

**DIGITAL PIANO
ES4/es1P**

Service Manual

Manufacturing Date June 2005

KAWAI Kawai Musical Instruments
Manufacturing Co., Ltd.

SE984E-S0512
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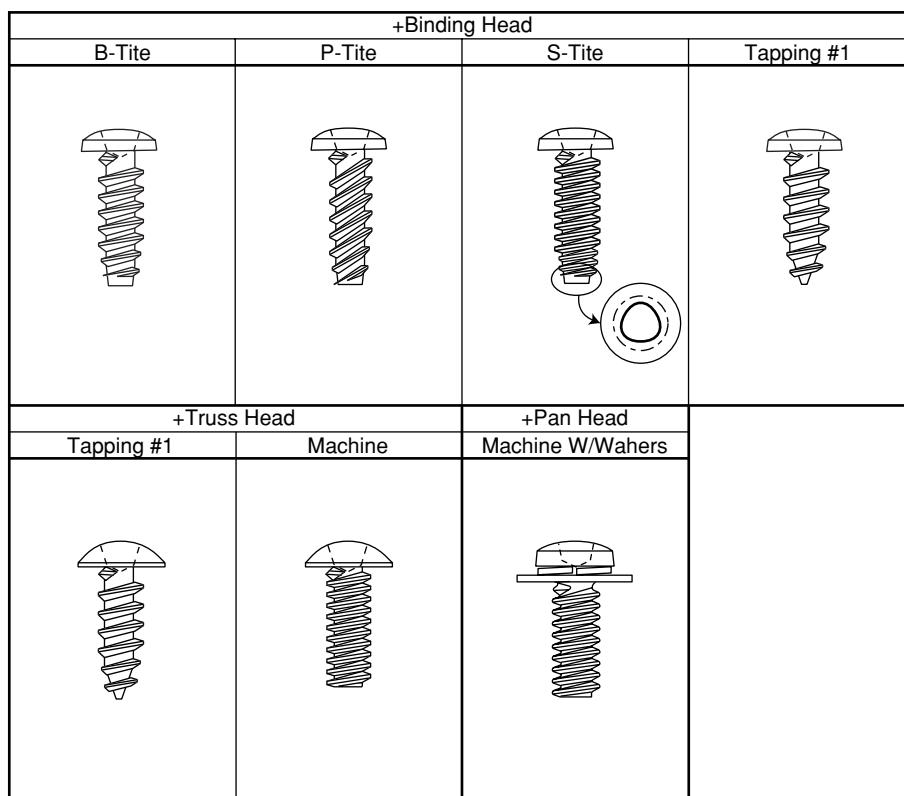
■ Specifications

Model	ES4	es1P
Keyboard	88 Keys with Advanced Hammer Action IV	
Polyphony	Maximum 96	
Preset Tones	Piano (3), E. Piano (3), Organ (3), Harpsi/Mallets (3), Strings (3), Choir/Pad (3), Bass (3)	Piano1 (4), Piano2 (4), E.Piano (4), Organ (4) Harpsi (4), Strings (4), Choir/Bass (4)
Effects	Chorus, Delay (3), Tremolo, Rotary (2)	—
Reverb	Room 1, Room 2, Stage, Hall 1, Hall 2	
Temperaments	Equal (Piano Only), Mersenne pure (Major), Mersenne pure (minor), Pythagorean, Meantone, Werckmeister III, Kirnberger III, Equal (flat), Equal	
Other Features	Master Volume, Dual, Split, Dual/Split Balance, Transpose, Tune, Damper Effect, String Resonance, Brilliance, EQ (3), Touch Curve (Normal, Light (2), Heavy (2), Off), MIDI (16 part multi-timbral capability)	Master Volume, Dual, Transpose, Tune, Damper Effect, String Resonance, Brilliance, EQ (3) Touch Curve (Normal, Light (2), Heavy (2), Off) MIDI (16 part multi-timbral capability)
Recorder	2 Tracks, 4 Songs The total memory capacity is approximately 10,000 notes.	2 Tracks, 4 Songs The total memory capacity is approximately 15,000 notes.
Pedal	Damper (Sustain, Soft with optional foot pedal) * F-1r: Normally closed switch	
Jacks	Headphone (2), LINE IN (Stereo), LINE OUT (L/MONO, R), PEDAL, MIDI (IN, OUT), USB	
Output Power	13W x 2	
Power Consumption	35W	30W
Adapter	PS-153 15V 4A (+) Center	
Speakers	5 cm x 6 2" x 6	
Dimensions (W x D x H)	136.2 x 32.1 x 13.8 cm 54" x 13" x 5"	
Weight	20.7 kg, 46 LB's	

* Specifications are subject to change without notice.

■ Hardware List

No.	PARTS NAME	Q'TY		CODE No.	SIZE
		ES4	es1P		
1	+Bind/B-Tite	3		797980	3 x 12
2	+Bind/B-Tite	4		798484	3 x 16
3	+Bind/B-Tite	37		798325	3 x 8
4	+Bind/P-Tite	12		797983	3 x 16
5	+Bind/P-Tite/Black Chromating	2		798425	3 x 10
6	+Bind/S-Tite	18		798030	3 x 8
7	+Bind/S-Tite/Black Chromating	5		812650	3 x 10
8	+Bind/Tapping #1	12		798176	3 x 35
9	+Bind/Tapping #1/Black Chromating	24		798074	3 x 12
10	+Pan/Machine Screw, w/Washers	5		812256	M5 x 20
11	+Pan/Machine Screw, w/Washers	4		797813	M5 x 25
12	+Truss/Machine Screw/Black Chromating	4		798373	M4 x 16
13	+Truss/Machine Screw/Black Chromating	5		798529	M5 x 25
14	+Truss/Tapping #1	16		797022	4 x 12
15	+Truss/Tapping #1	4		798357	4 x 14
16	+Truss/Tapping #1/Black Chromating	2		797284	4 x 8
17	Plain Washer/Black	5		797502	M3
18	+Bind/B-Tite/Black Chromating	—	4	797990	3 x 8
19	+Bind/P-Tite/Nickel	—	2	798749	2.6 x 5



■ Opening Procedure

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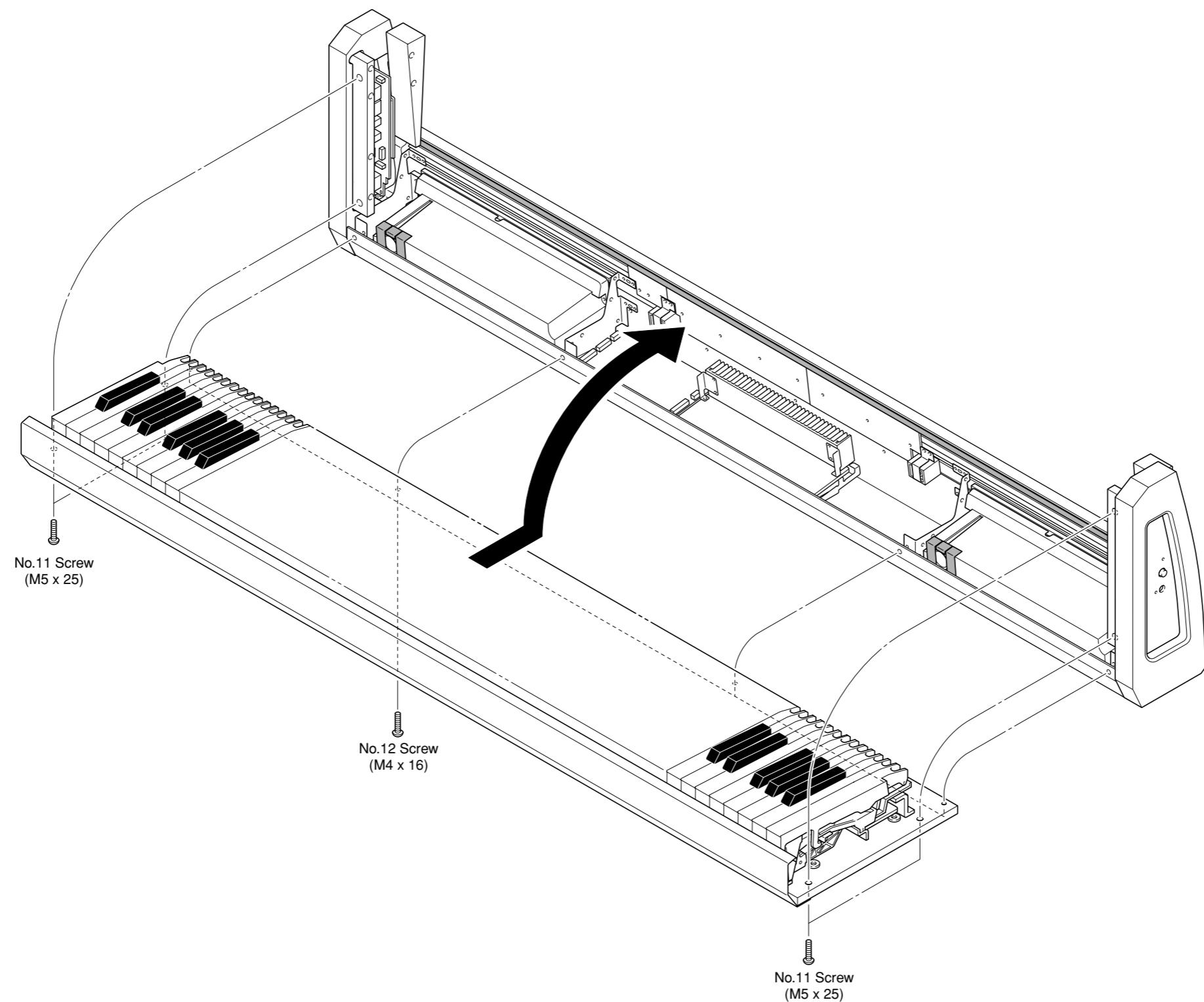
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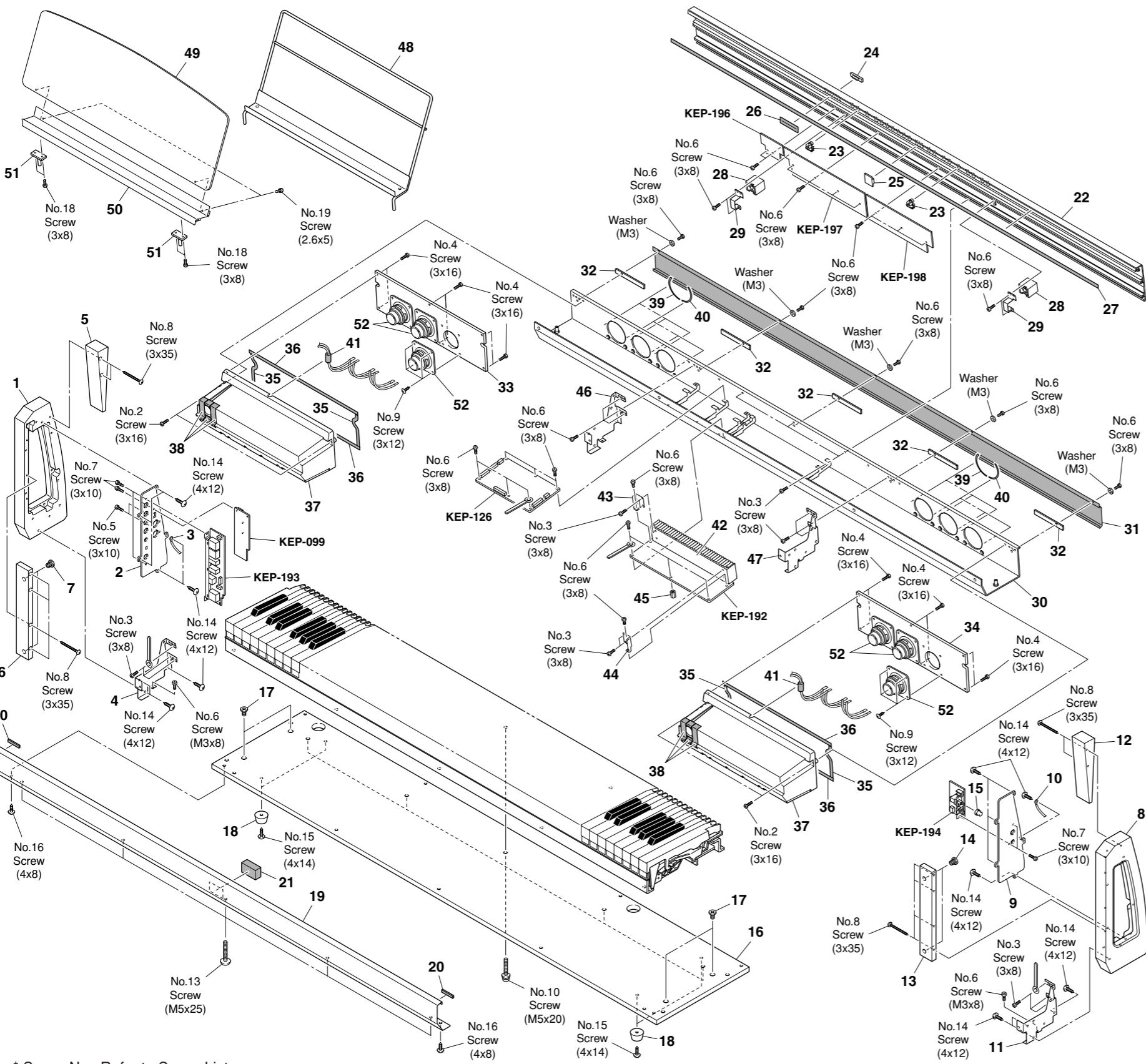
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* Screw No.: Refer to Screw List



1 **2** **3** **4** **5** **6** **7** **8** **9** **10** **11** **12** **13** **14** **15** **16** **17**

■ Case Assembly



NO.	PARTS NAME	Q'TY	CODE NO.		
			ES4B	es1PB	es1PW
1	ARM L	1	815027	815027	815031
2	JACK PANEL L	1	814998		814998
3	GROUND TERMINAL	1	810784		810784
4	SUPPORT FITTING L	1	815000		815000
5	CHEEK BLOCK L	1	815033	815033	815037
6	WOOD BLOCK	1	815040		815040
7	INSERT NUT	2	815026		815026
8	ARM R	1	815028	815028	815032
9	JACK PANEL R	1	814999		814999
10	GROUND TERMINAL	1	810784		810784
11	SUPPORT FITTING R	1	815001		815001
12	CHEEK BLOCK R	1	815034	815034	815038
13	WOOD BLOCK	1	815040		815040
14	INSERT NUT	2	815026		815026
15	POWER SW KEY TOP	1	808909		808909
16	KEY BED	1	815039		815039
17	INSERT NUT	4	798510		798510
18	LEG	4	814941		814941
19	KEY SLIP	1	815002	815002	815004
20	CUSHION SPACER	2	813369		813369
21	KEY SLIP CUSHION	1	815019		815019
22	PANEL	1	814993	814993	814995
23	KEY TOP	19	815021	815021	815020
24	SLIDE VOL.KNOB	1	815024	815024	813806
25	LED COVER	1	813809		813809
26	SLIDE VOLUME COVER CLOTH	1	811034		811034
27	KEY STOP RAIL FELT	1	812440	812440	813246
28	MUSIC RACK STOPPER	2	810030		810030
29	MUSIC RACK STOPPER FITTING	2	815005		815005
30	BACK PANEL GENERAL ASSY.	1	815006	815006	815007
31	SPEAKER NET	1	815008	815008	815010
32	SPACER	5	815041		815041
33	BAFFLE BOARD L	1	815042		815042
34	BAFFLE BOARD R	1	815043		815043
35	BAFFLE BOARD CUSHION A	4	815016		815016
36	BAFFLE BOARD CUSHION B	4	815017		815017
37	SPEAKER BOX	2	815025		815025
38	SPEAKER BOX CUSHION	6	815018		815018
39	SPEAKER RING L	6	815023		815023
40	SPEAKER RING R	6	815085		815085
41	SPEAKER CABLE CUSHION	2	815022		815022
42	HEATSINK	1	812953		812953
43	HEATSINK FITTING L	1	815011		815011
44	HEATSINK FITTING R	1	815012		815012
45	PWB SPACER	1	815056		815056
46	SUPPORT FITTING L	1	815000		815000
47	SUPPORT FITTING R	1	815001		815001
48	MUSIC RACK	1	815080		—
49	MUSIC RACK	1	—		815079
50	MUSIC RACK UNDER	1	—		946190
51	MUSIC RACK FITTING	2	—		946185
52	SPEAKER (KS05-010)	6	814992		814992

* Screw No.: Refer to Screw List

■ Keyboard Unit (RG88 Type)

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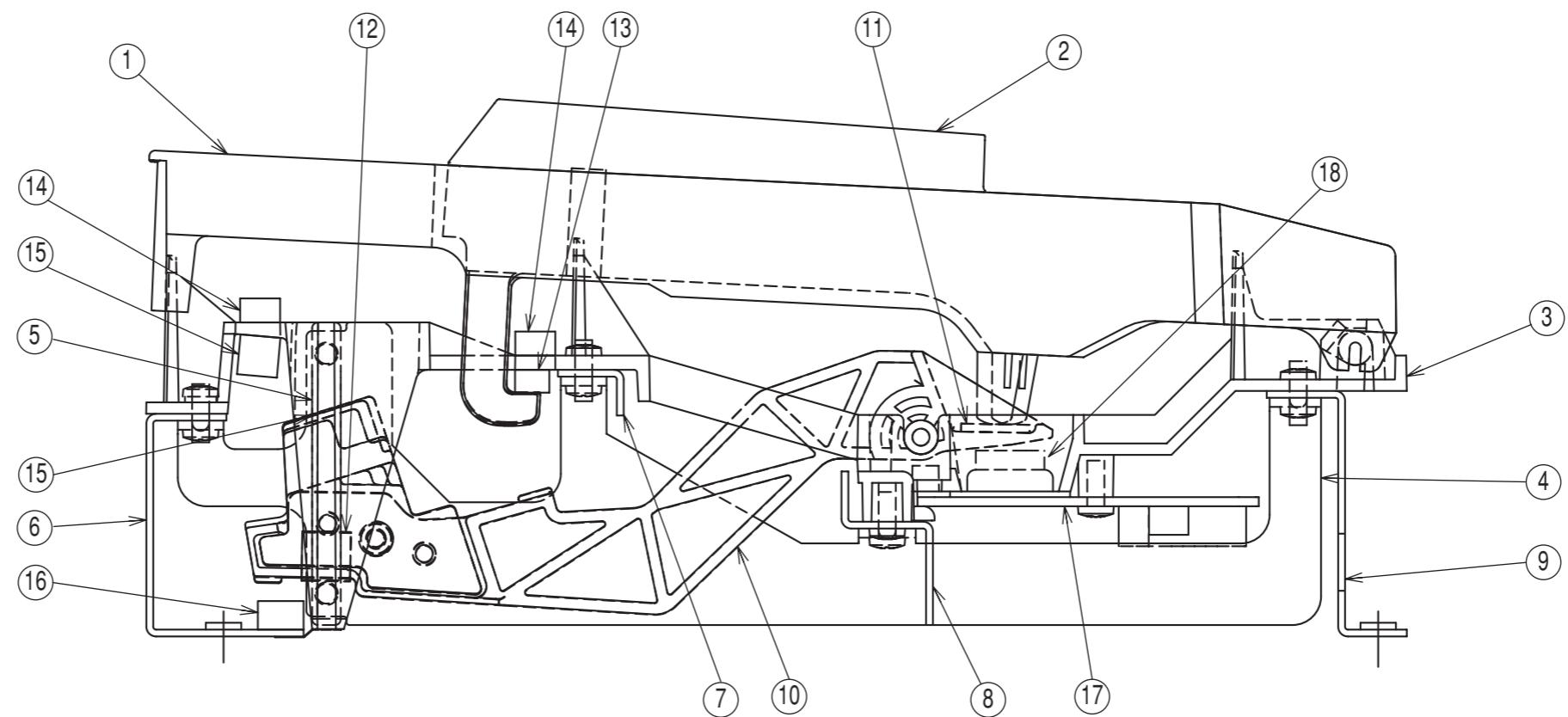
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<Keyboard Parts List>

No.	Code No.	Parts Name	Description	Q'ty
	814849	Complete Keyboard Unit		1
1	814651	White Key (C)		7
	814652	White Key (D)		7
	814653	White Key (E)		7
	814654	White Key (F)		7
	814655	White Key (G)		7
	814656	White Key (A)		7
	814657	White Key (B)		8
	814658	White Key (AA)	lowest A key	1
	814659	White Key (CC)	highest C key	1
2	814660	Black Key		36
3	814661	Chassis (A-G#)		7
	814662	Chassis (A-C)		1
4	947901A	Rib Assy		8
5	814650	Guide Spacer		16
6	947902	Front Rail		1
7	947903	Stopper Rail		1
8	947904	Switch Rail		1
9	947905	Back Rail		1

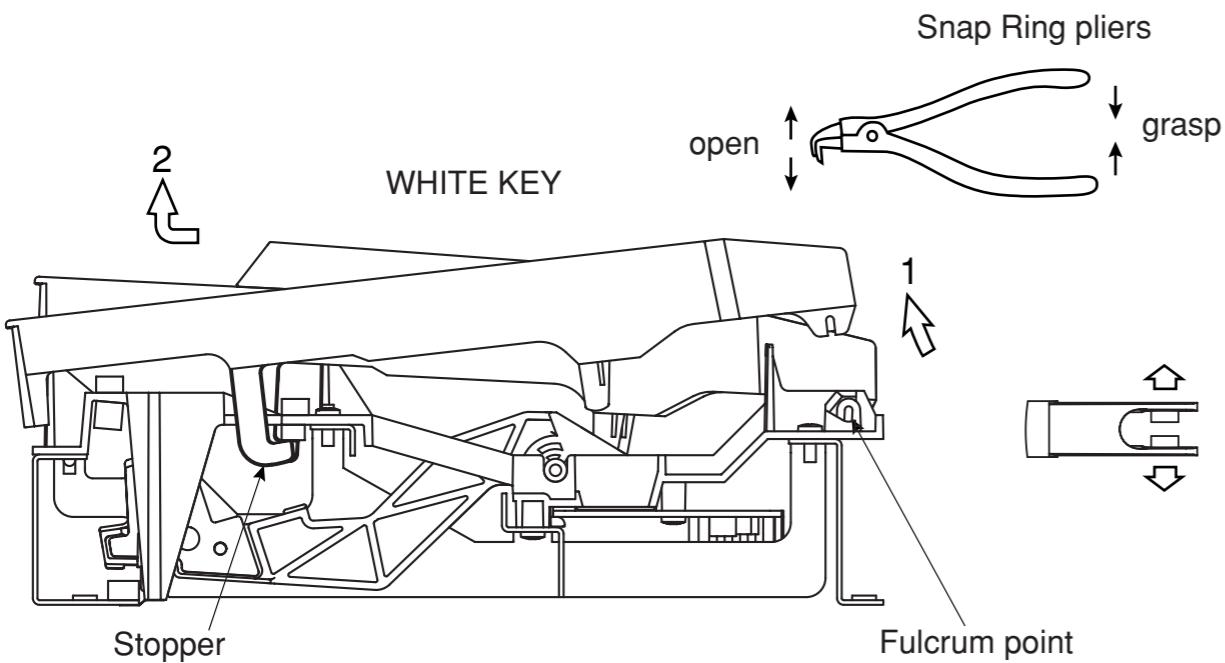
No.	Code No.	Parts Name	Description	Q'ty
10	947907A	Hammer Assy (White Key Low)	Key No. 1- 15	9
	947908A	Hammer Assy (White Key Mid-Low)	Key No. 16- 32	10
	947909A	Hammer Assy (White Key Mid-High)	Key No. 33- 63	18
	947910A	Hammer Assy (White Key High)	Key No. 64- 88	15
	947911A	Hammer Assy (Black Key Low)	Key No. 1- 15	6
	947912A	Hammer Assy (Black Key Mid-Low)	Key No. 16- 32	7
	947913A	Hammer Assy (Black Key Mid-High)	Key No. 33- 63	13
	947914A	Hammer Assy (Black Key High)	Key No. 64- 88	10
11	814664	Slip Tape		88
12	814665	Guide Tape		88
13	813171	Key Stopper Cushion		1
14	814666	Stopper Felt		2
15	814667	Hammer Upper-Limit Cushion		1
16	814668	Hammer Lower-Limit Cushion		1
17	237347	PWB, KKB-015 Assy		1
	800760	IC (Decoder)	74HC138P	3
	807339	Diode	1S2076A	176
	813175	Rubber Contact	F-E (12-cup)	8

■ Keyboard Disassembling Procedure

A First, remove the keyboard fixing screws (10 pcs.) at the bottom of the piano and slide the Keyboard unit backward.

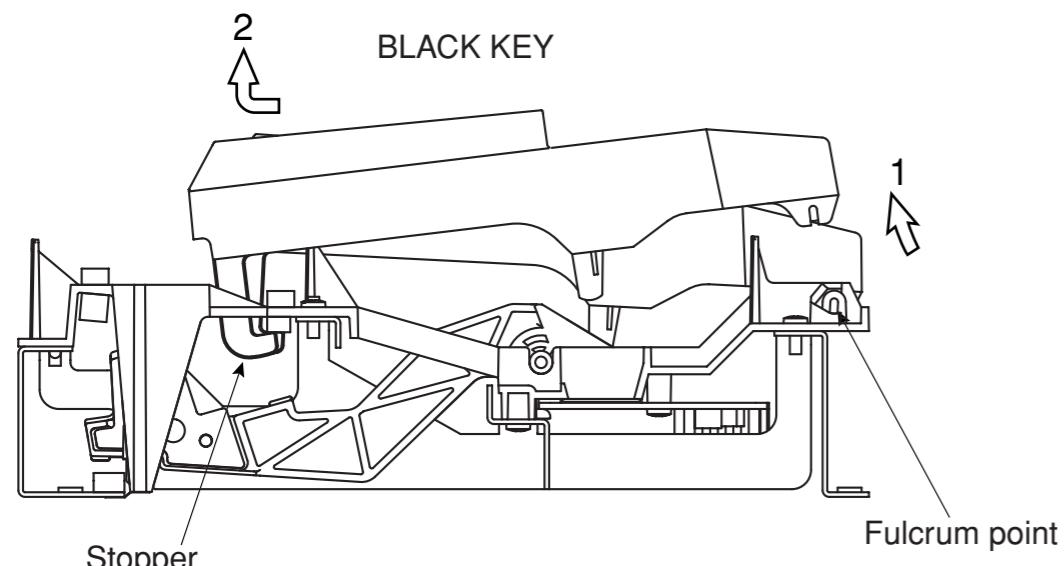
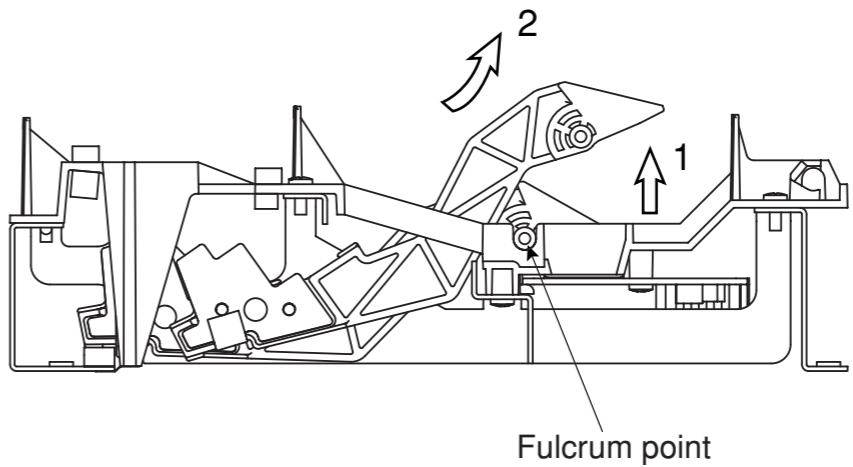
B **<How to take a key off>**

1. Spread the key at fulcrum point and lift it up. (We recommend to use Snap Ring pliers.
If not available, use a flat blade (tapered) screwdriver.)
2. Pull the key off. (Pay attention to the stopper.)



C **<How to take a hammer off>**

1. Lift the hammer at the fulcrum point.
2. Pull the hammer off.



K * To remove a black key, the white keys on either side must be removed first.

■ Parts List

Electrical Parts List

Code No.	Parts Name	Q'ty	Parts Number	Remarks	Model
237806	P.W.B. Assy	1	KEP-126 (23)	CPU	ES4
237807	P.W.B. Assy	1	KEP-126 (24)	CPU	es1P
237808	P.W.B. Assy	1	KEP-196 – 198 (1)	PANEL	
237809	P.W.B. Assy	1	KEP-192 – 194 (1)	ANALOG	
237810	P.W.B. Assy	1	KEP-099 (4)	USB/MIDI	
237347	P.W.B. Assy	1	KKB-015 (1)	KEYBOARD	
805062	PH Standard Color Cable	1	PH-04-0950-YEL	AMP-JACK	
947667	PH Standard Color Cable	1	PH-09-0150-WHT	CPU-AMP	
815061	PH Standard Color Cable	1	PH-06-0200-BLU	AMP-PANEL	
942695	PH Standard Color Cable	1	PH-08-0250-GRY	CPU-PANEL	
815060	PH Standard Color Cable	1	PH-05-0550-GRN	CPU-JACK	
815068	CPU POWER Cable	1		AMP-CPU	
815063	POWER Cable	1		INLET-AMP	
815065	SP Cable R	1		AMP-SP	
815066	SP Cable L	1		AMP-SP	
815064	LINE OUT Cable	1		AMP-JACK	
815059	KEYBOARD Cable	1		CPU-KEYBOARD	
815067	USB Cable	1		CPU-USB/MIDI	
810784	EARTH Cable	1	1007#18 65 T-T	INLET-EARTH	
814987	AC adaptor	1	PS-153	15VDC 4A (+) CENTER	
809168	AC Cable	1	DC-354-J12		es1P
815340	AC Cable	1	US SZC7S ME301P		ES4 (US,GE120)
809170	AC Cable	1	EC-511-E07		ES4 (CD,GE230)
809171	AC Cable	1	SC-078-J02		ES4 (AU)
813178	AC Cable	1	2P FOR BS 2.5M BA		ES4 (CG)

P.W.B. KEP-126 (23), (24) Assembly Parts List

Code No.	Parts Name	Q'ty	Parts Number	Parts Address
812979	CPU	1	KP430-F7FP (MB91F109PF-G)	U2
814414	TG	1	K022-FP MB87L8040	U6
814435	RESET IC	1	BD5245 FVE-TR	U29
810368	REGULATOR	1	NJM78L05UA-TE1	U17
812219	OP-AMP	6	NJM4580E-T1	U13,14,18,22
813047	REGULATOR	1	μ PC2933AT-E1	U27
814447	FLASH ROM	1	KP461-F9FP (A29L160HTV-70)	U3 (ES4 model)
814447	FLASH ROM	1	KP462-F9FP (A29L160HTV-70)	U3 (es1P model)
814418	DRAM	1	IC41LV16257-35T-EL	U4
814416	SRAM	1	UT62L2568LS-70LL UT62L2568LS-70LLI	U9
814981	ROM	1	KP459-MDFW MR27V12800J	U8
814074	DAC	2	AK4393VF-E2	U15
812217	LOGIC	2	TC74HCT7007AF-TP1	U23,25
804056	LOGIC	1	HD74HC245FPEL	U24
812958	X'tal Oscillator	1	DSO751SV 33.8688MHz	X2
812722	X'tal Oscillator	1	SMD-49 12.5MHz CX-49G 12.5MHz	X1
813358	Chip Bead	27	BLM18AG601SN1D	EM1,2,5,8,9,10,13,14,15,16,17,19,20, 22,33,34,40,41,42,44,45,46,47,49,51 R16,93

P.W.B KEP-196 – 198 (1) Assembly Parts List

Code No.	Parts Name	Q'ty	Parts Number	Parts Address
	KEP-196 (VOLUME)			
813787	SLIDE VOLUME	1	RS30112	VR1
804578	Connector	1	S6B-PH-K-S	CN2
	KEP-197 (PANEL)			
812220	IC(HCMOS)	1	74HC166P	U1
808457	IC(HCMOS)	3	74HC595P	U2,3,4
805851	Transistor	7	DTC143TS	Q1,2,3,4,5,6,7
810922	LED DISPLAY	1	LB-203ML	LED1,
813111	LED	10	3105VRT	LED2,3,4,5,6,7,8,9,10,11
800625	DIODE	10	1SS133T-77	D1,2,3,4,5,6,7,8,9,10
808345	SWITCH	10	KSH0612AT	SW1,2,3,4,5,6,7,8,9,10
804580	CONNECTOR	1	S8B-PH-K-S	CN1
809434	Cable Holder	1	51048-0900	CN4
	KEP-198 (PANEL)			
813111	LED	7	3105VRT	LED14,15,16,17,18,19,20
800625	DIODE	9	1SS133T-77	D11,12,13,14,15,16,17,18,19
808345	SWITCH	9	KSH0612AT	SW11,12,13,14,15,16,17,18,19
809434	Cable Holder	1	51048-0900	CN3
945265	Panel Joint Cable	1		

P.W.B KEP-192 – 194 (1) Assembly Parts List

Code No.	Parts Name	Q'ty	Parts Number	Parts Address	Model
	KEP-192 (AMP)				
800676	IC	2	M5218AP	U2,4	
812222	IC	1	LA6517	U3	
811018	IC	1	PST600C	U1	
812950	IC	1	TA8221AH	U6	
807032	IC	1	PQ05RD11	U5	
812125	Transistor	2	2SC3792	Q4,5	
812527	Transistor	12	2SC5395	Q2,6,7,8,9,10,11,12,13,14,16,17	
810851	Transistor	2	DTC143ES	Q1,15	
808973	Transistor	1	DTA114ES	Q3	
800625	Diode	2	1SS133	D2,3	
807082	Zener Diode	1	HZS6C3	D1	
805989	Zener Diode	1	HZS4ALL	D4	
811717	Retaldant Resistor	4	RDF50SS 2R2J	R89,90,91,92	
810861	Metal Oxide Resistor	1	RSS2 L15 2R7J	R88	
809432	Metal Film Resistor	2	CRB20 FX3301	R1,2	
809242	Ceramic Capacitor	2	UP050SL220J	C9,10	
809252	Ceramic Capacitor	6	UP050B102K	C13,36,37,49,53,54	
806466	Ceramic Capacitor	3	UP050F104Z	C18,27,46	
805921	Electrolytic Capacitor	4	ECA1HM010B	C5,7,51,52	
809769	Electrolytic Capacitor	6	ECEA1EKS4R7B	C1,2,6,8,11,12	
805923	Electrolytic Capacitor	6	ECA1CM100B	C3,4,40,41,55,56	
807028	Electrolytic Capacitor	6	ECA1CM101B	C14,16,38,39,42,50	
805926	Electrolytic Capacitor	1	ECA1CM221B	C57	
707333	Electrolytic Capacitor	1	ECA1EM102B	C45	
807403	Electrolytic Capacitor	1	ECA1EM222B	C56	
809125	Film Capacitor	4	ECQ-V1H 104JL	C59,60,61,62	
812961	IC Protecter	1	ICP-N10	F1	
807413	Connector	1	B2P-VH	CN5	
803428	Connector	1	B3P-VH	CN8	
802906	Connector	1	B4P-VH	CN7	
802908	Connector	1	B6P-VH	CN6	
804571	Connector	1	B4B-PH-K-S	CN4	
805737	Connector	1	B6B-PH-K-S	CN2	
804573	Connector	1	B7B-PH-K-S	CN3	
805827	Connector	1	B9B-PH-K-S	CN1	
	KEP-193 (JACK)				
812297	Retaldant Resistor	4	CFPS1/2CT26A680J	R95,96,97,98	
809252	Ceramic Capacitor	15	UP050B102K	C66,67,68,69,70,71,72,73,74, 75,76,77,78,79,80	
804571	Connector	1	B4B-PH-K-S	CN10	
804572	Connector	1	B5B-PH-K-S	CN9	
804573	Connector	1	B7B-PH-K-S	CN11	
803439	Phone Jack	2	YKB21-5074	JA4,5	
802576	Phone Jack	3	YKB21-5006	JA1,2,6	
805867	Phone Jack (MINI)	1	YKB21-5101A	JA3	
809852	Slide Switch	1	SSSF122-S06N0	SW1	
815057	Poly Switch	1	RUEF300	F2	

Code No.	Parts Name	Q'ty	Parts Number	Parts Address	Model
	KEP-194 (POWER SW)				
815073	Diode	1	SF5S4-7100	D5	
814982	DC Jack	1	LGP7031-1200C	JA7	
803428	Connector	1	B3P-VH	CN12	
813212	Push Switch	1	SDKLA-AP	SW2	
813940	Screw Terminal	1	TP00799-23		

P.W.B KEP-099 (4) Assembly Parts List

Code No.	Parts Name	Q'ty	Parts Number	Parts Address	Model
	KEP-099 (USB/MIDI)				
814016	IC	1	M38K07M4-056HP	U2	
808932	IC	1	PC400T	U3	
811645	IC	1	PST575CMT	U1	
810920	Transistor	2	DTC143EKA	Q1,2	
809834	Diode	1	HSK120TR	D1	
813928	X'tal Resonator	1	SMD-49 6.0MHz CX-49G 6.0MHz	X1	
809845	Electrolytic Capacitor	1	ECEV1CS100SR	C1	
813358	Chip Bead	3	BLM18A601SPT	EM1,2,3	
813937	Chip Bead	2	BLM21PG600SN1	EM4,7	
813938	Chip Bead	2	BLM18BB121SN1	EM5,6	
808473	MIDI Jack	1	YKF51-5053	JA1	
813805	USB Connecter	1	YKF45-0002	J1	
805827	Connector	1	B9B-PH-K-S	CN1	
813940	Screw Terminal	1	TP00799-23		

■ Cable Wiring Specification (1)

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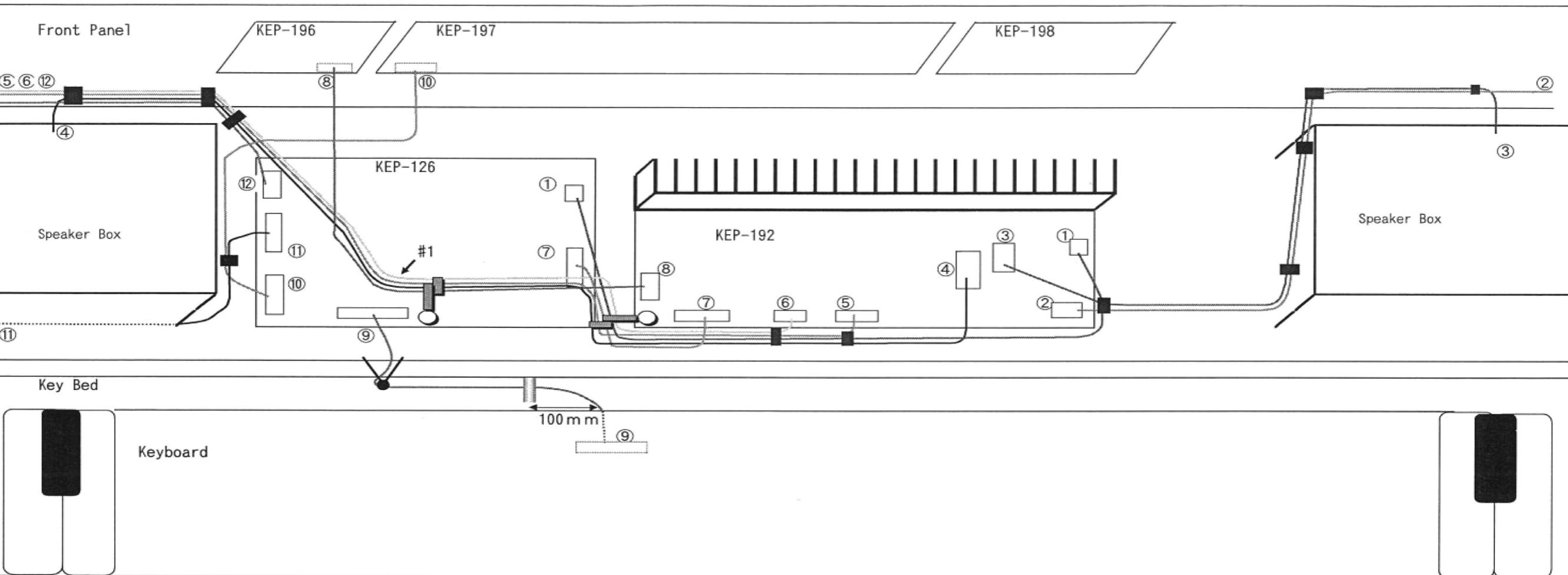
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	VINYL BINDER	1
	CABLE TIE(PTL1M)	11
	VINDER	2
	FILAMENT TAPE	1

#1 : Cables must not approach with PWB (KEP-126)

	CPU POWER Cable	KPBB-0488	815068		PH Standard Color Cable	PH-09-0150-WHT	947667
	POWER Cable	KPBB-0483	815063		PH Standard Color Cable	PH-06-0200-BLU	815061
	SP Cable R	KPBB-0485	815065		KEYBOARD Cable	KPBB-0489	815059
	SP Cable L	KPBB-0486	815066		PH Standard Color Cable	PH-08-0250-GRY	942695
	LINE OUT Cable	KPBB-0484	815064		USB Cable	KPBB-0487	815067
	PH Standard Color Cable	PH-04-0950-YEL	815062		PH Standard Color Cable	PH-05-0550-GRN	815060

■ Cable Wiring Specification (1)

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B

C

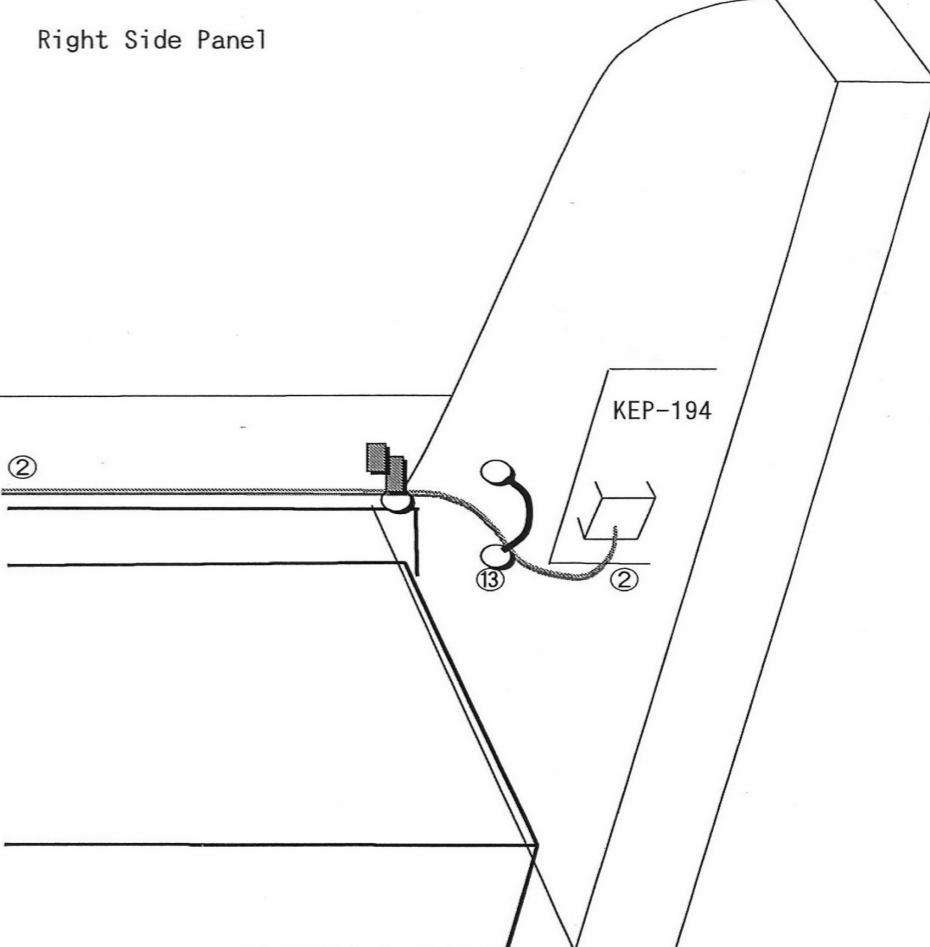
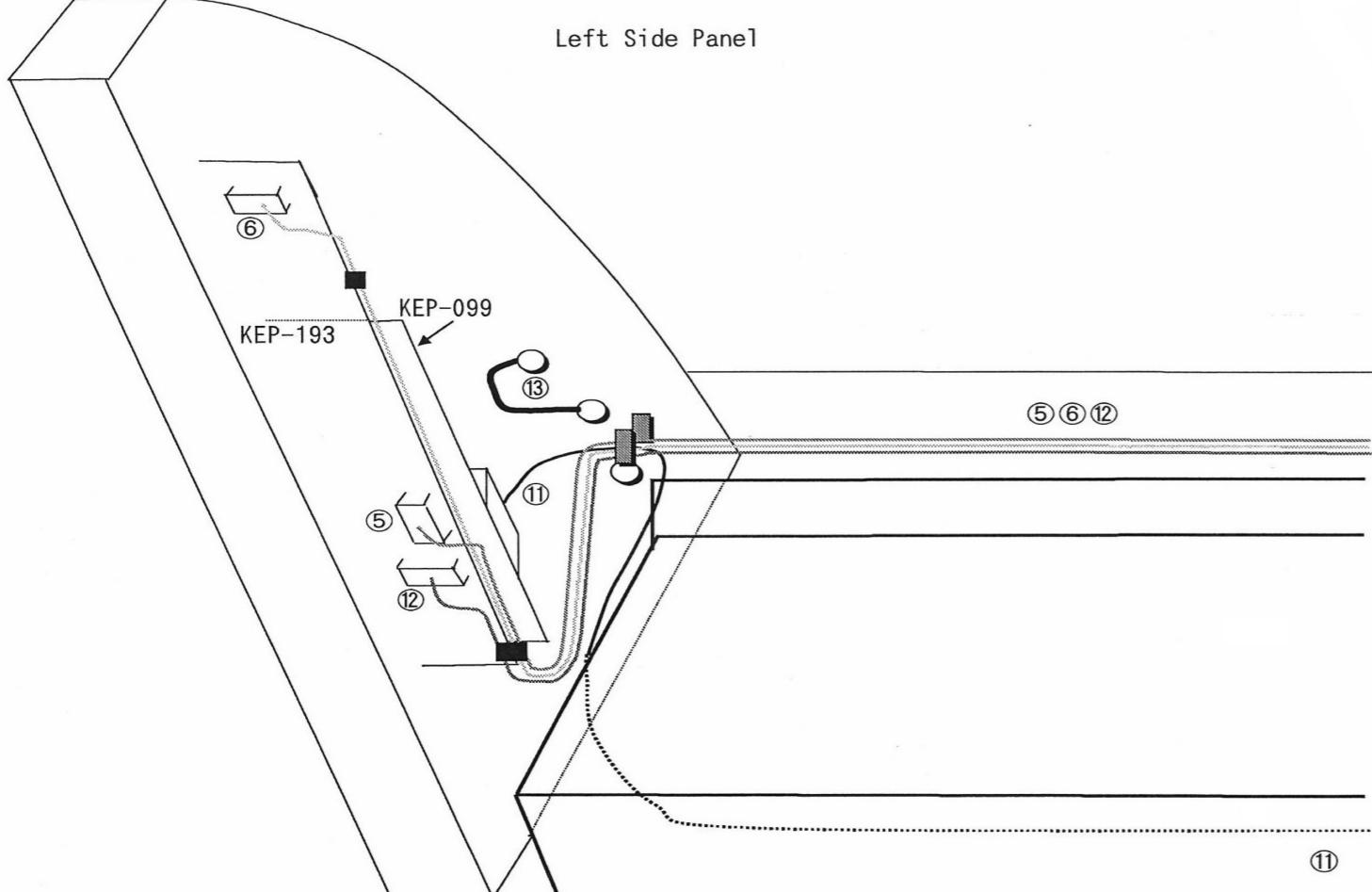
D

E

F

G

H



	VINYL BINDER	-
	CABLE TIE(PTL1M)	2
	VINDER	2

	POWER Cable	KPBB-0483	815063		PH Standard Color Cable	PH-05-0550-GRN	815060
	LINE OUT Cable	KPBB-0484	815064		EARTH Cable	1007#18 65 T-T	810784
	PH Standard Color Cable	PH-04-0950-YEL	815062				
	USB Cable	KPBB-0487	815067				

■ Block Diagram

A

B

C

D

E

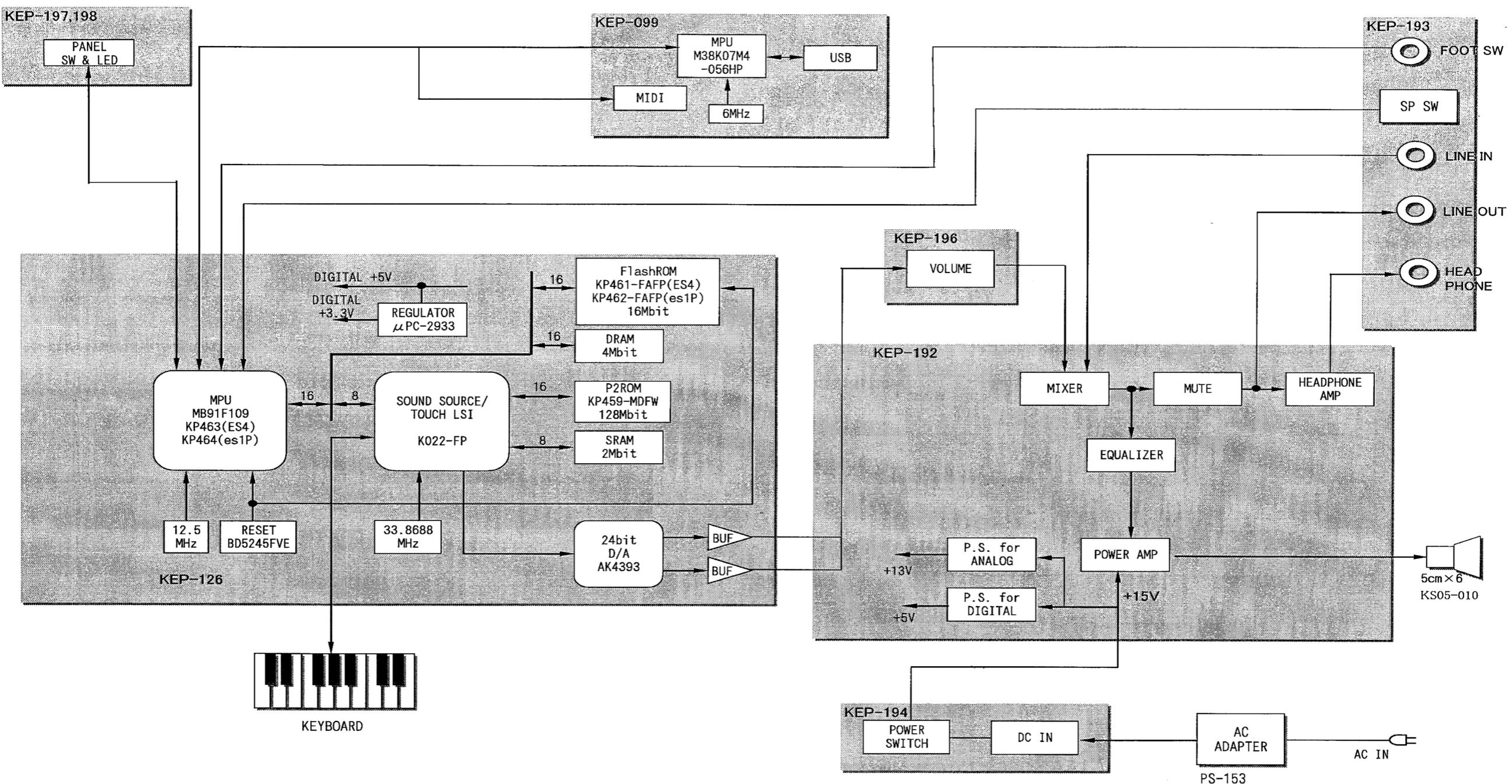
F

G

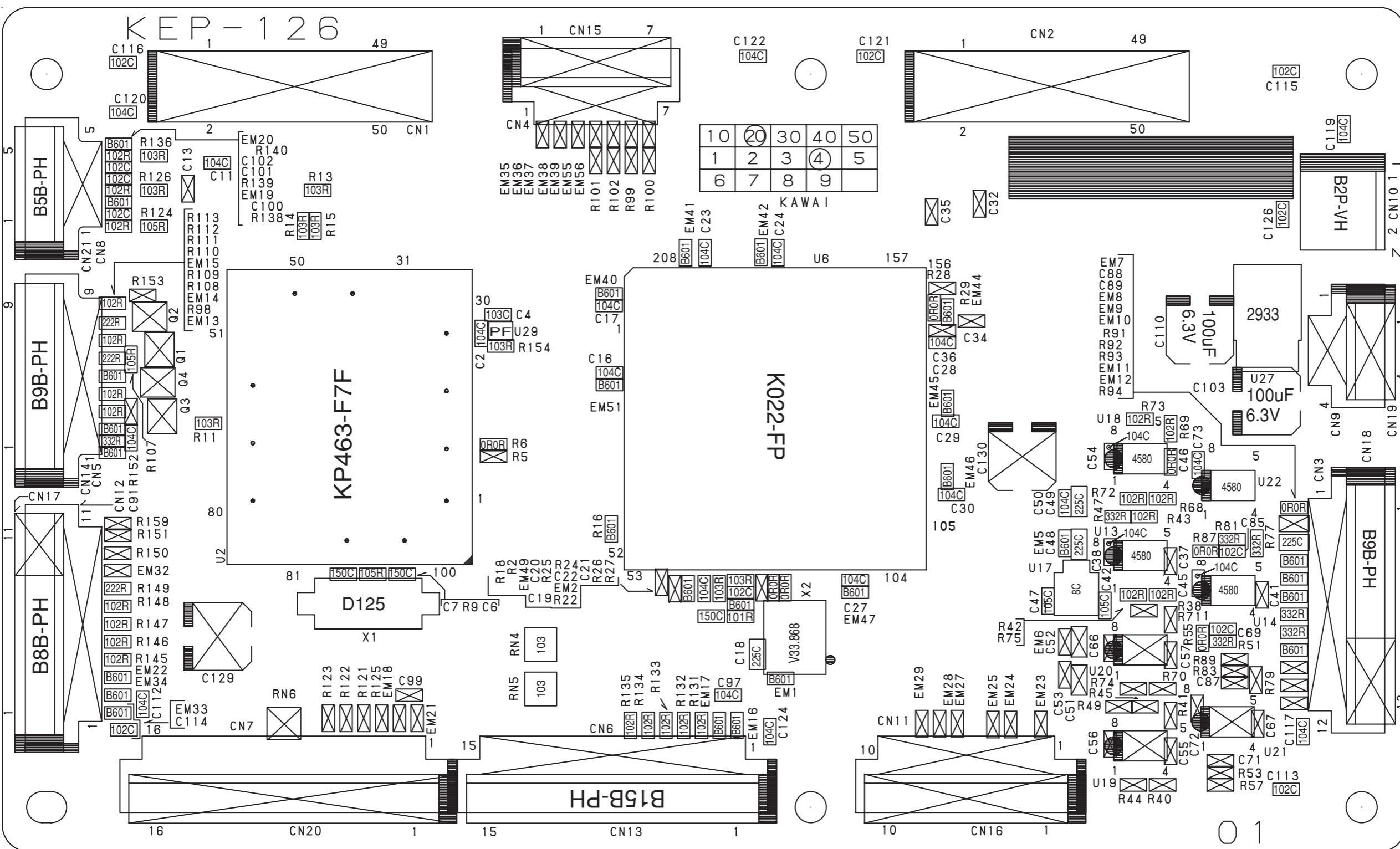
H

I

J



■ P.W.B. KEP-126 Assembly [TOP]



8C : NJM78L05UA

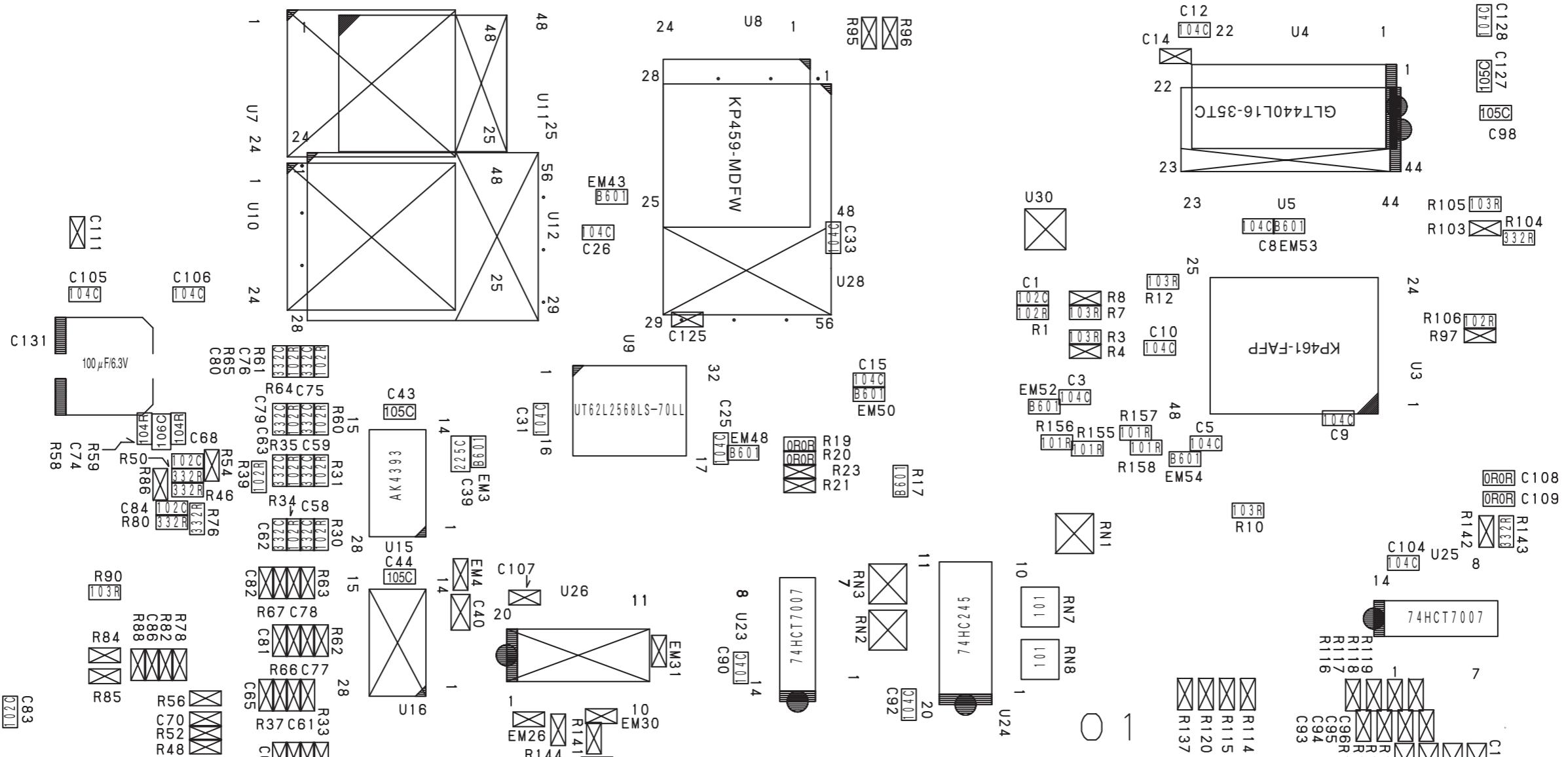
B601 : BLM18AG601SN1D

PF : BD5245FUE

R 38, 42, 43, 47, 51, 68, 69, 72, 73, 77, 81 : Resistance Tolerance $\pm 1\%$

■ P.W.B. KEP-126 Assembly [BACK]

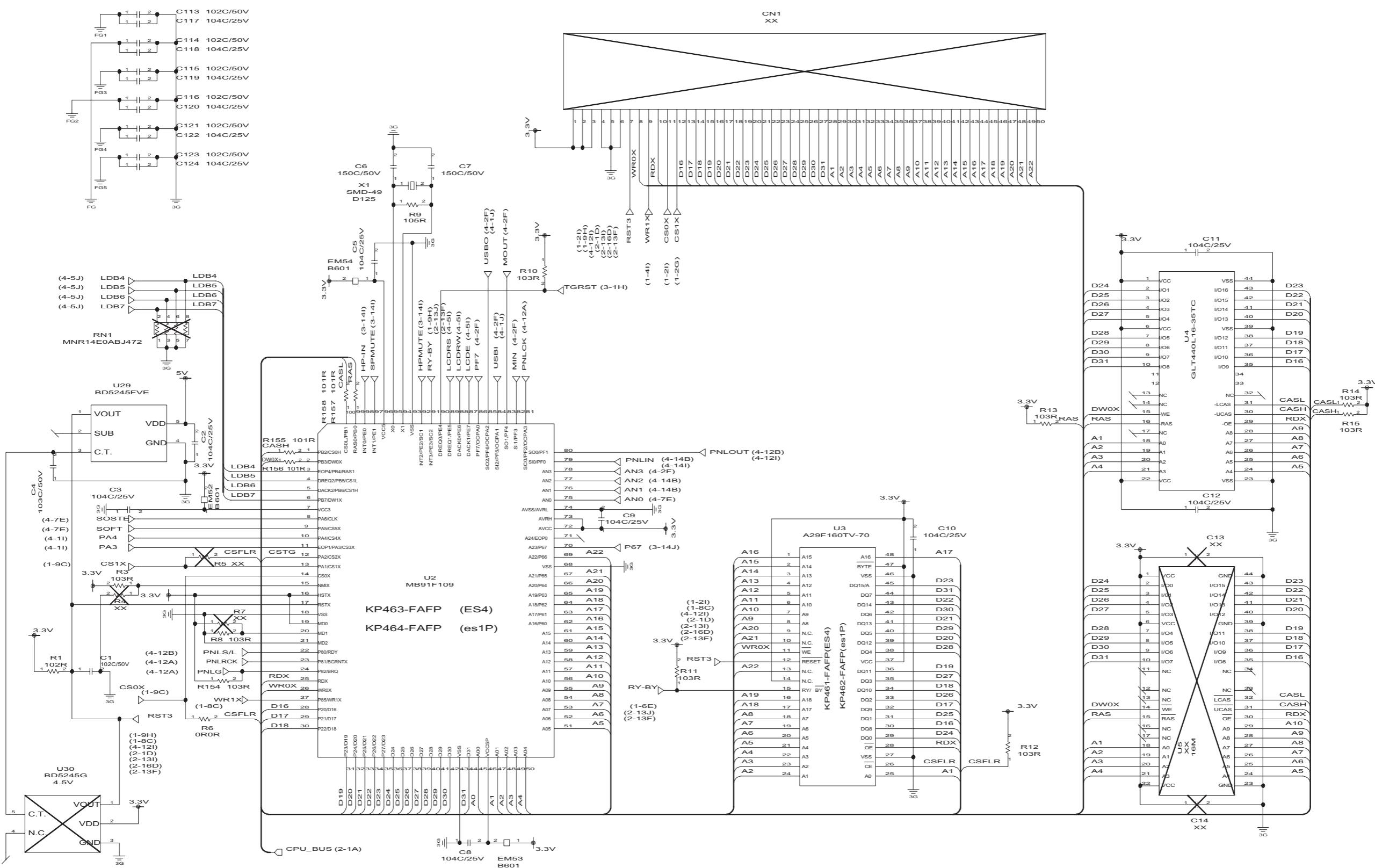
K E P - 1 2 6
KAWAI



B601 : BLM18AG601SN1D

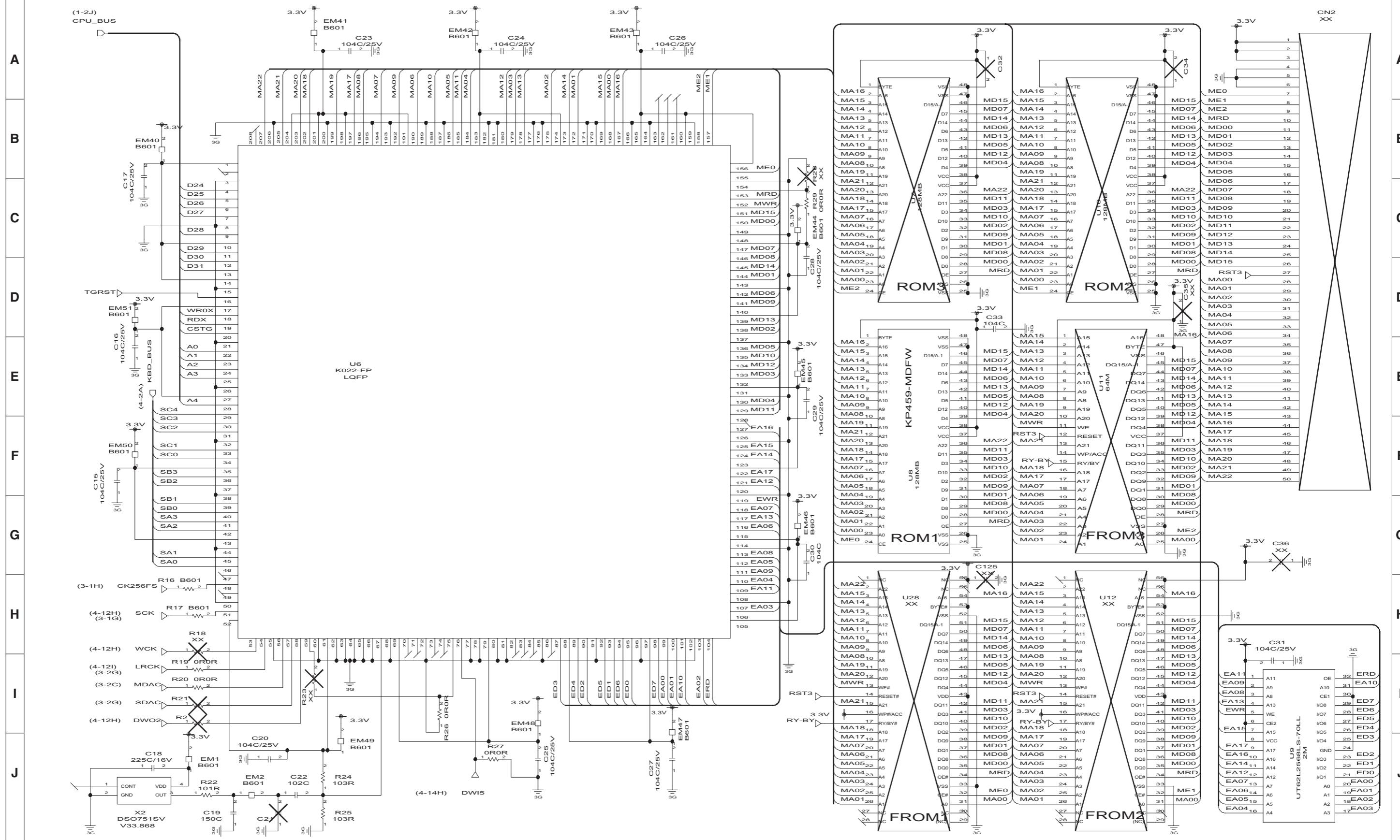
R30, 31, 34, 35, 39, 46, 50, 60, 61, 64, 65, 76, 80 : Resistance Tolerance ±1%

P.W.B. KEP-126 Circuit 1/4

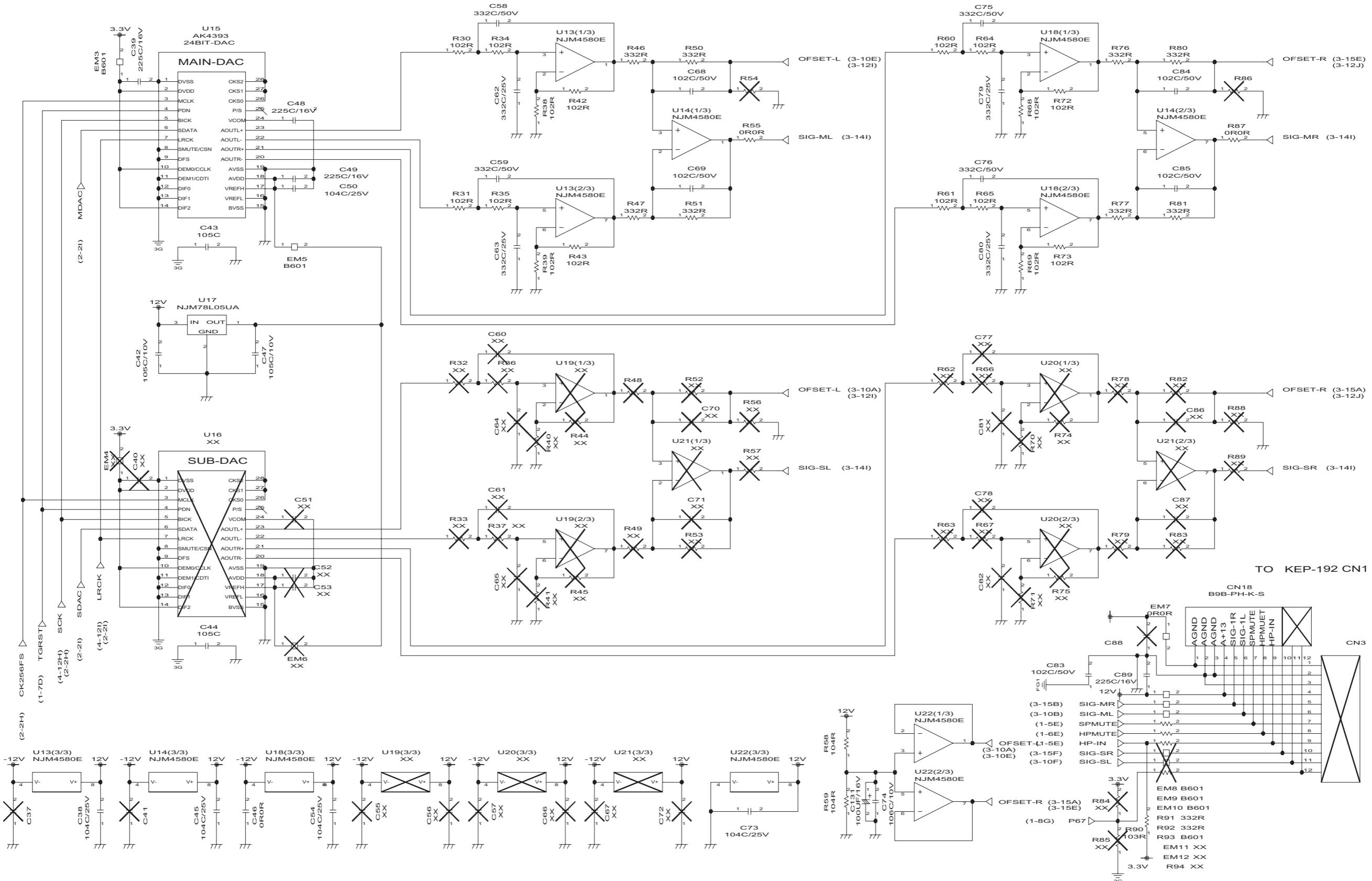


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

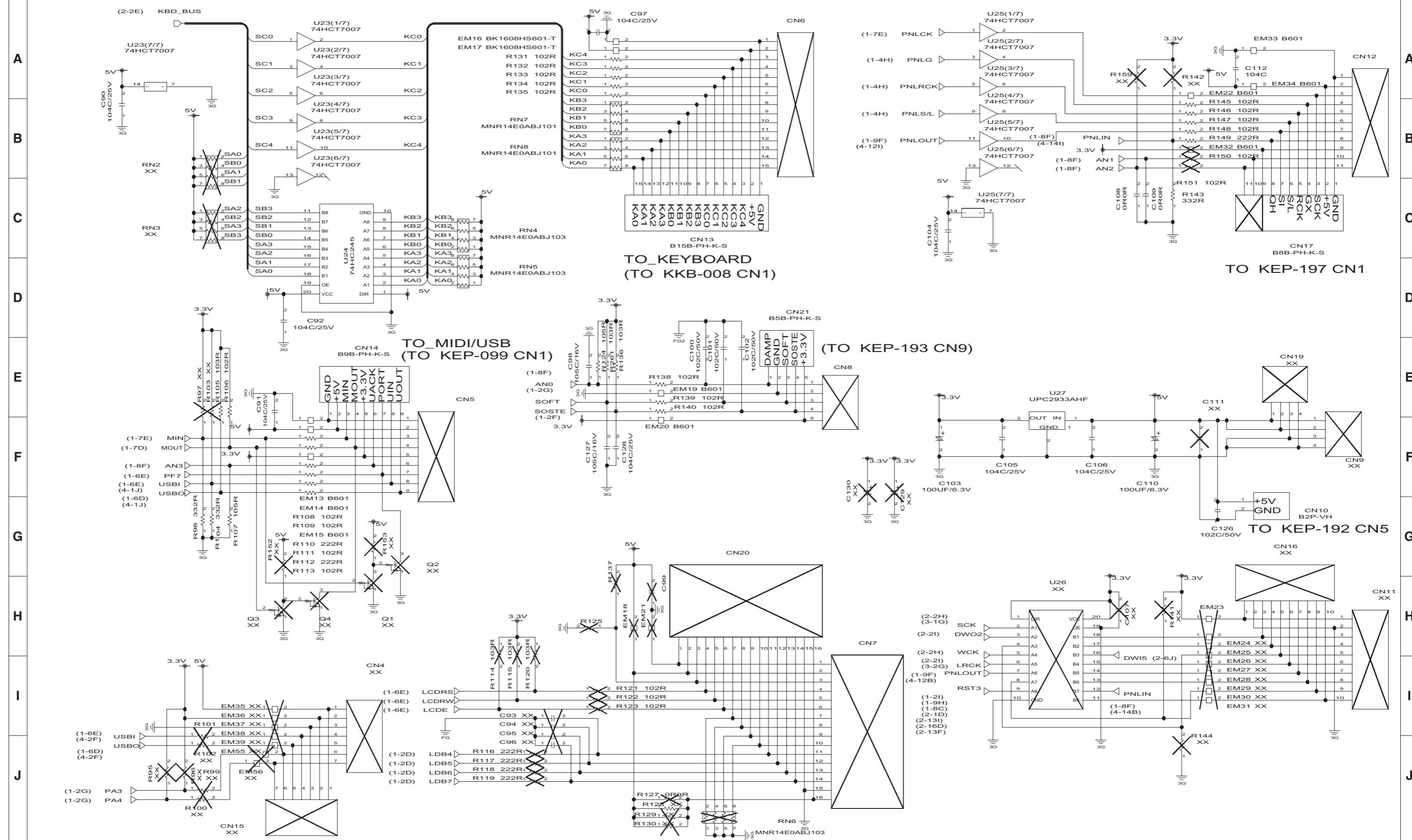
■ P.W.B. KEP-126 Circuit 2/4



■ P.W.B. KEP-126 Circuit 3/4

A**B****C****D****E****F****G****H****I****J****A****B****C****D****E****F****G****H****I****J**

■ P.W.B. KEP-126 Circuit 4/4



■ P.W.B. KEP-196 – 198 Assembly

A

B

C

D

E

F

G

H

I

J

A

B

C

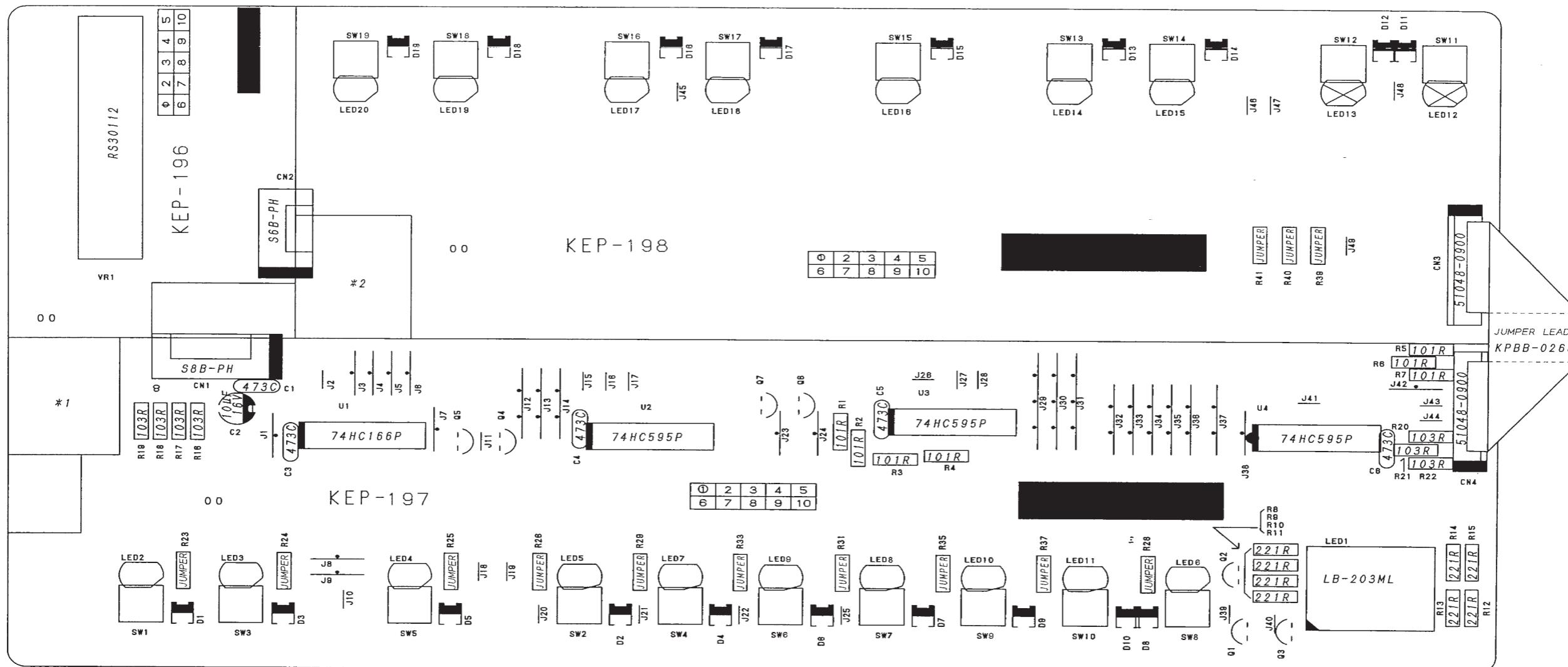
D

E

F

G

H



NOTE) 1. Q1~7 : DTC143TS

2. LED2~11, 14~20 : 3105VRT

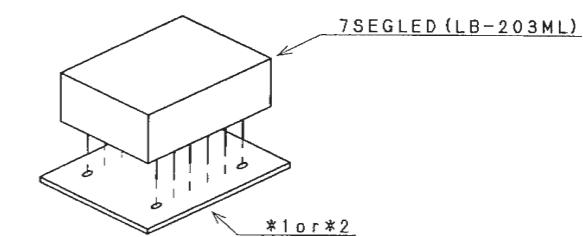
3. D1~19 : ISS133

4. SW1~19 : KSH0612AT

5. PCB *1 or *2 insert under
the 7SEGLED (LB-203ML)

	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10
es4	Demo	Piano	Split	E.Piano	Registration	Organ	Harpsi/Mallets	Bass	Strings	Choir/Pad
es1P	Demo	Piano1	Relax	Piano2	Concert Magic	E.Piano	Organ	Choir/Bass	Harpsi	Strings

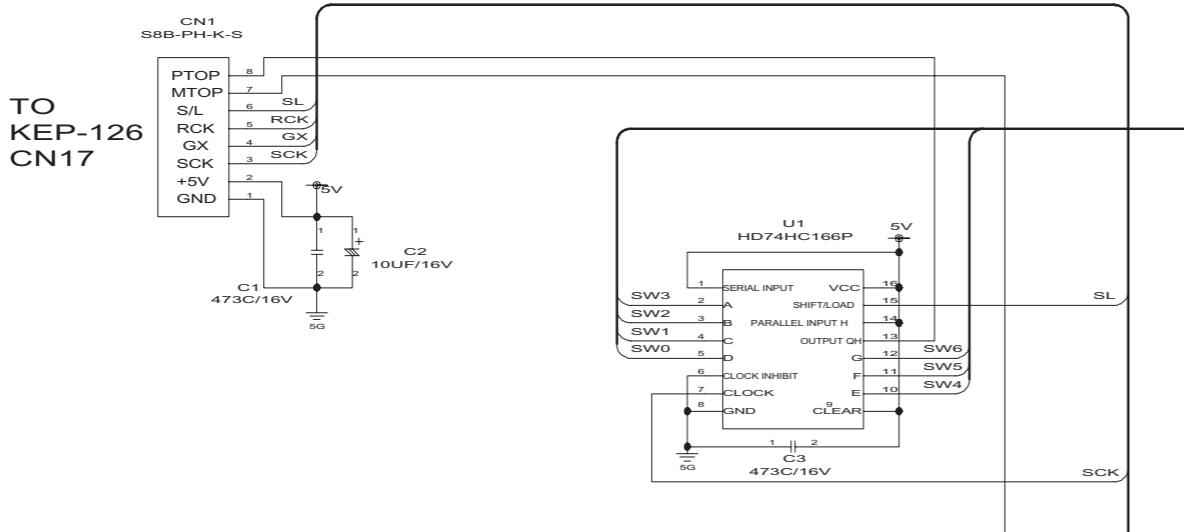
	SW11	SW12	SW13	SW14	SW15	SW16	SW17	SW18	SW19
es4	Transpose	Touch	Play/Stop	Rec	Rhythm/Metronome	Effects	Reverb	Up	Down
es1P	Transpose	Touch	Play/Stop	Rec	Reverb	Tempo	Beat	▲	▼



■ P.W.B. KEP-196 – 198 Circuit

KEP-197

A



B

C

D

E

F

G

H

I

J

K

A

B

C

D

E

F

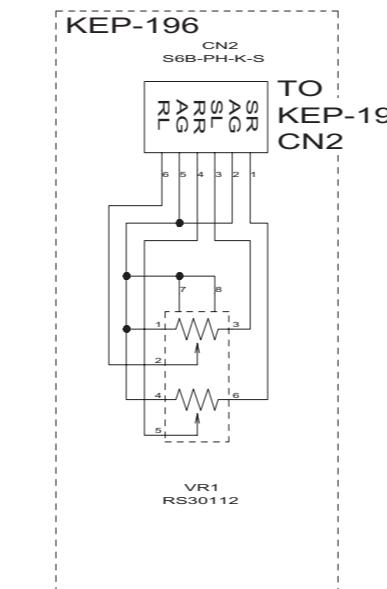
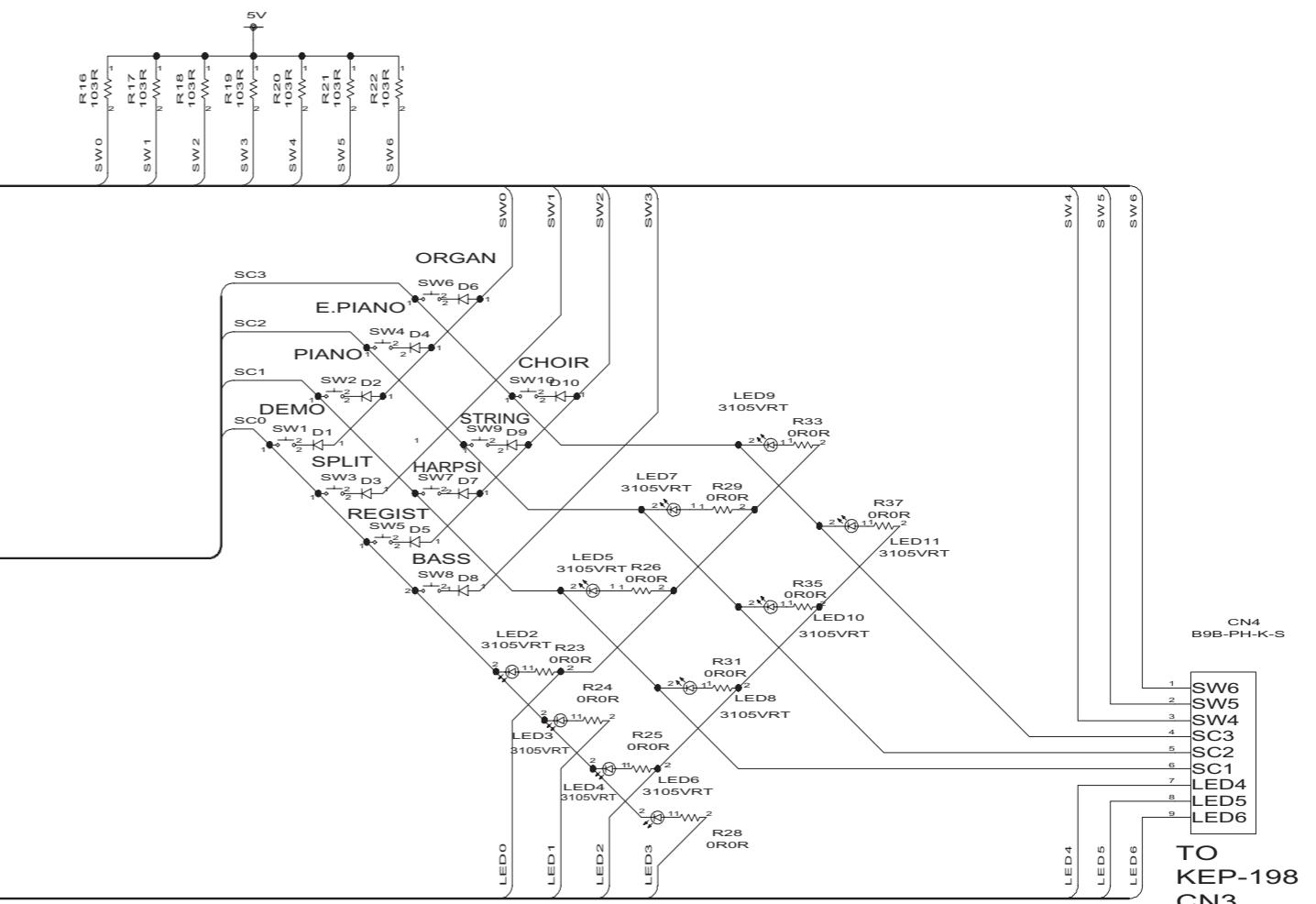
G

H

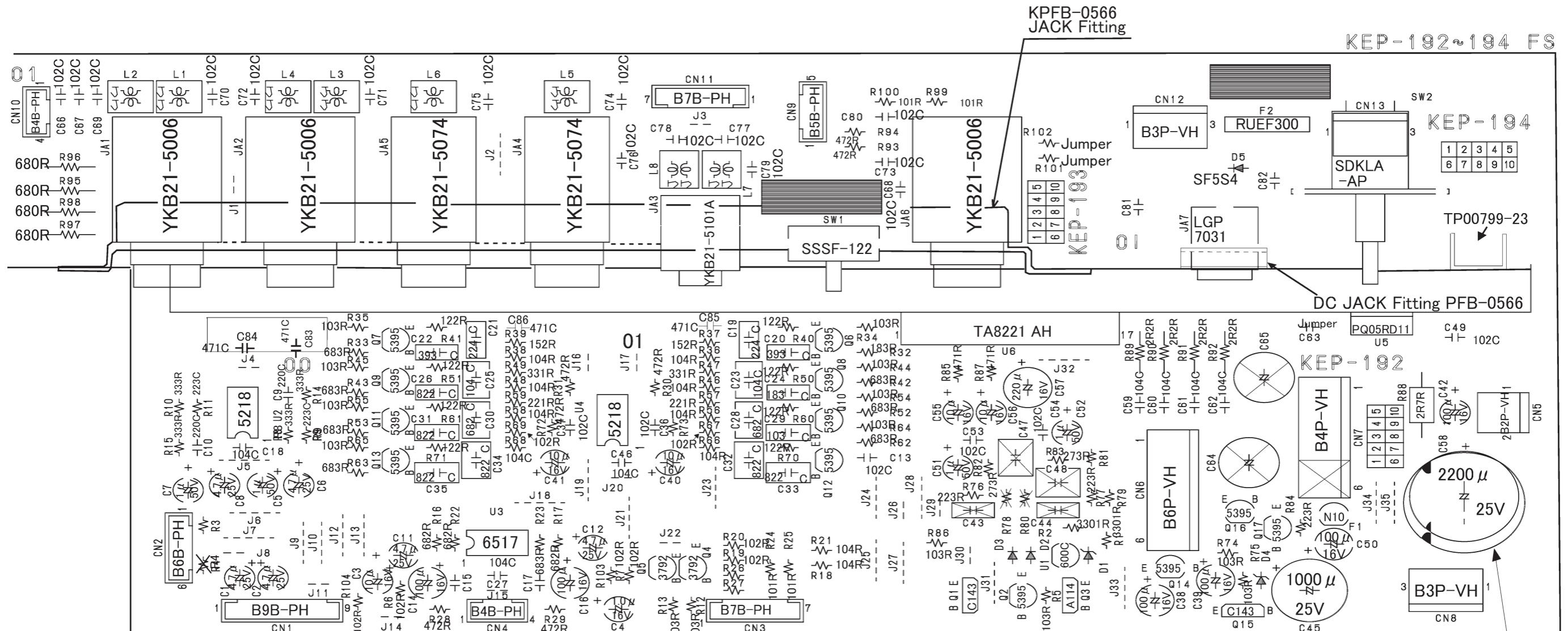
I

J

K



■ P.W.B. KEP-192 – 194 Assembly 1/2



D1 : HZS6C3

D2 , 3 : ISS133

D4 : HZS4AA

J1 ~ 8 : JUMPER 5mm

■ P.W.B. KEP-192 – 194 Assembly 2/2

A

B

C

D

E

F

G

H

I

J

A

B

C

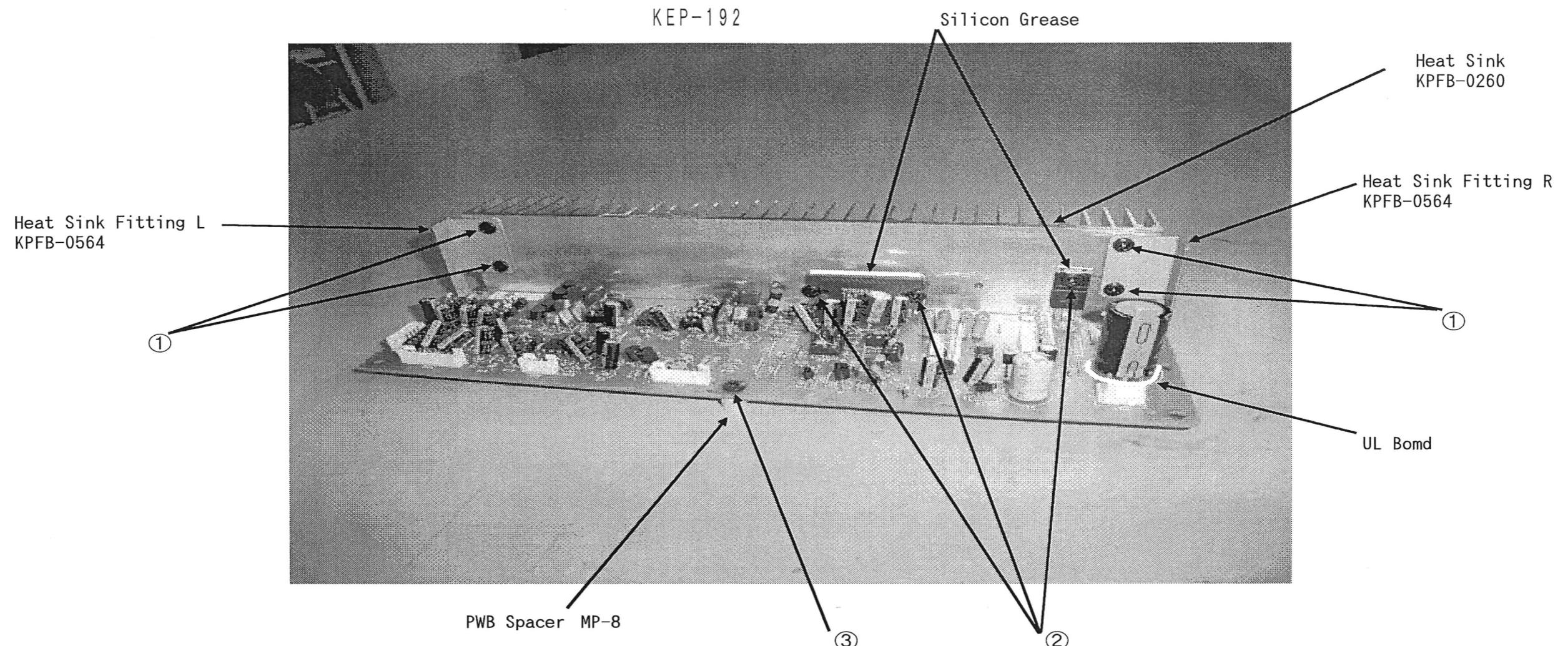
D

E

F

G

H

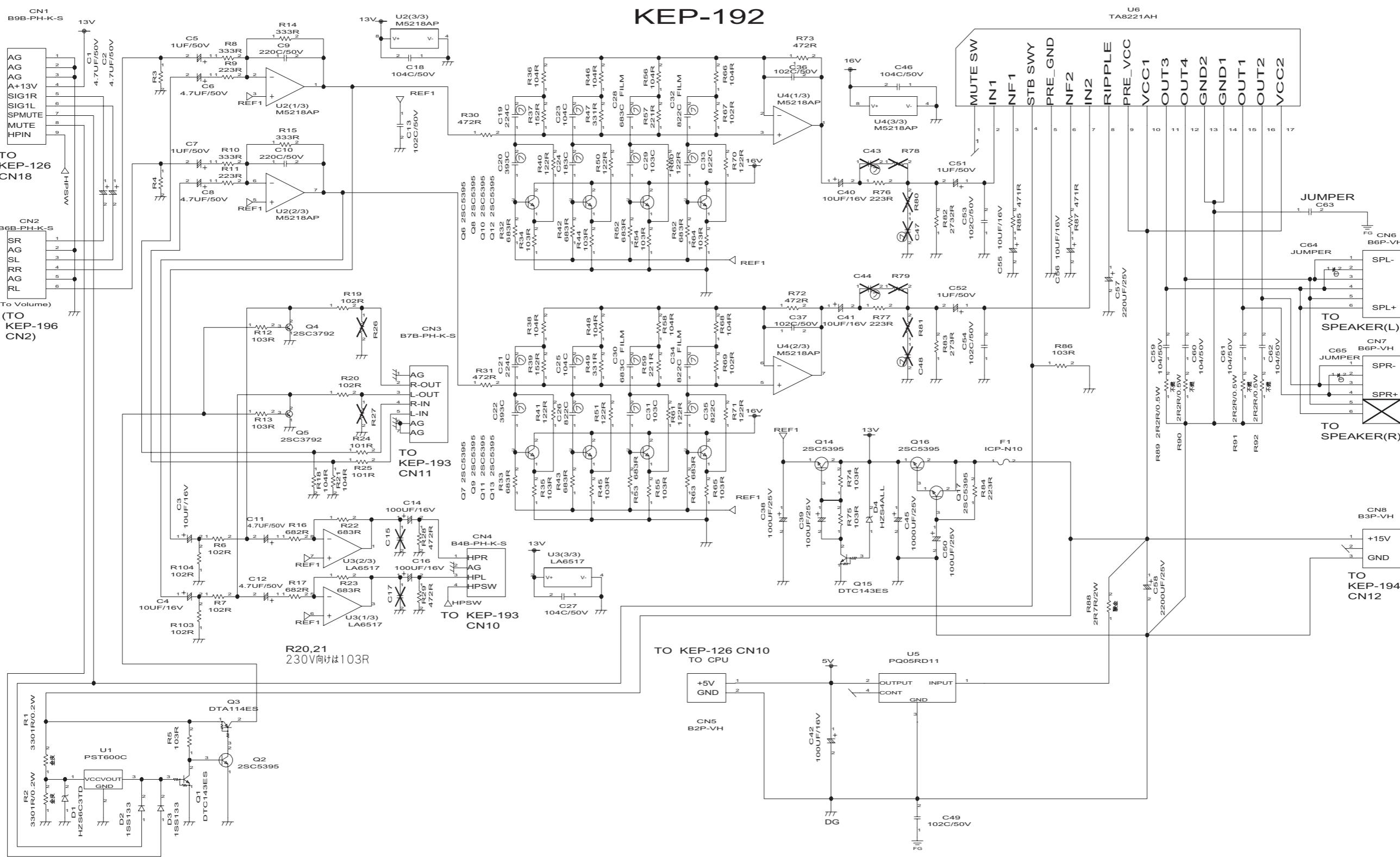


① +Bind/B tite 3×8 4pcs

② +Bind/B tite 3×12 3pcs

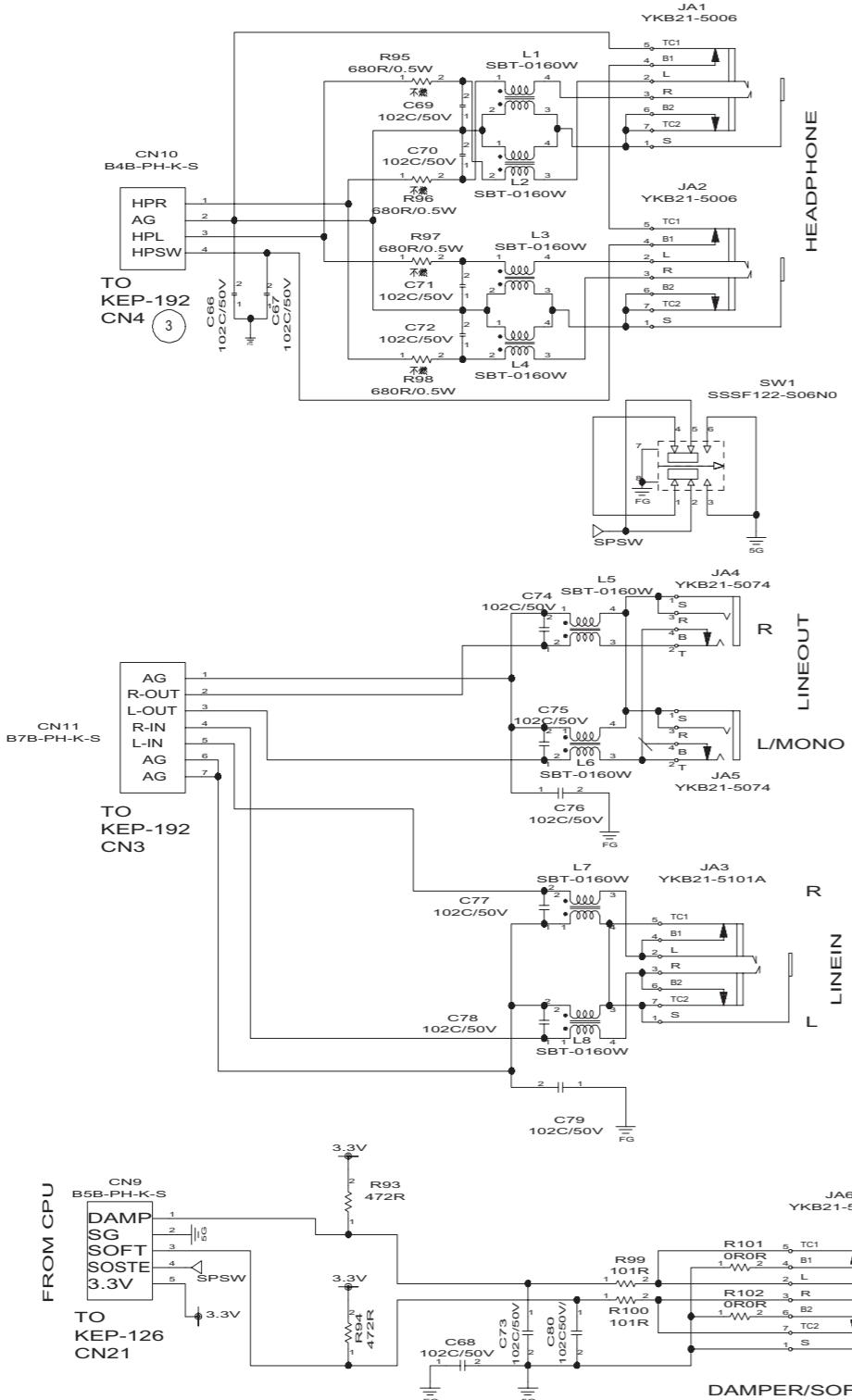
③ +Bind/S tite 3×8 1pcs

P.W.B. KEP-192 – 194 Circuit 1/2

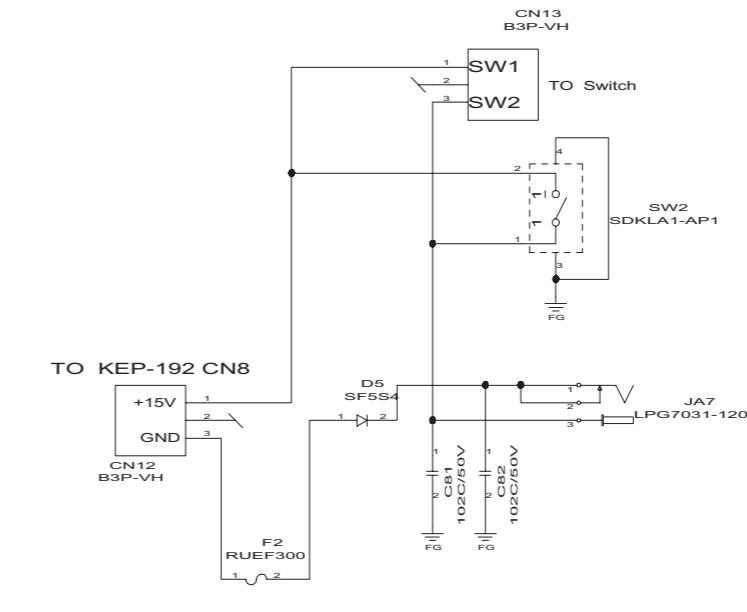


■ P.W.B. KEP-192 – 194 Circuit 2/2

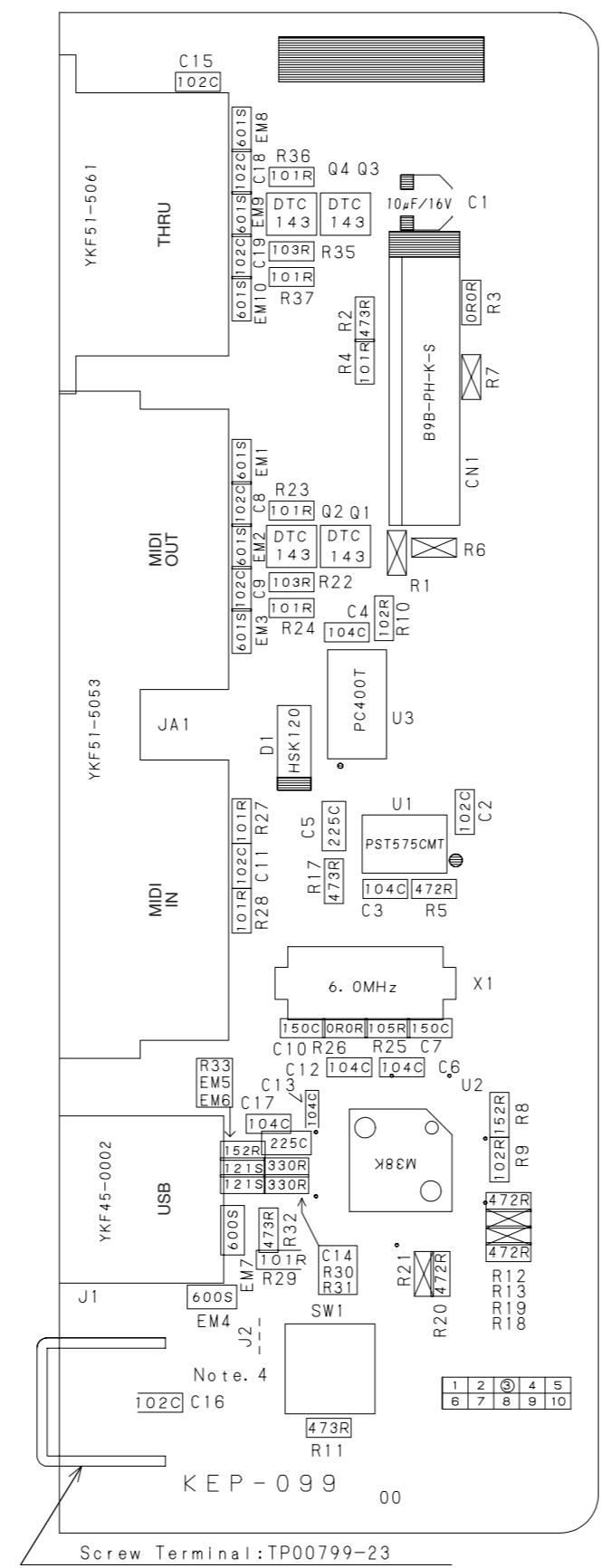
KEP-193



KEP-194



■ P.W.B. KEP-099 Assembly



Note / 1. 601S: BLM11A601S.

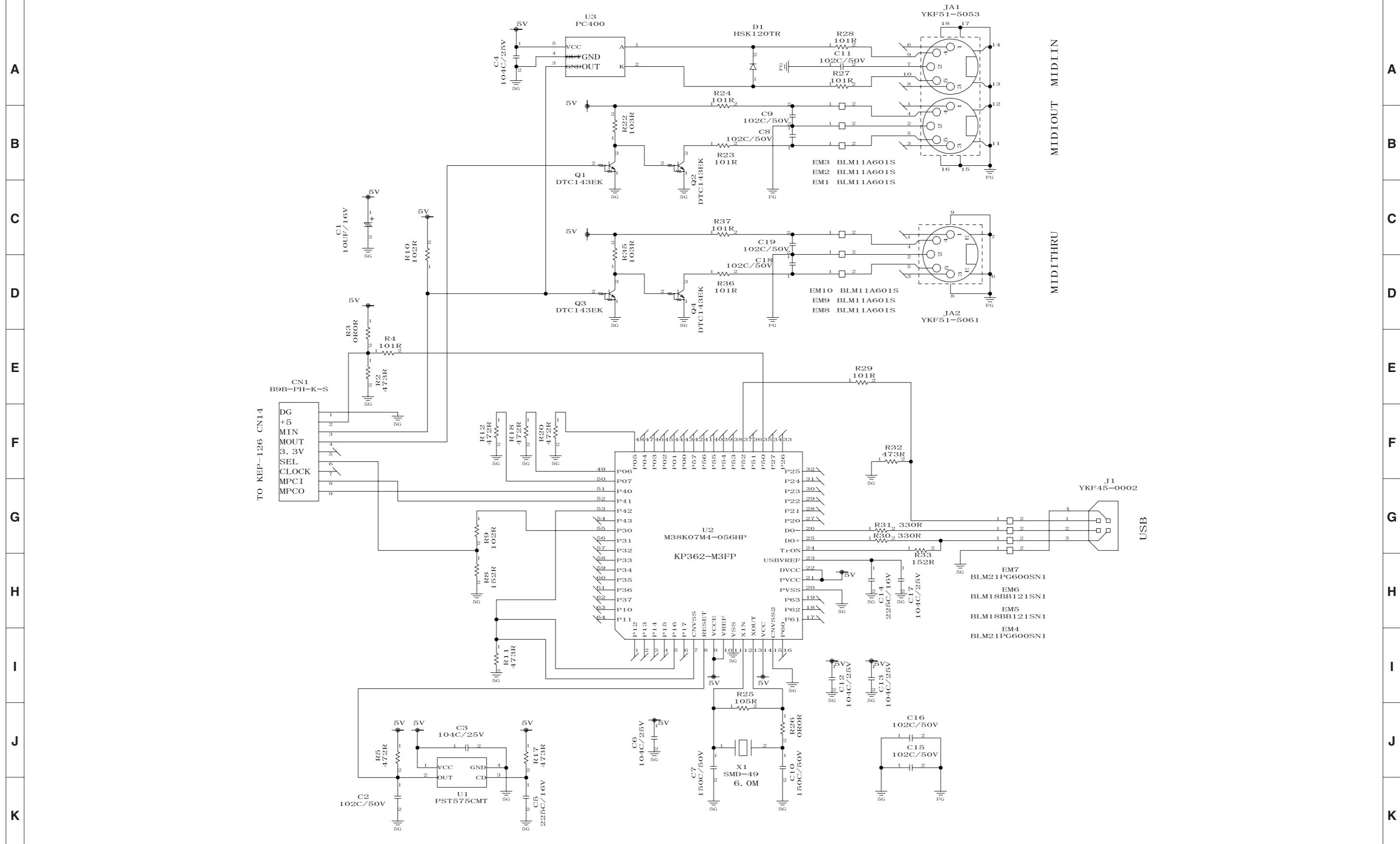
2. 600S:BLM21PG600SN1.

3. 121S:BLM18BB121SN1.

4. Remove after acceptance test. (J2)

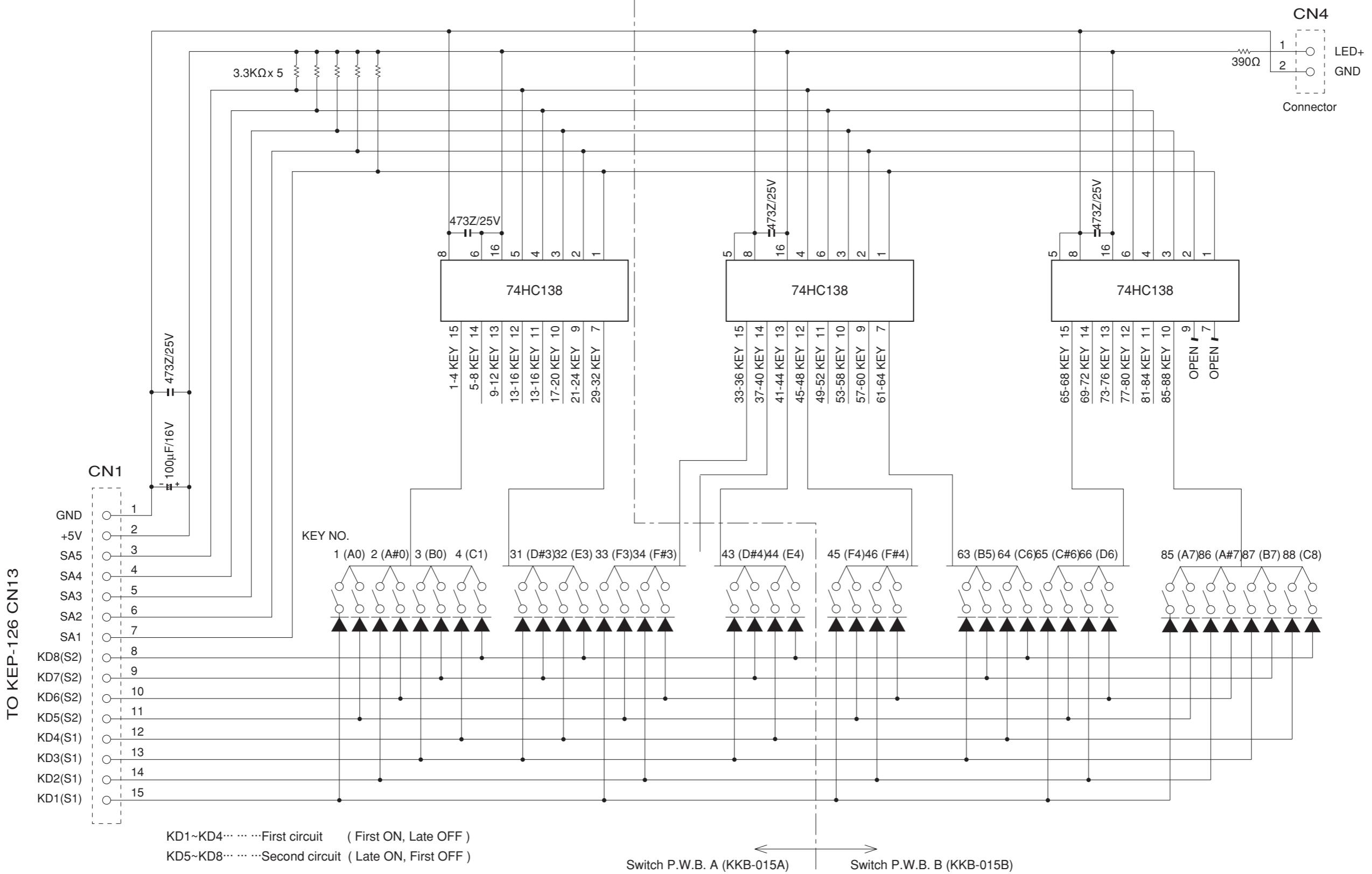
X : Not Mounted

■ P.W.B. KEP-099 Circuit



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

■ P.W.B. KKB-015 Circuit



■ Key Switch Matrix

A

B

C

D

E

F

G

H

I

J

K

A

B

C

D

E

F

G

H

I

J

K

KEY	NOTE	IC-PIN	S1	S2	KEY	NOTE	IC-PIN	S1	S2	KEY	NOTE	IC-PIN	S1	S2	KEY	NOTE	IC-PIN	S1	S2
1	A0	U1-15	KD1	KD5	25	A2	U1-9	KD1	KD5	49	A4	U2-11	KD1	KD5	73	A6	U3-13	KD1	KD5
2	A#0	U1-15	KD2	KD6	26	A#2	U1-9	KD2	KD6	50	A#4	U2-11	KD2	KD6	74	A#6	U3-13	KD2	KD6
3	B0	U1-15	KD3	KD7	27	B2	U1-9	KD3	KD7	51	B4	U2-11	KD3	KD7	75	B6	U3-13	KD3	KD7
4	C1	U1-15	KD4	KD8	28	C3	U1-9	KD4	KD8	52	C5	U2-11	KD4	KD8	76	C7	U3-13	KD4	KD8
5	C#1	U1-14	KD1	KD5	29	C#3	U1-7	KD1	KD5	53	C#5	U2-10	KD1	KD5	77	C#7	U3-12	KD1	KD5
6	D1	U1-14	KD2	KD6	30	D3	U1-7	KD2	KD6	54	D5	U2-10	KD2	KD6	78	D7	U3-12	KD2	KD6
7	D#1	U1-14	KD3	KD7	31	D#3	U1-7	KD3	KD7	55	D#5	U2-10	KD3	KD7	79	D#7	U3-12	KD3	KD7
8	E1	U1-14	KD4	KD8	32	E3	U1-7	KD4	KD8	56	E5	U2-10	KD4	KD8	80	E7	U3-12	KD4	KD8
9	F1	U1-13	KD1	KD5	33	F3	U2-15	KD1	KD5	57	F5	U2-9	KD1	KD5	81	F7	U3-11	KD1	KD5
10	F#1	U1-13	KD2	KD6	34	F#3	U2-15	KD2	KD6	58	F#5	U2-9	KD2	KD6	82	F#7	U3-11	KD2	KD6
11	G1	U1-13	KD3	KD7	35	G3	U2-15	KD3	KD7	59	G5	U2-9	KD3	KD7	83	G7	U3-11	KD3	KD7
12	G#1	U1-13	KD4	KD8	36	G#3	U2-15	KD4	KD8	60	G#5	U2-9	KD4	KD8	84	G#7	U3-11	KD4	KD8
13	A1	U1-12	KD1	KD5	37	A3	U2-14	KD1	KD5	61	A5	U2-7	KD1	KD5	85	A7	U3-10	KD1	KD5
14	A#1	U1-12	KD2	KD6	38	A#3	U2-14	KD2	KD6	62	A#5	U2-7	KD2	KD6	86	A#7	U3-10	KD2	KD6
15	B1	U1-12	KD3	KD7	39	B3	U2-14	KD3	KD7	63	B5	U2-7	KD3	KD7	87	B7	U3-10	KD3	KD7
16	C2	U1-12	KD4	KD8	40	C4	U2-14	KD4	KD8	64	C6	U2-7	KD4	KD8	88	C8	U3-10	KD4	KD8
17	C#2	U1-11	KD1	KD5	41	C#4	U2-13	KD1	KD5	65	C#6	U3-15	KD1	KD5					
18	D2	U1-11	KD2	KD6	42	D4	U2-13	KD2	KD6	66	D6	U3-15	KD2	KD6					
19	D#2	U1-11	KD3	KD7	43	D#4	U2-13	KD3	KD7	67	D#6	U3-15	KD3	KD7					
20	E2	U1-11	KD4	KD8	44	E4	U2-13	KD4	KD8	68	E6	U3-15	KD4	KD8					
21	F2	U1-10	KD1	KD5	45	F4	U2-12	KD1	KD5	69	F6	U3-14	KD1	KD5					
22	F#2	U1-10	KD2	KD6	46	F#4	U2-12	KD2	KD6	70	F#6	U3-14	KD2	KD6					
23	G2	U1-10	KD3	KD7	47	G4	U2-12	KD3	KD7	71	G6	U3-14	KD3	KD7					
24	G#2	U1-10	KD4	KD8	48	G#4	U2-12	KD4	KD8	72	G#6	U3-14	KD4	KD8					