Service Manual for EC-II counting scale

Ⅰ. Phenomena of trouble

1) Trouble of part

The trouble phenomena are as following:

a) Buzzer-----buzzer doesn't make sound, or sometimes make sound and sometimes doesn't make sound.

b) LCD-----The display is faultily.

c) Backlight-----The backlight doesn't lighten, or sometimes it lighten and sometimes doesn't lighten:

d) Key -----The key don't work.

2) Trouble of load cell

The trouble phenomena are as following:

a) The display data is drifting.

b) The display data doesn't change, or the internal resolution value is not in the natural range.

c) The internal resolution data drift badly.

d) The initial resolution is drifting.

3) Trouble of power supply

The phenomenon is as following:

The scale doesn't work or the "low voltage" symbol comes out after turning on.

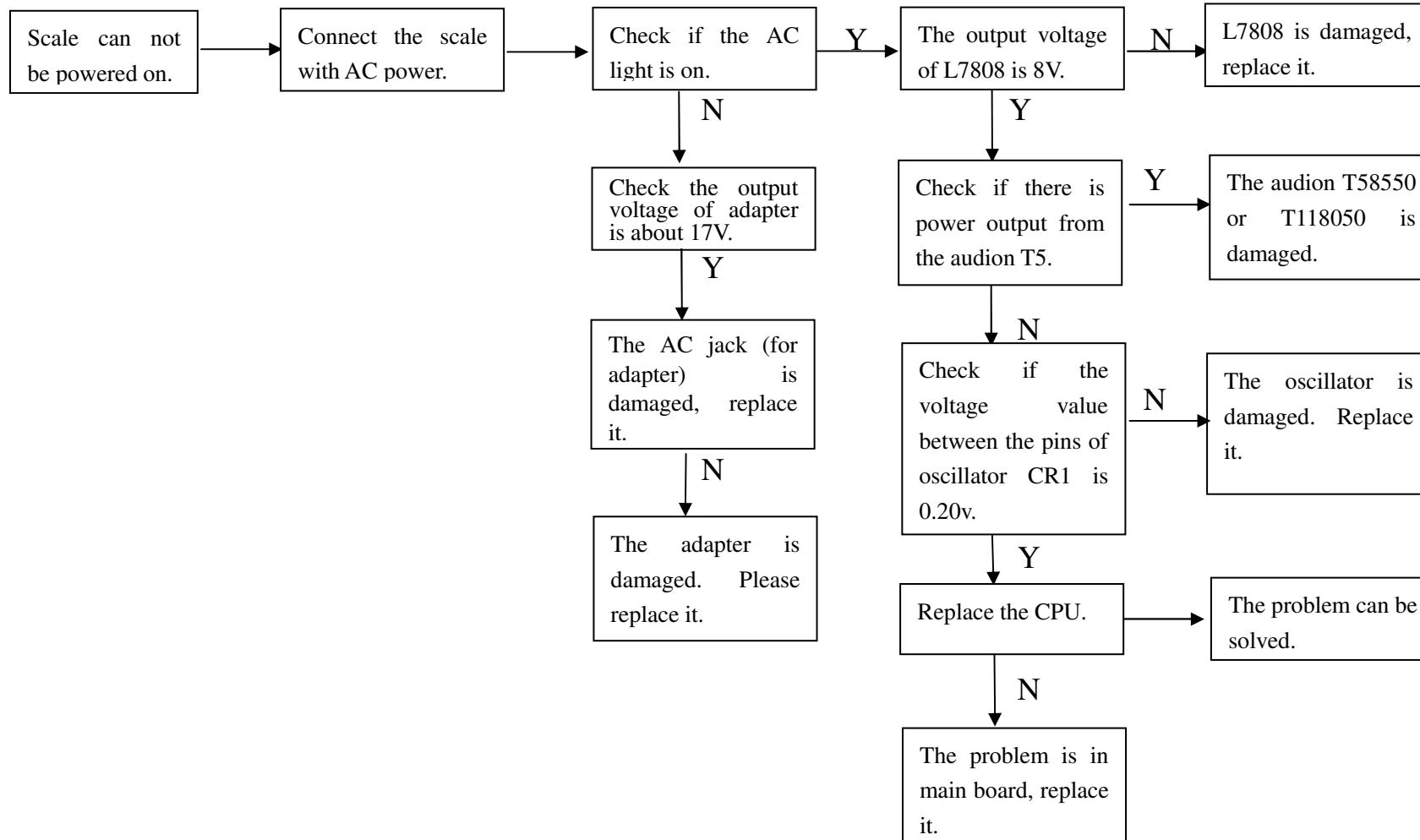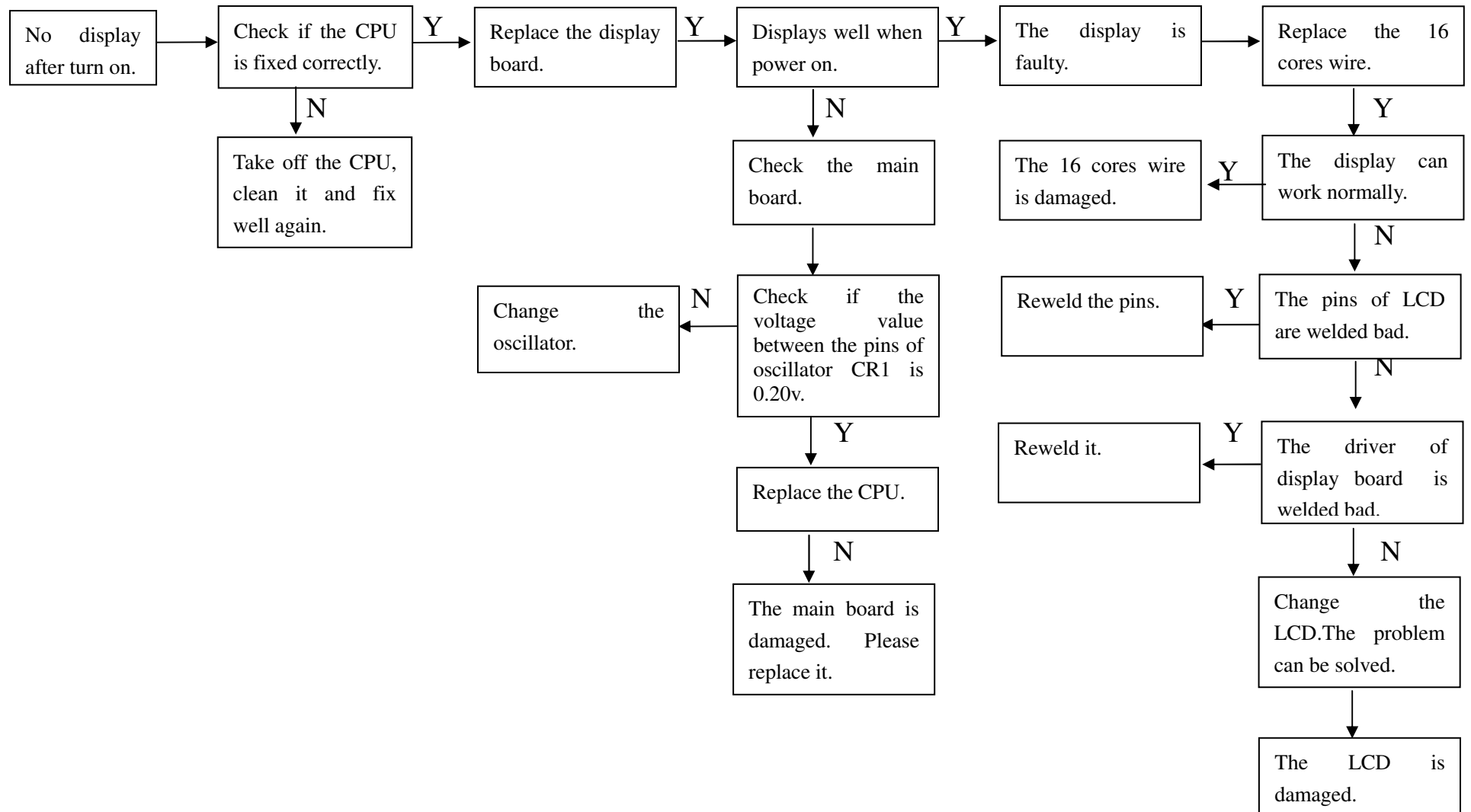### 4) Trouble of the PCB

The phenomena are as following:

a) Trouble of display board-----the display is abnormal, or shows nothing.

b) Trouble of main board

- There is nothing in the display when turn on the scale.
- The scale can not be powered on.
- The weighing is unstable.
- The internal resolution is out of the normal range.

c) Trouble of RS-232 board-----The scale doesn't transmit any data.
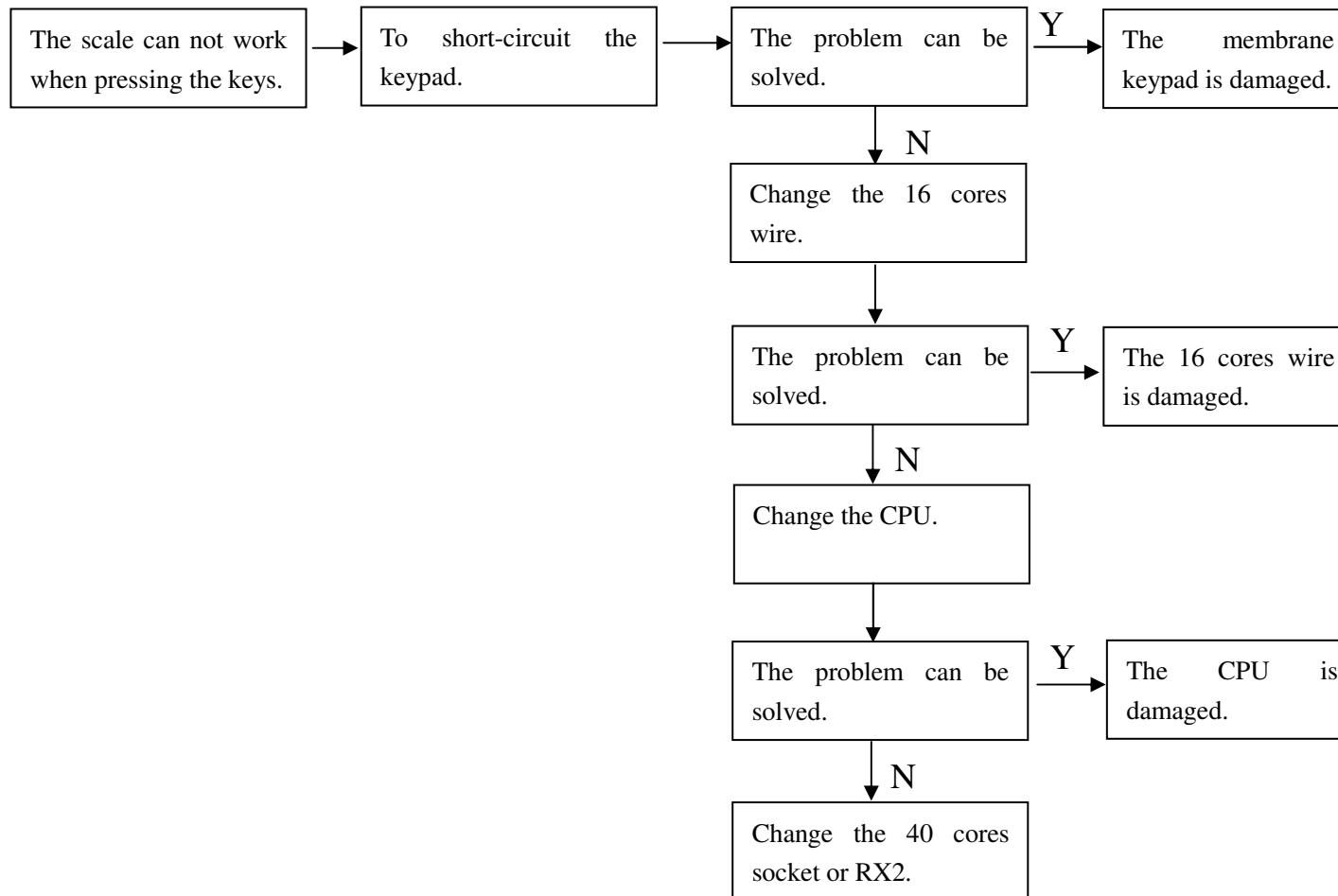
Ⅱ. To solve the trouble

1．The scale can not be powered on

```
┌──────────────┐     ┌──────────────┐     ┌──────────────┐  Y  ┌──────────────┐  N  ┌──────────────┐
│ Scale can not│ ──> │ Connect the  │ ──> │ Check if the │ ──> │ The output   │ ──> │ L7808 is     │
│ be powered   │     │ scale with   │     │ AC light is  │     │ voltage of   │     │ damaged,     │
│ on.          │     │ AC power.    │     │ on.          │     │ L7808 is 8V. │     │ replace it.  │
└──────────────┘     └──────────────┘     └──────────────┘     └──────────────┘     └──────────────┘
                                                 │ N                  │ Y
                                                 v                    v
                                          ┌──────────────┐     ┌──────────────┐  Y  ┌──────────────┐
                                          │ Check the    │     │ Check if     │ ──> │ The audion   │
                                          │ output       │     │ there is     │     │ T58550 or    │
                                          │ voltage of   │     │ power output │     │ T118050 is   │
                                          │ adapter is   │     │ from the     │     │ damaged.     │
                                          │ about 17V.   │     │ audion T5.   │     └──────────────┘
                                          └──────────────┘     └──────────────┘
                                                 │ Y                  │ N
                                                 v                    v
                                          ┌──────────────┐     ┌──────────────┐  N  ┌──────────────┐
                                          │ The AC jack  │     │ Check if the │ ──> │ The          │
                                          │ (for adapter)│     │ voltage value│     │ oscillator   │
                                          │ is damaged,  │     │ between the  │     │ is damaged.  │
                                          │ replace it.  │     │ pins of      │     │ Replace it.  │
                                          └──────────────┘     │ oscillator   │     └──────────────┘
                                                 │ N           │ CR1 is 0.20v.│
                                                 v             └──────────────┘
                                          ┌──────────────┐            │ Y
                                          │ The adapter  │            v
                                          │ is damaged.  │     ┌──────────────┐     ┌──────────────┐
                                          │ Please       │     │ Replace the  │ ──> │ The problem  │
                                          │ replace it.  │     │ CPU.         │     │ can be       │
                                          └──────────────┘     └──────────────┘     │ solved.      │
                                                                      │ N           └──────────────┘
                                                                      v
                                                               ┌──────────────┐
                                                               │ The problem  │
                                                               │ is in main   │
                                                               │ board,       │
                                                               │ replace it.  │
                                                               └──────────────┘
```

2. No display after turning on:

```
┌──────────────┐      ┌──────────────┐  Y   ┌──────────────┐  Y   ┌──────────────┐  Y   ┌──────────────┐  Y   ┌──────────────┐
│ No    display│ ───► │ Check if the │ ───► │ Replace the  │ ───► │ Displays well│ ───► │ The display  │ ───► │ Replace   the│
│ after turn on│      │ CPU is fixed │      │ display board│      │ when power on│      │ is faulty.   │      │ 16 cores wire│
└──────────────┘      │ correctly.   │      └──────────────┘      └──────────────┘      └──────────────┘      └──────────────┘
                      └──────────────┘                                   │ N                                        │ Y
                             │ N                                         ▼                                          ▼
                             ▼                                    ┌──────────────┐      ┌──────────────┐  Y   ┌──────────────┐
                      ┌──────────────┐                            │ Check the    │      │ The 16 cores │ ◄─── │ The  display │
                      │ Take off the │                            │ main board.  │      │ wire is      │      │ can    work  │
                      │ CPU, clean it│                            └──────────────┘      │ damaged.     │      │ normally.    │
                      │ and fix well │                                   │              └──────────────┘      └──────────────┘
                      │ again.       │                                   ▼                                          │ N
                      └──────────────┘                    ┌──────────────┐  N   ┌──────────────┐                    ▼
                                                          │ Change   the │ ◄─── │ Check if the │      ┌──────────────┐  Y   ┌──────────────┐
                                                          │ oscillator.  │      │ voltage value│      │ Reweld the   │ ◄─── │ The pins of  │
                                                          └──────────────┘      │ between the  │      │ pins.        │      │ LCD are      │
                                                                                │ pins of      │      └──────────────┘      │ welded bad.  │
                                                                                │ oscillator   │                            └──────────────┘
                                                                                │ CR1 is 0.20v.│                                   │ N
                                                                                └──────────────┘                                   ▼
                                                                                       │ Y             ┌──────────────┐  Y   ┌──────────────┐
                                                                                       ▼               │ Reweld it.   │ ◄─── │ The driver of│
                                                                                ┌──────────────┐       └──────────────┘      │ display board│
                                                                                │ Replace the  │                            │ is welded bad│
                                                                                │ CPU.         │                            └──────────────┘
                                                                                └──────────────┘                                   │ N
                                                                                       │ N                                         ▼
                                                                                       ▼                                    ┌──────────────┐
                                                                                ┌──────────────┐                            │ Change   the │
                                                                                │ The main board│                           │ LCD.The      │
                                                                                │ is damaged.  │                            │ problem can  │
                                                                                │ Please       │                            │ be solved.   │
                                                                                │ replace it.  │                            └──────────────┘
                                                                                └──────────────┘                                   │
                                                                                                                                   ▼
                                                                                                                            ┌──────────────┐
                                                                                                                            │ The LCD is   │
                                                                                                                            │ damaged.     │
                                                                                                                            └──────────────┘
```

3. Press the keypad the scale can not work:

```
┌─────────────────────┐     ┌─────────────────────┐     ┌─────────────────────┐  Y  ┌─────────────────────┐
│ The scale can not    │ ──▶ │ To  short-circuit    │ ──▶ │ The problem can be   │ ──▶ │ The      membrane    │
│ work  when pressing  │     │ the keypad.          │     │ solved.              │     │ keypad is damaged.   │
│ the keys.            │     │                      │     │                      │     │                      │
└─────────────────────┘     └─────────────────────┘     └─────────────────────┘     └─────────────────────┘
                                                                   │ N
                                                                   ▼
                                                         ┌─────────────────────┐
                                                         │ Change the 16 cores  │
                                                         │ wire.                │
                                                         └─────────────────────┘
                                                                   │
                                                                   ▼
                                                         ┌─────────────────────┐  Y  ┌─────────────────────┐
                                                         │ The problem can be   │ ──▶ │ The 16 cores wire    │
                                                         │ solved.              │     │ is damaged.          │
                                                         └─────────────────────┘     └─────────────────────┘
                                                                   │ N
                                                                   ▼
                                                         ┌─────────────────────┐
                                                         │ Change the CPU.      │
                                                         │                      │
                                                         └─────────────────────┘
                                                                   │
                                                                   ▼
                                                         ┌─────────────────────┐  Y  ┌─────────────────────┐
                                                         │ The problem can be   │ ──▶ │ The    CPU    is     │
                                                         │ solved.              │     │ damaged.             │
                                                         └─────────────────────┘     └─────────────────────┘
                                                                   │ N
                                                                   ▼
                                                         ┌─────────────────────┐
                                                         │ Change the 40 cores  │
                                                         │ socket or RX2.       │
                                                         └─────────────────────┘
```

4. Weighing is inaccurate or instable:

```
┌─────────────────────┐     ┌─────────────────────┐  Y  ┌─────────────────────┐  Y  ┌─────────────────────┐  Y  ┌─────────────────────┐
│ Weighing is inaccurate │──▶│ Check if the working │────▶│ The voltage value is │────▶│ The battery voltage is │────▶│ Recharge or replace the │
│ or instable.        │     │ environment is stable. │     │ normal.             │     │ less than 5.4V       │     │ battery.            │
└─────────────────────┘     └─────────────────────┘     └─────────────────────┘     └─────────────────────┘     └─────────────────────┘
                                      │ N                          │ N                          │ N
                                      ▼                            ▼                            ▼
                            ┌─────────────────────┐     ┌─────────────────────┐     ┌─────────────────────┐  Y  ┌─────────────────────┐
                            │ Change   to   a   stable │ │ To use the scale when │    │ There    are    something │──▶│ Move       away       the │
                            │ place.              │     │ the voltage is normal. │    │ touch    the    pan    or │     │ eyewinker.          │
                            └─────────────────────┘     └─────────────────────┘     │ up-supporter.        │     └─────────────────────┘
                                                                                     └─────────────────────┘
                                                                                              │ N
                                                                                              ▼
                                                                                     ┌─────────────────────┐  Y  ┌─────────────────────┐
                                                                                     │ Recalibrate the scale. │──▶│ The   problem   can   be │
                                                                                     └─────────────────────┘     │ solved.             │
                                                                                              │ N                 └─────────────────────┘
                                                                                              ▼
                                                                                     ┌─────────────────────┐  Y  ┌─────────────────────┐
                                                                                     │ Change  load  cell  and │──▶│ The      load     cell    is │
                                                                                     │ recalibrate.         │     │ damaged.            │
                                                                                     └─────────────────────┘     └─────────────────────┘
                                                                                              │
                                                                                              ▼
                                                                                     ┌─────────────────────┐
                                                                                     │ The   problem   can   be │
                                                                                     │ solved.             │
                                                                                     └─────────────────────┘
                                                                                              │ N
                                                                                              ▼
                                                                                     ┌─────────────────────┐
                                                                                     │ Change the main board │
                                                                                     │ and recalibrate.     │
                                                                                     └─────────────────────┘
                                                                                              │
                                                                                              ▼
                                                                                     ┌─────────────────────┐
                                                                                     │ The   problem   can   be │
                                                                                     │ solved.             │
                                                                                     └─────────────────────┘
```

5. The display is incomplete or exceptional:

```
┌──────────────────┐     ┌──────────────────┐     ┌──────────────────┐   Y   ┌──────────────────┐
│ The      display │     │ Change   the  9  │     │ The problem can be│──────▶│ The 9 cors wire is│
│ incomplete    or │────▶│ cors wire.       │────▶│ solved.          │       │ damaged.         │
│ exceptional      │     │                  │     │                  │       │                  │
└──────────────────┘     └──────────────────┘     └──────────────────┘       └──────────────────┘
                                                            │ N
                                                            ▼
                                                   ┌──────────────────┐
                                                   │ Change the display│
                                                   │ board.           │
                                                   └──────────────────┘
                                                            │
                                                            ▼
                                                   ┌──────────────────┐   Y   ┌──────────────────┐       ┌──────────────────────┐   Y   ┌──────────────┐
                                                   │ The problem can be│──────▶│ The problem is in│──────▶│ Check if all the pins│──────▶│ Reweld them. │
                                                   │ solved.          │       │ display board.   │       │ were welded bad.     │       │              │
                                                   └──────────────────┘       └──────────────────┘       └──────────────────────┘       └──────────────┘
                                                            │ N                                                    │ N
                                                            ▼                                                      ▼
                                                   ┌──────────────────┐                              ┌──────────────────┐
                                                   │ The problem is in│                              │ Change the LCD . │
                                                   │ main board.      │                              │                  │
                                                   └──────────────────┘                              └──────────────────┘
                                                                                                              │
                                                                                                              ▼
                                                                                             ┌──────────────────┐   Y   ┌──────────────┐
                                                                                             │ The problem can be│──────▶│ The LCD  was │
                                                                                             │ solved.          │       │ damaged.     │
                                                                                             └──────────────────┘       └──────────────┘
                                                                                                      │ N
                                                                                                      ▼
                                                                                             ┌──────────────────┐
                                                                                             │ The LCD driver module│
                                                                                             │ was damaged.     │
                                                                                             └──────────────────┘
                                                                                                      │
                                                                                                      ▼
                                                                                             ┌──────────────────┐
                                                                                             │ Replace HT1622.  │
                                                                                             └──────────────────┘
```

6. RS232 don't transmit any data

| RS232 don't transmit any data. | → | Check if the setting of transmit method or baud rate is matching with the printer or PC. |

Check if the setting... →(Y) Check the voltage of the 7 pins of the RS232 socket is around 10V. →(N) Check the voltage of the input pin of the U1ADM 202EA is 5V. →(Y) Check the 3-cores cable is living. →(N) Replace the 3-cores cable.

Check if the setting... ↓(N) Correct the setting.

Check the voltage of the 7 pins... ↓(Y) The socket is damaged, replace it.

Check the voltage of the input pin... ↓(N) Re-solder the U1. The trouble can be solved. ↓(N) Replace the U1.

Check the 3-cores cable is living. ↓(Y) The voltage balance between the pins of the Crystal Oscillator (CR1) is around 0.20v. →(N) The Crystal Oscillator is damaged. Replace it.

The voltage balance between the pins... ↓(Y) Replace the CPU, and the trouble can be solved.

Note: Since this series of balance is with high precision, it is very easy to be affected by clime and temperature. Sometimes the scale has the following phenomena:

1) Weighing is inaccurate.

   The problem can be solved by re-calibration.

2) After self-check, the display shows error messages.

   E1: Re-calibrate the scale to solve it.

   E3: Re-calibrate the scale or replace the load cell to solve it.

3) If any one of main board and load cell is changed, the scale must be recalibrated.

III. Calibration procedure

1. **Switch on. Press "83419" to enter into Calibration mode during self-checking.**

   If the display shows as below, it means the scale hasn't be calibrated or data lost. Then press "**ENTER**" key to enter into calibration value setting.

WEIGHT	UNIT WEIGHT	COUNT
HHHHHH	₌00₌	200358
▼ ▼ ▼		▼
⊿ →0← NET g Kg lb	⛰ 🔟g HI OK LO	→〉◼◻ NEGATIVE Local Remote COUNT
Random number		Internal resolution
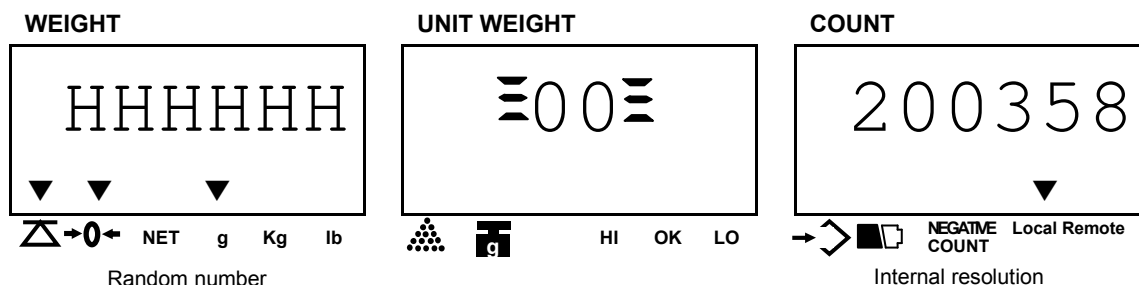
   1.2 If display shows as below, it means the scale has been calibrated before.

WEIGHT	UNIT WEIGHT	COUNT
0.0000	₌00₌	200358
▼ ▼ ▼		▼
⊿ →0← NET g Kg lb	⛰ 🔟g HI OK LO	→〉◼◻ NEGATIVE Local Remote COUNT
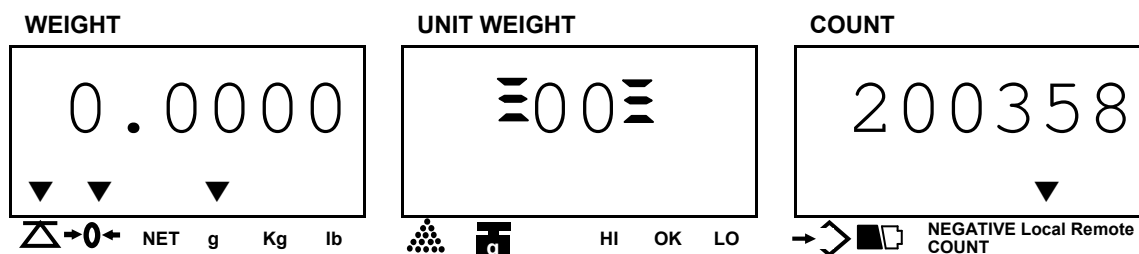
   1.2.1 If you want to change the calibration setting values, please "**ENTER**" key.

   1.2.2 If there is no need to change them, press "**SMPL**" key to do the calibration directly.

   Note: If the remote platform is required to be calibrated, press **REMOTE** key to enter into remote platform calibration. REMOTE indicator will be on.(Default one:

   Local platform)

2. **Check Internal Resolution**

   When display shows as below:

WEIGHT	UNIT WEIGHT	COUNT
HHHHHH	₌00₌	200358
▼ ▼ ▼		▼
⊿ →0← NET g Kg lb	⛰ 🔟g HI OK LO	→〉◼◻ NEGATIVE Local Remote COUNT
Random number		Internal resolution
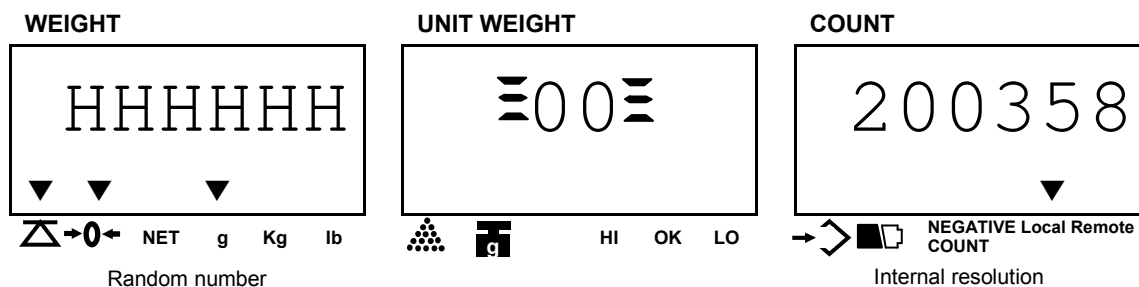
Press SET key to check the current internal resolution. Display shows as below:

WEIGHT	UNIT WEIGHT	COUNT
0	CAL	200358
▼ ▼ ▼		▼
△ →0← NET g Kg lb	⋰ g̅ HI OK LO	→⟩■◻ NEGATIVE Local Remote COUNT
		Current Internal resolution
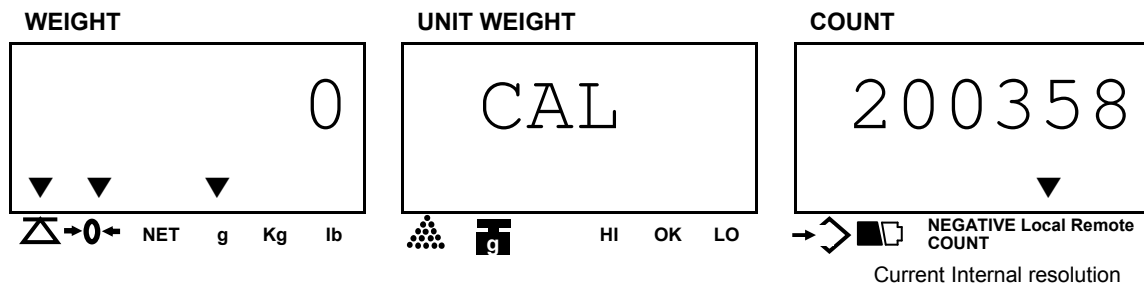
Put on more weight.

WEIGHT	UNIT WEIGHT	COUNT
142230	CAL	342588
▼ ▼ ▼		▼
△ →0← NET g Kg lb	⋰ g̅ HI OK LO	→⟩■◻ NEGATIVE Local Remote COUNT
Increasing Internal resolution		Total Internal resolution
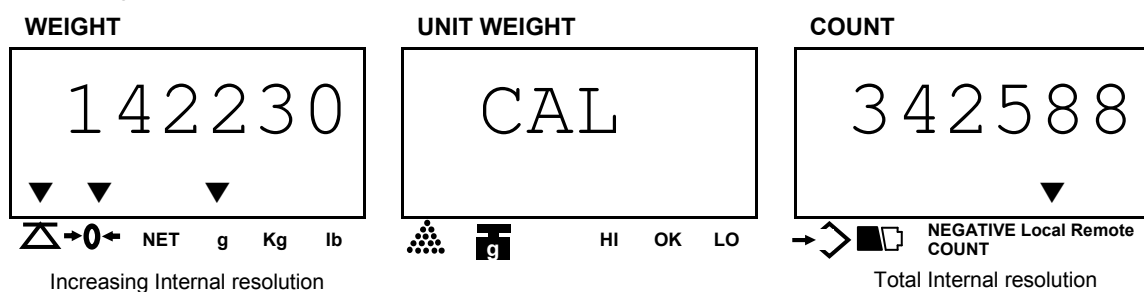
Weight window shows the increasing internal resolution, Count display window shows the total internal resolution which equals to original one and the increasing value.

Press SET key again to back to calibration mode.

3. Change and choose the unit, resolution, accuracy, capacity and weight value for calibration by pressing the "**MOVE**" key and the "**ENTER**" key.The steps are as following:

3.1 Default setting value(User setting and Calibration setting value): * "df no": Defaulting setting is released, * "df Yes" : Every setting is setup in default.

    3.1.1 The display shows:

WEIGHT	UNIT WEIGHT	COUNT
no	df	200358
▼ ▼ ▼		▼
△ →0← NET g Kg lb	⋰ g̅ HI OK LO	→⟩■◻ NEGATIVE Local Remote COUNT
		Current Internal resolution
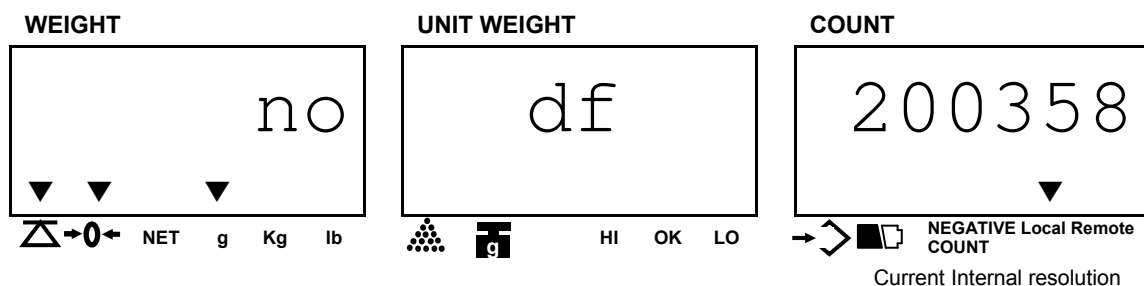
3.1.2 Press "MOVE" key to change the value. (yes, no)

3.1.3 Press "ENTER" key to confirm and enter into next setting.

3.2 Choose unit value(USA version):

3.2.1 The display shows:

WEIGHT	UNIT WEIGHT	COUNT
kg	Unit	200358
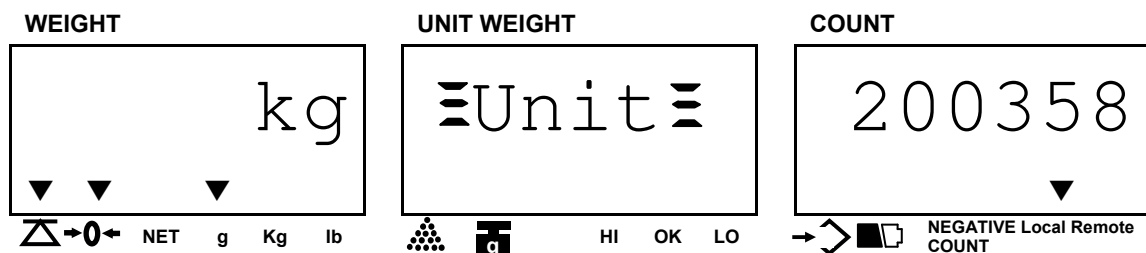
3.2.2 Press the "**MOVE**" key to change the value. (kg, Ib)

3.2.3 Press the "**ENTER**" key to confirm and enter into next step (Choose Resolution).

3.3 Choose Resolution value:

3.3.1 The display shows:

WEIGHT	UNIT WEIGHT	COUNT
HHHHH	res	200358
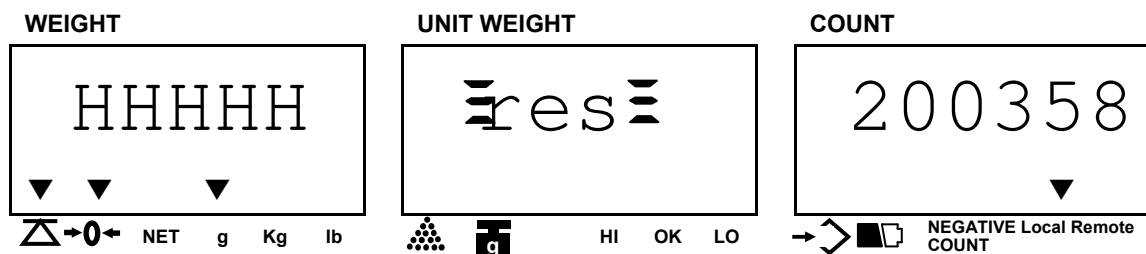
3.3.2 Use the numerical keys to enter the resolution value. (Resolution range: 3000~75000)

3.3.3 Press the "**ENTER**" key to confirm and enter into next step (Choose accuracy).

3.4 Choose accuracy value:

3.4.1 The display shows:

WEIGHT	UNIT WEIGHT	COUNT
1	☰ d ☰	200358

▼ ▼ ▼   ▼

⏃ →0← NET g Kg lb   HI OK LO   NEGATIVE Local Remote COUNT
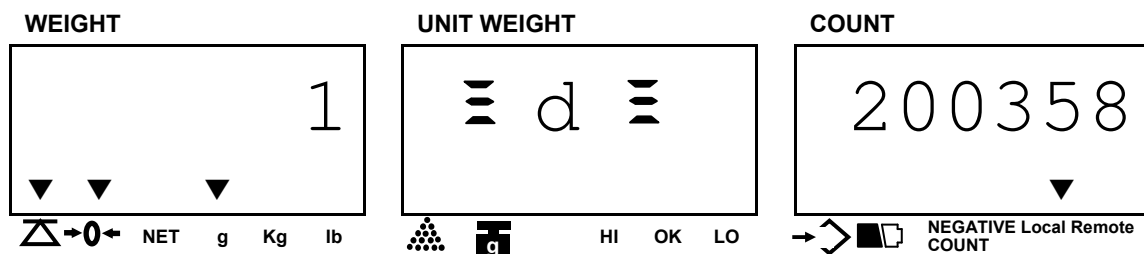
3.4.2 Press the "**MOVE**" key to change the value. (1,2,5)

3.4.3 Press the "**ENTER**" key to confirm and enter into next step (Choose capacity).

3.5 Choose capacity:

3.5.1 The display shows:

WEIGHT	UNIT WEIGHT	COUNT
HHHHH H	☰CAP☰	200358

▼ ▼ ▼   ▼

⏃ →0← NET g Kg lb   HI OK LO   NEGATIVE Local Remote COUNT
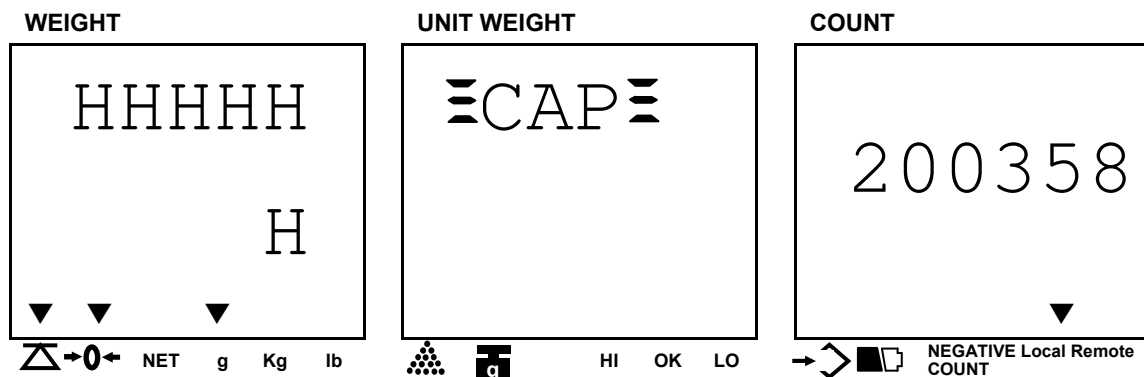
3.5.2 Press the "**MOVE**" key to change the value(move the dot position).

3.5.3 Press the "**ENTER**" key to confirm and enter into next step (Enter zero point).

3.6 Enter zero point:

3.6.1 The display shows:

WEIGHT	UNIT WEIGHT	COUNT
HHHHH	☰CAP0☰	200358

▼ ▼   ▼   △ →0←   NET   g   Kg   lb   HI   OK   LO   →〉◼◻   NEGATIVE Local Remote COUNT

3.6.2 Use the numerical keys to key in the zero point(0).

3.6.3 Press the "**ENTER**" key to confirm and enter into next step (Enter the first calibration value).

3.7 Enter the first calibration value:

3.7.1 The display shows:

WEIGHT	UNIT WEIGHT	COUNT
HHHHH H	☰CAP1☰	200358

▼ ▼   ▼   △ →0←   NET   g   Kg   lb   HI   OK   LO   →〉◼◻   NEGATIVE Local Remote COUNT
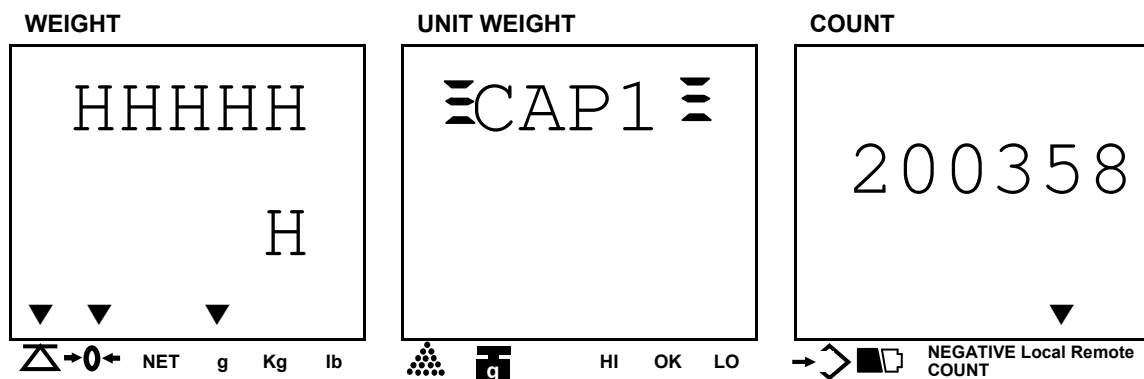
3.7.2 Use the numerical keys to key in the first calibration value.

3.7.3 Press the "**ENTER**" key to confirm and enter into next step (Enter the second calibration value)

3.8 Enter the second calibration value:

3.8.1 The display shows:

WEIGHT

$$HHHHH$$

▼ ▼ ▼
◹ →0← NET g Kg lb

UNIT WEIGHT

$$\Xi CAP2 \Xi$$

⛰ 📦 HI OK LO
g

COUNT

$$200358$$

▼
→⟩◪ NEGATIVE Local Remote COUNT
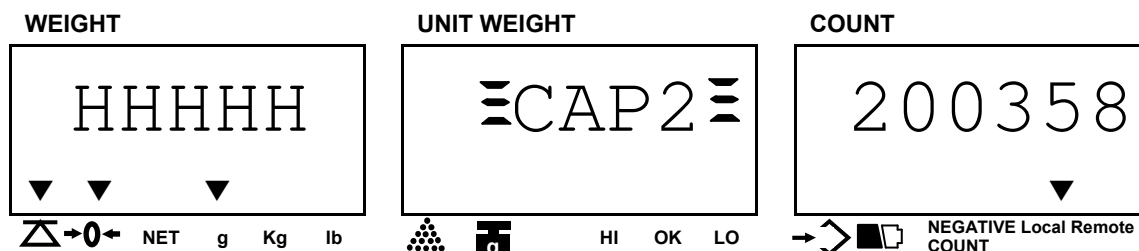
3.8.2 Use the numerical keys to key in the second value for calibration.

3.8.3 Press the "**ENTER**" key to confirm and enter into next step (Enter the third calibration value).

Note: If only one weight value for calibration is needed, Press "**SET**" key, the WEIGHT display window will show "End".Then press" **ENTER**" key to back to **1.2** of step**1** without saving the second calibration value.

3.9 Enter the third calibration value:

3.9.1 The display shows:

WEIGHT

$$HHHHH$$
$$H$$

▼ ▼ ▼
◹ →0← NET g Kg lb

UNIT WEIGHT

$$\Xi CAP3 \Xi$$

⛰ 📦 HI OK LO
g

COUNT

$$200358$$

▼
→⟩◪ NEGATIVE Local Remote COUNT
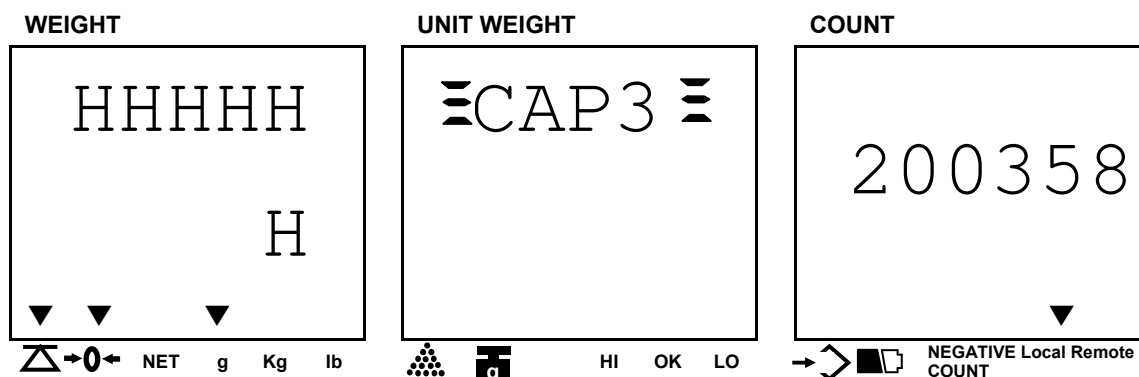
3.9.2 Use the numerical keys to key in the first calibration value.

3.9.3 Press the "**ENTER**" key to confirm and back to **1.2** of step**1**.

If only two weight values for calibration are needed , Press "**SET**" key, the WEIGHT display window will show "End". Then press" **ENTER**" key to back to **1.2** of step**1** without saving the third calibration value.

4. **Calibration Mode:**

- Press "**SMPL**" key to do the calibration. The unit weight window shows"00", and the value"HHHHHH" in weight window blinks.

- Several seconds later,the unit weight window shows " 01 ",and the weight window shows the weight value (the first calibration value). Put on the weight refer to the display. Press "**SMPL**" key to confirm.

  If "**SET**" key is pressed in step **3.8**, press "**SMPL**" key, calibration is finished and back to normal mode.

- Several seconds later,the unit weight window shows "02", and the weight window shows the weight value (the second calibration value). Put on the weight refer to the display. Press"**SMPL**" key for determination.

  If "**SET**" key is pressed in step **3.9**, press "**SMPL**" key, calibration is finished and back to normal mode.

- Several seconds later,the unit weight window shows " 03" ,and theweight window shows the weight value (the third calibration value).Put on the weight refer to the display. Press "**SMPL**" key to confirm.

- Several seconds later,the scale return to counting modle.Then the caliberation procedure is finished.

- Switch off, and take off all the weight, then swithc on, the scale can be used.

Note: If the scale hasn't be calibrated yet, value in weight display window is random data except unit and accuracy. On the contrary, value in weight window should be calibration data or last keyed in ones.

Simple calibration without weight

1. Turn on the scale, and key in "000419" during counting down (self-check) to zero to enter into Simple Calibration mode.

    The displays will indicate as below.

    Press **MOVE** key to choose the taget platform(local or remote).

WEIGHT   **UNIT WEIGHT**   **COUNT**

CAL	locAL	------

▼ ▼ ▼   ▼

⚖ →0← NET g Kg lb   HI OK LO   NEGATIVE Local Remote COUNT

Then press **ENTER** key for determination and enter into calibration mode.

2. The default detting is 1/3 capacity(Take 6kg scale for instance)

WEIGHT   **UNIT WEIGHT**   **COUNT**

Unit	g	------

▼ ▼ ▼   ▼

⚖ →0← NET g Kg lb   HI OK LO   NEGATIVE Local Remote COUNT

    Note: The weighing unit for Local platform is g, while the unit for Remote platform is kg.

3. Put a weight on the pan same as what exactly shown in the

    UNIT WEIGHT window, then press the **ENTER** key to confirm the operation.

    The displayed reading in the UNIT WEIGHT window starts blinking.The scale will stop blinking and return to normal counting mode.

    Calibration is now completed.

   Note:

   ★ Press **CLEAR** key to escape from calibration mode at any time.

   ★ **Change calibration value**

       After entering the third step, press **MOVE** key. Use numeric keys to input a calibration value r(0.80000~ 1.20000). Press **ENTER** key to confirm, then

       the calibration is finished.

        When the scale was calibrated in Country A, and it is used in Country B, the error coefficient (R) should be:

       R=gravity value in Country A / gravity value in Country B