SHARP SERVICE MANUAL

CODE: 00ZXEA147/S1E

ELECTRONIC CASH REGISTER

XE-A107/A137/A147(V)

MODEL XE-A1BT

CONTENT

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

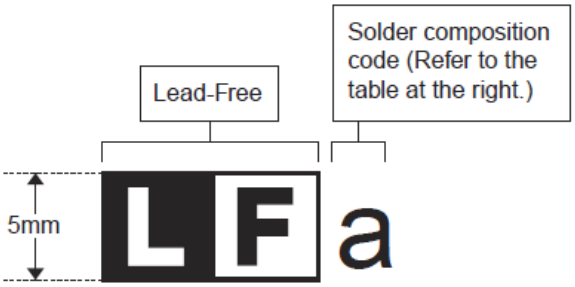
SHARP CORPORATION

This document has been published to be used for after sales service only.
The contents are subject to change without notice.

LEAD-FREE SOLDER

The PWB's of this model employs lead-free solder. The "LF" marks indicated on the PWB's and the Service Manual mean "Lead-Free" solder.

The alphabet following the LF mark shows the kind of lead-free solder.



<Solder composition code of lead-free solder>

Solder composition	Solder composition code
Sn-Ag-Cu	a
Sn-Ag-Bi Sn-Ag-Bi-Cu	b
Sn-Zn-Bi	z
Sn-In-Ag-Bi	i
Sn-Cu-Ni	n
Sn-Ag-Sb	s
Bi-Sn-Ag-P Bi-Sn-Ag	p

(1) NOTE FOR THE USE OF LEAD-FREE SOLDER THREAD

When repairing a lead-free solder PWB, use lead-free solder thread. Never use conventional lead solder thread, which may cause a breakdown or an accident.

Since the melting point of lead-free solder thread is about 40°C higher than that of conventional lead solder thread, the use of the exclusive-use soldering iron is recommendable.

(2) NOTE FOR SOLDERING WORK

Since the melting point of lead-free solder is about 220°C, which is about 40°C higher than that of conventional lead solder, and its soldering capacity is inferior to conventional one, it is apt to keep the soldering iron in contact with the PWB for longer time. This may cause land separation or may exceed the heat-resistive temperature of components. Use enough care to separate the soldering iron from the PWB when completion of soldering is confirmed.

Since lead-free solder includes a greater quantity of tin, the iron tip may corrode easily. Turn ON/OFF the soldering iron power frequently.

If different-kind solder remains on the soldering iron tip, it is melted together with lead-free solder. To avoid this, clean the soldering iron tip after completion of soldering work.

If the soldering iron tip is discolored black during soldering work, clean and file the tip with steel wool or a fine filer.

CAUTIONS

THERE IS A RISK OF EXPLOSION IF THE BATTERY
IS REPLACED BY AN INCORRECT TYPE.
PROPERLY DISPOSE OF USED BATTERIES ACCORDING
TO THE INSTRUCTIONS.

CHAPTER 1. SPECIFICATIONS

1. PRODUCTS OUTLINE

The XE-A107, A137 and A147 are developed in accordance with following basic concepts.

1) The XE-A137 and XE-A147 are a mass-route popular class ECR and low-class European Fiscal model.
2) Main features of XE-A137 and XE-A147 are 1-sheet drop-in thermal printer, and SD card slot.
3) XE-A147 also has features of RS-232 port and battery option.

2. MAIN FEATURE & FUNTTION

1) New design
2) Color variation (Black and white)
3) 1-Sheet drop-in thermal printer (XE-A137/XE-A147)
   - Print speed: Approx. 7 lines/Sec.
   - Paper width: 58mm
4) SD-card slot standard: for Programming and data export (XE-A137/XE-A147)
5) PC link (Programming tool) (XE-A137/XE-A147)
6) Local language support (XE-A137/XE-A147)
7) RS232C port(D-sub) standard: for FISCAL control box connection (XE-A147 only)
8) Battery option is available (XE-A147 only)

[1] XE-A137 / XE-A147

1. BASIC SPECIFICATIONS

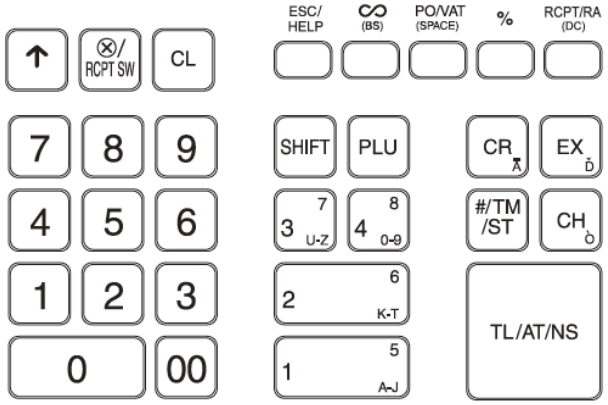
		XE-A137-BK/WH	XE-A147-BK/WH
External dimension (Including the drawer)		335(W) x 360 (D) x 190 (H) mm	
Weight		Approx 5kg	
Power source		AC adapter	
	Europe/ Asia/ME/ Oceania etc	AC220-230V (50/60Hz) AC230- 240V (50Hz)	
Power consumption		Stand-by: 1.9W Operating: 8.1W	
Working temperature		0~40°C (32 to 104°F)	

2. KEYBOARD

1) KEYBOARD OUTLINE

Type	Normal keyboard
Key position	STD / MAX 30
Key Pitch	19 (W) x 19 (H) mm
Key layout	Fixed type

2) KEYBOARD LAYOUT



3) KEY LIST

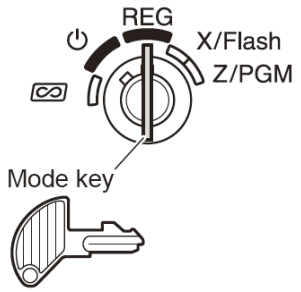
Key top	Description
0-9, 00	Numeric keys
↑	Paper feed key
⊗/RCT SW	Multiplication / Receipt switch key
CL	Clear key
(BS)	Void key
ESC/ HELP	Escape / help key
%	Percent key
PO/VAT (Space)	Paid out / VAT key
PCPT / RA (DC)	Receipt / Received on account key
SHIFT	Department shift key
PLU	PLU (Price Look Up) key
DEPT 1-4 (5-8)	Department 1-4 (5 -8) key
CR	Credit key
EX	Exchange Key
CH	Check key
#/TM/ST	Non add / Time / Subtotal
TL/AT/NS	Total / Amount tendered / No sale key

3. MODE SWITCH

1) MODE SWITCH OUTLINE

Type	Rotary switch type with Mode key
STEP	5

2) LAYOUT



3) FUNCTION

⏻	Turns the display off. No operations are possible
REG	Permit transaction entry
∞	Permit correction after final a transaction
X/Flash	Permits printing of sales reports and display the flash reports
Z/PGM	Permits printing and resetting of sales reports and programming

4. DISPLAY

1) OPERATOR DISPLAY

Display device	LED numeric display
Number of line	1 line
Number of positions	9 digits numeric display (V model)
Color of display	Yellow Green
Character size	Numeric: 14.2 (H) x 8.0 (W) mm

5. PRINTER

1) PRINTER

Printing system	Thermal printer
Printing digits	30 digits
Character size	1.25 mm(W) x 3.0 mm (H)
Printing speed	Approx. 7lines / Sec.
Cutter type	Manual
Validation printing	None
Logo stamp	None
Ink roller	None
Ink Ribbon	None
Graphic Logo Print	Yes (Size: 360 mm(W) x 180 mm(H))
Paper end sensor	
Receipt side	Yes
Journal side	None
Paper near end sensor	
Receipt side	None
Journal side	None
Printer cover key	None

2) PAPER

Paper type	Thermal paper
Paper roll width	57.5 ±0.5mm
Paper roll diameter	φ80mm
Paper Thickness	72 to 78μm
Paper weight	66 to 72g/m^2

6. DRAWER

1) DRAWER BOX AND DRAWER

Material	Plastic
Bell	--
Release lever	Standard equipment: situated at the bottom
Drawer open sensor	--

2) MONEY CASE

Separation from the drawer	Disallowed
Separation of the bill compartments from the coin compartments	Allowed
Bill separator	-
Number of compartments	3B/6C (V model)

[2] XE-A107

1. BASIC SPECIFICATIONS

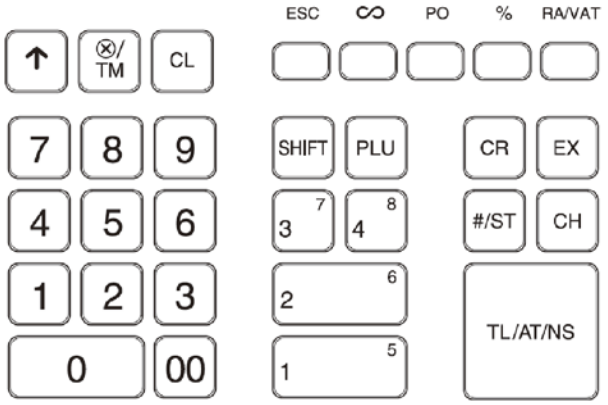
		XE-A107-BK/WH
External dimension (Including the drawer)		335(W) x 360 (D) x 190 (H) mm
Weight		Approx 4.0kg
Power source		AC adapter
	Europe/ Asia/ME/ Oceania etc	AC220 - 230V (±10%)
Power consumption		Stand-by: 1.5W Operating: 2.3W
Working temperature		0~40°C (32 to 104°F)

2. KEYBOARD

1) KEYBOARD OUTLINE

Type	Normal keyboard
Key position	STD / MAX 30
Key Pitch	19 (W) x 19 (H) mm
Key layout	Fixed type

2) KEYBOARD LAYOUT



3) KEY LIST

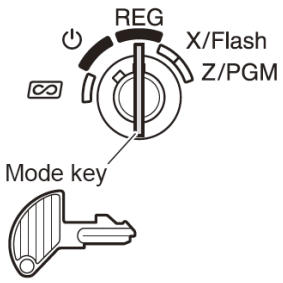
Key top	Description
0-9, 00	Numeric keys
↑	Paper feed key
⊗/TM	Multiplication / Time key
CL	Clear key
∞	Void key
ESC	Escape / help key
%	Percent key
PO	Paid out key
RA/VAT	Received on account / VAT key
SHIFT	Department shift key
PLU	PLU (Price Look Up) key
DEPT 1-4 (5-8)	Department 1-4 (5 -8) key
CR	Credit key
EX	Exchange key
CH	Check key
#/ST	Non add / Subtotal
TL/AT/NS	Total / Amount tendered / No sale key

3. MODE SWITCH

1) MODE SWUTCH OUTLINE

Type	Rotary switch type with Mode key
STEP	5

2) LAYOUT



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4. DISPLAY

1) OPERATOR DISPLAY

Display device	LED numeric display
Number of line	1 line
Number of positions	9 digits numeric display (V model)
Color of display	Yellow Green
Character size	Numeric: 14.2 (H) x 8.0 (W) mm

5. PRINTER

1) PRINTER

Printing system		Print wheel selective type
Printing capacity		Max. 13 characters
Character size		1.6 mm(W) x 2.1 mm (H)
Printing speed		Approx. 1.4lines / Sec.
Cutter type		Manual
Validation printing		None
Logo stamp		None
Ink roller		None
Ink Ribbon		None
Graphic Logo Print		None
Paper end sensor		
	Receipt side	None
	Journal side	None
Paper near end sensor		
	Receipt side	None
	Journal side	None
Printer cover key		None

2) PAPER

Paper type	Bond paper
Paper roll width	57.5 ±0.5mm
Paper roll diameter	ϕ80mm
Paper Thickness	0.06 to 0.085mm
Paper weight	47 to 64g/m^2

6. DRAWER

1) DRAWER BOX AND DRAWER

Material	Plastic
Bell	--
Release lever	Standard equipment: situated at the bottom
Drawer open sensor	--

2) MONEY CASE

Separation from the drawer	Disallowed
Separation of the bill compartments from the coin compartments	Allowed
Bill separator	-
Number of compartments	3B/6C (Vmodel)

[3] XE-A1BT

Installable model	XE-A147 only
Power consumption	7.2V / 1265mh
Type	Nickel Metal Hydride (Ni-MH) battery
	Re-chargeable

CHAPTER 2. OPTIONS

1. OPTIONS

Product name	Model	Description
Optional battery	XE-A1BT	Optional battery (for XE-A147)

2. SERVICE OPTIONS

Parts code	Price rank	Description
LANGK7612BHZZ	AF	Fix angle A (for tumble prevision)
LANGK7613BHZZ	AN	Fix angle B (for tumble prevision)
XHBS730P06000	AC	Screw (for set the fix angle)

3. SUPPLIES

Item	Parts code	Price rank	Description
Roll paper	DPAPR1025CSZZ	AV	5 Rolls / Pack (For XE-A107)
INK Roller	NROLR1022RCZB	AZ	Ink roller (For XE-A107)
Thermal paper	TPAPR6656RC05	BA	5 Rolls / Pack (For XE-A137 / XE-A147)

*Handled as service parts

4. SPECIAL SERVICE TOOLS

Parts code	Price rank	Description
UKOG-2374RCZZ	AV	RS232C loop back test tool (For XE-A147)

CHAPTER 3. MASTER RESET

Master reset:
Clears all the memory and initializes each preset parameter.

The master reset should be performed by using the following procedure.

1. Turn off the power (Power OFF). (See Note 1))
2. Let the ECR be without the memory back up battery.
3. Turn the mode switch to the others of Power-off position.
4. Turn on the power (Power ON). (See Note 2))

When the master rest is completed, the buzzer sounds intermittently three times.

5. Attach the memory back up battery to the ECR.
   The master reset can also be accomplished in the following case. (See Note 3))

Note 1) **Power OFF**:
Means disconnecting the AC power supply to the machine. (Specifically, unplugging the machine)

Note 2) **Power ON**:
Means connecting the AC power to the ma-chine. (Specifically, plugging in the machine)

Note 3) In case a power failure occurs when the machine has no battery installed, the master reset operation is automatically performed after the power has been restored.

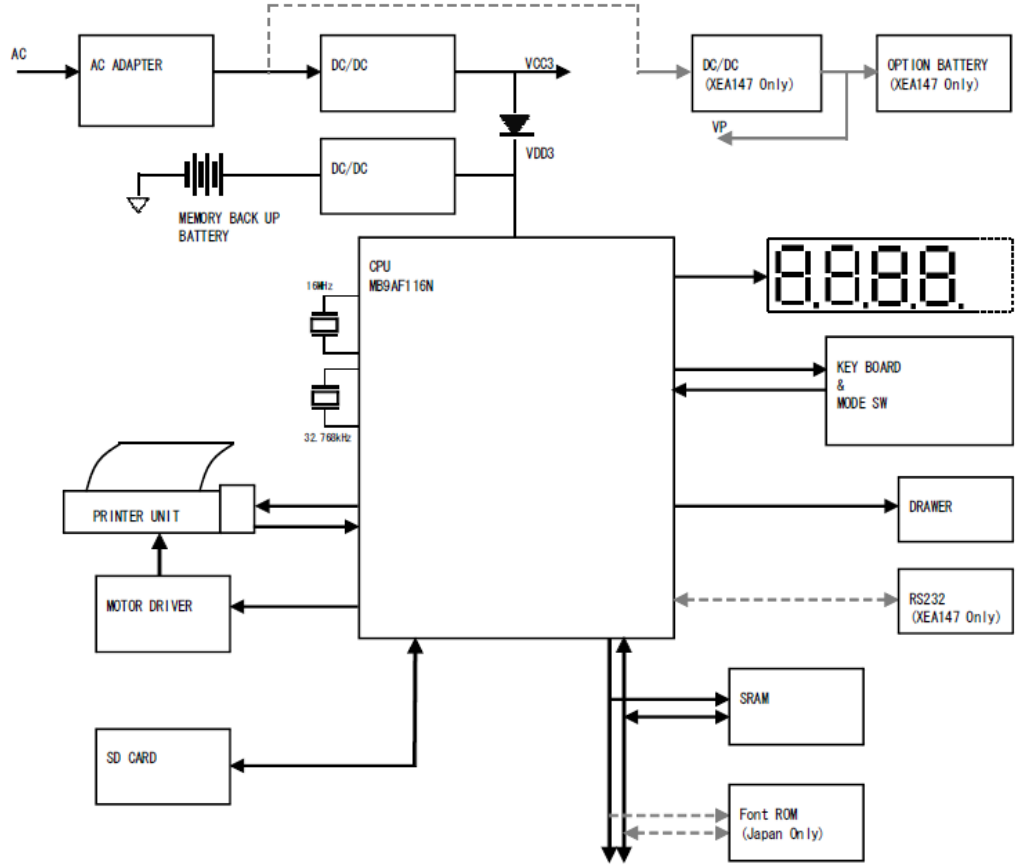
CHAPTER 4. HARDWARE DESCRIPTION & OPERATION PRICIPLE

1. OUTLINE

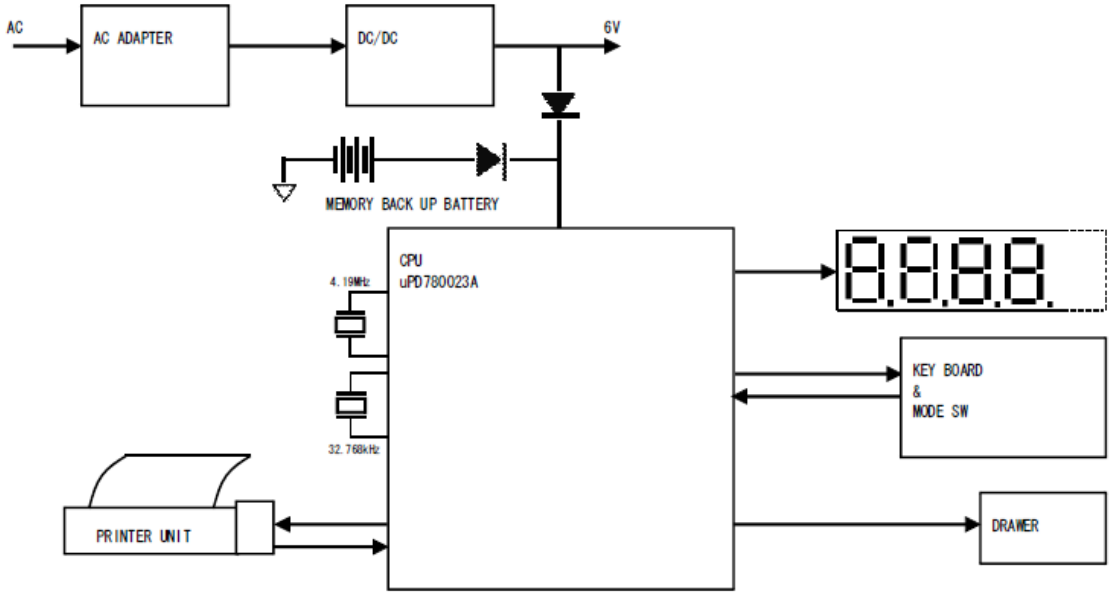
			XE-A107	XE-A137,XE-A147
CPU			8bit MASK CPU uPD780023AGC *4.19MHz MASK ROM Built in (For Program)	32bit CPU MB9AF116N *16MHz FLASH ROM Built in (For Program)
PRINTER			58mm Print wheel type	58mm Thermal Printer
	Rolling up	EU/Oceania/Asia/ ME/Africa	Yes	None
SRAM			None	1Mbit(128kByte x8)
ROM		For Program	MASK ROM in CPU	FLASH ROM in CPU
DISPLAY			7segments LED	
	Display digits	EU/Oceania/Asia/ ME/Africa	9 digits	
KEY			Normal KEY: 30key	
Mode S/W			5 steps rotary type	
I/F		USB	None	
		SD	None	1slot
		DRAWER	1port (For Standard drawer only. There is no optional drawer port)	
		RS232	None	1port (for XE-A147)
		EFT	None	
POWER SUPPLY			AC adapter for XE-A107	AC adapter for XE-A137or XE-A147
BATTERY		MEMORY BACK UP	LR6 (AA size)	
		OPTIONAL OPERATION BATTERY	None	Option: XE-A1BT (XE-A147only)
DRAWER			Standard: 1 unit	

2. Block diagram

1) XE-A147 / XE-A137



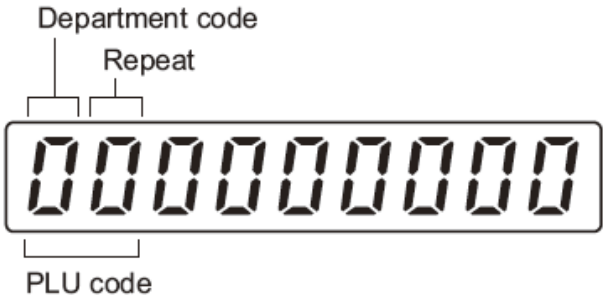
2) XE-A107



3. Description

1) DISPLAY

The display of these models is LED type. And there are 2 types such as 8 digits and 9 digits. It is depend on the destination of models.



a. Display content

Display

Departments/PLU Code:

The department code or PLU code entered appears on the left. For example, if the key for department 1 is pressed, "1" would appear in the extreme left position.

Repeat:

Indicates the number of times the same department key is pressed. If an entry is repeated more than ten times, only the first digit is displayed (12 displays as "2").

(E) Error:

This symbol appears, accompanied by a warning beep, when an error is made. If this occurs during a transaction because of an excessive digit entry, simply press [CL] and re-enter correctly.

(P) Program:

This symbol Appears on the display when the cash register is being programmed in the Z/PGM mode.

(F) Finalization:

This symbol appears when a transaction is finalized by pressing [CA/ AT/NS], [CH] or [CHK].

(O) Subtotal:

This symbol appears when [#/SBTL] is pressed and the cash register computes the subtotal, and also when the amount tendered is less than the total sale amount.

(C) Change:

This symbol appears whenever the change due amount is displayed.

(c) Exchange:

This symbol appears when [EX] is pressed to calculate a subtotal in foreign currency

(L) Low battery:

This symbol appears when the power of the installed batteries is below a certain level or you need to replace the batteries with new ones. (see the "Maintenance" section for explanation.)

(L) No battery:

This symbol appears when no batteries are installed, or the installed batteries are empty.

In addition, the following appear when appropriate:

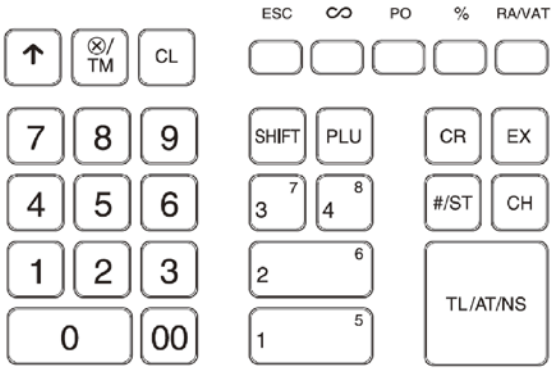
The minus sign (-) can appear in positions 2 to 8.

The decimal point appears in positions 1 to 3.

When entry of the secret code is necessary, "---" appears in positions 1 to 4.

2) KEYBOARD AND MODE SW

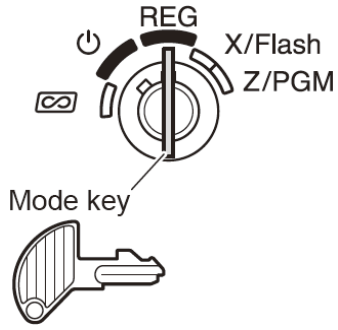
a. Keyboard layout (ex XE-A107)



b. Key list

Key top	Description
0-9, 00	Numeric keys
↑	Paper feed key
⊗/TM	Multiplication / Time key
CL	Clear key
∞	Void key
ESC	Escape / help key
%	Percent key
PO	Paid out key
RA/VAT	Received on account / VAT key
SHIFT	Department shift key
PLU	PLU (Price Look Up) key
DEPT 1-4 (5-8)	Department 1-4 (5 -8) key
CR	Credit key
EX	Exchange key
CH	Check key
#/ST	Non add / Subtotal
TL/AT/NS	Total / Amount tendered / No sale key

Mode switch layout



c. Function

⏻	Turns the display off. No operations are possible
REG	Permit transaction entry
∞	Permit correction after final a transaction
X/Flash	Permits printing of sales reports and display the flash reports
Z/PGM	Permits printing and resetting of sales reports and programming

3) BATTERY

a. MEMORY BACK UP BATTERY

For memory back up, the dry battery ULM-3 (3 pieces) are needed.

1. Memory holding time:
   Approx. 1 year after New dry batteries are installed.
   (It is depend on the battery capacity)
2. Battery exchange method:
   When the low battery symbol "L" lights up, replace the batteries (3 AA) replaced by the following method;
   1) Power on the ECR.
   2) Mode switch turn to "REG" mode.
   3) Remove the OLD dry batteries (3 pieces).
   4) The no-battery symbol "ʟ" light up.
   5) Insert the NEW dry batteries (3 pieces).
   6) Confirm the low battery symbol "L" and no-battery symbol "ʟ" is off.

b. LOW BATTERY

Low battery indication will appear on the left side of display when the battery voltage is low.

CASE 1: When sitting idle or after completion of transaction. The machine can indicate the low battery condition (Always)

CASE 2: Low battery indication will not appear during key operations, but will appear after power up of the cash register.

[Display sample]

“0.00”: Battery is OK.

"L 0.00": Low battery (The batteries have to be replaced.)

After finalization

"F 12.34": Battery is OK.

"L 12.34": Low battery ("L" indicate instead of "F".)

c. NO BATTERY

If the user forgets to replace the battery and the battery voltage falls below a certain level, or if a power failure occurs with no batteries installed, the memory contents cannot be retained. The CPU judges it as no battery and performs the master reset. In this case, all the settings and registrations are cleared. If, however, the power is continuously supplied to the AC cord, the memory contents are retained.

Low battery: Batteries are installed, but the voltage is low. Memory back up can be done.

No battery: Batteries are not installed or the voltage is extremely low. The master reset is executed when a power failure occurs, when the batteries are not properly changed.

Low battery & No battery indication will appear at the most left position of display when the battery voltage is low.

CASE 1: When any numeric entry & item entry is not done or just after
finalization.
The machine can indicate the battery condition. (Always)

CASE 2: When numeric entry or item entry is done.
Battery condition is not appeared.
Exceptionally, at the power is restored after power failure, the low battery & No battery indication will appear on the display only when the battery voltage is low.
And the indication will disappear after any key entry.

[Display sample]

" 0.00" : Battery is OK.

"L 0.00" : Low battery

"ʟ 0.00" : No battery

After finalization

"F 12.34": Battery is OK.

"L 12.34": Low battery ("L" indicate instead of "F".)

"ʟ 12.34": No battery ("L" indicate instead of "F"

CHAPTER 5. DIAGNOSTICS

1. XE-A137/XE-A147

1) Diagnostic menu

	DIAG menu	DESCRIPTION
1	Mode switch test	To check the mode key function
2	Key test	Keyboard check
3	Display test	To check a display
4	Drawer test	To check a drawer opening
5	Printer test	Printer test
6	Printer paper sensor test	To check a printer paper sensor
7	AD conversion level test	AD conversion check
8	CLOCK test	To check the clock on CPU
9	Destination display / ROM version	To check the Destination setting and ROM version
10	SD card test	To check the SD-card write protection
11	RS232C (XE-A147 only)	To execute the loopback test
12	ROM (Japan only)	To check the ROM for Japanese characters
13	RAM	To execute the RAM read write test

2) Entering procedure

It is possible to enter the DIAG mode with following procedure;

1. To set the mode switch to Z/PGM position
2. To input the job code in accordance with below list
3. To push the PO key
4. Start the Diagnostic mode

DIAG menu	Mode key position	Key code
Mode switch test	Z/PGM	'1' + PO key
Key test	Z/PGM	'2' + PO key
Display test	Z/PGM	'3' + PO key
Drawer test	Z/PGM	'4' + PO key
Printer test	Z/PGM	'5' + PO key
Printer Paper sensor test	Z/PGM	'6' + PO key
AD conversion level test	Z/PGM	'7' + PO key
CLOCK test	Z/PGM	'8' + PO key
Destination display / ROM version	Z/PGM	'9' + PO key
SD card test	Z/PGM	'10' + PO key
RS232C (XE-A147 only)	Z/PGM	'11' + PO key
ROM check (Japan only)	Z/PGM	'12' + PO key
RAM check	Z/PGM	'13' + PO key

3) Description

3-1) MODE KEY SWITCH

a. Test Procedure

Change over the mode switch as follows. If the mode switch data in the proper sequence is not read with the above operation, an error is printed.

To cancel this test mode, set the mode switch to any a position other than [Z/PGM] to [Z/PGM]. In this case, the completion print is performed.

During the test, the display indicates hard codes which correspond to the switch position.

The mode switch is set to the "OFF position", it will no-display.

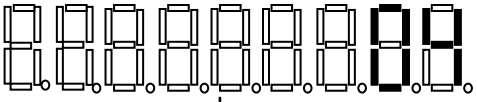
<Note>
In the test, the mode key should be fixed over 1second in each position.

b. Mode switch operation

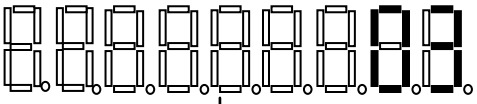
MODE: [Z/PGM] → [X/FLASH] → [REG] → [OFF] → [VOID]

c. Display

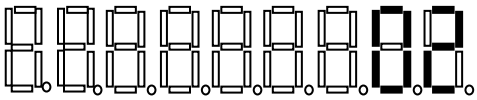
[Z/PGM]



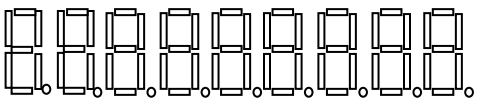
[X/FLASH]



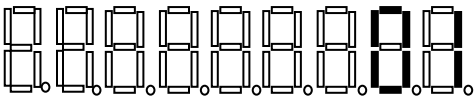
[REG]



[OFF]

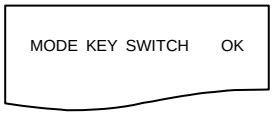


[VOID]

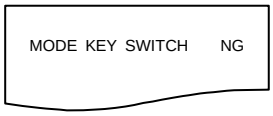


d. Test result print

When a test results is OK, following result is printed out



When a test result is NG, following result is oriented out.



3-2) KEY TEST

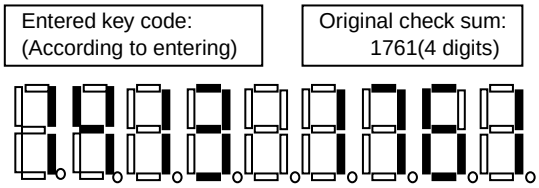
a. Test Procedure

Perform the keyboard check with the sum check data of the key code.

Enter the any key other than [TL] key, and then enter the [TL] key, finally. In the process above, machine records the sum, and after [TL] key entered, compare with check sum proper check sum.

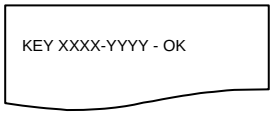
It is possible to re-operate from the beginning, enter the [CL] key 3 times, when operation is wrong.

b. Display

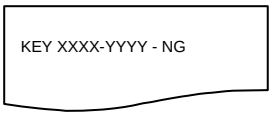


c. Test result print

When a test results is OK, following result is printed out



When a test result is NG, following result is printed out.



3-3) DISPLAY TEST

a. Test Procedure

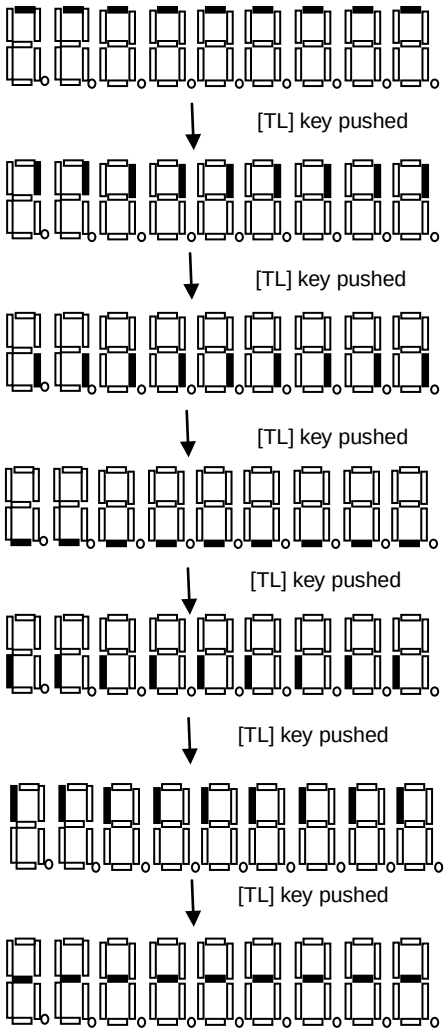
Check the continuous buzzer sound and the display state.

<Check points>

1. The all segments are lighted up correctly.
2. The brightness of all segments is same level.

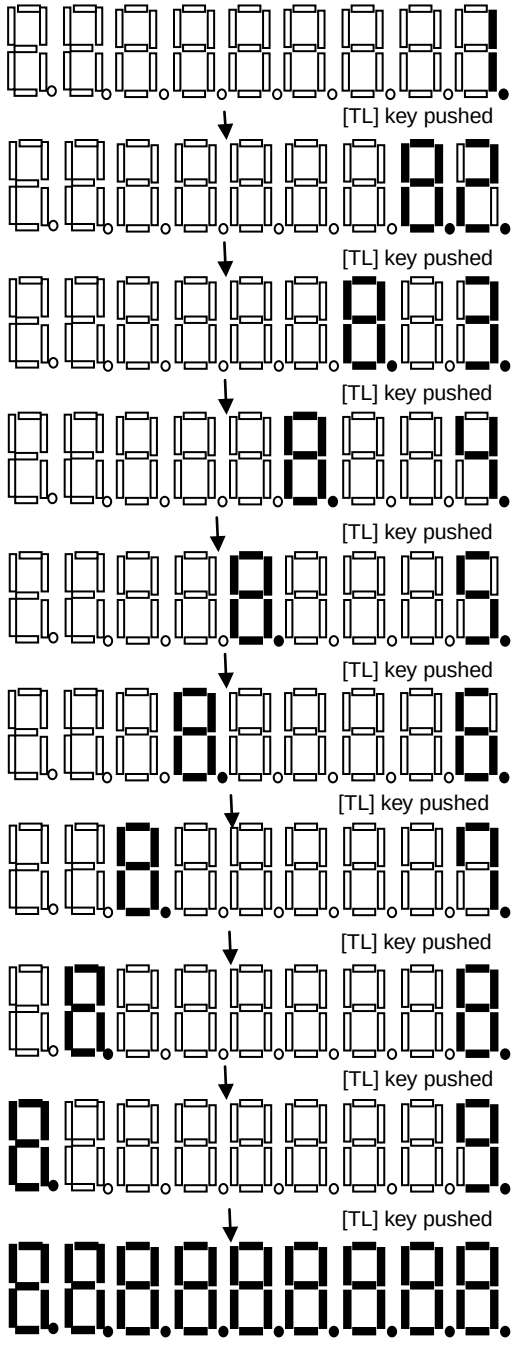
1. Segments display test
   The following pattern is displayed. When [TL] key pushed, the display pattern is changed to next.

< Display >



2. Shift display test
The following pattern is displayed. When [TL] key pushed, the display pattern is changed to next.
Finally, all segments are lighted on.

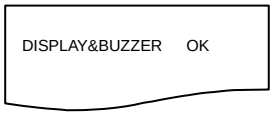
< Display >



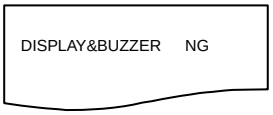
3. Completion of test
When [TL] key pushed after above test, the test is finished as OK status.
When other than [TL] key pushed after above test, the test is finished as NG status.

b. Test result print

When a test results is OK, following result is printed out



When a test result is NG, following result is printed out.



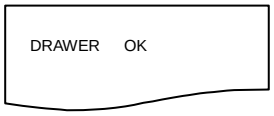
3-4) DRAWER TEST

a. Test Procedure

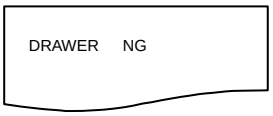
The drawer opens with the above key operation. Check that the drawer is open.
After drawer open, check the drawer opening,
When drawer open correctly, push the [TL] key, test will finish with OK status.
If not, push other than [TL] key, test will finish with NG status.

b. Test result print

When a test results is OK, following result is printed out



When a test result is NG, following result is printed out.

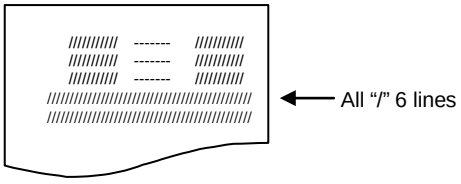


3-5) PRINTER TEST

a. Test Procedure

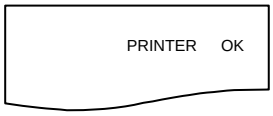
With the above key operation, the print test pattern is printed as below.

Check the print results.
When print result is OK, push the [TL] key, test will finish with OK status.
If not, push other than [TL] key, test will finish with NG status.

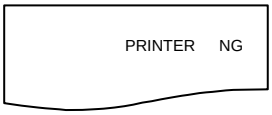


b. Test result print

When a test results is OK, following result is printed out



When a test result is NG, following result is printed out.



3-6) PRINTER PAPER SENSOR TEST

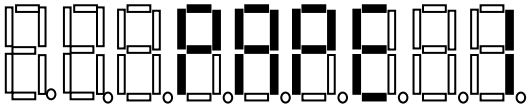
a. Test Procedure

With the above key operation, the sensor test is started.

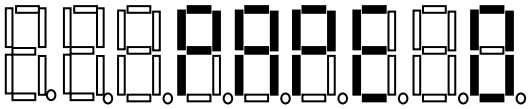
The status of printer paper sensor is displayed by real time.
When [TL] key pushed, the status of printer paper sensor is printed out then the test is finished.

b. Display

<Printer Paper is detected>

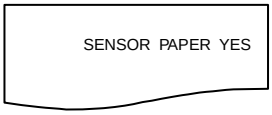


<Printer Paper is not detected>

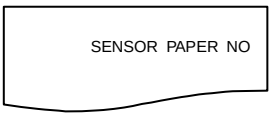


c. Test result print

When print printer paper is being detected.



When print printer paper is being detected.



3-7) AD CONVERSION TEST

a. Test Procedure

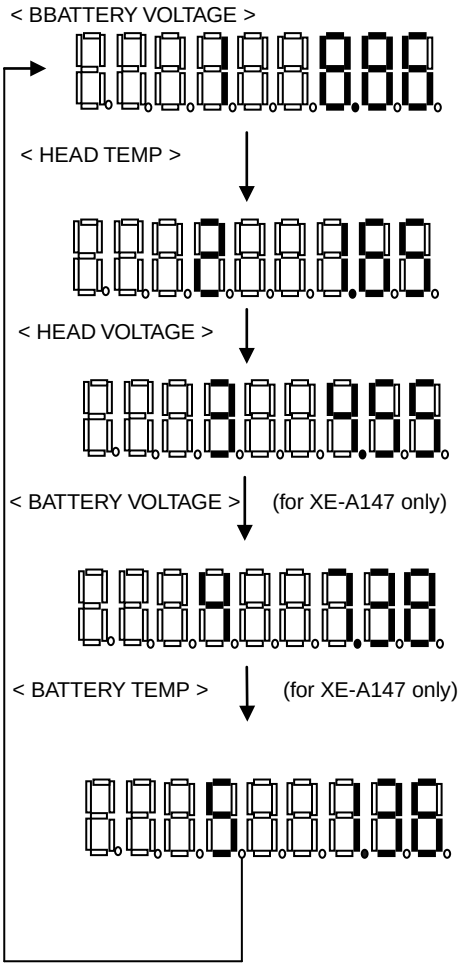
With the above key operation, the AD conversion level is started.

The AD conversion reading data is displayed by real time.
The displaying is done by following sequence:

1	BBATTERY VOLTAGE	Back up battery voltage
2	HEAD TEMP	Head temperature
3	HEAD VOLTAGE	Head voltage
4	BATTERY VOLTAGE	Option Battery voltage (XE-A147 only)
5	BATTERY TEMP	Option Battery temperature (XE-A147 only)

When [TL] key pushed, the status of following data is printed out then the test is finished.

b. Display



c. Test result print

When the test completion, following result is printed out

< XE-A147 >

```
 A/D
1 HEAD VOLTAGE   X.XXV
2 HEAD TEMP X.XXV
3 BBATTERY VOLTAGE   X.XXV
4 BATTERY VOLTAGE X.XXV
5 BATTERY TEMP   X.XXV
```

<XE-A137>

```
 A/D
1 HEAD VOLTAGE   X.XXV
2 HEAD TEMP X.XXV
3 BBATTERY VOLTAGE   X.XXV
```

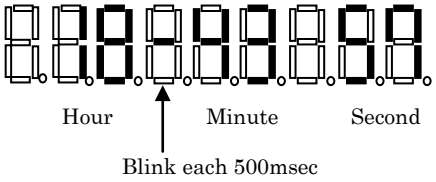
3-8) CLOCK TEST

a. Test Procedure

With the above key operation, the clock test is started.

The clock data is read from CPU and displayed by real time.
If count up is done correctly, the result is OK, push the [TL] key, test will finish with OK status.
If not, push other than [TL] key, test will finish with NG status.

b. Display



c. Test result print

When a test result is OK, following result is printed out

```
CLOCK              OK
```

When a test result is NG, following result is printed out

```
CLOCK              NG
```

3-9) Destination display / ROM version check

a. Test Procedure

With the above key operation, the Destination display / ROM version check is started.

The CPU version and destination setting are read from CPU then displayed. The destination code is as follows;

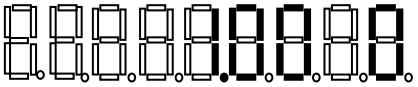
	North America	EU	Japan
Display	0	1	2
Print	U	V	J

If the displayed destination is correct, the result is OK, push the [TL] key, test will finish with OK status.
If not, push other than [TL] key, test will finish with NG status.

* In case of check sum is not correct, even if [TL] key is pushed, but, it may judged “NG”. Because of OK/NG is automatically judged by the program.

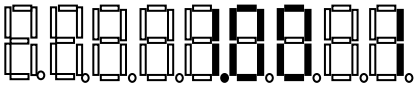
b. Display

<North America>

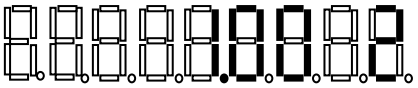


ROM ver Destination code

<EU>



<Japan>



c. Test result print

When a test result is OK, following result is printed out

```
DESTINATION  U  OK
ROM  ver.        1.00
```

When a test result is NG, following result is printed out

```
DESTINATION  U  OK
ROM  ver.        1.00
```

3-10) SD card TEST

a. Test Procedure

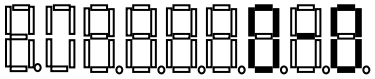
With the above key operation, the SD-card test is started.

The status of SD card is displayed by real time.
When [TL] key is pushed, the test is completion.

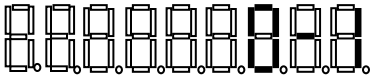
CD: Card detected.
WP: Write protection

b. Display

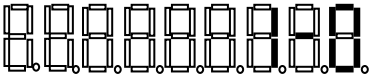
<CD: No / WP: No >



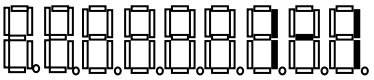
<CD: No / WP: Yes >



<CD: Yes / WP: No>

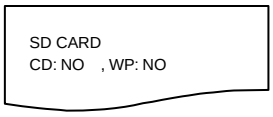


<CD: Yes / WP: Yes>

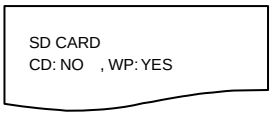


c. Test result print

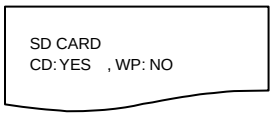
<CD: No / WP: No >



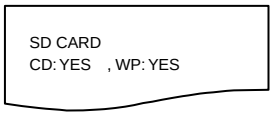
<CD: No / WP: Yes >



<CD: Yes / WP: No>



<CD: Yes / WP: Yes>



3-11) RS232C LOOP BACK TEST (XEA147 only)

a. Test Procedure

Before turn the power on, connect the loopback test jig: UKOG-6646RCZZ to RS232C port. And turn the power on then set to [Z/PGM] mode then push [1] [1] and [PO] key, the RS232C loop back test is started.

When stat the test mode, the machine checks the reading of input control signal, at first.

< The control signal check >
The read check is that DTR and RTS changed in accordance with following pattern then check the logic of DSR, DCD and CTS. In this time, if the checked logic is same as following list, the test result is OK. If not, it is displayed 'ERROR'.

<Control signal check>

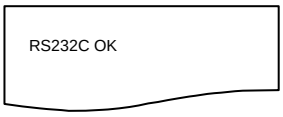
Output		Input		
DTRn	RTSn	DSRn	DCDn	CTSn
OFF	OFF	OFF	OFF	OFF
OFF	ON	OFF	ON	ON
ON	OFF	ON	OFF	OFF
ON	ON	ON	ON	ON

< Data transfer check >
As a check data, the 256 bytes (from 00H to 0FFH) loop back transfer is done. In this time the BAUDRATE setting is 38.4kbps.

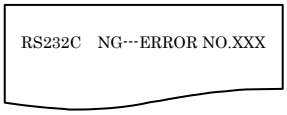
< Completion of test mode >
Push the [TL] key, the test is finished then test result is printed out.

b. Test result print

When a test result is OK, following result is printed out



When a test result is NG, following result is printed out



NO.	CONTENTS
1	DTR-DSR
2	RTS-DCD
3	RTS-CTS
4	SD-RD(DATA)

3-12) ROM check (Japan only)

This test mode is not available without Japan model.

3-13) RAM Check

a. Test Procedure

With the above key operation, the RAM check is started.

At first, the address touch on address lines in all RAM area is checked.

<For example the address touch test in all RAM area>

To check the following address
0x61000000、0x61000001、0x61000002、0x61000004
0x61000008、0x61000010、0x61000020、0x61000040
0x61000080、0x61000100、0x61000200、0x61000400
0x61000800、0x61001000、0x61002000、0x61004000
0x61008000、0x61010000、0x61020000

To write '55h' to 0x61000000
To write 'AAh' to other than 0x61000000
To check the data in 0x61000000, if 55h is written, the result is OK. If not, result is NG.
To check the data in the other than 0x61000000, if 'AAh' is written, the results is OK, if not, result is NG

↓

To write '55h' to 0x61000001
To write 'AAh' to other than 0x61000001
To check the data in 0x61000001, if 55h is written, the result is OK. If not, result is NG.
To check the data in the other than 0x61000001, if 'AAh' is written, the results is OK, if not, result is NG

⋮

To write '55h' to 0x61020000
To write 'AAh' to other than 0x61020000
To check the data in 0x61020000, if 55h is written, the result is OK. If not, result is NG.
To check the data in the other than 0x61020000, if 'AAh' is written, the results is OK, if not, result is NG

Secondly, the write & verify test is executed.
The different writing data are written in to each address.

<For example>

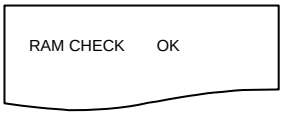
Address	Written data
0x6100_0000～0x6101_FFFF	00h write & verify
0x6100_0000～0x6101_FFFF	FFh write & verify
0x6100_0000～0x6101_FFFF	55h write & verify
0x6100_0000～0x6101_FFFF	AAh write & verify

⋮

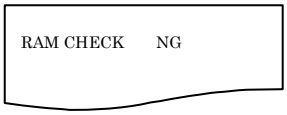
The test result is displayed and printed out then test is finished when the [TL] key pushed.

b. Test result print

When a test result is OK, following result is printed out



When a test result is NG, following result is printed out



2. XE-A107

1) Diagnostic menu

	DIAG MENU	DESCRIPTION
1	Mode switch test	To check the mode key function
2	Key test	Keyboard check
3	Display test	To check a display and buzzer
4	Drawer test	To check a drawer opening
5	Printer test	Printer test
6	CPU ver. display	CPU version check
7	Battery level test	Battery condition check
8	CLOCK test	To check the clock on CPU
9	Destination display	To check the Destination setting

2) Entering procedure

It is possible to enter the DIAG mode with following procedure;

1. To set the mode switch to Z/PGM position
2. To input the job code in accordance with below list
3. To push the PO key
4. Start the Diagnostic mode

DIAG menu	Mode key position	Key code
Mode switch test	Z/PGM	'1' + PO key
Key test	Z/PGM	'xxxx2' + PO key
Display test	Z/PGM	'3' + PO key
Drawer test	Z/PGM	'4' + PO key
Printer test	Z/PGM	'5' + PO key
CPU ver. display	Z/PGM	'6' + PO key
Battery level test	Z/PGM	'7' + PO key
CLOCK test	Z/PGM	'8' + PO key
Destination display	Z/PGM	'9' + PO key

3) Description

3-1) MODE KEY SWITCH

a. Test Procedure

Change over the mode switch as follows. If the mode switch data in the proper sequence is not read with the above operation, an error is printed.

To cancel this test mode, set the mode switch to any a position other than Z/PGM to Z/PGM. In this case, the completion print is performed.

During the test, the display indicates hard codes which correspond to the switch position.

The mode switch is set to the "OFF position", it will no-display.

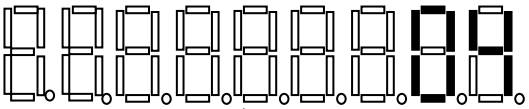
<Note>
In the test, the mode key should be fixed over 1second in each position.

b. Mode switch operation

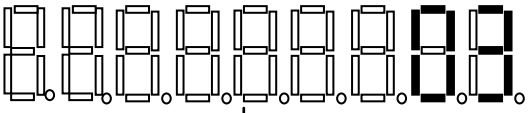
MODE: [Z/PGM] → [X/FLASH] → [REG] → [OFF] → [VOID]

c. Display

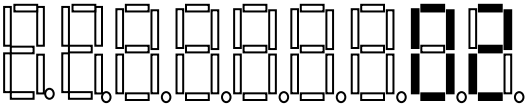
[Z/PGM]



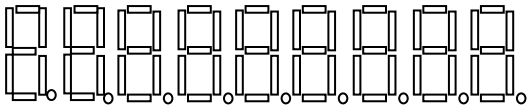
[X/FLASH]



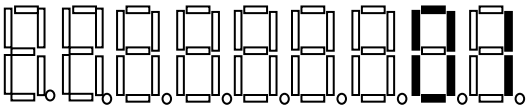
[REG]



[OFF]



[VOID]



d. Test result print

When a test results is OK, following result is printed out

When a test result is NG, following result is printed out.

3-2) KEY TEST

a. Test Procedure

Perform the keyboard check with the sum check data of the key code.

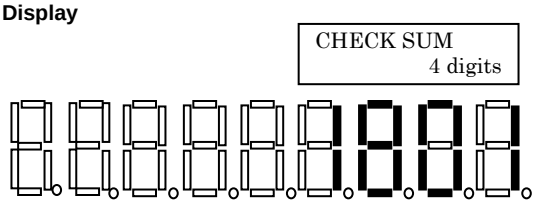
Enter the sum check data of each model in the four digits preceding the DIAG number 02, and compare the data with the key position code which is added until the [TL] key is pushed.

If the data coincides with the code, the completion print is performed.

If not, the error print is performed

<Note>
The check sum above should be higher 0100.
0001 to 0099 check sum does not reflect.

b. Display



c. Test result print

When a test results is OK, following result is printed out

When a test result is NG, following result is oriented out.

3-3) DISPLAY TEST

a. Test Procedure

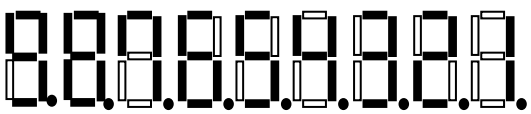
Check the display state.

1. The decimal point will shift from the lower digit to the upper, step by step (500msec).
2. The all segments light up
   In this time, the buzzer sound will stop. But the segments are all lights up until any key pushed.
3. To cancel the test mode, press any key, after that the test result is printed.

<Check points>

1. The all segments are lighted up correctly.
2. The brightness of all segments is same level.

b. Display



c. Test result print

When pushed any key, the test mode is cancelled, and the completion print is performed.

3-4) DRAWER TEST

a. Test Procedure

The drawer opens with the above key operation. Check that the drawer is open. After drawer open, the test will finish automatically and print the following report.

b. Test result print

3-5) PRINTER TEST

a. Test Procedure

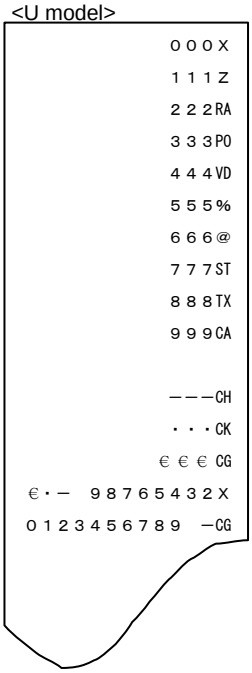
With the above key operation, the print test pattern is repeatedly printed as below.
Pushing any key will terminate the test after the completion of one cycle print. (The receipt is issued until any key pushed.)

<Check points>

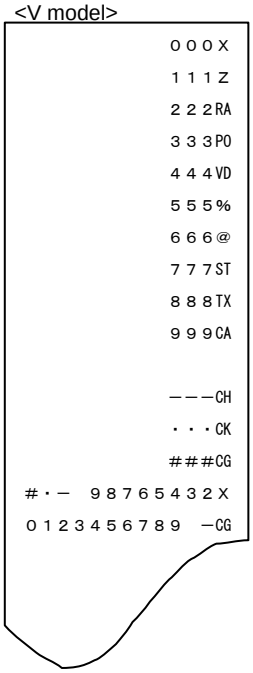
1. There is no lack character.
2. There is no unclear character.

b. TEST Pattern

<U model>



<V model>



3-6) CPU version PRINT

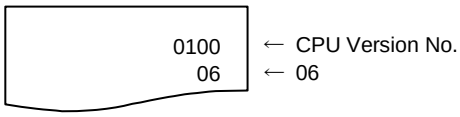
a. Test Procedure

The CPU version is printed with above key operation.

This mode is finished automatically when print completed.

b. Test result print

(When Version 1.00)



3-7) MEMORY BATTERY VOLTAGE SENSOR TEST

a. Test Procedure

Displays A/D conversion port read value of memory battery.
To terminate the test, press any key.

<The displayed value and status>

0155 or greater	Normal
0154 or smaller	Low battery display
0138 or smaller	No battery display (MRS is done when power on)

b. Test result print

3-8) TIME DISPLAY TEST

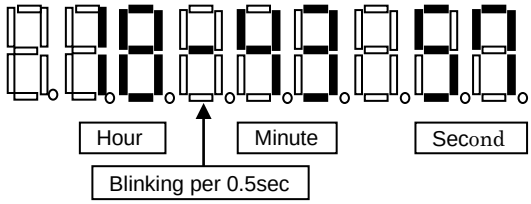
a. Test Procedure

Displays time of CPU with above key operation.

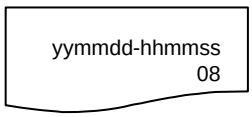
<Check point>
1. To blink the "-" (hyphen)
2. To count up the clock

To terminate the test, press any key.

b. Display



c. Test result print



3-9) DESTINATION DISPLAY

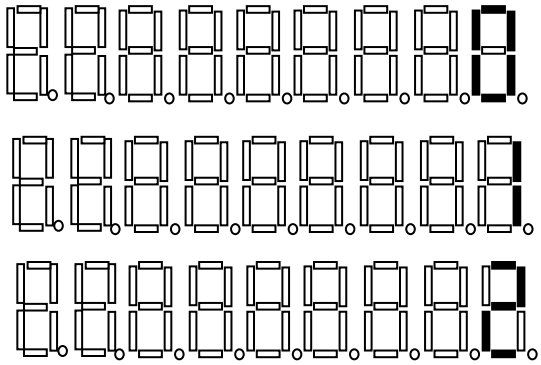
a. Test Procedure

The following destination code in the firmware is displayed with above key operation.

	North America	EU	Japan
Display	0	1	2

To terminate the test, press any key.

b. Display



c. Test result print

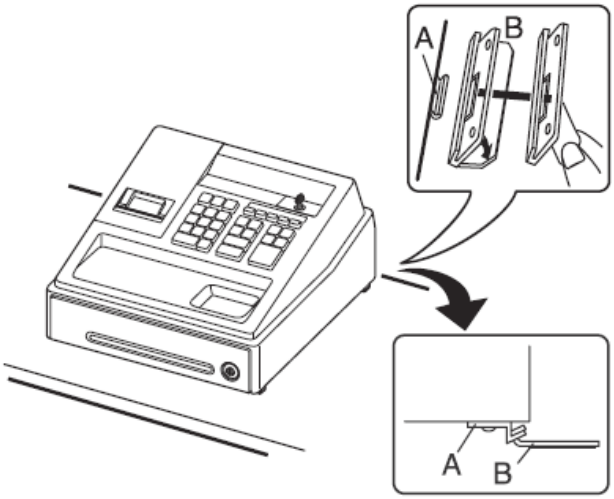
CHAPTER 6. OTHERS

[1] Installing the Fixing Angle Bracket

To prevent the register from moving when the drawer opens, the fixing angle bracket is provided with option. By attaching the bracket to the table where the register is installed, it is possible to hook the register on this bracket and secure the register to its position.

a. How to install the fixing angle bracket

1) To fix the fix angle-A (LANGK7612BHZZ) by the Screw (XHBS730P06000) to the bottom of the resister.
2) Thoroughly clean the location where the fixing angle-B (LANGK7613BHZZ) is to be placed.
3) Peel off the adhesive tape on the fixing angle bracket.
4) Hook the angle bracket onto the fix angle-A which is located at the bottom rear of the register.
5) Firmly stick the fixing angle B to the table surface that cleaned above.



b. How to remove the register from the fixing angle bracket

1) Lift up the front of the register and pull the register towards you.

[2] Printer for XE-A137/A147 series

Since there are no service parts for this model printer, only the printer unit is supplied. Therefore, the printer component parts are not supplied and no service document is issued.
For troubleshooting of the printer, refer to the below:

a. Thermal Printer Troubleshooting

a. Loading and removing the journal paper

- **Procedure for loading and removing the journal paper**

1) Journal paper loading procedure:
- Please release the platen unit before loading the journal paper.
- When loading the journal paper, please set the paper straight with the leading edge of the paper 5cm or longer sticking out from the top face of the printer mechanism.

2) Journal paper removal procedure:
- Please release the platen unit before removing the journal paper.

3) Paper removal procedure at the time of the paper jam
- Please take off the jammed paper in accordance with the Journal paper removal procedure.

- **Notes for loading and removing journal paper**
  - Please release the platen unit before loading the journal paper. The journal paper cannot be loaded by the auto loading function on this product.
  - When loading the journal paper, please set the paper straight with the leading edge of the paper 5cm or longer sticking out from the top face of the printer mechanism.
  - When installing the platen unit, the platen unit drive gear contacts with the deceleration gear, and in some cases, the platen unit cannot be installed. In this case, please release the platen unit, and then try to install it again.
  - When the journal paper is skewed, please keep feeding the paper until the paper is straightened or reload the journal paper.
  - When taking off the journal paper due the paper jam, please release the platen unit first. Please do not forcibly pull out the jammed paper otherwise it may cause the damage.

b. Cleaning of the thermal head

If the surface of the thermal head gets dirty for some reasons, please clean the thermal head, otherwise it may lead to the print error etc.

- **Cleaning procedure of the thermal head**
  - Please be sure to shut OFF the power before cleaning the thermal head.
  - Please release the platen unit.
  - When cleaning the thermal head, please wipe out the contamination on the heating element section using the cotton swab moistened with the ethyl alcohol or the iso-propyl alcohol.
  - After the alcohol is completely volatilize, please install the platen unit.

- **Notes for the thermal head cleaning**
  - Right after the printout, the thermal head and its surroundings reach the high temperature so please be sure not to clean the thermal head right after the printout.
  - When cleaning the thermal head, please release the platen unit.
  - Please be sure not to clean the thermal head with the tool which may damage the heating element such as the sand paper and the cutter etc.

[2] Printer for XE-A107 series

Since there are no service parts for this model printer, only the printer unit is supplied. Therefore, the printer component parts are not supplied and no service document is issued.
For troubleshooting of the printer, refer to the table below:

b. Trouble shooting

Phenomena	Check point/possible cause	Repair
The printer motor is locked and the buzzer sounds intermittently The printer does not work properly	Check if the printer cable is disconnected	Check and repair the printer cable
	Check if the printer life is reached	Replace the printer
	Check if any foreign material is attached to the printing type wheel or the gear section	Remove the foreign material. (After removing the foreign material, set the mode switch to "REG" and press "CL" key)
Defective print (Lack on the upper/ lower or left/right side)	Check if the printing type is worn down	Replace the printer.
	Check if any foreign material is attached to the printing type wheel	Install the ink roll properly
	Check if the printing type wheel is worn down	Replace the printer
Thin print	Check if the ink roll life is reached	Replace the ink roll.
	Check if the ink roll is properly installed	Install the ink roll properly
	Check if the printing type wheel is worn down	Replace the printer
Uneven pitch of print paper feed	Check if the roll paper size is proper	Use roll paper as specified below; Paper width: 57.5 0.5mm Outside diameter: φ80mm or less Inside diameter of paper tube: φ12mm or less Paper thickness: 0.06~0.085mm
	Check if a load is applied to the roll paper during paper feeding. This may result from a foreign materials attached to the roll paper.	Remove any foreign material.

CHAPTER 7. ERROR CODE

When the following error codes are displayed, press the [CL] key and take a proper action according to the table below.

Error code	Error status	Action
E01	Registration error	Make a correct key entry.
E02	Miss operation error	Make a correct key entry.
E11	Compulsory depression of the [#/TM/ST] key	Press the [#/TM/ST] key and continue the operation
E12	Compulsory tendering	Make a tendering operation.
E33	Compulsory SCM (starting cash memory) entry	Make the SCM (starting cash memory) entry.
E34	Overflow limitation error	Make a registration within a limit of entry
E35	The open price entry is inhibited	Make a preset price entry.
E36	The preset price entry is inhibited	Make an open price entry
E37	The direct finalization is inhibited	Make a tendering operation.
E67	Subtotal void is not allowed.	Finalize the transaction, and correct the wrong entries in the mode.
E80	The battery trouble is occurred	Change the battery

CHPTER 8. PARTS LIST

NO.	PARTS CODE	PRICE RANK	NEW MARK		DESCRIPTION	
1	0RDS1PSA19502	AR	N		MODE SWITCH ASSY 107	
	0RDS1PSA19512	AR	N		MODE SWITCH ASSY 137/147	
2	0RDS1PSA19501	BB	N		KEY UNIT ASSY 107	
	0RDS1PSA19529	BB	N		KEY UNIT ASSY 137/147	
3	0RDS1PSA19532	BM	N		MONEY CASE UNIT (EA-BK)	
	0RDS1PSA19533	BM	N		MONEY CASE UNIT (EA-WH)	
4	0RDS1PSA19462	AN	N		PRINTER COVER ASSY 107B	
	0RDS1PSA19541	BC	N		PRINTER COVER ASSY 107W	
	0RDS1PSA19544	BC	N		PRINTER COVER ASSY 147B	
	0RDS1PSA19545	BC	N		PRINTER COVER ASSY 137B	
	0RDS1PSA19546	BC	N		PRINTER COVER ASSY 147W	
	0RDS1PSA19547	BC	N		PRINTER COVER ASSY 137W	
5	0RDS1PSA19549	BF	N		TOP CAB UNIT (A107 E-B)	
	0RDS1PSA19550	BF	N		TOP CAB UNIT (A107 E-W)	
	0RDS1PSA19551	BG	N		TOP CAB UNIT (A137 E-B)	
	0RDS1PSA19552	BG	N		TOP CAB UNIT (A137 E-W)	
	0RDS1PSA19553	BG	N		TOP CAB UNIT (A147 E-B)	
	0RDS1PSA19554	BG	N		TOP CAB UNIT (A147 E-W)	
6	0RDS1PSA19563	BP	N		ASSY DRAWER SERVICE (A107B)	
	0RDS1PSA19566	BP	N		ASSY DRAWER SERVICE (A107W)	
	0RDS1PSA19568	BP	N		ASSY DRAWER SERVICE (A137B / A147B)	
	0RDS1PSA19570	BP	N		ASSY DRAWER SERVICE (A137W / A147W)	
7	0RDDDCASST003	BC	N		AC ADAPTOR 107B4	
	0RDDDCASST004	BC	N		AC ADAPTOR 107B6	
	0RDDDCASST005	BC	N		AC ADAPTOR 107B7	
	0RDDDCASST006	BC	N		AC ADAPTOR 107B8	
	0RDDDCASST009	BC	N		AC ADAPTOR 137B4	
	0RDDDCASST010	BC	N		AC ADAPTOR 137B6	
	0RDDDCASST011	BC	N		AC ADAPTOR 147B7	
8	0RDS1PSA19467	BG	N		MAIN PCB ASSY 107	
	0RDS1PSA19485	BS	N		MAIN PCB ASSY 147	
	0RDS1PSA19513	BR	N		MAIN PCB ASSY 137	
9	0RDS1PSA19475	AF	N		PRINTER PCB ASSY 107	NOTE
	0RDS1PSA19491	AP	N		PRINTER PCB ASSY 137/147	
10	0RDS1PSA19477	AR	N		DC JACK PCB ASSY 107	
	0RDS1PSA19495	AV	N		DC JACK PCB ASSY 137/147	
11	0RDS1PSA19473	AW	N		7SEG PCB ASSY 107	
	0RDS1PSA19497	AX	N		7SEG PCB ASSY 137/147	
12	0RDS1PSA19499	AL	N		Battery PCB ASSY (147)	
13	0RDS00EEF0020	AB	N		E RING (PHAI2)	
14	0RDS0GCJB9050	AC	N		SCREW B-TIGHT	
15	0RDS1PM336259	AE	N		LOCK LEVER	
16	0RDS1PM336264	AC	N		MONEY CASE ROLLER	
17	0RDS1PM424072	AC	N		SCREW M3X8 P-TIGHT F	
18	0RDS1PM429041	AC	N		2.6X4 B-TIGHT FLAT H	
19	0RD1QB200AJ0B	AL	N		WIRE ASSY (PRINTER-MAIN)	
20	DUNT-1475BHPZ	BG			PRINTER UNIT (LPT01-245-01) 137/147	
	KI-OB2015BHPB	BA			PRINTER UNIT 107	NOTE
21	0RDS1PM225998	AF	N		SPOOL (A107)	
22	0RDS1PM336274	AD	N		SPOOL DISK (A107)	
23	0RDS1PM440848	AZ	N		MOTOR GUM (A107)	

NOTE

* When replace the PRINTER UNIT 107 (KI-OB2015BHPB), the soldering is needed with the PRINTER PCB ASSY 107 (0RDS1PSA19475).

AC-adaptor destination table

Part Number	Parts name	XE-A107						XE-A137				XE-A147				
		B4	B5	B6	B7	B8	B9	B4	B5	B6	B9	B4	B5	B6	B7	B9
		W4	W5	W6	W7	W8	W9	W4	W5	W6	W9	W4	W5	W6	W7	W9
0RDDDCASST003	AC ADAPTOR 107B4	○	○				○									
0RDDDCASST004	AC ADAPTOR 107B6			○												
0RDDDCASST005	AC ADAPTOR 107B7				○											
0RDDDCASST006	AC ADAPTOR 107B8					○										
0RDDDCASST009	AC ADAPTOR 137B4							○	○		○	○	○			○
0RDDDCASST010	AC ADAPTOR 137B6									○				○		
0RDDDCASST011	AC ADAPTOR 147B7														○	
		EUROPE (w/o Germany, UK) Southeast Asia & Middle East	Germany	UK, Malaysia	Australia, New Zealand	South Africa	Indonesia	EUROPE (w/o Germany, UK) Southeast Asia & Middle East	Germany	UK, Malaysia	Indonesia	EUROPE (w/o Germany, UK) Southeast Asia & Middle East	Germany	UK, Malaysia	Australia, New Zealand	Indonesia

PARTS OUTLOOK

1. Mode SW ASSY

2. KEY UNIT ASSY

3. MONEY CASE UNIT

4. PRINTER COVER ASSY

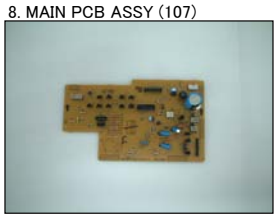
5. TOP CAB UNIT

6. ASSY DRAWER SERVICE

7. AC ADAPTER

8. MAIN PCB ASSY (137/147)

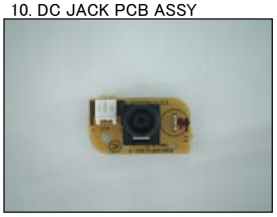
8. MAIN PCB ASSY (107)



9. PRINTER PCB ASSY (137/147)

9. PRINTER PCB ASSY (107)

10. DC JACK PCB ASSY



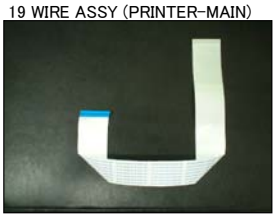
11. 7SEG PCB ASSY

12. BATTERY PCB ASSY

15. LOCK LEVER

16. MONEY CASE ROLLER

19 WIRE ASSY (PRINTER-MAIN)



20. PRINTER UNIT (A137/147)

20. PRINTER UNIT (A107)

21. SPOOL (A107)

22. SPOOL DISK (A107)

23. PRINTER GUM (A107)

SHARP

SHARP CORPORATION

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