*1(M661)	1	AS	A	
N	4	1006 3962	PCB ASSY / M660-CN4,5,6M	TK-M241142*1(M661)	1	CW	A	
	D301-D391	2390 1344	DIODE	1SS133T-77	91	AA	B	
	IC301	2105 6679	IC/C-MOS	NJU3718L	1	AW	B	
	IC302,IC303	2105 6680	IC/C-MOS	NJU3716L	2	AV	B	
	IC304,IC305	2105 6681	IC/C-MOS	TC74HC257AP	2	AF	B	
	LED301-LED320	1000 5470	LED	SLZ-190B-02-T1	42	AA	B	
	LED332-LED353	1000 5471	LED	SLZ-290B-02-T1	3	AA	B	
	LED321-LED323	1000 5471	LED	SLZ-290B-02-T1	3	AA	B	
	SW301-SW374	3412 0903	SWITCH/TACT	EVQ-21405R	74	AA	B	
	VR301	2765 0280	VOLUME	EWANAXCH1B14	1	AI	B	
	VR302	2765 2187	VOLUME	EWANFECH1B54	1	AG	B	
Power supply PCB								
N	5	1006 3965	PCB ASSY / M660-PS2M	TK-M241140*2(M661)	1	DO	A	110 - 127V area
N	5	1006 3966	PCB ASSY / M660-PS2M	TK-M241140*3(M661)	1	DO	A	220 - 240V area
	D402,D411	1002 1391	DIODE/ZENER	MTZJT-775.1A	2	AA	B	
	D403,D404	1003 6786	DIODE	2A02	2	AA	B	
	D405,406,413	1003 6785	DIODE	2A02B	3	AA	B	
	D407-D410	2390 3022	DIODE	3BZ41(LC6-15)	4	AD	B	
	D412,D416-D420	2390 1344	DIODE	1SS133T-77	10	AA	B	
	D423,D425-D427	2390 1344	DIODE	1SS133T-77	10	AA	B	
	D415	2390 2996	DIODE	1SR139-400T-32	6	AA	B	
	D421	2390 1323	DIODE	RB100A-T32-T	1	AC	B	

Notes: N- New parts

Q- Quantity used per unit

R- Rank

N	Item	Code No.	Part Name	Specification	Q	Price Code	R	Remarks
N	D422	1004 2152	DIODO/ZENER	MTZJT-7710C	1	AA	B	
	D424	2390 1463	DIODE/SCHOTTKY	SB20-03B	1	AD	B	
	D428	2390 2828	DIODE/SCHOTTKY	RB441Q-40T-77	1	AA	B	
N	D429	1004 2156	DIODO/ZENER	MTZJT-7715B	1	AA	B	
	F401-F403	3632 0420	FUSE/TIME-LAG	UL-TSC-6.3A-N1	3	AF	A	110 - 127V area
	F401-F403	3632 0427	FUSE/TIME-LAG	(S)T-6.3A	3	AF	A	220 - 240V area
	IC401-IC402	2114 5897	IC/MONOLITHIC	NJM2068D	5	AC	B	
	IC409-IC411	2114 3444	IC/MONOLITHIC	NJM7805FA	1	AE	B	
	IC403	2114 5896	IC/MONOLITHIC	PQ1CF2	1	AS	B	
	IC404	2114 5794	IC/MONOLITHIC	NJM78M15FA	1	AE	B	
	IC405	2114 5795	IC/MONOLITHIC	NJM79M15FA	1	AG	B	
	IC406	2114 2149	IC/HYBRID	STK4152MK2	1	BP	B	
	IC407	2114 1421	IC/PHOTO COUPLER	PC900V	1	AK	B	
	IC408	3612 0584	JACK	YKB21-5012	2	AD	A	
	J403,J404	3612 0789	JACK	YKB21-5010	2	AC	A	
	J405,J406	3501 4816	JACK/DIN	YKF51-5051	1	AH	B	
	J407	2254 0551	TRANSISTOR/FET	2SK365-BL(TPE4)	4	AC	B	
	Q401,Q402	2250 1592	TRANSISTOR	2SC1740STPR	4	AA	B	
	Q405,Q406							
	Q403,Q404							
	Q407,Q408							
PS12,PS3,PS4M PCBs								
	6	1000 2326	PCB ASSY / M425-PS1,2	TK-M341012*5	1	BW	B	110 - 127V area
	6	1000 2327	PCB ASSY / M425-PS1,2	TK-M341012*6	1	BU	B	220 - 240V area
	7	1004 4959	PCB ASSY / M660-PS3M	M341059*1 TK(M660)	1	CF	B	
	8	1004 4960	PCB ASSY / M660-PS4M	M341060*1 TK(M660)	1	BM	B	
	F401	3632 0720	FUSE/TIME-LAG	MT4-3.15A-N1	1	AG	A	110 - 127V area
	F401	3631 1045	FUSE/TIME-LAG	(S)T-1.6A	1	AF	A	220 - 240V area
	J401,J402	3502 2657	JACK/PHONE	YKB22-5006	2	AF	A	
	LED401	2370 1417	LED	SLP-135B-51	1	AA	B	
Display PCB								
N	9	1006 3961	PCB ASSY / M660-LCD1M	TK-M241143*1(M661)	1	CJ	B	
	D601	2360 3056	DIODE/ZENER	HZS6A2LTD-T	1	AA	B	
	D602	2390 1344	DIODE	1SS133T-77	1	AA	B	
	LSI601	2012 6018	LSI	SED1278F2A	1	AV	A	
	Q601,Q602	2253 0710	TRANSISTOR	2SD965-R(TA)	2	AB	B	
	Q603	2250 1577	TRANSISTOR	2SA933ASTPS	1	AA	B	
	Q604	2250 1592	TRANSISTOR	2SC1740STPS	1	AA	B	
	T601	3012 1606	TRANSFORMER	TE-CFL5-1M1	1	AL	B	
Keyboard PCBs								
	10	6928 5460	PCB ASSY M887T-KY1M	M240951A*1	1	BO	C	
	11	6928 5470	PCB ASSY M887T-KY2M	M240952A*1	1	BT	C	
	12	6928 5480	PCB ASSY M887T-KY3M	M241019A*1	1	BM	C	
Keyboard unit								
	20	10046083	KEY ASSY	M141175*1 TK(MLMP2)	1	EM	B	
	21	69284470	RUBBER/CONTACT	M240957-2	1	AE	A	
	22	69284480	RUBBER/CONTACT	M240958-2	6	AH	A	
	23	69284490	RUBBER/CONTACT	M240959-2	1	AH	A	
	24	10052296	HAMMER ASSY/WHITE KEY	M341434*1 TK(MLMP)	13	BH	B	
	24	10052297	HAMMER ASSY/WHITE KEY	M341435*1 TK(MLMP)	13	BH	B	
	24	10052298	HAMMER ASSY/WHITE KEY	M341436*1 TK(MLMP)	13	BH	B	
	24	10052299	HAMMER ASSY/WHITE KEY	M341437*1 TK(MLMP)	13	BH	B	

Notes: N- New parts

Q- Quantity used per unit

R- Rank

N	Item	Code No.	Part Name	Specification	Q	Price Code	R	Remarks
	25	10052300	HAMMER ASSY/BLACK KEY	M341438*1 TK(MLMP)	9	BH	B	
	25	10052301	HAMMER ASSY/BLACK KEY	M341439*1 TK(MLMP)	9	BH	B	
	25	10052309	HAMMER ASSY/BLACK KEY	M341440*1 TK(MLMP)	9	BH	B	
	25	10052310	HAMMER ASSY/BLACK KEY	M341441*1 TK(MLMP)	9	BH	B	
	26	69274030	BLACK KEY	M140784-1	36	AG	A	
	27	69274040	WHITE KEY/C	M140783-1	7	AH	A	
	28	69274050	WHITE KEY/D	M140785-1	7	AI	A	
	29	69274060	WHITE KEY/E	M140786-1	7	AH	A	
	30	69274070	WHITE KEY/F	M140787-1	7	AI	A	
	31	69274080	WHITE KEY/G	M140788-1	7	AH	A	
	32	69274090	WHITE KEY/A	M140789-1	7	AH	A	
	33	69274100	WHITE KEY/B	M140790-1	8	AI	A	
	34	69274110	WHITE KEY/SA	M140792-1	1	AM	A	
	35	69274120	WHITE KEY/SC	M140791-1	1	AN	A	
		69274011	CAP/GUIDE	M340958A-1	13	AE	C	
		69274020	CAP/GUIDE	M340959-1	36	AA	C	
		10054481	CHASSIS SUB ASSY	M140831E*1	1	CV	C	
Console assy								
	16	6927 7840	BL ASSY	M241135*1	1	DD	B	
	17	3335 6876	LCD	LD-B10500E	1	CJ	C	
	18	3122 3736	CFL	HMBV4BG2W178NLUAZG	1	AX	B	
	19	6927 3420	HOLDER / CFL	M440758-1	2	AA	C	
	37	6921 5032	KNOB / SLIDE	M311859B-1 (1)	2	AA	B	
	38	6924 5260	BUTTON / POWER	M340318-1	1	AA	B	
	39	6927 6600	FELT / KEY	M440829-1	1	AL	C	
	40	6927 7800	SW ASSY / POWER	M341019*2	1	BJ	B	
	41	6928 2630	BUTTON / RUBBER / 660A	M341002-1	2	AB	B	
	42	6928 2640	BUTTON / RUBBER / 660B	M241040-1	2	AD	B	
	43	6928 2651	BUTTON / RUBBER / 660C	M241041A-1	1	AD	B	
	44	6928 2660	BUTTON / RUBBER / 660D	M241042-1	1	AD	B	
	45	6928 2670	BUTTON / RUBBER / 660E	M341021-1	1	AA	B	
	46	6928 2680	BUTTON / RUBBER / 660F	M241043-1	1	AB	B	
	47	6928 2690	BUTTON / RUBBER / 660G	M241044-1	1	AB	B	
	48	6928 2700	BUTTON / RUBBER / 660H	M241045-1	1	AC	B	
	49	6928 2710	BUTTON / RUBBER / 660I	M241046-1	1	AC	B	
	50	6928 2720	BUTTON / RUBBER / 660J	M241047-1	1	AC	B	
	51	6928 2730	BUTTON / RUBBER / 660K	M341022-1	2	AA	B	
	52	6928 2740	BUTTON / RUBBER / 660L	M241048-1	2	AD	B	
	53	6928 2751	BUTTON / RUBBER / 660M	M241049A-1	1	AD	B	
	54	6928 2760	BUTTON / RUBBER / 660N	M241050-1	1	AD	B	
	55	6928 2770	BUTTON / RUBBER / 660P	M241039-1	1	AC	B	
	56	6928 2790	CONNECTOR	M440837-1	1	AP	B	
	57	6928 2800	FILM	M341053-1	1	AF	C	
	58	6928 2810	PACKING	M440868-1	2	AC	C	
	59	6928 2820	PLATE / DISPLAY	M341020-1	1	AI	C	
	60	1000 5478	TAPE / ADHESIVE	M440950-1	1	AA	C	
	61	1000 5480	TAPE / ADHESIVE	M440951-1	1	AA	C	
	62	1000 5482	TAPE / ADHESIVE	M440952-1	2	AA	C	
Components								
	13	3012 1618	TRANSFORMER	TE-660-1M1	1	CL	B	110 - 127V area
	13	3012 1619	TRANSFORMER	TE-660-2M1	1	CM	B	220 - 240V area
	14	3831 1075	SPEAKER	S05JH37A	2	AR	B	

Notes: N- New parts

Q- Quantity used per unit

R- Rank

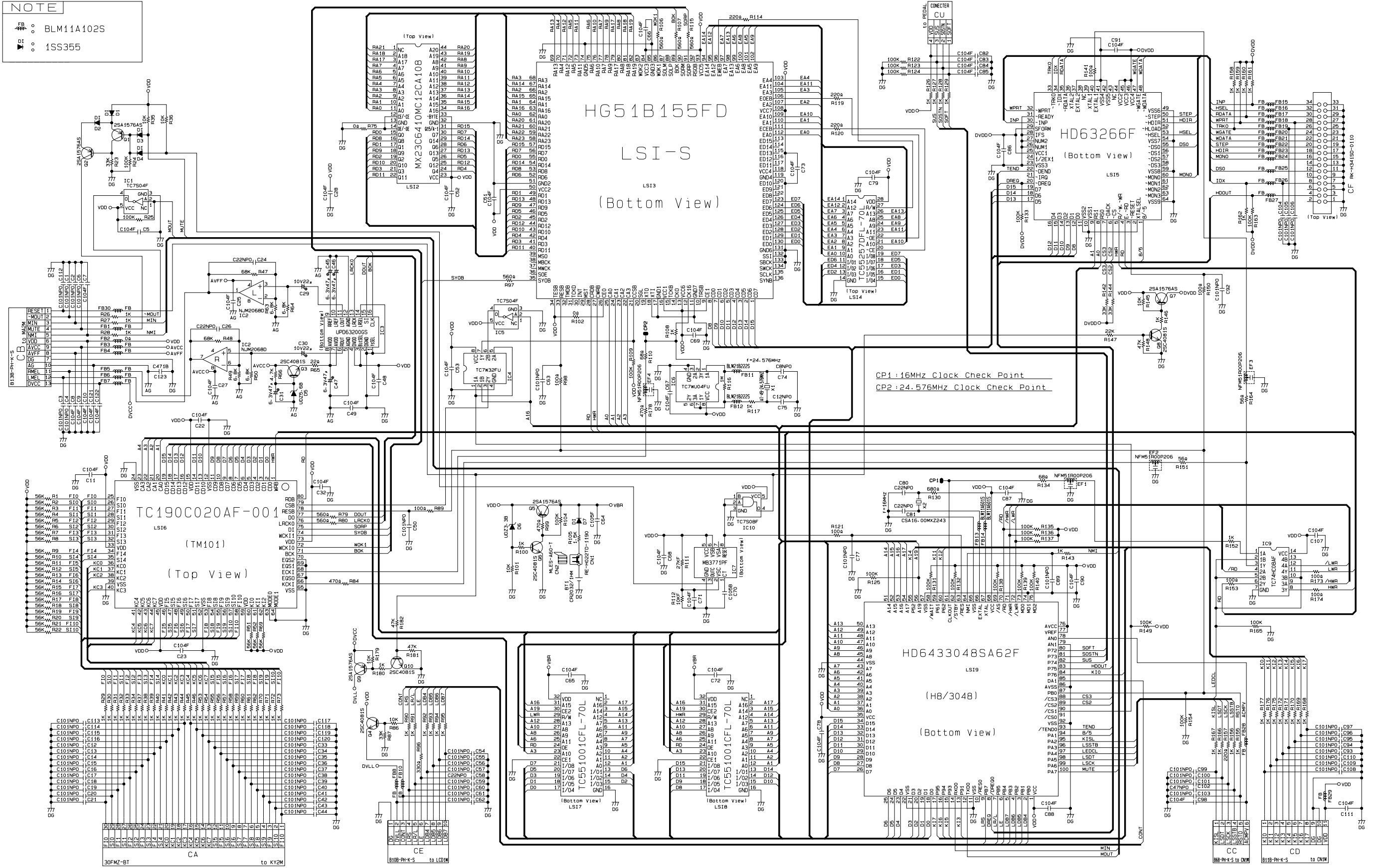
N	Item	Code No.	Part Name	Specification	Q	Price Code	R	Remarks
	15	3831 1077	SPEAKER	SG16G51BFA	2	BS	B	
N	36	1005 9403	FDD	DF354H134F	1	CV	B	
N	67	1006 3958	STAND ASSY/MUSIC	TK-M241675*2(M661)	1	CP	X	
N	68	1006 3967	BOARD ASSY/TOP	TK-M241124*4(M661)	1	DP	X	
	69	1005 6776	COVER ASSY/KEY	TK-M241123*2(M661)	1	DN	X	
N	70	1006 3959	CASE ASSY	TK-M141276*2(M661)	1	DW	X	
	71	1005 6785	BOARD ASSY/FRONT	TK-M241134*2(M661)	1	DT	X	
Stand								
N	63	6931 2740	PEDAL-BOX	M241122F*3	1	CO	B	
	64	1005 4121	SCREW SET	M341560A-1	1	BW	B	
N	72	6930 7053	SIDE SUB ASSY/ST	M341550*1	1	CY	X	
N	73	6930 7054	SIDE SUB ASSY/ST	M341550*2	1	CY	X	
	74	1000 8765	ST-BACK-660	M341031B-1	1	CW	X	
N	75	1005 2086	FOOT SUB ASSY	M341406*1	1	BG	X	L-TYPE
N	76	1005 2087	FOOT SUB ASSY	M341406*2	1	BG	X	R-TYPE
N	77	1005 2061	PANEL SUB ASSY/CN	M140921*2	1	BZ	X	
AC cord								
	65	6927 7690	AC-CORD-ASSY	M341018*4	1	CI	C	110 -127V area
	65	3701 1008	CORD-SET	SP22-17022A	1	CD	C	UK(230V)
	65	3701 0595	CORD-SET	EC-654-E06	1	BP	C	Europe(230V)*2
	66	1000 2324	INLET ASSY/3P-AC	TK-M341017*2	1	BP	C	40V area 220-240V area
Accessories								
		1005 6774	FLOPPY-DISK	AP65R-DISK-1	1	AK	C	
		1005 6775	FLOPPY-DISK	AP65R-DISK-2	1	AK	C	

Notes: N- New parts
Q- Quantity used per unit
R- Rank

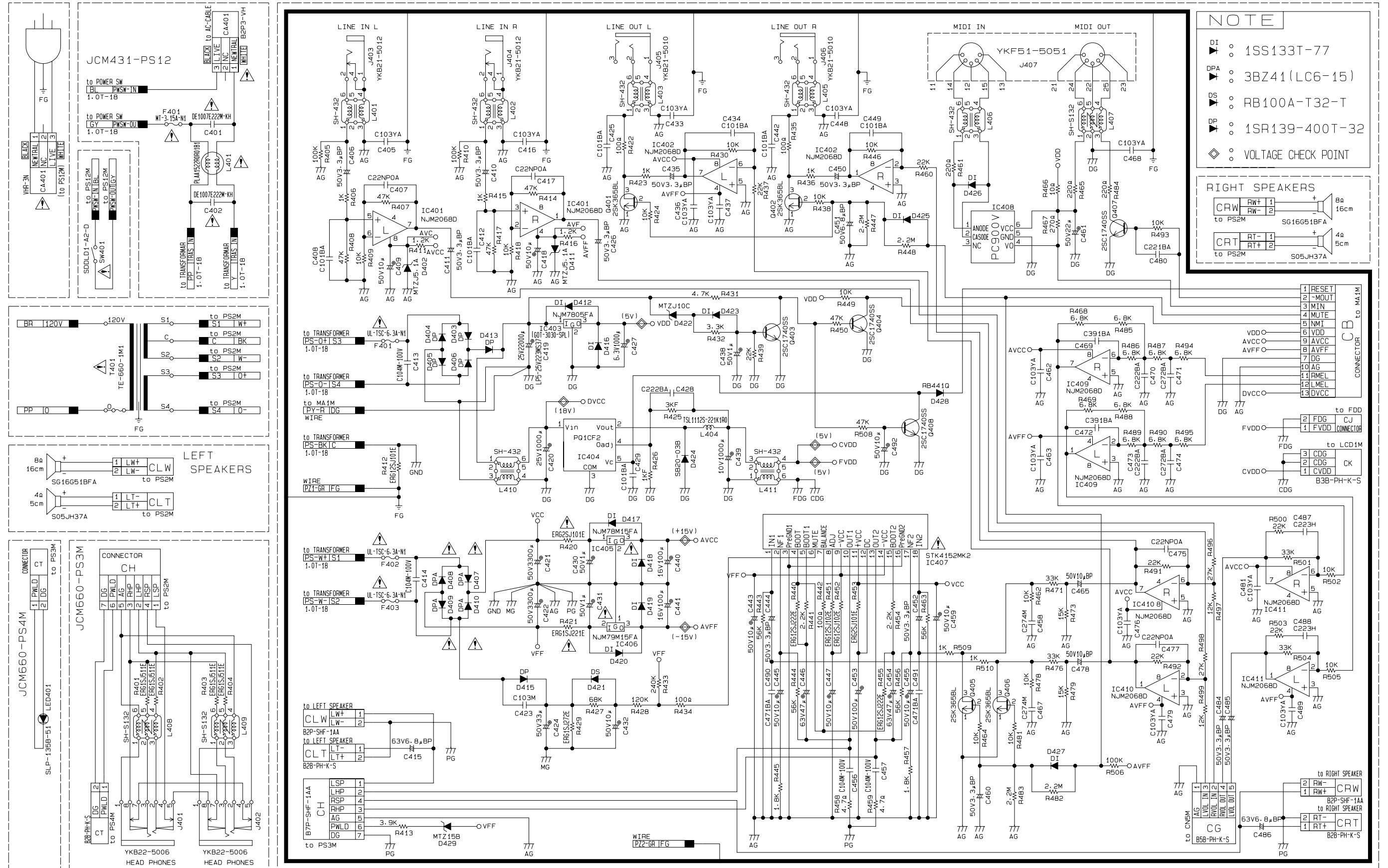
SCHEMATIC DIAGRAMS

MAIN PCB JCM660-MA1M

NOTE
 ○ BLM11A102S
 ▲ 1SS355

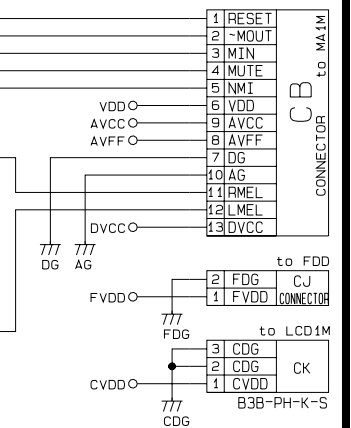
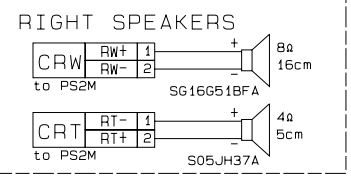


PHONE JACK PCBs JCM660-PS2M,PS3M,PS4M and POWER PCBs JCM431-PS12 (120 V area)

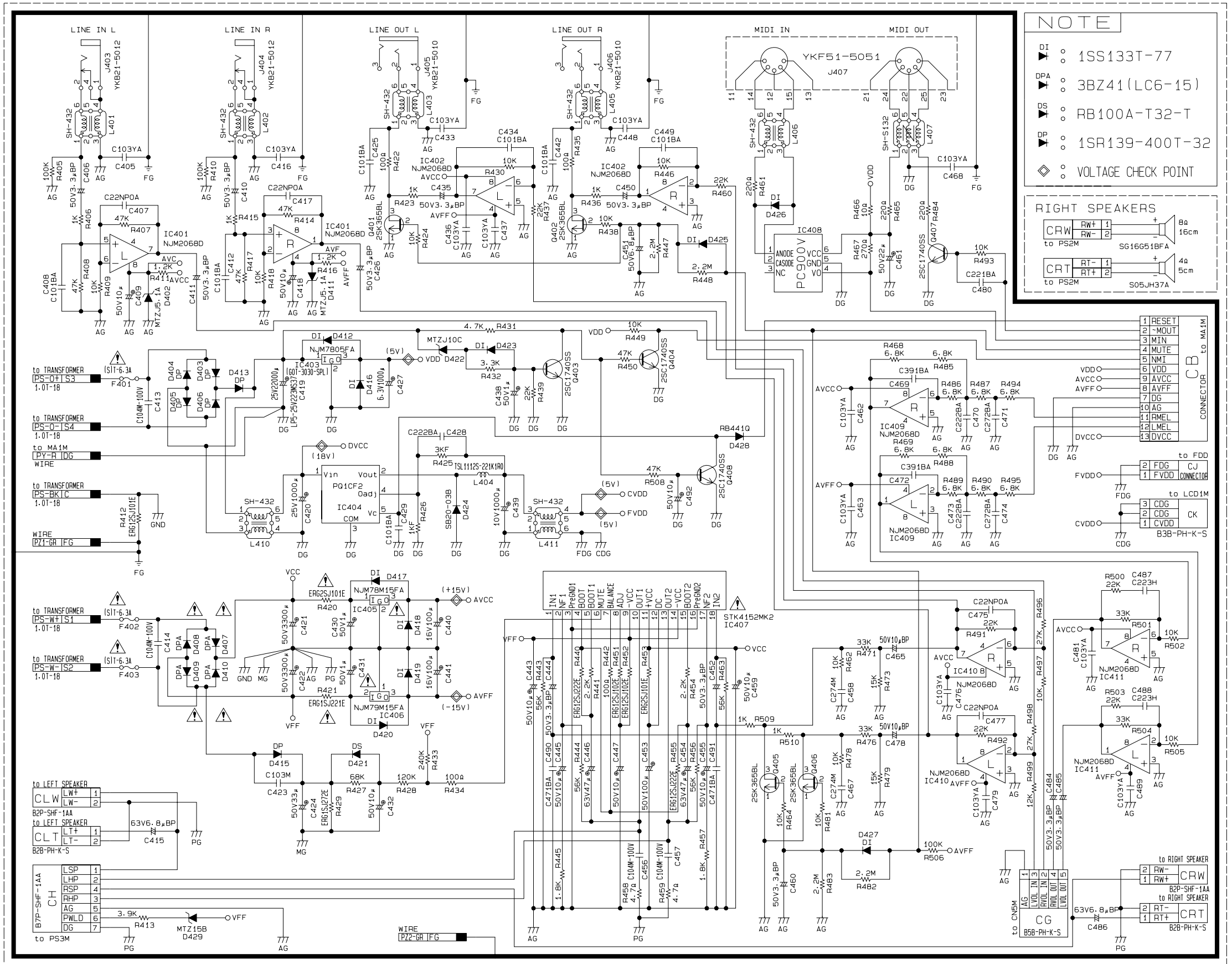
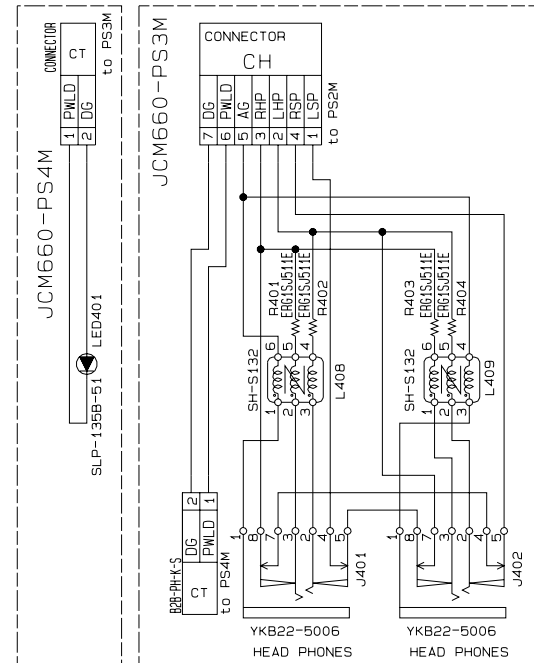
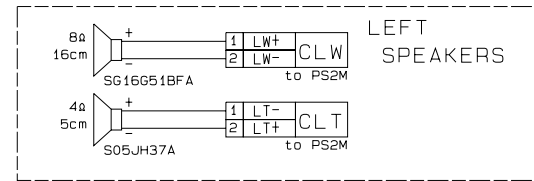
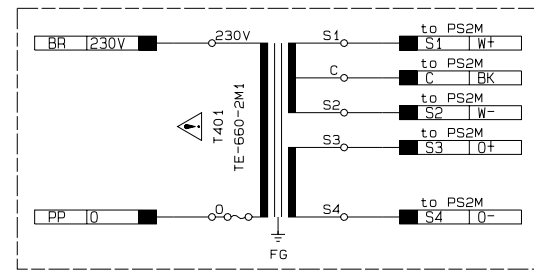
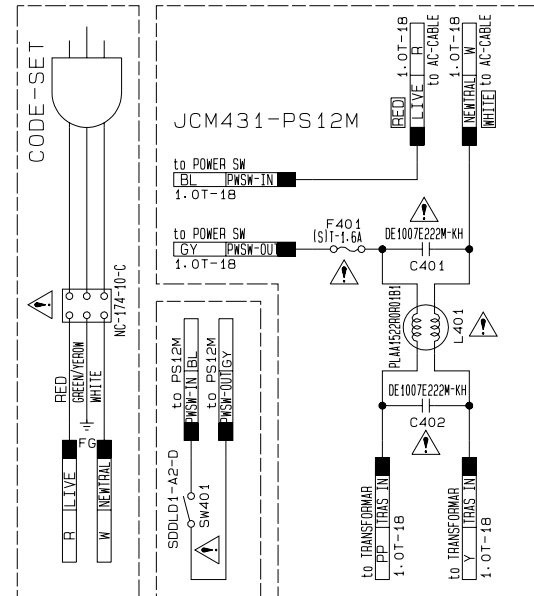


NOTE

- ▶ ○ : 1SS133T-77
- ▶ ○ : 3BZ41(LC6-15)
- ▶ ○ : RB100A-T32-T
- ▶ ○ : 1SR139-400T-32
- ◇ ○ : VOLTAGE CHECK POINT

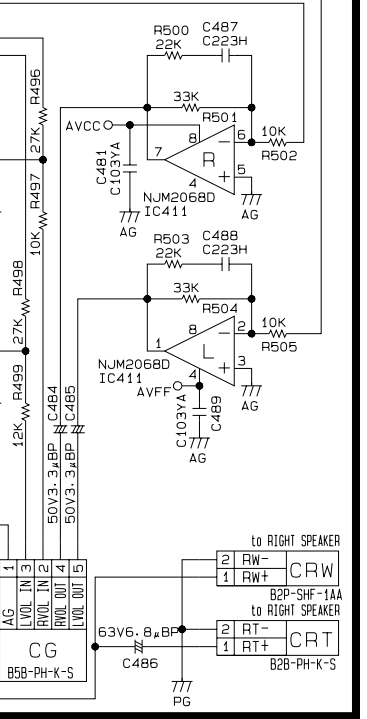
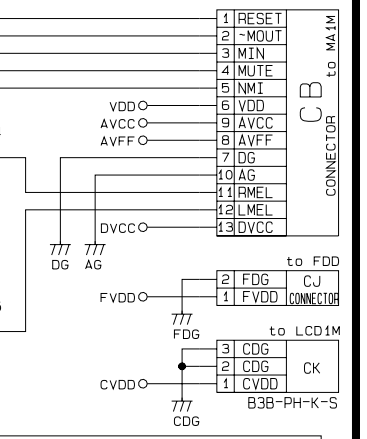
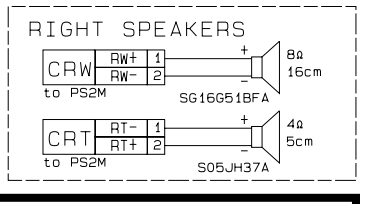


PHONE JACK PCBs JCM660-PS2M,PS3M,PS4M and POWER PCBs JCM431-PS12 (230 V area)

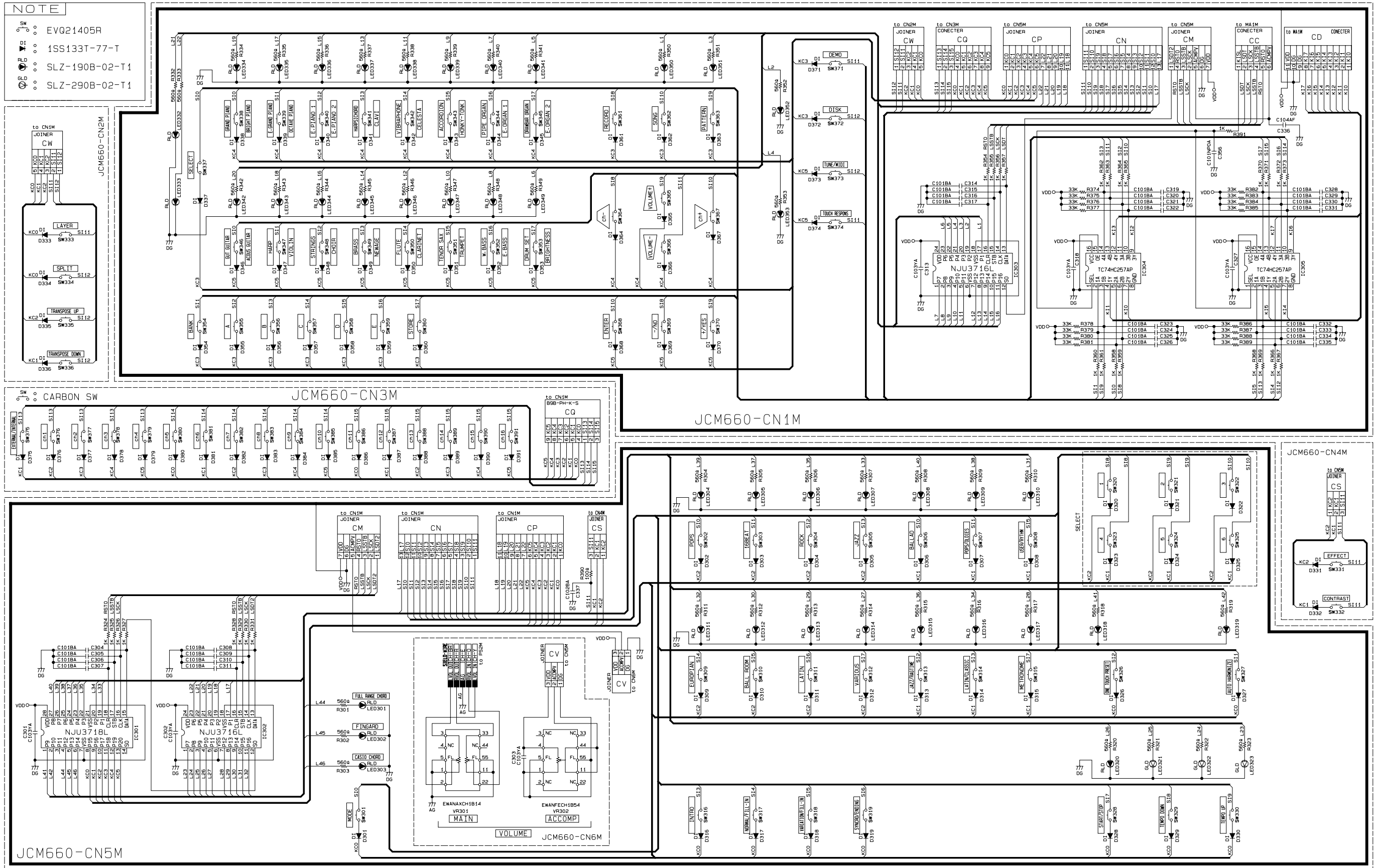


NOTE

- ▶ ○ 1SS133T-77
- ▶ ○ 3BZ41(LC6-15)
- ▶ ○ RB100A-T32-T
- ▶ ○ 1SR139-400T-32
- ◇ ○ VOLTAGE CHECK POINT



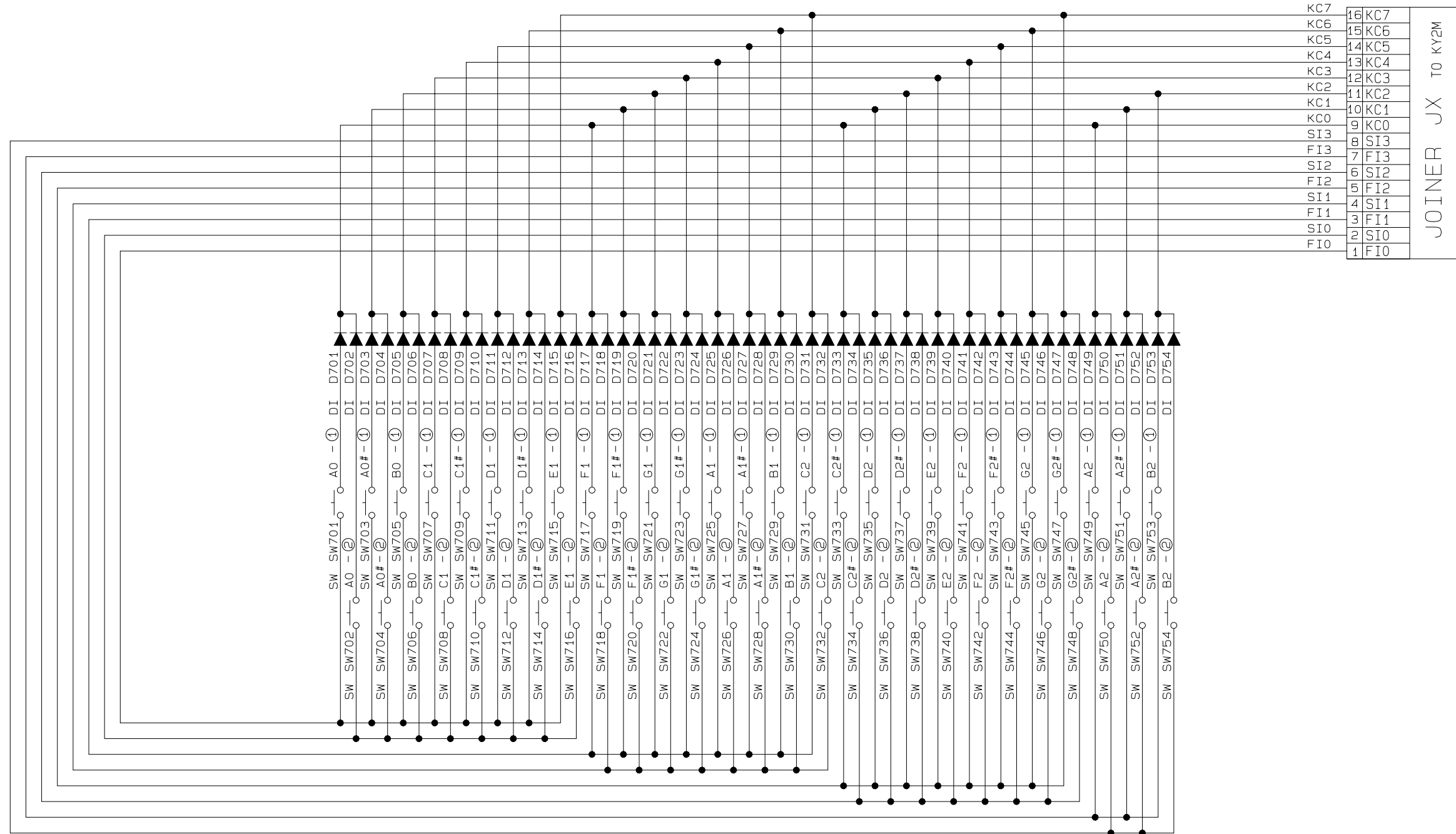
CONSOLE PCBs JCM660-CN1M, CN2M, CN3M, CN4M, CN5M, CN6M



KEYBOARD PCB JCM887T-KT1M

JCM887T-KY1M

NOTE
 : 1S2076TE



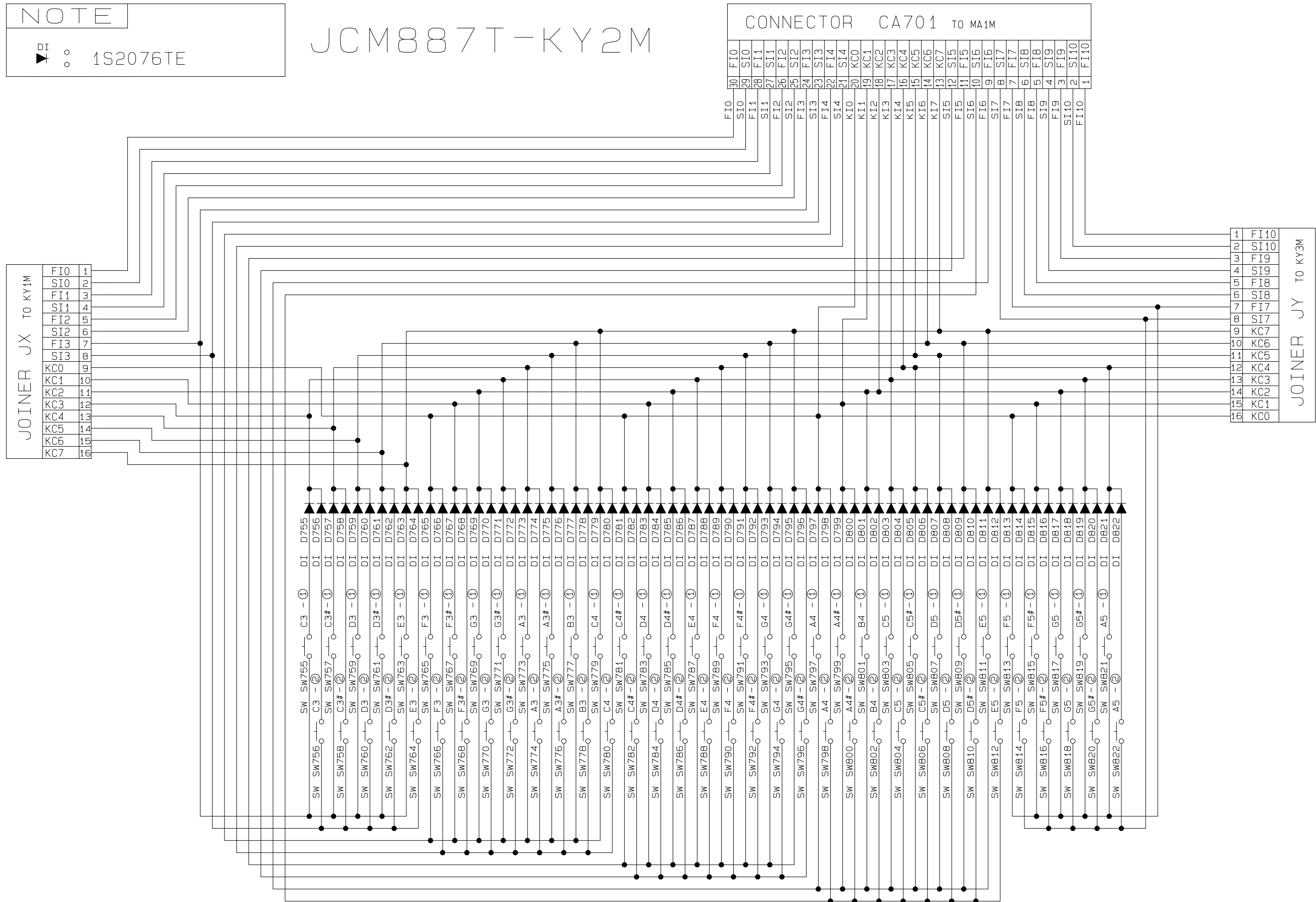
KEYBOARD PCB JCM887T-KT2M

NOTE

DI ◦ 1S2076TE

JCM887T-KY2M

CONNECTOR CA701 TO MA1M



JOINER JX TO KY1M

FI0	1
SI0	2
FI1	3
SI1	4
FI2	5
SI2	6
FI3	7
SI3	8
KC0	9
KC1	10
KC2	11
KC3	12
KC4	13
KC5	14
KC6	15
KC7	16

JOINER JY TO KY3M

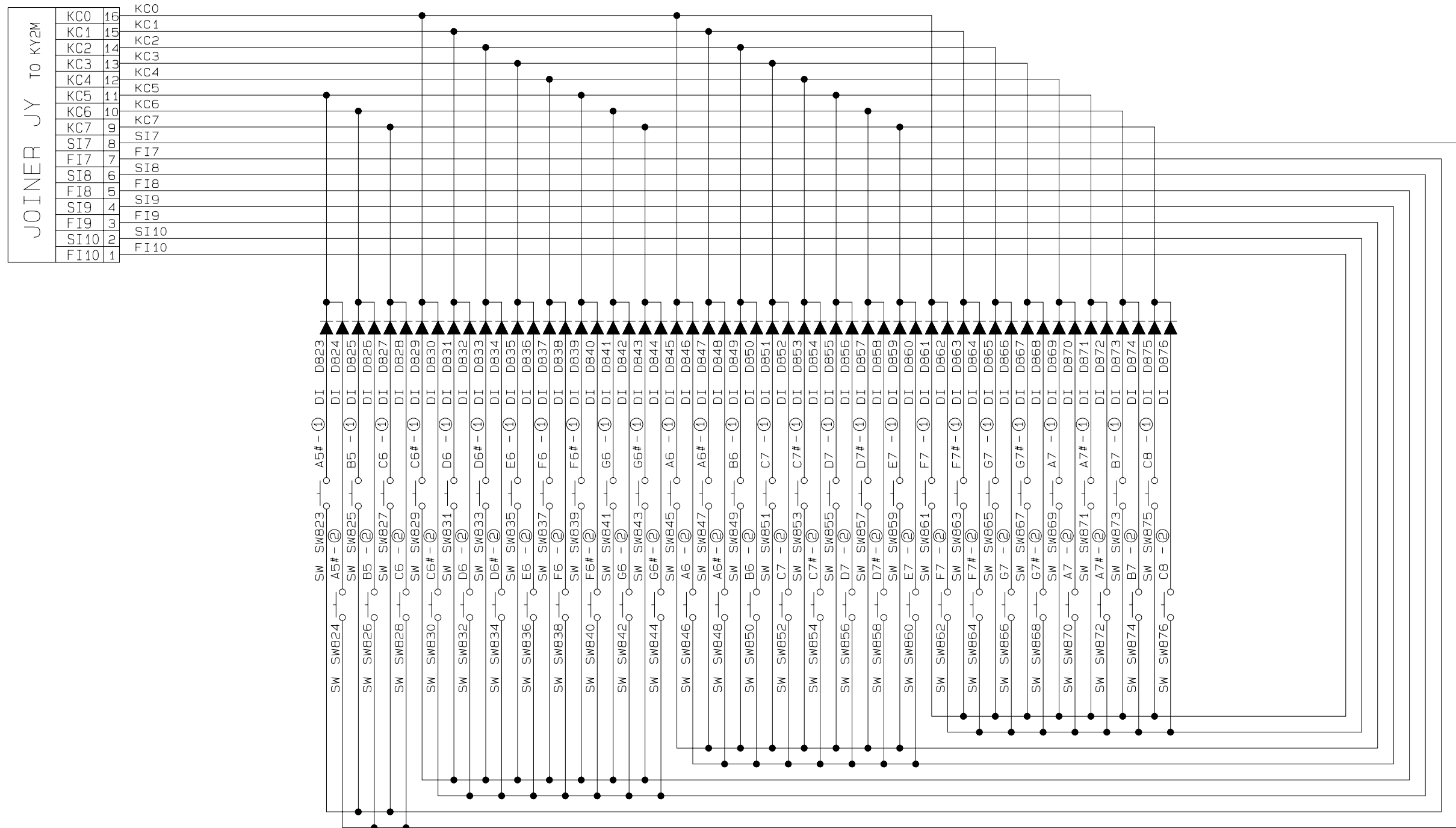
1	FI10
2	SI10
3	FI9
4	SI9
5	FI8
6	SI8
7	FI7
8	SI7
9	KC7
10	KC6
11	KC5
12	KC4
13	KC3
14	KC2
15	KC1
16	KC0

30	FI0
29	SI0
28	FI1
27	SI1
26	FI2
25	SI2
24	FI3
23	SI3
22	FI4
21	SI4
20	KC0
19	KC1
18	KC2
17	KC3
16	KC4
15	KC5
14	KC6
13	KC7
12	SI5
11	SI5
10	SI6
9	FI6
8	SI7
7	FI7
6	SI8
5	FI8
4	SI9
3	FI9
2	SI10
1	FI10

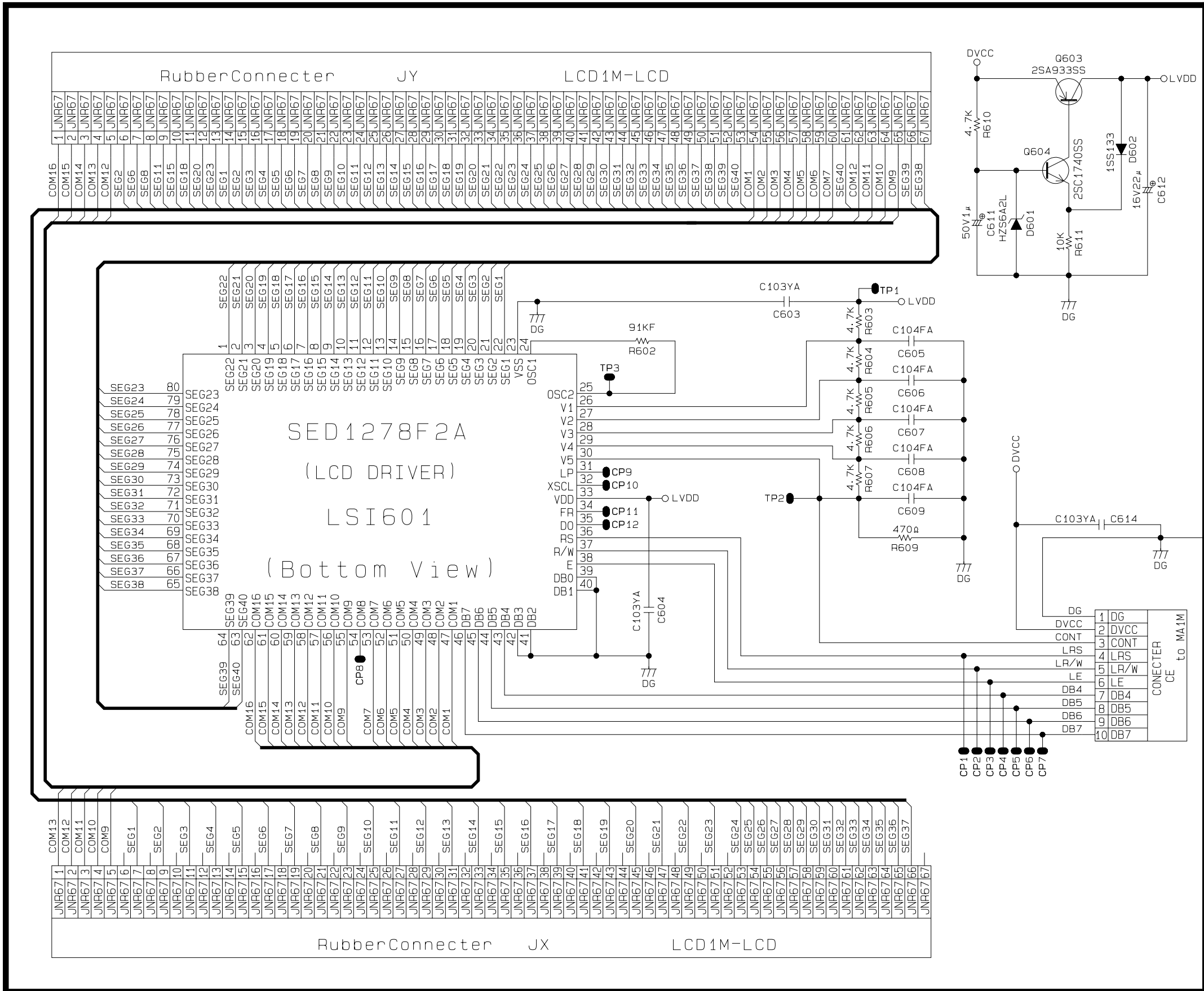
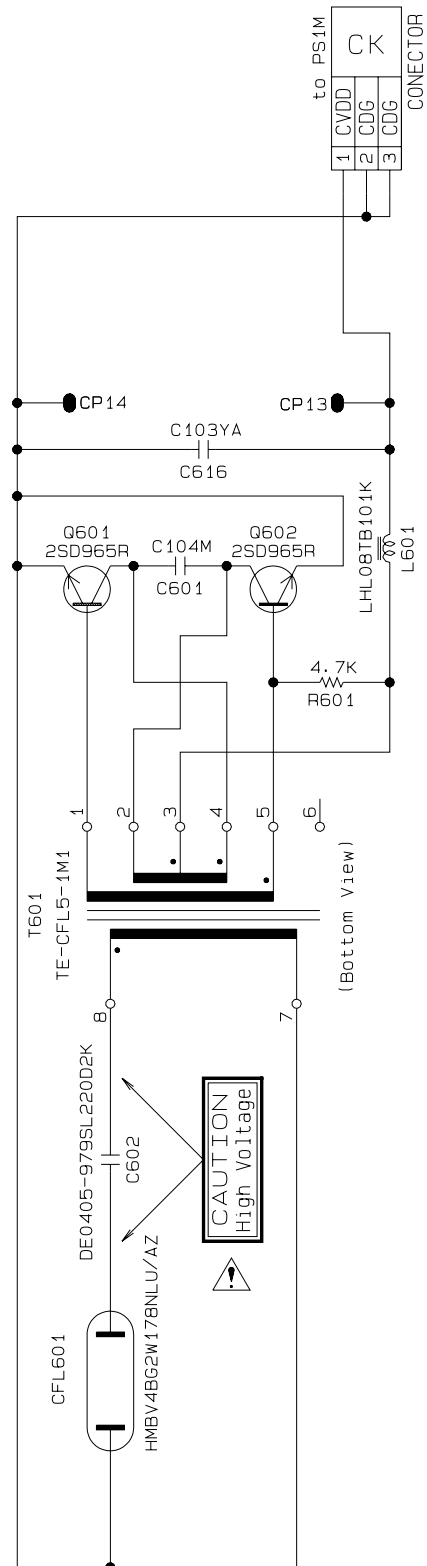
KEYBOARD PCB JCM887T-KT3M

JCM887T-KY3M

NOTE
 DI : 1S2076TE



LCD PCB JCM660-LCD1M



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