

MUSIC WORKSTATION KRONOS&KRONOS X -61/73/88 SERVICE MANUAL



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Additional models

KRONOS(K4~),KRONOS X
KRONOS X(Erp)

Page with the revised

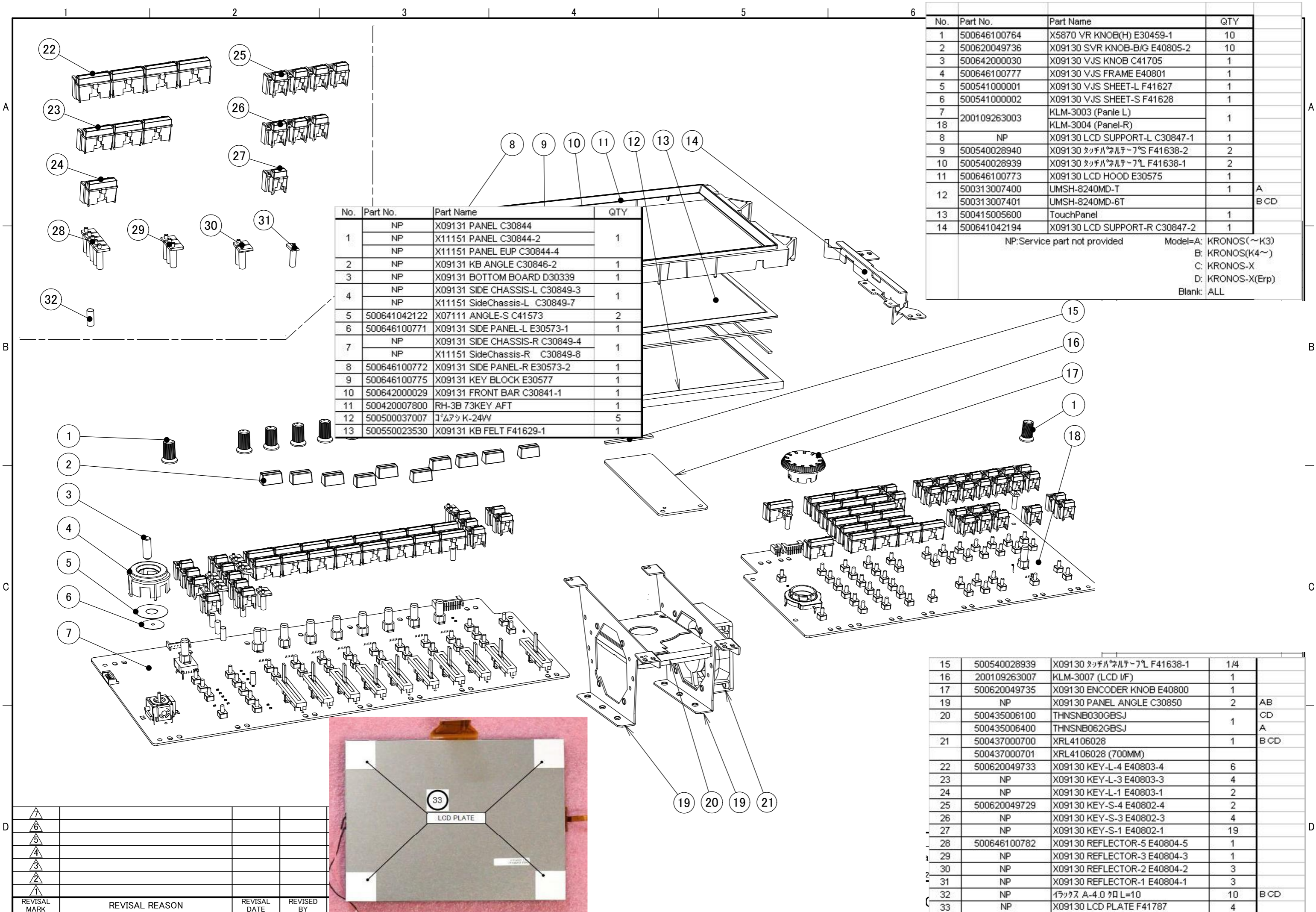
2~6: Add Model to Parts List
7: Add page of parts list & AC inlet
9:Block diagram of the models added
14~17,21,24,26: Adding a revised schematic
33,34: Add page of new PCB.
35: Added model to the title
37: Revised Fan control.
46: Revised Keyboard select
49,48: Add page of Auto Power off
51~53: Added model to parts list.

KORG

Issued: Oct. 12, 2012

Ver. 2.0

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No.	Part No.	Part Name	QTY
1	500646100764	X5870 VR KNOB(H) E30459-1	10
2	500620049736	X09130 SVR KNOB-B/G E40805-2	10
3	500642000030	X09130 VJS KNOB C41705	1
4	500646100777	X09130 VJS FRAME E40801	1
5	500541000001	X09130 VJS SHEET-L F41627	1
6	500541000002	X09130 VJS SHEET-S F41628	1
7	200109263003	KLM-3003 (Panel L)	1
18		KLM-3004 (Panel-R)	
8	NP	X09130 LCD SUPPORT-L C30847-1	1
9	500540028940	X09130 タッチパネル用7°S F41638-2	2
10	500540028939	X09130 タッチパネル用7°L F41638-1	2
11	500646100773	X09130 LCD HOOD E30575	1
12	500313007400	UMSH-8240MD-T	1
	500313007401	UMSH-8240MD-6T	1
13	500415005600	TouchPanel	1
14	500641042194	X09130 LCD SUPPORT-R C30847-2	1

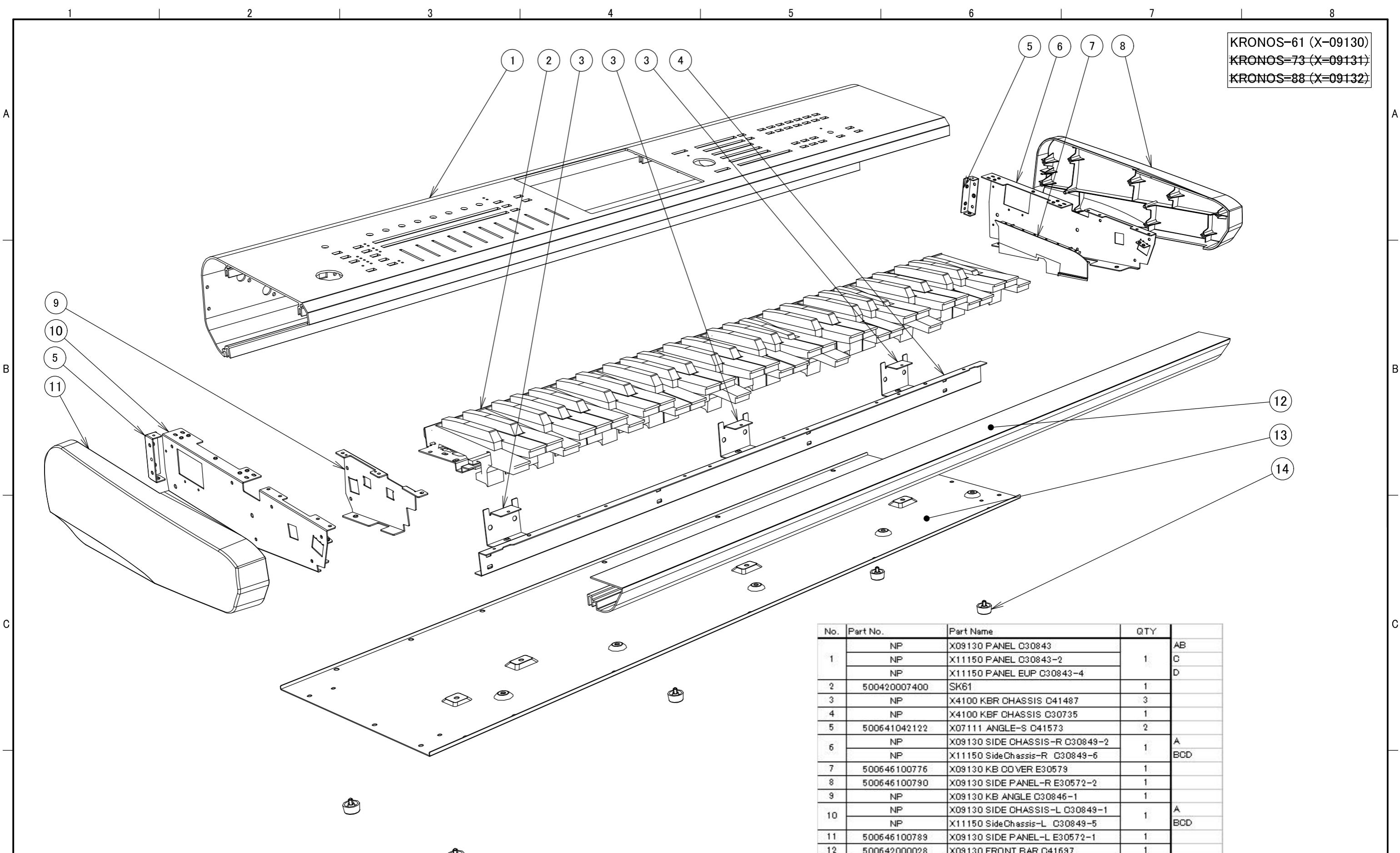
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 B: KRONOS(K4~)
 C: KRONOS-X
 D: KRONOS-X(Erp)
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No.	Part No.	Part Name	QTY
1	NP	X09131 PANEL C30844	1
	NP	X11151 PANEL C30844-2	
	NP	X11151 PANEL EUP C30844-4	
2	NP	X09131 KB ANGLE C30846-2	1
3	NP	X09131 BOTTOM BOARD D30339	1
4	NP	X09131 SIDE CHASSIS-L C30849-3	1
	NP	X11151 SideChassis-L C30849-7	
5	500641042122	X07111 ANGLE-S C41573	2
6	500646100771	X09131 SIDE PANEL-L E30573-1	1
7	NP	X09131 SIDE CHASSIS-R C30849-4	1
	NP	X11151 SideChassis-R C30849-8	
8	500646100772	X09131 SIDE PANEL-R E30573-2	1
9	500646100775	X09131 KEY BLOCK E30577	1
10	500642000029	X09131 FRONT BAR C30841-1	1
11	500420007800	RH-3B 73KEY AFT	1
12	500500037007	キーブロック K-24W	5
13	500550023530	X09131 KB FELT F41629-1	1

15	500540028939	X09130 タッチパネル用7°L F41638-1	1/4
16	200109263007	KLM-3007 (LCD IF)	1
17	500620049735	X09130 ENCODER KNOB E40800	1
19	NP	X09130 PANEL ANGLE C30850	2
20	500435006100	THNSNB030GBSJ	1
	500435006400	THNSNB062GBSJ	
21	500437000700	XRL4106028	1
	500437000701	XRL4106028 (700MM)	
22	500620049733	X09130 KEY-L-4 E40803-4	6
23	NP	X09130 KEY-L-3 E40803-3	4
24	NP	X09130 KEY-L-1 E40803-1	2
25	500620049729	X09130 KEY-S-4 E40802-4	2
26	NP	X09130 KEY-S-3 E40802-3	4
27	NP	X09130 KEY-S-1 E40802-1	19
28	500646100782	X09130 REFLECTOR-5 E40804-5	1
29	NP	X09130 REFLECTOR-3 E40804-3	1
30	NP	X09130 REFLECTOR-2 E40804-2	3
31	NP	X09130 REFLECTOR-1 E40804-1	3
32	NP	キーブロック A-4.0 角 L=10	10
33	NP	X09130 LCD PLATE F41787	4



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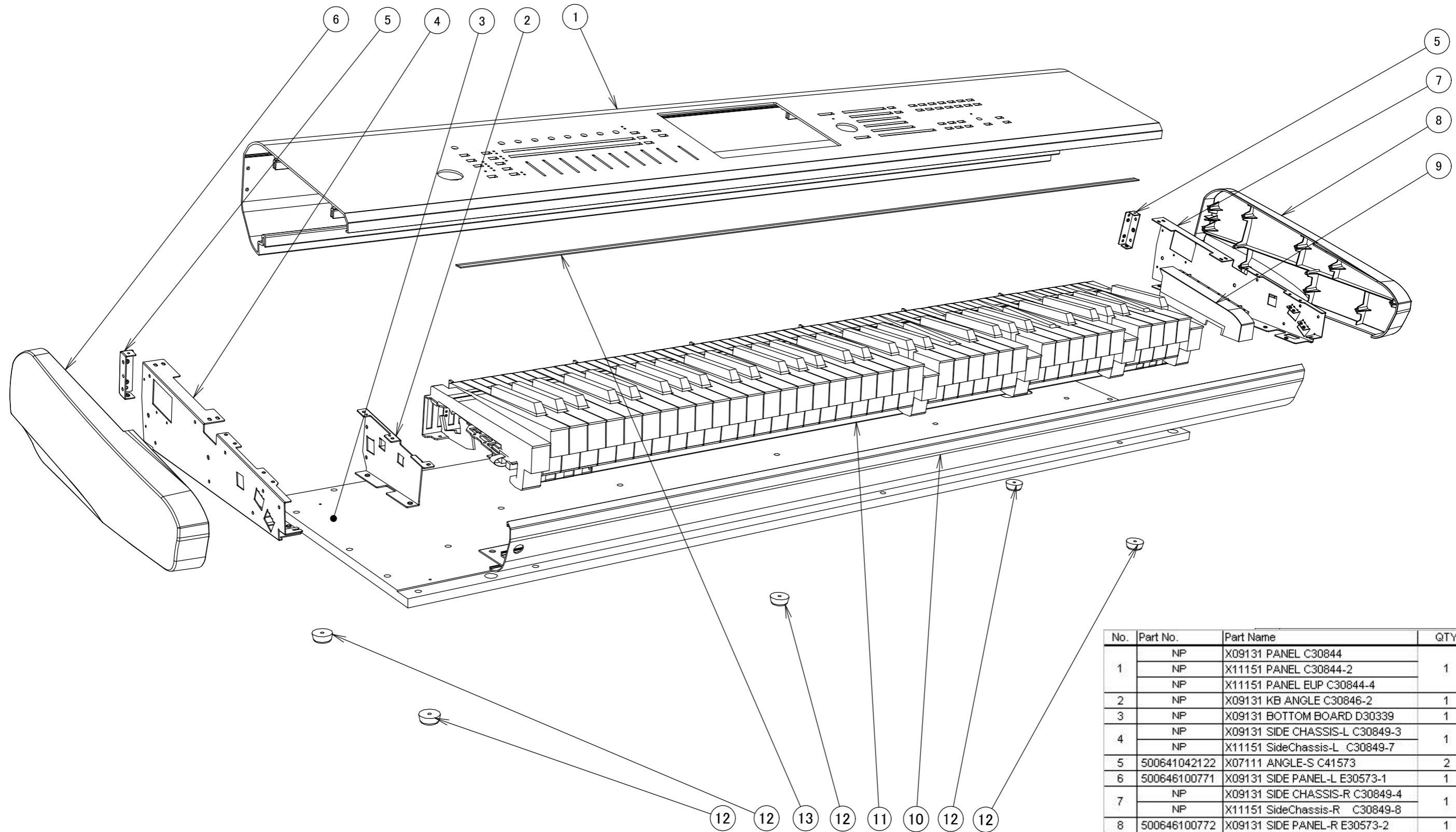
KRONOS=61 (X=09130)
 KRONOS=73 (X=09131)
 KRONOS=88 (X=09132)

No.	Part No.	Part Name	QTY	
1	NP	X09130 PANEL C30843	1	AB
	NP	X11150 PANEL C30843-2		C
	NP	X11150 PANEL EUP C30843-4		D
2	500420007400	SK61	1	
3	NP	X4100 KBR CHASSIS C41487	3	
4	NP	X4100 KBF CHASSIS C30735	1	
5	500641042122	X07111 ANGLE-S C41573	2	
6	NP	X09130 SIDE CHASSIS-R C30849-2	1	A
	NP	X11150 SideChassis-R C30849-6		BCD
7	500646100776	X09130 KB COVER E30579	1	
8	500646100790	X09130 SIDE PANEL-R E30572-2	1	
9	NP	X09130 KB ANGLE C30846-1	1	
	NP	X09130 SIDE CHASSIS-L C30849-1		A
10	NP	X11150 SideChassis-L C30849-5	1	BCD
	500646100789	X09130 SIDE PANEL-L E30572-1		1
12	500642000028	X09130 FRONT BAR C41697	1	
13	NP	X09130 BOTTOM COVER C20467	1	ABC
	NP	X09130 BOTTOM COVER C20467-2		D
14	500500022500	FF-004-AR791	5	

NP: Service part not provided Model=A: KRONOS(~K3)
 B: KRONOS(K4~)
 C: KRONOS-X
 D: KRONOS-X(Erp)
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KRONOS-61 (X-09130)
 KRONOS-73 (X-09131)
 KRONOS-88 (X-09132)

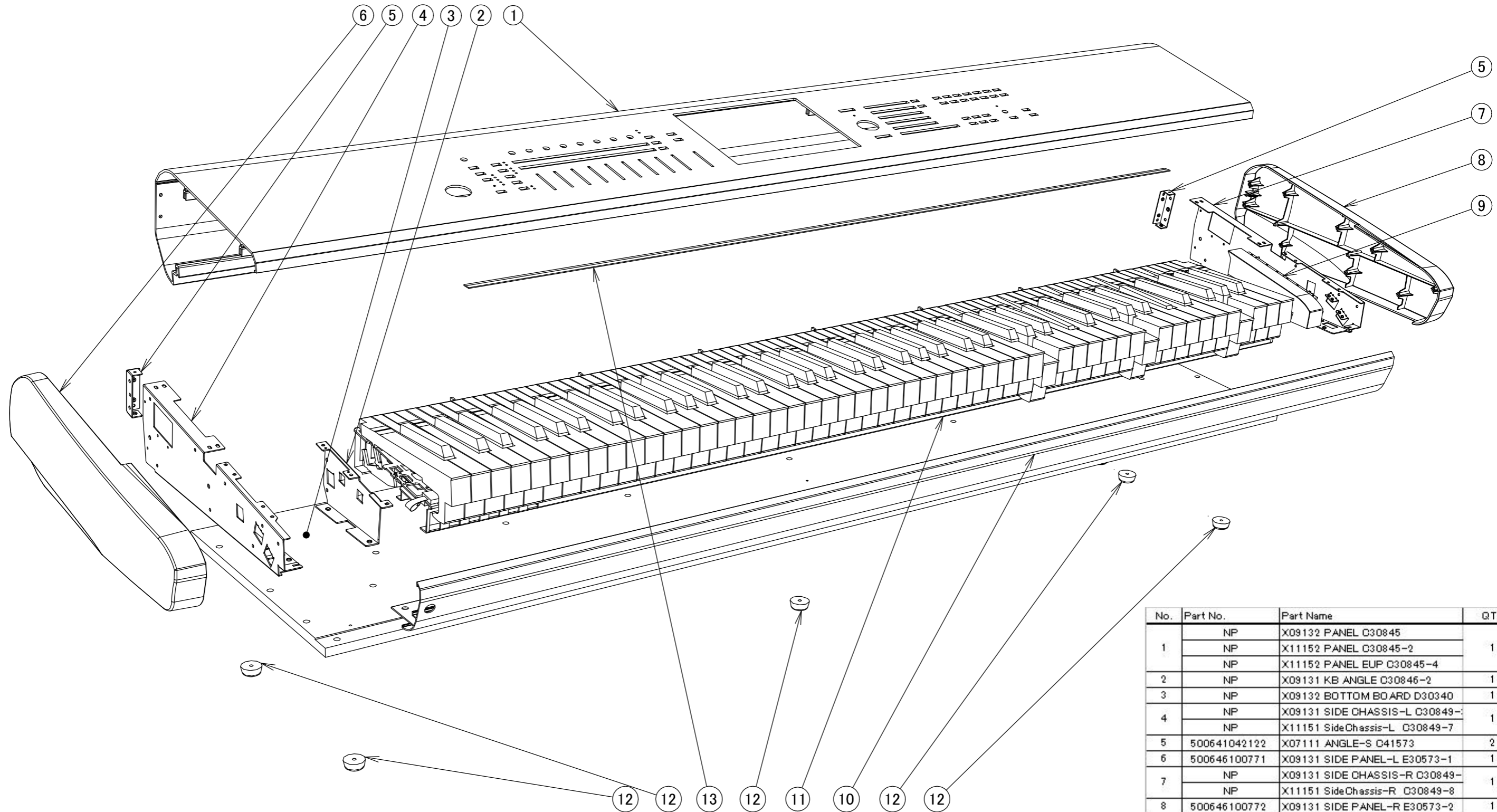


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1	NP	X09131 PANEL C30844	1	A
	NP	X11151 PANEL C30844-2		BC
	NP	X11151 PANEL ELP C30844-4		D
2	NP	X09131 KB ANGLE C30846-2	1	
3	NP	X09131 BOTTOM BOARD D30339	1	
4	NP	X09131 SIDE CHASSIS-L C30849-3	1	A
	NP	X11151 SideChassis-L C30849-7		BCD
5	500641042122	X07111 ANGLE-S C41573	2	
	500646100771	X09131 SIDE PANEL-L E30573-1		1
7	NP	X09131 SIDE CHASSIS-R C30849-4	1	A
	NP	X11151 SideChassis-R C30849-8		BCD
8	500646100772	X09131 SIDE PANEL-R E30573-2	1	
9	500646100775	X09131 KEY BLOCK E30577	1	
10	500642000029	X09131 FRONT BAR C30841-1	1	
11	500420007800	RH-3B 73KEY AFT	1	
12	500500037007	3'Δ7' K-24W	5	
13	500550023530	X09131 KB FELT F41629-1	1	

NP: Service part not provided Model=A: KRONOS(~K3)
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KRONOS=61 (X=09130)
 KRONOS=73 (X=09131)
 KRONOS=88 (X=09132)



No.	Part No.	Part Name	QTY	
1	NP	X09132 PANEL C30845	1	A
	NP	X11152 PANEL C30845-2		BC
	NP	X11152 PANEL EUP C30845-4		D
2	NP	X09131 KB ANGLE C30846-2	1	
3	NP	X09132 BOTTOM BOARD D30340	1	
4	NP	X09131 SIDE CHASSIS-L C30849-	1	A
	NP	X11151 SideChassis-L C30849-7		BCD
5	500641042122	X07111 ANGLE-S C41573	2	
	500646100771	X09131 SIDE PANEL-L E30573-1		
7	NP	X09131 SIDE CHASSIS-R C30849-	1	A
	NP	X11151 SideChassis-R C30849-8		BCD
8	500646100772	X09131 SIDE PANEL-R E30573-2	1	
9	500646100775	X09131 KEY BLOCK E30577	1	
10	500642000032	X09132 FRONT BAR C30841-2	1	
11	500420007600	RH3-88 (AFT)	1	A
	500420007601	RH-3D 88KEY AFT		BCD
12	500500037007	K-24W (Rubber feet)	5	
13	500550023531	X09132 KB FELT F41629-2	1	

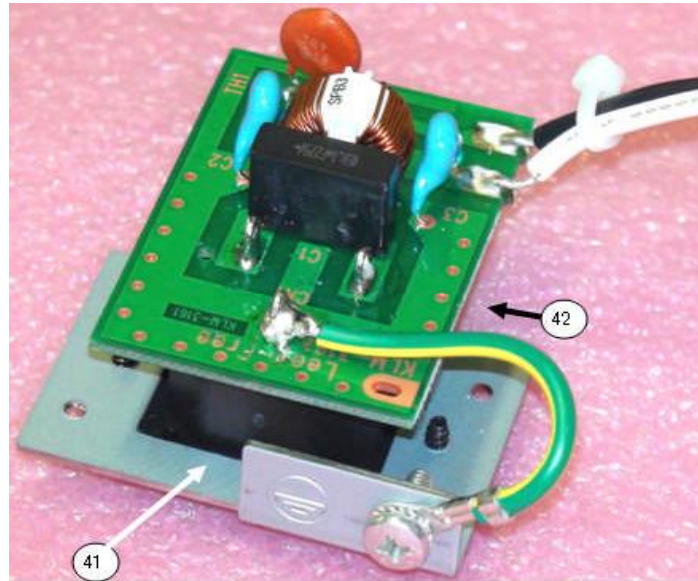
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 C: KRONOS-X
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NP: Service part not provided

Model=A: KRONOS(～K3)
 B: KRONOS(K4～)
 C: KRONOS-X
 D: KRONOS-X(Erp)
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AC inlet and Line filter (Model=B,C,D)

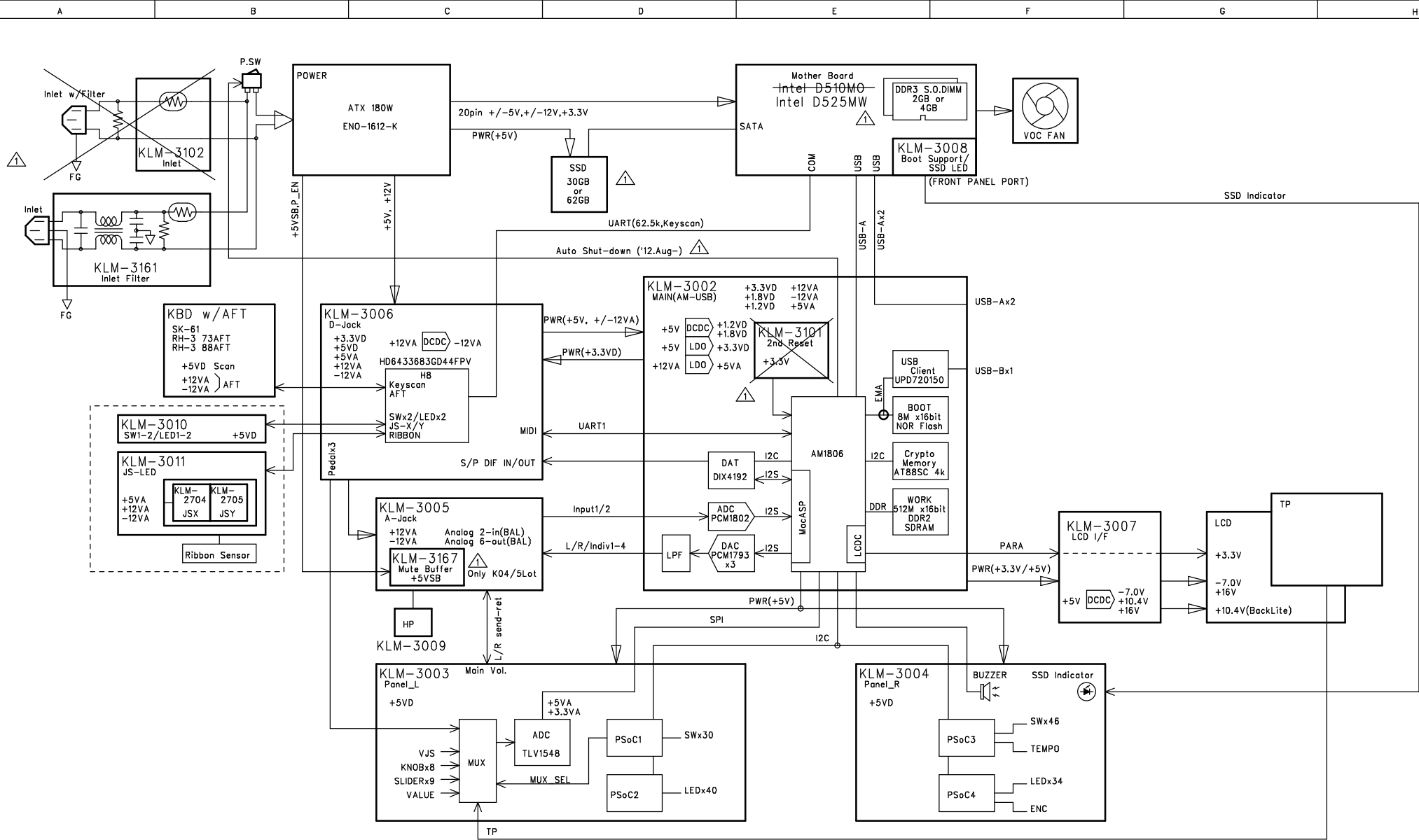


NP: Service part not provided

Model=A: KRONOS(～K3)
 B: KRONOS(K4～)
 C: KRONOS-X
 D: KRONOS-X(Erp)
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No.	Part No.	Part Name	QTY	
1	NP	X09130 PCB STAY C41707	2	
2		KLM-3005 (D-Jack)		
5	*1)	KLM-3006 (A-Jack)	1	
14		KLM-3008 (BootSupport)		
33		KLM-3009 (HP)		
3	*1)	KLM-3002 (Main)	1	
4	200109263003	KLM-3003 (Panle L)	1/2	
10		KLM-3004 (Panel-R)	1/2	
6	500540028938	ACInlet (SUP-J3G-E2A)	1	A
41	500540028954	AC-P16CS40		BCD
7	NP	KLM-3102	1	A
42	200109263161	KLM-3161 KRONOS-61/73/88		BCD
8	NP	X4210 PW CHASSIS C41501	1	
9	*1)500375011100	PowerSW	1	
	500375017600			
	*1)500646040900	Barrier		
	500646107097			
11	500002190400	ENO-1612-K (D510MO)	1	A
	500002190401	ENO-1612-K (D525MW)		BCD
12	500641042191	X09130 PCB ANGLE C41708	3	
13	500641042197	X09130 MB ANGLE-B C41709	1	
15	NP	MotherBoard(BLKD510M0)	1	A
	200002189801	BLKD525MW (SPARE)		BCD
16	NP	X09130 MB ANGLE-A C30851	1	
17	NP	X09131 MB ANGLE-B C30848-2	1	
18	NP	X09131 MB ANGLE-A C30848-1	1	
19	NP	X09131 PMR SHIELD F41702	1	
20	NP	X09131 MB SHIELD F41701	2	A
	NP	X11151 MB SHIELD2 F41788		BCD
21	500620044800	ROTARY VR KNOB KOC-E48026-1	2	
22	500620018200	POWER SWKNOB KOC-E40224	2	
23	NP	X09130 KB SHIELD F41700	1	
31	NP	X09130 HP ANGLE C41706	1	
32	500646100774	X09130 JS PANEL E30576	1	
34	500415005000	KX-2100(Sensor) Black	1	
35	NP	X4100 FSRカチカ2 C41489	1	
36	500646100791	X09130 JS REFLECTOR E40747-2	1	
37	NP	X09130 KEY-L-1 E40803-1	2	
38	200109263010	KLM-3011 (JS-LED)	1	
39		KLM-3010 (SW1-2)		
40	500646100703	X4100 JS COVER E40702-2	1	
40	500646100068	X4100 JS WHEEL E40703	1	
40	500646100070	X4100 JS WHEEL SUPPORT E30455	1	
40	500646100071	X4100 JS FRAME E30456	1	
40	500646100069	X4100 JS PLATE E40704	1	
40	500644010500	X-0100 ホールスプリング KOC-C41222	2	
40	500540026500	X-0100 JSワッシャー KOC-F40979	2	
40	200062462704	KLM-2704 (JSX)	1/4	
40		KLM-2705 (JSY)		

*1) Please see parts list

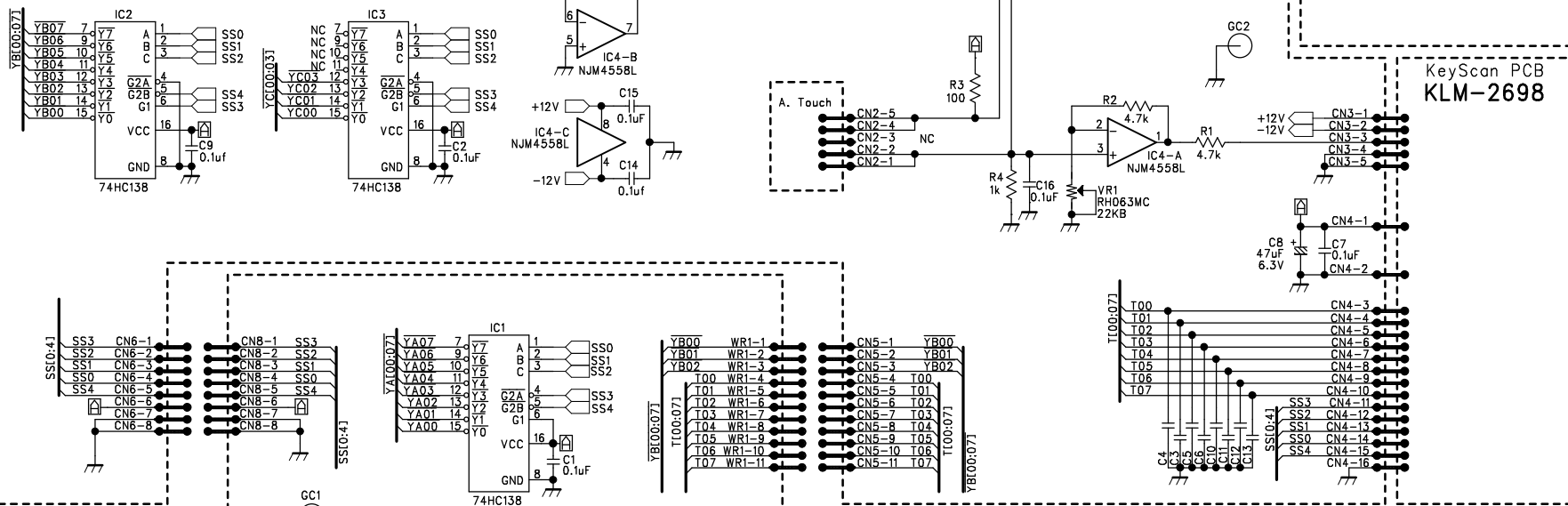
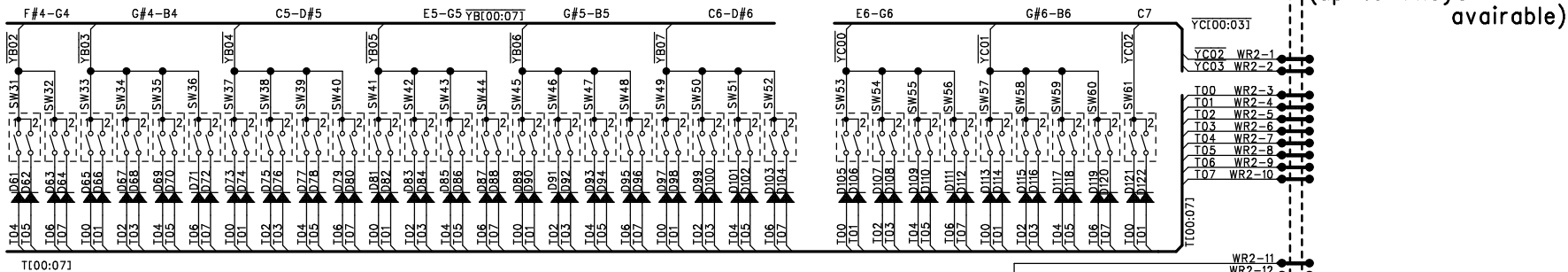


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DRAWN BY	DESIGNED BY	CHECKED BY	MODEL X-09130/31/32/11150/51/52
			TITLE
S.Nomura			Block Diagram
KORG		DRAWING NO. KOD-B30116	DATE '11.01.26

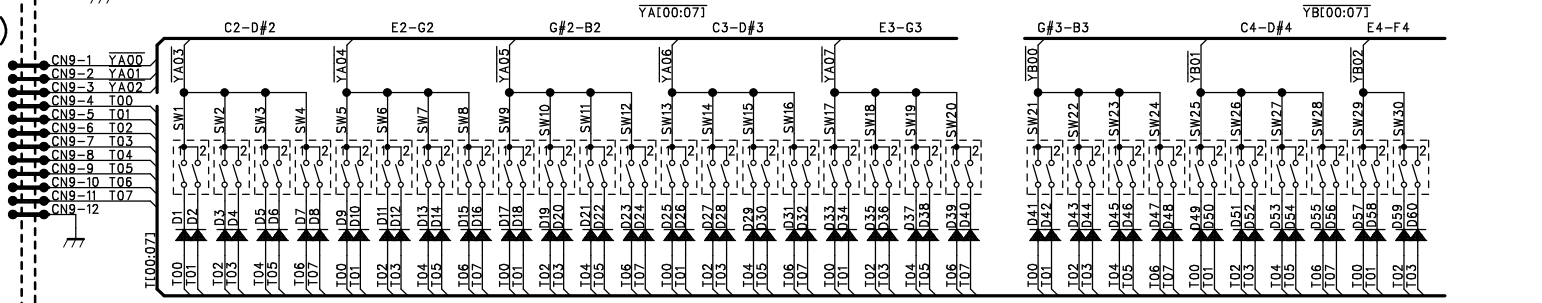
KLM-2782 Upper Side(31keys:F#4-C7)

73/76key Upper Side
(up to 7keys
available)



73/76key Lower Side
(up to 12keys
available)

KLM-2781 Lower Side(30keys:C2-F4)

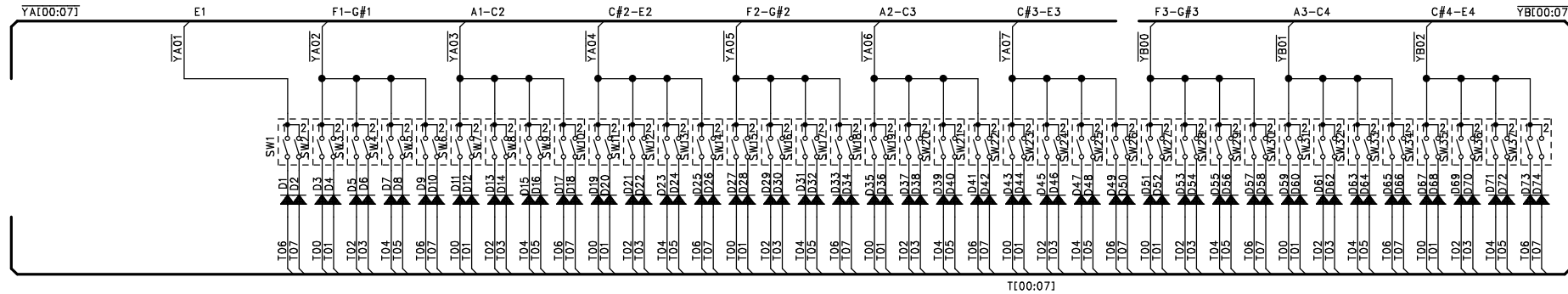
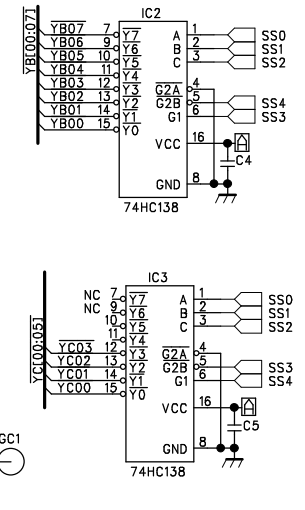
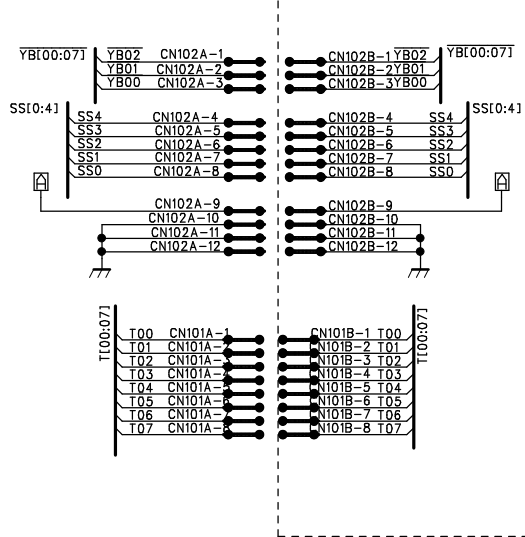
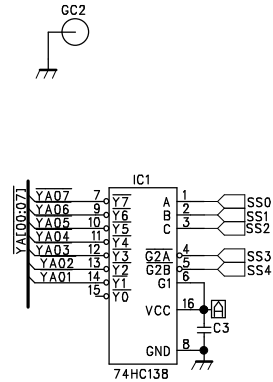
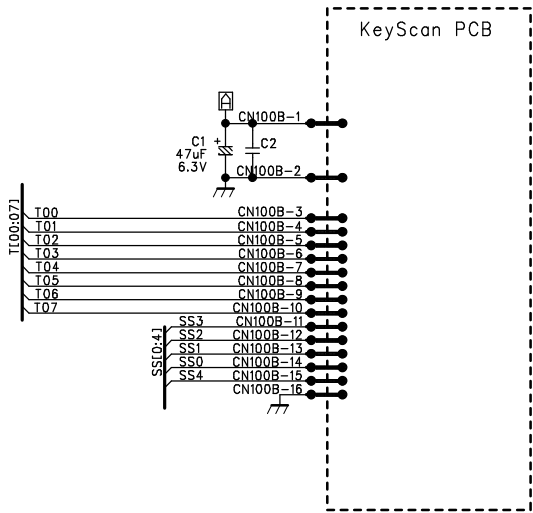
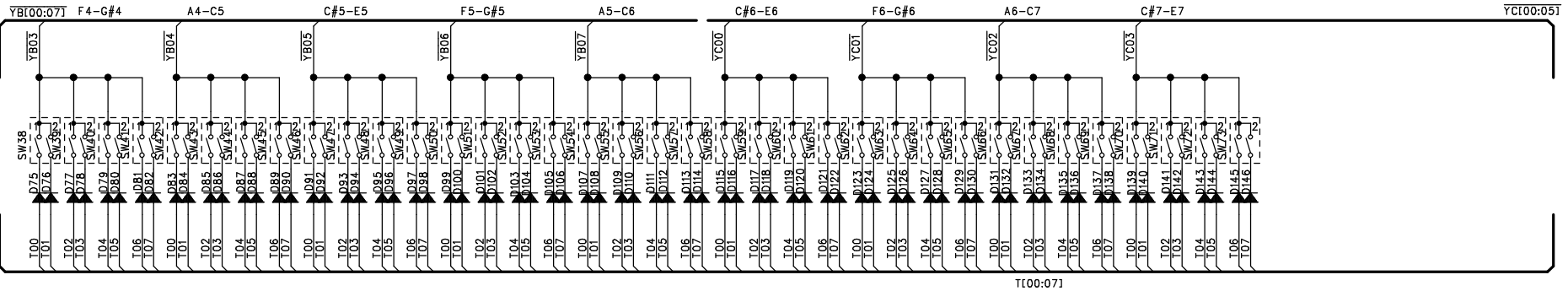


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1: First Contact Point
2: Second Contact Point

DRAWN BY	DESIGNED BY	CHECKED BY	MODEL	Single-61/73/76
S.Nomura	S.Nomura	TAMURA	TITLE Single KBD Share PCB KLM-2781/82 CIRCUIT DIAGRAM	
			'06.10.23	
KORG		DRAWING NO.	DATE	
		KOD-A30722	060601	

KLM-2946 Upper Side(36keys:F4-E7)

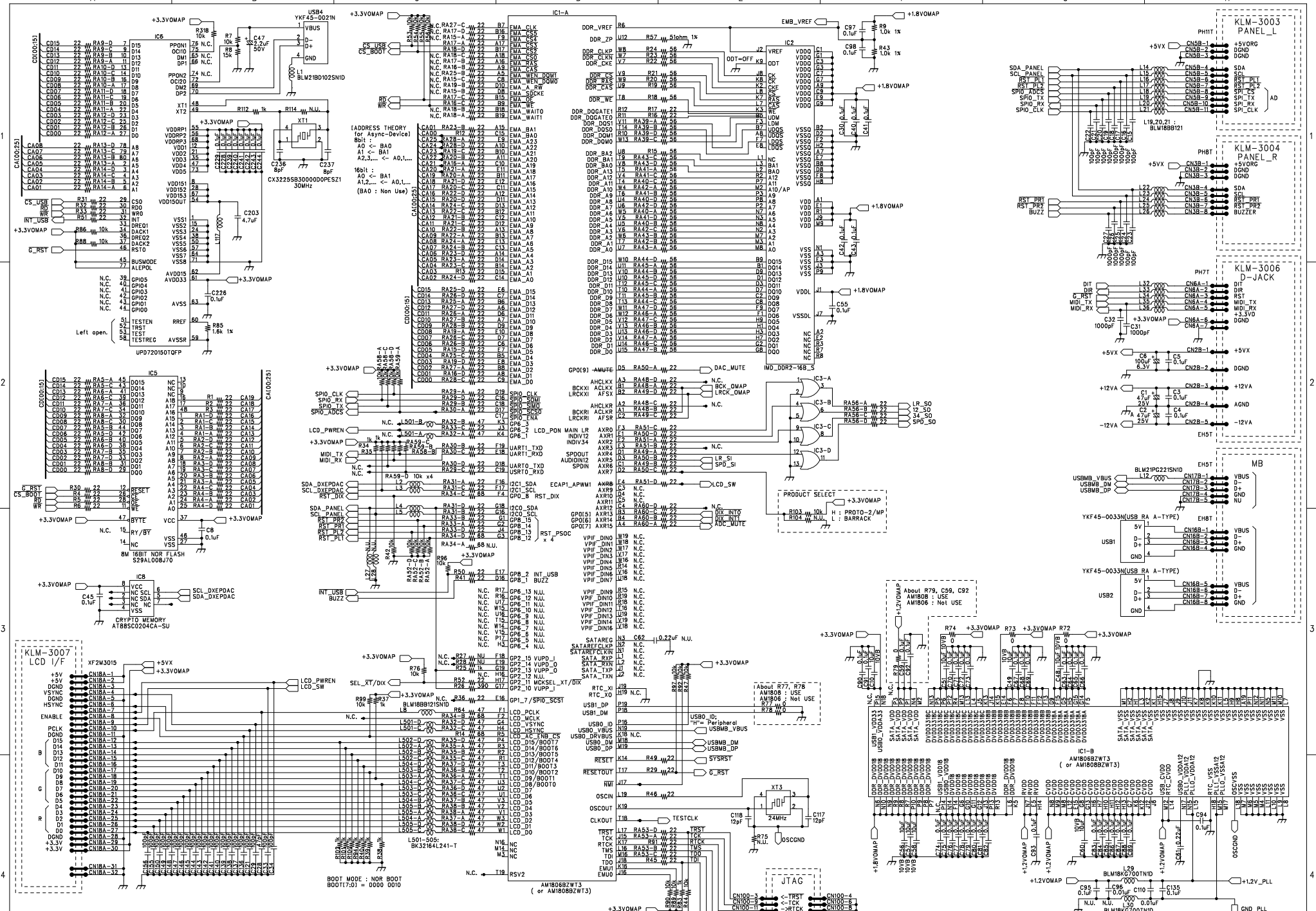


KLM-2945 Lower Side(37keys:E1-E4)

1: First Contact Point
2: Second Contact Point

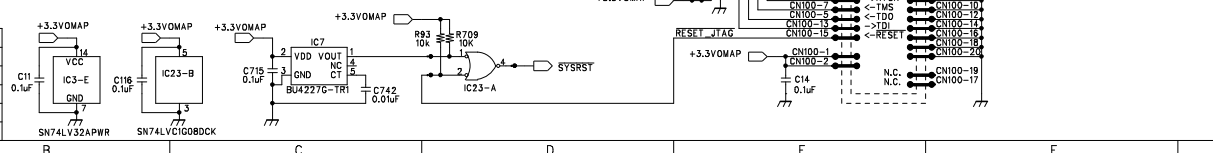
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DRAWN BY	DESIGNED BY	CHECKED BY	MODEL	RH-3 73key
m.Hoshino Technics			TITLE	RH-3-73 KLM-2945/46 CIRCUIT DIAGRAM
KORG		DRAWING NO.	KOD-A30814	
				DATE
				080804

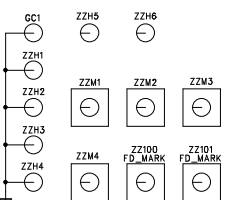
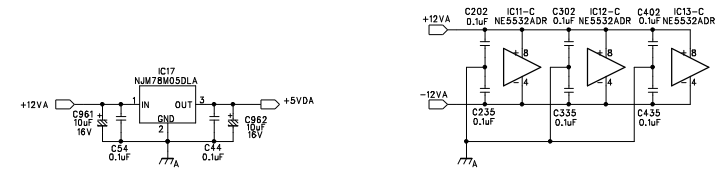
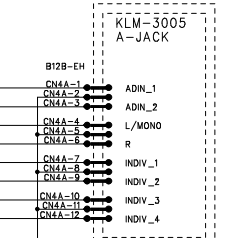
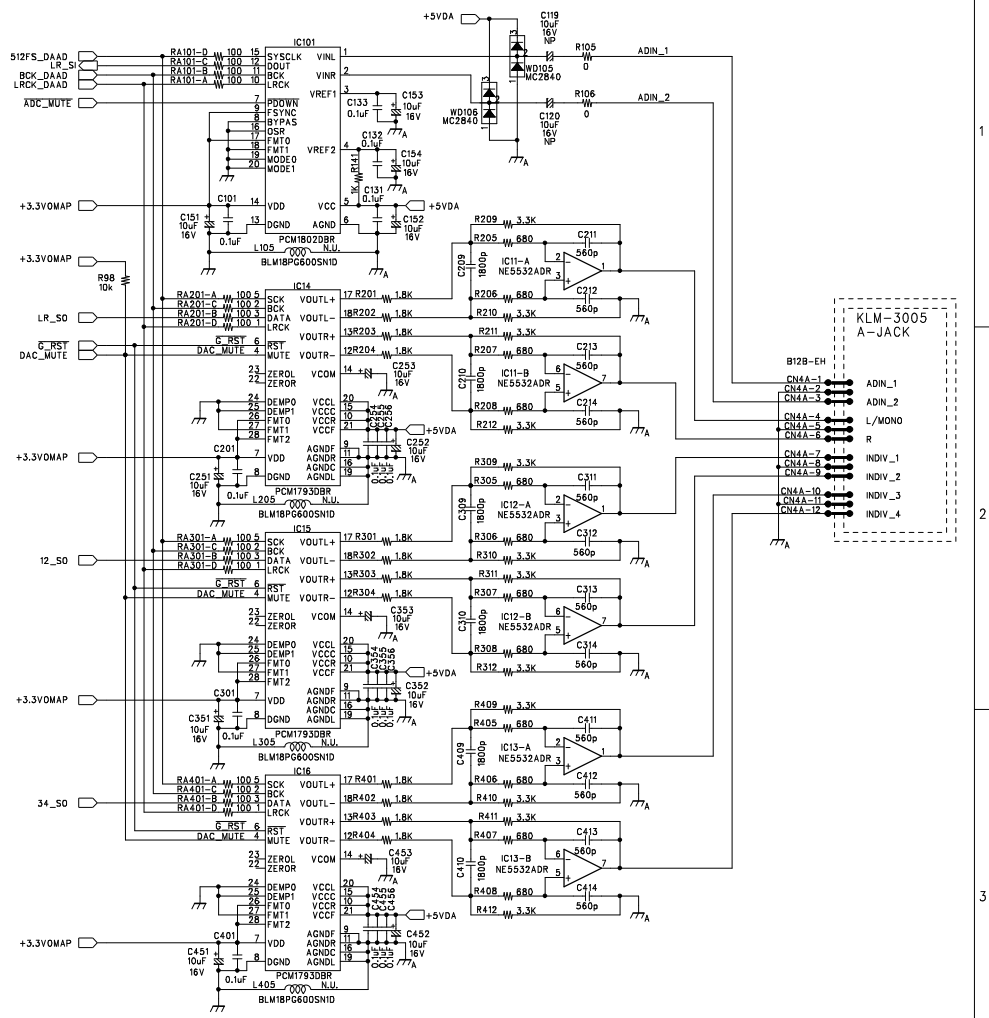
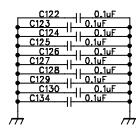
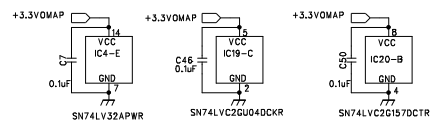
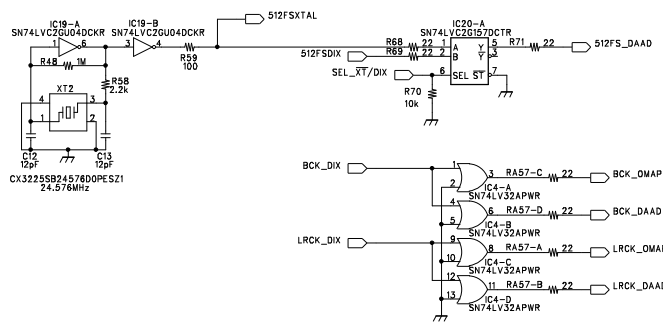
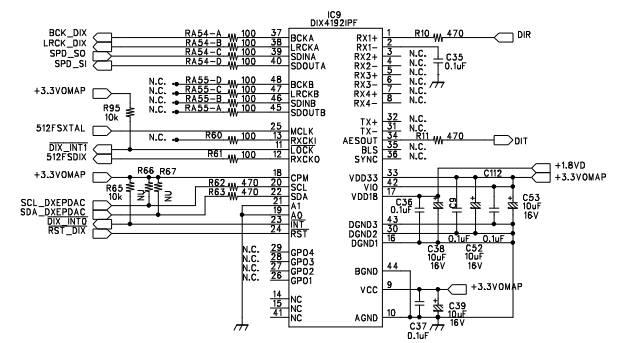
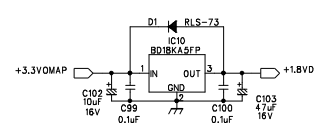
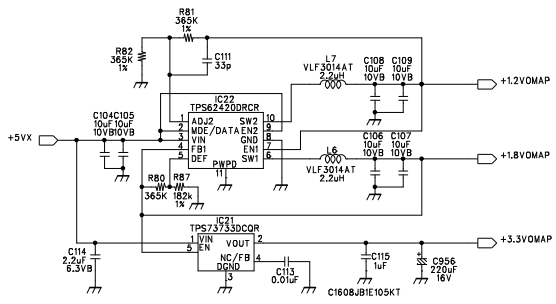


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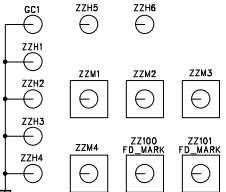
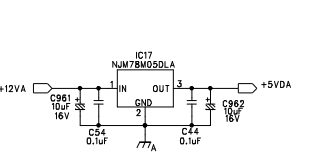
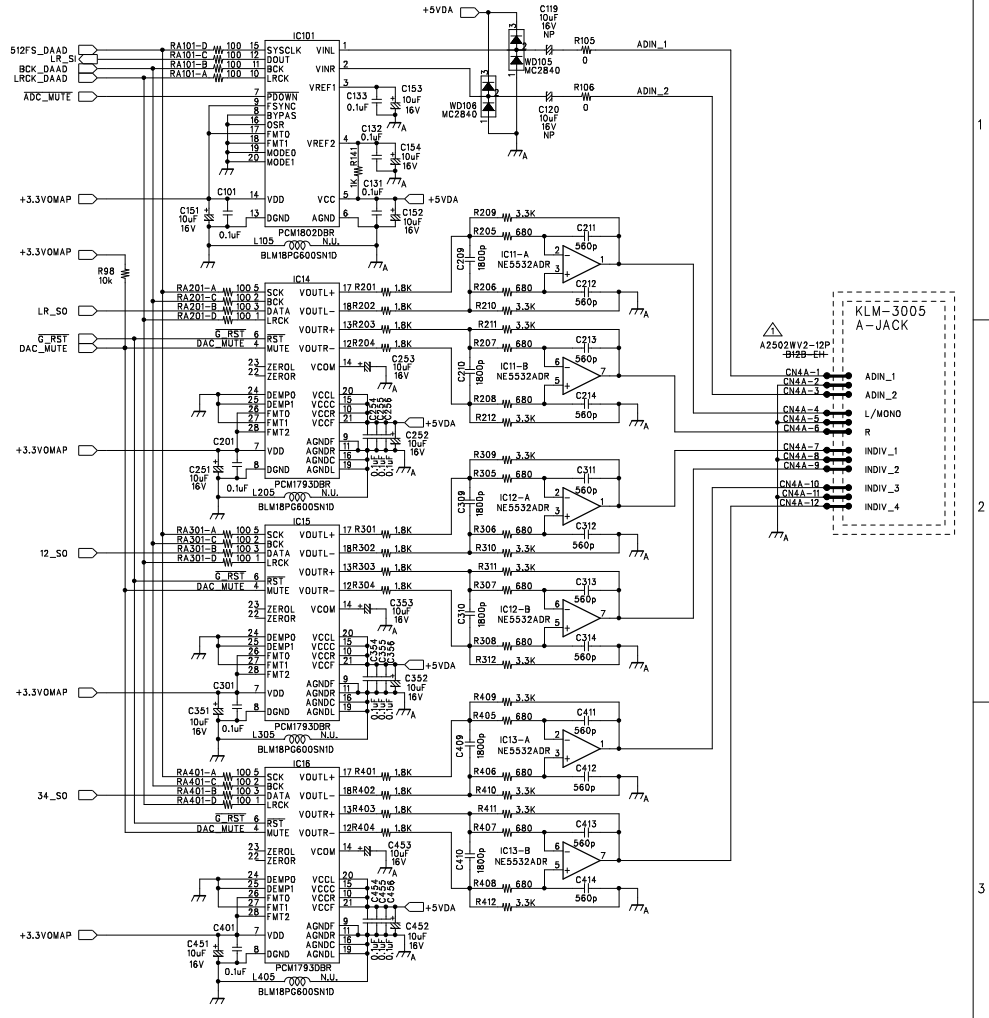
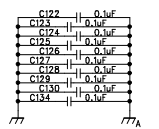
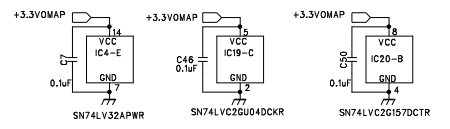
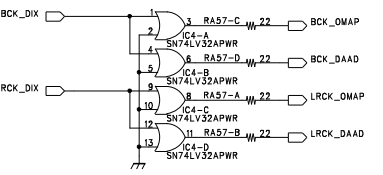
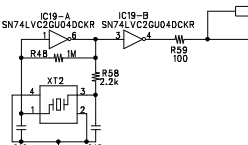
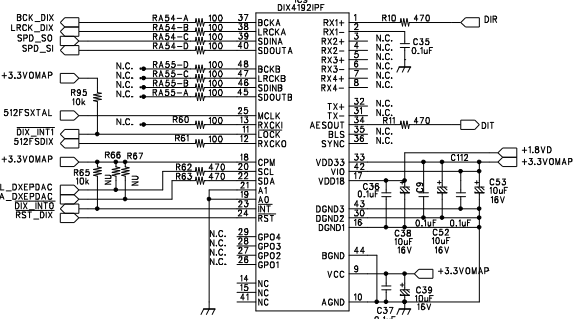
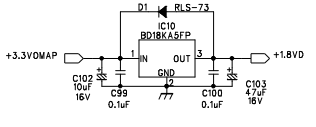
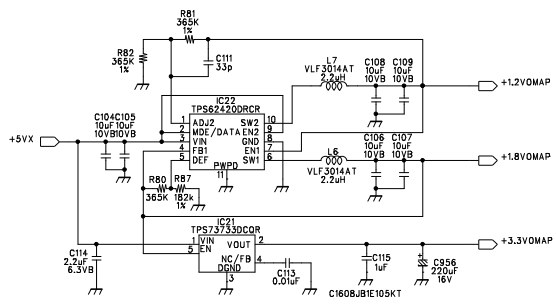


DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/31/32	
S.Nomura	Mosato Adachi		TITLE	KLM-3002 OMAP PCB(1/2)	
DRAWING NO.		KOD-A30876	C	DATE	2011. 2. 1



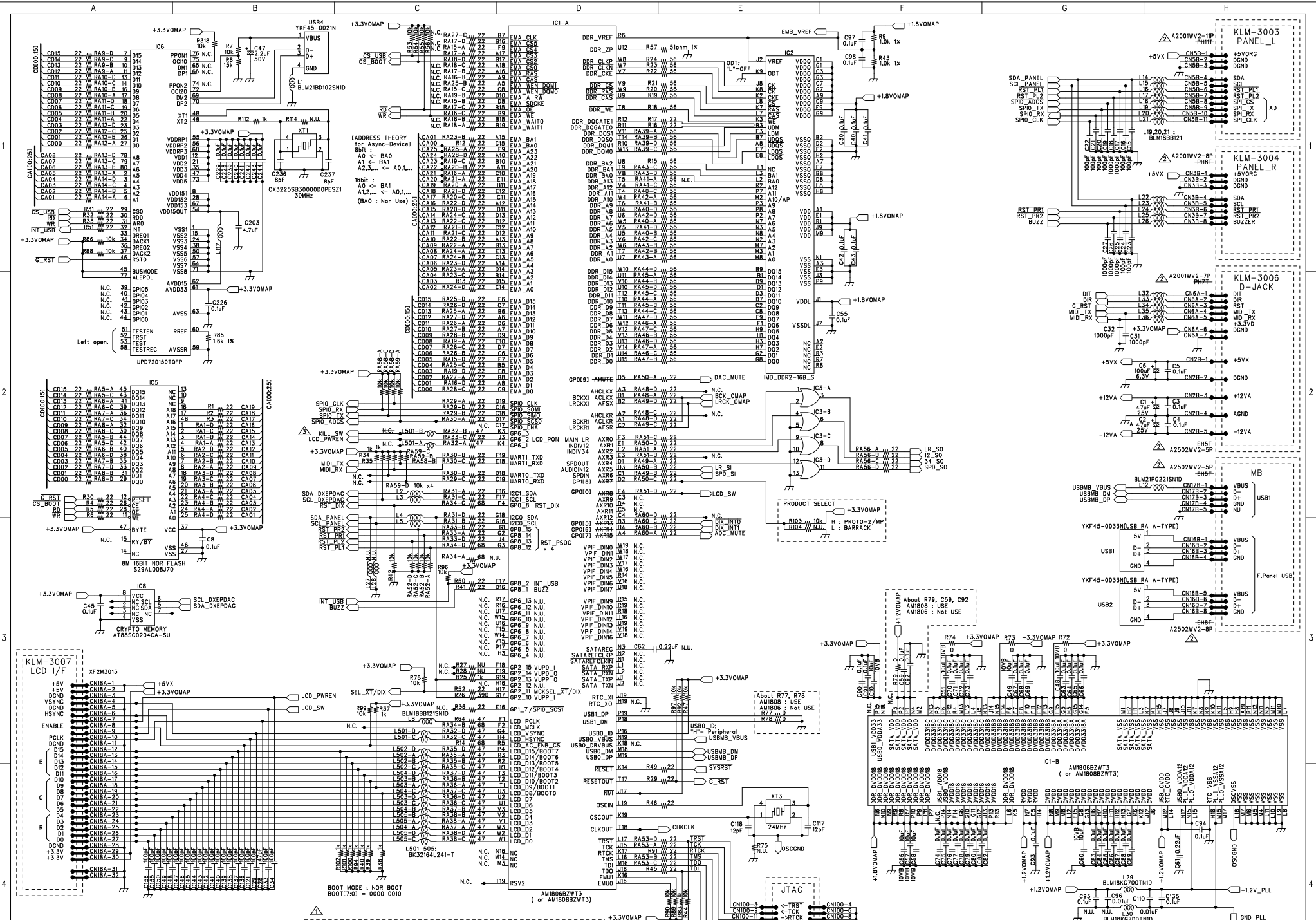
MARK	REVISION	REASON	DATE	REVISED BY
△				
△				
△				
△				

DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/31/32
S.Nomura		Mosato Adachi	TITLE	KLM-3002
				OMAP PCB(2/2)
DRAWING NO.			KOD-A30882	DATE
KORG			C	2010.11.11



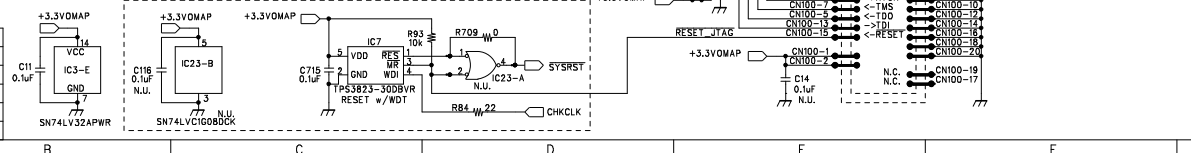
MARK	REVISION REASON	DATE	REVISED BY
△	Added New Products	2012. 3.29	S.NOMURA
△	Correct the part name	2011. 5.17	S.NOMURA

DRAWN BY	DESIGNED BY	CHECKED BY	MODEL	X-09130/31/32/11150/51/52
S.Nomura	S.Nomura		TITLE	KLM-3002
				OMAP PCB(1/2)
DRAWING NO.			KOD-A30882	DATE
D				2010.11.11



non value L:MMZ1608Y102

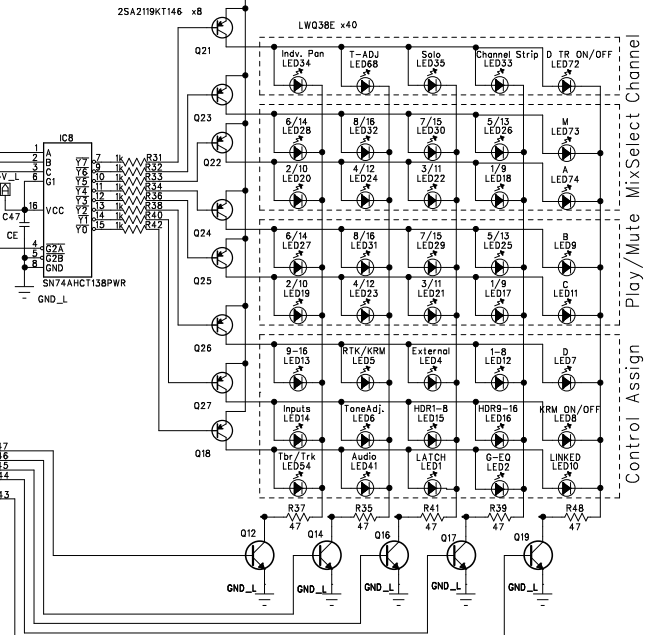
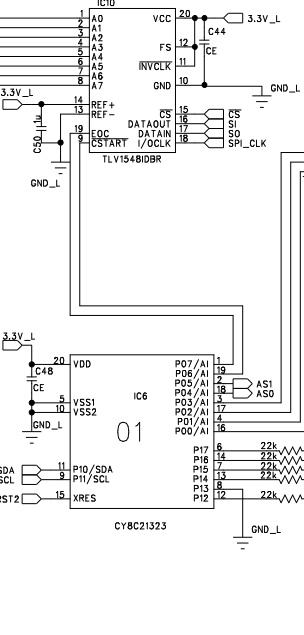
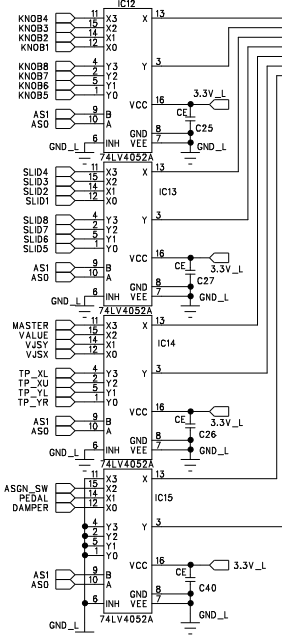
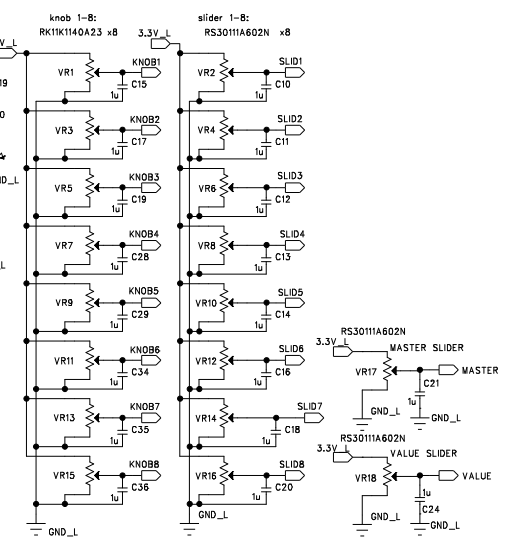
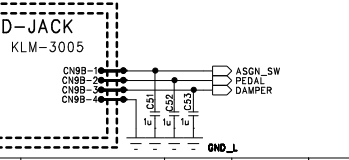
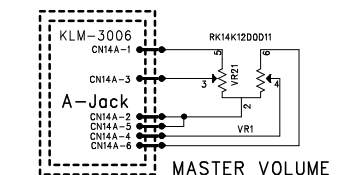
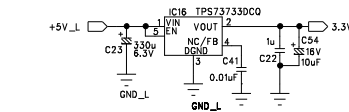
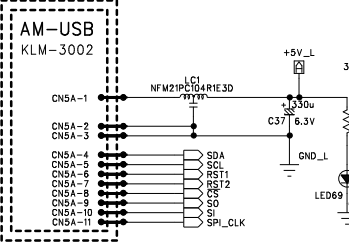
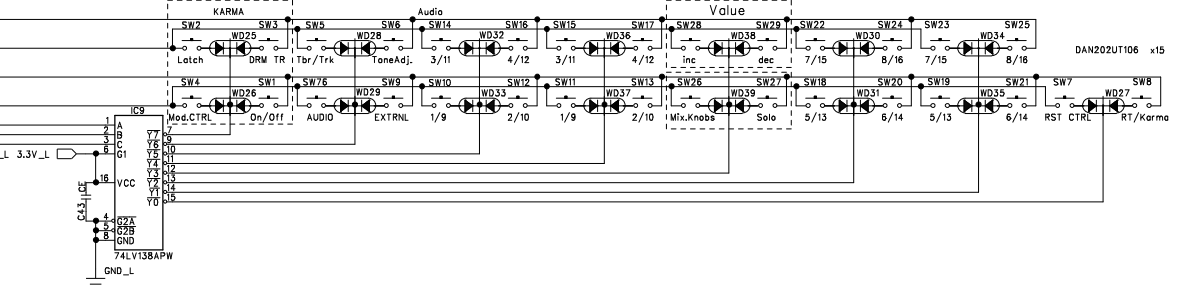
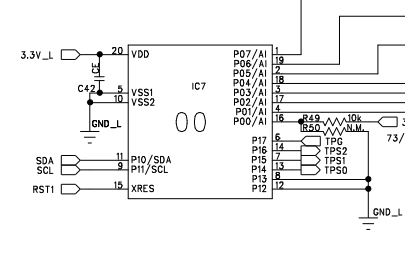
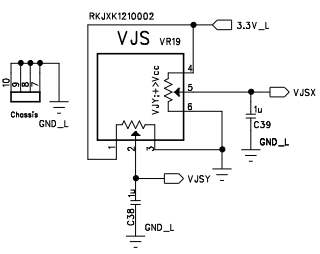
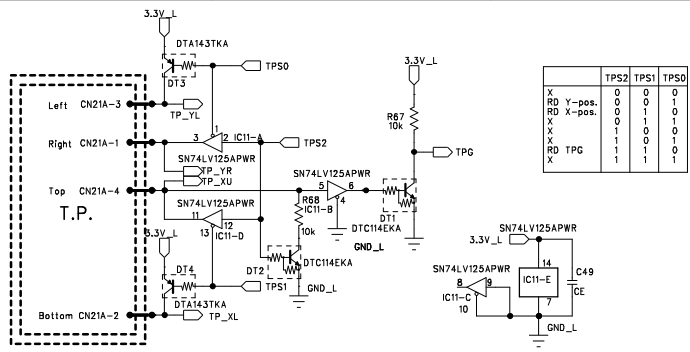
MARK	REVISION	REASON	DATE	REVISED BY
△		Added signal for Eup	2012.4.23	S.NOMURA
△		Correct the part name	2011.5.17	S.NOMURA
△		Measures for AM1806B BUG	2011.4.13	S.NOMURA



DRAWN BY	DESIGNED BY	CHECKED BY	MODEL	TITLE
S.Nomura	S.Nomura		X-09130/31/32/1150/51/52	KLM-3002 OMAP PCB(1/2)

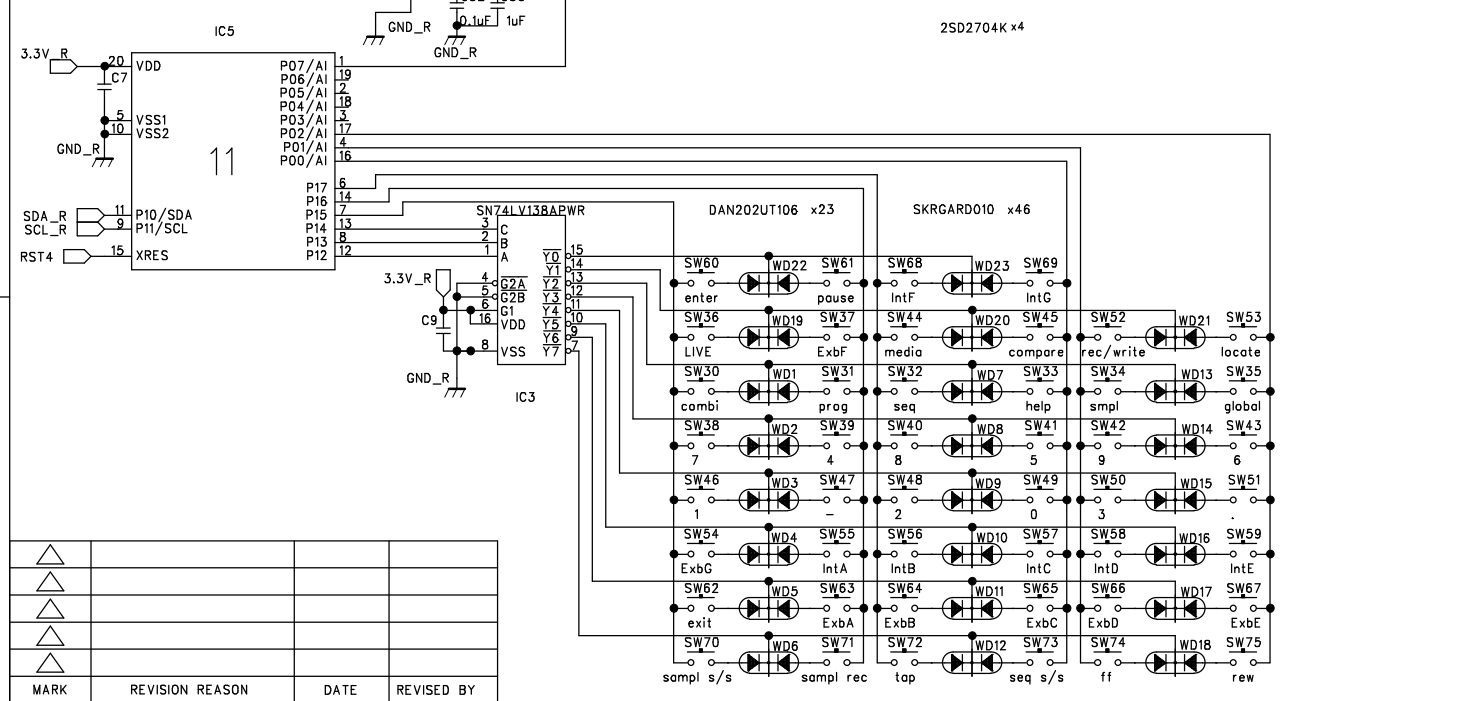
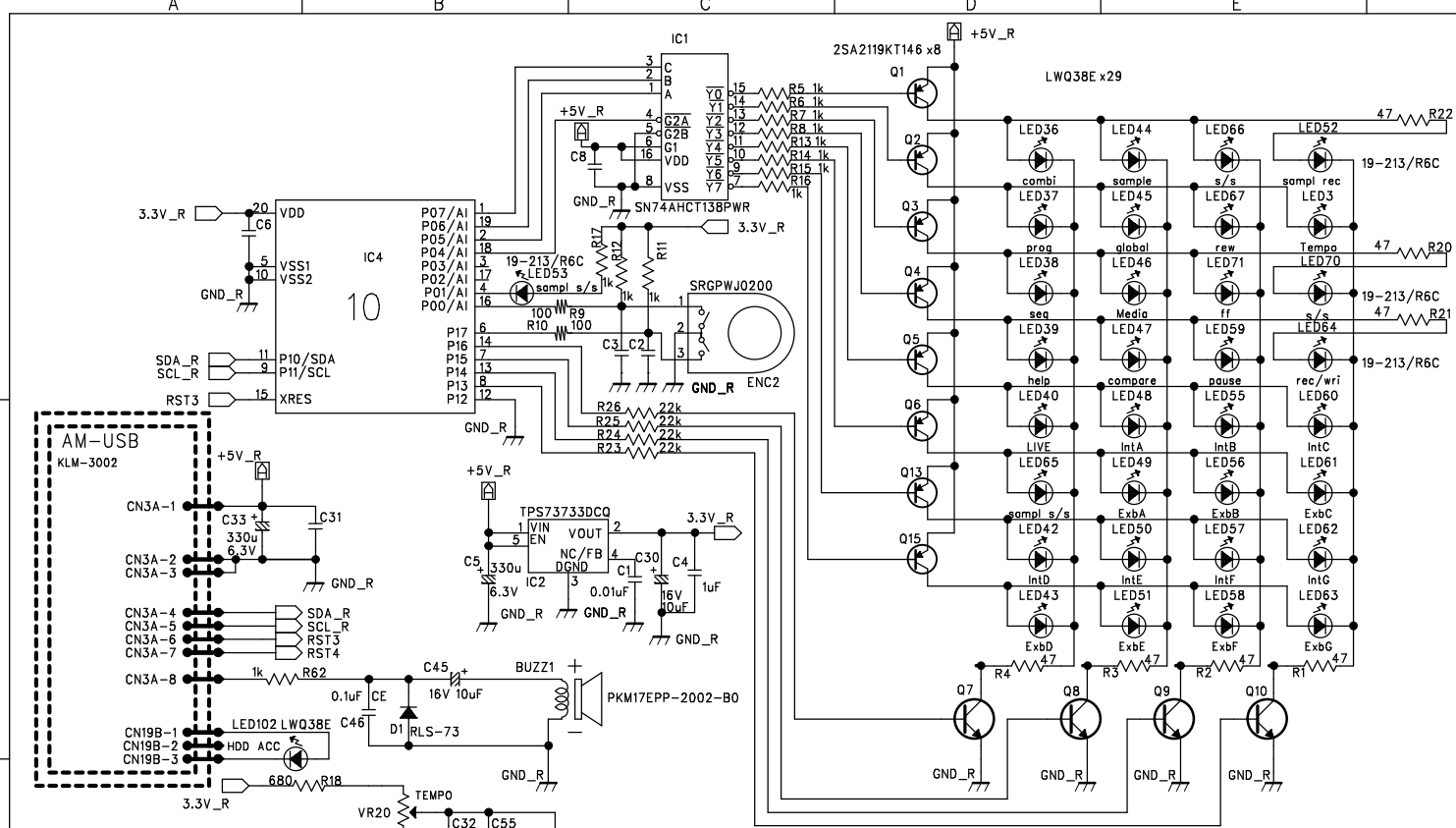
DRAWING NO. KOD-A30876 E DATE 2012. 5.24

KORG



MARK	REVISION	REASON	DATE	REVISED	APPROVED

DRAWN BY	DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	(X-09130/1)
DRG	DRG	Y.Tomiyama	Mesato Adachi	KLM-3003	CIRCUIT DIAGRAM
DRAWING NO.				KOD-A30877	DATE
KORG				Dec.27'10	

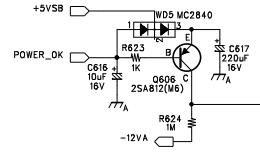
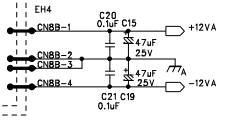


MARK	REVISION	REASON	DATE	REVISED BY
△				
△				
△				
△				

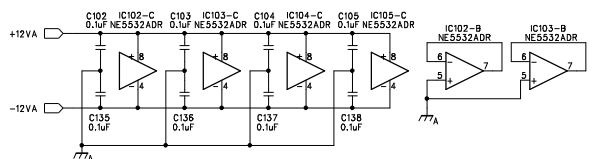
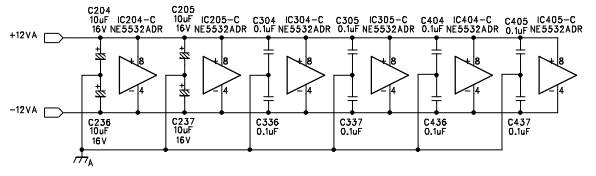
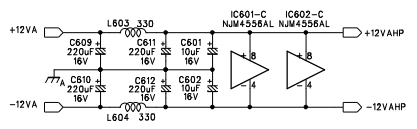
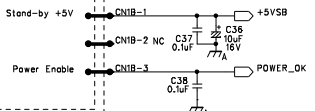
DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/1
	Y.Tamiyama	Masato Adachi	TITLE	KLM-3004 (PANEL R) Schematic
DRAWING NO.			DATE	
KOD-A30878			Dec.27'10	

POWER-ON-MUTE

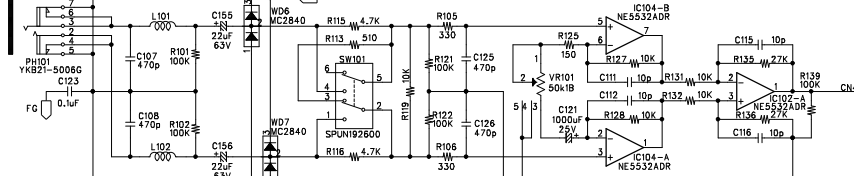
D-JACK KLM-3006



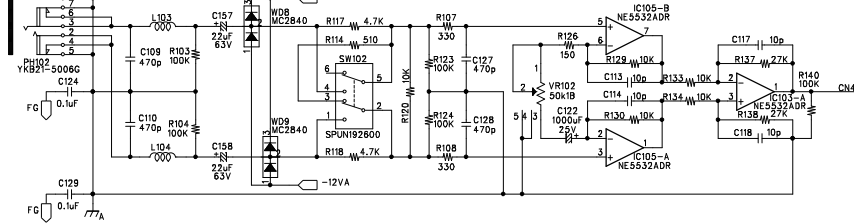
POWER UNIT



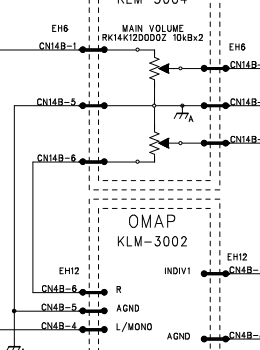
INPUT 1



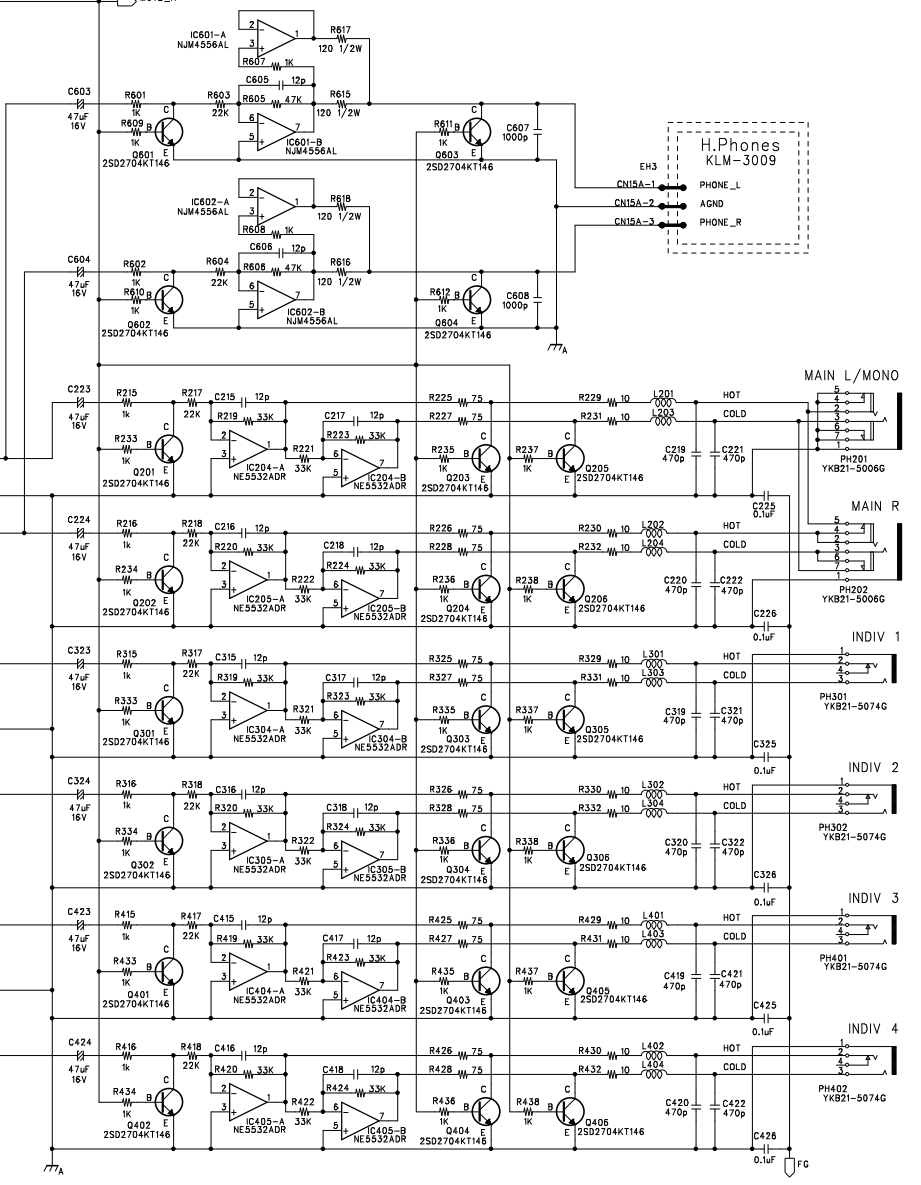
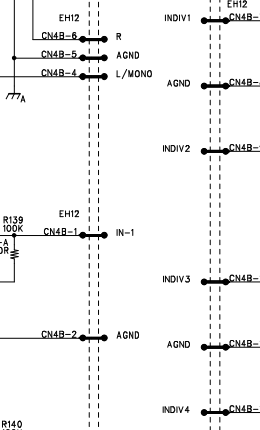
INPUT 2



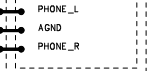
Panel_L KLM-3004



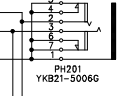
OMAP KLM-3002



H.Phones KLM-3009



MAIN L/MONO



MAIN R



INDIV 1



INDIV 2



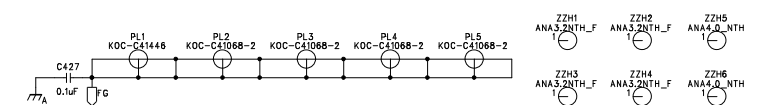
INDIV 3



INDIV 4



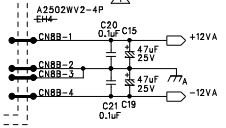
MARK	REVISION REASON	DATE	REVISED BY



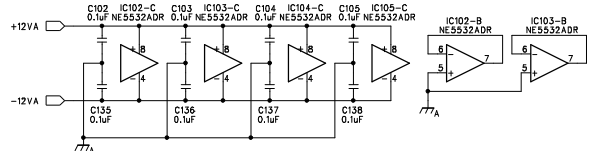
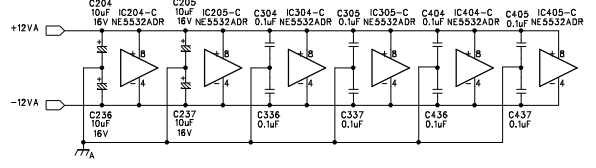
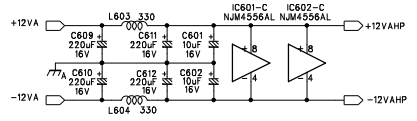
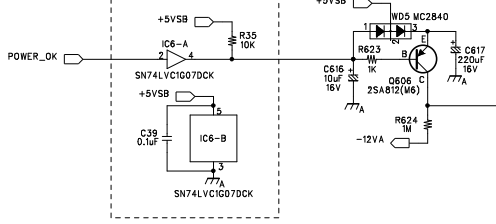
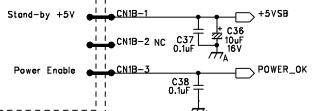
DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/31/32
S.Nomura	Masato Adachi		TITLE	KLM-3005 Audio Jack Schematics
DRAWING NO.		KOD-A30879	C	DATE
KORG				2010.11.30

POWER-ON-MUTE

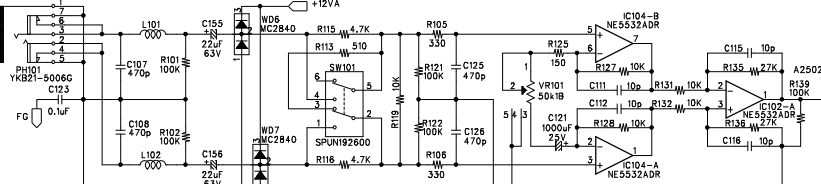
D-JACK KLM-3006



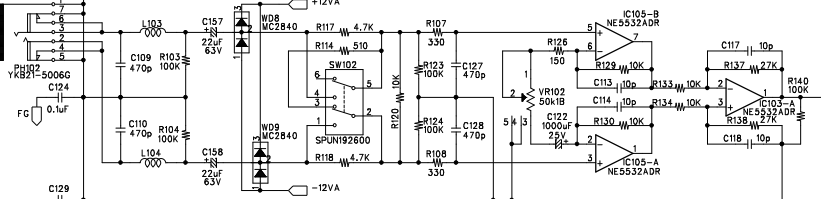
POWER UNIT



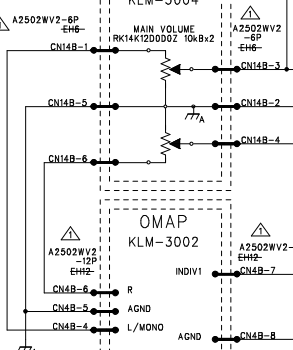
INPUT 1



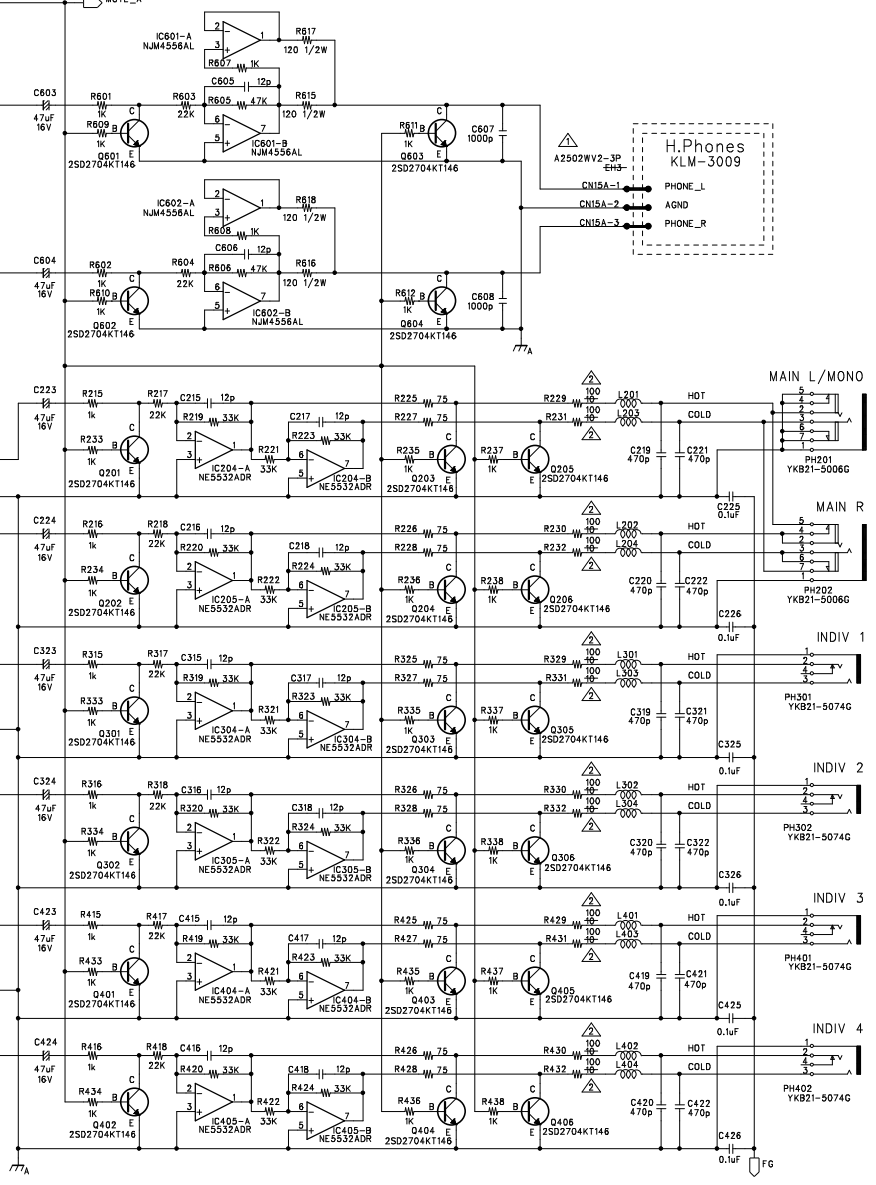
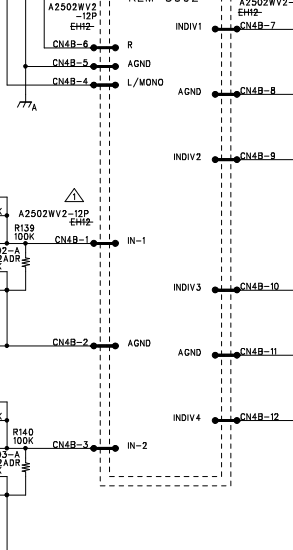
INPUT 2



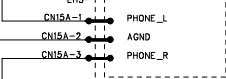
Panel_L KLM-3004



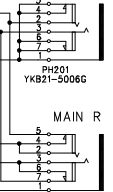
OMAP KLM-3002



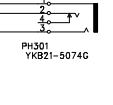
H.Phones KLM-3009



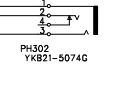
MAIN L/MONO



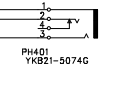
INDIV 1



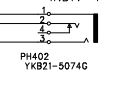
INDIV 2



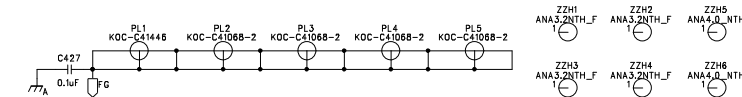
INDIV 3



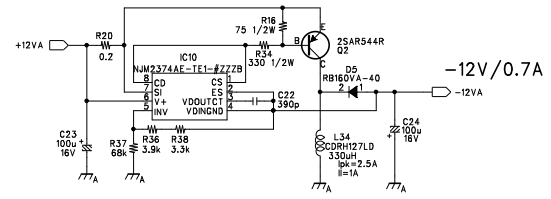
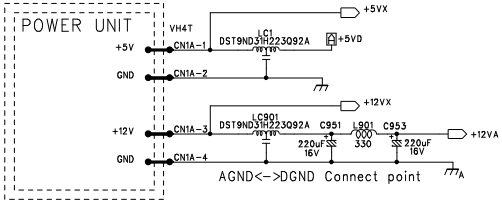
INDIV 4



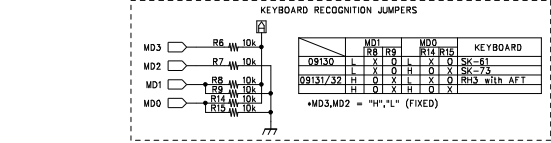
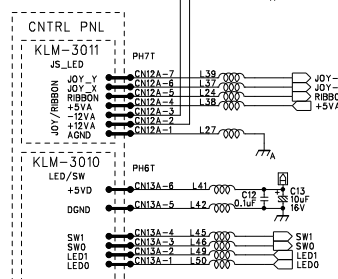
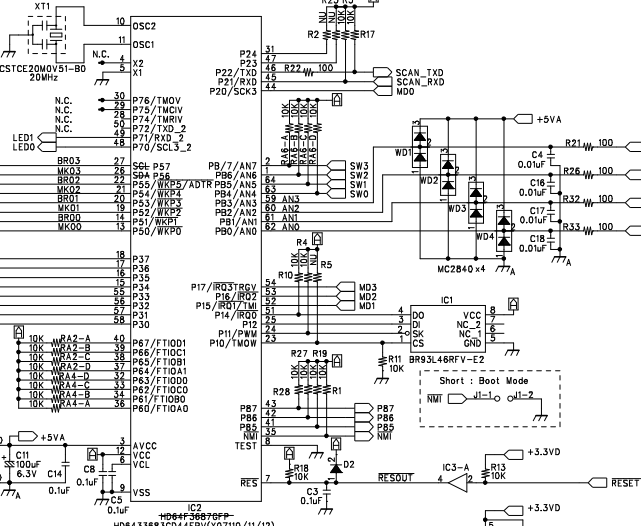
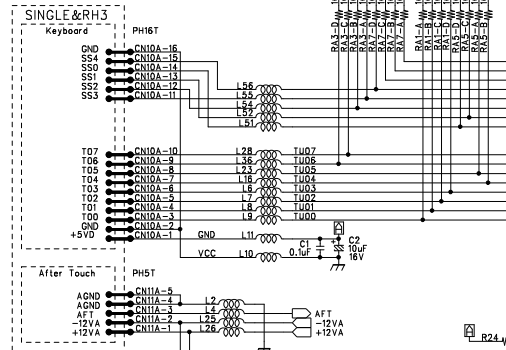
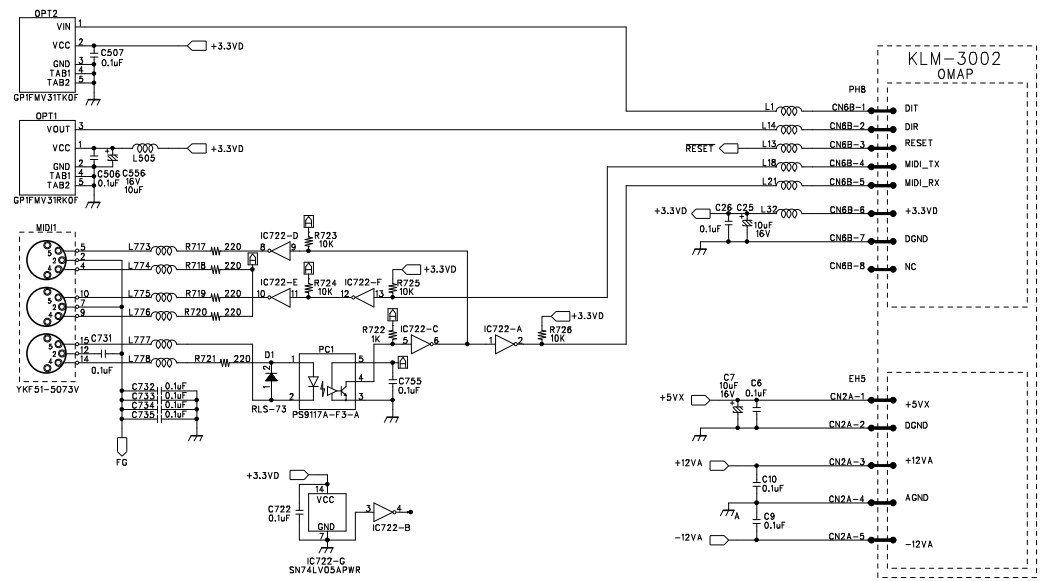
MARK	REVISION	REASON	DATE	REVISED BY
△				
▲		Added circuit to reduce load	2012. 2.25	S.NOMURA
△		Revised value to protect TR	2012. 1.18	S.NOMURA
▲		Correct the part name	2011. 5.17	S.NOMURA



DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/31/32
S.Nomura		Mosato Aedechi	TITLE	KLM-3005 Audio Jack Schematics
			DRAWING NO.	KOD-A30879
			DATE	2012. 2.28

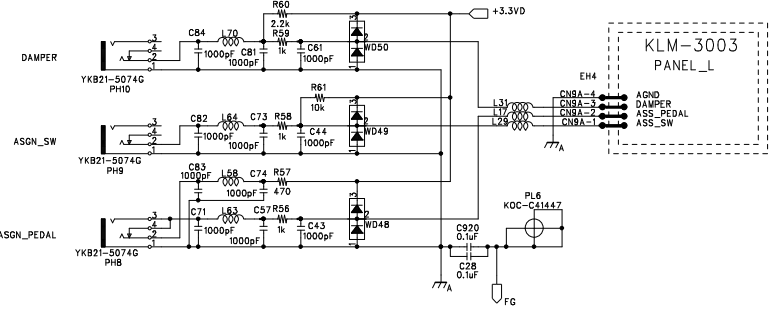
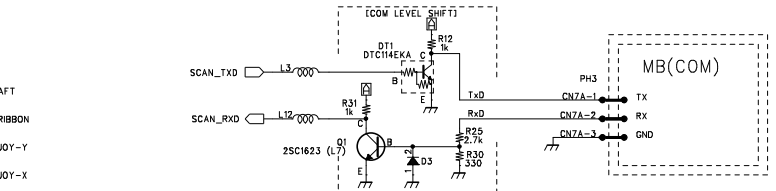


S/P DIF
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THRU
MIDI
OUT
IN



KLM-3006

△			
△			
△			
△			
△	Revised part name	2011.4.27	S.NOMURA
MARK	REVISION REASON	DATE	REVISED BY



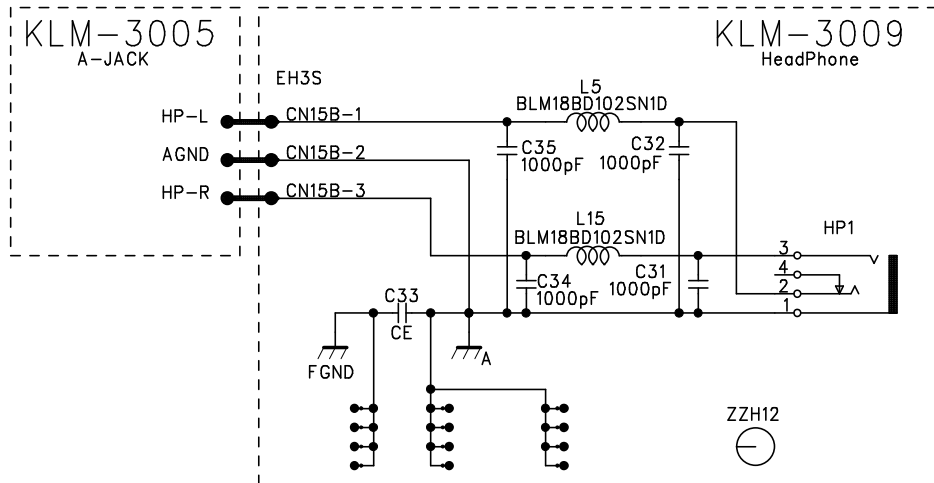
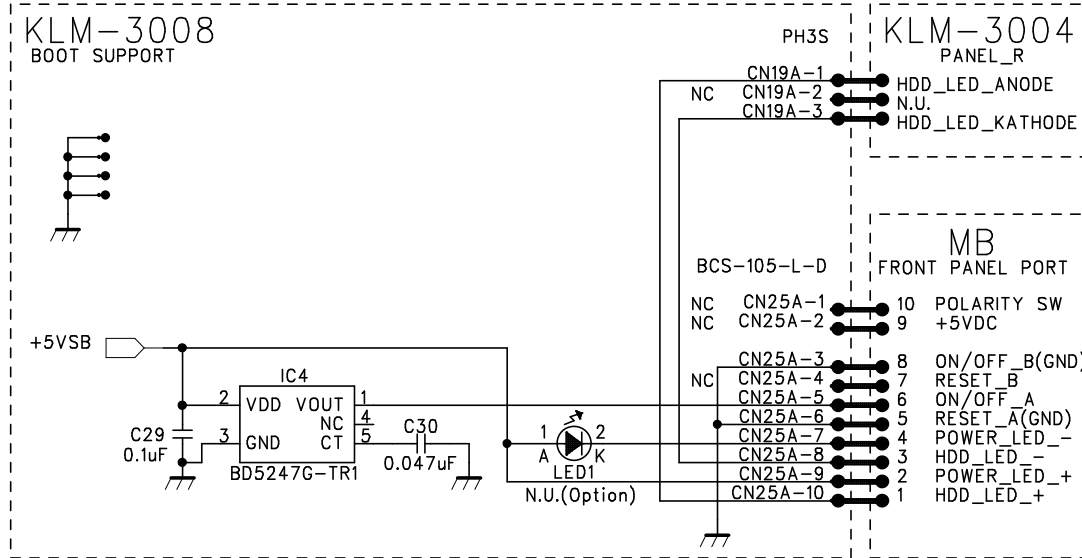
DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/31/32
S.Nomura	Mosato Adachi		TITLE	KLM-3006 Digital Jack Schematics
DRAWING NO.			KOD-A30880	DATE
DRAWING NO.			KOD-A30880	DATE
DRAWING NO.			KOD-A30880	DATE

Non Marked L:MMZ1608Y102BT



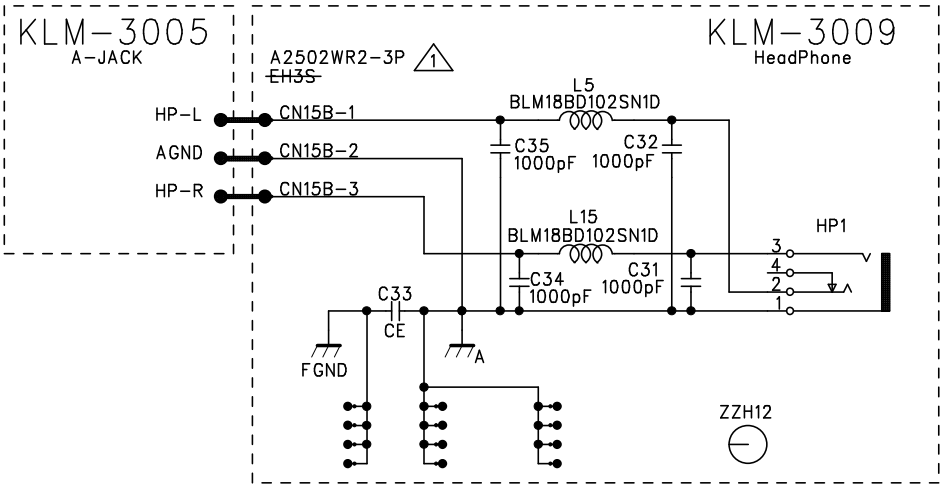
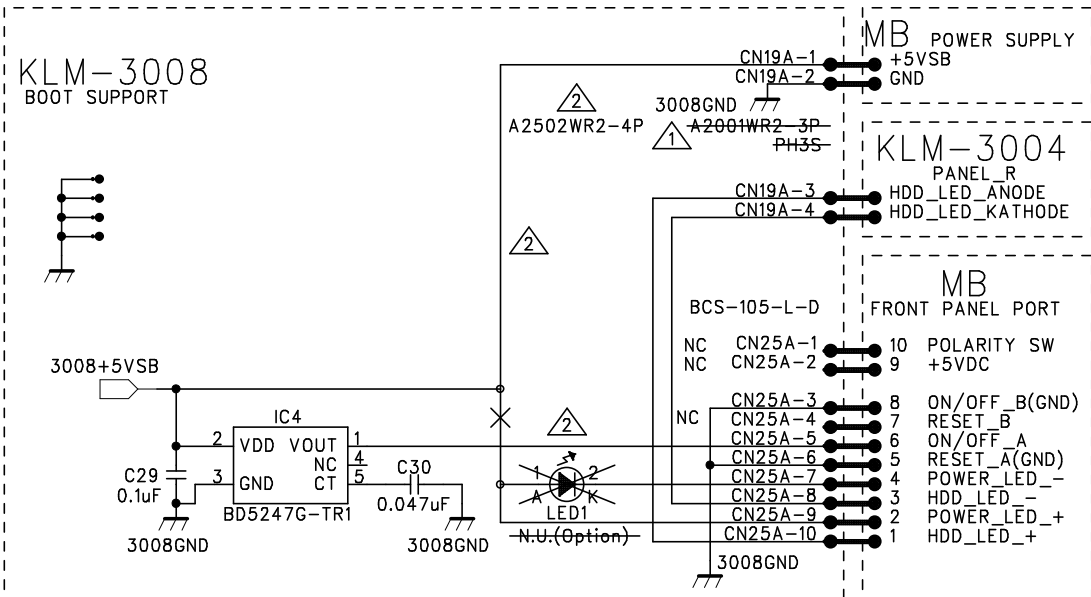
DRAWING NO. KOD-A30880

DATE 2011.4.27



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△			
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MARK	REVISION REASON	DATE	REVISED BY

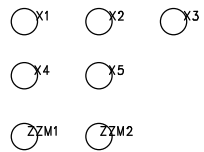
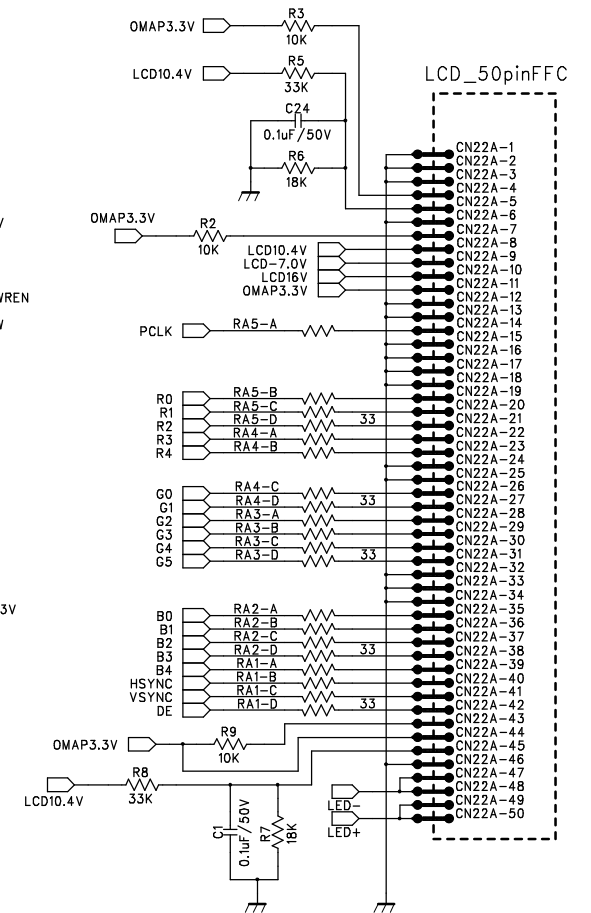
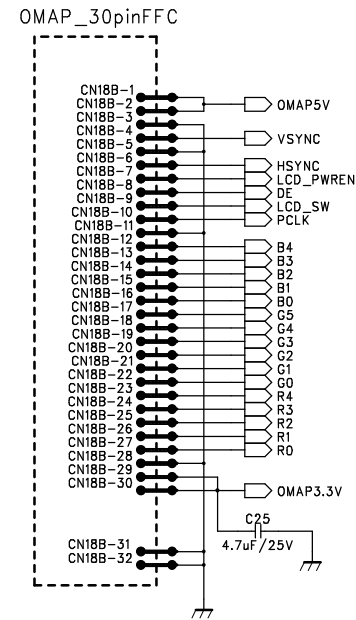
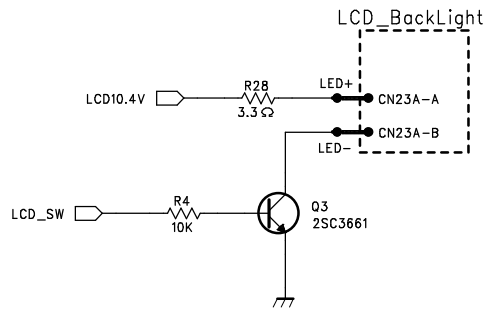
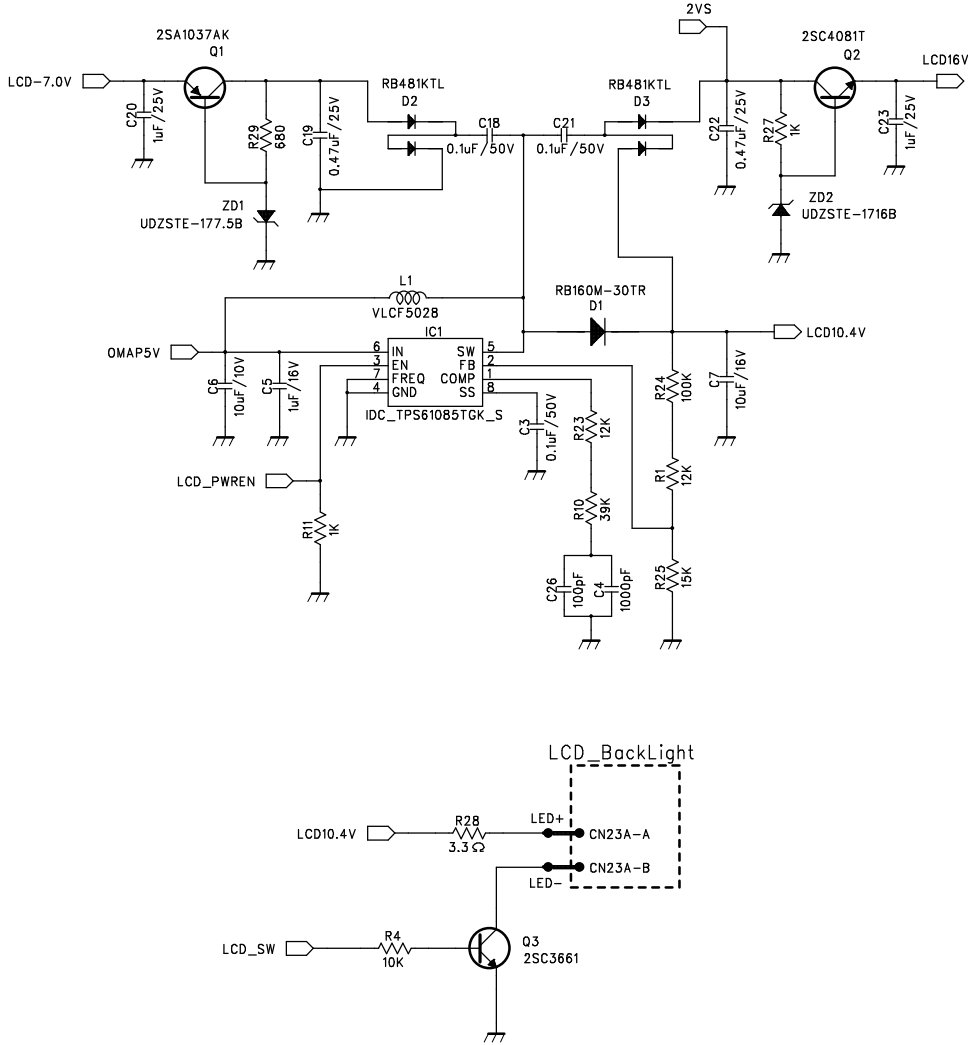
DESIGNED BY	CHECKED BY	APPROVED BY	MODEL X-09130/31/32
S.Nomura		Masato Adachi	TITLE KLM-3008 BOOT SUPPORT KLM-3009 HEAD PHONES Schematics
KORG		DRAWING NO. KOD-A40719	DATE 2010.11.11



MARK	REVISION REASON	DATE	REVISED BY
△			
△			
③	Added new Products	2012. 2. 6	S.NOMURA
②	KLM-3008 Renewal	2011. 8.31	S.NOMURA
①	Correct the part name	2011. 5.17	S.NOMURA

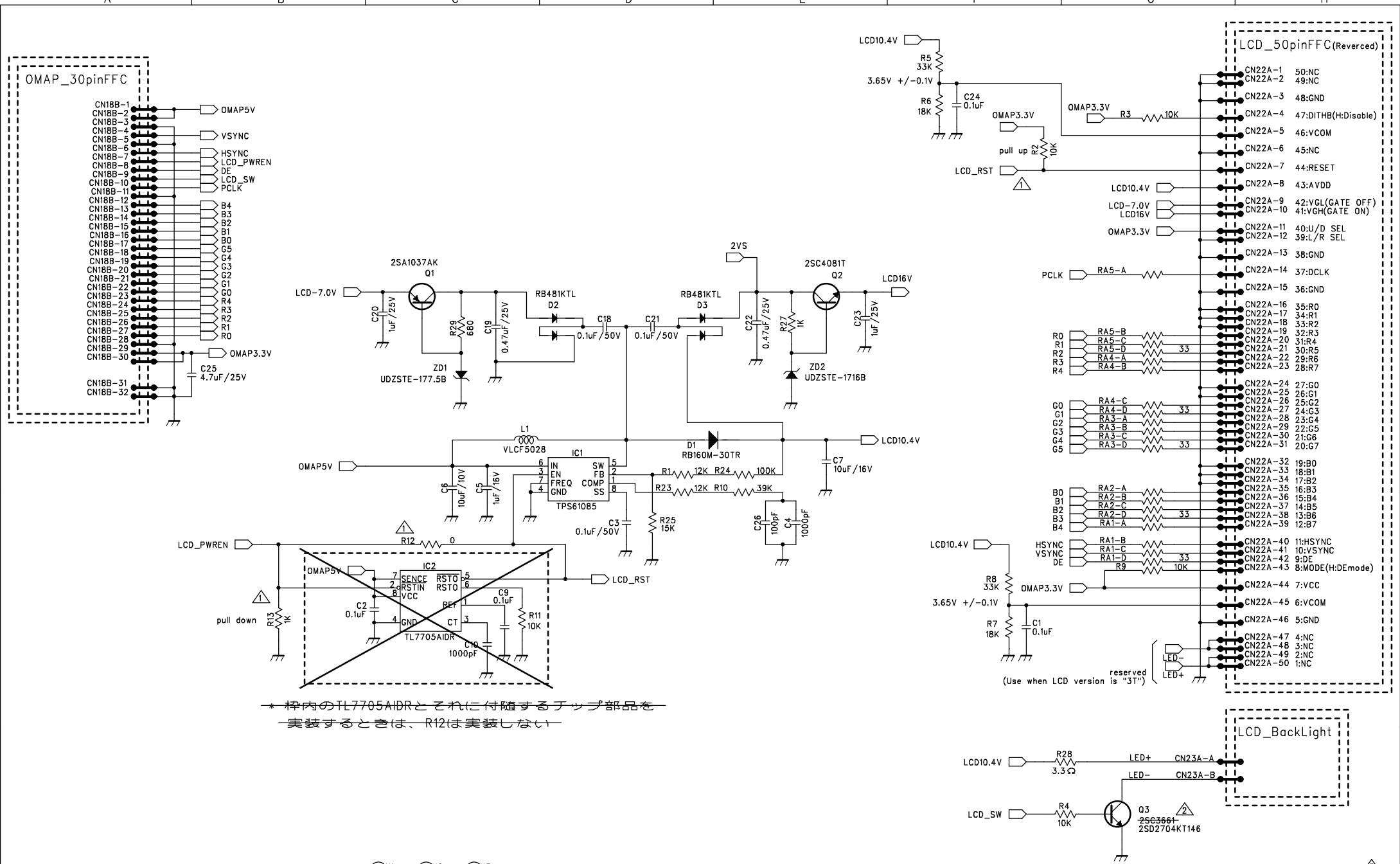
DESIGNED BY	CHECKED BY	APPROVED BY	MODEL X-09130/31/32/11150/51/52
S.Nomura	<i>DRIS</i>	Masato Adachi	TITLE KLM-3008 BOOT SUPPORT KLM-3009 HEAD PHONES Schematics
KORG		DRAWING NO. KOD-A40719	DATE 2011. 9. 5



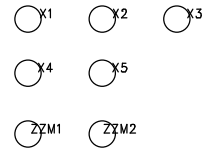


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MARK	REVISION REASON	DATE	REVISED BY

DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/1/2	
Y.Tomiya		Masato Adachi	TITLE	KLM-3007 LCD I/F Schematics	
KORG		DRAWING NO.	KOD-A30881	DATE	'10.11.16



* 枠内のTL7705AIDRとそれに付随するチップ部品を
 実装するときは、R12は実装しない

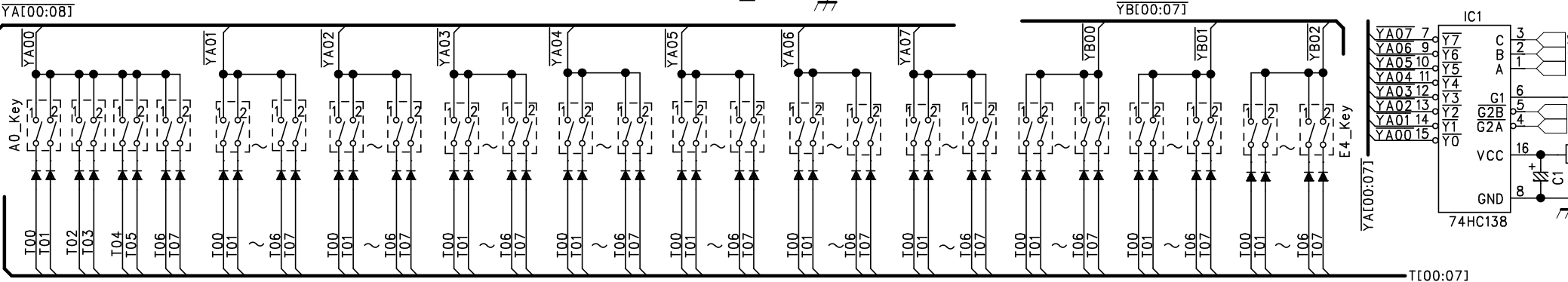
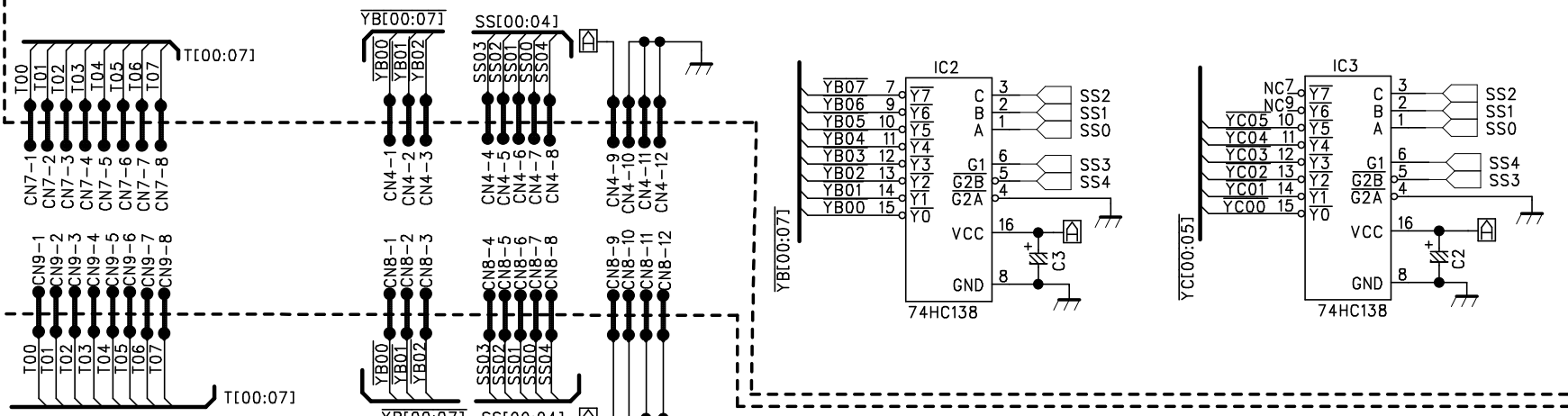
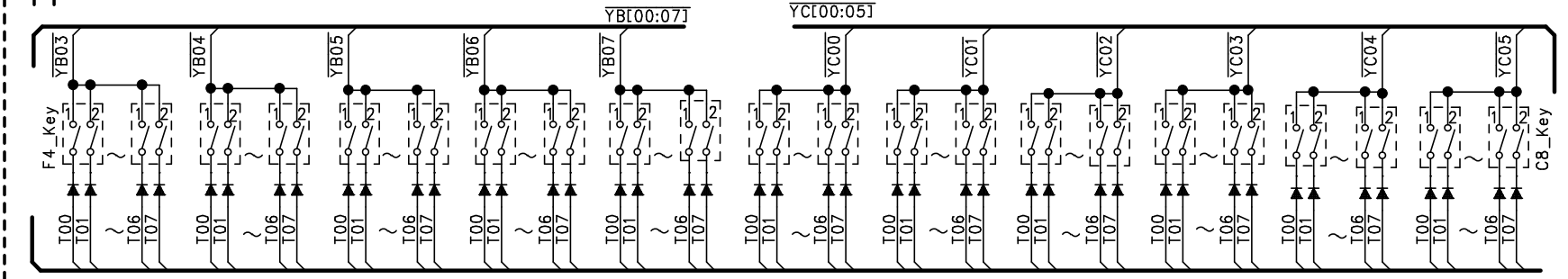
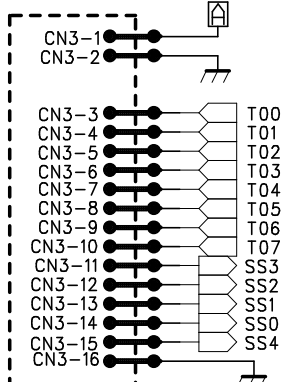


△			
△			
③	機種追加	2102/3/29	S. Nomura
②	代替変更	'11.09.14	S. Nomura
△	LCDチラつき対策のため	'11.04.07	Y.Tomiyama
MARK	REVISION REASON	DATE	REVISED BY

DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/31/32/11150/51/52
Y.Tomiyama S.Nomura		Masato Adachi	TITLE	KLM-3007 LCD I/F Schematics
KORG		DRAWING NO.	KOD-A30881	DATE
			D	'11.04.07

Lower Side

Upper Side



1: First Contact Point
2: Second Contact Point

MARK	REVISION REASON	DATE	REVISED BY

DRAWN BY	DESIGNED BY	CHECKED BY	CHECKED BY	MODEL	RH-3
Yomogita	Yomogita			TITLE	RH-3 88Key KEYBOARD CIRCUIT DIAGRAM
KORG				DRAWING NO.	KOD-A40582
				DATE	'04.10.12

A B C D E F G H

1

1

2

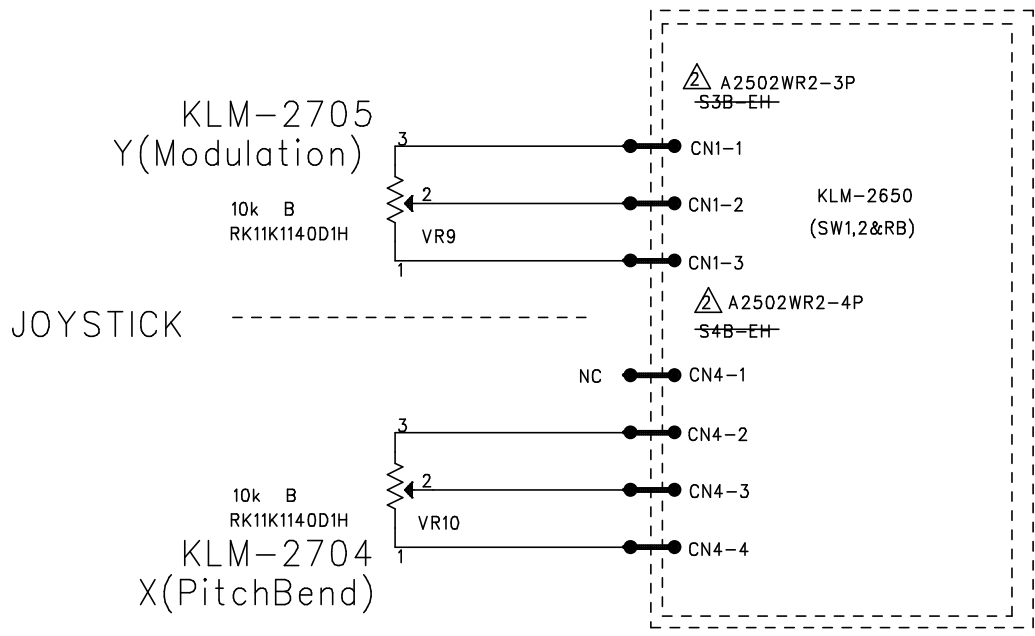
2

3

3

4

4



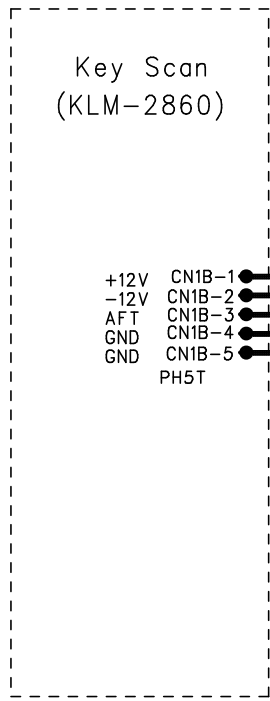
- △4 X-09130/1/2
- △3 X-09100
- △1 X-07111

MARK	REVISION REASON	DATE	REVISED BY
△			
△4	機種追加のため	'11.01.13	Y.Tomiyama
△3	機種追加のため	'10.03.08.	S.Kamachi
△2	代替依頼のため (104から自然切替)	'09.12.25.	S.Kamachi
△1	機種追加のため	'08.07.16	S.Kamachi

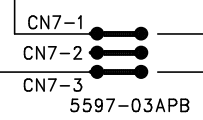
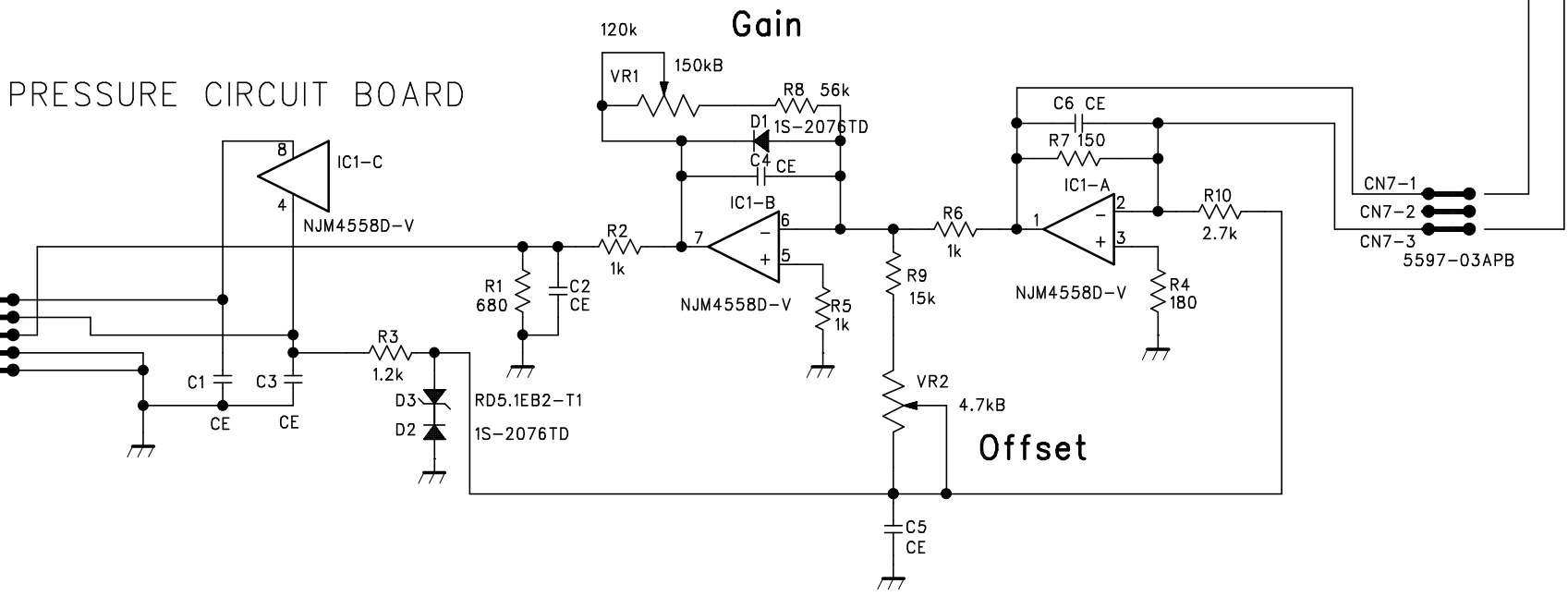
DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-4100/10/20
S.Kamachi	S.Nomura	J.Takeda	TITLE	KLM-2704/2705 (JoystickX/Y)
KORG		DRAWING NO.	KOD-A40642	DATE '07.02.20

A B C D E F G H

KEYBOARD RH3B



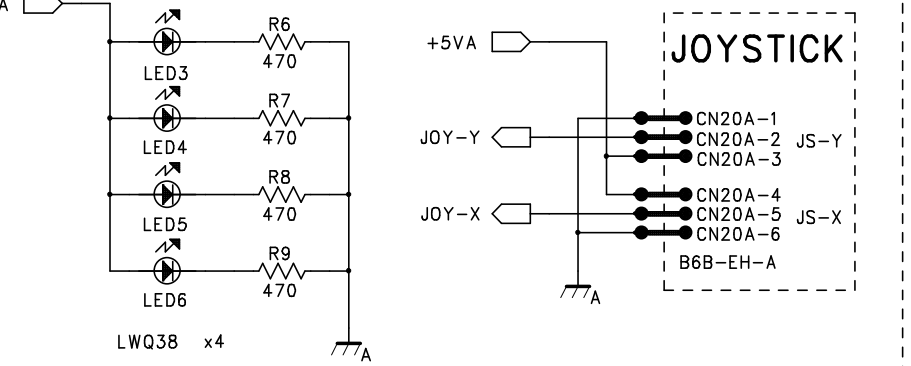
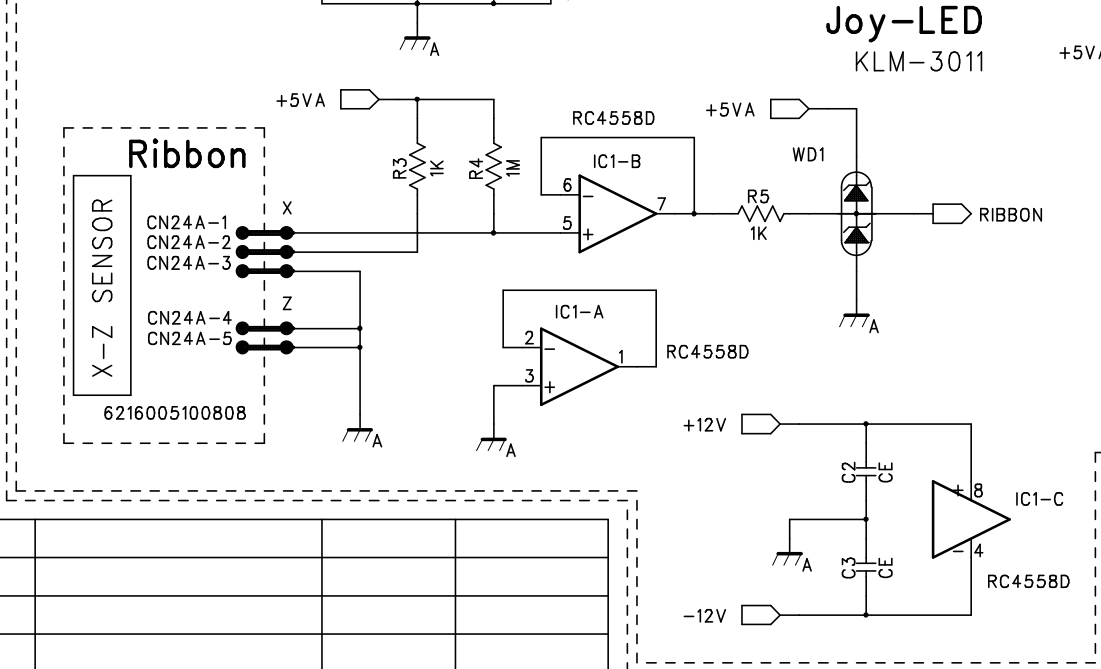
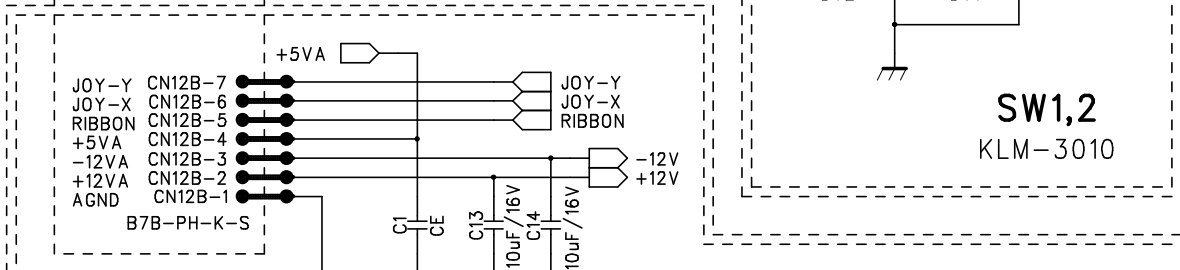
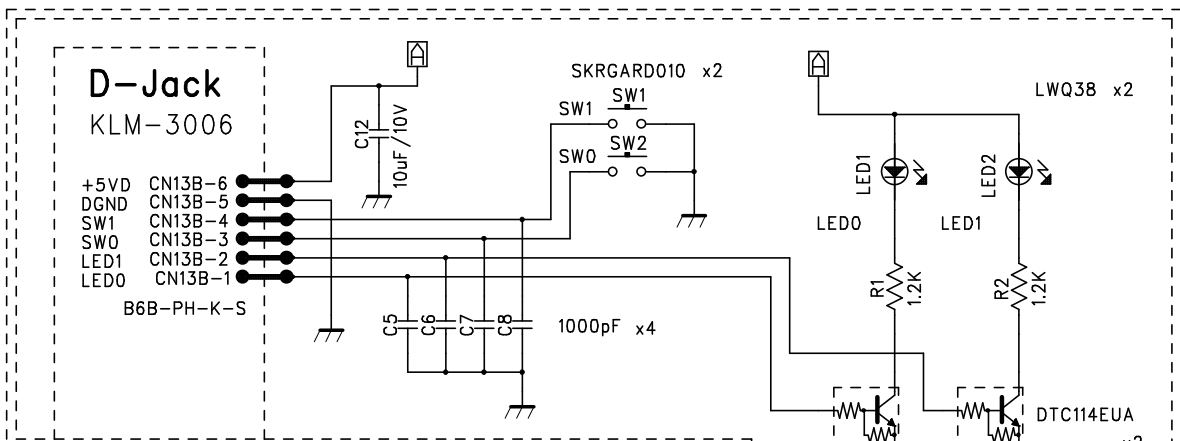
PRESSURE CIRCUIT BOARD



CE: UP050F104Z-A-BZ, 0.1uF

△			
△			
△			
△			
MARK	REVISION REASON	DATE	REVISED BY

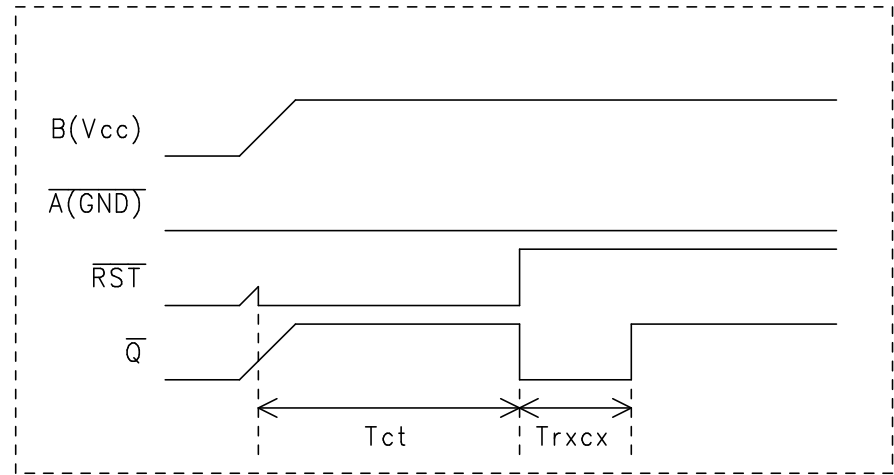
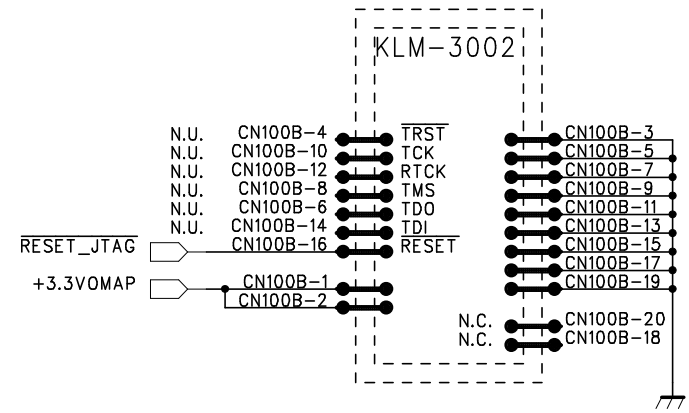
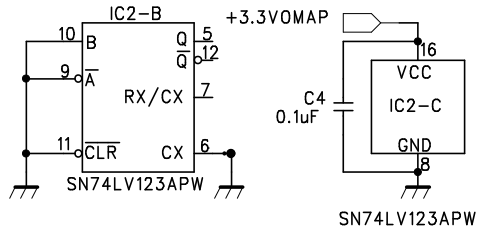
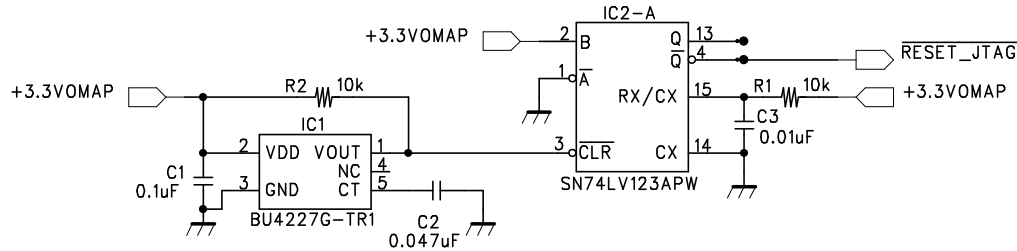
DRAWN BY	DESIGNED BY	CHECKED BY	CHECKED BY	MODEL	X-4120
S.Kamachi	S.Kamachi			TITLE	RH3B KLM-2702 AFTER PCB CIRCUIT DIAGRAM
KORG				DRAWING NO.	KOD-A40644
				DATE	'07.03.14



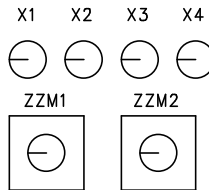
MARK	REVISION REASON	DATE	REVISED BY
△			
△			
△			
△			

DESIGNED BY	CHECKED BY	APPROVED BY	MODEL	X-09130/1/2
Y.Tomiyama		Masato Adachi	TITLE	KLM-3010/11
			SW1,2/JoyLED Schematics	
KORG		DRAWING NO.	DATE	
		KOD-A40720	'10.11.16	

Note: The KLM-3101 is used only for J03, J04, and J05 lot (some for J06lot as well).
 The newer KLM-3002 made it obsolete.
 (The lot number can be found in the upper left corner of the serialnumber plate.)



△			
△			
△			
△			
△			
MARK	REVISION REASON	DATE	REVISED BY



DESIGNED BY	CHECKED BY	APPROVED BY	MODEL X-09130
S.Nomura		Masato Adachi	TITLE KLM-3101 Second reset schematics
KORG		DRAWING NO. KOD-A40721 A	DATE 2011.01.18

A B C D E F G H

1

1

2

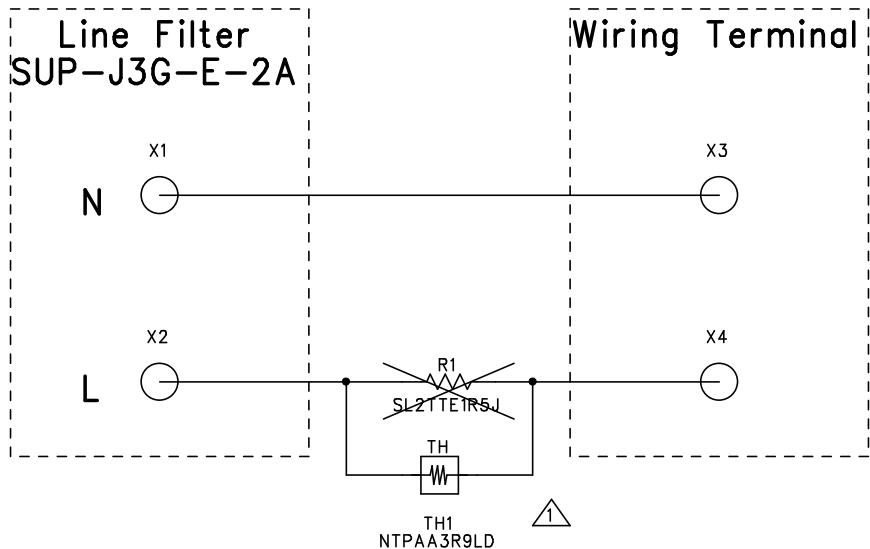
2

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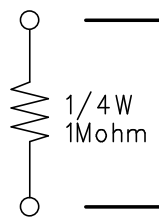
3

4

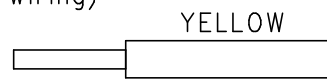
4



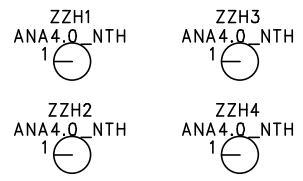
(Tie-up-wiring)



(Tie-up-wiring)



△			
△			
△			
△			
△	To reduce Inrush Current	2011.3.18	S.Nomura
MARK	REVISION REASON	DATE	REVISED BY



DESIGNED BY	CHECKED BY	APPROVED BY	MODEL X-09130/31/32
S.Nomura	<i>DR</i>	Masato Adachi	TITLE KLM-3102 Inlet Intercept PCB
KORG		DRAWING NO. KOD-A40722	DATE 2011.03.18

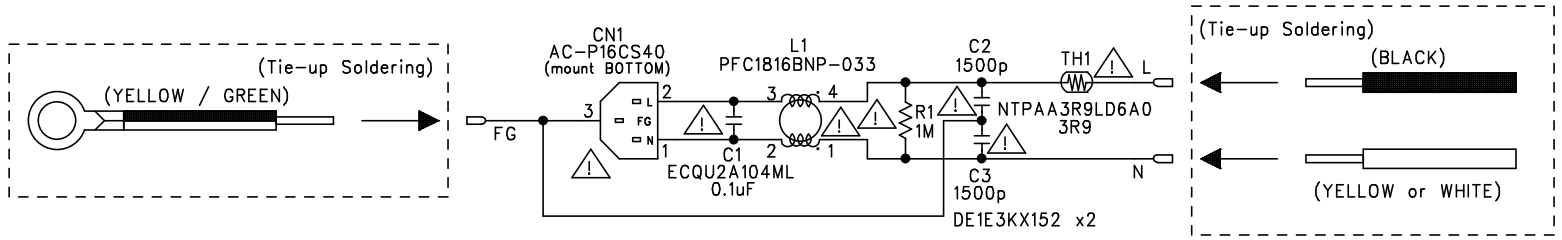
A B C D E F G H

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2

3

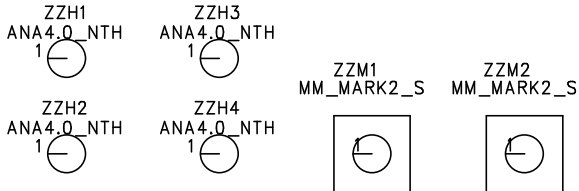
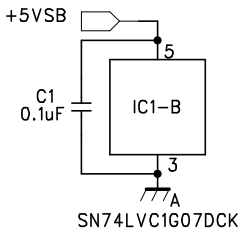
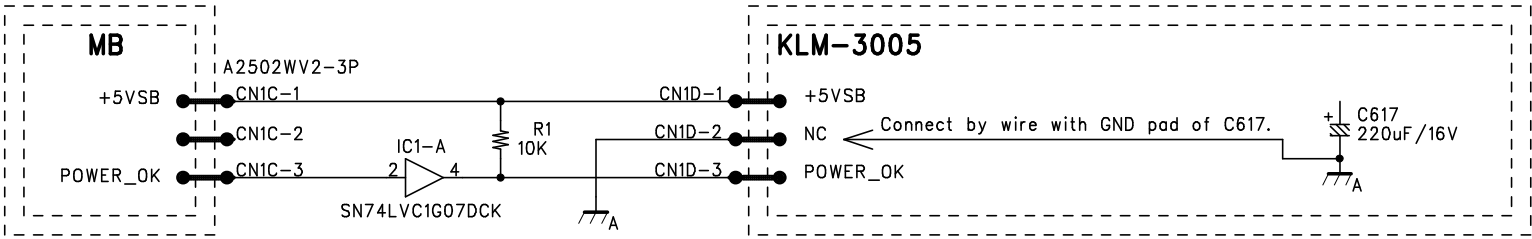
4



△			
△			
△			
△			
△	Added CP Symbol	2012.10.5	S.Nomura
MARK	REVISION REASON	DATE	REVISED BY

DRAWN BY	DESIGNED BY	CHECKED BY	MODEL X-09130/31/32/11150/51/52
S.Nomura	Y,Akashi 2011.12.19		TITLE KLM-3161 (AC Line Filter) CIRCUIT DIAGRAM
KORG		DRAWING NO.	DATE
		KOD-A40729	2012.12.19

K-04/05 Lot Only



△			
△			
△			
△			
△			
MARK	REVISION REASON	DATE	REVISED BY

DRAWN BY	DESIGNED BY	CHECKED BY	MODEL X-09130/31/32/11150/51/52
S.Nomura	S.Nomura		TITLE KLM-3167 Mute Buffer Circuit
KORG		DRAWING NO. KOD-A40732	DATE 120229

KRONOS & KRONOS-X Test mode

How to enter the TEST MODE

Following table shows each static test mode.

The instruments enters the each test mode when pushing the switch in the SWITCH column of the table below.

SWITCH	TEST MODE
[MIXER KNOBS]+ [RESET CONTROLS]+ [ENTER]+[5]	Full test
[MIXER KNOBS]+ [RESET CONTROLS]+ [ENTER]+[2]	Skipp internal Test

Basic operation

[ENTER]: Proceed to the next check .

△ : The item is advanced.

▽ : The item is returned.

[FF>>]: The step is advanced.

[<<REW]: The step is returned.

1. Appearance check

- 1) Check that there is no scratch on Case and Knobs.
- 2) Check that there are no abnormalities or problems on paintings and silk printings.
- 3) Check that there are no abnormalities or problems of float or ETC on Buttons, Switches, Jacks, Potentiometers and etc.
- 4) Check that there are about one sheet of paper space between the touch panel and the LCD food.
- 5) Check there are 0.8mm or more space between the keyboard and the FrontBar.
- 6) Check that there is neither shaking of the product nor a distortion on the plane.

2. Preperation and LCD flicker Check

(note) Do not insert USB memory before power on.

- 1) Push [POWER] switch turn on.

Insert USB memory after blinking DISK access LED.

Connect USB A and USB B with one cable.

Connect MIDI IN and OUT with one MIDI cable.

Check that LCD doesn't flicker when LCD display Set List page.

3. Sound check

Hit the key medium touch from left edge to right edge.

Check that abnormality is not heard in the sound.

Push [COMBI] switch.

Check the sound after select BANK I-A ,I-B and I-C

4. LCD color check

Push the switch in order of [PROG],[BANK I-A], [0], and [ENTER].

Check that abnormality is not found the color of LCD while turning the Rotary Encoder.

Push the switch in order of [I-D],[0], and [ENTER].

Check that abnormality is not found the color of LCD while turning the Rotary Encoder.

5. Start TEST MODE

Please push the switch of [MIXER KNOBS], [RESET CONTROLS], [ENTER], and [5] at the same time.

LCD is displayed as shown in a right figure.

```
***** INTERNAL TEST *****
1 MIDI: OK
2 Battery: OK
3 USB: OK
4 Temp: OK
5 Keybed: OK

Keybed: *,*                               SSD1:**GB
Memory: *Gbyte      **Key      IP:CAN' T GET!
                               Version:KRONOS ***,**
Date & Time                               OMAP:V** R**   .PSoc: V** R**
```

6. System Version Check

Check that the displayed version is latest.

“Version”,”OMAP”,”PSoC”,”Keybed”

7. Internal inspection check

Check the following inspection is OK

“MIDI”,”Battery”, “USB”, “Keybed”

8. Memory size

Confirm the size of implemented memory which is displayed on the side of “Memory”

Model	Memory size
KRONOS	2 GByte
KRONOS X	3.25 GByte

(The above table added from the KRONOS(K4-) & KRONOS-X.)

9. The number of KEY

Check the number of KEY on the display.

10. Date and Time

Confirm that display time and date is now.

Confirm the size of SSD1 which is displayed on the side of “SSD1”.

(SSD1 &table added from the KRONOS(K4-) & KRONOS-X.)

Model	SSD size
KRONOS	30 GB
KRONOS X	62 GB

Advance it to the following inspection pushing the [ENTER] switch.

11. Fan Control

LCD displays “Value” and “RPM”

Confirm that “RPM” value is change by VALUE slider.

(note) If “RPM” value is not change, rotate encoder more than two clicks.

Advance it to the following inspection pushing the [ENTER] switch.

(The following notes added from the KRONOS(K4-) & KRONOS-X.)

(Note) Confirm that there are more than 1000 (RPM) is a difference in the display when the display Value 127 and 0 .

When the system is in V2.0.1and mother board is D510MW, the difference in rotational speed is good in more than 800.

12 All LED check

Check all red LED turn on.

Check that the brightness of LED is uniform.

Wite LED

Top of Joystick	Bottom of Joystick	Left of Joystic	Right of Joystick	
	SW1	SW2	KARMA ON/OFF	LATCH
M	A	B	C	D
LINK ED	DRUM TRACK	TIMBRE/TRACK	TIMBRE/TRACK 1-8	TIMBRE/TRACK 9-16
AUDIO	AUDIO IN	AUDIO 1-8	AUDIO 9-16	EXIT
RT KNOBS/KARMA	TONE ADJ/EQ	TONE ADJ	EQ	MIX PLAY/MUTE(8point)
MIX SELECT(8point)	CHANNEL STRIP	INDIVIDUAL PAN	SOLO	SET LIST
COMBI	PROG	SEQ	HELP	SAMPLING
GLOBAL	DISK	COMPARE	BANK I-A	I-B
I-C	I-D	I-E	I-F	I-G
BANK U-A	U-B	U-C	U-D	U-E
U-F	U-G	PAUSE	<<REW	FF>>

RED LED

REC/WRITE	SEQUENCER START/STOP	SAMPLING REC	SAMPLING START/STO
-----------	----------------------	--------------	--------------------

Advance it to the following inspection pushing the [ENTER] switch.

13. Panel SW & LED check

The confirmation advances in order of the table below.

Push the switch corresponding to lighting LED.

(note) Refer to the table below for the correspondence of the switch and LED.

LED that should be inspected as follows lights when a correct switch is pushed.

LED	SW
SW1	SW1
SW2	SW2
KARMA ON/OFF	KARMA ON/OFF
LATCH	LATCH
M	MODULE CONTROL
A	MODULE CONTROL
B	MODULE CONTROL
C	MODULE CONTROL
D	MODULE CONTROL
DRUM TRACK	DRUM TRACK
LINKED	DRUM TRACK
TIMBRE/TRACK	TIMBRE/TRACK
TIMBRE/TRACK 1-8	TIMBRE/TRACK
TIMBRE/TRACK 9-16	TIMBRE/TRACK
AUDIO	AUDIO
AUDIO IN	AUDIO
AUDIO 1-8	AUDIO
AUDIO 9-16	AUDIO
EXT	EXT
RT KNOBS/KARMA	RT KNOBS/KARMA
TONE ADJ/EQ	TONE ADJ/EQ
TONE ADJ	TONE ADJ/EQ
EQ	TONE ADJ/EQ
MIX PLAY/MUTE 1	MIX PLAY/MUTE 1
MIX PLAY/MUTE 2	MIX PLAY/MUTE 2
MIX PLAY/MUTE 3	MIX PLAY/MUTE 3
MIX PLAY/MUTE 4	MIX PLAY/MUTE 4
MIX PLAY/MUTE 5	MIX PLAY/MUTE 5
MIX PLAY/MUTE 6	MIX PLAY/MUTE 6
MIX PLAY/MUTE 7	MIX PLAY/MUTE 7
MIX PLAY/MUTE 8	MIX PLAY/MUTE 8
MIX SELECT 1	MIX SELECT 1
MIX SELECT 2	MIX SELECT 2
MIX SELECT 3	MIX SELECT 3
MIX SELECT 4	MIX SELECT 4
MIX SELECT 5	MIX SELECT 5

MIX SELECT 6	MIX SELECT 6
MIX SELECT 7	MIX SELECT 7
MIX SELECT 8	MIX SELECT 8
CHANNEL STRIP	MIX KNOBS
INDIVIDUAL PAN	MIX KNOBS
ALL	RESET CONTROLS
SOLO	SOLO
ALL	△
ALL	▽
SET LIST	SET LIST
ALL	EXIT
COMBI	COMBI
PROG	PROG
SEQ	SEQ
HELP	HELP
SAMPLING	SAMPLING
GLOBAL	GLOBAL
DISK	DISK
COMPARE	COMPARE
ALL	7
ALL	8
ALL	9
ALL	4
ALL	5
ALL	6
ALL	1
ALL	2
ALL	3
ALL	-
ALL	0
ALL	.
ALL	ENTER
BANK I-A	BANK I-A
I-B	I-B
I-C	I-C
I-D	I-D
I-E	I-E
I-F	I-F
I-G	I-G

BANK U-A	BANK U-A
U-B	U-B
U-C	U-C
U-D	U-D
U-E	U-E
U-F	U-F
U-G	U-G
PAUSE	PAUSE
<<REW	<<REW
FF>>	FF>>
ALL	LOCATE
REC/WRITE(RED)	REC/WRITE
SEQUENCER START/STOP	SEQUENCER START/STOP
SEQUENCER START/STOP(RED)	SEQUENCER START/STOP
TEMPO	TAP TEMPO
SAMPLING REC(RED)	SAMPLING REC
SAMPLING START/STOP	SAMPLING START/STOP
SAMPLING START/STOP(RED)	SAMPLING START/STOP

After pushing SAMPLING START/STOP, advance it to the following inspection

14. LCD check

14-1 All segments are white

Check all dots are white.

Check that there are no abnormalities in the color.

Check no dust in LCD.

Push [ENTER] and advance it to the following inspection.

14-2 All segments are black

Check all dots are black.

Check no dust in LCD.

Push [ENTER] and advance it to the following inspection.

14-3 Gradation check

The gradation that darkens while going to bottom on the screen is displayed.

Check that there are no abnormalities in the color.

Push [ENTER] and advance it to the following inspection.

14-4 Brightness check

Confirm the brightness changes periodically.

Push [ENTER] and advance it to the following inspection.

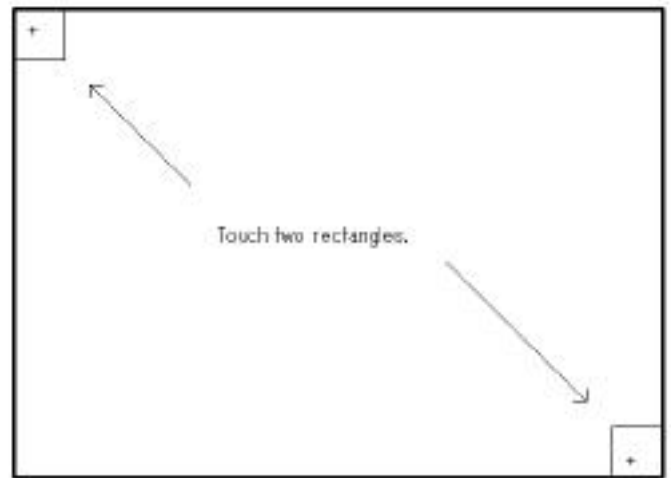
14-5 Touch pannel calibration

Note) Do the calibration since Ver1.5.1 according to the description of b).



a) Touch center of "+" by using stylus pen.

The square around "+" becomes green from red.

After the calibration, push [ENTER] and advance it to the following inspection.





b) Since Ver1.5.1

 and  are displayed on the LCD screen as shown in the following photograph.



Do the calibration according to the procedure for showing in the following b1, b2, and b3 with a stylus.

b1. Touch cross point of  or internal of  displayed in a red square (1).

The value of "Saved Value =" in the LCD display is updated at the same time as touching.

(note) The value of the position in which it touched first is used for the calibration.

The value is not used even if it moves after it touches.

When the calibration is done over again, you should separate the stylus from the screen once.

And, the value is updated when touching.

b2.  and  are displayed on the red square (2).

Touch cross point of  or internal of  for the calibration.

b3. Fix it pushing [HELP] switch when the calibration ends.

14-6 Touch function check


Note) Do the check since version 1.5.1 according to the description of b).


a) A blue square is displayed in the center and lower right on the left of LCD.


Confirm the change into green pushing each square by the finger.

Push [ENTER] and advance it to the following inspection if the confirmation of three places ends.


b) It is displayed in LCD as shown in the following photograph.

b1. Touch cross point of  or internal of


white  in the blue square(1)


A blue square discolors if touching within the range of white .

Whenever touching, the square becomes blue from green from blue to green.

The point that touches is shown by red .



See the zoom at the position of (2)

Confirm touch has been detected inside of white .

(note) When it is not detected in touch to a white  range

Do the calibration again pushing [REW] switch.

Return it to green after the confirmation ends.

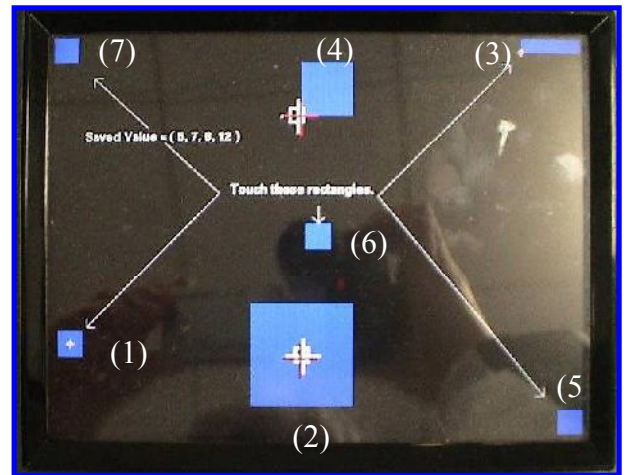
b2. Confirm it similarly by  and  are displayed on the blue square (3)

(note) The zoom of (3) is (4)

b3. Confirm the color changes into green touching in order of (5), (6), and (7).

(note) The check on the detection position is unnecessary.

Confirm square (1)-(7) are all greens.



Push [ENTER] and advance it to the following inspection.

14-7 Buzzer check

Confirm that the buzzer sound is not extremely small.

Push [ENTER] and advance it to the following inspection

15. A/D converter

(note) When objects other than the inspection object are operated, it displays an error.

Please inspect it again if this error occurs due to the mistake of the operation.

15-1 Ribbon controller check

Push the right edge of ribbon controller.

Confirm "OK" is displayed right side of "MAX" in the LCD.

The finger is moved to the left while pushing the ribbon controller.

Confirm "OK" is displayed right side of "CENTER" while it pushing about center of Ribbon controller.

Keep moving the finger to the left edge.

Confirm "OK" is displayed right side of "MAX" while it pushing left edge of Ribbon controller.

(note) Confirm RAW -value doesn't become 1023 at any position.

Confirm it doesn't have the foreign-body sensation while operating it.

Release finger from Ribbon controller.

Push [ENTER] and advance it to the following inspection

It advances to the following inspection

15-2 JOYSTICK -X axis

Confirm "OK" is displayed right side of "RIGHT" when JOYSTIC is moved to the right

Moved JOYSTIC to the left.

Confirm "OK" is displayed right side of "CENTER" while it is moved about center.

Keep moving it to the left.

Confirm "OK" is displayed right side of "LEFT" when it is moved to the left full.

Confirm that movement is smooth moves smoothly while moving JOYSTIC up and down and right and left.

Move JOYSTIC to the right full.

Releases it so that JOYSTICK returns it to the center by the power of the spring.

Don't touch JOYSTIC and push [ENTER] and advance it to the following inspection

15-3 JOYSTICH Y axis

Confirm "OK" is displayed right side of "MAX" when JOYSTIC is moved up.

Move JOYSTIC downward.

Confirm "OK" is displayed right side of "CENTER" while it move about center.

Keep moving it downward.

Confirm "OK" is displayed right side of "MIN" when it is moved to the downward full.

Move JOYSTIC downward full.

Releases it so that JOYSTICK returns it to the center by the power of the spring.

Don't touch JOYSTIC and push [ENTER] and advance it to the following inspection

15-4 VECTOR JOYSTIC

Confirm "OK" is displayed side of "CENTER" when VECTOR JOYSTIC is moved to the CENTER.

Confirm "OK" is displayed right side of "RIHGT" when it is moved to the right full.

Confirm "OK" is displayed right side of "LEFT" when it is moved to the left full.

Confirm "OK" is displayed right side of "MAX" when it is moved to the up full.

Confirm "OK" is displayed right side of "MIN" when it is moved to the down full.

Confirm that movement is smooth moves smoothly while moving it up and down and right and left.

Don't touch VECTOR JOYSTIC and push [ENTER] and advance it to the following inspection.

15-5 Rotary Volume and Slide Volume Check

The result of rotary volume displayed under "Knob1" to "Knob8" in the LCD.

The result of slide volume displayed under "Fader1" - "Fader8", "Master", and "Value".

Check following about Each Rotary Volume

- 1) Rotate smoothly
- 2) "OK" is displayed right side of "CENTER" when the knob is rotated 12 o'clock.
- 3) "OK" is displayed right side of "MAX" when the knob is rotated clockwise full.
- 4) "OK" is displayed right side of "MIN" when the knob is rotated counterclockwise full.

Check following about Each Slide Volume

- 1) Slide smoothly.
- 2) "OK" is displayed right side of "CENTER" when the Slider is rotated 12 o'clock.
- 5) "OK" is displayed right side of "MAX" when the Slider is moved to right full.
- 6) "OK" is displayed right side of "MIN" when the Slider is moved to left full.

Push [ENTER] and advance it to the following inspection after the confirmation ends.

15-6 Rotary Encoder Check

Confirm rotate smoothly.

Set the encoder to the position that you easily get one rotation.

Push switch [7] for reset.

Rotate one-rotation encoder clockwise.

Confirm an increase of the value and becoming 32.

Confirm that "OK" is displayed under "32"

Push switch [7] for reset.

Rotate one-rotation encoder counterclockwise.

Confirm an decrease of the value and becoming -32.

Confirm that two "OK" is displayed under "-32"

Push [ENTER] and advance it to the following inspection after the confirmation ends.

15-7 TEMPO Volume Check

Rotate smoothly

"OK" is displayed right side of "CENTER" when the knob is rotated 12 o'clock.

"OK" is displayed right side of "MAX" when the knob is rotated clockwise full.

"OK" is displayed right side of "MIN" when the knob is rotated counterclockwise full.

It advances to the following inspection at the same time.

15-8 Pedal

Push on the opponent of EXP-2.

Push on the near side of EXP-2 slowly.

Confirm three OK is displayed in the next order.

- 1) "OK" is displayed under "MIN" of "FootPedal"
- 2) "OK" is displayed under "CENTER" of "FootPedal"
- 3) "OK" is displayed under "MAX" of "FootPedal"

Push on the opponent of EXP-2.

Push DS-1H slowly.

Confirm three OK is displayed in the next order.

- 1) "MAX" of "DamperPedal"
- 2) "CENTER" of "DamperPedal"
- 3) "MIN" of "DamperPedal"

Release DS-1H

Push PS-2

Confirm that "OK" is displayed under "MIN" of "FootSwitch!"

Release PS-2

Confirm that “OK” is displayed under “MAX” of “FootSwitch” momentarily.
It advances to the following inspection at the same time.

18. Keyboard check

18-1. Velocity check

Hit the key medium touch from right edge of key to left edge of key.
When hard touch or soft touch is detected, the error is displayed.
Confirm a mechanical, abnormal noise is not generated while inspecting it.
It advances to the following inspection after left edge key check ends.

(note) How to hit or play keyboard .

Push right edge key and keep pushing it.
Keep pushing right edge key and push 2nd key from the right edge.
Keep pushing 2nd key from the right and release right edge key.
Keep pushing 2nd key from the right and push 3rd key from the right.
In the same way, push the 4th key from the right .
In the same way, check until left edge key sequentially

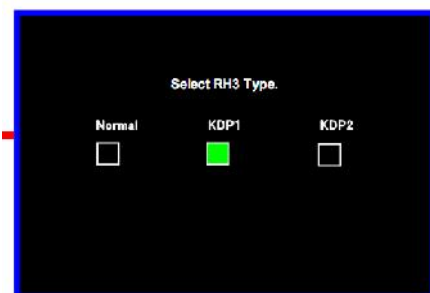
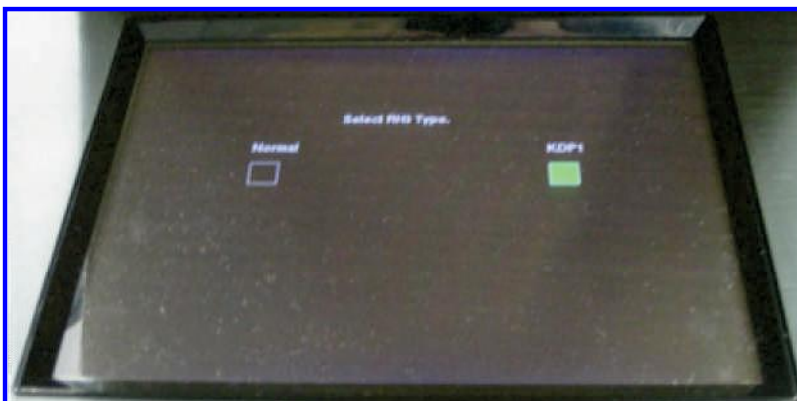
(Note) Do the setting according to the description of 18-1b) when versions are since V1.5.1 and 73/88 keys. (18-1b is not displayed in the condition excluding this.)

18-1b) Keyboard select

Normal button and KDP1 button are displayed on the LCD screen as shown in the photograph below.

The button that has been selected greens.

(If the new version has been added KDP2)



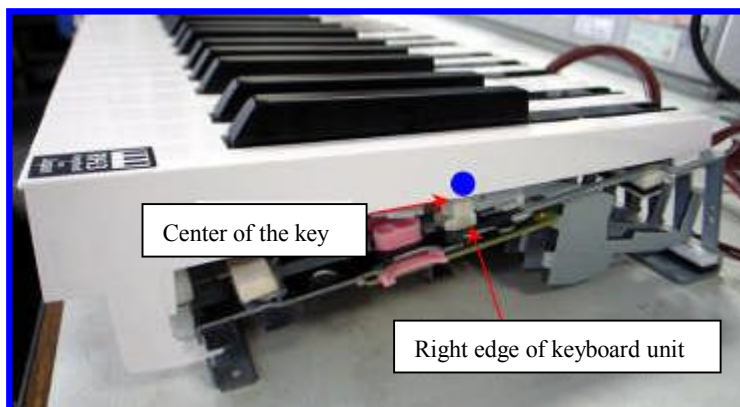
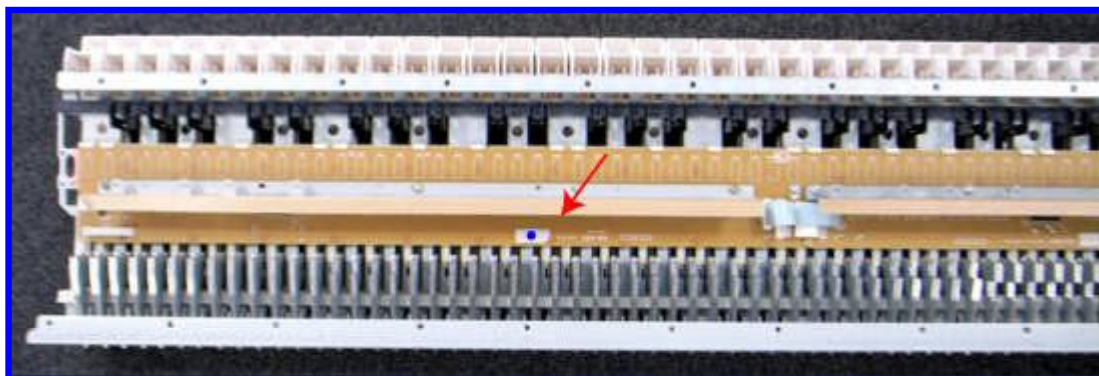
note) KDP2: For future use
Please do not select it.

Select the button that suits the keyboard.

(note) How to distinguish type of keyboard

KDP1: A blue label is pasted to the position of the photograph on the next page.

KDP2: For the future use.



Push [ENTER] switch and fix it.

"Now writing to internal memory" is displayed in LCD.

It advances to the following inspection after writing ends.

18-2 After touch check

Push C4Key and C#4Key

Confirm "OK" is displayed side of "MAX" when C4Key and C#4Key is pushed.

Check following after value when right and left edge key is pushed.

61Key model: Value must be 0

73/88Key: Value must be equal or lower than 285.

(system V2.0.3 before) Push the [ENTER] switch if the inspection ends.

Turn off the power by power switch.

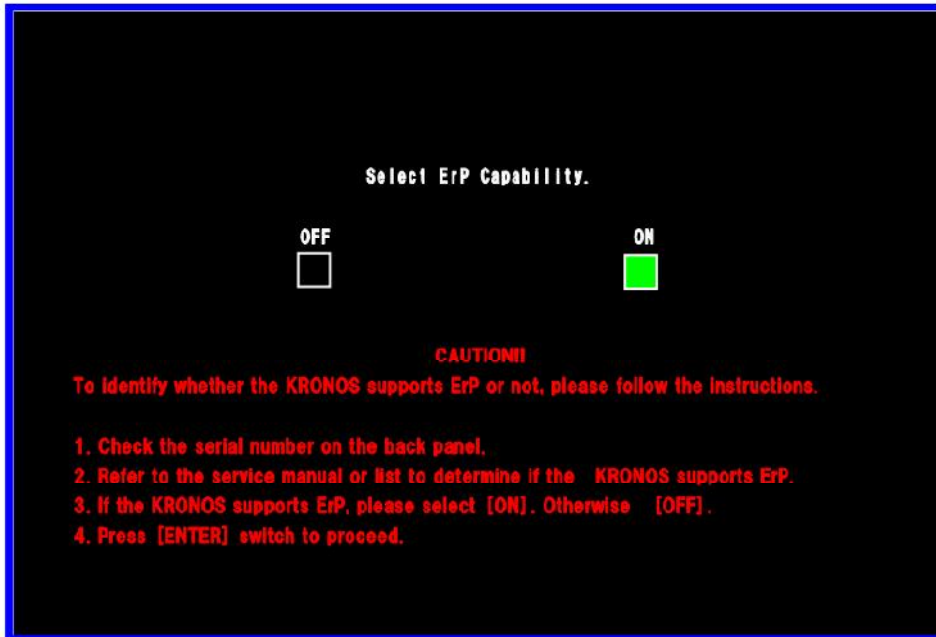
Disconnect cables

(system V2.0.3 or later) Push [ENTER] and advance it to the following inspection after the confirmation ends.

(Following item 19 added from the KRONOS-X(Erp). system V2.0.3 or later)

19. Auto Power Off setting and Confirm

Select Erp Capability screen is displayed.



If applicable, the serial number of the following, select “ON”.

If not, select “OFF”.

KRONOS X-61 K-9 101051~	KRONOS-61 010101~
KRONOS X-73 K-9 100981~	KRONOS-73 010001~
KRONOS X-88 K-9 101721~	KRONOS-88 010001~

Push [ENTER] switch.

“Now writing to internal memory.” will be displayed for 3 seconds.

If “ON “ is selected



Touch “OK” of display.

Confirm the power switch (it is rear) turned off.

Confirm that the power is turned off.

Disconnect cables

If "OFF" is selected

Following screen is displayed.



Turn off the power by power switch

(Until this line item 19)

Error Code

check item	NG Step Number	Symptom
1 MIDI	S1	Time out Error
	S2	Verify Error
2 Battery	S1	Time setting Error (It is 2009 former.)
3 USB	S1	USB A and B loop is not detected.
	S2	USB memory id note tetected.
4 Temp	S1	CPU temperature is not acquired.
	S2	SYSTEM temperature is not acquired.
	S3	CPU temperature is over 70 degree
	S4	SYSTEM temperature is over 70 degree.
5 KeyBed	S1	Communication Check Error
	S2	Pinmode Error (The numbers of keyboards are not which 61, 73 or 88.)
	S3	Keybed EEPROM Error
	S4	Keybed matrix circuit Error
	S5	Controler use AD Error

Model=A: KRONOS (~K3)
 B: KRONOS(K4~)
 C: KRONOS-X
 D: KRONOS-X(Erp)
 Blank: ALL

**KORG KRONOS
 KRONOS X Parts List**

⚠ = SAFETY CRITICAL COMPONENT.

Part Number	Category	Part Name	Location	Reference	Model	QTY		
						61	73	88
500324022002	ASSP IC	TPS3823-30DBVR	KLM-3002	IC7		1	1	1
500324007049	LDO IC	BD18KA5FP-E2	KLM-3002	IC10		1	1	1
500324009054	REGULATOR IC	NJM78M05D1A-TE1	KLM-3002	IC17		1	1	1
500324021149	OPAMP	NE5532ADR	KLM-3002	IC11-13		3	3	3
500324022116	REGULATOR IC	TPS73733DCQR	KLM-3002	IC21		1	1	1
Difficult to replace.	DC-DC Converter	TPS62420DRCR	KLM-3002	IC22		1	1	1
500335400450	CRYSTAL	CX3225SB2400D0PESZ1	KLM-3002	XT3		1	1	1
500335400460	CRYSTAL	CX3225SB24576D0PESZ1	KLM-3002	XT2		1	1	1
500335400600	CRYSTAL	CX3225SB3000D0PESZ1	KLM-3002	XT1		1	1	1
500402401300	EMI/EMC PART	VLF3014AT-2R2M1R2	KLM-3002	L6-7		2	2	2
500474039400	CONNECTOR	YKF45-0021N(USB RA B-TYPE)	KLM-3002	USB4		1	1	1
500474045544	CONNECTOR	YKF45-0033N(USB RA A-TYPE)	KLM-3002	USB1-2		2	2	2
200109263002*3)	PCB ASSY	KLM-3002 KRONOS-61/73/88	KLM-3002			1	1	1
500314010690	LED	19-213/R6C-AN2Q1B/3T(ELJ)	KLM-3003/3004	LED64 LED52 LED70 LED53		4	4	4
500314036000	LED	LWQ38E-Q1S2-3K6L-1	KLM-3003/3004	LED1-51 LED54-63 LED65-68 LED71-74 LED102		70	70	70
500324022116	REGULATOR IC	TPS73733DCQR	KLM-3003/3004	IC2 IC16		2	2	2
500362009032	VR	RK11K1140A23	KLM-3003/3004	VR1 VR3 VR5 VR7 VR9 VR11 VR13 VR15 VR20		9	9	9
500362009072	VR	RK14K12D0D11	KLM-3003/3004	VR21		1	1	1
500362009073	VR	RKJXK1210	KLM-3003/3004	VR19		1	1	1
500365011400	VR	RS30111A602N	KLM-3003/3004	VR2 VR4 VR6 VR8 VR10 VR12 VR14 VR16-18		10	10	10
500370006300	ENCODER SWITCHS	SRGPWJ0200	KLM-3003/3004	ENC2		1	1	1
500374001600	SW	SKRGARD010	KLM-3003/3004	SW1-76		76	76	76
200109263003	PCB ASSY	KLM-3003/4 KRONOS-61/73/88	KLM-3003/3004			1	1	1
500184080020	Chip FUSE R	RF732BTTD0R2J	KLM-3005/6/8/9	R20		1	1	1
500304050740	TRANSISTOR	2SAR544RTL	KLM-3005/6/8/9	Q2		1	1	1
500314010740	DIODE	RB160VA-40	KLM-3005/6/8/9	D5		1	1	1
500320009108	OPAMP	NJM4556AL (SIP)	KLM-3005/6/8/9	IC601-602		2	2	2
500324007050	RESET IC	BD5247G-TR	KLM-3005/6/8/9	IC4		1	1	1
500324009086	DC-DC Converter	NJM2374AE-TE1-#ZZZB	KLM-3005/6/8/9	IC10		1	1	1
500324021149	OPAMP	NE5532ADR	KLM-3005/6/8/9	IC102-105 IC204-205 IC304-305 IC404-405		10	10	10
500330003700	PHOTO COUPLER	PS9117A-F3-AX(M)	KLM-3005/6/8/9	PC1		1	1	1
500330004000	OPTO TX/RX MODULE	GP1FMV31TK0F	KLM-3005/6/8/9	OPT2		1	1	1
500330004100	OPTO TX/RX MODULE	GP1FMV31RK0F	KLM-3005/6/8/9	OPT1		1	1	1
500335400151	CERAMIC	CSTCE20M0V51-R0	KLM-3005/6/8/9	XT1		1	1	1
500362009058	VR	RK09K1110 50K17 (F1815071M)	KLM-3005/6/8/9	VR101-102		2	2	2
500375014900	SW	SPUN192600	KLM-3005/6/8/9	SW101-102		2	2	2
500402400600	INDUCTOR	PK0810-331K-UL-T/F (TR)	KLM-3005/6/8/9	L603-604 L901		3	3	3
500404001250	Chip INDUCTOR	CDRH127LD	KLM-3005/6/8/9	L34		1	1	1
500450003100	PHONE JACK	LGR4609-7100F	KLM-3005/6/8/9	HP1		1	1	1
500454005600	PHONE JACK	YKB21-5006G	KLM-3005/6/8/9	PH101-102 PH201-202		4	4	4
500454009900	PHONE JACK	YKB21-5074G	KLM-3005/6/8/9	PH8-10 PH301-302 PH401-402		7	7	7
500480010560	DIN JACK	YKF51-5073V	KLM-3005/6/8/9	MID11		1	1	1
200109263005	PCB ASSY	KLM-3005/6/8/9 KRONOS-61	KLM-3005/6/8/9	MOTHER BOARD=D510MO	A	1	0	0
200109273005		KLM-3005/6/8/9 KRONOS-73/88				0	1	1
200129603005		KLM-3005/6/8/9 KRONOS X-61				1	0	0
200129613005		KLM-3005/6/8/9 KRONOS X-73/88				0	1	1
200109263008	PCB ASSY	KLM-3008 KRONOS/X(FOR	KLM-3005/6/8/9	MOTHER BOARD=D525MW	BCD	1		
500304050310	TRANSISTOR	2SA1037AKT146R	KLM-3007(LCD I/F)	Q1		1	1	1
500304050660	TRANSISTOR	2SC4081T106R	KLM-3007(LCD I/F)	Q2		1	1	1
500314037000	SCHOTTKY DIODE	RB160M-30TR	KLM-3007(LCD I/F)	D1		1	1	1
500314037100	SCHOTTKY DIODE	RB481KTL	KLM-3007(LCD I/F)	D2-3		2	2	2
500314037200	ZENER DIODE	UDZSTE-1716B	KLM-3007(LCD I/F)	ZD2		1	1	1
500314037300	ZENER DIODE	UDZSTE-177.5B	KLM-3007(LCD I/F)	ZD1		1	1	1
500324022133	DC-DC Converter	TPS61085DGKR	KLM-3007(LCD I/F)	IC1		1	1	1
500402401500	INDUCTOR	VLCF5028	KLM-3007(LCD I/F)	L1		1	1	1
200109263007	PCB ASSY	KLM-3007 KRONOS-61/73/88	KLM-3007(LCD I/F)			1	1	1
500314036000	LED	LWQ38E-Q1S2-3K6L-1	KLM-3010/11			6	6	6
500324021034	OPAMP	RC4558DR	KLM-3010/11			1	1	1
500374001600	SW	SKRGARD010	KLM-3010/11			2	2	2
200109263010	PCB ASSY	KLM-3010/11 KRONOS-61/73/88	KLM-3010/11			1	1	1
500324007028	ASSP IC	BU4227G-TR	KLM-3101	IC1	A	1	1	1
200109263101	PCB ASSY	KLM-3101	KLM-3101		A	0.1	0.1	0.1
500002190400 ⚠	POWER SUPPLY BOARD	ENO-1612-K (D510MO)	Other Electric		A	1	1	1
500002190401 ⚠		ENO-1612-K (D525MW)			BCD			
Service part not provided	MOTHER BOARD	BLKD510M0	Other Electric	MOTHER BOARD= D510MO Please see last page of parts list. Remodeling to change mother board from D510MO to D525MW	A	1	1	1
200002189801		BLKD525MW (SPARE)		MOTHER BOARD=D525MW	BCD			
500002190700	MEMORY MODULE	DIMM SMD-2G88HP-8E	Other Electric	MOTHER BOARD=D510MO	A	*a)	*a)	*a)
500002191100		SO-DIMM SMD-N2G68H1P-13H		MOTHER BOARD=D525MW	B	*a)	*a)	*a)
					CD	2	2	2
500520001700 ⚠	LITHIUM BATTERY	CR2032-A1/Z	Other Electric			1	1	1
500313007400	LCD	UMSH-8240MD-T	Other Electric		A	1	1	1
500313007401		UMSH-8240MD-6T			BCD			
500415005600	TOUCH PANEL	NC01151-T001	Other Electric			1	1	1
500375011100 ⚠	SW	POWER SW JW-M11RKK	Other Electric		ABC	1	1	1
500375017600 ⚠		A8GS-P1185			D			
500646040900	SW PROTECTOR	POWER SWBARRIER AT-217K	Other Electric		ABC	1	1	1
500646107097		A8GS-211(P)			D			
500415005000	PRESSURE SENSOR	KX-2100 SENSOR (BLACK)	Other Electric			1	1	1
500420007400	KEYBOARD UNIT	SK61	Other Electric			1		
500420007800	KEYBOARD UNIT (73KEY)	RH-3B 73KEY AFT	Other Electric		A		1	
500420007801		RH-3D 73KEY AFT			BCD			
500420007600	KEYBOARD UNIT (88KEY)	RH-3B AFT	Other Electric		A			1
500420007601		RH-3D 88KEY AFT			BCD			

500435006100	SSD	THNSNB030GBSJ	Other Electric		AB	1	1	1	
500435006400		THNSNB062GBSJ			CD				*5)
500437000700	DC FAN	XRL4106028	Other Electric		A	1	1	1	
500437000701		XRL4106028 (700MM)			BCD				*5)
500540028938	AC INLET	SUP-J3G-E2A			A	1	1	1	
500540028954	Line Filter	AC-P16CS40	Other Electric		BCD	1	1	1	*5)
200109263161		KLM-3161 KRONOS-61/73/88				0.25	0.25	0.25	*5)
500104016710	RESISTOR	CFS1/4CT26A 105 J	Other Electric			1	1	1	
500180400020	THERMISTOR	NTPAA3R9LD6A0	Other Electric			1	1	1	
500565001400	HEATSINK	HS-AA-C-D(SOFT 50X50)	Other Electric		AB	1			
500565001500	HEATSINK	HH-AA-A-P(HARD 20X20)	Other Electric			1	1	1	
500565001600	HEATSINK	HT-B-A-A(TAPE 20X20)	Other Electric			1	1	1	
500540028903	POWER PLUG/JACK	CONVERTER SOCKET YL-212-C	ACC	100JP		1	1	1	
500600006508	AC CABLE	LY100JPVCTFLY35LY37(JP)	ACC	100JP					
500600005700	AC CABLE	UC-953-J01	ACC	120CN/US					
500600005800	AC CABLE	SC-111-J01	ACC	240AU		1	1	1	
500600005400	AC CABLE	EC-652-E03	ACC	230GE					
500600006507	AC CABLE	LY230BSH05VVFBSLY13(UK)	ACC	230UK					
500475104063	HARNESS	HNS-4063			ABC	1			*5)
500475104258	HARNESS	HNS-4258			D				
500475004064	HARNESS	HNS-4064			A	1			*5)
500475004203	HARNESS	HNS-4203			BCD				
500475104066	HARNESS	HNS-4066				1			
500475104067	HARNESS	HNS-4067				1			
500475104068	HARNESS	HNS-4068				1			
500475104069	HARNESS	HNS-4069				1			
500475114069	HARNESS	HNS-4069(SHIELDED)			A	1			*5)
500475104070	HARNESS	HNS-4070			BCD				
500475104072	HARNESS	HNS-4072				1			
500475104073	HARNESS	HNS-4073				1			
500475104074	HARNESS	HNS-4074				1			
500475104075	HARNESS	HNS-4075	Harness(61Key)			1			
500475104078	HARNESS	HNS-4078				1			
500475104079	HARNESS	HNS-4079				1			
500475104080	HARNESS	HNS-4080				1			
500475104081	HARNESS	HNS-4081				1			
500475104082	HARNESS	HNS-4082				1			
500475104093	HARNESS	HNS-4093				1			
500475104096	HARNESS	HNS-4096				1			
500475104119	HARNESS	HNS-4119				1			
500475104204	HARNESS	HNS-4204			A	1			*5)
500475104120	HARNESS	HNS-4120			BCD				
500475104121	HARNESS	HNS-4121				1			
500475004124	HARNESS	HNS-4124				1			
500475004231	HARNESS	HNS-4231		EUP	D	1			*5)
500475104063	HARNESS	HNS-4063			ABC		1		*5)
500475104258	HARNESS	HNS-4258			D				
500475004064	HARNESS	HNS-4064			A		1		*5)
500475004203	HARNESS	HNS-4203			BCD				
500475104066	HARNESS	HNS-4066				1			
500475104067	HARNESS	HNS-4067				1			
500475104068	HARNESS	HNS-4068				1			
500475104069	HARNESS	HNS-4069				1			
500475114069	HARNESS	HNS-4069(SHIELDED)				1			*5)
500475104070	HARNESS	HNS-4070				1			
500475104071	HARNESS	HNS-4071				1			
500475104072	HARNESS	HNS-4072				1			
500475104073	HARNESS	HNS-4073	Harness(73Key)			1			
500475104074	HARNESS	HNS-4074				1			
500475104075	HARNESS	HNS-4075				1			
500475104076	HARNESS	HNS-4076				1			
500475104205	HARNESS	HNS-4205			A		1		*5)
500475104077	HARNESS	HNS-4077			BCD				
500475104083	HARNESS	HNS-4083				1			
500475104084	HARNESS	HNS-4084				1			
500475104085	HARNESS	HNS-4085				1			
500475104086	HARNESS	HNS-4086				1			
500475104087	HARNESS	HNS-4087				1			
500475104093	HARNESS	HNS-4093				1			
500475104096	HARNESS	HNS-4096				1			
500475004231	HARNESS	HNS-4231		EUP	D	1			*5)
500475104063	HARNESS	HNS-4063		EUP	ABC			1	*5)
500475104258	HARNESS	HNS-4258			D				
500475004064	HARNESS	HNS-4064			A			1	*5)
500475004203	HARNESS	HNS-4203			BCD				
500475104066	HARNESS	HNS-4066						1	
500475104067	HARNESS	HNS-4067						1	
500475104068	HARNESS	HNS-4068						1	
500475104069	HARNESS	HNS-4069						1	
500475114069	HARNESS	HNS-4069(SHIELDED)						1	*5)
500475104070	HARNESS	HNS-4070						1	
500475104071	HARNESS	HNS-4071						1	
500475104072	HARNESS	HNS-4072						1	
500475104073	HARNESS	HNS-4073	Harness(88Key)					1	
500475104074	HARNESS	HNS-4074						1	
500475104075	HARNESS	HNS-4075						1	
500475104076	HARNESS	HNS-4076						1	
500475104205	HARNESS	HNS-4205			A			1	*5)
500475104077	HARNESS	HNS-4077			BCD				
500475104088	HARNESS	HNS-4088						1	
500475104089	HARNESS	HNS-4089						1	
500475104090	HARNESS	HNS-4090						1	

500475104091	HARNESS	HNS-4091								1	
500475104092	HARNESS	HNS-4092								1	
500475104093	HARNESS	HNS-4093								1	
500475104096	HARNESS	HNS-4096								1	
500475004231	HARNESS	HNS-4231								1	
500642000030		X09130 VJS KNOB C41705	Mechanical						1	1	1
500646100789		X09130 SIDE PANEL-L E30572-1	Mechanical						1		
500646100790		X09130 SIDE PANEL-R E30572-2	Mechanical						1		
500646100771		X09131 SIDE PANEL-L E30573-1	Mechanical							1	1
500646100772		X09131 SIDE PANEL-R E30573-2	Mechanical							1	1
500646100773		X09130 LCD HOOD E30575	Mechanical						1	1	1
500540028944		X09131 LCD SPACER F41729	Mechanical							1	1
500646100774		X09130 JS PANEL E30576	Mechanical						1	1	1
500646100776		X09130 KB COVER E30579	Mechanical						1		
500646100775		X09131 KEY BLOCK E30577	Mechanical							1	1
500646100777		X09130 VJS FRAME E40801	Mechanical						1	1	1
500646100782		X09130 REFLECTOR-5 E40804-5	Mechanical						1	1	1
500620049729		X09130 KEY-S-4 E40802-4	Mechanical						2	2	2
500620049733		X09130 KEY-L-4 E40803-4	Mechanical						6	6	6
500620049735		X09130 ENCODER KNOB E40800	Mechanical						1	1	1
500620049736		X09130 SVR KNOB-B/G E40805-2	Mechanical						10	10	10
500541000001		X09130 VJS SHEET-L F41627	Mechanical						1	1	1
500541000002		X09130 VJS SHEET-S F41628	Mechanical						1	1	1
500550023530		X09131 KB FELT F41629-1	Mechanical							1	
500550023531		X09132 KB FELT F41629-2	Mechanical								1
500646100764		X5870 VR KNOB(H) E30459-1	Mechanical						10	10	10
500620044800		ROTARY VR KNOB KOC-E48026-1	Mechanical						2	2	2
500620018200		POWER SWKNOB KOC-E40224	Mechanical						2	2	2
500500022500		FF-004-AR791	Mechanical						5		
500500037007		RUBBER FOOT K-24W	Mechanical							5	5
500646100791		X09130 JS REFLECTOR E40747-2	Mechanical						1	1	1
500540028940		TOUCH PANEL TAPE S F41638-2	Mechanical						2	2	2
500540028939		TOUCH PANEL TAPE L F41638-1	Mechanical						2.25	2.25	2.25
500641042122		X07111 ANGLE-S C41573	Mechanical						2	2	2
500642000028		X09130 FRONT BAR C41697	Mechanical						1		
500642000029		X09131 FRONT BAR C30841-1	Mechanical							1	
500642000032		X09132 FRONT BAR C30841-2	Mechanical								1

*1)Note: The KLM-3101 is used only for J03, J04, and J05 lot (some for J06lot as well).

*2)Change in service manual Ver 1.4

*a)QTY=1:Before DIMM extension

QTY=2:If supported DIMM extension

*3) It is necessary to write the system in the factory.

*4) 200109263008(PCB Ass'y) is the same as the one that is included in 200129603005&200129613005

*5) It is the part that was added in service manual V2.0

JoyStic unit

Part Number	Category	Part Name	Location	Reference	QTY		
500362009052	VR	RK11K1140D1H	KLM-2704/5	VR9-10	2	2	2
200062462704	PCB ASSY	KLM-2704/2705	KLM-2704/5		0.25	0.25	0.25
500646100703		X4100 JS COVER E40702-2	Mechanical		1	1	1
500646100068		X4100 JS WHEEL E40703	Mechanical		1	1	1
500646100070		X4100 JS WHEEL SUPPORT E30455	Mechanical		1	1	1
500646100071		X4100 JS FRAME E30456	Mechanical		1	1	1
500646100069		X4100 JS PLATE E40704	Mechanical		1	1	1
500644010500		X-0100 WHEEL SPRING KOC-C41222	Mechanical		2	2	2
500540026500		X-0100 JS WASHER KOC-F40979	Mechanical		2	2	2

Remodeling to change mother board from D510MO to D525MW

(note)Don't use BLKD525MW on the market.

Part Number	Category	Part Name	Location	Reference	QTY		
					61	73	88
200002189801	MOTHER BOARD	BLKD525MW (SPARE)		Assembled following parts and customized BIOS. 500520001700 CR2032-A1//Z 500540028943 63429-202LF 500565001500 HH-AA-A-P(HARD 20X20) 500565001600 HT-B-A-A(TAPE 20X20)	1	1	1
500002191100	MEMORY MODULE	SO-DIMM SMD-N2G68H1P-13H			*a)	*a)	*a)
200109263008	Boot suport BOARD	KLM-3008 KRONOS/X(FOR			1	1	1
500641042208	Side Chassis	X11150 SideChassis-R C30849-6			1		
500630042661	Shield sheet	X11151 MB SHIELD2 F41788				2	2
500475004186	HARNESS	HARNESS FOR ENO-1612(D525MW)			1	1	1

*a)QTY=1:Before DIMM extension

QTY=2:If supported DIMM extension

*5) It is the part that was added in service manual V2.0

APPENDIX

1 . PSoC System loading

Do the loading of PsoC system when you exchange PANEL PC BOARD(KLM-3003 or KLM-3004)

(When IC SY8C21323-24PVXIT is exchanged, the loading is similarly done.)

When the first turning on power after it exchanges it, it is automatically loaded.

(note) Loading can be started if set power on with pushing [ENTER] and [<<REW]

Display start up and “Updating the panel scan system...” is displayed in the upper left side of LCD.

“Completed!” is displayed if loading succeeds.

If loading is failed, “Cannot update it.”

Set power off after confirm this message.

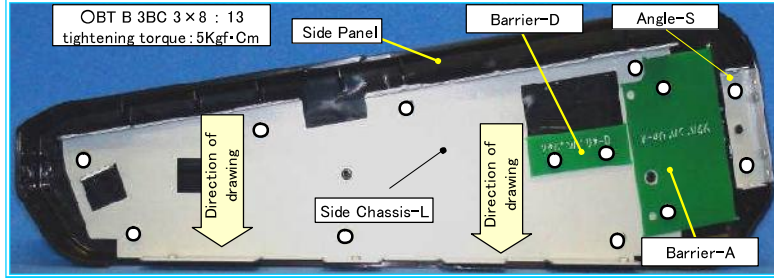
TITLE
SIDE Panel Assy 1

MODEL
KRONOS 61/73/88

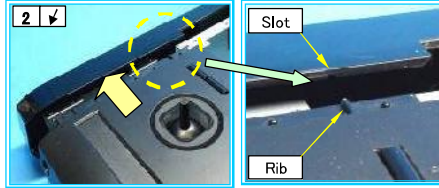
Set the rib of JS Panel to the slot two places of Side Panel.
Insert JS panel to Side Panel slot.
Confirm in view of the table side, there is no space after screw clamp.

SIDE PANEL-L Assy

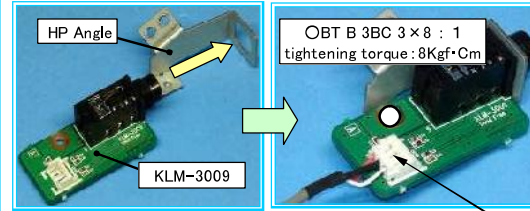
1



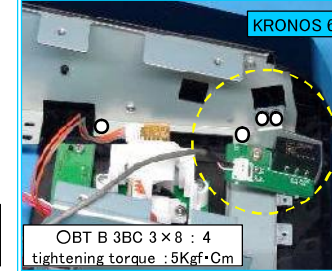
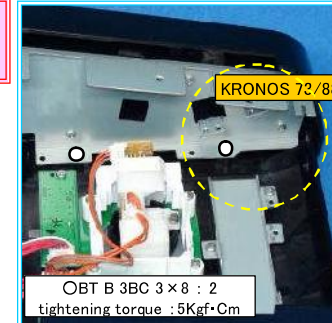
2



3

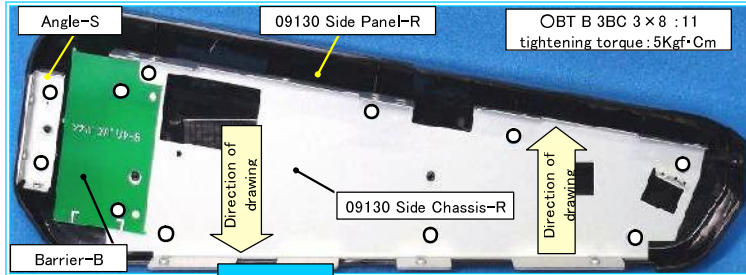


61: HNS-4082
73: HNS-4087
88: HNS-4092

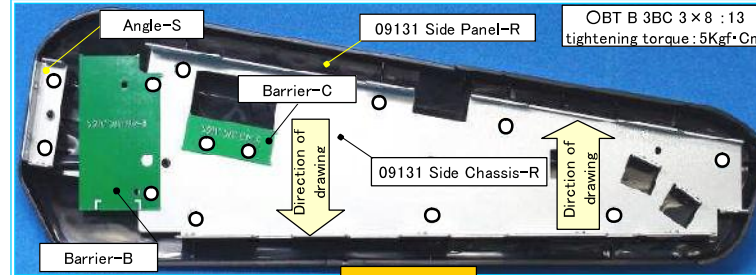


SIDE PANEL-R Assy

1

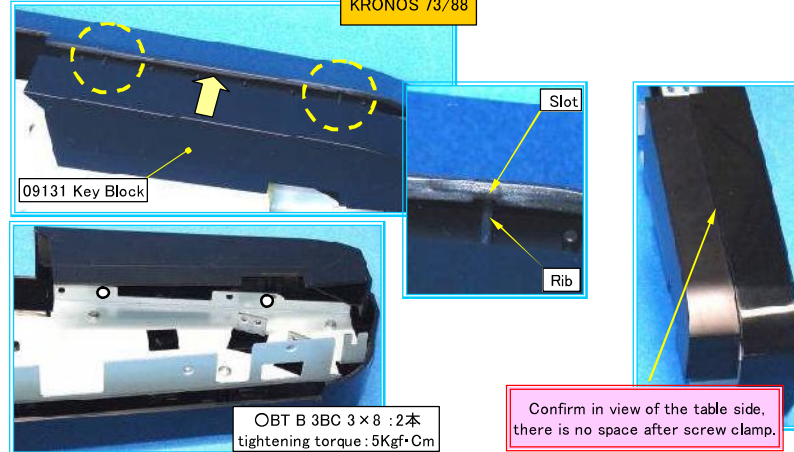
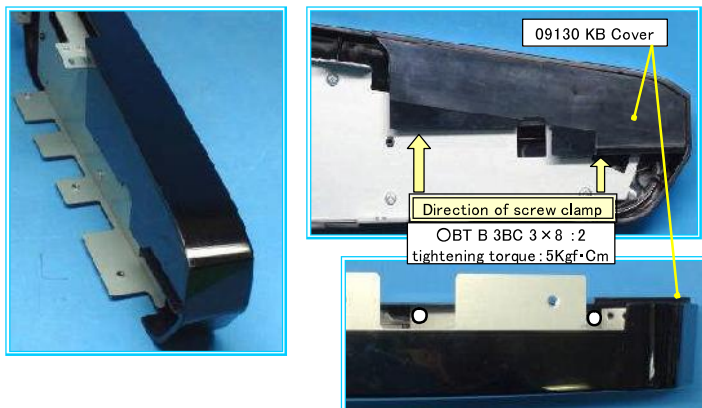


KRONOS 61



KRONOS 73/88

2

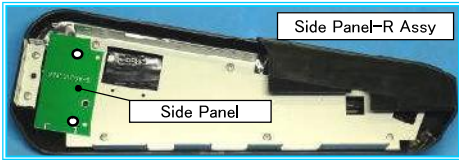
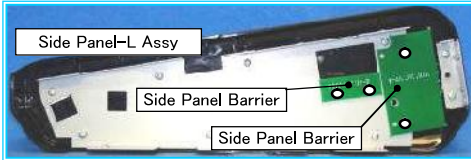


Confirm in view of the table side, there is no space after screw clamp.

TITLE			
SidePanel Assy			
MODEL			
KRONOS 61/73/88			

1 ↓

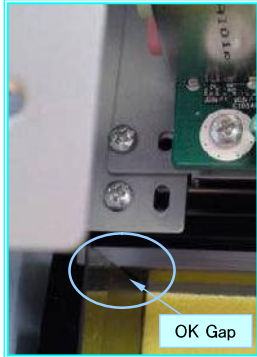
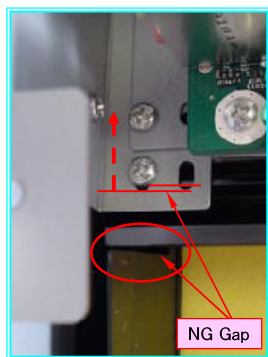
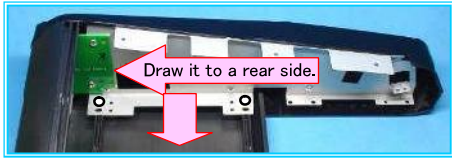
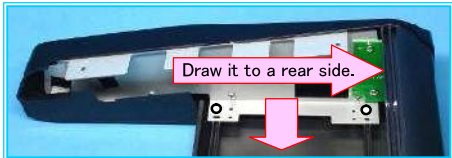
○BT B 3BC 3×8 :6本
tightening torque:8Kgf·Cm



2

Screw Side Panel-L/R Assy after drawing to Side Panel to a rear side.

○BT B 3BC 3×8 :4
tightening torque:8Kgf·Cm



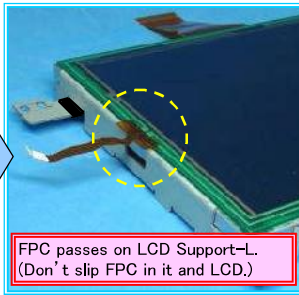
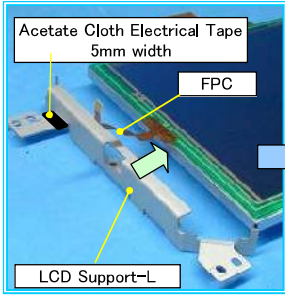
Screw Side Panel-L/R Assy after drawing to Side Panel to a rear side.
Confirm in view of the table side, there is no space of Side Panel and Panel after screw clamp.
Do not bulge Panel from Side Panel.

●BT B 3BBC 3×8 :4
tightening torque:8Kgf·Cm



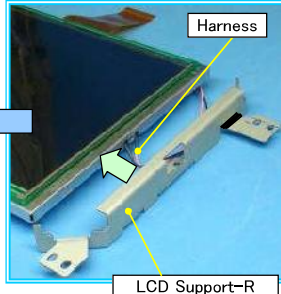
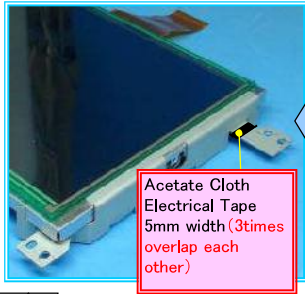
TITLE			
LCD/SSD/FAN Assy			
MODEL			
KRONOS-61/73/88			

1 ↓



Wrap the Acetate tape(5mm width) around LCD Support-L twice. Do not make space bend point of metal.

Insert the arrow part of LCD Support-L in the space between LCD and Touch Panel as for.

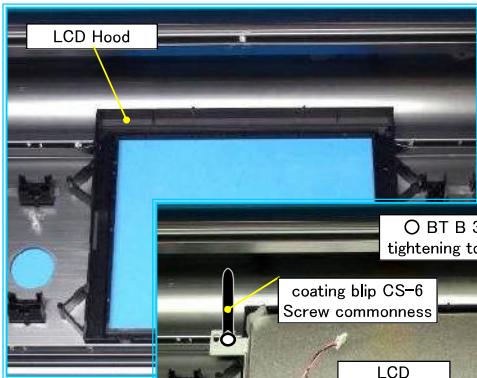


Wrap the Acetate tape(5mm width) around LCD Support-R twice. Do not make space bend point of metal.

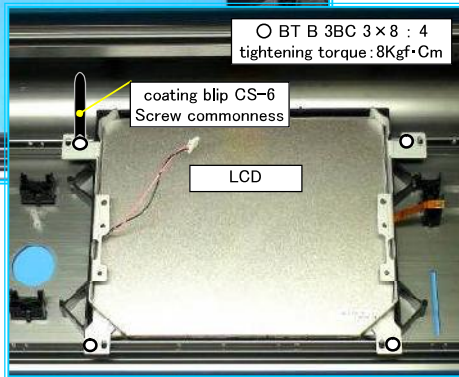
The harness is put out downward through the inside of metal fittings (Do not pass the corner hole of metal fittings)

Insert the arrow part of LCD Support-R in the space between LCD and Touch Panel as for.

2 ↓



3 →

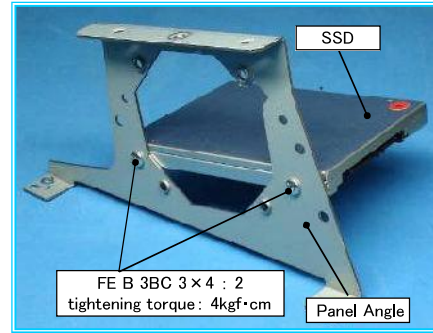


4 →

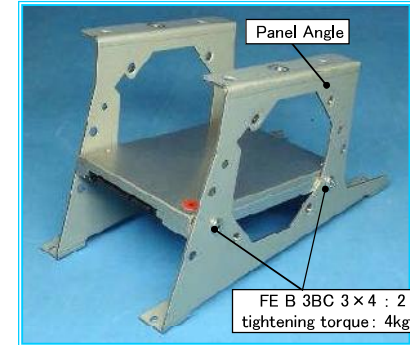
Cut the Touch Panel Tape-L in four capitation and paste.



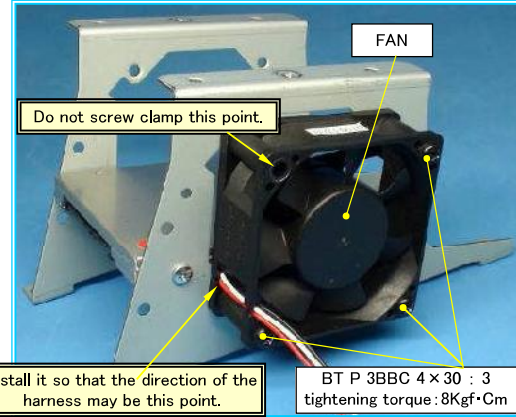
1 ↓



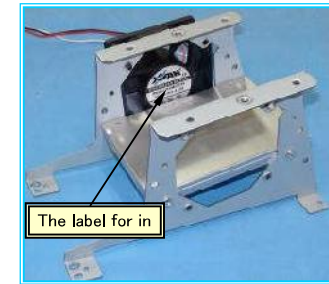
Notice) the screw tightening torque of SSD is lower than other parts.



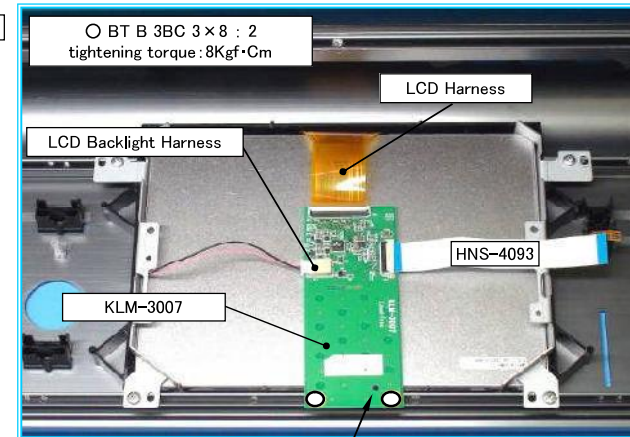
2 ↓



Install FAN so that the label may become direction of the inside.



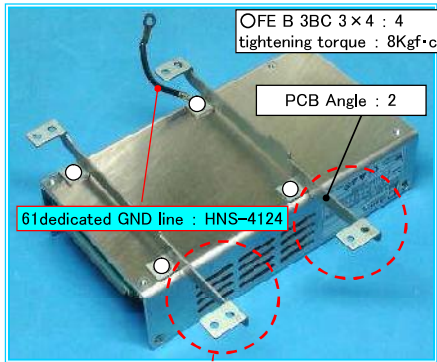
5



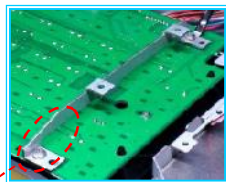
Fit the hole of PC Board to LCD Hood positioning pin.

TITLE			
Power Unit Assy			
MODEL			
KRONOS 61/73/88			

61KEY dedicated POWER Unit Assy

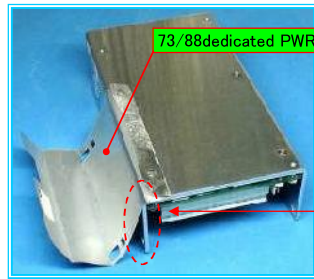


Attention of becoming opposite direction only in case of one of PCB Angle of 61KEY (figure below)
Three both is installed in 73/88KEY for the same.



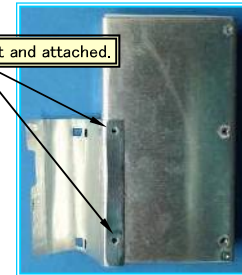
73/88 KEY dedicated POWER Unit Assy

1 ↓

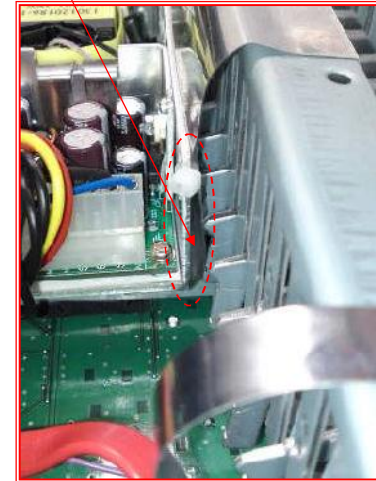


Fit the hole of Power Unit and attached.

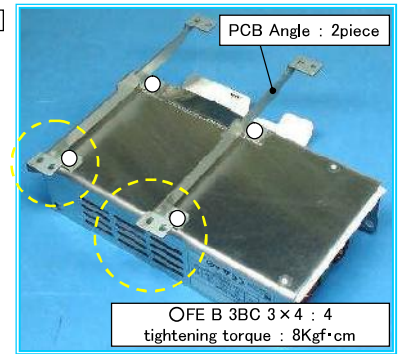
The swelling of the shield paper is NG.



2 ↓

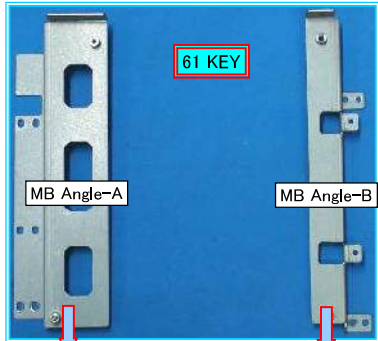
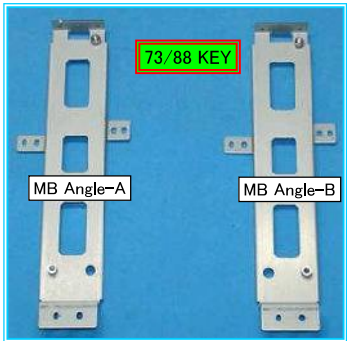


3

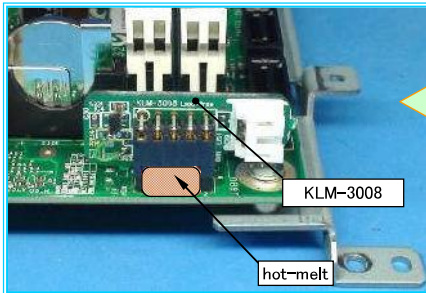
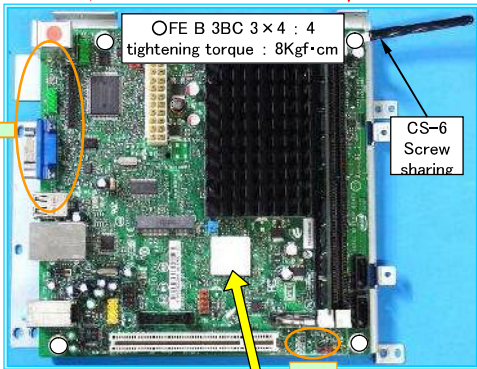
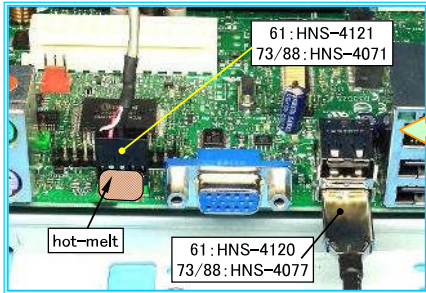


	TITLE			
	Mother Board Assy			
	MODEL			
	KRONOS 61/73/88			

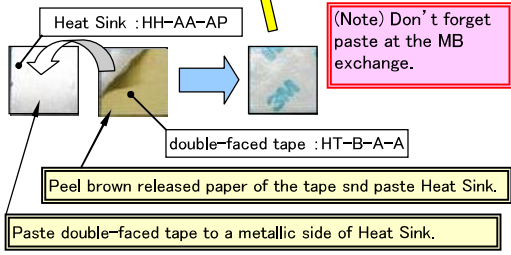
1 ↓



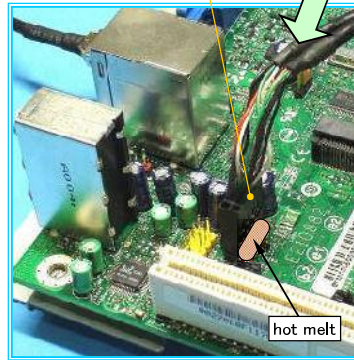
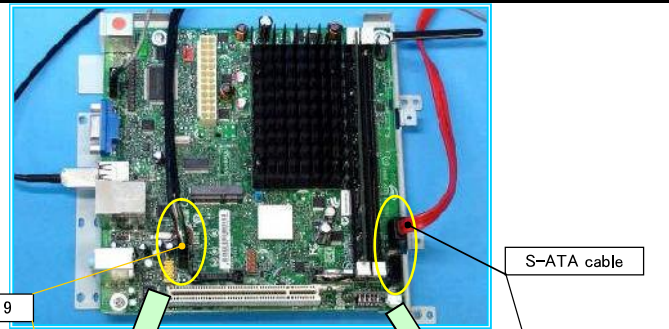
2 →



3

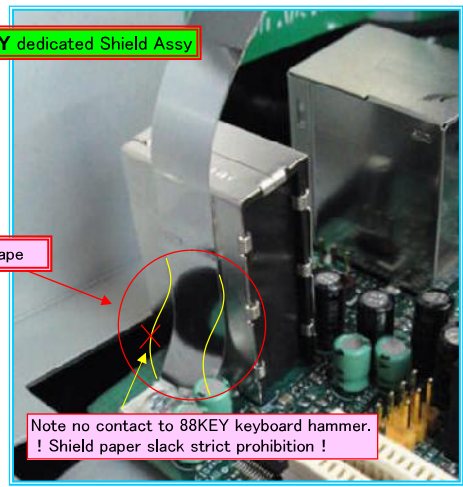
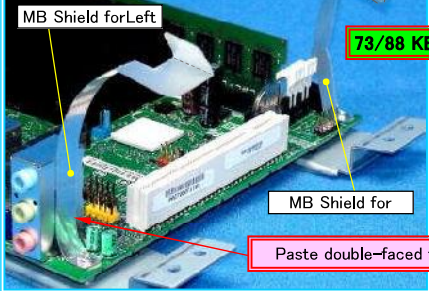


3 ↓



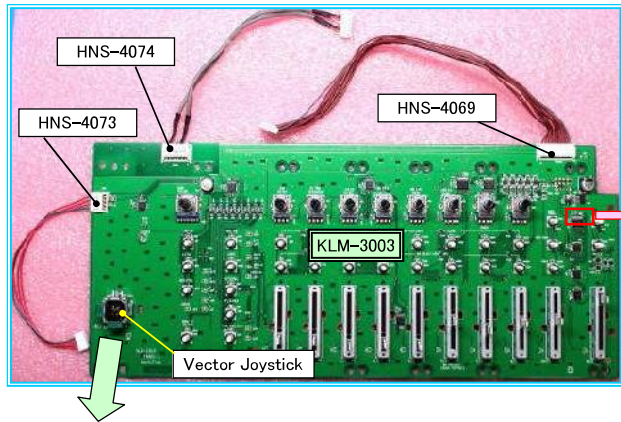
Same MB Shield is used for L and for R. The way of folding is only different in L and R. Note that the installation point is different.

Note MB Shield to damage screw clamp easily sometimes.

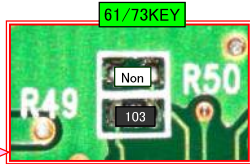


TITLE			
PNEL_PCB Assy			
MODEL			
KRONOS 61/73/88			

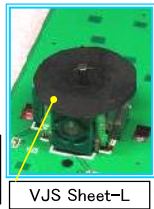
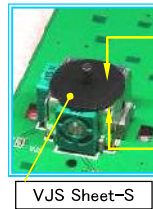
1



(Note) The mount position of 10K Ω resistance is different for 61/73 keys and for 88 keys in KLM-3003.



Non : マウント無し 103 : 10K Ω



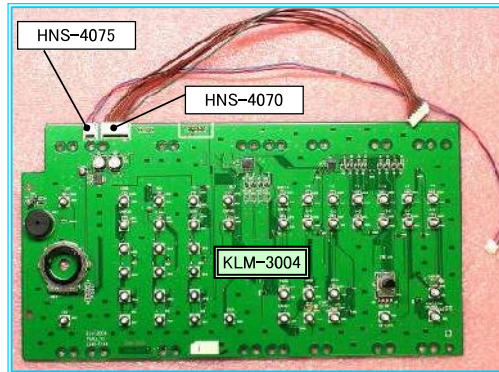
mat side

Gloss surface side

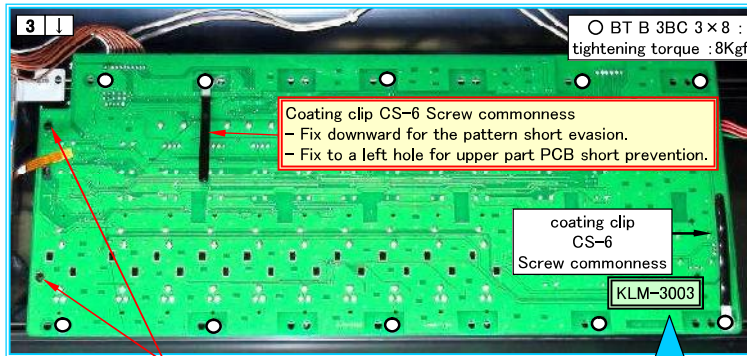
Set up VJS Sheet-S/L bot with the gloss surface turned internally.

Hangs VJS Frame the tab of the stopper to the corner hole of the substrate for

2



3



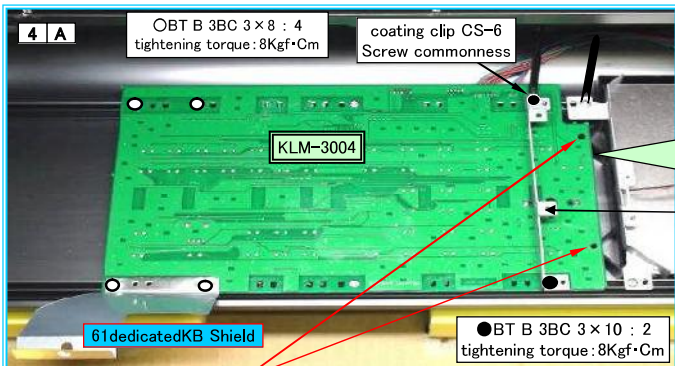
BT B 3BC 3 x 8 : 10 tightening torque : 8Kgf·Cm

Coating clip CS-6 Screw commonness
- Fix downward for the pattern short evasion.
- Fix to a left hole for upper part PCB short prevention.

coating clip CS-6 Screw commonness

Confirm the positioning pin of the LCD food firmly engages with the positioning hole of PCB. There is a possibility that some sliders rub when there is a floatage.

4 A

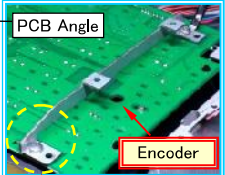
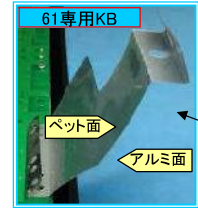


OBT B 3BC 3 x 8 : 4 tightening torque : 8Kgf·Cm

coating clip CS-6 Screw commonness

61dedicatedKB Shield

BT B 3BC 3 x 10 : 2 tightening torque : 8Kgf·Cm

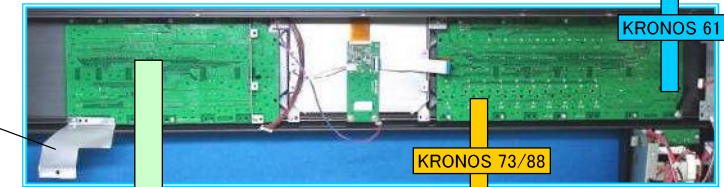


PCB Angle

Encoder

Fix while suppressing it so that the positioning pin of the LCD food may firmly engage with the positioning hole of PCB so that the encoder part of PCB should not float. The rotation of the encoder rubs if there is a floatage even a little.

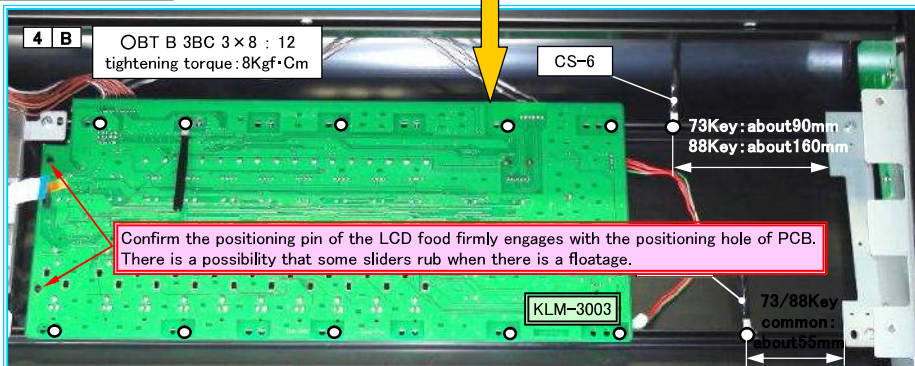
(Note) Install the direction of PCB Angle in the opposite direction of PowerUnit Angle only for 61 keys.
Install it same direction of PowerUnit Angle for 73/88keys.



KRONOS 61

KRONOS 73/88

4 B



OBT B 3BC 3 x 8 : 12 tightening torque : 8Kgf·Cm

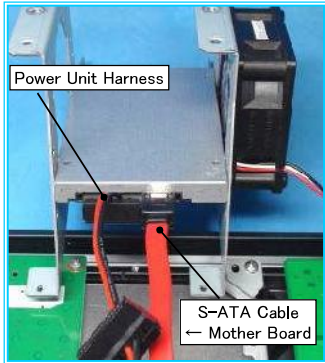
73Key : about 90mm
88Key : about 160mm

Confirm the positioning pin of the LCD food firmly engages with the positioning hole of PCB. There is a possibility that some sliders rub when there is a floatage.

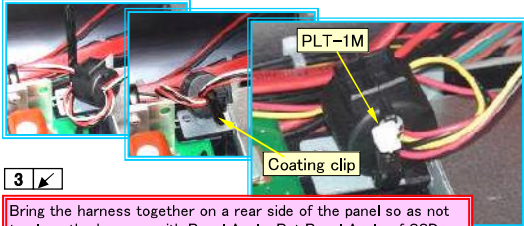
73/88Key common : about 55mm

TITLE			
FAN/AC_Inlet Assy			
MODEL			
KRONOS 61/73/88			

1 →

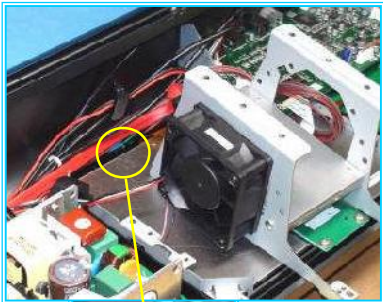


2 ↓

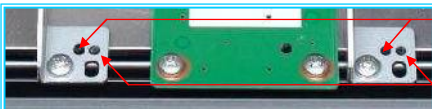
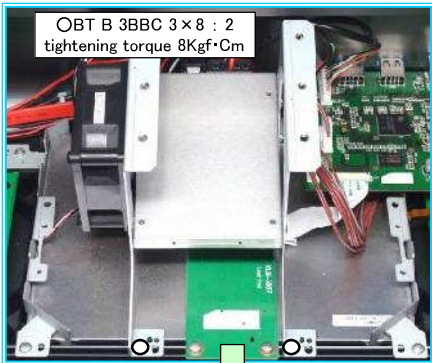


3 ↘

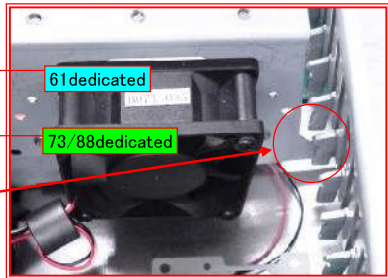
Bring the harness together on a rear side of the panel so as not to place the harness with Panel Angle. Put Panel Angle of SSD Assy in the positioning pin in the back and forth four places.



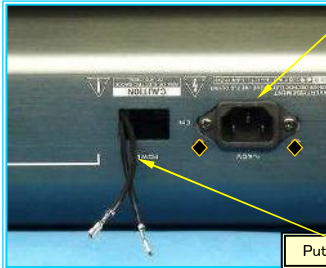
4



The left side sets for 61Key and the right side to enter the hole of 73key as the position-determining pin faces it. (There is a possibility of coming in contact with the weight of the RH3 keyboard if making a mistake.)



1 ↓



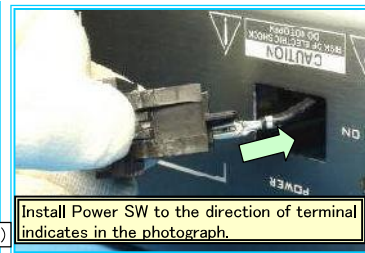
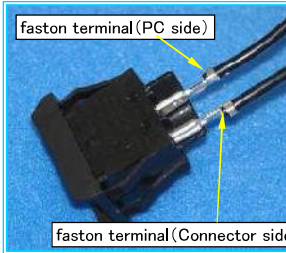
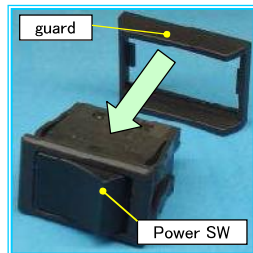
(Note) Install AC Inlet in a correct direction because AC Inlet is installed in either direction.

◆ BT B 3BBC 3 × 8 : 2
tightening torque 8Kgf·Cm

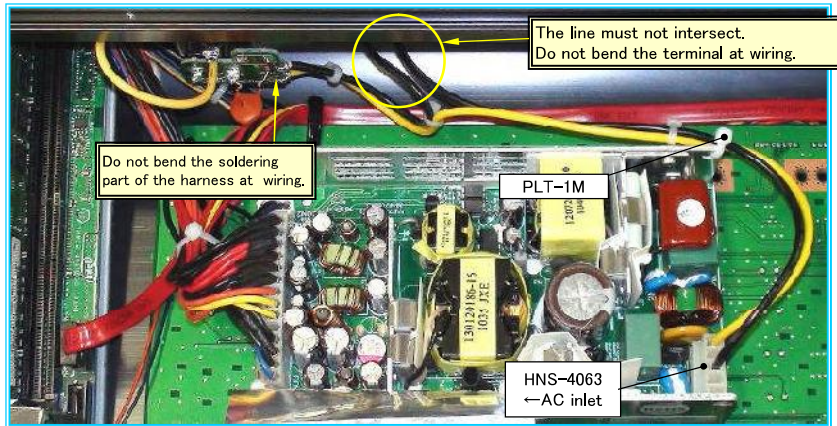
Put out the faston terminal of AC Inlet harness from the switch installation hole.

2 ↓

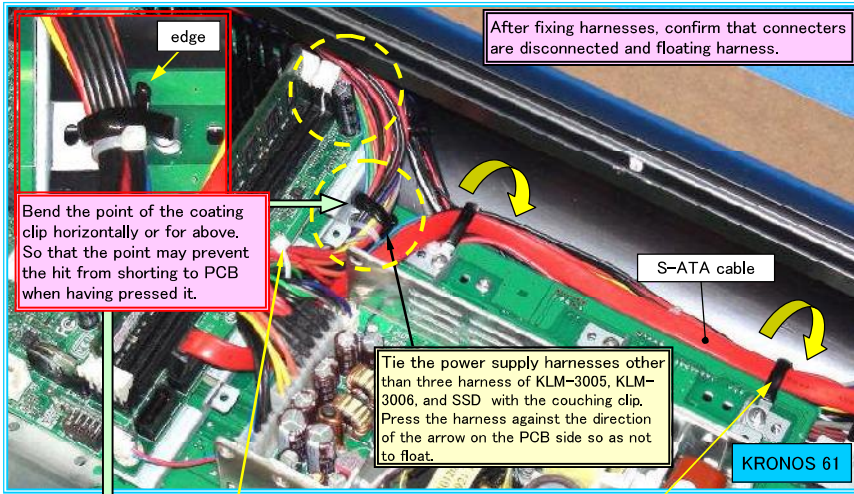
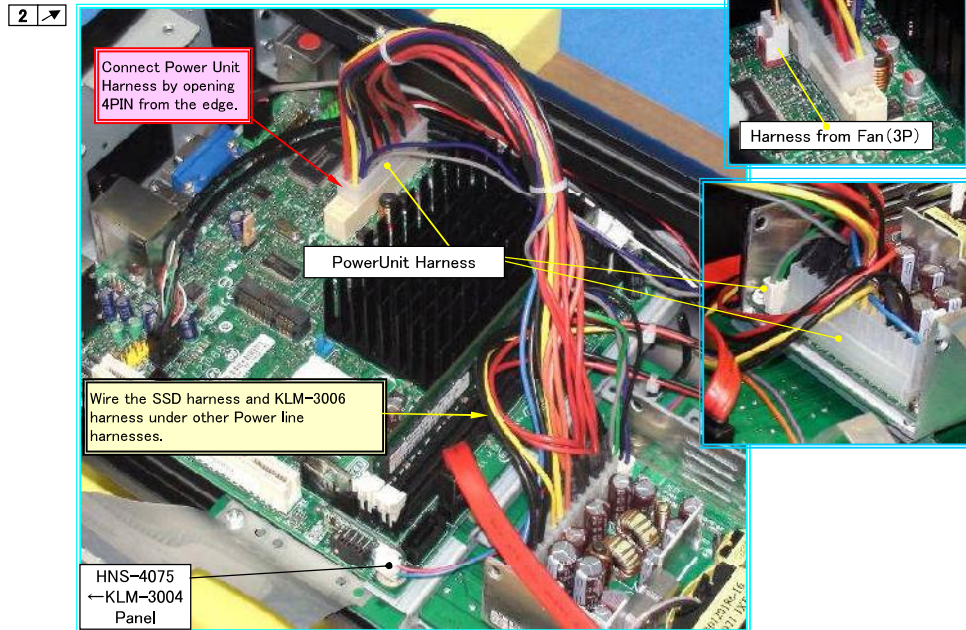
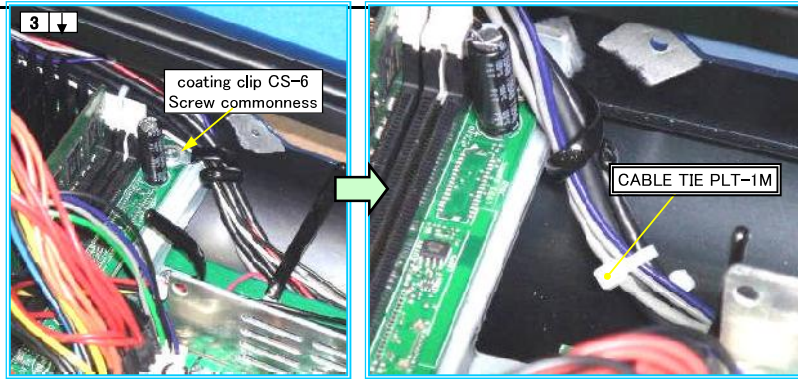
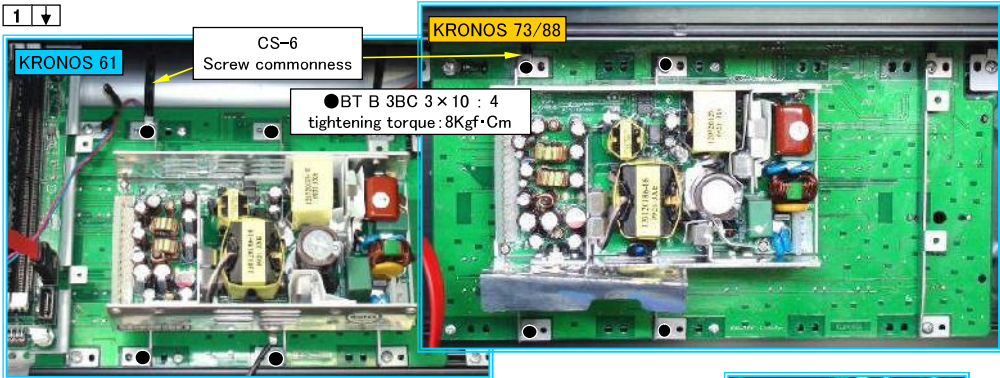
Confirm the terminal is inserted to the root of the switch



3



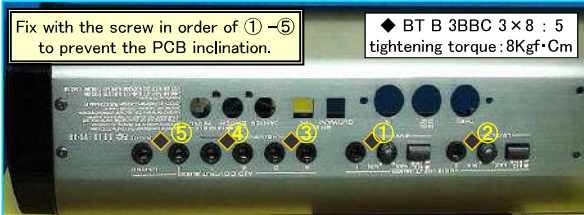
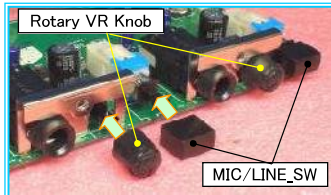
TITLE			
Power Cable Assy			
MODEL			
KRONOS 61/73/88			



TITLE			
JAC_PCB Assy			
MODEL			
KRONOS 61/73/88			

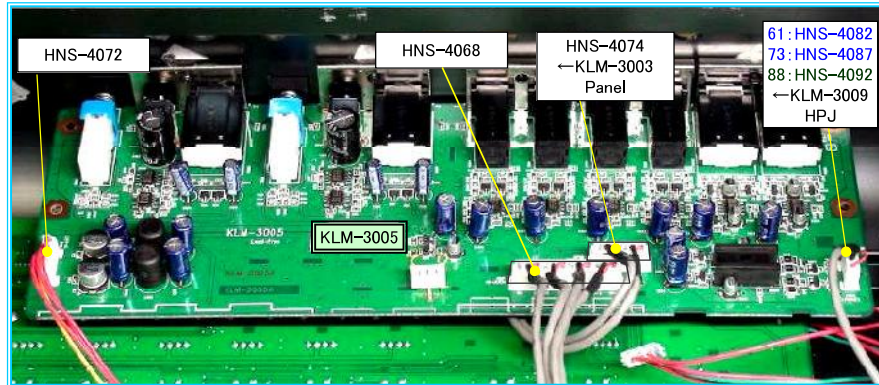
1 ↓

Install the two Rotary VR Knob and two Power switch knob before fixing PCB.



Push Rotary VR Knob until click. (note) It rubs against the panel if it is insufficient

Confirm the rubbing of Rotary VR Knob and the panel after the installation. Pass or fail when there is rubbing OK: It doesn't resist the rotation.



2 ↓

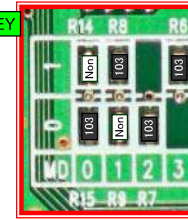
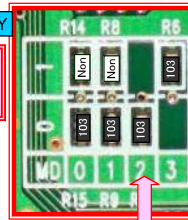


3 ↓

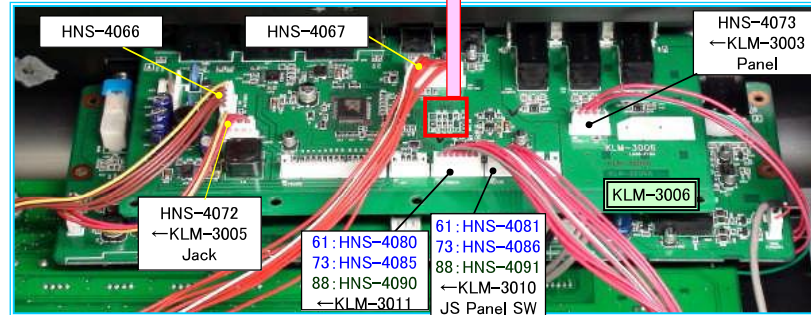
(Note) The mount position of 10K Ω resistance is different for 61 keys and for 73/88 keys in KLM-3006.

ONLY 61KEY

73/88KEY



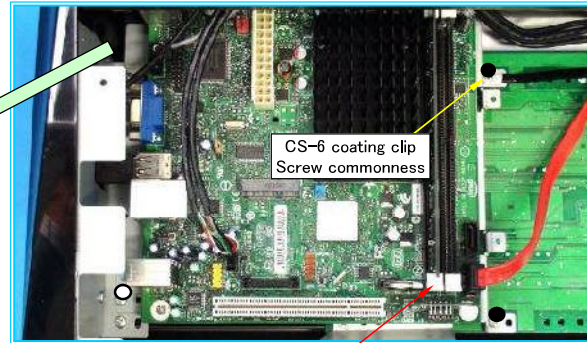
Non : no
10K : 10K Ω



4 ↓



○ BT B 3BC 3 x 8 : 2
tightening torque: 8Kgf·Cm



CS-6 coating clip
Screw commonness

5



● BT B 3BBC 3 x 8 : 2 (61 KEY)
● BT B 3BBC 3 x 6 : 2 (73/88 KEY)
tightening torque: 8Kgf·Cm

● BT B 3BC 3 x 10 : 2
tightening torque: 8Kgf·Cm

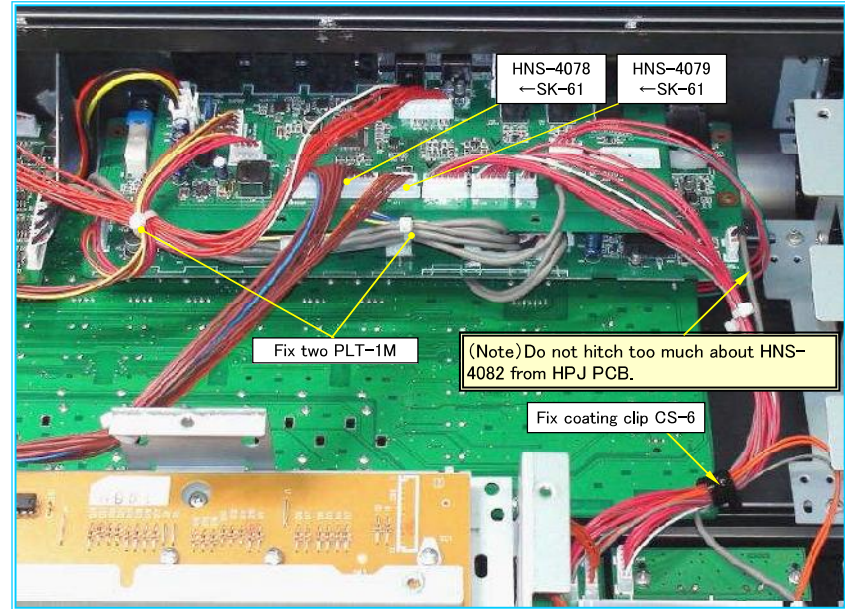
Confirm the lock lever of the memory is locked (four places in total).



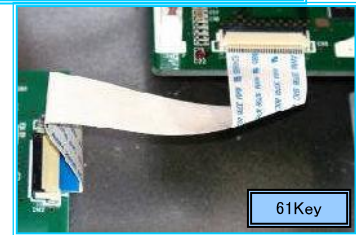
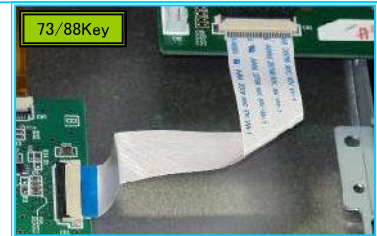
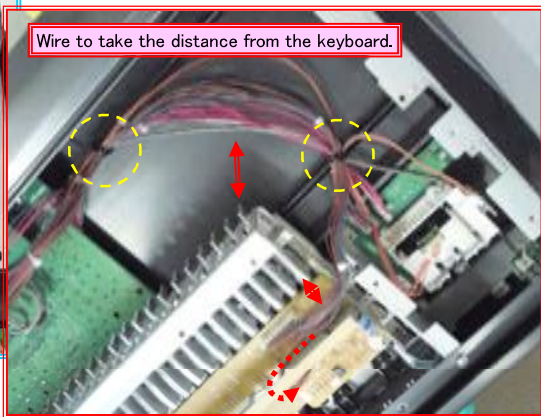
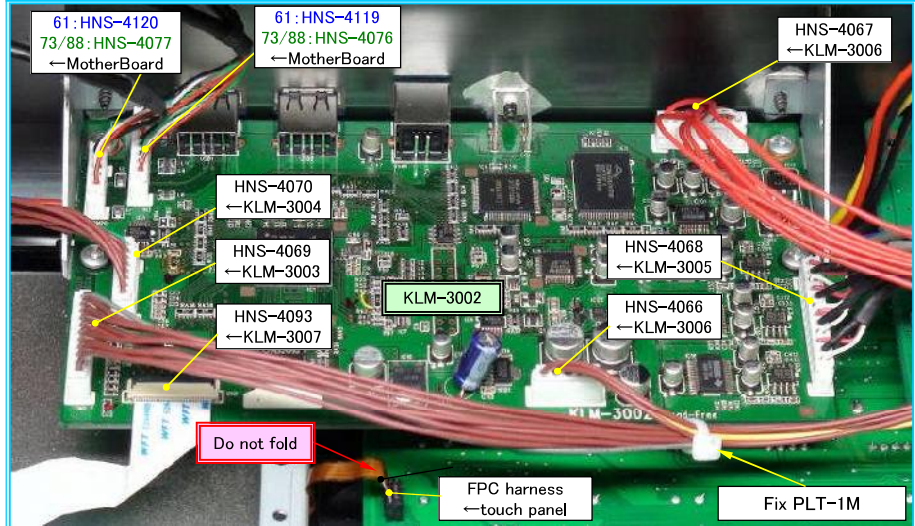
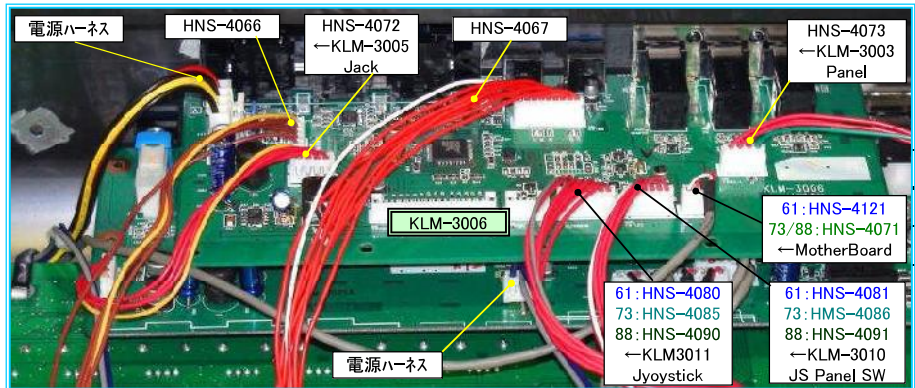
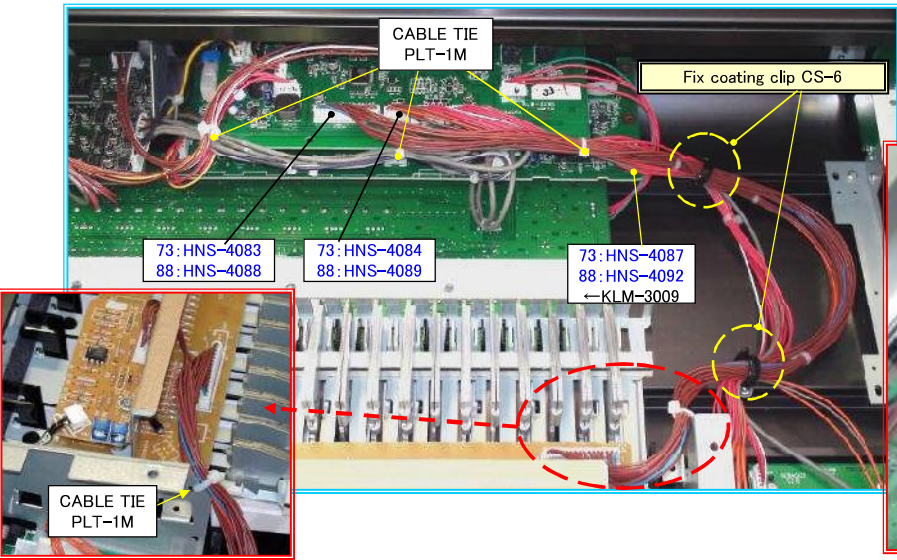
○ BT B 3BC 3 x 8 : 2
tightening torque: 8Kgf·Cm

TITLE			
Jac Cable Assy			
MODEL			
KRONOS 61/73/88			

KRONOS-73/88 (Photograph below is KRONOS-73.)

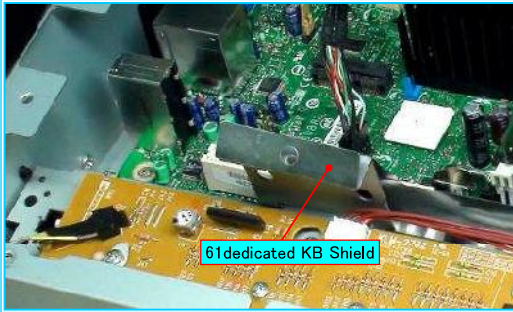


KRONOS-73/88 (This photo is 73)



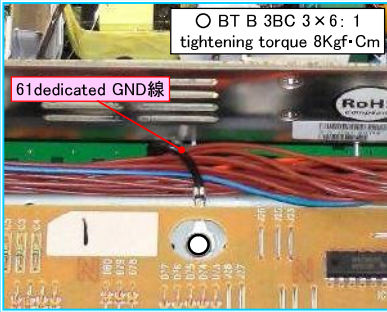
TITLE			
KBD/Bottom Cover Assy			
MODEL			
KRONOS 61			

1 →



Peel off the double-faced tape pasted to KB Shield.
Suit and paste the hole position.

2 ↗



Fix the Keyboard harness by using GND cable and screwed.

3 →

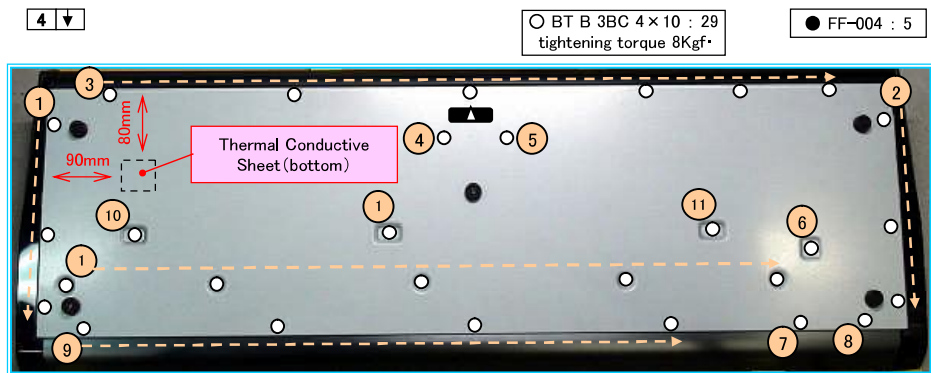


Front Bar is lowered vertically on and set.



Match the point of Front Bar and JS Panel.

4 ↓



Tighten with the screw in order from ① to ⑬.

Do according to the following procedure when you tighten the screw of ⑩.
The keyboard is pushed up by the hand.
The screw hole of the keyboard must match the position of the bottom plate screw hole.

※ Do according to the following procedure when you tighten the screw of ⑥⑦⑧
Hold the JS panel, the bottom plate, and BAR by the hand so that there is no space.

5

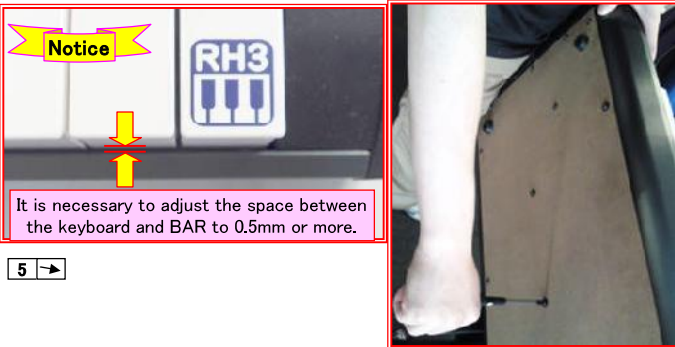
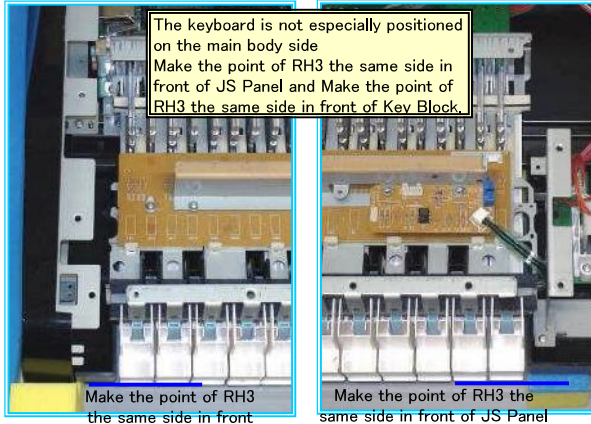


Set SlideVR MAX and insert Sliderknob on the panel side. (To arrange height preventing the difference passing.)

TITLE
73&88 KBD_Bottom Cover Assy

MODEL
KRONOS 73/88

1 →

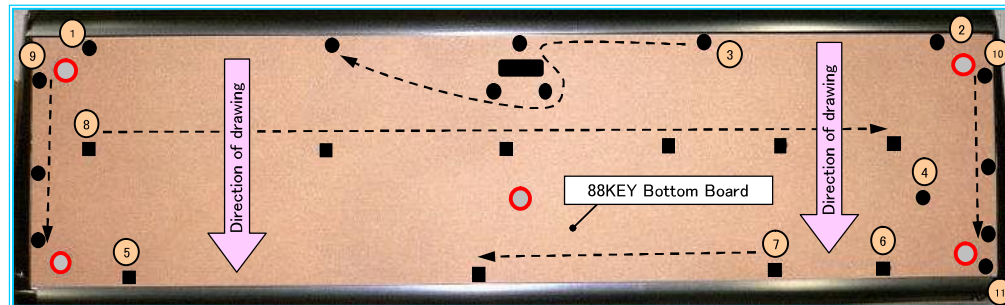


5 →

● コム73 K-24W : 5
TP1 T 3BBC 3.5 × 12 : 5
tightening torque : 8Kgf•cm

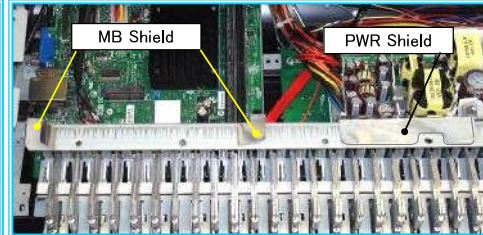
● BT FEW 3BBC 4 × 20 : 15
tightening torque : 8Kgf•cm

RH3 Special screw
■ FE WSE1 3BBC 5 × 20 : 8
tightening torque : 15Kgf•cm



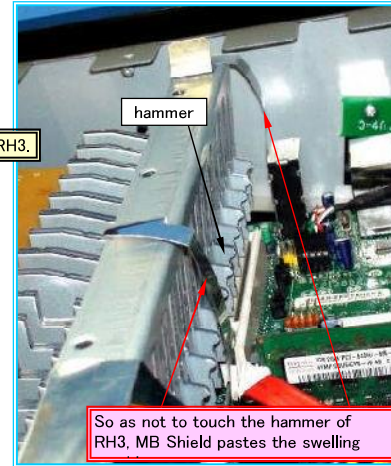
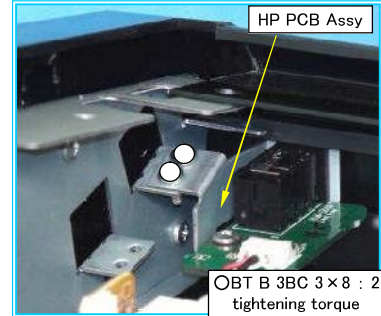
2 →

MB Shield and PWR Shield are pasted to the chassis of RH3.

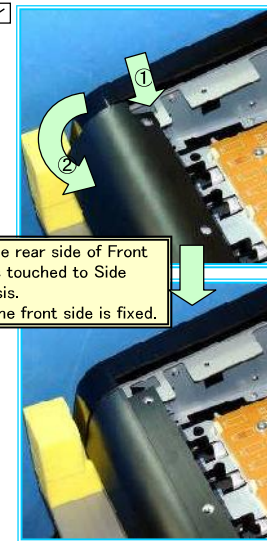


Pass Phone Jack on HP PCB Assy through the hole of Front Bar, and threadably mounted on Side Shassis

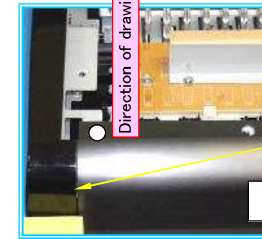
4 ↗



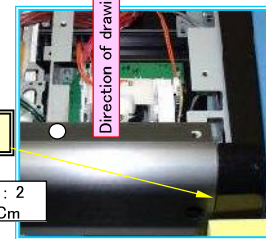
3 ↗



Front Bar is stopped in the screw. Make a right and left space the same. Make Front Bar and JS Panel no space. Make Front Bar and Key Block no space.



Make a right and left space the same.



○ TS B SSE 3BC 4 × 10 : 2
tightening torque : 8Kgf•Cm

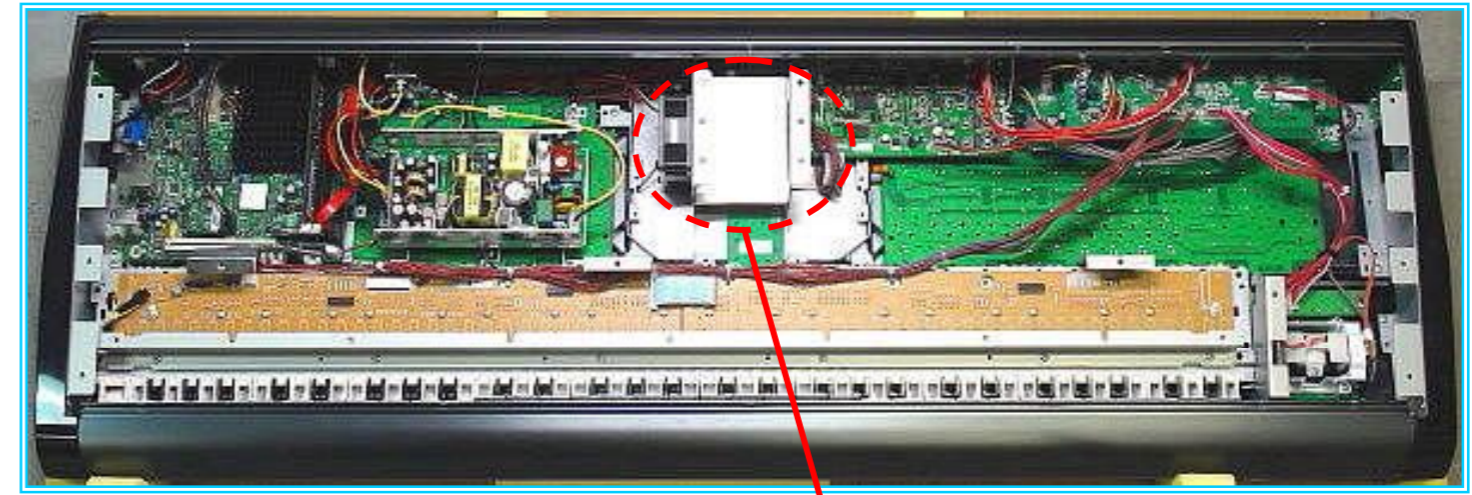
6



※Set SlideVR MAX and insert Sliderknob on the panel side.(To arrange height preventing the difference passing.)

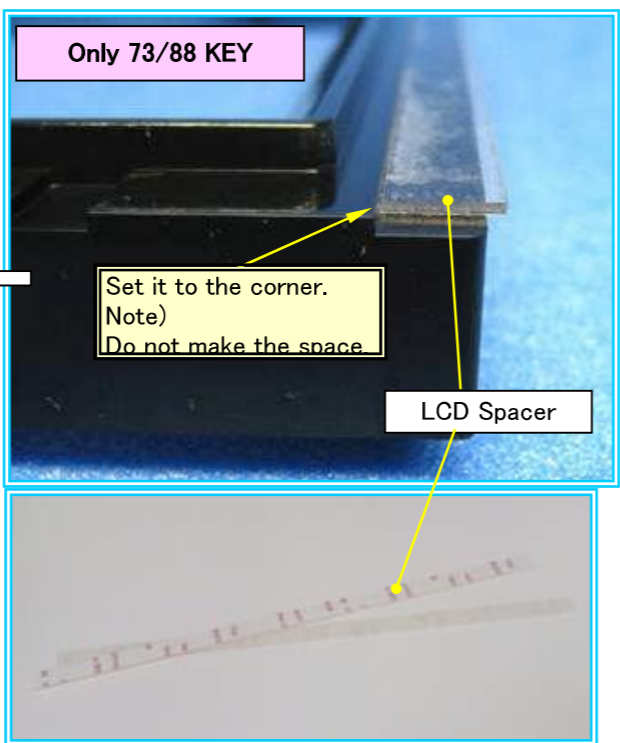
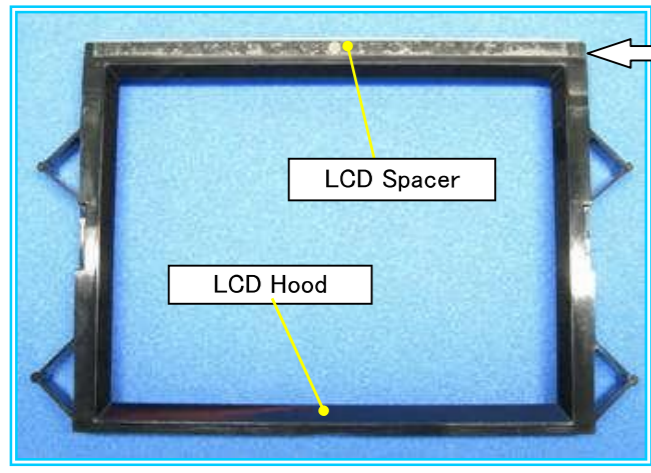
TITLE			
Touch Panel Measures Assy			
MODEL			
KRONOS 73/88			

Add LCD Spacer(500540028944 X09131 LCD SPACER F41729) when it is because LCD Hood Top comes in contact with Touch Panel and the trouble that cannot be turned off occurs.
 (Note) This solution are unnecessary in 61Key.



Solution

- 1)Set LCD Spacer to the corner in the part on the LCD HOOD Top side that fell by one step.
- 2)Open an even space right and left and paste it.

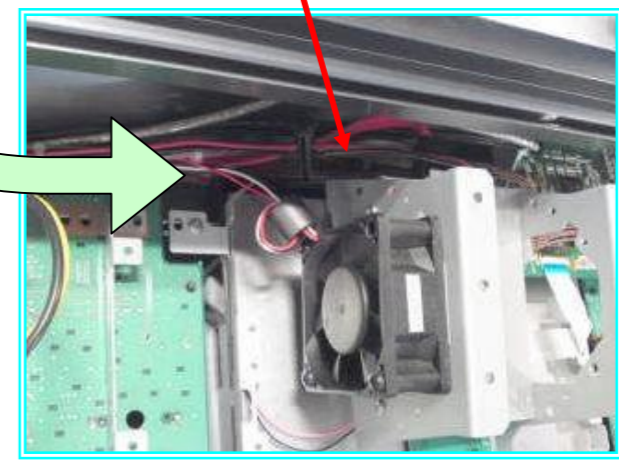


Only 73/88 KEY

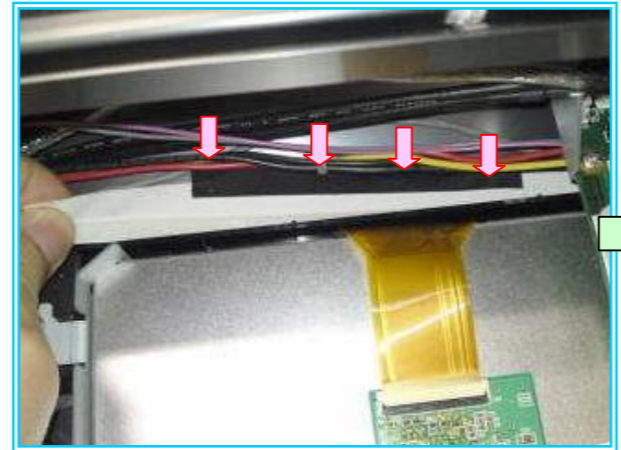
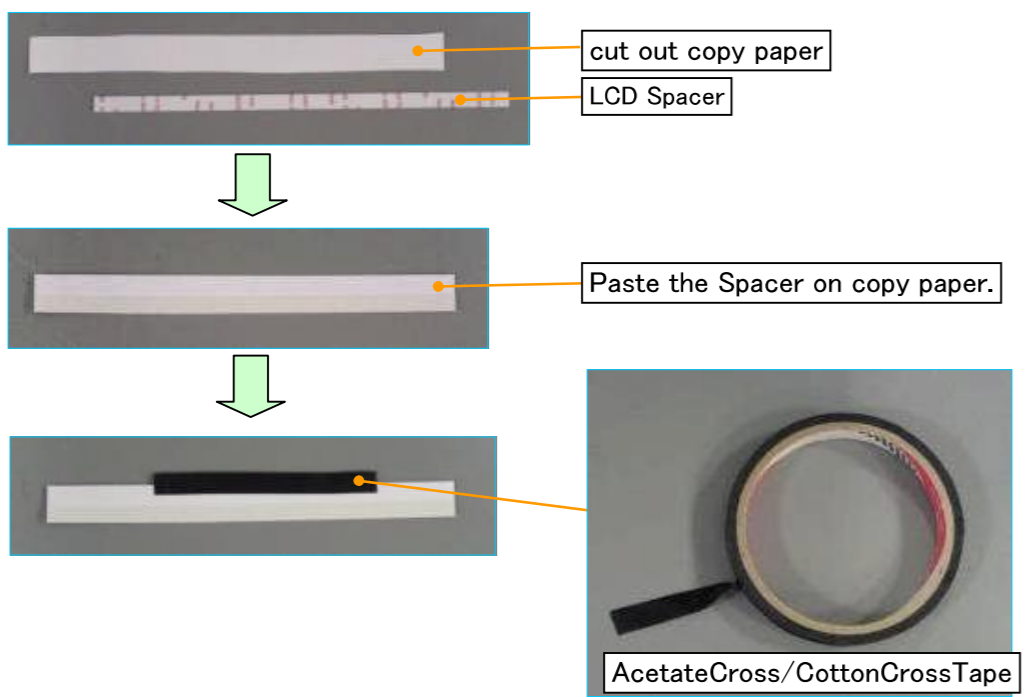
Set it to the corner.
 (Note)
 Do not make the space.



- 1)Make them slide into under LCD Hood.
- 2)Fix with the tape.



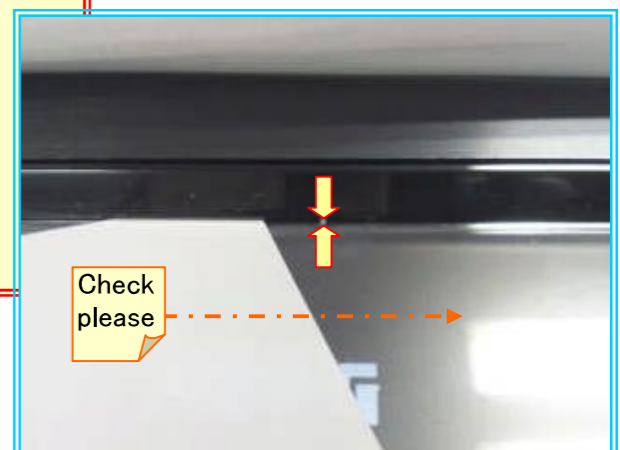
There is a necessity for removing a lot of parts to do the above-mentioned measures. The method of not removing parts is shown below.



After solution, this space becomes 0.5mm or more.

After this solution, do the calibration according to the procedure of TestMode.
 Calibration
 1) Enter TestMode pushing [ENTER],[2],[MIXER KNOBS] and [RESET CONTROLS] at the same time.
 2) The item of LCD is displayed pushing two times [^]
 3) Enter calibration display pushing five times [ENTER].
 4) Do the touch sensor calibration with touching '+' mark by stylus.
 5) Complete calibration by pushing [ENTER].
 6) Confirm the result of calibration by touch 3'[]' marks.
 7) Complete confirm by pushing [ENTER].
 8) Turn off the power after buzzer ring.

When LCD Hood is too much deformed, the LCD Spacer might not work well. In this case the LCD Hood should be repaired or exchanged,



Replacement procedure of [VALUE] dial

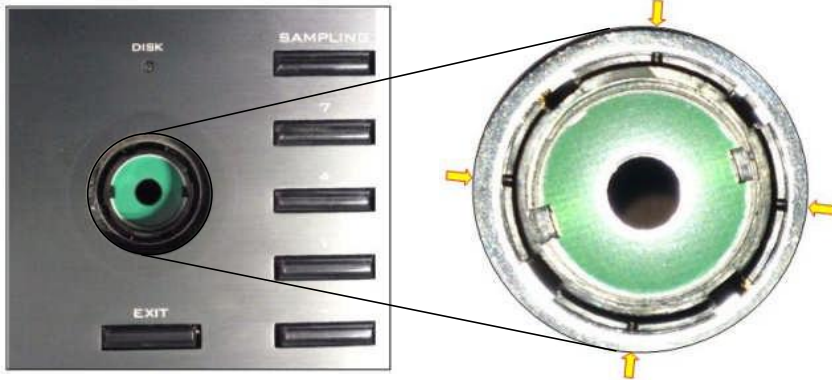


1) Confirm the position of slit on dial before replacement.(Yellow arrow of photograph below.)



73/88KEY needs Acetate Cloth Electrical Tape to the slit for adjusting angle of panel.
61KEY does not need it.

2) Confirm the position in which the slit is inserted from the KRONOS panel side.
(Yellow arrow of figure below)



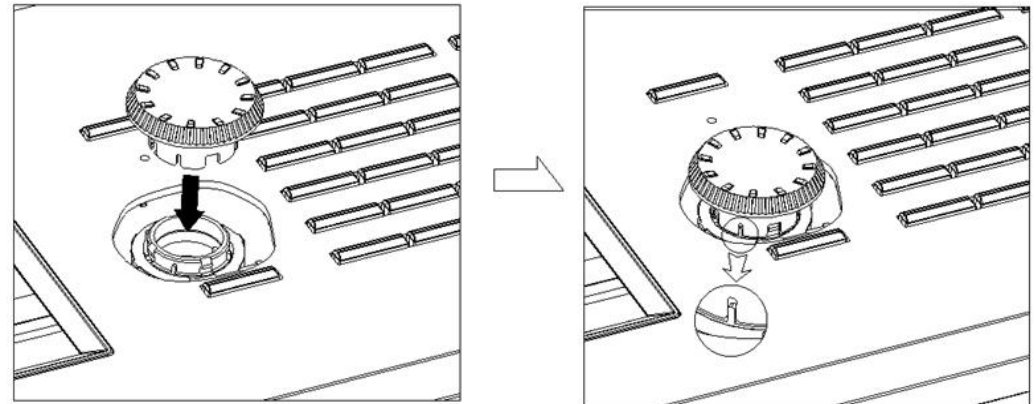
3) Insert the dial vertically straight.



4) If irregularity in the rotation or the rubbing of dial and the panel is found, detach it as follows.
To insert paper etc. between the panel and the dial, and so as not to damage the panel side, the dial is pulled out.
Insert the dial again.



The figure below shows the engagement part of the dial.
(note) It cannot be seen from the opening of the panel.



TITLE				
Remodeling to change mother board from D510MO to D525MW (1) Assembly MOTHERBOARD/ Mount DIMM / Connect Harness				
DRAWING No.	MODEL			
KOE-F32224	KRONOS-61			

REVISAL MARK	REVISAL REASON	REVISAL DATE	REVISED BY	APPROVED

	Work item	Screw/Tools/Jig
1	Fix Mother Board BLKD525MW (SPARE) to 09130 MB Angle-A and 09130 MB Angle-B with four screw of FE B 3BC 3 x 4.	○ FE B 3BC 3 x 4 : 4
2	Mount DIMM(2G). (Note) QTY=2:After supported DIMM extension.	

1

2

**Note) D510MO has done supported DIMM extension you must mout 2 DIMM !
(Before DIMM extension only one DIMM must be mouted lower slot. (see bottom photo.))**

Tip the DIMM and insert it in the slot until the terminal of DIMM disappears. Push DIMM from top of the board. Set the stopper to the lack part the board. Confirm the stopper fits in even if DIMM turn horizontal.

	Work item	Screw/Tools/Jig
3	Conect Mother Board with Harnesses and KLM-3008. Fix them with apply jetmelto the housing joint of HNS-4119 and KLM-3008 and HNS-4121	

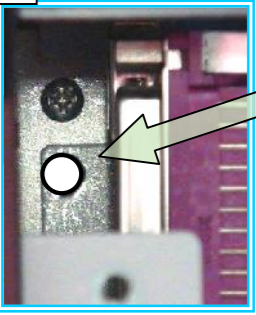
3

TITLE		APPROVED	CHECKED	DRAWN	REVISAL MARK	REVISAL REASON	REVISAL DATE	REVISED BY	APPROVED
Remodeling to change mother board from D510MO to D525MW (2) Assembly to the instrument/Harness routing.									
DRAWING No.	MODEL								
KOE-F32225	KRONOS-61								

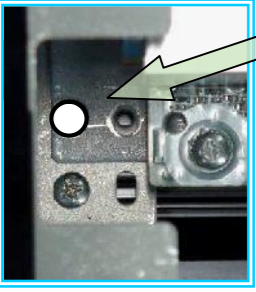
	Work item	Screw/Tools/Jig
1	Fix Mother Board to the panel with 2 BT B 3BC 3×8 and 2 BT B 3BC 3×10. One screw coating clip CS-6 Screw commonness	○ BT B 3BC 3×8 : 2 ● BT B 3BC 3×10 : 2
2	Fix Mother Board to the Panel Rear with 2 screw of BT B 3BBC 3X8	● BT B 3BBC 3×8 : 2
3	Connect harness from SSD Assy's FAN to Mother Board. Route power supply harness, harness from FAN, HNS-4119,HNS-4120 and HNS-4121. Fix them with coating clip.	

	Work item	Screw/Tools/Jig
4	Connect power supply harnesses to the power unit. Route the harnesses and tie them with coating clip(or banding band).	

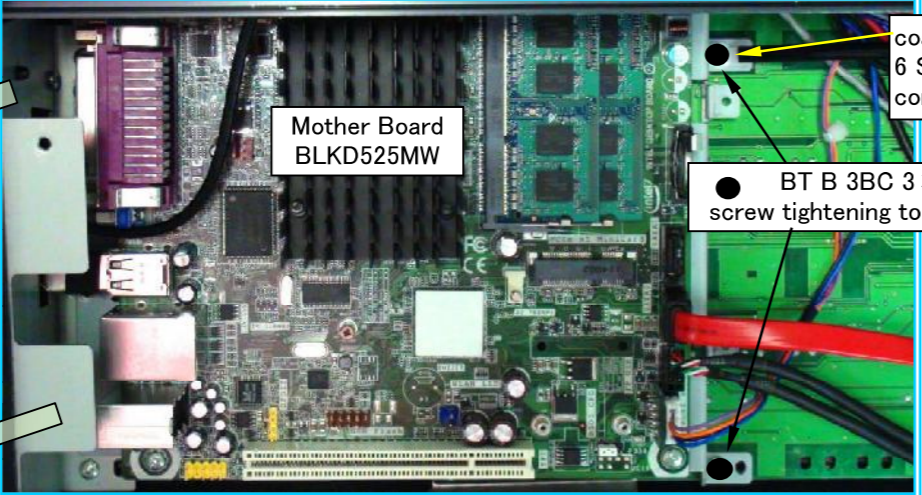
1



○ BT B 3BC 3×8 : 2
screw tightening torque : 8Kgf·Cm



● BT B 3BC 3×10 : 2
screw tightening torque : 8Kgf·Cm




Mother Board BLKD525MW

coating clip CS-6 Screw commonness

● BT B 3BC 3×10 : 2
screw tightening torque : 8Kgf·Cm

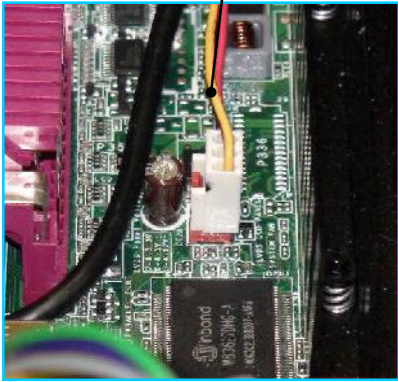
2



● BT B 3BBC 3×8 : 2
screw tightening torque : 8Kgf·Cm

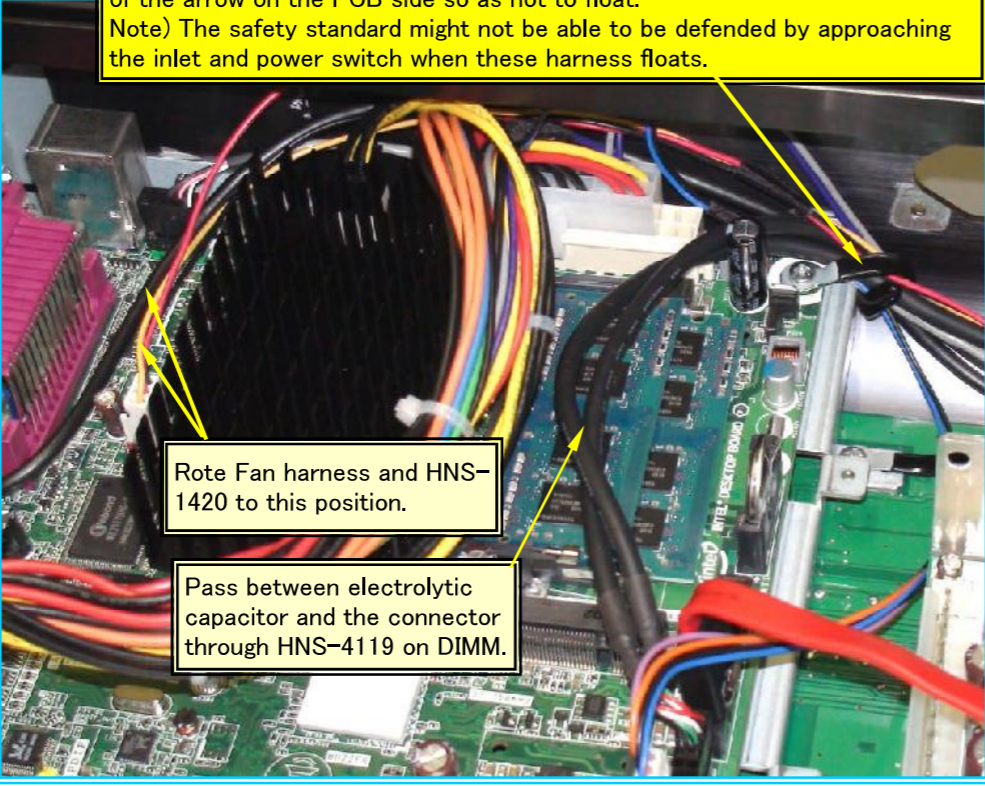
Note) Do not touch battery to the metal parts include shield sheet after assembling Mother Board.

3



Harness from FAN (3P)

Connect harness from SSD Assy's FAN.

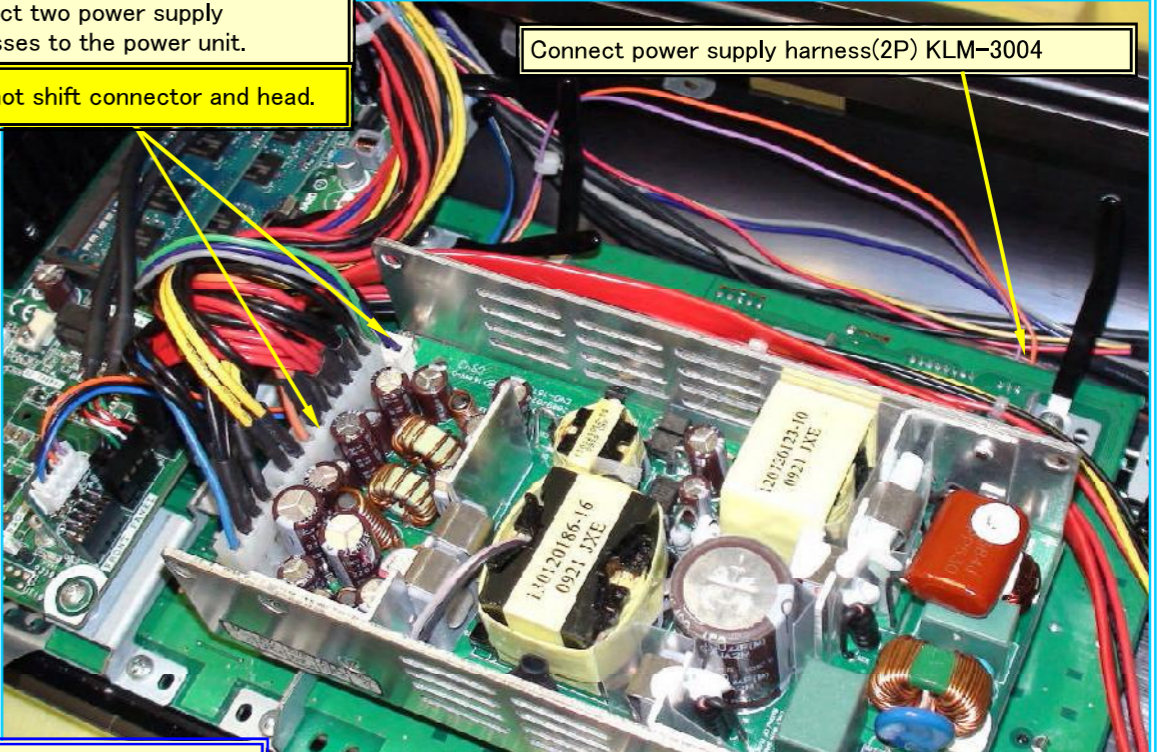


Tie these harnesses with coating clip. Press the harness against the direction of the arrow on the PCB side so as not to float.
Note) The safety standard might not be able to be defended by approaching the inlet and power switch when these harness floats.

Route Fan harness and HNS-1420 to this position.

Pass between electrolytic capacitor and the connector through HNS-4119 on DIMM.

4



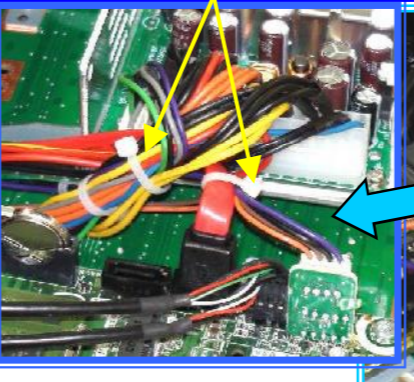
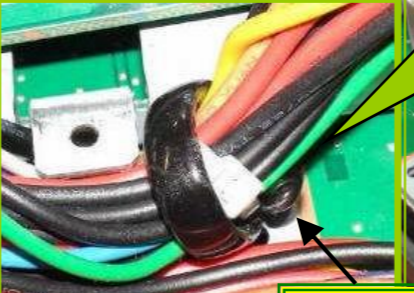
Connect two power supply harnesses to the power unit.
Note) Do not shift connector and head.

Connect power supply harness(2P) KLM-3004

Tie two power supply harnesses to PowerUnit with one banding band.
Tie the power supply cable to the KLM-3008 and S-ATA cable with one banding band.

Route the power supply harnesses except connecting power unit , KLM-4119, KLM-4120, KLM-4121 and S-ATA cable to rear side of the PANEL. Fix them with two coating clip.

Bend two coating clip for pinching S-ATA cable.
Roll coating clipe in the cable and put the cable under the board.

Bend the point of the coating clip horizontally or for above.
So that the point may prevent the hit from shorting to PCB when having pressed it.

Tie the power supply harnesses which connect to power unit.
Press the harness against the direction of the arrow on the PCB side so as not to float.

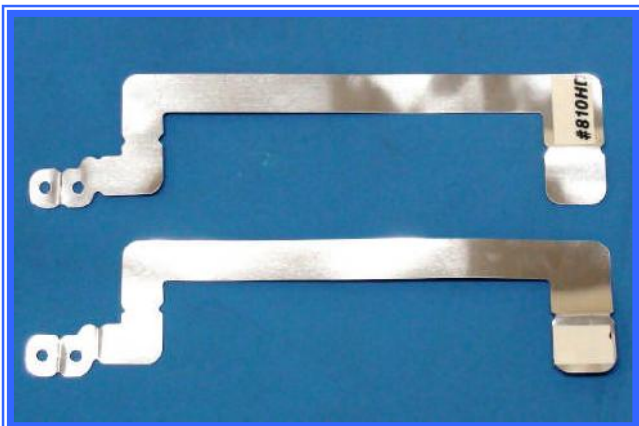
TITLE		APPROVED	CHECKED	DRAWN
Remodeling to change mother board from D510MO to D525MW (3) SHIELD Sheet Assy.				
DRAWING No.	MODEL			
KOE-F42020	KRONOS-73/88			

	Work item	Screw/Tools/Jig
1	Paste the double-faced tape (DIC #810HD 10mm width) to the gloss surface of two shield seats by one place. Bend the specified part in the shield seat.	

Use for KRONOS-73/88 only

1

Note) Two shield sheet is same.
The position where the double-faced tape is pasted and the bend position are different.



Paste the double-faced tape to the gloss surface of two MB Shield seats by one place.
Cut double-faced tape ajust MB Sheild.



Bend at the position of the arrow of the photograph above.
L: 2 position
R: 3 position

REVISAL MARK	REVISAL REASON	REVISAL DATE	REVISED BY	APPROVED

TITLE		APPROVED	CHECKED	DRAWN
Remodeling to change mother board from D510MO to D525MW (4) Assembly MOTHERBOARD/ Mount DIMM / Connect Harness				
DRAWING No.	MODEL			
KOE-F32226	KRONOS-73/88			

REVISAL MARK	REVISAL REASON	REVISAL DATE	REVISED BY	APPROVED

	Work item	Screw/Tools/Jig
1	Fix Mother Board BLKD525MW (SPARE) to 09131 MB Angle-A and 09131 MB Angle-B with four screw. One coating clip screw commonness. Two MB Shield screw	○ FE B 3BC 3 × 4 : 4
2	Mount DIMM(2G). Note) QTY=2:After supported DIMM extension.	

1

09131 MB Angle-A
09131 MB Angle-B
A and B is distinguished at the position of the stud.

BLKD525MW(SPARE)

Use Screw lock. FE B 3BC 3 × 4 : 2 screw tightening torque : 8Kgf·cm
Use Screw lock. FE B 3BC 3 × 4 : 2 screw tightening torque : 4Kgf·cm

X11151 MB Shield
For the right coating clip Screw commonness
For the left: 73KEY
For the left: 88KEY

Note) The MB Shield is same. About R/L the position where the double-faced tape is pasted and the bend position are different. About 73/88 the direction of the installation is different.

Use the low torque driver to damage MB Shield easily.

2

Note) D510MO has done supported DIMM extension you must mout 2 DIMM !
(Before DIMM extension only one DIMM must be mouted lower slot. (see bottom photo.))

Tip the DIMM and insert it in the slot until the terminal of DIMM disappears. Push DIMM from top of the board. Set the stopper to the lack part the board.

Confirm the stopper fits in even if DIMM turn horizontal.

stopper

NG OK

	Work item	Screw/Tools/Jig
3	Conect Mother Board with Harnesses and KLM-3008. Fix them with apply jetmelt to the housing joint of HNS-4076 and KLM-3008 and HNS-4071	

3

Power supply harness HNS-4071
Connect right edge.
Fix Jet-Melt.

Photograph right: DIMM board is 2 case. (When shipping it, the number of boards is one.)

HNS-4077
Insert lower port

KLM-3008 Power supply harness
S-ATA cable
HNS-4076

Connect power supply harness to the KLM-3008 which insert header. Fix them with HNS-4076 by using jetmelt.

Fix with jetmelt
Apply side of KLM-3008

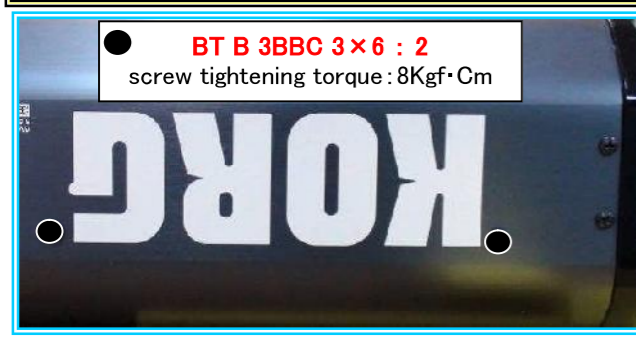
TITLE		APPROVED	CHECKED	DRAWN
Remodeling to change mother board from D510MO to D525MW (5) Assembly to the instrument/Harness routing.				
DRAWING No.	MODEL			
KOE-F32227	KRONOS-73/88			

REVISAL MARK	REVISAL REASON	REVISAL DATE	REVISED BY	APPROVED

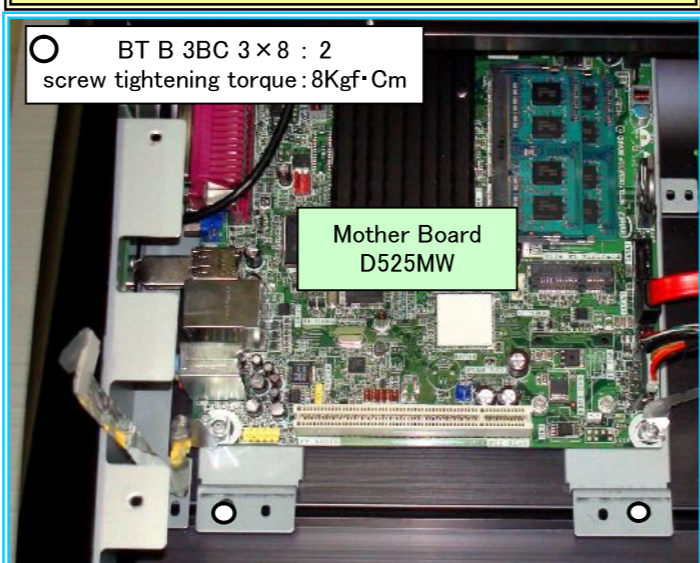
Work item	Screw/Tools/Jig
1 Fix first rear side. Fix Mother Board to the panel.	● BT B 3BBC 3×6 : 2 ○ BT B 3BC 3×8 : 2
2 Connect harness from FAN of SSD Assy to Mother Board. Connect power supply harness(2P) KLM-3004	

1

Fix first rear side with screw.
Note the screw tightened from a rear side because only here is 6mm.



Note) Do not touch battery to the metal parts include shield sheet after assembling Mother Board.



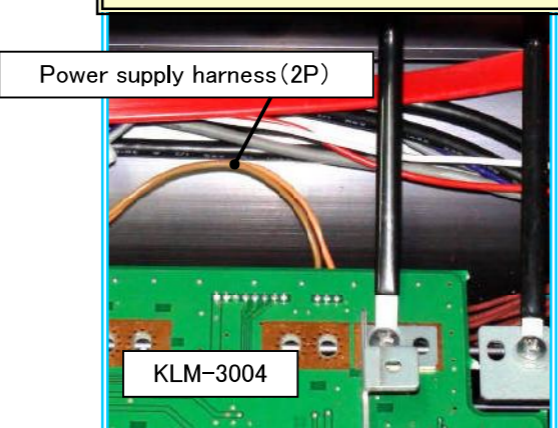
2

Harness (3P) from FAN of SSD



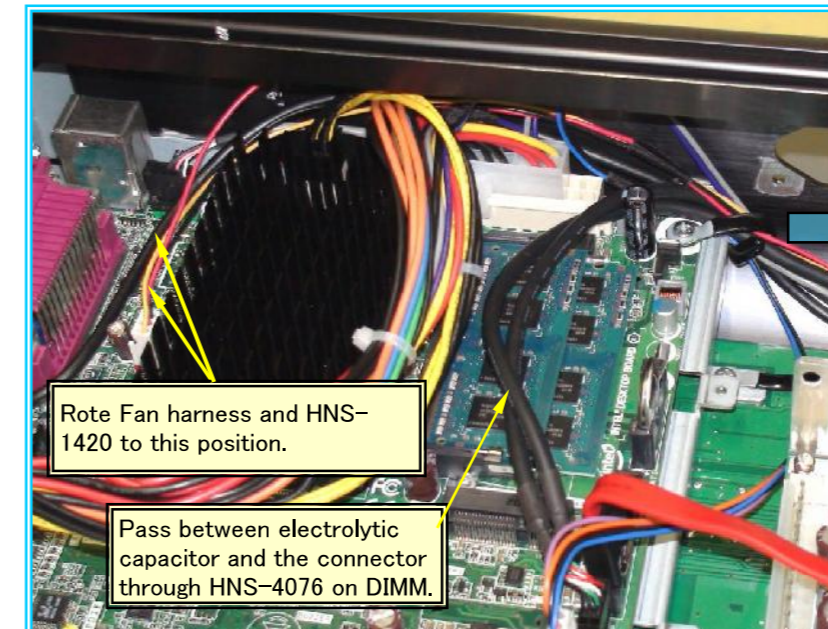
Connect harness from SSD Assy's FAN.

Connect power supply harness(2P) KLM-3004.
The connector is not seen.

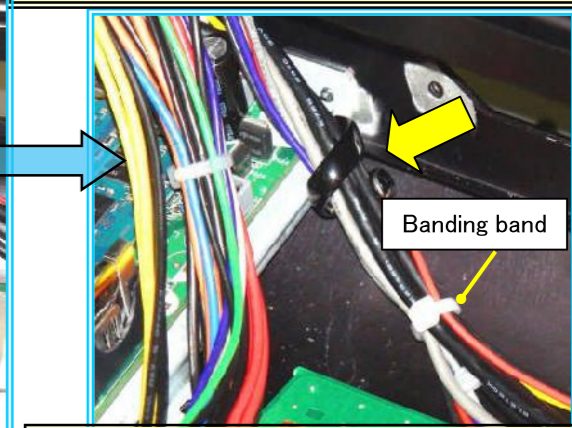


Work item	Screw/Tools/Jig
3 Route power supply harness, FAN harness, HNS-4071,HNS-4076 and HNS-4077 to panel rear.	
4 Connect power supply harness from Mother Board to Power Unit.	
5 Route power supply harness from Power Unit and S-ATA cable Power Unit out of KLM-3004. Fix them with 2 coating clip.	
6 Tie power supply harness from Power Unit to Mother Board with corting clip and banding band.	

3



Press the harness against the direction of the arrow on photo so as not to float. Fix them.

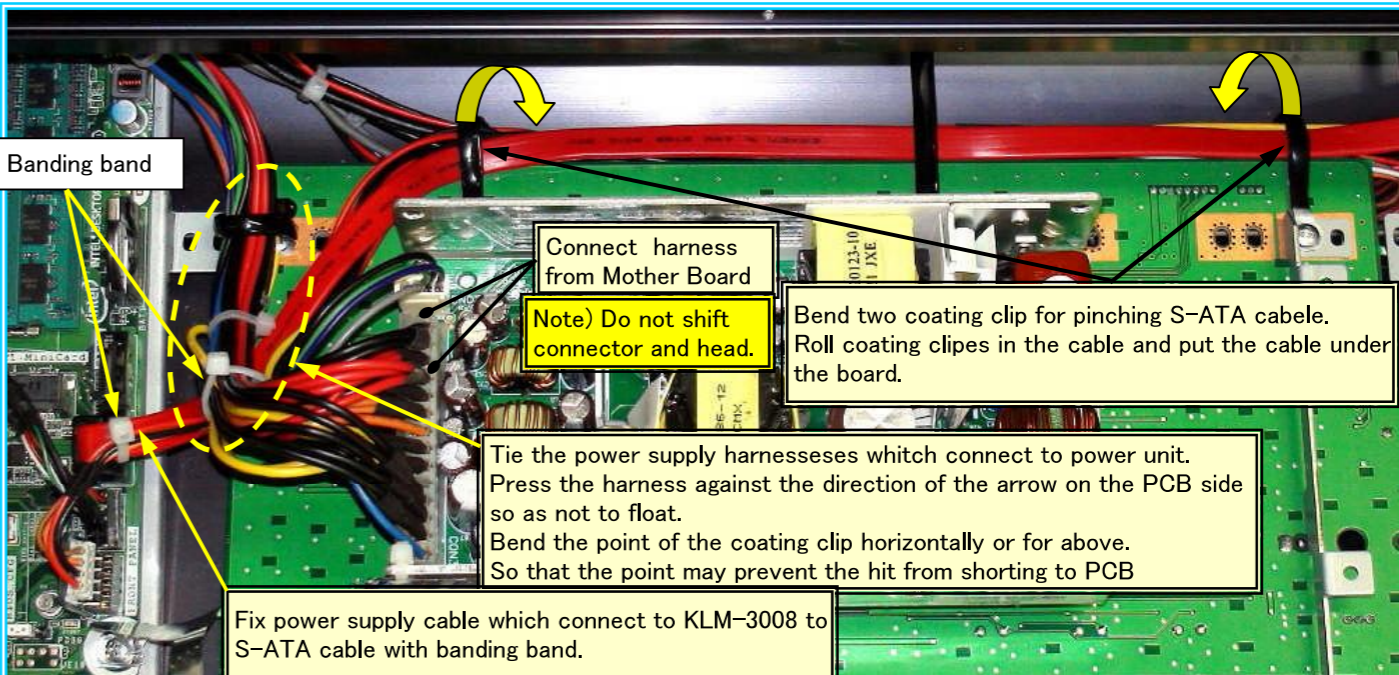


Route 4 harness connecting to Mother board and one power supply harnesses connecting KLM-3005 to rear side of the PANEL.
Fix them with coating clip and one banding band.

4

5

6



Tie these harnesses with coating clip. Press the harness against the direction of the arrow on the PCB side so as not to float. Note) The safety standard might not be able to be defended by approaching the inlet and power switch when these harness floats.

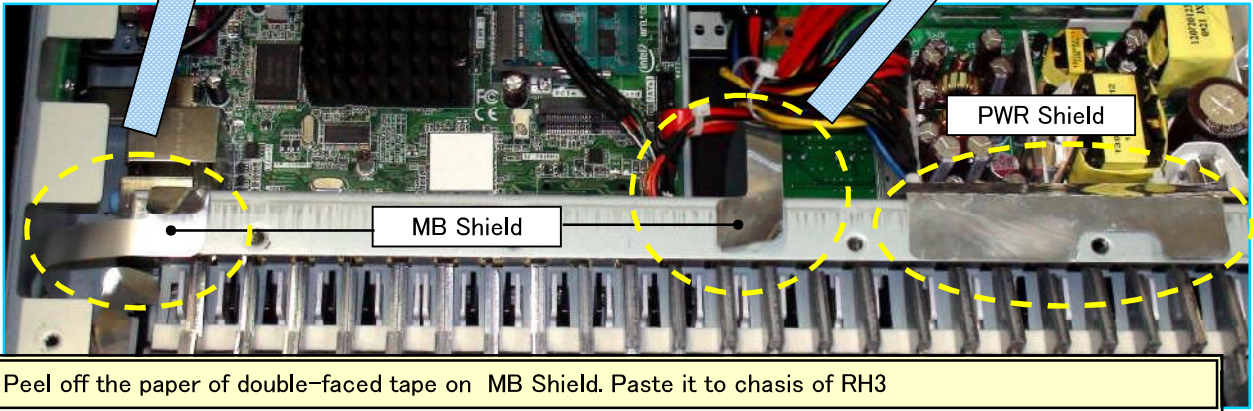
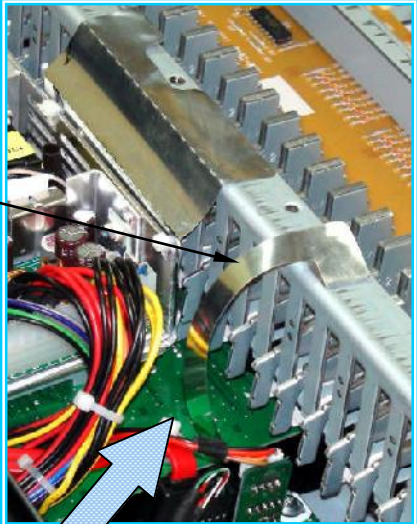
TITLE		APPROVED	CHECKED	DRAWN
Remodeling to change mother board from D510MO to D525MW (6) SHIELD Sheet Assy.				
DRAWING No.	MODEL			
KOE-F42021	KRONOS-73			

	Work item	Screw/Tools/Jig
1	Paste MB Shield and PWR Shield to the chasis of RH3.	

1



So as not to hit the hammer of RH3, MB Shield gives and pastes the swelling outside.



Peel off the paper of double-faced tape on MB Shield. Paste it to chasis of RH3

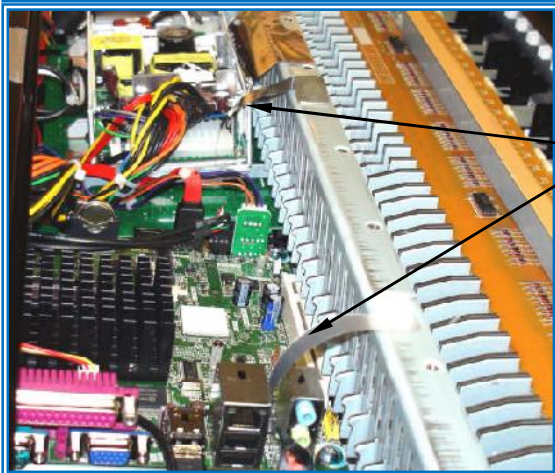
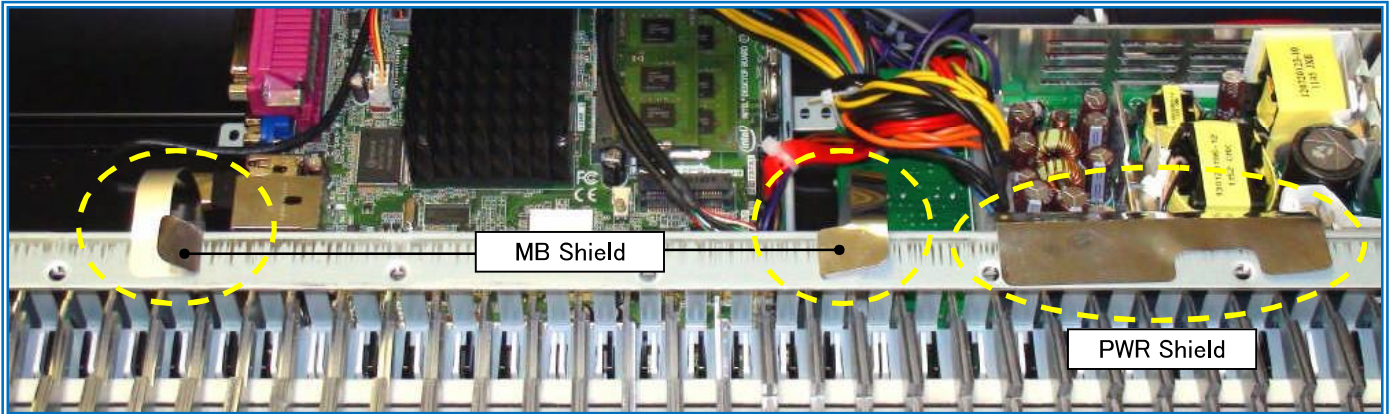
REVISAL MARK	REVISAL REASON	REVISAL DATE	REVISED BY	APPROVED

TITLE		APPROVED	CHECKED	DRAWN
Remodeling to change mother board from D510MO to D525MW (7) SHIELD Sheet Assy.				
DRAWING No.	MODEL			
KOE-F42022	KRONOS-88			

	Work item	Screw/Tools/Jig
1	Paste MB Shield and PWR Shield to the chasis of RH3.	

1

Peel off the paper of double-faced tape on MB Shield. Paste it to chasis of RH3



So as not to hit the hammer of RH3, MB Shield gives and pastes the swelling outside.

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