# KORG KP3 SERVICE MANUAL



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ASSEMBLY SKETCH (HOOKUP): 2 BLOCK DIAGRAM: 3 SCHEMATIC DIAGRAM: 4-6 TEST MODE: 7-10 PAD CALIBRATION: 11-12 PARTS LIST: 13-14



Issued Nov.6, 2006 Ver.2 Changed P11 Added Pad Cal 3/13/08 - GA











How to		2006.8.30 KORG PD3 T.Kanai	
	enter the simple TEST MODE	English by M.Y.	
	Pushing following switches, and turn the power of CONNECTION[SEND] & [7] + [TAP/RANGE] CONNECTION[SEND] & [5] + [TAP/RANGE]	ON. : Skipping the Audio Loop Back Inspection and the USB check : Skipping the MIDI Loop Back inspection and the USB check.	
Other t	test modes for repairing		
	Pushing following switches, and turn the power of CONNECTION[SEND] & [1] + [TAP/RANGE] CONNECTION[SEND] & [2] + [TAP/RANGE] CONNECTION[SEND] & [3] + [TAP/RANGE] CONNECTION[SEND] & [4] + [TAP/RANGE] CONNECTION[SEND] & [6] + [TAP/RANGE]	ON. : Skipping the Audio Measurements and PAD surface inspection : Audio Measurement only : PAD all surface inspection only : Full inspection (Internal and External) : External inspection	
	[TAP/RANGE] + [SAMPLING] [1] + [2] + [SAMPLING] [SAMPLING] + [SAMPLE BANK C] + [SAMPLE	: Display of System Version : Load the Preset BANK D] : IPL Mode	
Functio	ons of switches		
	[TAP/RANGE] [SAMPLE BANK A] [SAMPLE BANK B] [SAMPLE BANK C] [SAMPLE BANK D] [SAMPLE BANK A] + [TAP/RANGE]	: Step Up (When an error occurred in the internal inspection, retry the inspection.) : Step + (Move within the item) : Step - (Move within the item) : Item Number Up : Item Number Down : When an error occurred in the internal inspection, skip the inspection	
Error C	Code		
	KP3 displays the Error Code in the LED, when a 4 digits of the LED indicates the error code.	an error occurred in the internal inspection.	
	[Er.**] * (Ten's digit) : Item number (item of th * (One's digit): Test number( In the int	ne internal inspection) ernal inspection)	
tem	1. DSP IF Check       Notice: When the start-up condition or the forwarding between CPU <-> DSP is NG,         2. DSP - SDRAM Check       KP3 cannot start the test mode, because after the forwarding the Boot code,         3. CPU ROM Check       KP3 moves to the self check sequence (TEST MODE).         4. EEPROM Check       KP3 moves to the self check sequence (TEST MODE).         5. Loop Back Check (Audio)       6. MIDI Loop Check         6. MIDI Loop Check       *USB check needs a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE]         when an array occurred in the inspection		
	6. MIDI Loop Check     7. Card Check     8. USB Check     when an error occ	ts a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia	S. Loop Back Check (Add)     G. MIDI Loop Check     7. Card Check <del>8. USB Check</del> *USB check need     when an error occ	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia	S. LOOP Back Check (Addio)     G. MIDI Loop Check     T. Card Check     *USB check     *USB check when an error occ      Il Settings     Set the volumes and the switches like followings	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia	S. LOOP Back Check     All DLoop Check     S. USB Check     *USB check eee     when an error oce      Set the volumes and the switches like followings     CONNECTION : SEND	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia	S. LOOP Back Check (Addid)     G. MIDI Loop Check     T. Card Check <b>*</b> USB check need     when an error ocd <b>Il Settings</b> Set the volumes and the switches like followings     CONNECTION : SEND     INPUT Select : LINE     INPUTVR : MAX     Fx Depth : MIN     Slider : MIN (0)     PHONES VR : MAX	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia	S. Loop Back Check (Addd)     G. MIDL Loop Check     7. Card Check     *USB check *USB check need     when an error ocd      Set the volumes and the switches like followings     CONNECTION : SEND     INPUT Select : LINE     INPUTVR : MAX     Fx Depth : MIN     Slider : MIN (0)     PHONES VR : MAX     MICTrim:MAX : MAX     SD Card (Protect OFF)	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia	6. MIDI Loop Check 7. Card Check 8. USB Check *USB check need when an error ocd Il Settings Set the volumes and the switches like followings CONNECTION : SEND INPUT Select : LINE INPUTVR : MAX Fx Depth : MIN Slider : MIN (0) PHONES VR : MAX MIC Trim:MAX : MAX SD Card (Protect OFF) m:) Use the AC Adaptor of KA-20*series	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
<b>∗ Initia</b> Cautio	6. MIDI Loop Check 7. Card Check 8. USB Check *USB check need when an error occ al Settings Set the volumes and the switches like followings CONNECTION : SEND INPUT Select : LINE INPUTVR : MAX Fx Depth : MIN Slider : MIN Slider : MIN (0) PHONES VR : MAX MICTrim:MAX : MAX SD Card (Protect OFF) m:) Use the AC Adaptor of KA-20*series	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
<b>* Initia</b> Cautio	S. LOOP Back Check     S. LOOP Check     S. LOOP Check     S. USB Check     *USB check each     when an error occ      Il Settings     Set the volumes and the switches like followings     CONNECTION : SEND     INPUT Select : LINE     INPUTVR : MAX     Fx Depth : MIN     Slider : MIN     Slider : MIN     Slider : MAX     MICTrim:MAX : MAX     SD Card (Protect OFF)     m:) Use the AC Adaptor of KA-20*series  al Inspection	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
<b>★ Initia</b> Caution	S. Loop Pack Check     S. Loop Check     S. USB Chec	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia Cautio	S. Loop Back Check     S. Loop Back Check     S. Loop Check     S. USB Check     S. US	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
* Initia Caution	6. MIDI Loop Check 7. Card Check 8. USB Check *USB check need when an error occ Il Settings Set the volumes and the switches like followings CONNECTION : SEND INPUT Select : LINE INPUTVR : MAX Fx Depth : MIN Slider : MIN (0) PHONES VR : MAX MICTrim:MAX : MAX SD Card (Protect OFF) on:) Use the AC Adaptor of KA-20*series Al Inspection 1. DSP IF Check When an error occurred, the inspectio 2. DSP SDRAM Check	Is a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	
<b>* Initia</b> (Caution	5. Loop Back Check 6. MIDL Loop Check 7. Card Check 8. USB-Check *USB check need when an error occ al Settings Set the volumes and the switches like followings CONNECTION : SEND INPUT Select : LINE INPUT Select : LINE INPUTYR : MAX Fx Depth : MIN Slider : MIN (0) PHONES VR : MAX MICTrim:MAX : MAX SD Card (Protect OFF) an:) Use the AC Adaptor of KA-20*series al Inspection 1. DSP IF Check When an error occurred, the inspection 2. DSP SDRAM Check When "Data Error", the inspection stog When "Address Error", the inspection	ds a special computer, so skip by [SAMPLE BANK A] + [TAP/RANGE] curred in the inspection.	

	4. EEPROM Check			
	When "Verify Error", the inspection stops displaying [Er.41] in the LED display.			
5. OVER LOAD Line Check ( Audio LoopBack ) << <in can="" mode,="" simple="" skip="" test="" the="" this.="" you="">&gt;&gt;</in>				
	a: OUTPUT Lch(LINE IN (Rch: GND Level) Connect the LINE OUT(L) to the LINE IN(L), when the level of the LINE IN(L) is out of the decided range, the inspection stops displaying [Er.51] in the LED display. Connect the LINE OUT(L) to the LINE IN(L), when the level of the LINE IN(R) is more than the decided level, the inspection stops displaying [Er.52] in the LED display.			
	b: OUTPUT Rch(LINE IN (Lch: GND Level) Connect the LINE OUT(R) to the LINE IN(R), when the level of the LINE IN(R) is out of the decided range, the inspection stops displaying [Er.53] in the LED display. Connect the LINE OUT(R) to the LINE IN(R), when the level of the LINE IN(L) is more than the decided level, the inspection stops displaying [Er.54] in the LED display.			
(Caution	) *1 Before the internal inspection, connect LINE OUT(L) to LINE IN(L), LINE OUT( R )to LINE iN ( R ) by two cables. *2 Set INPUT VOLUME at MAX, INPUT SELECT (toggle) is LINE side.			
	6. MIDI Loop Check << <in can="" mode,="" simple="" skip="" test="" the="" this.="" you="">&gt;&gt;</in>			
	When KP3 cannot receive the Data, the inspection stops displaying [Er.61] in the LED display. During receiving the data when KP3 could not receive some data, the inspection stops displaying [Er.62] in the LED display. When the received data is different value, the inspection stops displaying [Er.63] in the LED display.			
(Caution	) *3. Connect MIDI IN and MIDI OUT by a MIDI cable, before the internal inspection.			
	7. Card Check			
	After [C.Ins] is appeared in the LED display, insert a SD card. When a SD card is not inserted and KP3 could not detect that a card is not inserted, [Er.71] is displayed in the LED.			
	After inserted a SD card and remove your hand from the card, then confirm that the card is rocked. When KP3 could not detect that a SD card is inserted, [Er.72] is displayed in the LED. When KP3 could not write or read the data, [Er.73] is displayed in the LED.			
	When the inspection has completed as OK, [C.Pul] is displayed in the LED, then pull out the SD card.			
(Caution	) *4 Use the SD card as protect OFF. *5 Do not insert the SD card before [C.Ins] is displayed in the LED.			
	8. USB Check << Skip this inspection>>			
	* The special computer is needed for this inspection, so skip by [SAMPLE BANK A] + [TAP/RANGE]. * Errors are displayed as [Er.8*], ignore these errors.			
	9. All LEDs light			
	a. Confirm that all LEDs light. All LEDs except followings light. : LEDs(8x8) of PAD, 7segments LED[8888], [SMPL]SW LED of two colors are followings .:PEAK, [TAP/RANGE], [SAMPLE BANK A], [SAMPLE BANK B], [SAMPLE BANK C], [SAMPLE BANK D] Confirm that there is not the uneven brightness, and that there is not slanted LED.			
	After the confirmation, push [TAP/RANGE], then the inspection proceeds to 10 External Inspection.			
	10. 7 Segments LED, segments light one by one. For each digit, segments light one by one like the right figure. After confirmation of the four digits, push [TAP/RANGE] SW and proceed to next inspection.			
(Caution	) *6. You need all digit's inspection to proceed to the next inspection.			



Confirm that there is no rubbing or feeling of not smooth when rotation.

After the confirmation, proceed to next inspection.

#### 15. LEVEL (Slider) Check

[SLdr] is displayed in the LED display.

Push [TAP/RANGE] to start the inspection.

Move LEVEL slider from MIN(lowest)->MAX(highest)->MIN(lowest)

At MIN(lowest) position, all LEDs of [1]-[8] are OFF. Move to MAX(highest), [1], [2], [3], [4], [5], [6], [7], [8] LEDs turn ON (increasing one by one), At MAX(highest) position all LEDs of [1]-[8] turn ON. Move to MIN(lowest), LEDs turn OFF one by one (decreasing).

Confirm that there is no rubbing or feeling of not smooth when moving. After the confirmation, proceed to next inspection.

#### 16. Touch PAD Check

[Pd.1] is displayed in the LED display.

One LED upper left turns ON, push this part by your finger then  $[P_1]$  is displayed in the LED then remove the finger from the PAD. The next LED turns ON.

[P2.] is displayed in the LED display. 4 LEDs of upper left turn ON, push the center of these then [P\_2] is displayed in the LED. then remove the finger from the PAD.

[P3.] is displayed in the LED display. One LED lower right turns ON, push this part by your finger then [P\_3] is displayed in the LED then remove the finger from the PAD.

After removing the finger from PAD, inspection proceeds to next.

#### 17. Touch PAD Calibration

Complete steps 2 & 3 of "Calibrating the Touch Pad" on the next page; or push [SAMPLE BANK D] to skip this item.

#### 18. Inspection of the PAD surface.

After audio measurement, push [SAMPLE BANK D] then [Pd.2] is displayed in the LED and start the inspection of the PAD surface. When you touch the PAD, KP3 sounds.

Stroke slowly all the surface of the PAD and confirm that the frequency of the sound does not change. When the sound changed to high frequency sound, the inspection is NG because other part than the part you touch is pushed. When stroking the PAD, confirm that there is not strange feeling.

Confirm that sound stops when you remove the finger from the PAD. The inspection is NG when the sound does not stop after removed from the PAD.

Confirm that there are no dusts and etc. on the surface and beneath the PAD.

#### 19.Preload

Move the [CONNECTION]SW to "DIRECT" to the status of waiting for the preload. [PrLd] is displayed in the LED display, pushing [SAMPLE BANK A] sw and push [TAP/RANGE] to execute the preload. After finished preload, KP3 restarts in normal operation and [LOAd] in the LED display changes to [FLE.1]. [FLE.1] is not displayed in the LED display after few while the preload is failed.

## Calibrating the Touch Pad

Depending on the operating environment, the touch pad segments that light when the pad is pressed might be out of position. When this happens, the following steps should be taken to re-calibrate the touch pad.

Please use a plastic pointing device such as a PDA stylus or a gaming device touch pen. using a sharp or metallic object will risk damaging the touch pad surface.

1. Turn on the power while pressing the PROGRAM MEMORY 7, PROGRAM MEMORY 8 and [SAMPLING] buttons.

"CAL.1" should appear on the display and the four bottom left touch pad segments should light up.

2. Using the pointing device, lightly touch the centre of the four lit segments where the grid lines cross as shown in the diagram below.





!NOTE! do not move the pointing device from this position while the pad is touched.

After touching this point for a short while, the calibration will move onto the next step: the next set of four segments will light and the display should read "CAL.2".

 Remove the pointing device from the touch pad and repeat for the next position indicated by the segment lights.
 Complete all four steps as shown in the following diagrams.







4. After completing the four steps, the touch pad lights will go out and "P.oFF" will be displayed.

!NOTE! do not turn the power off until "P.oFF" is displayed.

5. The unit is now re-calibrated. Turn the power off and on as usual and confirm that the KP3 operates correctly.

KOKG KF3 FAKTS L	31	<b>—</b> (N)	
Part Number	Category	Part Name	QTY
510306510001	POWER MOS FET	CPH6316-TL-E (S)	1
510310510502	DOUBLE DIODES	MC2840-T112-1 (S)	1
510310511507		$PI S_73 TE_{-11} (S)$	22
510510511507		RL3-73 TE-TT (3)	22
510310511506	SCHUTTKY DIODE	RB051L-401E25 (S)	2
510310511001	ZENER DIODE	RD10M-T1B-A (B3) (S)	1
510300510503	TRANSISTOR	2SA812-T1B-A M5-7 M6 RANK(S)	3
510300510502	TRANSISTOR	29C1623A T1P AT	1
510300510302	TRANSISTOR		
510300511504	TRANSISTOR	2SC3661-TB-E (S)	4
510300511009	DIGITAL TR	DTC114EKA T146 (TS) (S)	16
510300511015	DIGITAL TR	DTB143EK T146 (S)	16
E10212E12001			00
510312513001		10-2013BC-IVIRE (S)	80
510312513009	Chip LED	TO-3227BC-MRMG EE (S)	6
510316521502	SEGMENT LED	TOF-3461BH-B9	1
510646502093		X-5500 LED SPACER_E10236-2(D)	1
510040502095	ODAMD	N=5500 EED SI ACEIN E 10230-2(D)	
510324021160	OPAMP	NE5532DR (15)	3
510320511008	OPAMP	NJM4556AM-TE1-#ZZZB (S)	1
510320515502	Logic IC	SN74LVU04APWR	1
510320516020			1
510320510029		SN74LV 123AF WR (3)	
510320516013		SN74LV126APWR (S)	1
510320516016	Logic IC	IC SN74LV138ANSR (TS) (S)	2
510320516056		SN741 V574ANSR (S)	2
510320510030			
510320516010		SN/4LV05APVVR (S)	1
500324023008	IC	S-8520F33MC-BNST2G	1
510320511009	REGULATOR IC	NJM78L05UA-TE2 (TS)(S)	1
510320514025		PA17810ED	1
510320314023			
510320514026	LDOIC	BD00KA5WF	1
500330003700	PHOTO COUPLER	PS9117-F3-A	1
510320512002	RESETIC	M51953BEP#CE1J (S)	1
E00224019019	EEDDOM		1
500324018018			
500320004718	CPU	HD64F2215UTE16V (X5500)	1
510320516070	DSP	TMS320VC5501PGF300	1
500324026004	SDRAM	MT48I C8M16A2P-75 G TR	1
540224020004			
510324019513	A/D Converter	AK5381V1	1
510324038010	D/A Converter	AK4384ET-E2	1
510335520001	CRYSTAL	HC-49US 16MHZ (D)	1
510335520007	CRYSTAL	$H_{C-49US} = 20.000MHZ (D)$	1
510555520007			
510335552008	CRYSTAL	HC-49US 24.576MHZ SS (D)	1
510374524026	SLIDE VR	RA4522F-20-15C1-B5K-0015	1
510370521001	ROTARY ENCODER	RF111F-41B1-15F-15P-05	1
E10274E24027			1
510374524027		RV112DCF-40-20A-D10K	
510374524017	ROTARY VR	RV09ACF-40-20F-B5K-0057	1
510360521510	VR	R0923NOAH1B104FE0061 (D)	1
510360521511	VR	R0925GOAH1B103EE0061 (D)	1
E104E0E20010		CT 1550 01 01 00	
510450520019	DIN JACK	51-1550-01-51-60	2
510474520501	USB CONNECTOR	GE813A02 (USB B TYPE) (D)	1
510450520008	PHONE JACK	MJ-081 (PHONE-J MONO GOLD) (D)	1
510450520000			1
510450520009		$\frac{1}{100} = 0040  04  (D)$	
510450520010	RUA PIN JACK	KUA-204G-04 (D)	2
510450522504	DC JACK	PJCP042100-42-0 (D)	1
510374522002	SLIDE SW	SK-22D06G8 2P2T (D)	1
E10274E22019		TE 22E01 AC19 NI	1
510574522016	DUGULE SW		
510374520004	PUSH SW	SPUN192600 (D)	1
510450520011	RCA PIN JACK	SHIELD PLATE RCA-204-E (D)	2
510470521003	HARNESS	HNS-3153 FLATCABLE 5P 2MM (D)	
E10470E21005			
510470521005	TAKINESS	TINO-0100 OF ZIVINI BU-IN/HSG (U)	1
510474523003	CONNECTOR	5597-04APB7F (39532044)	1
500474043700	FFC CONNECTOR	XF2M-5015-1A	2
510/70521552	FEC	HNS-3647	1
510470521552			
5104/4510501		AXA2730211	1
500415004302	TOUCH PANEL	N010-0517-T902	1
510C33682734	PCB ASS'Y	KI M-2734-KP3 (ASS'Y)	(1)
510032602725		KIM 2735/6 KD3 (ASS'V)	
51003082735		NLIVI-21 30/0-NM3 (ASS I)	(1)
510640507004	Mechanical Part	X-5500 UPPER CASE KOC-C10259	1
510640506510	Mechanical Part	X-5500 BOTTOM PLATE KOC-C30714	1
510500502524	Mochanical Part		1
510500502551		A-0000 RUDDER RET 1 RUG-E30429	
510500502532	Mechanical Part	X-5500 RUBBER KEY 2 KOC-E30430	1
510500502522	Mochanical Dart		1
510500502533		A-0000 RUDDER KET 3 NUU-E30431	
510500502534	Mechanical Part	X-5500 RUBBER KEY 4 KOC-E30432	1
510500502535	Mechanical Part	X-5500 ENCORDER KNOB E30426	1
E10646502004	Mochanical Dart		+
510040502094		A-0000 VR NIVOD NUC-E0042/	4
510646502095	Mechanical Part	X-5500 SLIDER KNOB KOC-E30428	1

### KORG KP3 PARTS LIST

Part Number	Category	Part Name	QTY
500620040700	Mechanical Part	KNOB P423-90F(X-9100) E40519-1	2
500620018201	Mechanical Part	PSW KNOB (בֹּיָבי) E40224	1
510646502096	Mechanical Part	X-5500 SD FRAME KOC-E20275	1
510646502099	Mechanical Part	X-5500 LCD FRAME KOC-E20276	1
510646506504	Mechanical Part	X-5500 SUPORT PLATE KOC-F30119	1
510646506505	Mechanical Part	X-5500 WINDOW KOC-F41269	1
510646502097	Mechanical Part	X-5500 LED FRAME KOC-E10236-1	1
510500501515	Mechanical Part	X-5500 SWITCH MASK KOC-F41307	1
510500500008	Mechanical Part	X-332CHINA URETHANE-LEG F40709	4
510500501510	Mechanical Part	SHIELD FORM 10X10X60	1
510500501511	Mechanical Part	SHIELD FORM 10X10X12	1
510405540009	AC ADAPTER	KA-201 12V 700mA EIAJ-Plug(100JP)	(1)
510405540010	AC ADAPTER	KA-203 12V 700mA EIAJ-Plug(120US/CN/EX)	(1)
510405540011	AC ADAPTER	KA-209 12V 700mA EIAJ-Plug(230GE/FR/WG)	(1)
510405540012	AC ADAPTER	KA-206 12V 700mA EIAJ-Plug(230UK)	(1)