KORG

iS40
iS50

Interactive Music Workstation

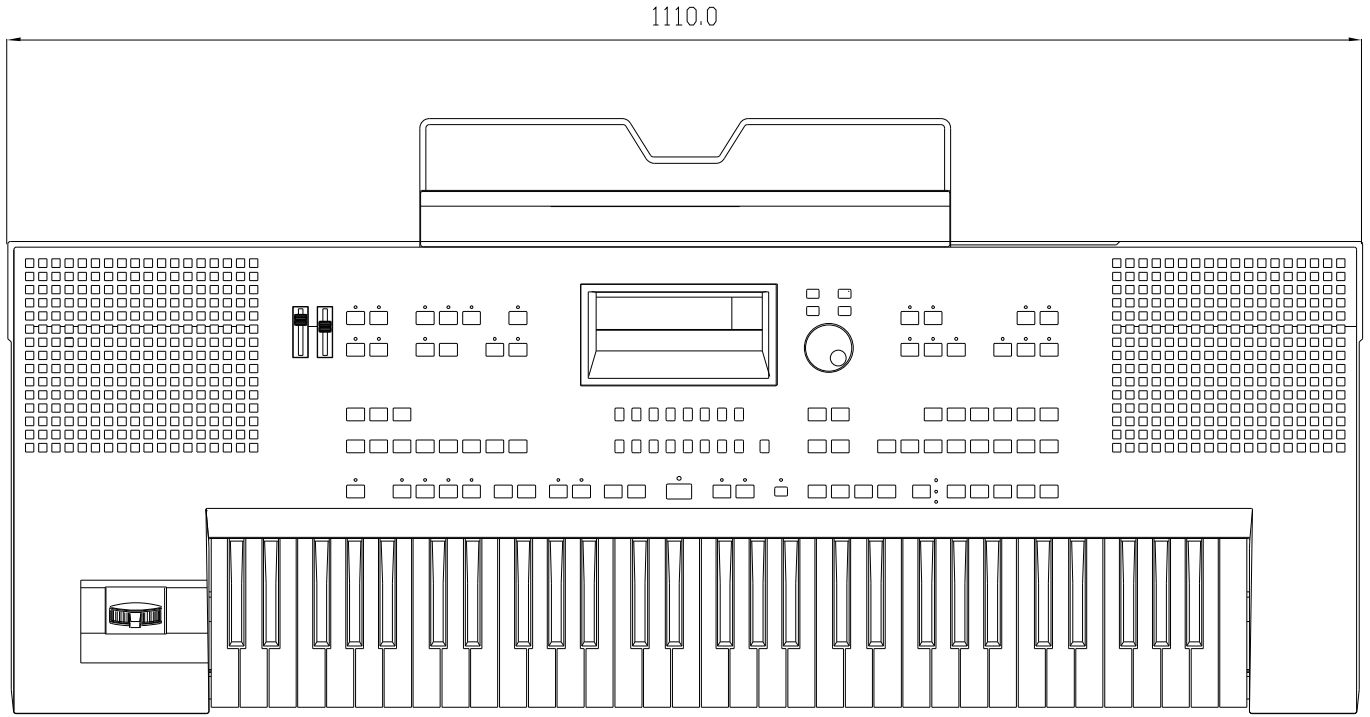
Service Manual

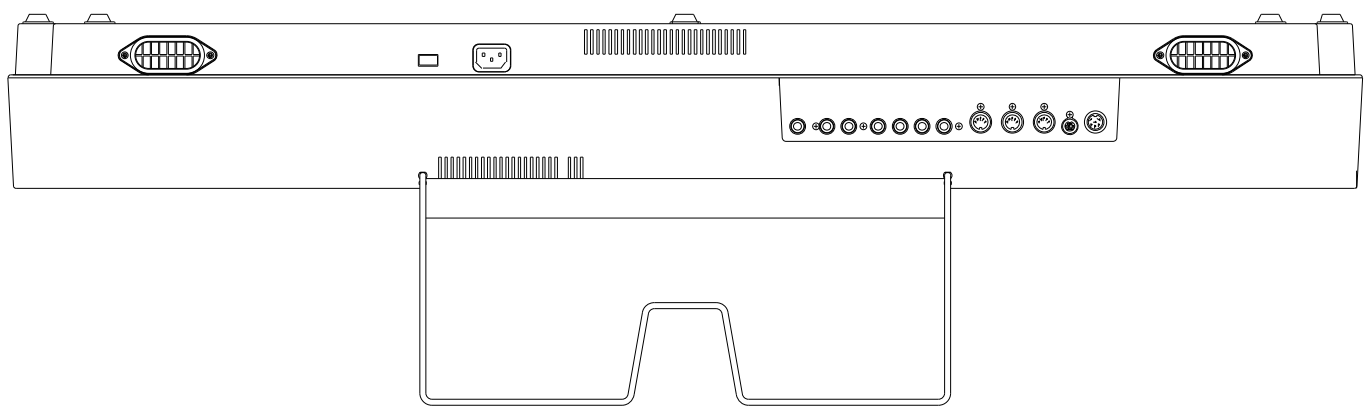
Specifications

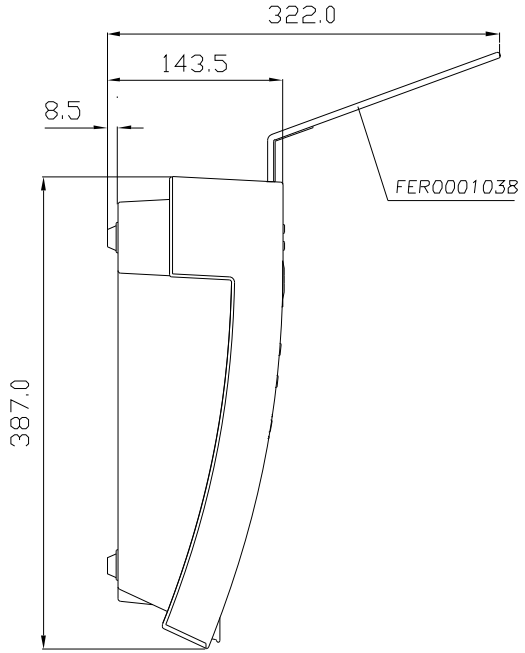
Features	iS40	iS50
Keyboard	61 notes with velocity and aftertouch	61 notes with velocity
Generation system	AI^2 Synthesis System	
Tone generator	32 voices, 32 oscillators	
Waveform memory	14MB PCM ROM	12MB PCM ROM
Effects	2 stereo digital multi-effect systems, 47 effects - Edit effects	
Programs	320 programs (including GM programs) + 14 drum kits + 64 user programs + 2 user drum kits	
Styles	128 styles + 16 user styles	
Arrangements	128 arrangements + 64 user arrangements	
Keyboard set	15	--
Song	Midi file player format 0 and 1 (16 tracks), GM compatible	
Backing sequence	10, stored in RAM (40,000 events)	
Control inputs	Damper Pedal, Assignable Pedal/Switch, EC5	Assignable Pedal /Switch
Audio outputs	Left/Mono, Right	
Audio inputs	Left/Mono, Right	--
MIDI	In, Out, Thru + PC interface (PC TO HOST) IBM PC and Macintosh compatible	In, Out
Floppy Disk	3.5 inch 2DD/2HD (IBM PC 1.44 MB)	
Display	Backlit custom LCD	
Main Amplifier	2 x 14watt	2 x 8 watt
Speakers	4 speakers (in Bass Reflex Box)	2 speakers (dual concentric speakers in Bass Reflex Box)
Controls	Joystick, Dial	Joystick
Aftertouch	Yes	--
Dimensions (W x D x H)	1110 x 386 x 142 mm (43.7 x 15.1 x 5.6inch) without music rest	
Weight	12,9 kg (28.4 lbs)	11,5 kg (25.3 lbs)

* Specifications and design are subject to change without notice for the purpose of product enhancement.

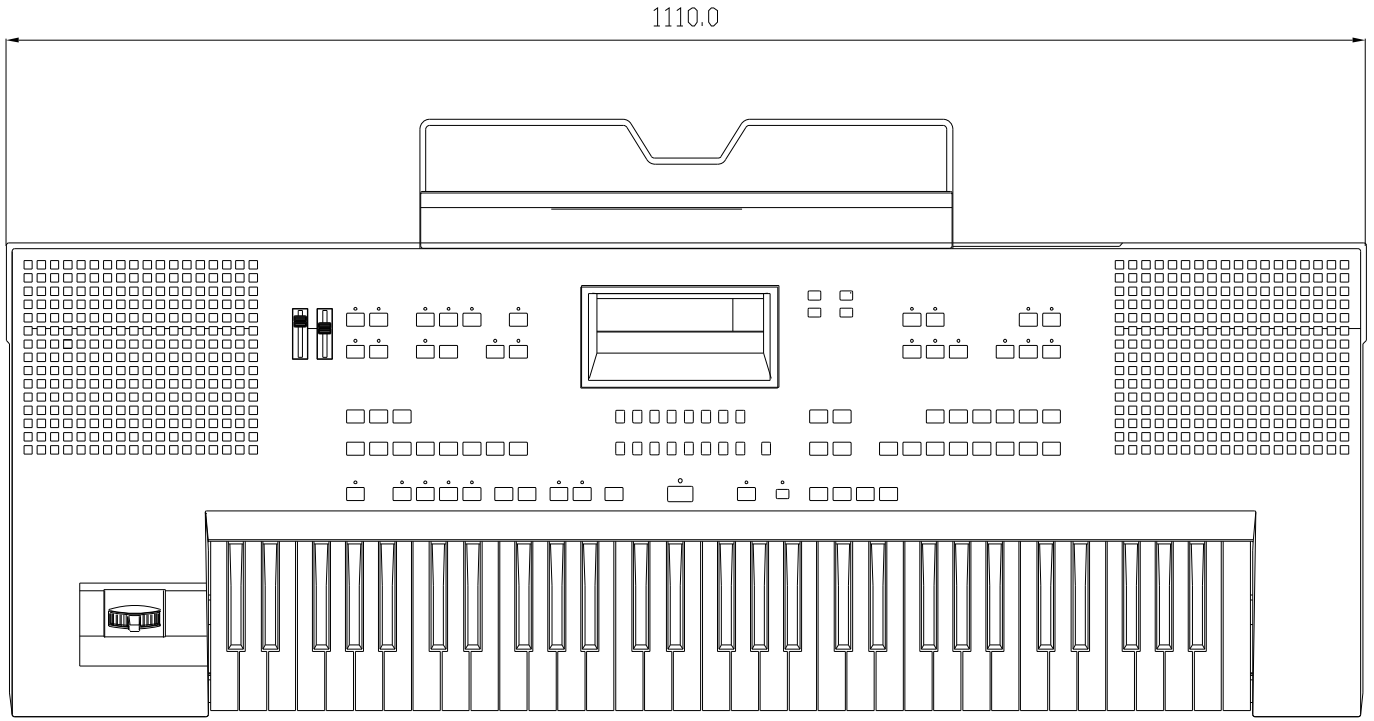
IS40 FULL VIEW

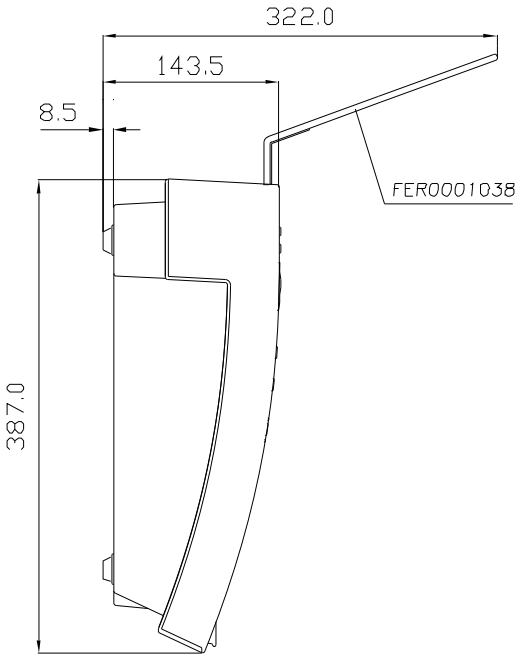


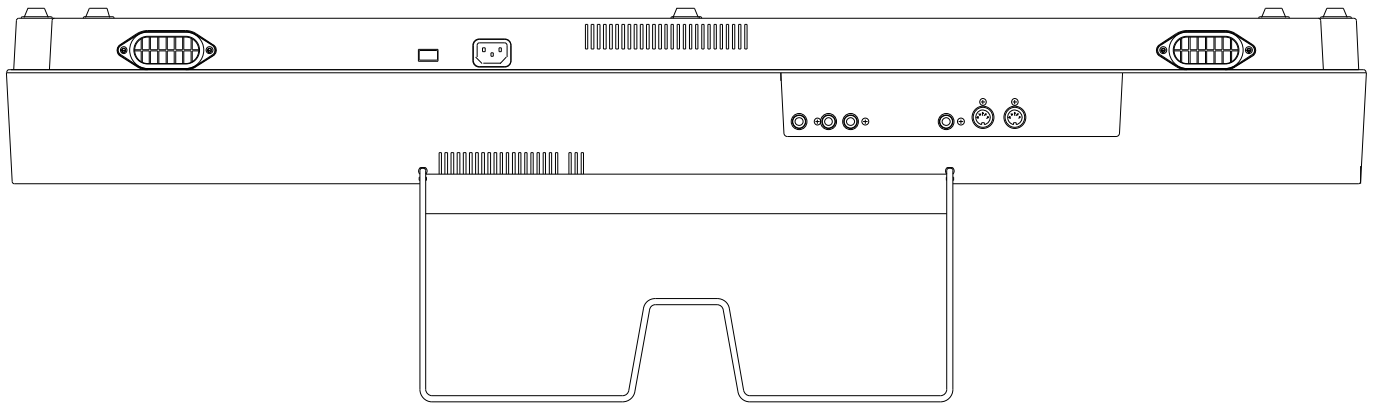




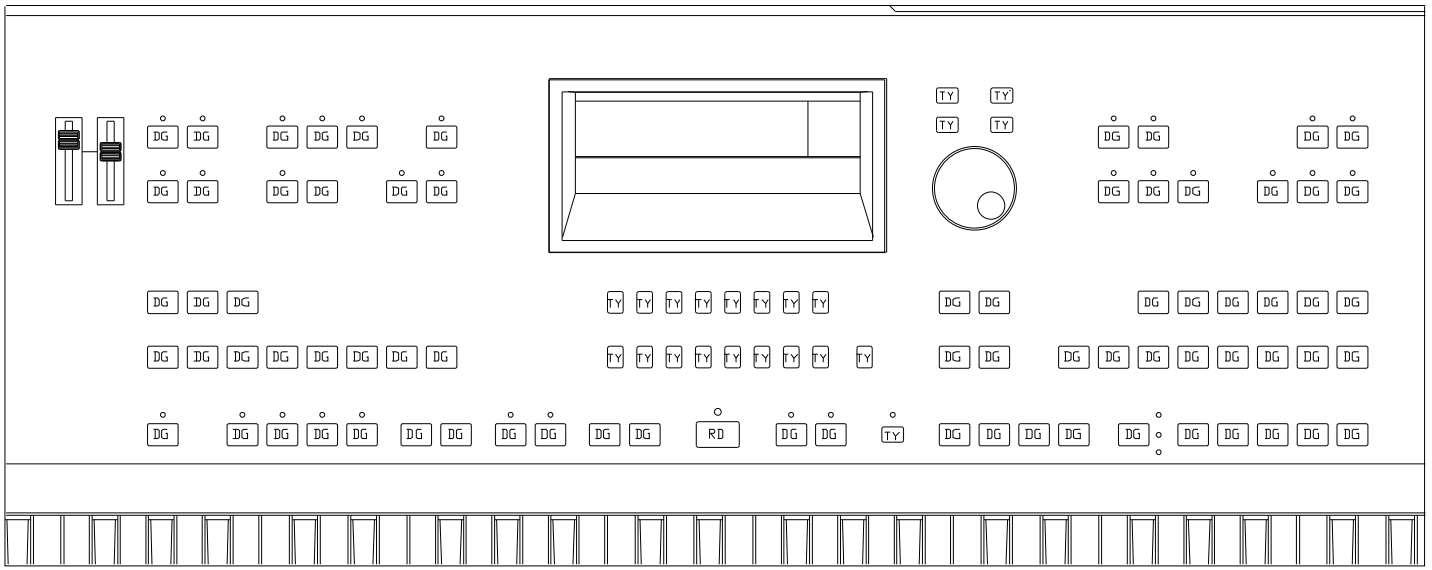
IS50 FULL VIEW





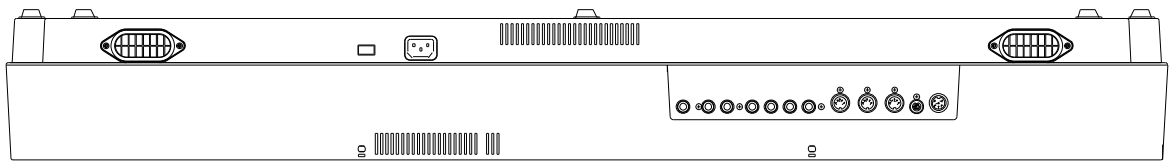


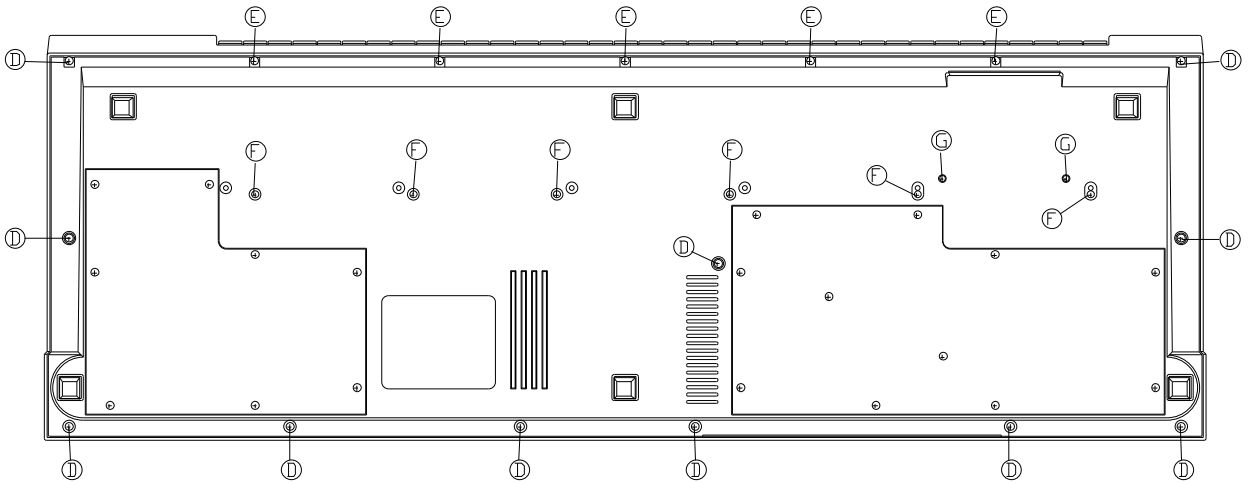
IS40 DISASSEMBLY



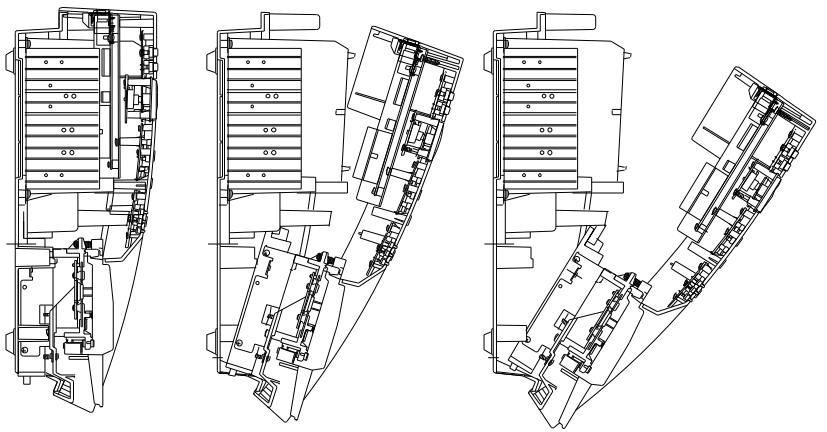
DG= DARK GREY
TY= TRANSPARENT YELLOW
RD= RED

G	VTA0001039	AF 2.9x9.5 TC SP ZN	2
F	VTA0001036	AF 3.5x16 TC ZN	6
E	VTA0001047	AF 4.2x11 TFR ZN	5
D	VTA0001041	AF 4x15 TC PR SP ZN	11
PART.	CODE	SCREWS DESCRIPTION	Q.TY

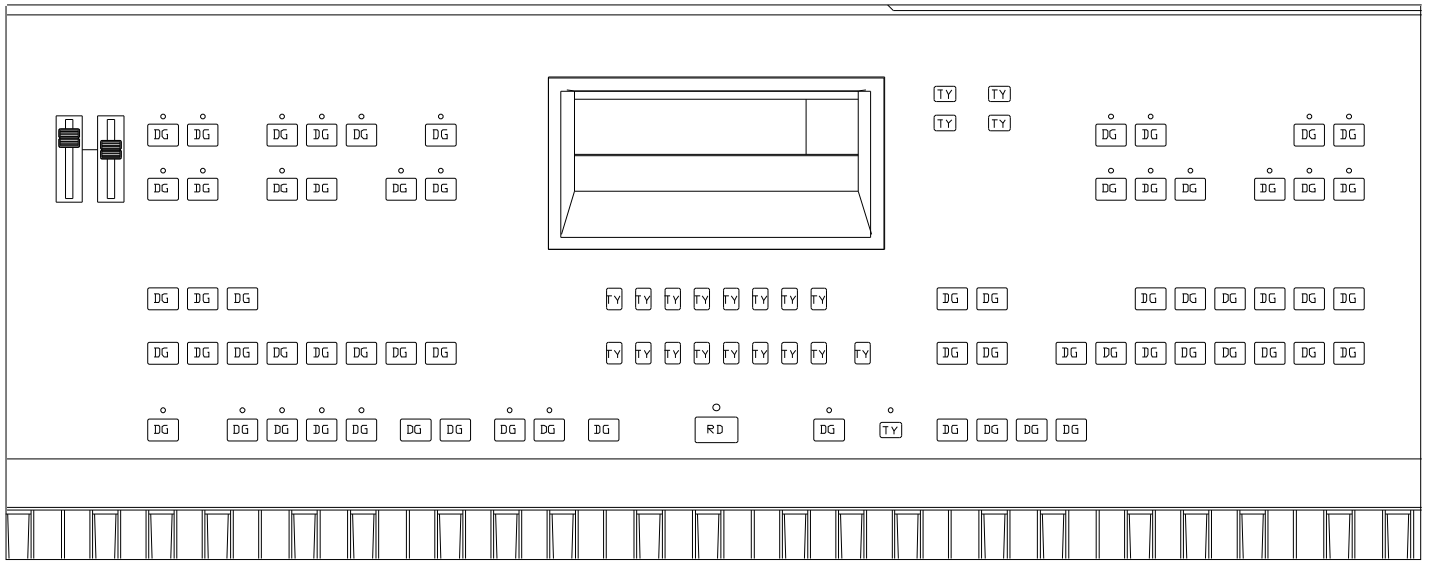




PHASE 1 PHASE 2 PHASE 3



IS50 DISASSEMBLY



DG= DARK GREY
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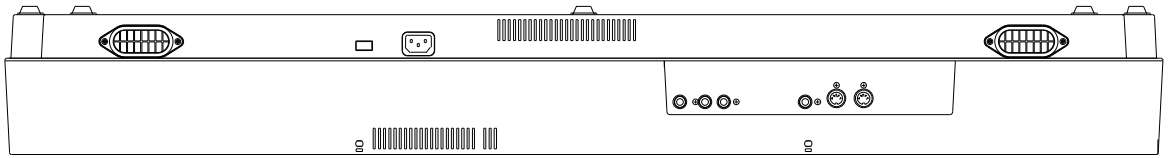
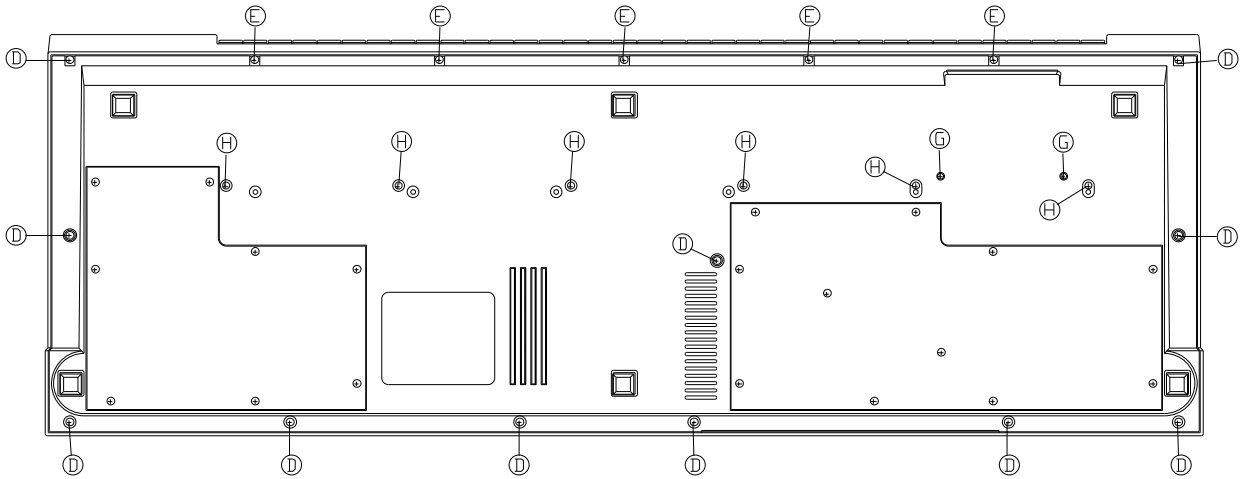
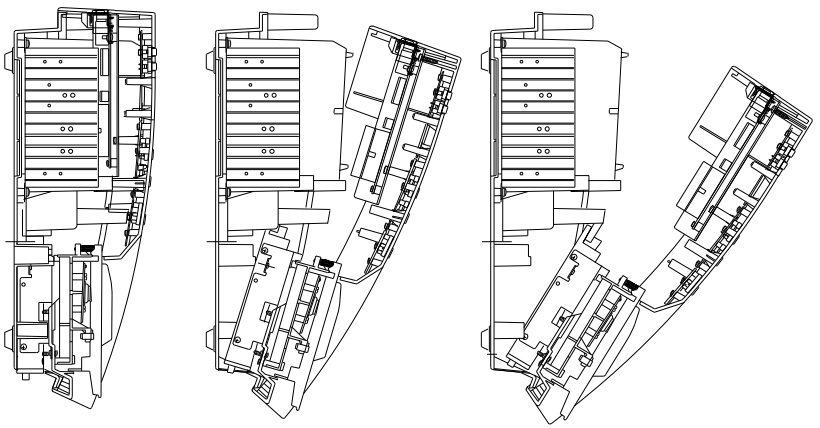
RD= RED



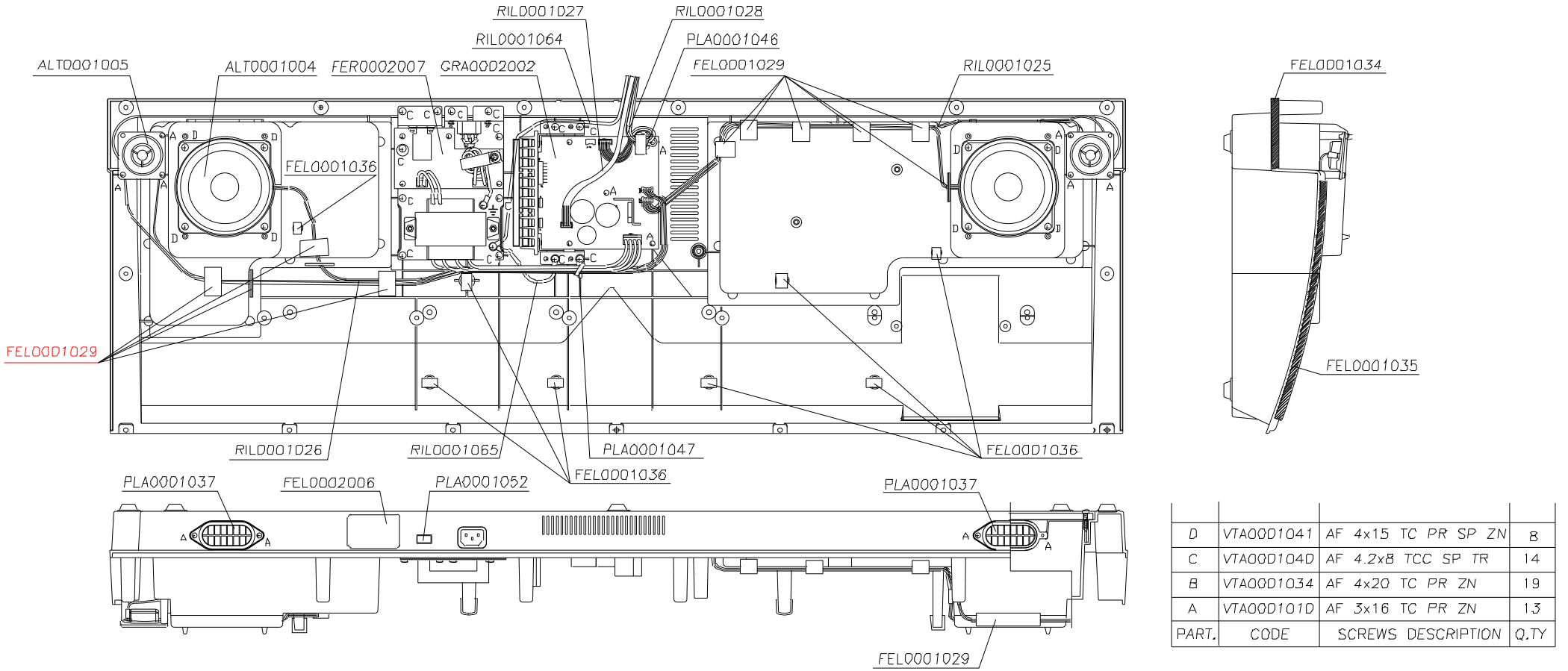
G	VTA0001039	AF 2.9x9.5 TC SP ZN	2
H	VTA0001010	AF 3x16 TC PR ZN	6
E	VTA0001047	AF 4.2x11 TFR ZN	5
D	VTA0001041	AF 4x15 TC PR SP ZN	11
PART.	CODE	SCREWS DESCRIPTION	Q.TY



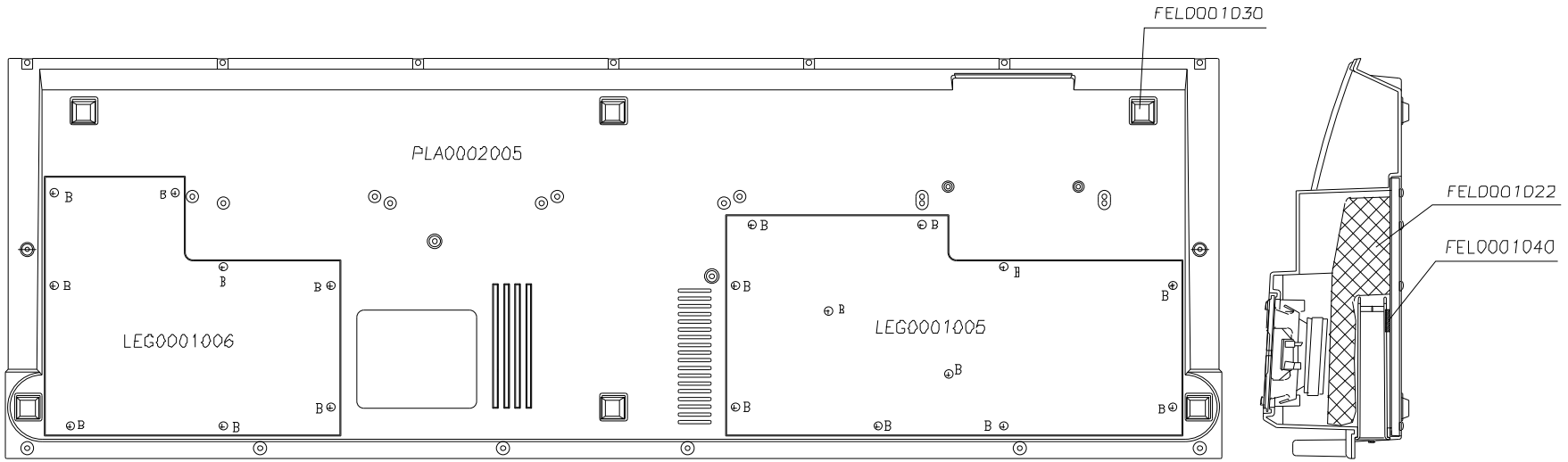
PHASE 1 PHASE 2 PHASE 3



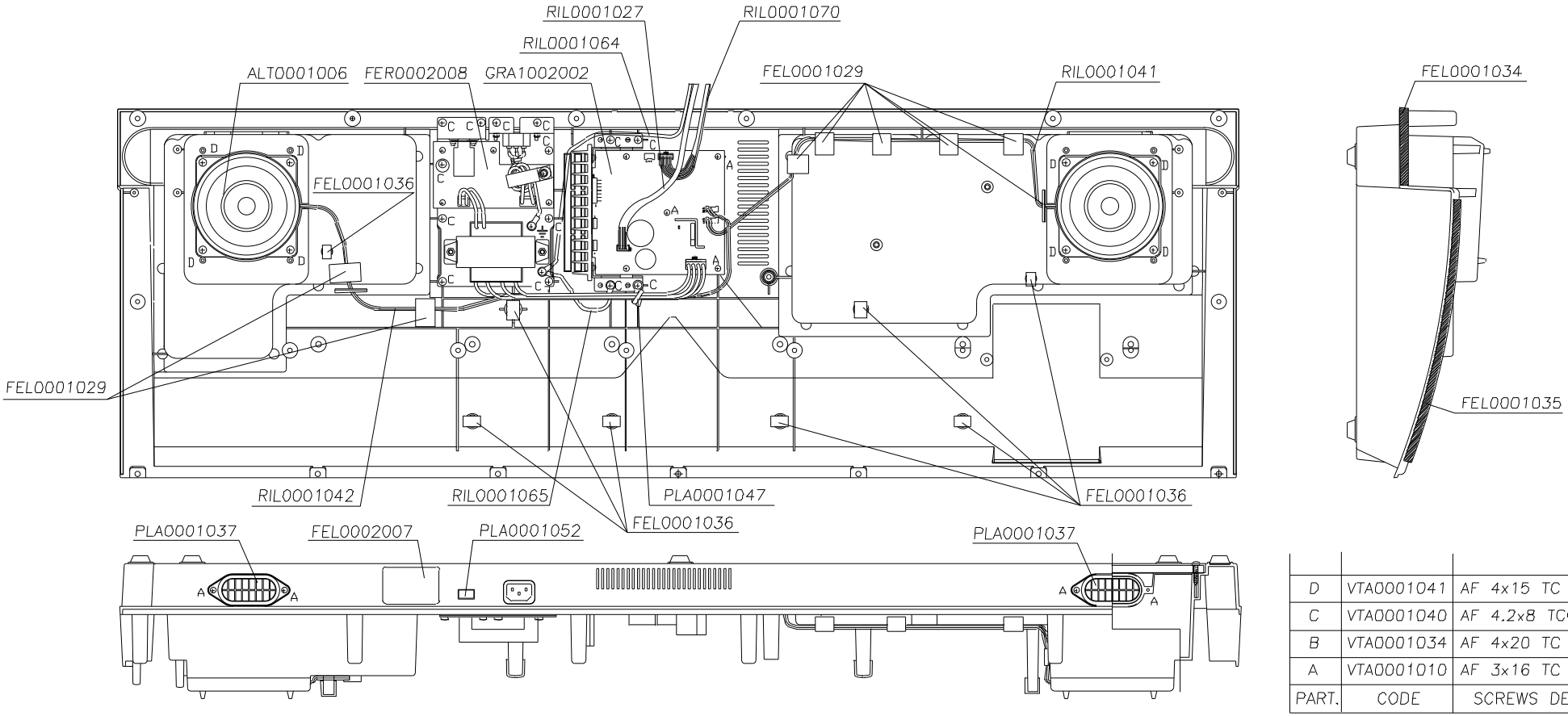
IS40 LOWER CASE ASSEMBLY



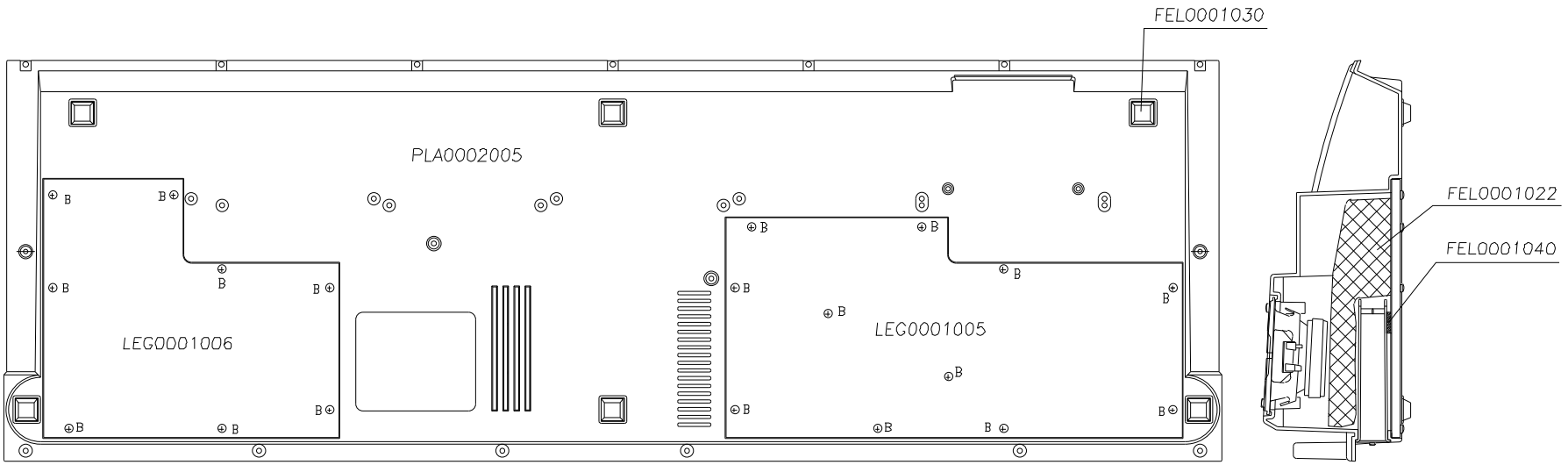
D	VTA0001041	AF 4x15 TC PR SP ZN	8
C	VTA0001040	AF 4.2x8 TCC SP TR	14
B	VTA0001034	AF 4x20 TC PR ZN	19
A	VTA0001010	AF 3x16 TC PR ZN	13
PART.	CODE	SCREWS DESCRIPTION	Q.TY



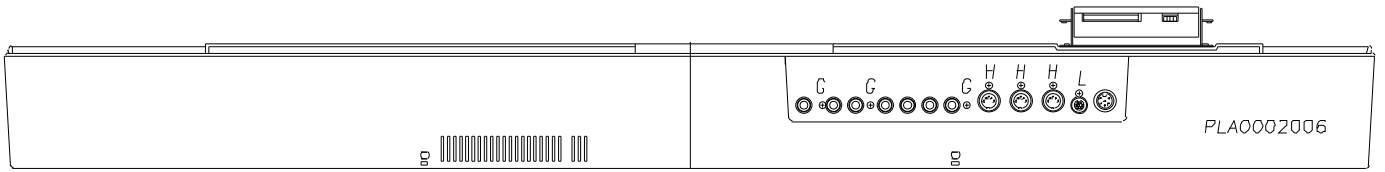
IS50 LOWER CASE ASSEMBLY

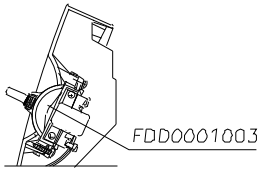


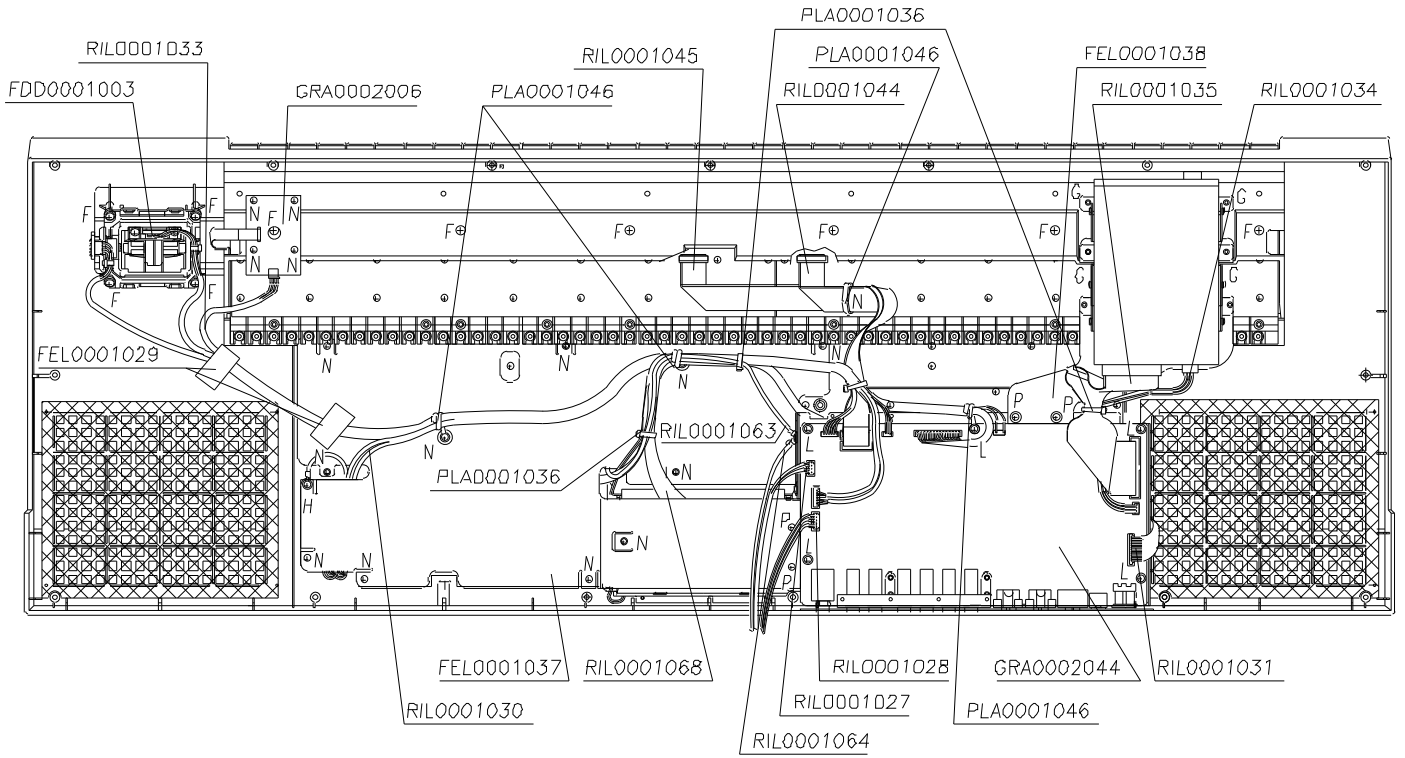
D	VTA0001041	AF 4x15 TC PR SP ZN	8
C	VTA0001040	AF 4.2x8 TCC SP TR	14
B	VTA0001034	AF 4x20 TC PR ZN	19
A	VTA0001010	AF 3x16 TC PR ZN	7
PART.	CODE	SCREWS DESCRIPTION	Q.TY

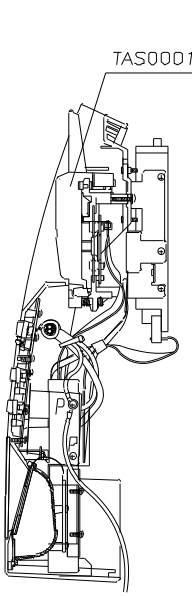


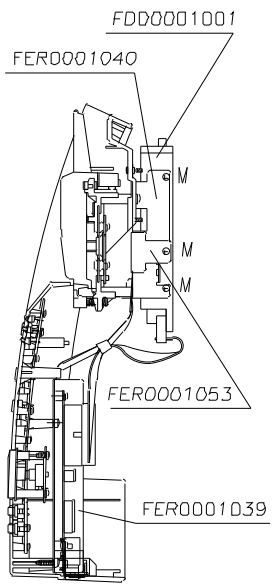
IS40 UPPER CASE ASSEMBLY 1/2



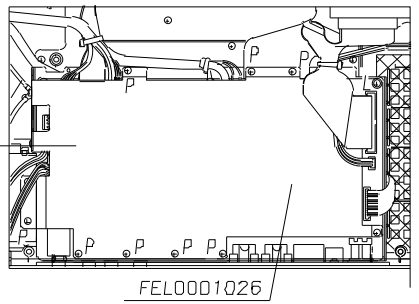






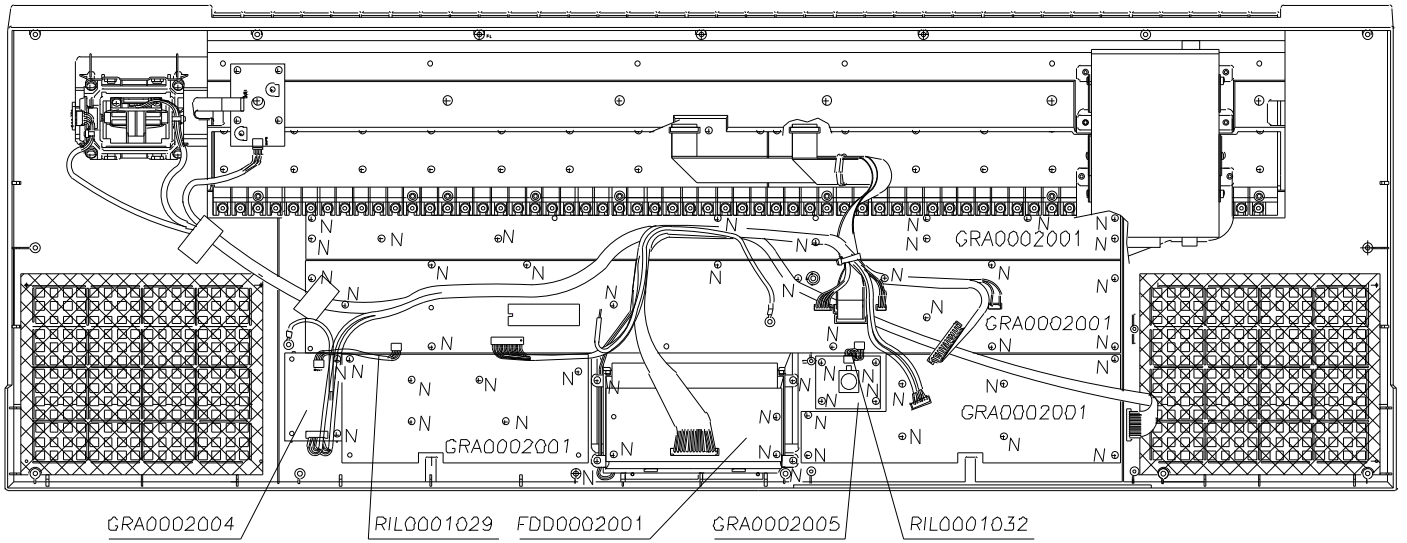


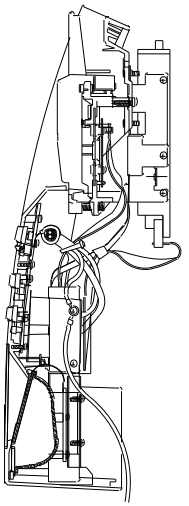
ONLY FOR FCC

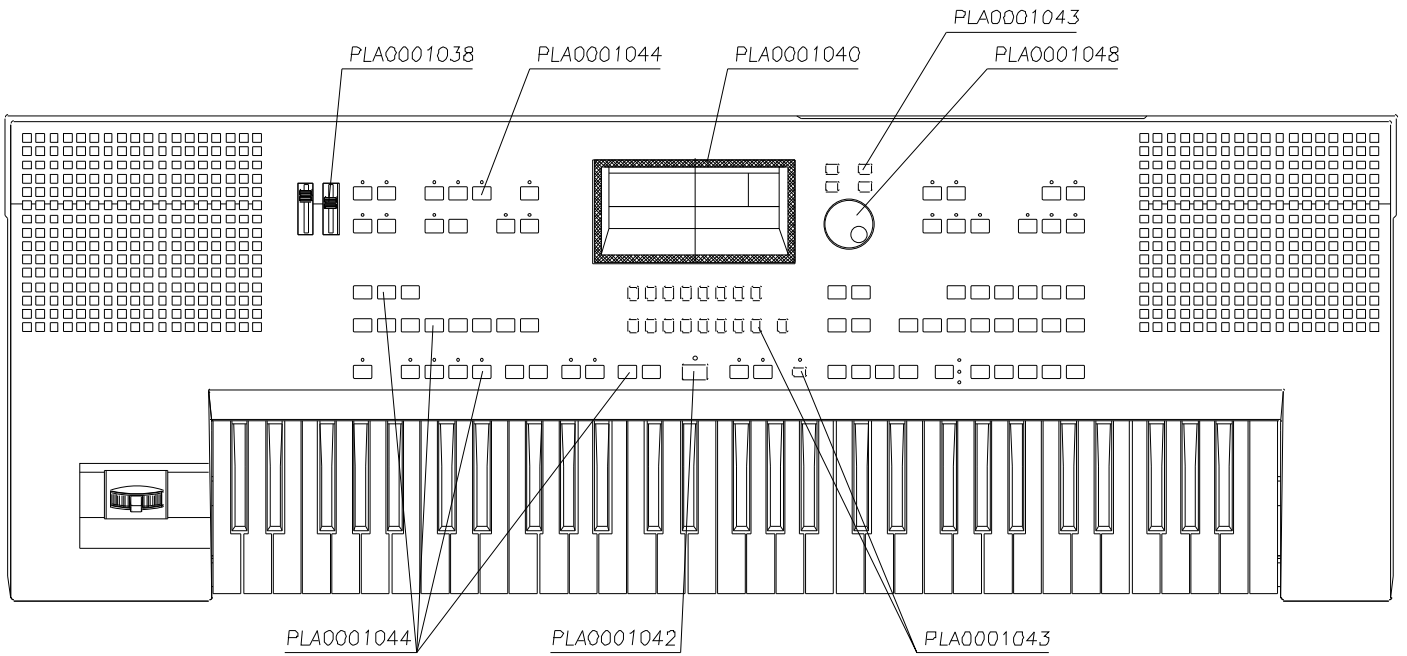


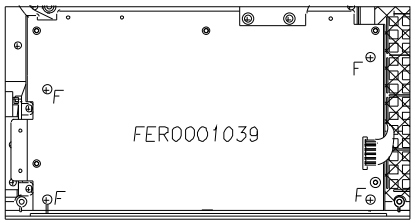
P	VTA0001037	AF 2.9x6.5 TC SP ZN	6+5
N	VTA0001038	AF 3x8 TC PR ZN	16
M	VTA0001046	ME M3x6 TC ZB	6
L	VTA0001032	ME M3x8 TC ZN	6
H	VTA0001010	AF 3x16 TC PR ZN	4
G	VTA0001039	AF 2.9x9.5 TC SP ZN	7
F	VTA0001036	AF 3.5x16 TC ZN	10
PART.	CODE	SCREWS DESCRIPTION	Q.TY

IS40 UPPER CASE ASSEMLY 2/2

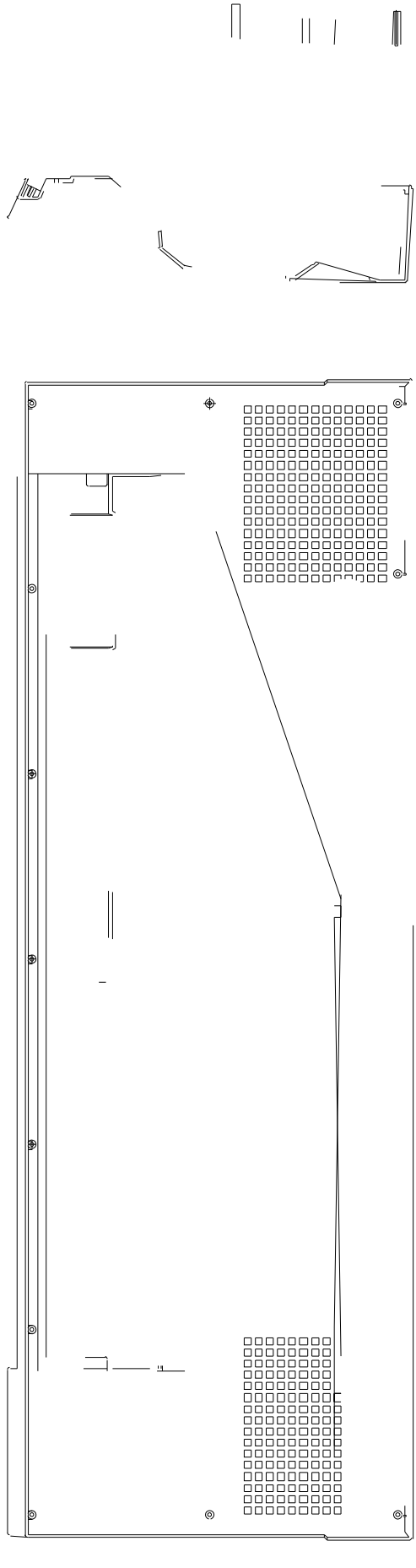




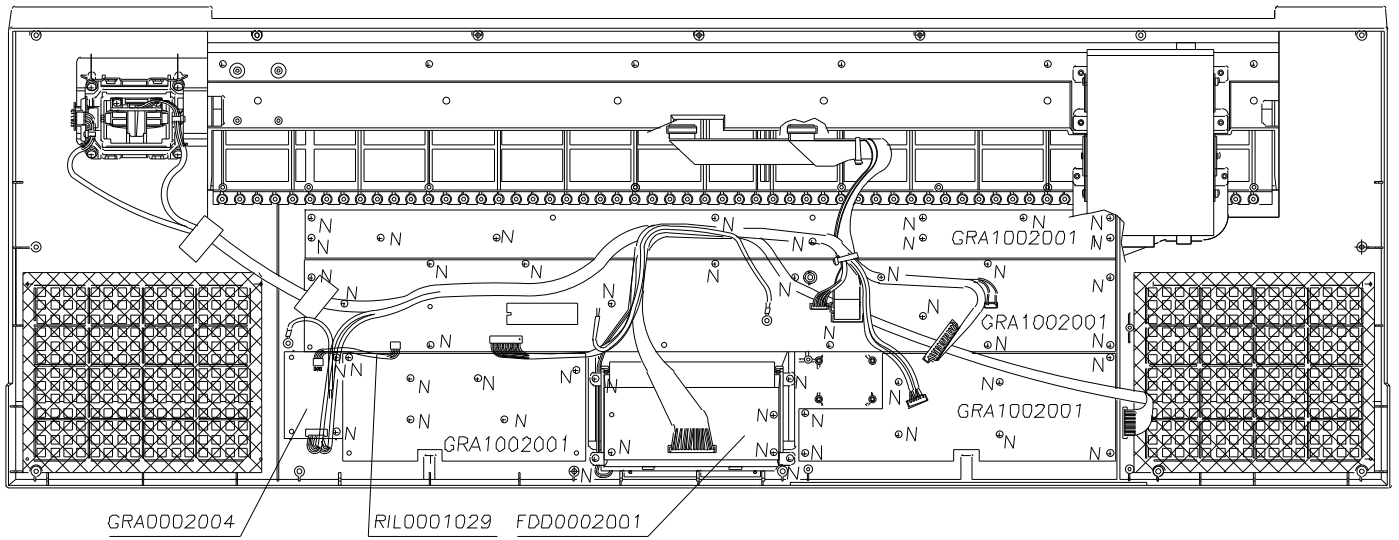


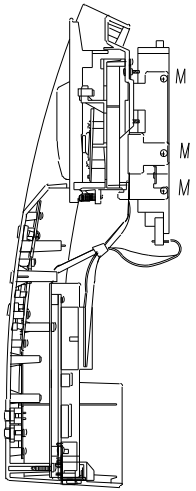


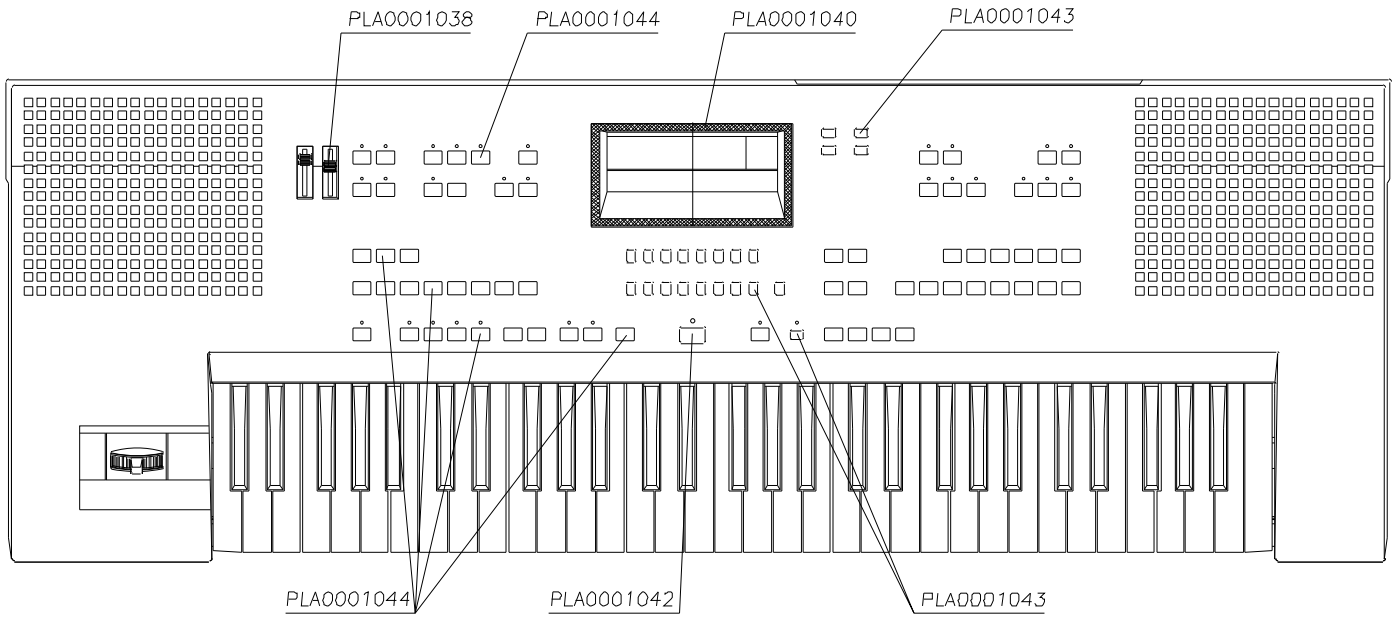
N	VTA0001038	AF 3x8 TC PR ZN	53
F	VTA0001036	AF 3.5x16 TC ZN	4
PART.	CODE	SCREWS DESCRIPTION	Q.TY

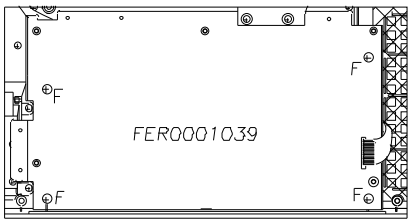


IS50 UPPER CASE ASSEMBLY 2/2



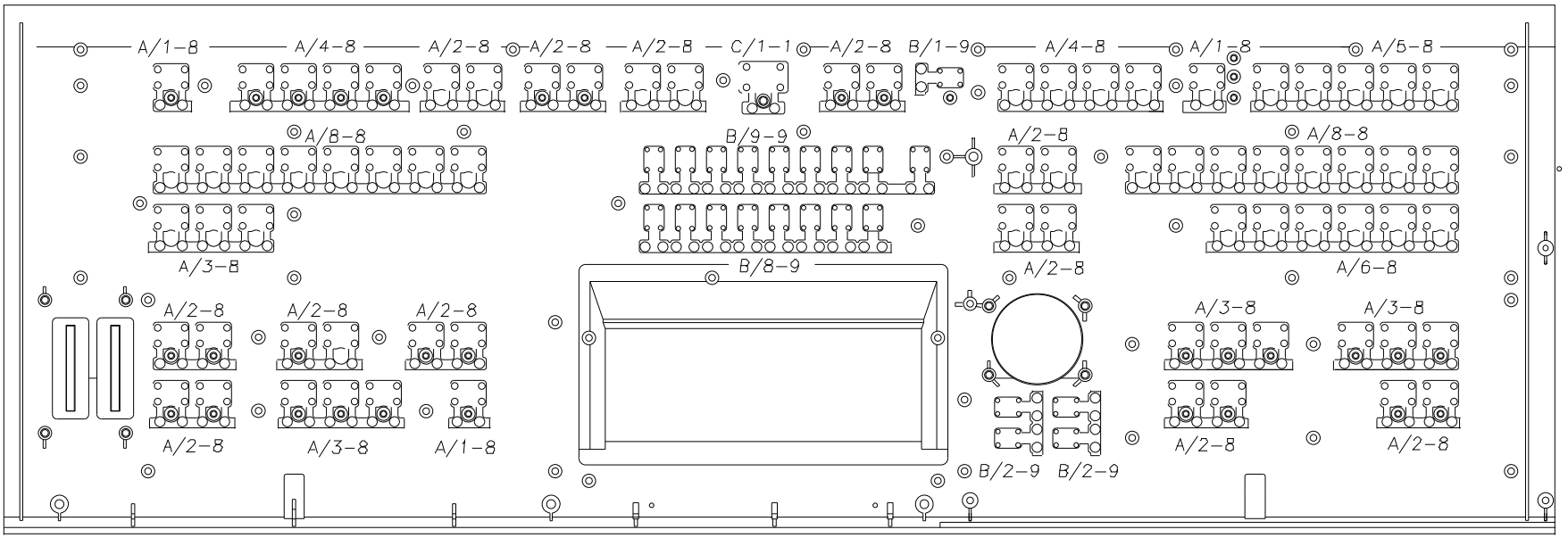






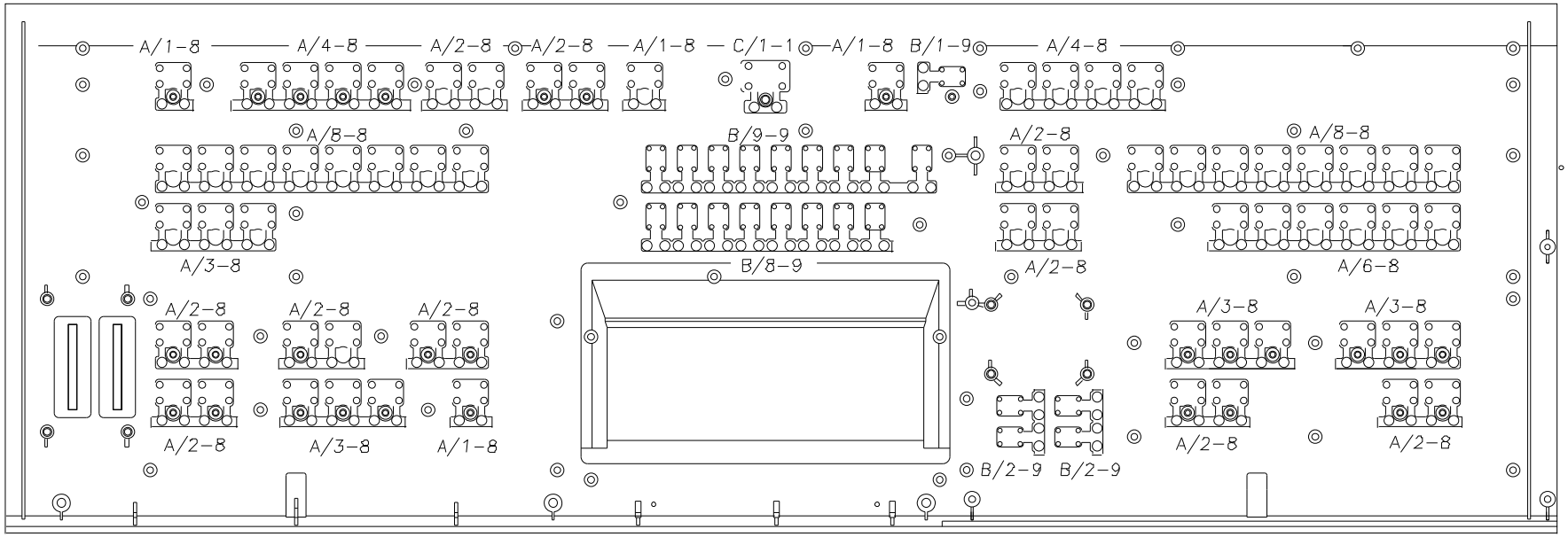
N	VTA0001038	AF 3x8 TC PR ZN	49
F	VTA0001036	AF 3.5x16 TC ZN	4
PART	CODE	SCREWS DESCRIPTION	Q.TY

IS40 SW. BUTTONS SETTING



C/1-1	PLA0001042	RED BUTTONS	1
B/9-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	1
B/8-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	1
B/2-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	2
B/1-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	1
A/8-8	PLA0001044	DARK GREY BUTTONS	2
A/6-8	PLA0001044	DARK GREY BUTTONS	1
A/5-8	PLA0001044	DARK GREY BUTTONS	1
A/4-8	PLA0001044	DARK GREY BUTTONS	2
A/3-8	PLA0001044	DARK GREY BUTTONS	4
A/2-8	PLA0001044	DARK GREY BUTTONS	12
A/1-8	PLA0001044	DARK GREY BUTTONS	3
PART.	CODE	BUTTON DESCRIPTION	Q.TY

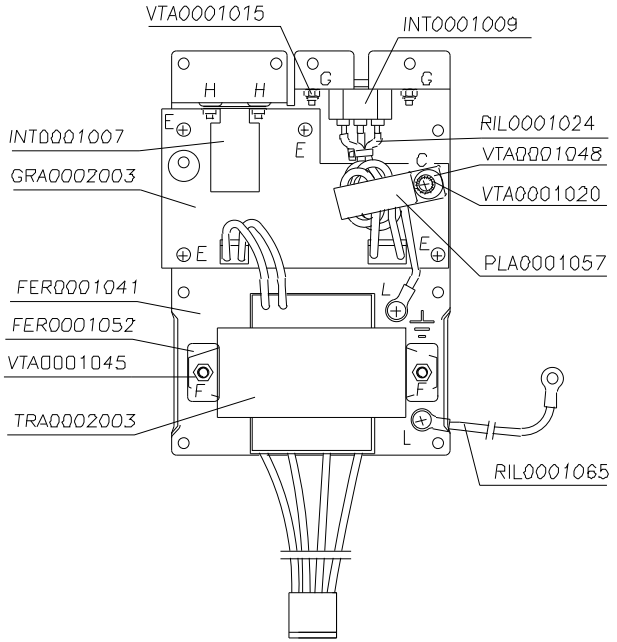
IS50 SW. BUTTONS SETTING



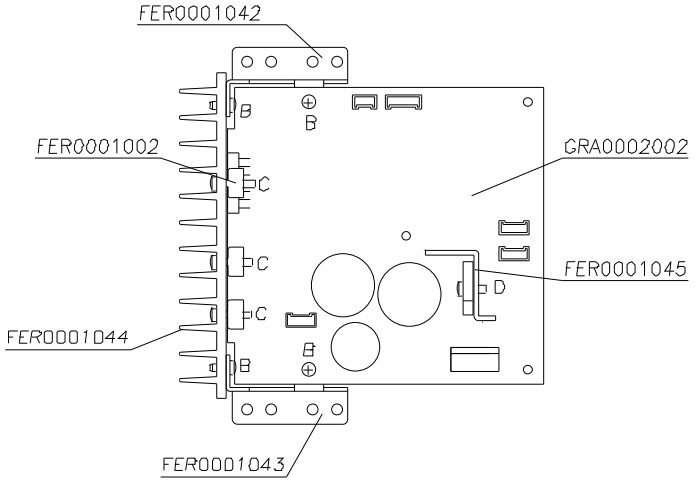
C/1-1	PLA0001042	RED BUTTONS	1
B/9-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	1
B/8-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	1
B/2-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	2
B/1-9	PLA0001043	YELLOW TRANSPARENT BUTTONS	1
A/8-8	PLA0001044	DARK GREY BUTTONS	2
A/6-8	PLA0001044	DARK GREY BUTTONS	1
A/4-8	PLA0001044	DARK GREY BUTTONS	2
A/3-8	PLA0001044	DARK GREY BUTTONS	4
A/2-8	PLA0001044	DARK GREY BUTTONS	10
A/1-8	PLA0001044	DARK GREY BUTTONS	4
PART.	CODE	BUTTON DESCRIPTION	Q.TY

IS40

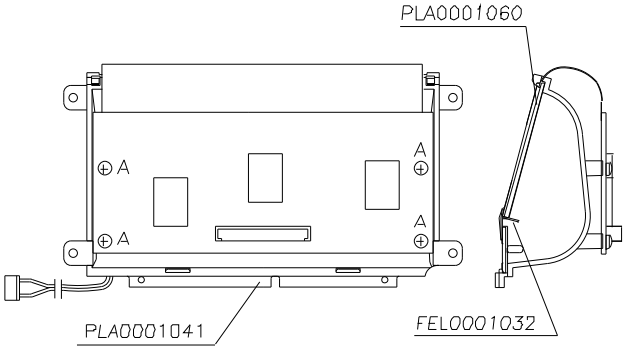
MAIN SUPPLY UNIT ASS.

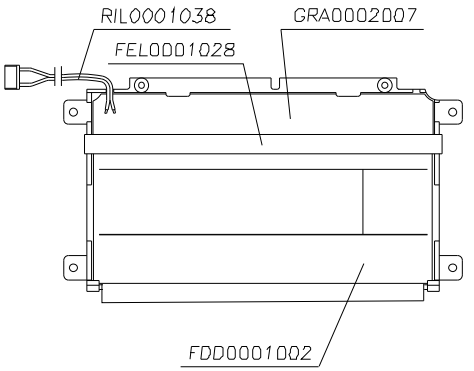


POWER AMPLIFIER AND SUPPLY ASS.



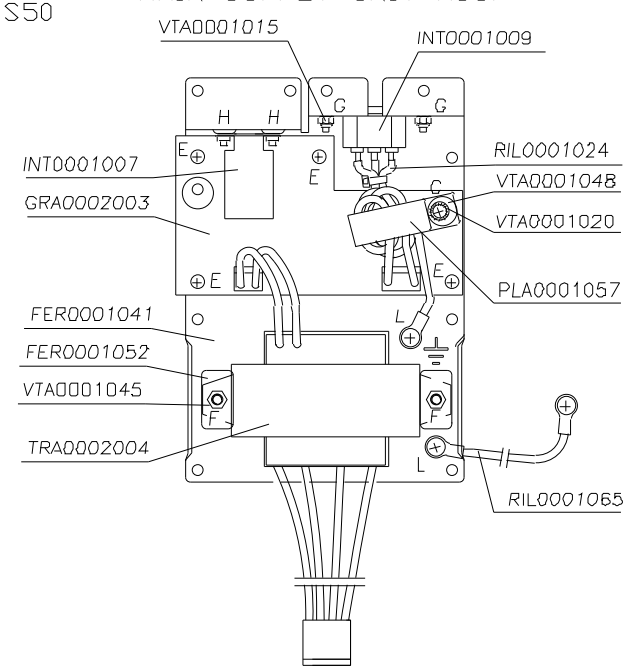
DISPLAY ASSEMBLY



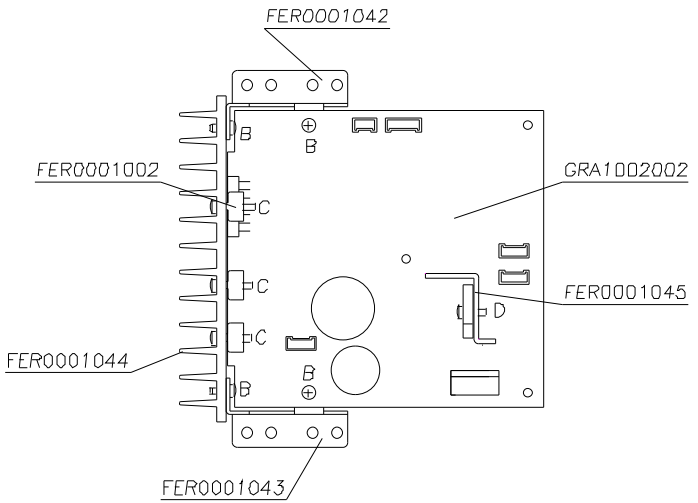


IS50

MAIN SUPPLY UNIT ASS.

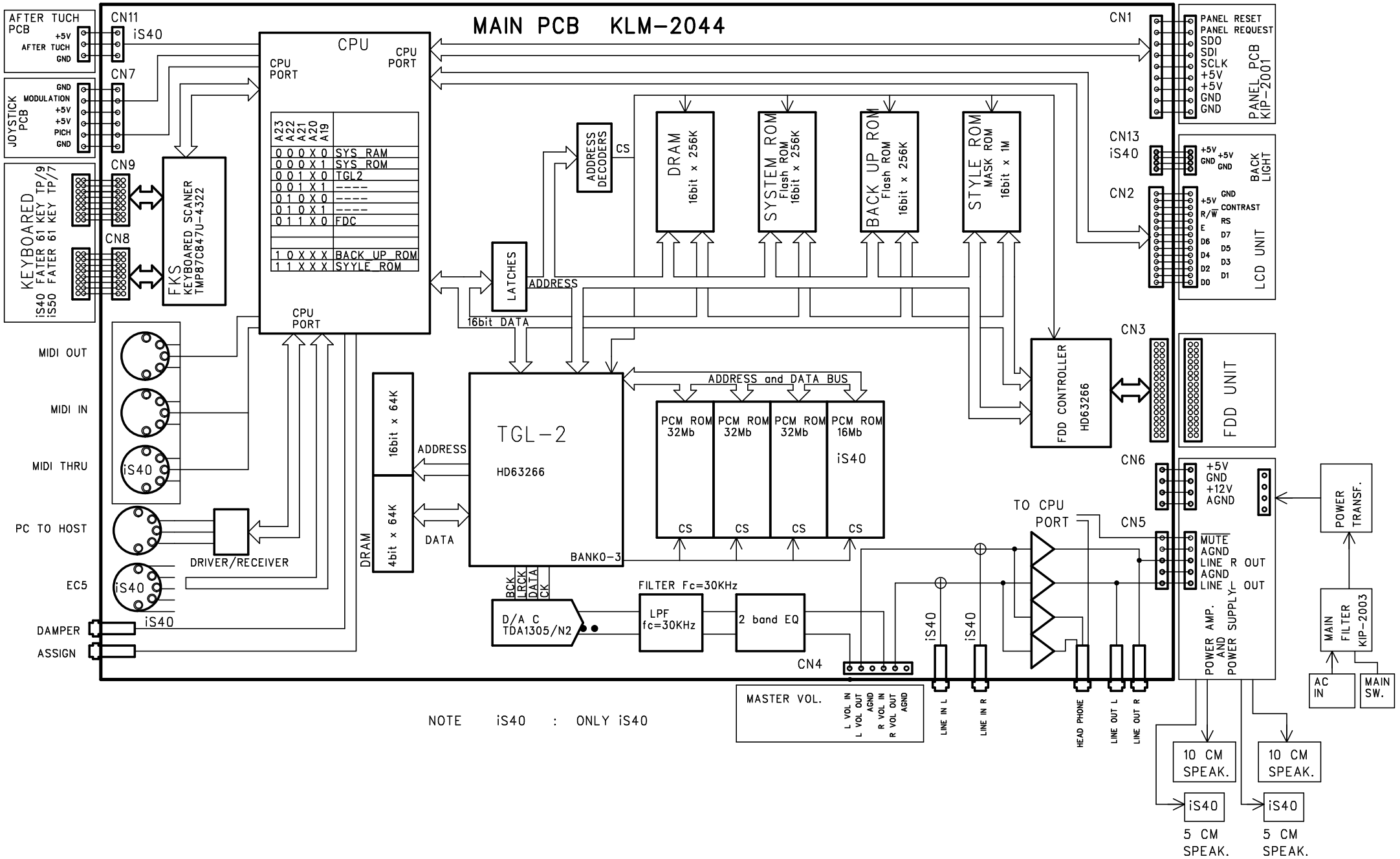


POWER AMPLIFIER AND SUPPLY ASS.



L	VTA0001050	AM 4x8 TC ZB	2
H	VTA0001031	ME M3x5 TC ZN	2
G	VTA0001030	ME M3x8 TS ZN	2
F	VTA0001029	ME M4x10 TC ZN	2
E	VTA0001032	ME M3x8 TC ZN	4
D	VTA0001039	AF 2.9x9.5 TC SP ZN	1
C	VTA0001006	ME M3x14 TC ZN	4
B	VTA0001037	AF 2.9x6.5 TC SP ZN	16
A	VTA0001038	AF 3x8 TC PR ZN	4
PART.	CODE	SCREWS DESCRIPTION	Q.TY

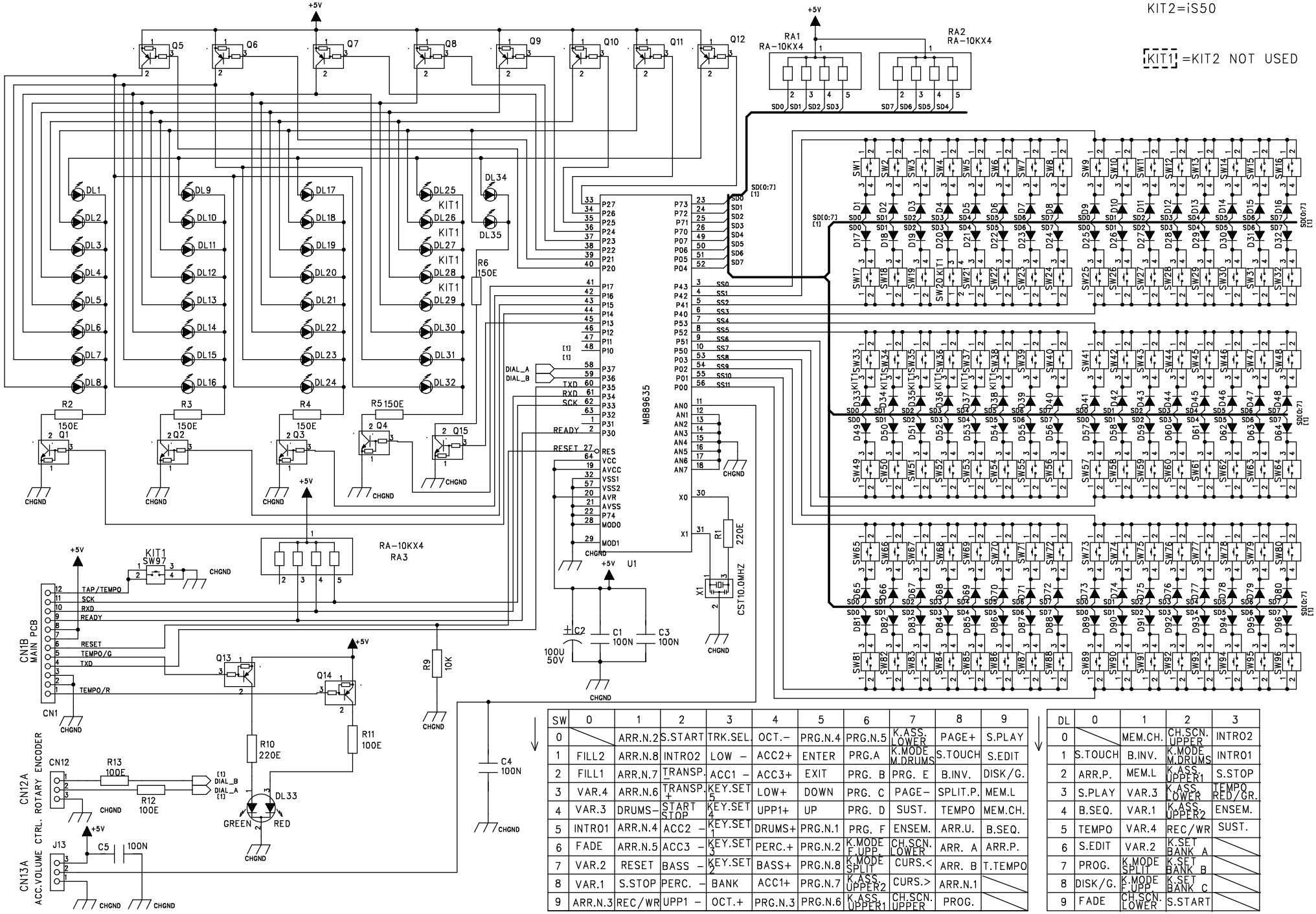
BLOCK DIAGRAM iS40 AND iS50



PANEL BOARD iS40/iS50 KIP-2001

KIT1=iS40
KIT2=iS50

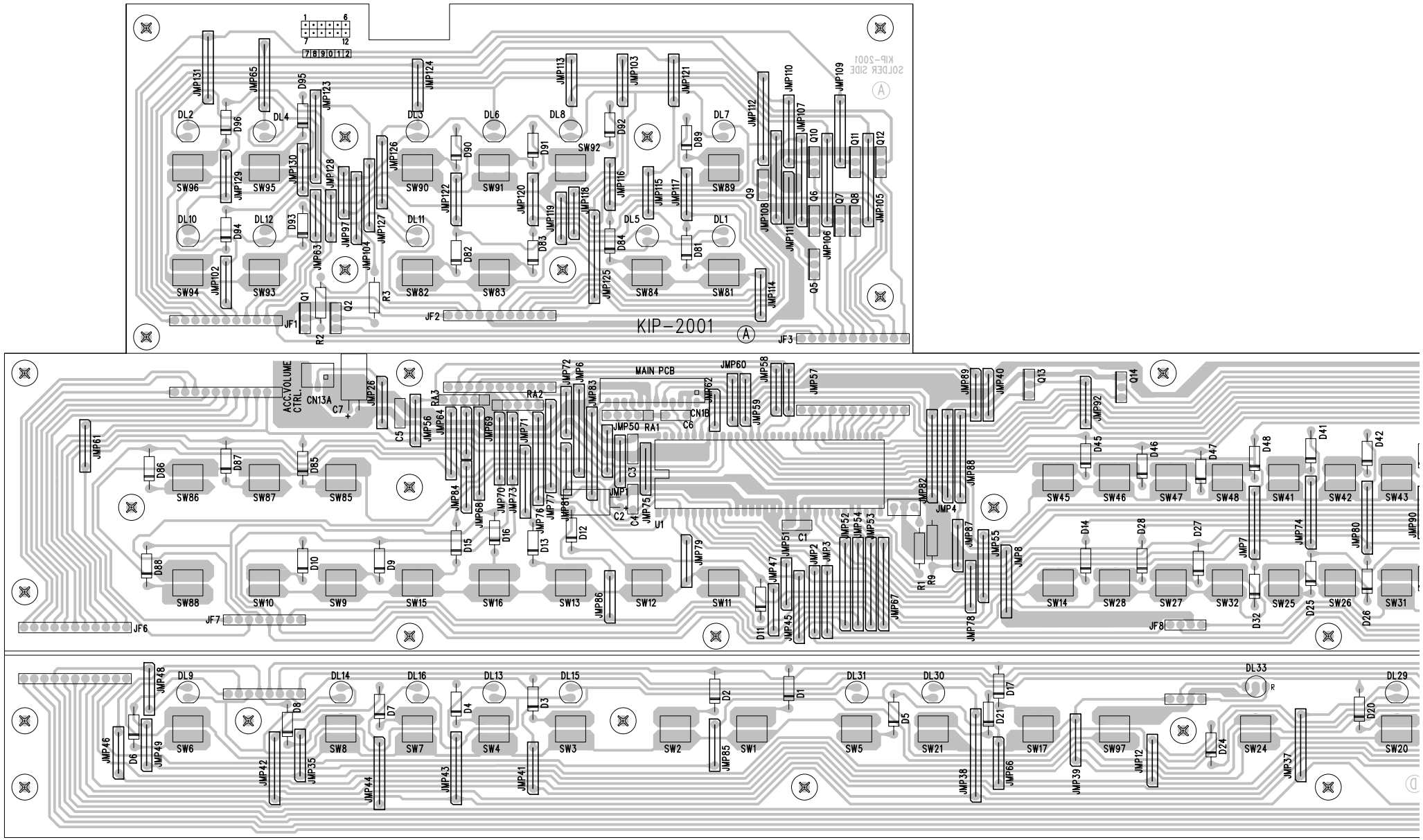
[KIT1] =KIT2 NOT USED



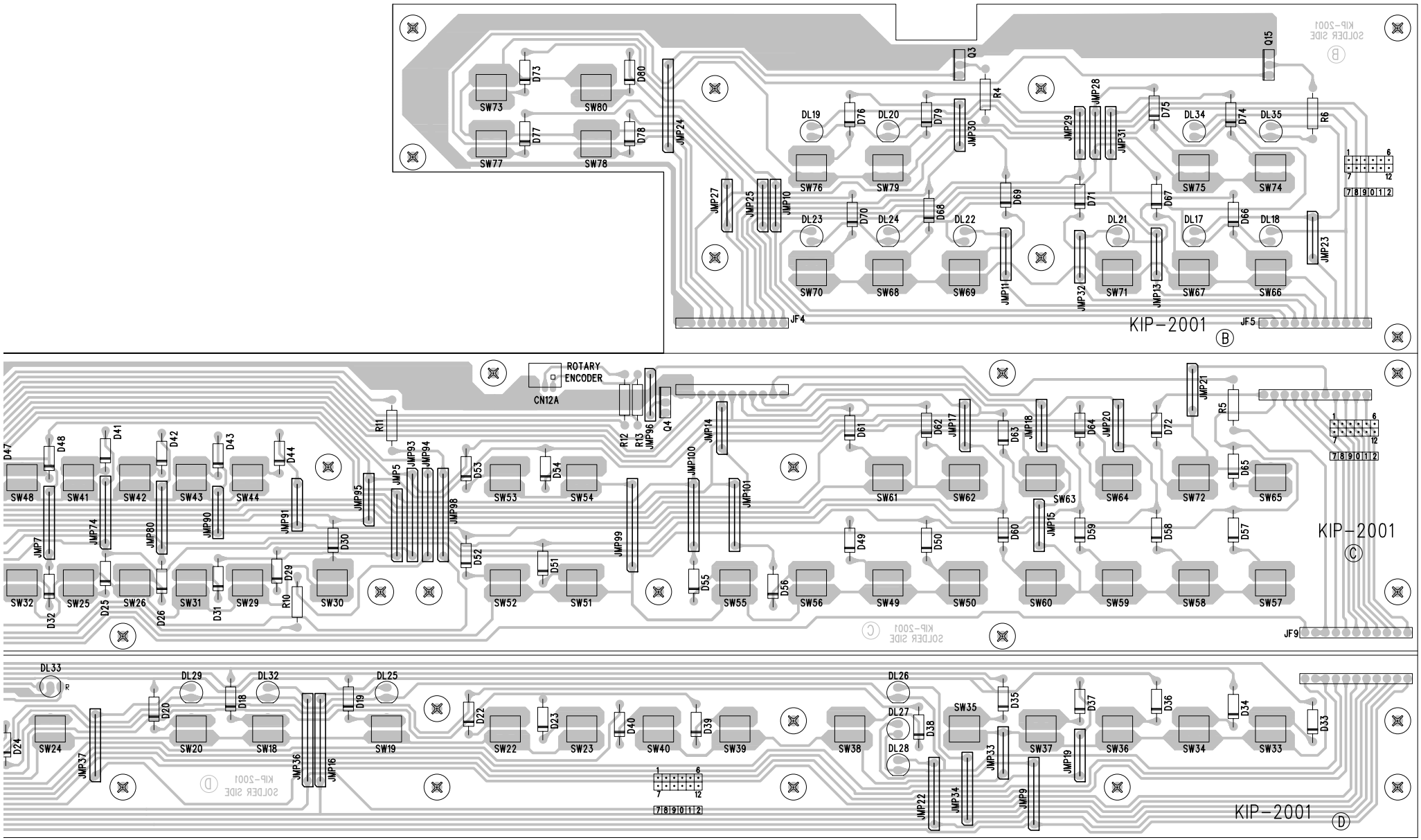
SW	0	1	2	3	4	5	6	7	8	9
0		ARR.N.2	S.START	TRK.SEL.	OCT.–	PRG.N.4	PRG.N.5	K.ASS. LOWER	PAGE+	S.PLAY
1	FILL2	ARR.N.8	INTRO2	LOW –	ACC2+	ENTER	PRG.A	K.MODE M.DRUMS	S.TOUCH	S.EDIT
2	FILL1	ARR.N.7	TRANSP. –	ACC1 –	ACC3+	EXIT	PRG. B	PRG. E	B.INV.	DISK/G.
3	VAR.4	ARR.N.6	TRANSP. +	KEY.SET 5	LOW+	DOWN	PRG. C	PAGE–	SPLIT.P.	MEM.L
4	VAR.3	DRUMS–	START STOP	KEY.SET 4	UPP1+	UP	PRG. D	SUST.	TEMPO	MEM.CH.
5	INTRO1	ARR.N.4	ACC2 –	KEY.SET 1	DRUMS+	PRG.N.1	PRG. F	ENSEM.	ARR.U.	B.SEQ.
6	FADE	ARR.N.5	ACC3 –	KEY.SET 3	PERC.+	PRG.N.2	K.MODE F.UPP.	CH.SCN. LOWER	ARR. A	ARR.P.
7	VAR.2	RESET	BASS –	KEY.SET 2	BASS+	PRG.N.8	K.MODE SPLIT	CURS.<	ARR. B	T.TEMPO
8	VAR.1	S.STOP	PERC. –	BANK	ACC1+	PRG.N.7	K.ASS. UPPER2	CURS.>	ARR.N.1	
9	ARR.N.3	REC/WR	UPP1 –	OCT.+	PRG.N.3	PRG.N.6	K.ASS. UPPER1	CH.SCN. UPPER	PROG.	

DL	0	1	2	3
0		MEM.CH.	CH.SCN. UPPER	INTRO2
1	S.TOUCH	B.INV.	K.MODE M.DRUMS	INTRO1
2	ARR.P.	MEM.L	K.ASS. UPPER1	S.STOP
3	S.PLAY	VAR.3	K.ASS. LOWER	TEMPO RED/GR.
4	B.SEQ.	VAR.1	K.ASS. UPPER2	ENSEM.
5	TEMPO	VAR.4	REC/WR	SUST.
6	S.EDIT	VAR.2	K.SET BANK A	
7	PROG.	K.MODE SPLIT	K.SET BANK B	
8	DISK/G.	K.MODE F.UPP	K.SET BANK C	
9	FADE	CH.SCN. LOWER	S.START	

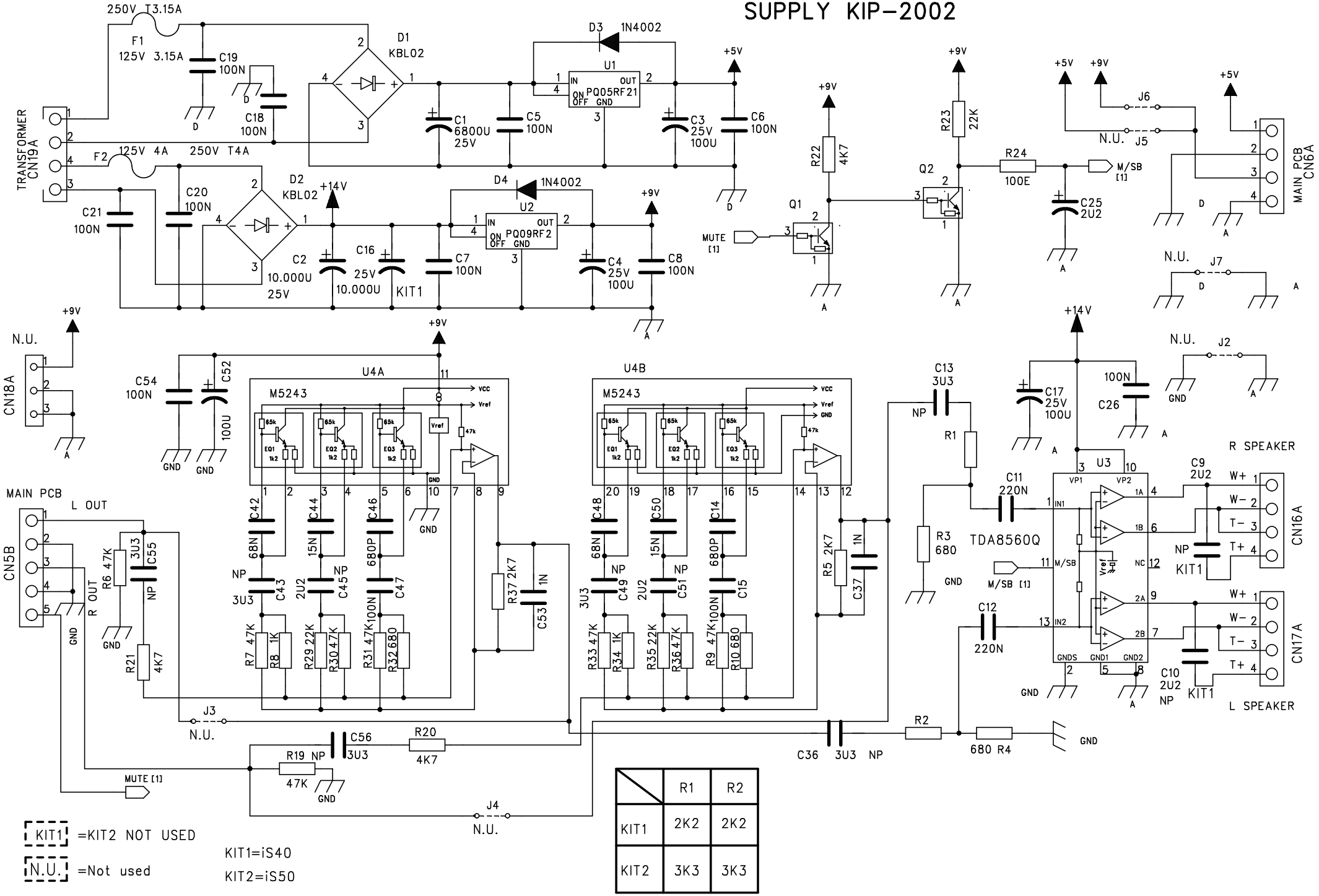
KIP-2001: PANEL BOARD PCB (Component side 1/2)



KIP-2001: PANEL BOARD PCB (Component side 2/2)

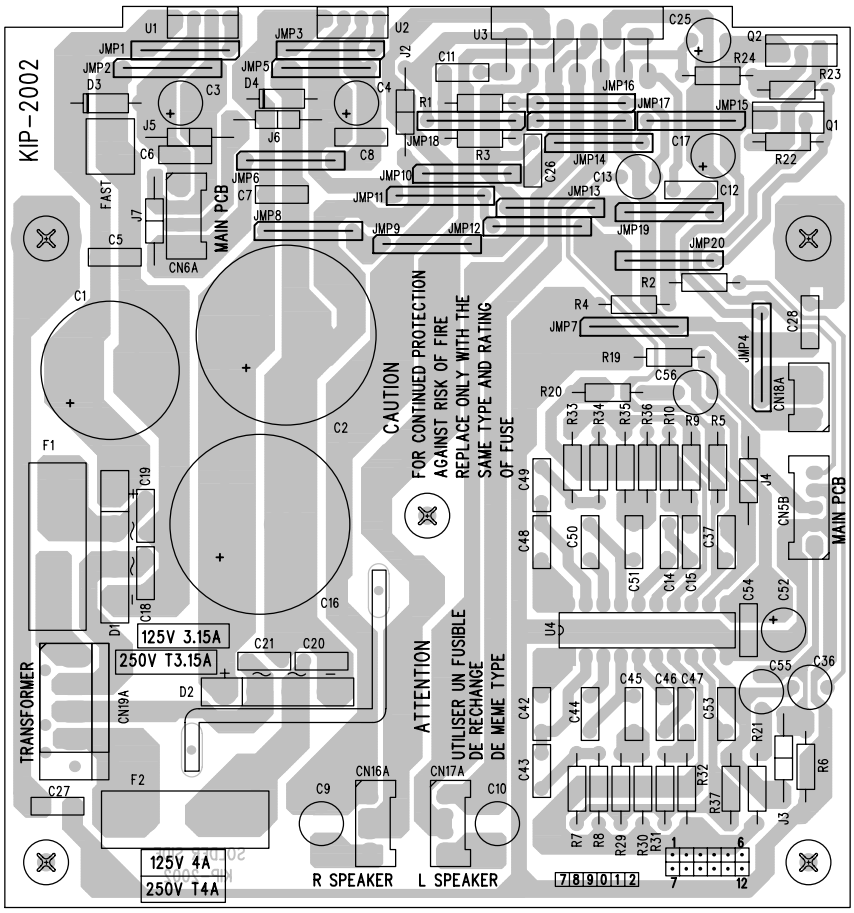


POWER AMPLIFIER AND POWER SUPPLY KIP-2002

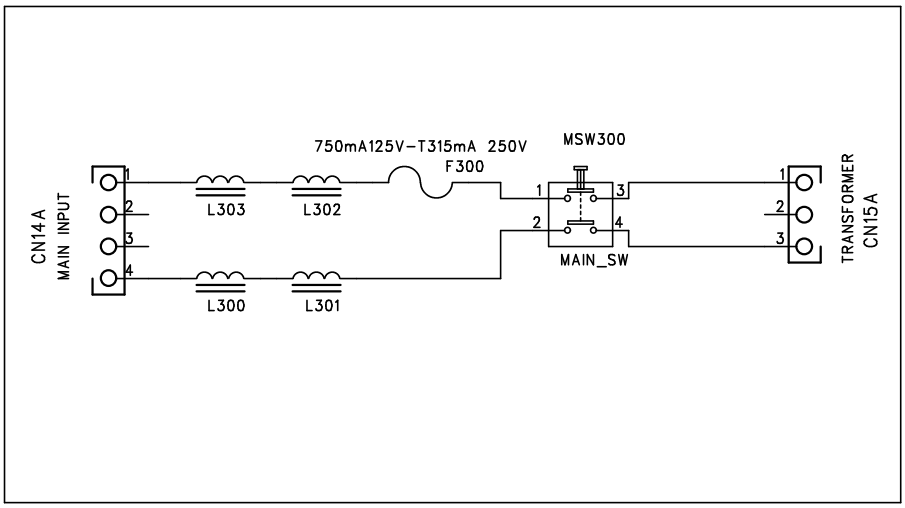


	R1	R2
KIT1	2K2	2K2
KIT2	3K3	3K3

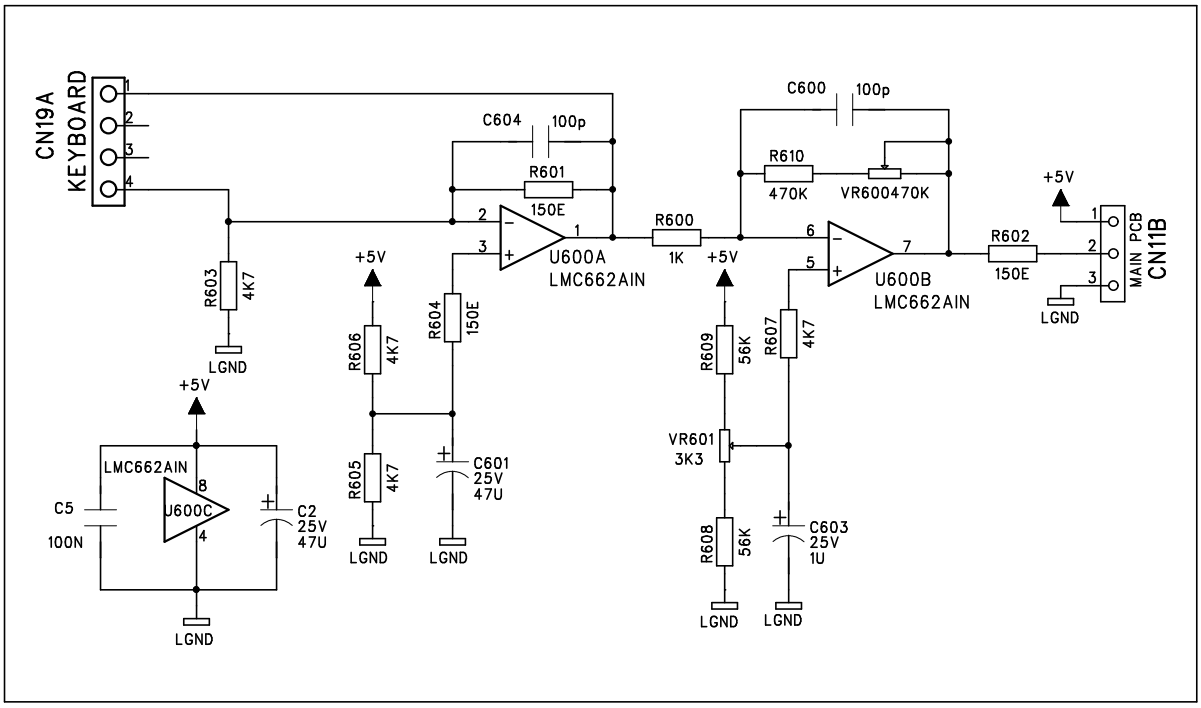
KIP-2002 COMPONENT SIDE



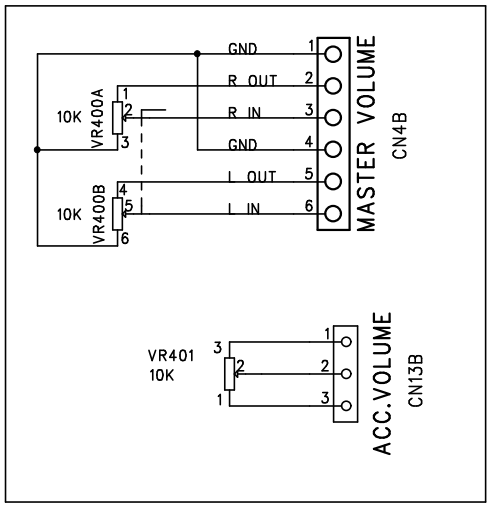
KIP-2003: MAIN FILTER PCB



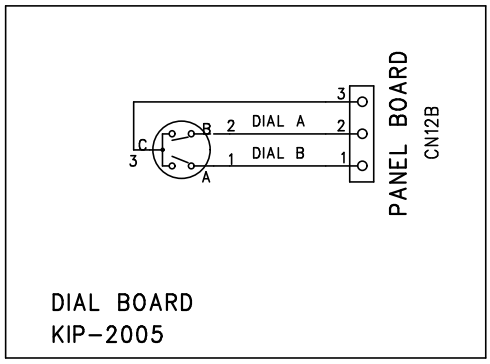
KIP-2006: AFTER TOUCH PCB iS40



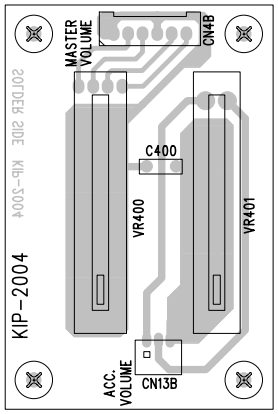
KIP-2004: POTENTIOMETER PCB



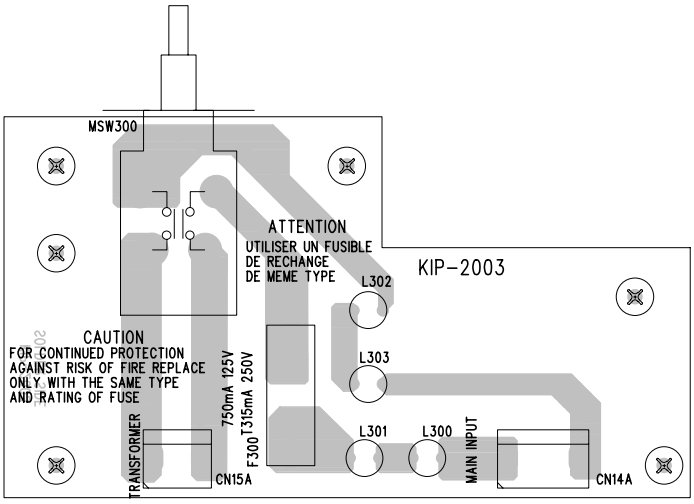
KIP-2005: ROTARY ENCODER PCB iS40



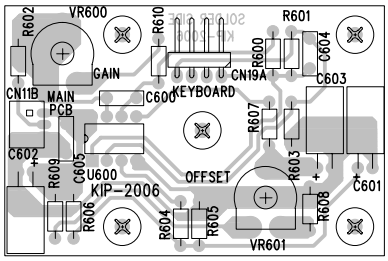
KIP-2004: POTENZIOMETER PCB iS40/iS50



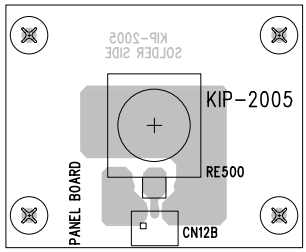
KIP-2003:MAIN FILTER PCB iS40/iS50

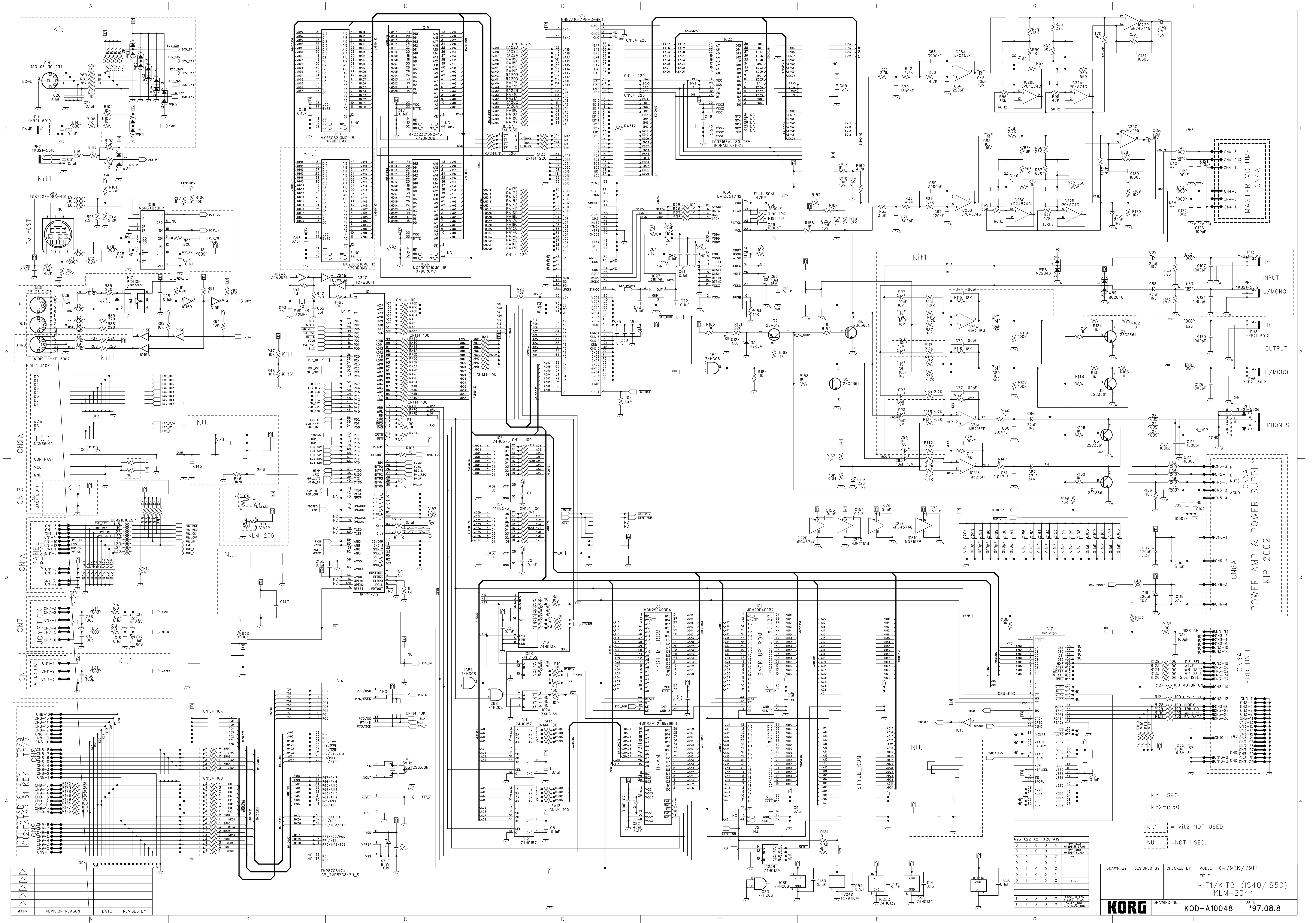


KIP-2006: AFTER TOUCH PCB iS40

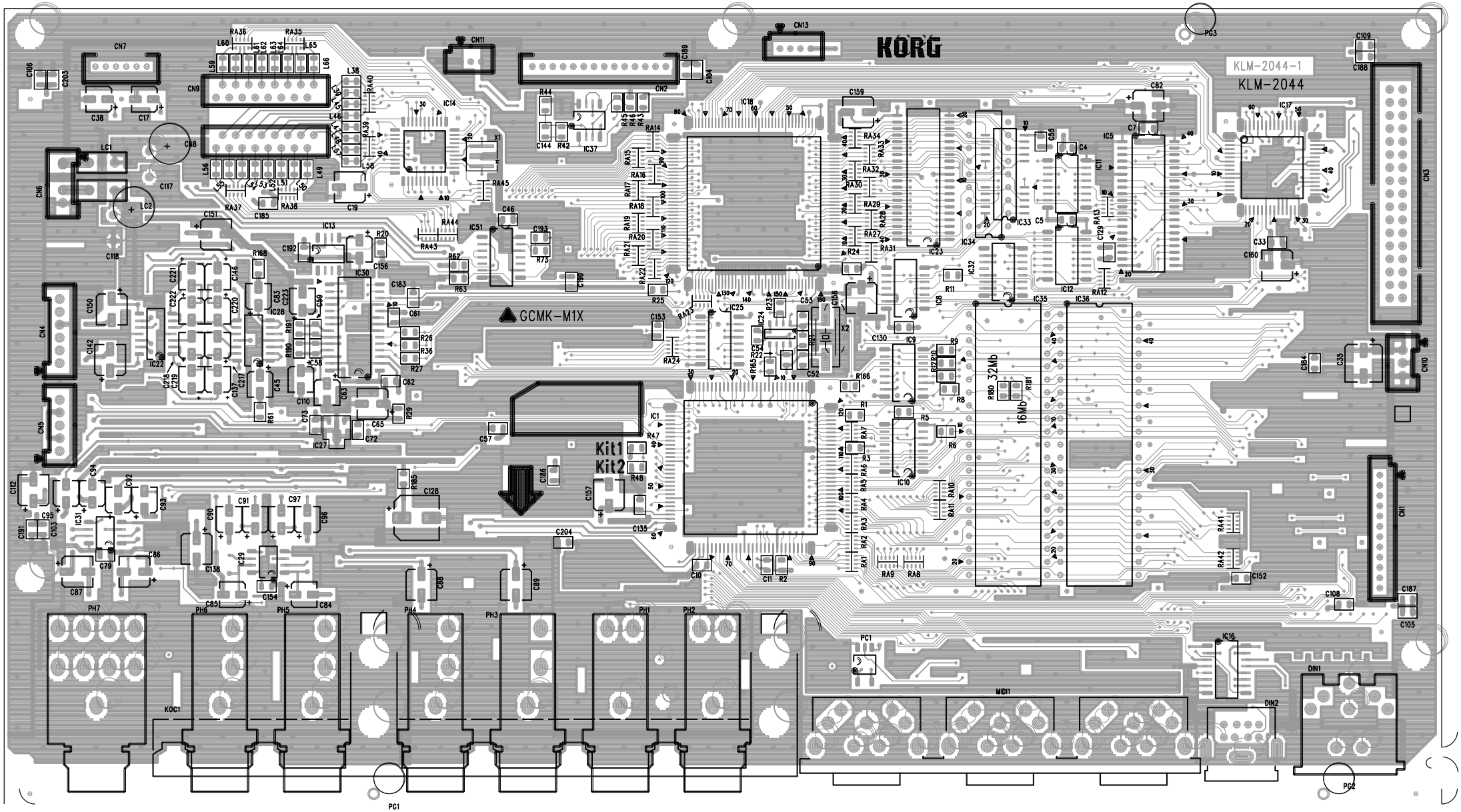


KIP-2005: ROTARY ENCODER PCB iS40

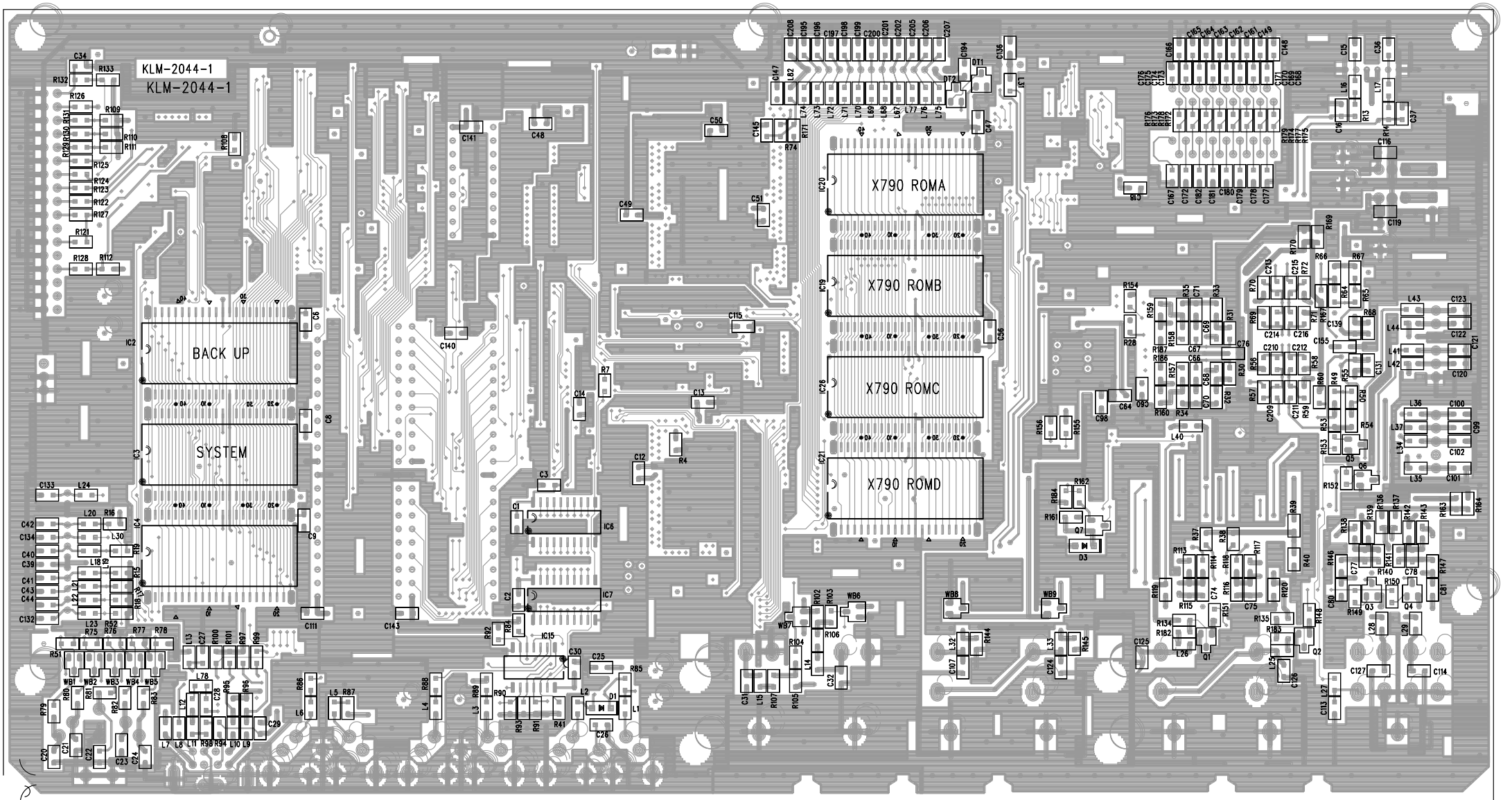



Kit1
EC-5
DIN1 150-06-30-234
DAMP
PH1 YKB21-5010
PH2 YKB21-5010
To HOST
DIN2 TCS7927-58A-401
IC16 M5M34050FP
MIDI1 YKF51-5054
IN
OUT
THRU
MIDI2 YKF-5067
MIDI 3 JACK
LCD NCM6601A
CN2A
CONTRAST
VCC
GND
CN13
LCD BACK LIGHT
CN1A
PANEL KIP-2001
BLM21B102SPT
CN7
JOYSTICK
CN11
AFTER TUCH
CN8
CN9
Kit1:FATAR 61 KEY TP/9
Kit2:FATAR 61 KEY TP/7
IC20 MX23C3210MC-15 X790ROMA
IC19 MX23C3210MC-15 X790ROMB
IC21 MC23C1610MC-15 X790ROMD
IC26 MX23C3210MC-15 X790ROMC
IC18 MB87A104APF-G-BND
IC23 LC32166AJ-80-TRM 1MDRAM 64KX16
IC30 TDA1305T/N2
FULL SCALL 4VPP
IC1 UPD70433
IC14 TMP87C847U ICP_TMP87C847U_S
IC6 74HC573
IC7 74HC573
IC10 74HC138
IC9B 74HC139
IC9A 74HC139
IC8A 74HC08
IC8B 74HC08
IC11 74HC157
IC12 74HC157
IC3 MBM29F400BA SYSTEM_ROM
IC4 MBM29F400BA BACK_UP_ROM
IC5 4MDRAM 256kx16bit DRAM
IC2 NU.
STYLE_ROM
IC25B 74HC139
IC17 HD63266
CN3A FDD UNIT
MASTER VOLUME CN4A
INPUT
OUTPUT
PHONES
CN5A POWER AMP & POWER SUPPLY KIP-2002
CN6A
DT2 FN1A4M
DT1 FA1A4M
KLM-2061
NU.
kit1=iS40
kit2=iS50
kit1 = kit2 NOT USED.
NU. =NOT USED.
A23 A22 A21 A20 A19
0 0 0 X 0 SYS_RAM 16x256KM_DRAM
0 0 0 X 1 SYS_ROM 16x256K_FLASH
0 0 1 X 0 TGL
0 0 1 X 1
0 1 0 X 0
0 1 0 X 1
0 1 1 X 0 FDC
1 0 X X X BACK_UP_ROM 16x256K FLASH
1 1 X X X SYTLE_ROM 16x1M MASK_ROM
MARK REVISION REASON DATE REVISED BY
DRAWN BY DESIGNED BY CHECKED BY
MODEL X-790K/791K
TITLE KIT1/KIT2 (IS40/IS50) KLM-2044
KORG
DRAWING NO. KOD-A10048
DATE '97.08.8

KLM-2044A (Component side)



KLM-2044A (Soldering side)

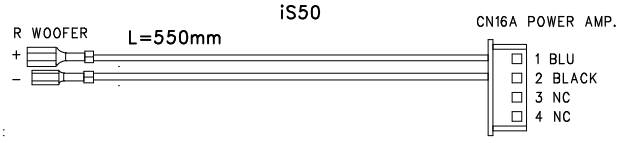


HARNESSES (FOR iS40 AND iS50 UNLESS OTHERWISE SPECIFIED)

CODE: RIL0001042

(POWER AMPLIFIER)

iS50

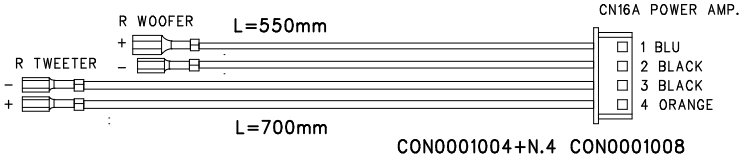


CON0001004+N.4 CON0001008

CODE: RIL0001026

(POWER AMPLIFIER)

iS40

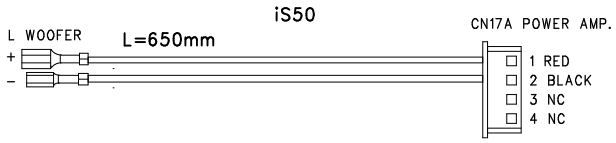


CON0001004+N.4 CON0001008

CODE: RIL0001041

(POWER AMPLIFIER)

iS50

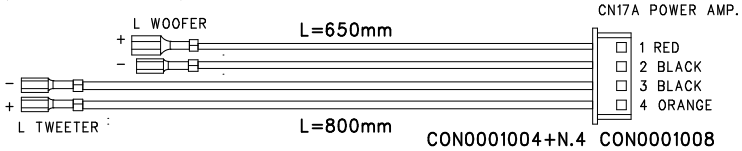


CON0001004+N.4 CON0001008

CODE: RIL0001025

(POWER AMPLIFIER)

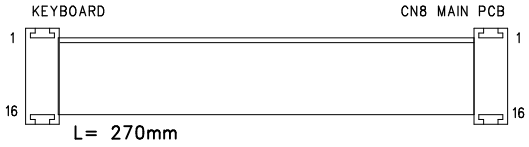
iS40



CON0001004+N.4 CON0001008

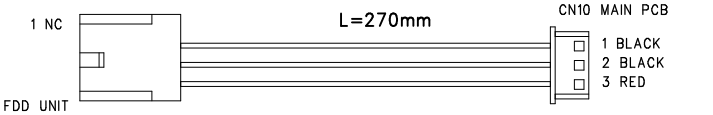
CODE: RIL0001044

(KEYBOARD RIGHT SIDE)



CODE: RIL0001034

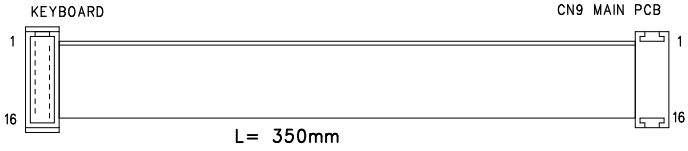
FDD



CON0001043+N.3 CON0001045 CON000101+N.3 CON0001008

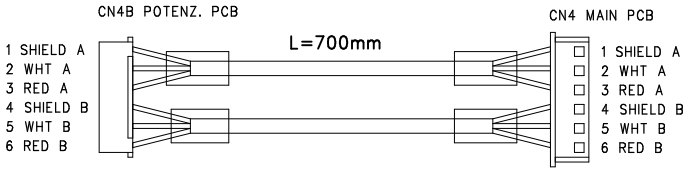
CODE: RIL0001045

(KEYBOARD LEFT SIDE)



CODE: RIL0001030

(MASTER VOLUME)

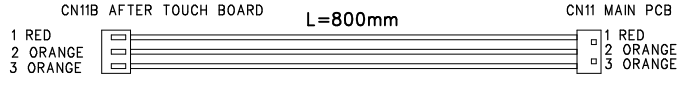


N.1 CON0001001+N.6 CON0001008 N.1 CON0001001+N.6 CON0001008

CODE: RIL0001033

(AFTER TOUCH)

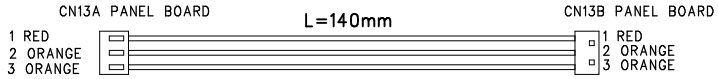
iS40



N.1 CON0001041+N.3 CON0001010 N.1 CON0001041+N.3 CON0001010

CODE: RIL0001029

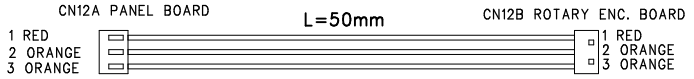
(ACC. VOLUME POT.)



N.1 CON0001041+N.3 CON0001010 N.1 CON0001041+N.3 CON0001010

CODE: RIL0001032

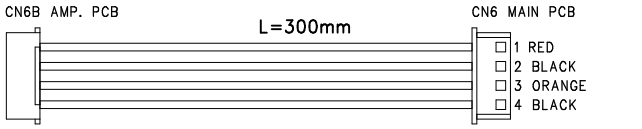
(ROTARY ENCODER) iS40



N.1 CON0001041+N.3 CON0001010 N.1 CON0001041+N.3 CON0001010

CODE: RIL0001027

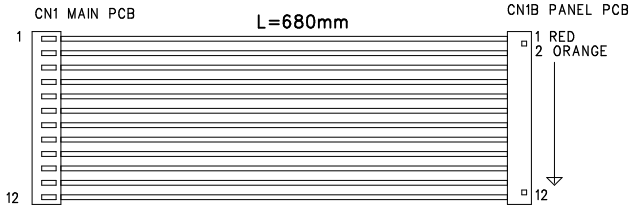
(POWER)



N.1 CON0001004+N.4 CON0001008 N.1 CON0001004+N.4 CON0001008

CODE: RIL0001031

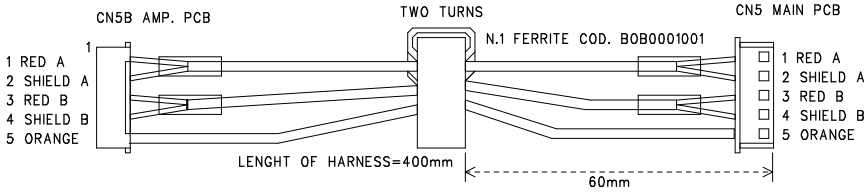
(PANEL)



N.1 CON0001040+N12 CON0001010 N.1 CON0001040+N12 CON0001010

CODE: RIL0001028

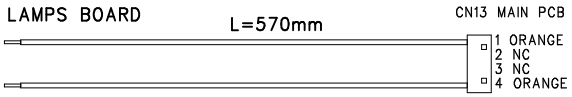
(TO AMP.) iS40



N.1 CON0001005+N.5 CON0001008 N.1 CON0001005+N.5 CON0001008

CODE: RIL0001038

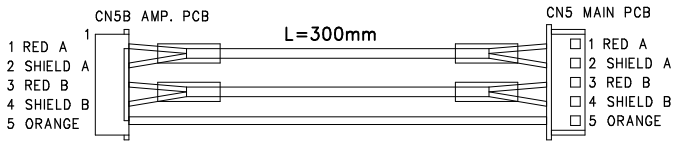
(LAMPS)



N.1 CON0001042+N.2 CON0001010

CODE: RIL0001070

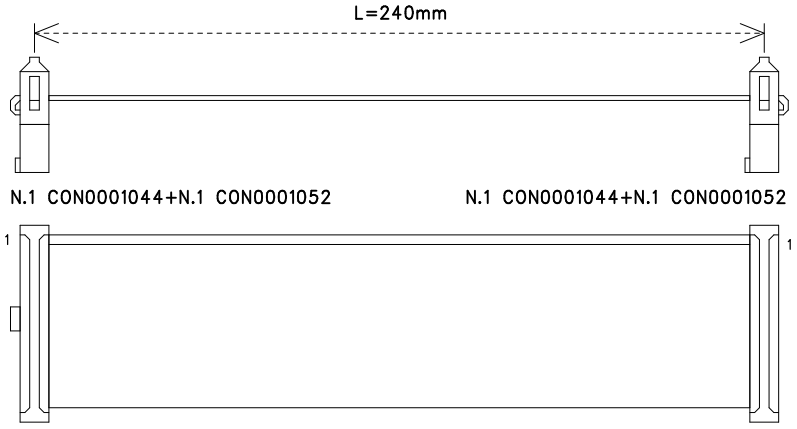
(TO AMP.) iS50



N.1 CON0001005+N.5 CON0001008 N.1 CON0001005+N.5 CON0001008

CODE: RIL0001035

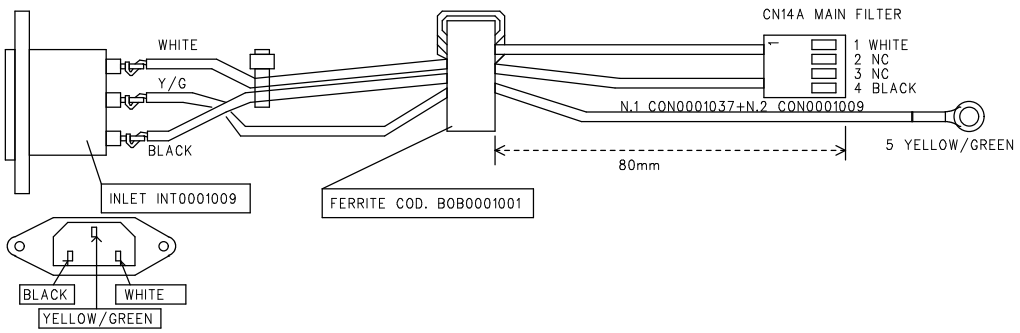
(FDD) FLAT CABLE AWM 2651 TYPE



N.1 CON0001044+N.1 CON0001052 N.1 CON0001044+N.1 CON0001052

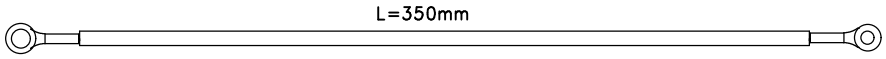
CODE: RIL0001024

(INLET)



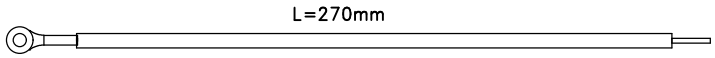
CODE: RIL0001064

(TRANF. SUPPORT/CPU SUPPORT)



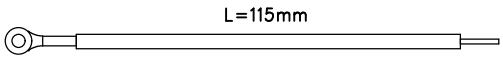
CODE: RIL0001063

(PANEL BOARD/CPU SUPPORT)



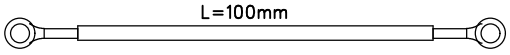
CODE: RIL0001069

(POTENT. BOARD/PANEL SHIELD)



CODE: RIL0001065

(TRANSF. SUPPORT/POWER AMPL. SUPPORT)



Test Mode

* Operating Specifications for test mode *

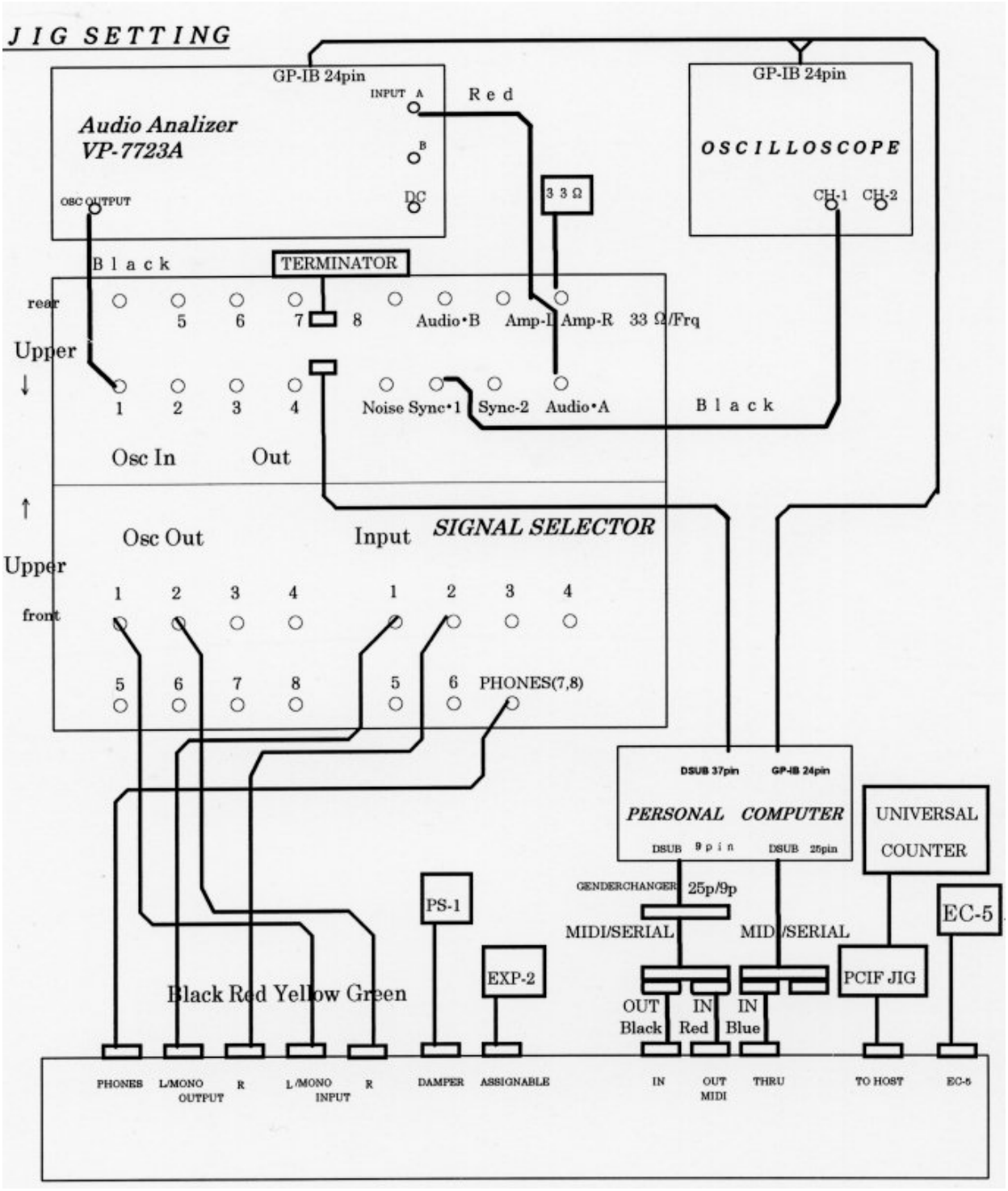


Fig.1: Standard Setup

• Press one of the following combinations of switches, and then turn the power switch on. This makes the test mode start.

GLOBAL + ARR. PLAY:	Ordinary test
GLOBAL + SONG PLAY:	Test mode excluding the Internal test

• Switches to be used in test mode:

CURSOR >	:	Go to the next test step
PROGRAM 8	:	Go to the next test step (iS50)
KEYBOARD SET 5	:	Go to the next test step (iS40)
CURSOR <	:	Return to the previous test step
PAGE +	:	Go to the next test item
PAGE -	:	Return to the previous test item

* Floppy disk drive test *

The number shows the type of a happened error.

0: OK
1: Drive not Ready
2: Data Error
3: Verify Error
4: No File
5: Same File
7: Disk Full
10: Soft Protect
12: Hard Protect
17: Disk Type
18: Media Type

• Turn the power switch ON by pressing [GLOBAL] and [SONG PLAY] simultaneously.
• Press [PAGE -].
• Insert the test disk (a 2HD disk formatted with iS40) and press [PROGRAM 1] to start the test.
• When [PROGRAM 2] is pressed, a checking disk format type will be skipped, but the test can be continued even using an unformatted disk.

* Internal test *

• Turn the power switch ON by pressing [GLOBAL] and [ARR.PLAY] simultaneously.
• Hook up all the terminals for INPUT L/MONO, INPUT R, OUTPUT L/MONO, OUTPUT R, MIDI IN, MIDI OUT, ASSIGNABLE, (MIDI THRU, TO HOST, PEDAL SW, EC5 only on iS40) with the plug inserted.

1. System ROM Check
   1.1. Checksum test

2. Flash ROM Check
   2.1.Write/Read check (before preload from disk) -
   2.2.Checksum test

3. Internal RAM Check
   3.1. 00000h~3FFFFh
   3.2. 40000h~7FFFFh

4. LCD RAM Check
   4.1. Write/Read check

5. FPS I/F Check
   5.1. Communication command Send & Receive

6. FKS I/F Check
   6.1. Communication command Send & Receive

7. TGL I/F Check
   7.1. All voices on/off check, TGL voice flag
   7.2. VDA & VDF register Write/Read

8. MIDI loop back Check
   8.1. Check MIDI OUT/IN data (Check MIDI THRU data only on iS40)

9. PC I/F Check (only on iS40) -
   9.1. Check PCIF OUT/IN data

10. PCM Verification
   10.1 Data bus check
   10.2. Address bus check BANK 0&1 PCM
   10.3. Address bus check BANK 2&3 PCM
   10.4. Address bus check BANK 4&5 PCM
   10.5. Address bus check BANK 6&7 PCM (only iS40)

11. Style Verification
   11.1. Data bus check
   11.2. Address bus check

12. HeadPhone Check
   Check headphone connection

* External test *

1. Key Type check

   Check keyboard type
   iS40 = TP9
   iS50 = TP7

2. PCI (TO HOST) Clock out check (only iS40)
   2.1. Check that the output clock is 995k ~ 1,005kHz with a universal counter.

   995.000 kHz ≤ clock ≤ 1005.000 kHz

[CURSOR >]

3. Panel Switch & LED

   3.1. Check that all the LEDs are lit
   Insert the preload disk (a 2DD disk) to the FDD, and check that the access lamp is lit.
   Eject the disk.
   Insert the preload disk again to preload the background.

[CURSOR >]

3.2. Check that all the LEDs are lit

ARR_PLAY	B_SEQ	SMF_PLAY	SONG_EDIT
GLOBAL	PROG	CHORD_HOLD	SOUND_HOLD
B_INVERSION	SPLIT_POINT	TEMPO_LOCK	SINGLE_TCH
ARR_BANK_A	ARR_BANK_B	ARR_BANK_U	ARR_1
ARR_2	ARR_3	ARR_4	ARR_5
ARR_6	ARR_7	ARR_8	FADE_INOUT
VARIATION1	VARIATION2	VARIATION3	VARIATION4
FILL1	FILL2	INTRO_ENDING1	INTRO_ENDING2
DRUM_UP	PERC_UP	BASS_UP	ACC1_UP
ACC2_UP	ACC3_UP	KBD1_UP	KBD2_UP
DRUM_DOWN	PERC_DOWN	BASS_DOWN	ACC1_DOWN
ACC2_DOWN	ACC3_DOWN	KBD2_DOWN	KBD1_DOWN
TR_SELECT	RESET	TAP TEMPO (iS40)	START_STOP(G)
START_STOP(R)	SYNC_START (iS40)	SYNC_STOP	REC_WRITE
PAGE -	PAGE +	CURSOR <	CURSOR >
TEMPO/VALUE -	TEMPO/VALUE +	EXIT/NO	ENTER/YES
TRANSPOSE b	TRANSPOSE #	OCTAVE_DOWN	OCTAVE_UP
CHORD SCAN LOW	CHORD SCAN UP	KEY ASS LOW	KEY ASS UP2
KEY ASS UP1	ENSEMBLE	SUSTAIN	KB MODE M.DRUM
KB MODE SPLIT	KB MODE FULL	PROG BANK A	PROG BANK B
PROG BANK C	PROG BANK D	PROG BANK E	PROG BANK F
PROG 1	PROG 2	PROG 3	PROG 4
PROG 5	PROG 6	PROG 7	PROG 8

(iS40 only)

KB SET BANK A	KB SET BANK B	KB SET BANK C	KB SET 1
KB SET 2	KB SET 3	KB SET 4	KB SET 5

[CURSOR >]

4. LCD Check

4.1. Check that all the segments of the LCD are lit and the back light lamps are lit. (See Fig.2)

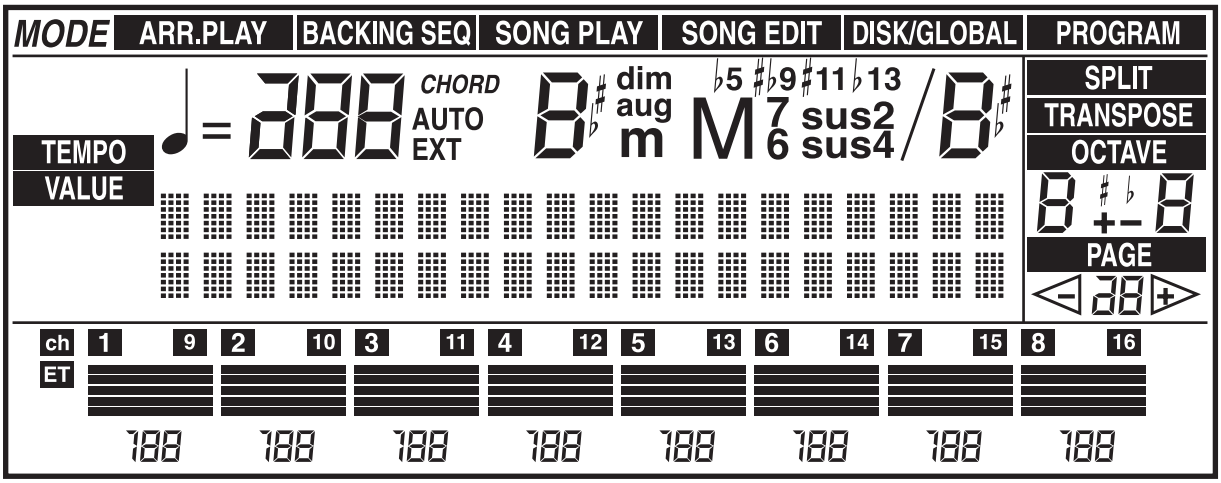


Fig.2: LCD Display

[CURSOR >]

4.2. Check that the LCD screen is completely blank.

[CURSOR >]

5. MDE Check

* Set the master volume at middle.
OSCILLOSCOPE 1V/DIV, 2mS/DIV, DC

5.1. Check that the waveform from the OUTPUT L/MONO is normal (see Fig.3). Observe for a 2sec.

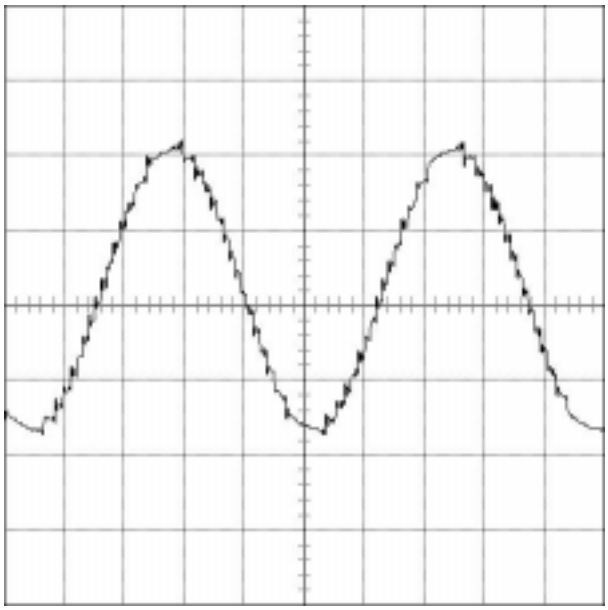


Fig.3: Waveform

[CURSOR >]

5.2. Check that the output waveform level is 0 with an oscilloscope.

[CURSOR >]

5.3. Check that the waveform at the OUTPUT L/MONO is normal (see Fig.3). Observe for a 2sec.

[CURSOR >]

6. LINE IN Check (only iS40)

* Set the master volume at MAX.
OSCILLOSCOPE 1V/DIV, 0.2mS/DIV, DC

6.1. Put a signal (1kHz/-10dBu sin waveform) into the INPUT L/MONO, and measure the output level of OUTPUT L/MONO. Check that the waveform according to the test range indicated in the table below and the output frequency is normal. Check that the observed waveform is normal without distortion.

[CURSOR >]

6.2. Test INPUT R - OUTPUT R likewise.

OUTPUT L/MONO:	1kHz, 3.9dBu ≤ level ≤ 7.9dBu
OUTPUT R:	1kHz, 3.9dBu ≤ level ≤ 7.9dBu

[CURSOR >]

7. Level Check
   * Set the master volume at MAX.
   Measure the level at the PHONE L and PHONE R under a load of 33 ohms.
   OSCILLOSCOPE 1V/DIV, 0.5mS/DIV, DC

7.1. Check that the level is within the test range indicated in the table below and the output frequency is normal. Check that the observed wave form is normal without distortion.

7.2. Check likewise OUTPUT R,PHONE L and PHONE R.

OUTPUT L/MONO: 488Hz, 7.3dBu ≤ level ≤ 9.5dBu

[CURSOR >]

OUTPUT R: 412Hz, 7.3dBu ≤ level ≤ 9.5dBu

[CURSOR >]

Headphone L: 549Hz, 2.4dBu ≤ level ≤ 4.6dBu (1 V RMS ≤ level ≤ 1.3 V RMS)

[CURSOR >]

Headphone R: 610Hz, 2.4dBu ≤ level ≤ 4.6dBu (1 V RMS ≤ level ≤ 1.3 V RMS)

[CURSOR >]

8. Noise Check

* Set the master volume at MAX.
OSCILLOSCOPE 1V/DIV, 0.5mS/DIV, DC

8.1. Measure the noise level of OUTPUT L/MONO. Check that the level is within the test range indicated in the table below. Check that the output wave form level is 0 with an oscilloscope.

8.2. Check likewise OUTPUT R, PHONE L and PHONE R.

OUTPUT L/MONO: level ≤ -84dBu

[CURSOR >]

OUTPUT R : level ≤ -84dBu

[CURSOR >]

Headphone L : level ≤ -88dBu

[CURSOR >]

Headphone R : level ≤ -88dBu

[CURSOR >]

9. Speaker Check

9.1. Check the sound from the middle range speaker L.
Check that the output sound has no distortion, also check that no sound comes out from the middle range speaker R.

[CURSOR >]

9.2. Check the middle range speaker R, the tweeter L and the tweeter R likewise.

10. A/D converter

* Pay attention not to touch the joystick when starting this test.

10.1. Rotary Encoder (only iS40)

10.1.1.• Turn the rotary encoder and set the finger hook to the top position
• Slowly turn the rotary encoder clockwise four (4) times.
• When the fourth (4th) tern is completed (the finger hook is positioned at the top), check that "|****0" appears.

10.1.2. • Slowly turn the rotary encoder clockwise four (4) times.
• When the fourth (4th) left tern is completed (the finger hook positioned at the top), check that "0****|" appears.

[CURSOR >]

10.2. Acc Slider VR
Move the ACC slider from MIN to MAX and check that the maximum and minimum value 00 to 7F appears. “0” will appear when the value reaches MAX and /or MIN.

10.3. Joystick X (Left/Right test: horizontal movement) (↔)
This indication appears when reaching the maximum (minimum) value.

[CURSOR >]

10.4. Joystick Y (Up/Down test: vertical movement) (↕)
This indication appears when reaching the maximum (minimum) value.

[CURSOR >]

10.5. Assignable Pedal

Operate respectively from MIN to MAX and check that the maximum and minimum values (00 to 7F) appear. When the value reaches MAX and MIN, “0” will appear.

10.6. EC5 (A, B, C, D, E) & Damper pedal (only iS40)

Press the A to E (EC5) ON and OFF individually, turn up and down Damper pedal, and check that “0” appears.

10.7. After Touch (only iS40)

Hit D#4 key and check that the value changes smoothly. It reaches 7F when pressed strongly.
Hit C2 key and check that the value changes smoothly. It reaches 7F when pressed strongly.
Hit C7 key and check that the value changes smoothly. It reaches 7F when pressed strongly.

11. Keyboard

• Hit the keyboard from the highest key to the lowest, and check that the note hit is indicated on the LCD screen.
• The velocity value must be within the range from 43 to 73 in order to proceed to the next key.
• When the lowest key was hit, press it for the next step.

12. Preload and 2DD mode disk check

• If there is the background preload error, retry the preload.
• When the preload data were loaded, check that the screen displays “ARR: ”.
• Press the C3key, then press [Start/Stop] to check the playing.
• Move Master Volume from MAX to MIN and check that the output sound changes smoothly without noise.
• Withdraw the disk and the cables, and turn the power switch OFF for the test.

PART LIST (for iS40 and iS50 unless utherwise specified)

Qty	Code	Description	NOTE
1	GRA0002001	PCB ASSEMBLY KIP-2001	PANEL BOARD iS40
1	GRA1002001	PCB ASSEMBLY KIP-2001	PANEL BOARD iS50
1	GRA0002002	PCB ASSEMBLY KIP-2002	POWER AMPL. iS40
1	GRA1002002	PCB ASSEMBLY KIP-2002	POWER AMPL. iS50
1	GRA0002003	PCB ASSEMBLY KIP-2003	MAIN FILTER
1	GRA0002004	PCB ASSEMBLY KIP-2004	POTENTIOMETER
1	GRA0002005	PCB ASSEMBLY KIP-2005	ROTARY ENCODER iS40
1	GRA0002006	PCB ASSEMBLY KIP-2006	AFTER TOUCH iS40
1	GRA0002044	PCB ASSEMBLY KIP-2044	MAIN BOARD iS40
1	GRA1002044	PCB ASSEMBLY KIP-2044	MAIN BOARD iS50

Part list PANEL PCB KIP-2001 for iS40 (GRA0002001) and iS50 (GRA1002001)

Qty kit1 iS40	Qty kit2 iS50	Code	Reference	Description
1	1	LED0005002	DL33	Bicolor LED 3mm (Red Green)
1	1	QUA0005001	X1	10.0MHz ceramic res. W/C
34	30	LED0005001	DL1-32 DL34-35 (kit2: DL1-25 DL30-32 DL34-35)	LED 2mm H=4mm
1	1	CIN0001001	U1	Panel scan IC MB89635
5	5	TRS0001001	Q1-4 Q15	NPN DIG.TR RN1202
10	10	TRS0001002	Q5-14	PNP DIGI.TR RN2202
97	89	INT0001008	SW1-97	T .S. T=0.2H=5 F=160
1	1	PLA0001045		BICOLOR LED SUPPORT
1	1	CST0001009		KIP-2001 PCB

Part list POWER AMP PCB KIP-2002

Qty	Code	Reference	Description
2	DIX0005001	D1-2	GBU8D BRIDGE RECT.
2	DIX0005002	D3-4	RECT. DIODE 1N4002.
4	FUS0005060	F1-2	FUSE CLIPS 5X20
1	CIN0001003	U4	3 BAND GRAF EQ.M5243
1	TRS0001004	U1	POS REG..5V 2A PQ05RF21
1	TRS0001005	U2	POS REG..9V 1A PQ09RF1
1	TRS0001003	U3	POWER AMPLF.2X15W TDA8560
2	TRS0001001	Q1-2	NPN DIG TRANSISTOR RN1202
1	FUS0005021 FUS0005039	F1 F1	FUSE T3.15A 250V FUSE 3A 125V
1	FUS0005022 FUS0005040	F2 F2	FUSE T4A 250V FUSE 4A 125V
1	CST0001010		KIP-2002 PCB

Part list MAIN FILTER PCB. KIP-2003 (GRA0002003)

Qty	Code	Reference	Description
4	BOB0005001	L300-303	EMI SUPP. COIL
1	FUS0005011 FUS0005032	F300 F300	315mA 250V fuse 750mA 125V fuse
1	INT0001007	MSW300	MAIN SW. SDDFC3
1	FUS0005060		CLIPS 5X20 FUSES
1	CST0001011		PCB KIP-2003

Part list ROTARY ENCODER PCB KIP-2005 for iS40 (GRA0002005)

Qty	Code	Reference	Description
1	INT0001006	RE500	ROT. ENC. EC16B
1	CST0001012		PCB KIP-2005

Part list SLIDE POTENTIOMETER PCB KIP-2004(GRA0002004)

Qty	Code	Reference	Description
1	POT0001003	VR400	SLID.POT. 10KX2 W D.C.
1	POT0001004	VR401	SLID.POT.10KX1 W D.C.
1	CST0001013		PCB KIP-2004

Part list MAIN BOARD PCB KLM-2044 for iS40 (GRA0002044) and iS50 (GRA1002044)

Qty KIT2 iS50	Qty Kit1 iS40	Code	Parts name
2	2	219401400	EMI FILTER SDST310 92D223S50
39	53	40400500	CHIP INDUCTOR SBLM21B102SPT
1	1	304000070	TRANSISTOR2SA812-T1B (M5-7)
6	6	304020230	TRANSISTOR 2SC3661-TA/TB (3K)
1	1	304030140	COMPOUND TRANSISTOR FN1A4M-T1B
1	1	304050120	COMPOUND TRANSISTOR FP1A4M-T1B
1	1	314001400	DIODE RLS-73 TE-11
1	9	315000500	W DIODE MC-2840-T12-1
1	1	314029300	ZENER DIODE HZK5A
1	1	320001529	IC(MAIN CPU) uPD70433GD-16-5BB (V55PI)
1	1	320003217	IC(KEYSCAN) TMP87C847U-4458
1	1	320004538	IC(FDC) HD63266F
1	1	320012181	IC(TGL2A) MB87A104APF-G-BND
1	1	320012216	IC(SYSTEM) MBM29F400BA-90(9709**)
1	1	320004029	IC(STYLE) MX23C1610PC-10-STY is V11
0	0	320006038	IC(STYLE) MSM27C1602CZ-NRS(9708**)
1	1	320012216	IC(BACK UP) MBM29F400BA-90
1	1	320040017	IC(PCM1) MX23C3210MC-15 X790ROMA
1	1	320040018	IC(PCM2 MX23C3210MC-15 X790ROMB
1	1	320040019	IC(PCM3) MX23C3210MC-15 X790ROMC
0	1	320040019	IC(PCM4) MX23C1610MC-15 X790ROMD
1	1	320043002	IC(4x64K DRAM) uPD41464CF-10
0	0	320043001	IC(4x256KDRAM) IN41464P-10
1	1	324005003	IC(16x64KDRAM) LC321664BJ-10/80
0	0	324003006	IC(16x64KDRAM) TC511664A-80J (Substitution)
0	0	324006001	IC(16x64KDRAM) MSM51166AJ-80-TRM (Substitution)
1	1	324011035	IC(256Kx16DRAM) M5M44170CJ-7 L2
1	1	324003010	IC(LOGIC) TC7WU04F
2	2	324004003	IC(LOGIC) HD74HC139FPER
0	0	324004006	IC(LOGIC) HD74HC00FPER
2	2	324004007	IC(LOGIC) HD74HC573FPER
1	1	324004012	IC(LOGIC) HD74HC08FPER
1	1	324004050	IC(LOGIC) HD74HC138FPER
3	3	324004059	IC(LOGIC) HC74HC157FPER
1	1	324004176	IC(LOGIC) HD74HC05FPER
2	2	324001016	IC(OP-AMP)uPC4574G
1	1	324011004	IC(OP-AMP)M5216FP-600C
1	1	324009004	IC(REG) NJM78L05UA-TE2
2	2	324009019	IC(OP-AMP)NJM2115M-TE2
1	1	324011012	IC(RESET) M51953BFP-600C
0	1	324011021	IC(PC I/F) M5M34050FP-42A
1	1	324038002	IC(DAC) TDA1305T/N2-T

1	1	334000600	PC PC-410K
1	1	335400128	X-TAL SMD49 32MHz
1	1	335400117	CERAMIC RESONATOR CSTCS8.00MT-TC
1	1	343020440	PCB KLM-2044

Other Erectric Parts

Qty KIT2 iS50	**Qty Kit1 iS40**	**Parts Code**	**Parts name**
1	1	FDD0002001	CUSTOM LCD ASSEMBLY
1	1	FDD0001003	JOYSTICK ASSEMBLY
1	1	FDD0001001	LOW NOISE F.D.D.
0	1	TAS0001004	61 KEY TP9 FATAR KEYBOARD WITH A. TOUCH
1	0	TAS0001005	61 KEY TP7 FATAR KEYBOARD
1	0	TRA0001004	POWER TRANSFORMER 38VA
0	1	TRA0001003	POWER TRANSFORMER 50VA
0	2	ALT0001004	WOOFER SPEAKER 104MM
0	2	ALT0001005	TWEETER SPEAKER 50MM
2	0	ALT0001006	DUAL CONE 104MM SPEAKER
			AC MAINS CORDS
1	1	RIL0001040	EU
1	1	RIL0001071	US
1	1	RIL0001072	UK
1	1	FDD0001004	ACCESSORY DISK

KORG

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