TESTING PROCEDURE

1) Be sure to have all the required test tools:

    1   Oscilloscope

    2   Audio Analyzer

    3   1 x USB Flash Memory

    4   Stereo jack loaded 47   + 47

    5   Damper Pedal DS1H

    6   Expression Pedal EXP2

    7   2 x Dummy mono 1/4″ jacks (6mm)

    8   USB cable with A and B connectors

    9   MIDI cable

    10   TVC with RCA 75   video composite cable

    11   Microphone Dynamic (no phantom supply)

    12   Headpho

2) Using a screwdriver, remove the Battery/microSD compartment's plastic cover.
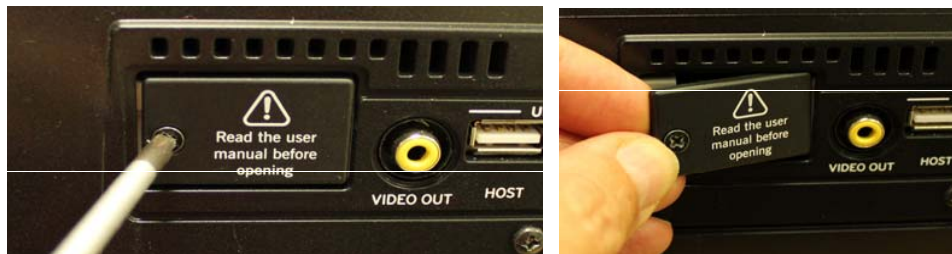
3) Insert the microSD into the socket, and check if a battery is already inserted.

4) Switch on Pa700/Pa700-OR by keeping the ⏻ button pressed. Release the button as soon as its LED becomes red.

4.a)   As soon as Pa700/Pa700-OR is ready, check the internal clock.
4.b)   Press [GLOBAL].
4.c)   Touch [General Controls].
4.d)   Touch [Clock & Power].
4.e)   Verify the date and the clock time, and eventually set them.
4.f)   Press [EXIT] and turn the keyboard off.

5) Connect the oscilloscope probe to the LEFT OUT jack socket, insert a dummy mono jack in the RIGHT OUT jack socket, use a MIDI cable to connect in a loop the MIDI IN and MIDI OUT sockets, insert the USB Flash memory into the USB sockets (front and rear), connect the DS1H Damper pedal and the EXP2 Expression pedal, connect the USB cable to a PC, connect the AC power cord.

6) Rotate the MASTER VOLUME knob to MAX, then turn on the instrument (Pa700/Pa700-OR) by pressing and keeping pressed these buttons on the control panel:

[STYLE PLAY] + [MEDIA] + ⏻

7) Then only release the ⏻ button as soon as its LED becomes red. Keep the other buttons pressed.

8) Release the [STYLE PLAY] and [MEDIA] buttons as soon as the display shows the Touch Panel Calibration page. Calibrate the touch panel by touching the four display corners when the animated icon moves to them, then touch the Save button on the display to save the calibration settings.
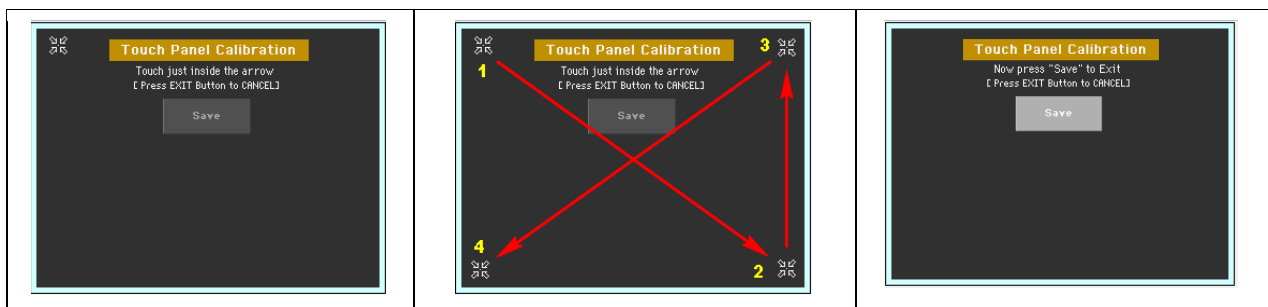
9) Wait for the following message:
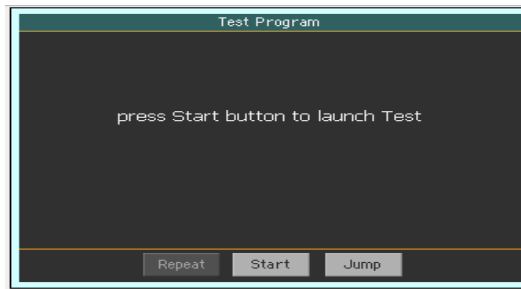
10) Touch the Jump button on the display, to make the following page appear:
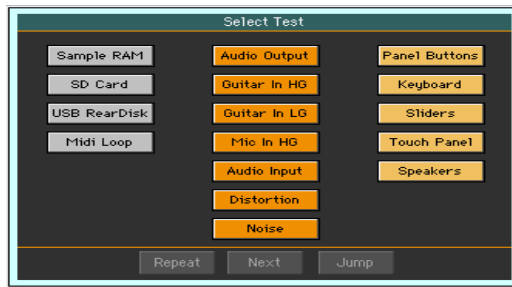

If the clock battery is not installed, or the date and time are wrong, this message appears in the LCD:

In this case turn the instrument off, insert the battery (if it isn't already inside the battery socket) and turn the instrument on again. Wait for the default screen, then set the date and time:

Global General Controls Clock & Power Set Data and Time Apply turn the instrument off.

Go back to step 5), and press the Jump button. Start the test from the Sample RAM test. The internal test will automatically verify:

SAMPLE RAM	↔SD Card	USB Host Disk test	MIDI Loop
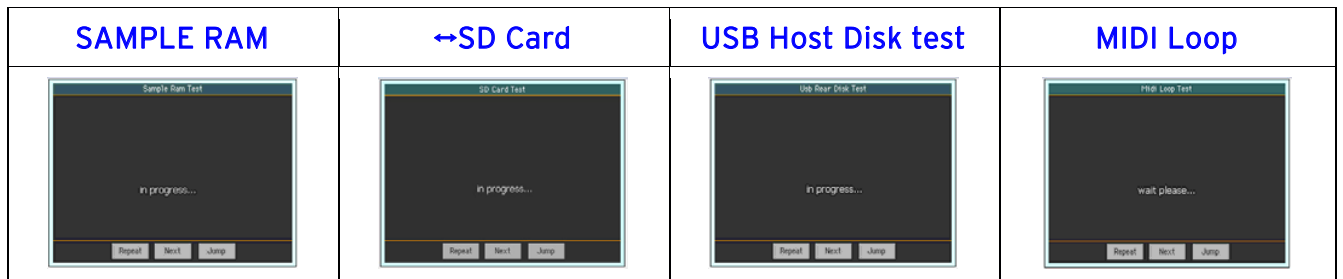
11) When all these tests have been completed, the <mark>Audio Output</mark> - <mark>Guitar In HG</mark> - <mark>Mic In HG</mark> - <mark>Audio Input</mark> tests will begin. See below for detailed information.

Analogue Audio Output Test: This includes four separate steps. Measure the sine wave level with the oscilloscope connected to one of the audio outputs. Touch the Next button on the display to go to the next step. To do a correct measurement, insert a dummy jack in the Right output while measuring the Left output, and vice-versa. Do the same for the OUT-1 e OUT-2 outputs.

Audio Output: Out Left - Out Right - Out HP Left - Out HP Right

Left	Right	HP Left	HP Right
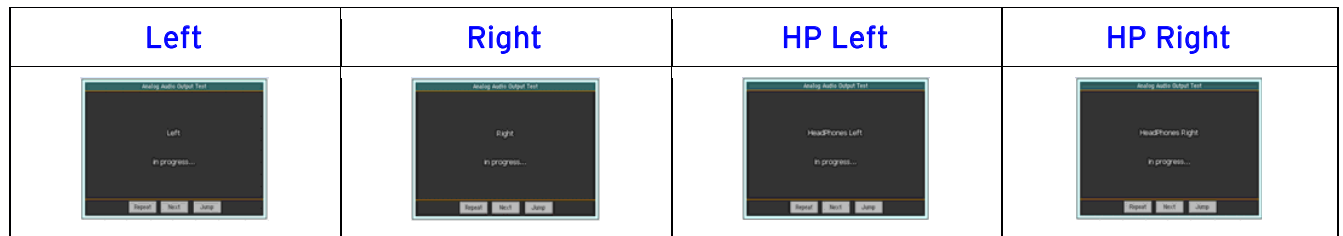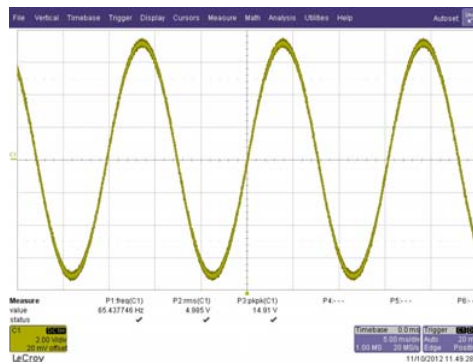
Output Levels:

Output	Output load: 10Kohm			
	Min. Level Vpp	Max Level Vpp	Frequency	
Left	21	25	440 Hz	
Right	21	25	880 Hz	
HP out	Headphones Load 47 + 47ohm			
	Min. Level Vpp	Max Level Vpp	Frequency	
Left	4	8	1,8 kHz	
Right	4	8	3 kHz	

12) *Guitar Input High Gain (HG) Test:* This includes one step: Left Out. Rotate the MIC/GTR gain potentiometer to max gain. Measure the sine wave level with the oscilloscope connected to the Left output. Connect the audio analyzer's 600Ω output to Pa700/Pa700-OR Mic/GTR/Left Input socket, and a 560KΩ resistor in series to the input jack. Then Check the signal level of the following signal paths: Guitar In to Left Out.
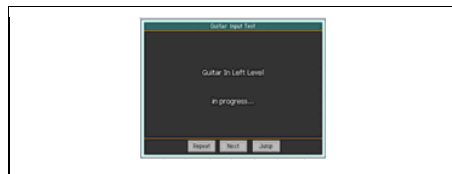
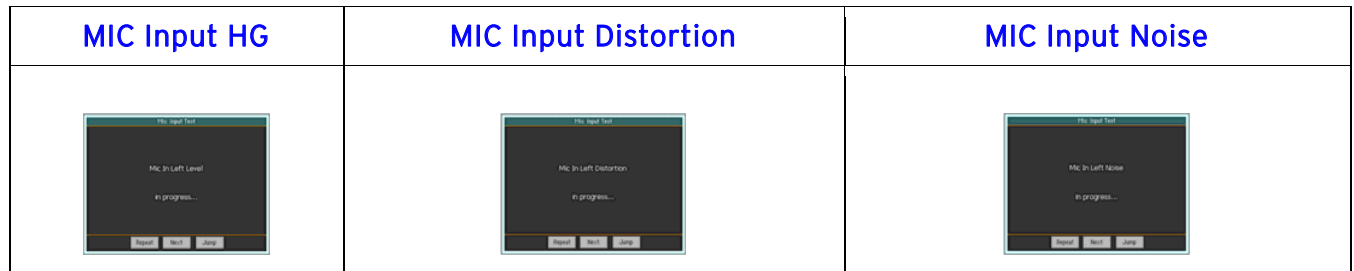| Frequency	Left Input	Left Out 10Kohm LG	
	Input Signal Level	Min. Level	Max Level
1 kHz	0,4 Vpp	25 Vpp	28 Vpp

13) *Guitar Input Low Gain (LG) Test:* Rotate the MIC/GTR gain potentiometer to minimum gain.

Frequency	Left Input	Left Out 10Kohm LG	
	Input Signal Level	Min. Level	Max Level
1 kHz	10 Vpp	3 Vpp	7 Vpp

Touch the Next button on the display to go to the next step.

14) *Mic Input High Gain Test:* This includes three separate steps (one for the Left Out, one for the Distortion Left Out, and one for the Noise Left Out). Rotate the MIC/GTR gain potentiometer to max gain. Measure the sine wave level with the oscilloscope connected to the Left output. Connect the audio analyzer's 600 output to Pa700/Pa700-OR's Left input and check the signal level of the following signal paths: Left In to Left Out, Distortion Left Out, Noise to Left. Touch the Next button on the display to go to the next step.

MIC Input HG	MIC Input Distortion	MIC Input Noise

Signal level input: 0.150 Vpp. Signal level frequency: 1kHz.

Frequency	Left Out 10Kohm		Distortion Left Out 10Kohm	
	Min. Level	Max Level	Min. Level	Max Level
1 kHz	20 Vpp	24 Vpp	0.01%	0.2%
	Noise Left Out			
	Min. Level	Max Level		
	-100dB	-80dB		

Distortion Test: The distortion level shall be less than 0.2%.

Noise Test: The noise level shall be less than -80dB.

15) *Input Left and Right Test:* This includes twelve separate steps (three for the Left Out, three for the Right Out, and six for the Headphones Out). Measure the sine wave level with the oscilloscope connected to one of the outputs, measure the distortion and the noise with the Audio Analyzer. Connect the audio analyzer's 600 output to Pa700/Pa700-OR's input and check the signal level of the following signal paths: Left In to Left Out (with a dummy jack inserted in the Right input), Right In to Right Out (with a dummy jack inserted in the Left input), Left In to Left Headphones Out, Right In to Right Headphones Out.

Touch the Next button on the display to go to the next step.

Audio In Test
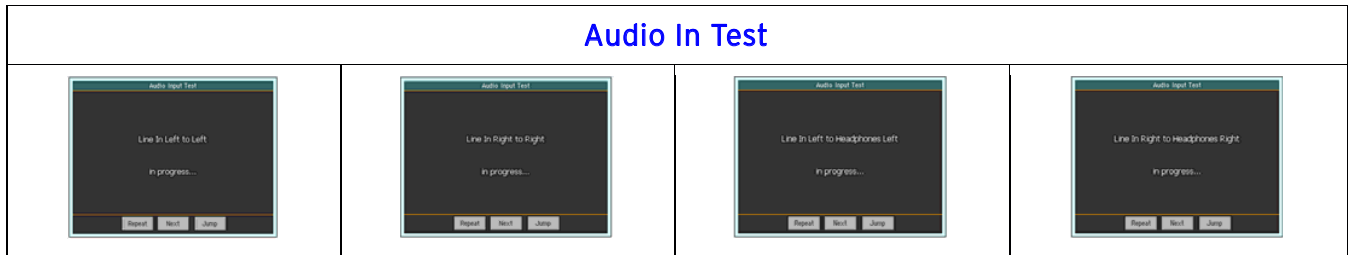
Signal level input: 14 Vpp

Output level				
Frequency	**Left Out 10Kohm**		**Right Out 10Kohm**	
	Min. Level	**Max Level**	**Min. Level**	**Max Level**
1 kHz	11 Vpp	15 Vpp	11 Vpp	15 Vpp

Signal level input: 3,5 Vpp

Headphones Output level				
Frequency	**Headphones Left 47ohm**		**Headphones Right 47ohm**	
	Min. Level	**Max Level**	**Min. Level**	**Max Level**
1 kHz	1 Vpp	3 Vpp	1 Vpp	3 Vpp

Touch the Next button on the display to go to the next step.

16) *Distortion Test:* Measure the sine wave distortion. Connect the audio analyzer's 600 output to Pa700/Pa700-OR inputs, and Pa700/Pa700-OR outs to the input of the audio analyzer. Check the distortion in the following signal paths: Left In to Left Out (with a dummy jack inserted in the Right input), Right In to Right Out (with a dummy jack inserted in the Left input), Left In to Left Headphones Out, Right In to Right Headphones Out.

Distortion Test
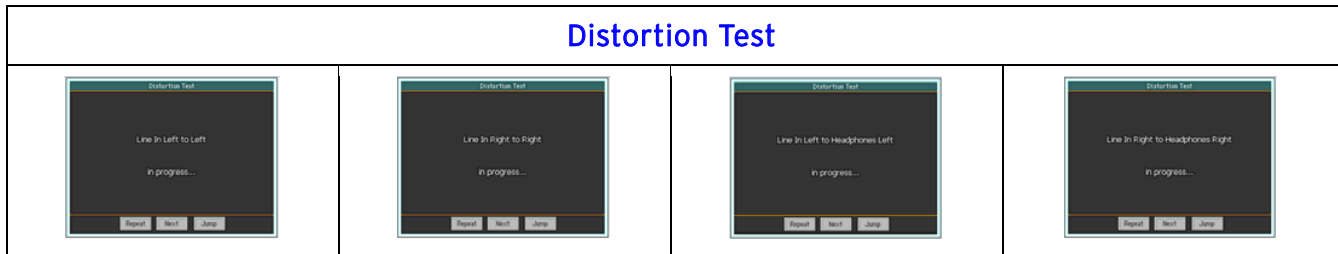
Frequency	**Left Out 10Kohm**		**Right Out 10Kohm**	
	Min. Level	**Max Level**	**Min. Level**	**Max Level**
1 kHz	0.01%	0.2%	0.01%	0.2%

Frequency	Headphones Left 47ohm		Headphones Right 47ohm	
	Min. Level	Max Level	Min. Level	Max Level
1 kHz	0.01%	0.2%	0.01%	0.2%

17) *Noise Test:* Use the audio analyzer to measure the noise level. Connect the audio analyzer to the Pa700/Pa700-OR Left Out, Right Out, Left Headphones Out, Right Headphones Out connectors.

Noise Test
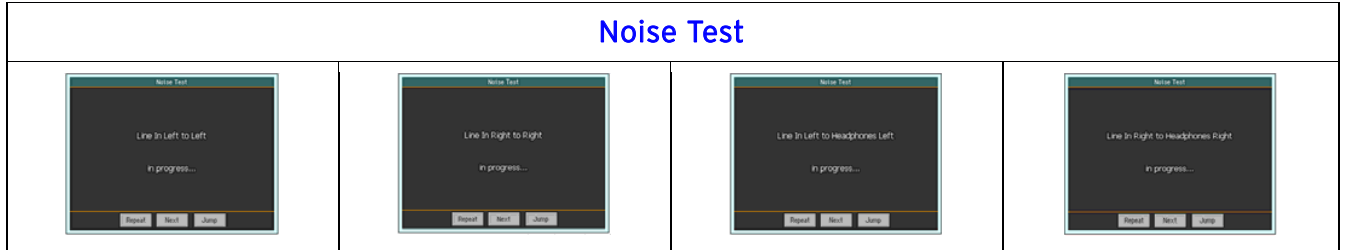
	Noise Left Out 10Kohm		Noise Right Out 10Kohm	
	Min. Level	Max Level	Min. Level	Max Level
	-100dB	-80dB	-100dB	-80dB
	Noise Headphones Left 47ohm		Noise Headphones Right 47ohm	
	Min. Level	Max Level	Min. Level	Max Level
	-100dB	-80dB	-100dB	-80dB

18) *Panel Buttons Test*.

Pa700	Pa700-OR
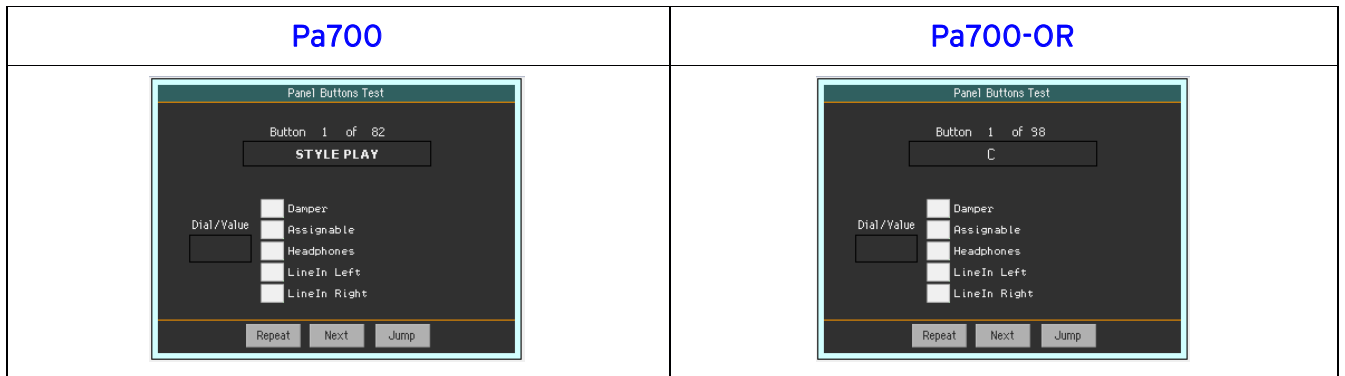
19) *Dial/Value Test:* Rotate the DIAL clockwise, until you read +48; then rotate it counterclockwise, until you read -48; at this point, the check box should become green.

20) *Jack Sense Test:*
20a)   Connect, remove, connect again the Damper pedal's jack to the Damper socket. When done, the Damper checkbox will appear filled.
20b)   Connect, remove, connect again the Expression pedal's jack to the Assignable socket. When done, the Assignable checkbox will appear filled.
20c) Connect, remove the Headphones jack to the Headphones socket. When done, the Headphones checkbox will appear filled.
20d)   Connect, remove, connect again a dummy jack to the Left Input. When done, the Line In Sense checkbox will appear filled.
20e)   Connect, remove, connect again a dummy jack to the Right Input. When done, the Line In Sense checkbox will appear filled.

Pa700	Pa700-OR
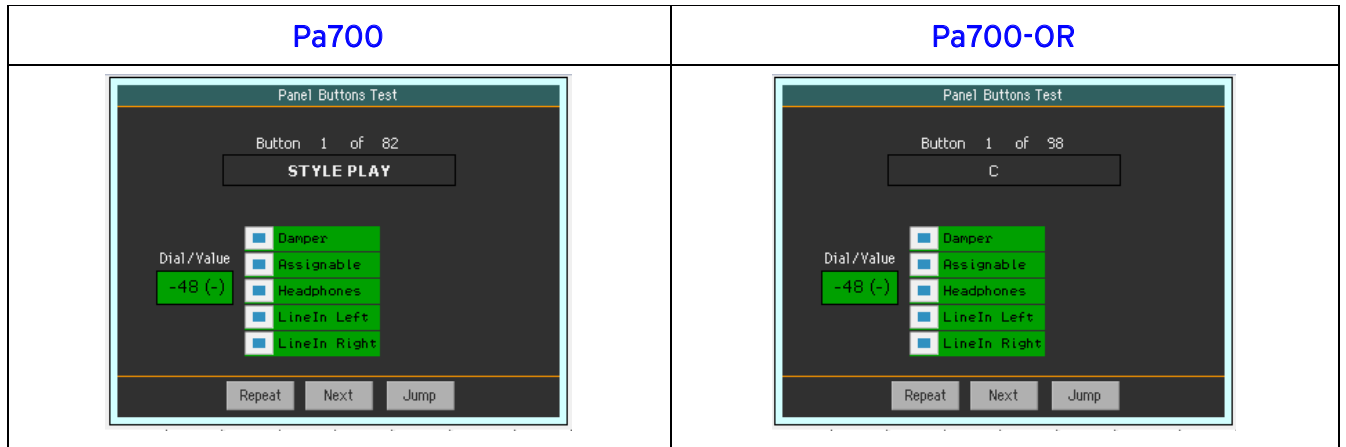
21) Check all buttons as in the following tables.

Pa700					
It	SW	LED On	It	SW	LED On
1	Style Play	Style Play	42	Ensemble	Ensemble
2	Song Play	Song Play	43	Upper Octave -	*All LED*
3	Sequencer	Sequencer	44	Upper Octave +	*All LED*
4	Sound Edit	Sound Edit	45	Transpose b	*All LED*
5	Global	Global	46	Transpose #	*All LED*
6	Media	Media	47	Ass. SW 1 Red	Ass. SW 1 Red
7	Lyrics	*All LED*	48	Ass. SW 1 Green	Ass. Sw 1 Green
8	Marker	*All LED*	49	Ass. SW 2 Red	Ass. SW 2 Red
9	Score	*All LED*	50	Ass. SW 2 Green	Ass. Sw 2 Green
10	Player Select	*All LED*	51	Ass. SW 3 Red	Ass. SW 3 Red
11	Player << REW	*All LED*	52	Ass. SW 3 Green	Ass. Sw 3 Green
12	Player >> FFWD	*All LED*	53	Intro 1	Intro 1
13	Player Home ◀	*All LED*	54	Intro 2	Intro 2

14	Player Play ▶■	▶ ■	55	Intro 3	Intro 3
15	Exit	*All LED*	56	Variation 1	Variation 1
16	Menu	*All LED*	57	Variation 2	Variation 2
17	Chord Sequencer	Red LED	58	Variation 3	Variation 3
18	Chord Sequencer	Green LED	59	Variation 4	Variation 4
19	Accomp.	Accomp.	60	Auto Fill	Auto Fill
20	Memory	Memory	61	Break	Break
21	Manual Bass	Manual Bass	62	Ending 1	Ending 1
22	Pad 1	*All LED*	63	Ending 2	Ending 2
23	Pad 2	*All LED*	64	Ending 3	Ending 3
24	Pad 3	*All LED*	65	Syncro Start	Syncro Start
25	Pad 4	*All LED*	66	Syncro Stop	Syncro Stop
26	Pad Stop	*All LED*	67	Start / Stop Red	Start/Stop Red
27	Style to KBD set	Style to KBD set	68	Start / Stop Green	Start/Stop Green
28	Style Select	*All LED*	69	Tap Tempo Reset	*All LED*
29	Record	Record	70	Fade IN/OUT	Fade IN/OUT
30	TRK Sel	*All LED*	71	My Setting	*All LED*
31	Keyb. Set 1	*All LED*	72	Songbook	*All LED*
32	Keyb. Set 2	*All LED*	73	Set List	Set List
33	Keyb. Set 3	*All LED*	74	Piano & El. Piano	Piano & El. Piano
34	Keyb. Set 4	*All LED*	75	Organ	Organ
35	Search	*All LED*	76	Guitar	Guitar
36	Shift	*All LED*	77	String	String
37	Tempo -	*All LED*	78	Brass	Brass
38	Tempo +	*All LED*	79	Trumpet & Trombone	Trumpet & Trombone
39	Tempo 🔒	Tempo 🔒	80	Sax & Woodwind	Sax & Woodwind
40	Metronome	Metronome	81	Synt & FX	Synt & FX
41	Split	Split	82	Ethnic	Ethnic

It	SW	LED On	It	SW	LED On
	Pa700-ORIENTAL				
It	**SW**	**LED On**	**It**	**SW**	**LED On**
1	C	C	50	Keyb. Set 4	*All LED*
2	C#	C#	51	Search	*All LED*
3	D	D	52	Shift	*All LED*
4	D#	D#	53	Tempo -	*All LED*
5	E	E	54	Tempo +	*All LED*
6	F	F	55	Tempo 🔒	Tempo 🔒
7	F#	F#	56	Metronome	Metronome
8	G	G	57	Split	Split
9	G#	G#	58	Ensemble	Ensemble
10	A	A	59	Upper Octave -	*All LED*
11	A#	A#	60	Upper Octave +	*All LED*
12	B	B	61	Transpose b	*All LED*
13	SC 1	SC 1	62	Transpose #	*All LED*
14	SC 2	SC 2	63	Ass. SW 1 Red	Ass. SW 1 Red
15	SC 3	SC 3	64	Ass. SW 1 Green	Ass. Sw 1 Green
16	SC 4	SC 4	65	Ass. SW 2 Red	Ass. SW 2 Red
17	Style Play	Style Play	66	Ass. SW 2 Green	Ass. Sw 2 Green
18	Song Play	Song Play	67	Ass. SW 3 Red	Ass. SW 3 Red
19	Sequencer	Sequencer	68	Ass. SW 3 Green	Ass. Sw 3 Green
20	Sound Edit	Sound Edit	69	Intro 1	Intro 1
21	Global	Global	70	Intro 2	Intro 2
22	Media	Media	71	Intro 3	Intro 3
23	Lyrics	*All LED*	72	Variation 1	Variation 1
24	Marker	*All LED*	73	Variation 2	Variation 2
25	Score	*All LED*	74	Variation 3	Variation 3
26	Player Select	*All LED*	75	Variation 4	Variation 4
27	Player << REW	*All LED*	76	Auto Fill	Auto Fill
28	Player >> FFWD	*All LED*	77	Break	Break
29	Player Home ◄	*All LED*	78	Ending 1	Ending 1
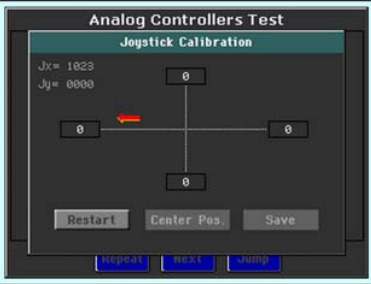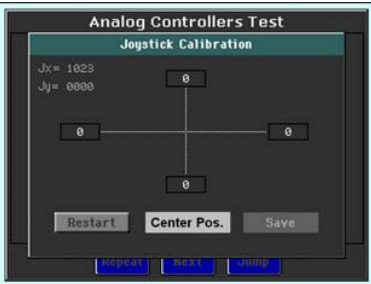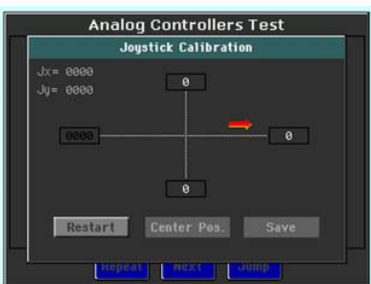
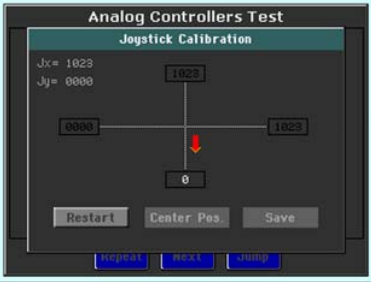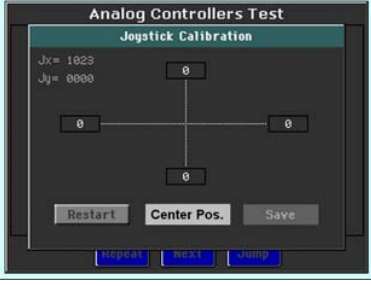|					
30	Player Play ▶■	▶ ■	79	Ending 2	Ending 2
31	Exit	*All LED*	80	Ending 3	Ending 3
32	Menu	*All LED*	81	Syncro Start	Syncro Start
33	Chord Sequencer	Red LED	82	Syncro Stop	Syncro Stop
34	Chord Sequencer	Green LED	83	Start / Stop Red	Start/Stop Red
35	Accomp.	Accomp.	84	Start / Stop Green	Start/Stop Green
36	Memory	Memory	85	Tap Tempo Reset	*All LED*
37	Manual Bass	Manual Bass	86	Fade IN/OUT	Fade IN/OUT
38	Pad 1	*All LED*	87	My Setting	*All LED*
39	Pad 2	*All LED*	88	Songbook	*All LED*
40	Pad 3	*All LED*	89	Set List	Set List
41	Pad 4	*All LED*	90	Piano & El. Piano	Piano & El. Piano
42	Pad Stop	*All LED*	91	Organ	Organ
43	Style to KBD set	Style to KBD set	92	Guitar	Guitar
44	Style Select	*All LED*	93	String	String
45	Record	Record	94	Brass	Brass
46	TRK Sel	*All LED*	95	Trumpet & Trombone	Trumpet & Trombone
47	Keyb. Set 1	*All LED*	96	Sax & Woodwind	Sax & Woodwind
48	Keyb. Set 2	*All LED*	97	Synt	Synt
49	Keyb. Set 3	*All LED*	98	Ethnic	Ethnic
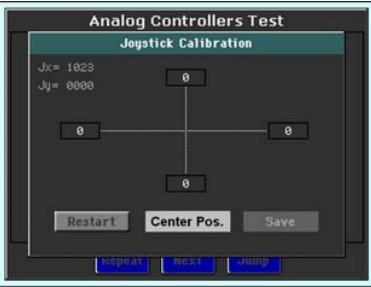
22) After the Ethnic button test, start the *Keyboard Test*. Press all the keys from right to left, one after the other. Apply a playing strength (velocity) between 30 and 110.
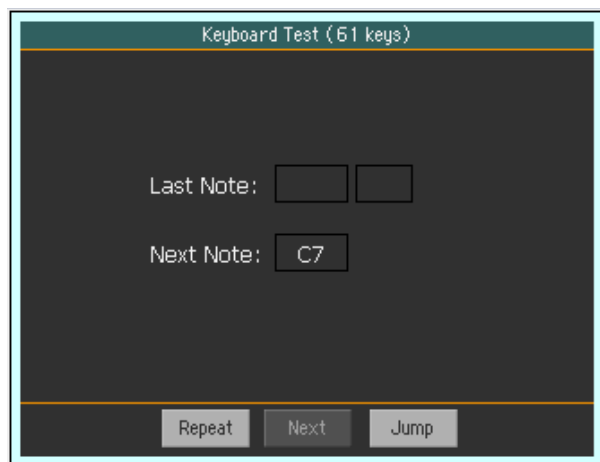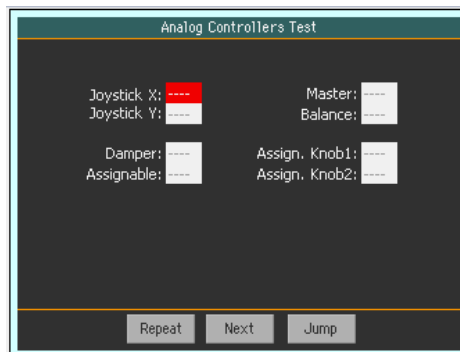
23) After having played C2, the *Analog Controllers Test* will start. First of all, do a *Joystick Calibration*:
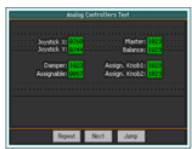
23.a) First, you must do joystick calibration:
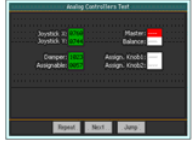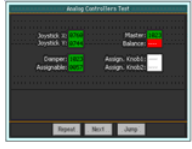
|	
	Move the joystick fully to the left and release it
	Touch the Center Pos. button on the display
	Move the joystick fully to the right and release it.
	Touch the Center Pos. button on the display
	Move the joystick fully up and release it.

|	
	Touch the Center Pos. button on the display
	Move the joystick fully down and release it
	Touch the Center Pos. button on the display
	Touch the Save button on the display

24) Check all theh analog controllers:

|	
	Joystick X: Move the joystick from left to right (0-1023); when in the center position, the value must be `512` **Joystick Y**: Move the joystick from down to up (o-1023); when in the center position, the value must be `512`
	Damper: Press it and verify that the value field becomes green:
	Assignable pedal: Press it and verify that the value field becomes green:
	Master: Rotate it and verify that the value field becomes green. (0-1023)
	Balance: Rotate it and verify that the value field becomes green. (0-1023)
	Assignable Knobs 1: Rotate it and verify that the value field becomes green. (0-1023)
	Assignable Knobs 2: Rotate it and verify that the value field becomes green. (0-1023)

25) The *Touch Screen Test* comes next. Slide up a finger on the display; check the corners' and borders' sensitivity.
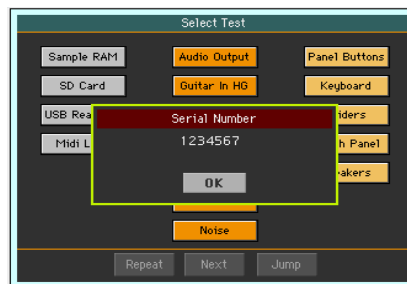
X = 0 - Y = 0	X = 0 - Y = 255	X = 255 - Y = 0	X = 255 - Y = 255
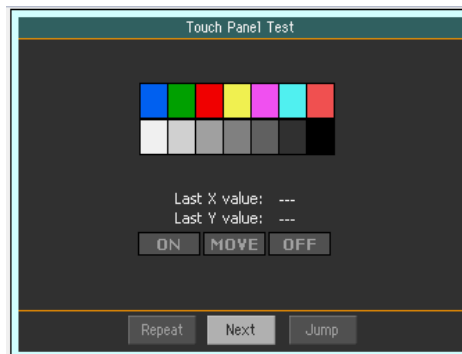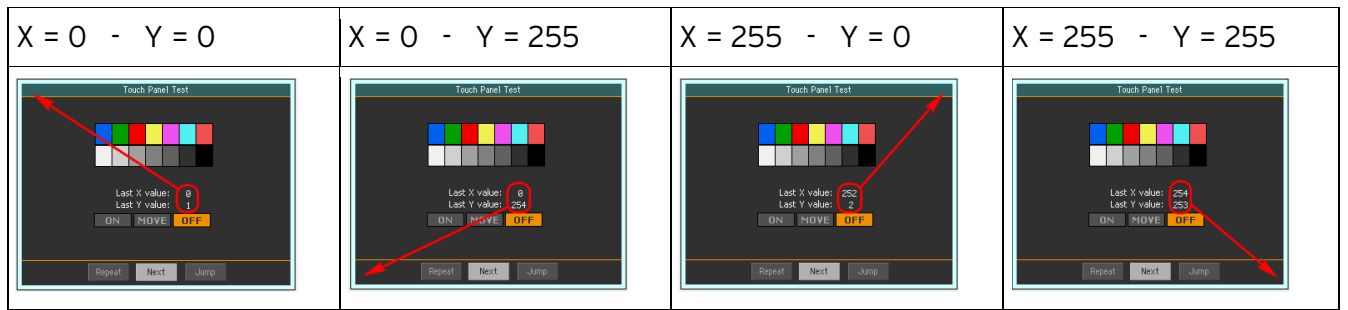
When done, touch the Next button on the display.

26) Next is the *Speaker Test*. This includes 5 separate steps. Touch the Next button on the display to go to the next step.

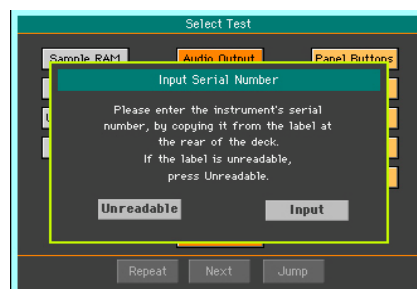| Speaker Test				
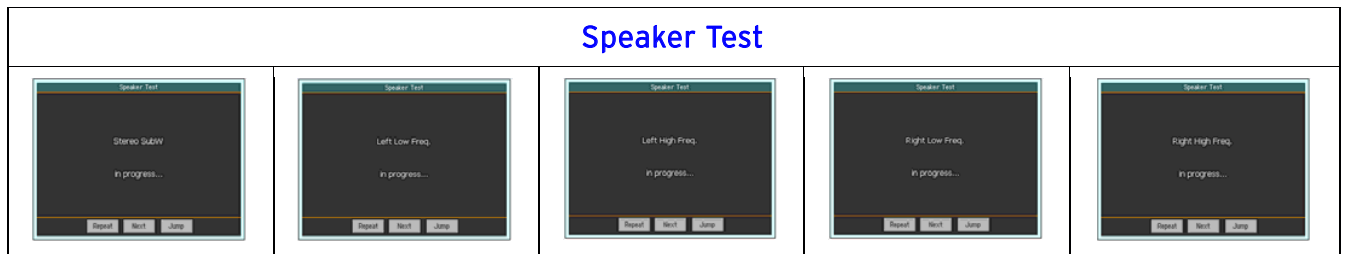
27) The serial number should appear in the display. Check the serial number, that should be the same of the rating label, and press OK .
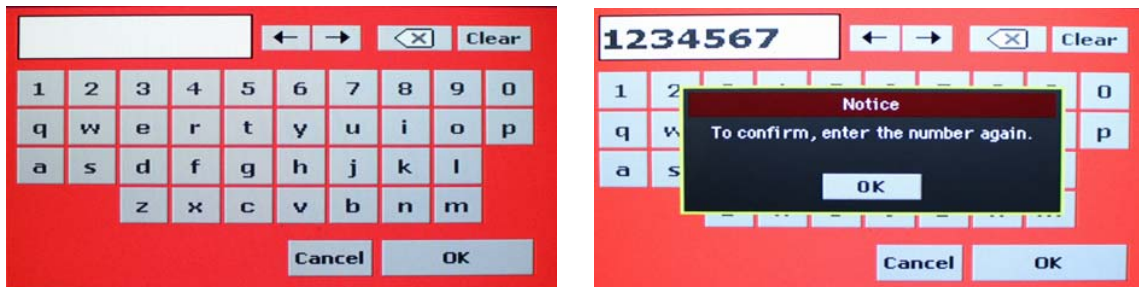

Continue to step **28.**

If the CPU does not contain the serial number, this message appears in the display:

If you can't find a serial number in the rating label, touch Unreadable and continue to step **28.**

If you find a serial number in the rating label, touch Input to enter the Pa700/Pa700-OR serial number.

Insert the serial number again and press OK two times.
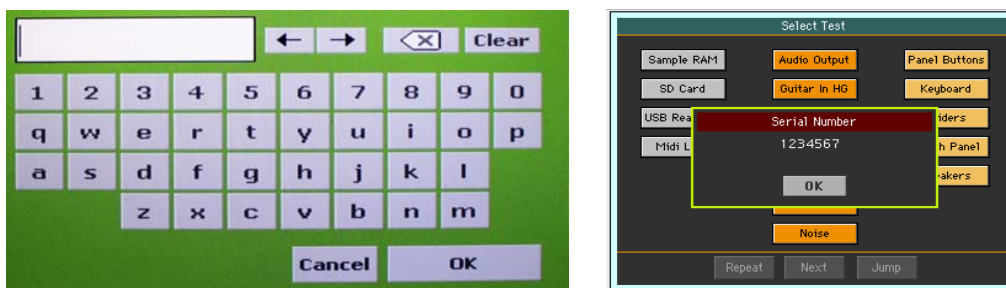
28) Test completed:
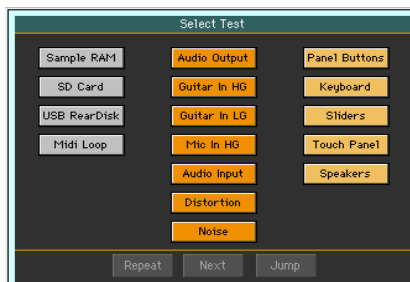
29) Turn off Pa700/Pa700-OR, the keep the ⏻ button pressed for 3 seconds.

30) Turn Pa700/Pa700-OR on again by keeping the button ⏻ pressed, then release the button as soon as its LED becomes red.

31.a)   Rotate the Mic Gain knob to minimum.
31.b)   When the keyboard is ready: Listening with headphones, start to play some notes and play a style pressing Start/Stop, then press Start/Stop again. Remove the headphones.

31.c) If it's all right, stop the style. Select [Song Play]. Select in the USB memory an MP3 song and play the song. If it's all right, continue to listen the song in the loudspeakers. If it's all right, stop the song.

31.d) Connect the Left and Right outputs to an external amplifier, and verify that the outputs are all right by pressing [DEMO] and listening to the sound on the external amplifier. If it is all right, stop the [DEMO] (disconnect the headphones).

32) Connect the microphone and press the [MIC] button, then check the audio while adjusting the level with the Mic Gain potentiometer.

33) Check the USB Device port connected to a personal computer.

33.a) Press [Media] and select the USB tab.

33.b) Touch the Enable button to enable file transfer. Pa700/Pa700-OR becomes the USB device, while the personal computer becomes the USB host. When finished, the icon of the internal memory of Pa700/Pa700-OR will appear among the other storage devices connected to the computer.

33.c) If the USB connection is enabled, disable the connection from the PC, then press Disable

34) Turn Pa700/Pa700-OR off, then remove all the cables and rotate the Mic Gain potentiometer to the minimum.

35) Remove the microSD card, and replace and fix the battery/SD cover.

Formatting storage devices

Formatting a storage device

The Format function lets you initialize a device. Pa700 uses a PC-compliant device format (DOS FAT16 and FAT32).

Warning: Formatting a storage device deletes all the data it contains!

Choose the device to be formatted

Go to the **Media > Format** page.

If formatting an external device, connect the device to the **USB HOST** port.

Use the **Device** pop-up menu to choose the device.

Assign a name to the device

Use the **Volume Label** parameter to assign a name to an external device to be formatted.

Since this is a reserved name, you cannot rename the label (name) of the internal volume. When formatting the internal drive, the label cannot be edited.

Also, if you try to rename the internal volume when Pa700 is connected to a PC through the USB port, the original name is automatically restored.

Touch the **Text Edit ( )** icon to open the **virtual keyboard** and edit the name. When done editing the name, confirm by touching the **OK** button under the virtual keyboard.

Please note that renaming a device, containing MIDI Songs or MP3 Songs used in the SongBook, will break the links to the files. We suggest to give the device the same name it had before formatting. In case you changed the name, please use SongBook Editor (freely available on our web site) to edit the links.

Format the device

Touch the **Execute** button to start formatting.

Confirm the following warning message(s).

Backing up and restoring musical resources

A set of file backup and restore utilities can be found in the **Media > Utility** page.

Backing up the musical resources

You can backup the internal data (musical resources and settings) to a storage device. Backup should only be used for archiving purpose, since you will not be able to load individual data from a backup archive. To save data that has to remain accessible with the normal **Media > Load** operations, for example to load User data after updating the musical resources, use the **Media > Save** operations instead.

This function only backs up the internal memory, and not the internal or external drives. It will back up Styles, Keyboard Sets, Sounds, Pads, Voice Presets, Guitar Presets, the Global. It will not back up the MIDI and MP3 Songs contained in the internal or external drives. Also, it will not back up the Direct banks, already residing in internal or external drives. To back up these data, please make a backup of the internal or external drives by connecting them to a PC (see the **Media > USB** page).

Choose the backup command

Go to the **Media > Utility** page.

Select the **Full Resource Backup** option, then touch the **Execute** button to see the file selector.

Choose the target device and folder

After touching **Execute**, the target device appears:

If you are making a backup to an external device, connect the device to the **USB HOST** port.

Use the **Device** pop-up menu to choose the target device.

Browse through the folders. Touch the **Open** button to open the selected folder. Touch the **Close** button to close the current folder.

Select the folder where to backup the data, then touch the **Backup** command to confirm.

If nothing is selected, data will be saved to the current folder.

Assign a name to the backup archive

After touching **Backup**, a dialog will appear, asking you to assign a name to the backup file.

Touch the **Text Edit ( )** icon to open the **virtual keyboard** and edit the name. When done editing the name, confirm by touching the **OK** button under the virtual keyboard.

When at the **Backup** dialog again, touch the **OK** button to start backing up.

When finished backing, save the storage device in a safe place.

Restoring the musical resources

You can restore data from a backup archive created with the **Full Resource Backup** command.

Choose the restore command

Go to the **Media > Utility** page.

Select the **Resource Restore** option, then touch the **Execute** button to see the file selector.

Choose the source device and folder

If you are restoring from an external device, connect the device to the **USB HOST** port.

Use the **Device** pop-up menu to choose the target device.

Browse through the folders. Touch the **Open** button to open the selected folder. Touch the **Close** button to close the current folder.

When the backup archive appears, select it and touch the **Restore** command.

Choose the data to restore

After touching **Restore**, a dialog will appear, with a list of types of data to be restored. Only check the types of data you want to restore.

Touch **OK** to start restoring.

Warning: This command will delete from the internal memory all types of data selected in this dialog box (including your custom data).

When done, a message will appear, asking you to restart the instrument ('Data Restored. Please switch off'). Turn the instrument off, then turn it on again.

Restoring the original musical resources

After an OS update, or when you want to erase all changes to your Factory and User data, and restore your Pa700 to the same condition it was when new, use the **Factory Restore** operation.

Warning: This command deletes all data from memory (including your custom data).

Go to the **Media > Utility** page.

Select the **Factory Restore** option, then touch the **Execute** button.

A dialog will appear, with a list of types of data to be restored. Only check the types of data you want to restore.

Warning: This command will delete from the internal memory all types of data selected in this dialog box (including your custom data).

When done, a message will appear, asking you to restart the instrument ('Data Restored. Please switch off'). Turn the instrument off, then turn it on again.