

# **EK-*i*/EW-*i* Series**

## ***Compact Balances***

**EK-120<sub>i</sub> / EK-200<sub>i</sub> / EK-300<sub>i</sub> / EK-600<sub>i</sub>**

**EK-1200<sub>i</sub> / EK-2000<sub>i</sub> / EK-3000<sub>i</sub> / EK-6000<sub>i</sub> / EK-12K<sub>i</sub>**

**EW-150<sub>i</sub> / EW-1500<sub>i</sub> / EW-12K<sub>i</sub>**

# Maintenance Manual

**© 2002 A&D Company Ltd. All rights reserved.**

No part of this publication may be reproduced, transmitted, transcribed, or translated into any language in any form by any means without the written permission of A&D Company Ltd.

The contents of this manual and the specifications of the instrument covered by this manual are subject to change for improvement without notice.

### **COMPLIANCE WITH FCC RULES**

Please note that this equipment generates, uses and can radiate radio frequency energy. This equipment has been tested and has been found to comply with the limits of Class A computing device pursuant to Subpart J of Part 15 of FCC rules. These rules are designed to provide reasonable protection against interference when the equipment is operated in a commercial environment. If this unit is operated in a residential area it may cause some interference and under these circumstances the user would be required to take, at his own expense, whatever measures are necessary to eliminate the interference.

(FCC = Federal Communications Commission in the U.S.A.)

#### **Note**

Under some ambient electromagnetic conditions, this equipment may be affected by the electromagnetic interference.



This is a hazard alert mark.

1. Introduction .....	3
2. Block diagram .....	5
3. Trouble shooting .....	6
4. Calibration mode .....	7
4.1 Calibration using a weight .....	7
4.2 Gravity acceleration correction .....	9
4.3 Calibration of the CAL prohibition models .....	10
4.4 Cancellation of CAL prohibition mode .....	10
4.5 Procedure of calibration .....	10
4.6 Set the CAL prohibition mode .....	10
5. Disassembling and Assembling .....	11
5.1 Disassembling .....	11
5.2 Assembling .....	14
6. Internal settings .....	17
6.1 Setting for replacing the maintenance load cell .....	17
6.1.1 Input the characteristic revised data of load cell .....	17
6.1.2 Calibration procedure for maintenance load cell .....	17
6.2 Setting for replacing the main board / E2PROM .....	18
6.2.1 Initialize .....	18
6.2.2 Setting of function .....	18
6.2.3 Input the adjustment data .....	18
6.2.4 Calibration .....	19
7. Check mode .....	20
7.1 Check mode Flow chart .....	20
7.2 Adjustment group .....	21
7.2.1 <span style="border: 1px solid black; padding: 0 2px;">tESt</span> (display/key/port check) .....	21
7.2.2 <span style="border: 1px solid black; padding: 0 2px;">d-dSP</span> (The internal data) .....	21
8. Function setting mode .....	23
8.1 Initialize .....	23
8.2 C-Func (The function setting at manufactured .....	24
8.3 CAL (Calibration) .....	25
8.4 d-SEt (Internal data setting) .....	26

8.5 C-Function list .....	27
9. Specification .....	30
9.1 EK- <i>i</i> series.....	30
9.2 EW- <i>i</i> series .....	31
9.3 Other weighing units .....	32
10. Dimensions .....	33
11. Maintenance .....	34
12. Circuit diagram of PZ3762 .....	37
13. Parts layout of PZ:3762 .....	39
14. Parts list of circuit (PZ:3762) .....	41
15. Options .....	43
15.1 OP-04 Comparator relay output and buzzer .....	43
15.2 OP-09 Rechargeable battery pack (Ni-MH).....	44
16. Circuit diagram of PZ:3764 .....	45
17. Parts layout of PZ:3764 .....	46
18. Parts list of circuit (PZ:3764) .....	47
19. Circuit diagram of PZ:3765 .....	48
20. Parts layout of PZ3765 .....	49
21. Parts list of circuit (PZ:3765) .....	51
22. Exploded view and parts list.....	53
22.1 EK-120i/200i/300i/EW-150i.....	53
22.2 EK-600i/1200i/2000i/3000i/6000i/12ki/EW-1500/12ki .....	57



# 1. Introduction

EK-i and EW-i series are classified in 300i series, 3000i, 12ki series by system of load cell units. Each models is put through various kinds of tests for optimum adjustment. EK-i and EW-i series are gauged using the data from various kinds of test. This data is different from each load cell unit. The data is input into E<sup>2</sup>PROM and shown on the inside of upper case by the area of optional unit connection. These characteristic revised data of load cell are different from each load cell units. In case of replacing the load cell or main board (E<sup>2</sup>PROM) the characteristic revised data of load cell will be initialized.

- Replacing the load cell
  1. Load cell for maintenance (characteristic revised data is adjusted)  
Use the function that no adjustment by software. (Refer to 6.1)
  2. Load cell that attached other models.  
Initialize characteristic revised data of the load cell that shown on the inside of upper case unit that the load cell was attached before. (Refer to 6.2)
- Replacing the main board (E<sup>2</sup>PROM)
  1. Setting of normal load cell unit  
Initialize characteristic revised data of the load cell that is shown on the inside of upper case unit by the optional connection. (Refer to 6.2)
  2. Load cell for maintenance (characteristic revised data is adjusted)  
Use the function that no adjustment by software. (Refer to 6.1)

Model	Product	Case unit	Load cell	Main board
EK/EW300i series	EW150i	QD-AS3-001234A	7LC:148-300-FE * Early version LC:138-300	PZ:3762A * Early version PZ:3762
	EK120i			
	EK200i			
	EK300i			
EK/EW3000i series	EW1500i	QD-AS3-001235A	7LC:140-3000-FE	PZ:3762
	EK600i			
	EK1200i			
	EK2000i			
	EK3000i			
EK/EW12ki series	EW12ki	QD-AS3-001235A	7LC:140-12K-FE	PZ:3762
	EK6000i			
	EK12ki			

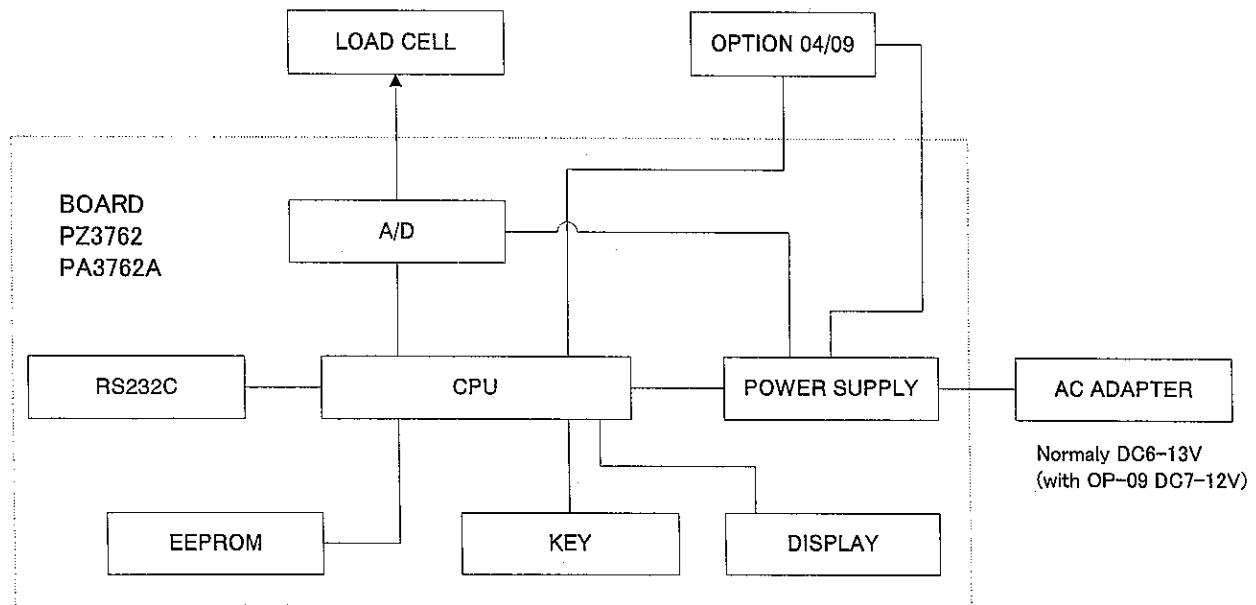
\* In case of EK/EW300i series, there are two types of models (early version and latest version). The latest model's load cell and main board are improved. The early version of load cell must use PZ:3762 board, the latest version must use PZ:3762A board. PZ:3762 and PZ:3762A board, the parts of the A/D section differ a little. Being distinguishable by sticker 300/300A on the chassis near the optional connection. Distinguish the main board by the model no suffix of sticker affixed to the shield case.

Repairing the product need to care as follows;

- In case of LC:138-300 and PZ:3762 (Old version of EK/EW 300i series)  
Initialize characteristic revised data of the load cell that shown on the inside of upper case unit by the optional connection. (Refer to 6.2)
- In case of LC:138-300 and PZ3762A  
Repair is not possible.
- In case of 7LC:148-300-FE and PZ:3762  
Repair is not possible.
- In case of 7LC:148-300-FE and PZ:3762A (New version of EK/EW 300i series)  
Initialize characteristic revised data of the load cell that shown on the inside of upper case unit by the optional connection. (Refer to 6.2)
- In case of load cell for maintenance and PZ:3762  
Repair is not possible.
- In case of load cell for maintenance and PZ:3762A  
Use the function that no adjustment by software. (Refer to 6.1)



## 2. Block diagram



OPTION  
04:BUZZER+RELAY OUTPUT  
09:BUILT IN NiMH BATTERY

### Matters that require attention before maintenance

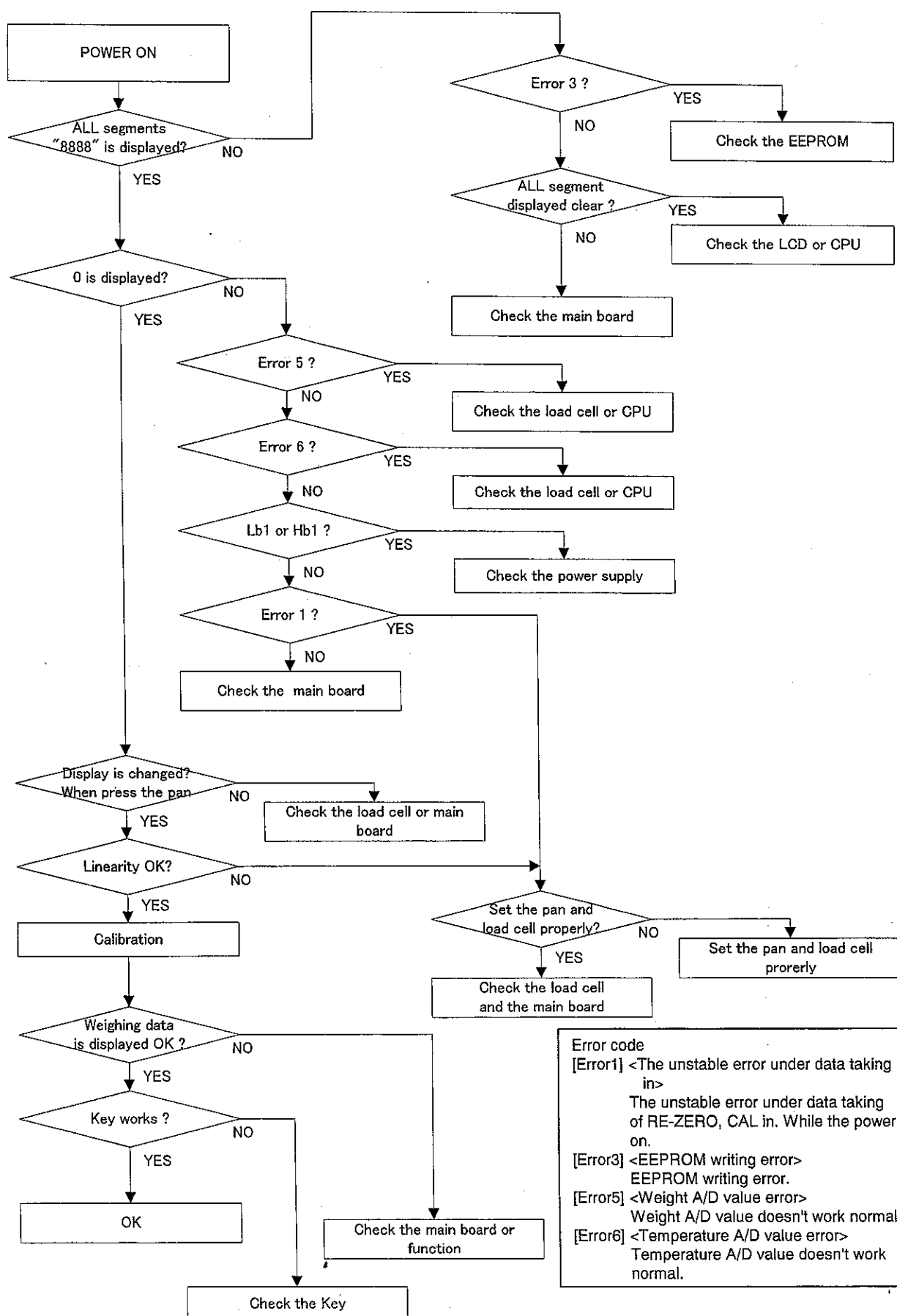
1. Maintenance will be performed following the "Troubleshooting flow chart" to judge how to maintain. First determine setup, reexamination of a calibration, redo of a main part assembly, repair of the logic board, and repair of the load cell should be done.
2. A defective main board or load cell can be judged checking the voltage of load cell connector (J2).
3. To check the main board enter the check mode and check the hardware in the mode [ test] or [ d-dsp]. In case of replacing E<sup>2</sup>PROM or main board, set the function of the check mode, data of the load cell and perform the calibration. Performing the calibration normally will not change characteristic revised data of the load cell. So after changing the parts as E<sup>2</sup>PROM or load cell, must perform calibration in the check mode.

### ☐ Attention!

1. Please do not repair A/D unit in the shield case. If A/D unit is repaired, there is no guarantee of the performance of the product.
2. Please do not remove the load angle of the load cell unit as the clearance of the load angle and the load cell shifts. If removed, it will be damaged when attaching the load angle to the load cell unit.



### 3. Trouble shooting





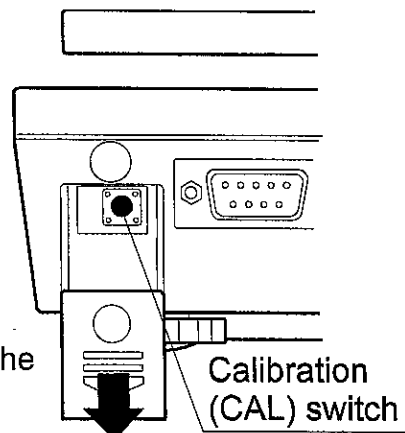


## 4. Calibration mode

This function adjusts the balance for accurate weighing. Perform a calibration in the following cases.

- ☐ When the balance is first used.
- ☐ When the balance has been moved.
- ☐ When the ambient environment has changed.
- ☐ For the regular calibration.

Press and slide down the calibration switch cover



### 4.1 Calibration using a weight

1. Warm up the balance for at least half an hour with nothing on the pan.

2. Press and hold the calibration (CAL) switch until **CAL** appears, and release the switch.

3. The balance displays **CAL 0**.

To change the calibration weight value, proceed to step 4.

To use the calibration weight value in the balance memory, proceed to step 5.

4. Press the **SAMPLE** key. The display shows the calibration weight value in "gram" that is stored in the balance. Use the following keys to change the value.

**SAMPLE** key To select the digit blinking to change.

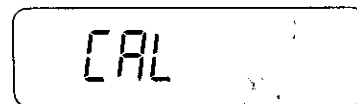
**RE-ZERO** key To set the value of the digit selected.

**PRINT** key To store the value and return to step 3.

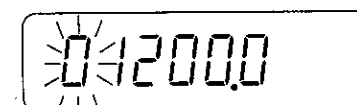
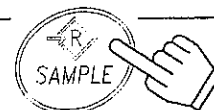
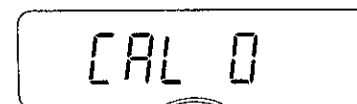
**MODE** key To cancel the value and return to step 3.



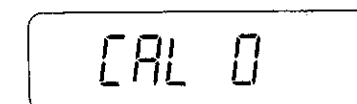
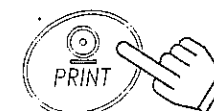
Press and hold the CAL switch.



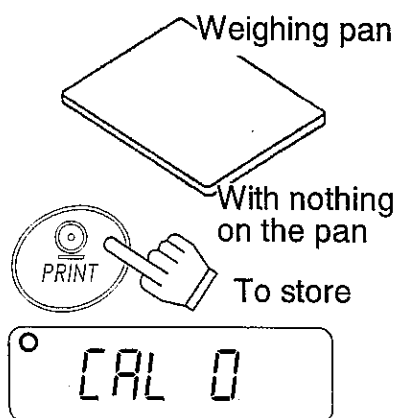
Release the CAL switch.



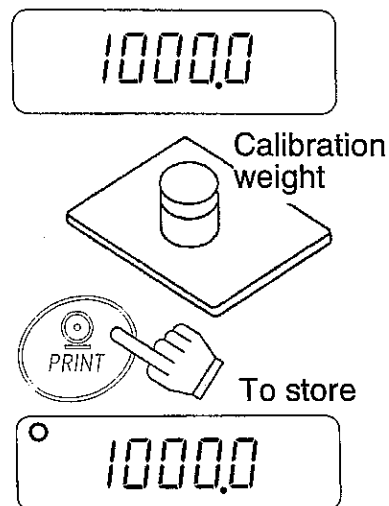
Set the weight using the relevant keys.



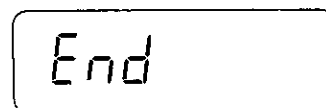
5. At step 3, pressing the **PRINT** key weighs the zero-point value. Do not touch the pan during weighing.



6. Place the calibration weight with the same value as displayed on the pan. Press the **PRINT** key to weigh it. Do not touch the pan during weighing.



7. **End** appears.  
Remove the weight from the pan, and press the CAL switch or **MODE** key to return to the weighing mode.



**Note**

The value set in step 4 is stored in memory even after the power is switched off.

If the balance is to be moved to other places, set the gravity acceleration value of the area where the calibration using a weight is to be done, and calibrate the balance according to the procedure above. See the next section to set the value.




## 4.2 Gravity acceleration correction

When the balance is first used or has been moved to a different place, it should be calibrated using a calibration weight.

But if the calibration weight cannot be prepared, the gravity acceleration correction will compensate the balance. Change the gravity acceleration value of the balance to the value of the area where the balance will be used. See the gravity acceleration map appended to the end of this manual.

### □ Note

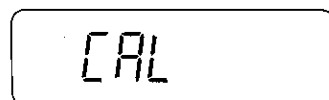
**Gravity acceleration correction is not required when the balance is calibrated using a calibration weight at the place where the balance is to be used.**

1. Press and hold the calibration (CAL) switch until  appears, and release the switch.



Press and hold the CAL switch.


2. The balance displays .




3. Press the  key.


The display shows the gravity acceleration value stored in the balance.

Use the following keys to change the value.

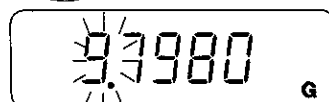
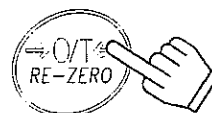
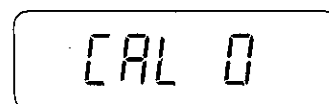
 key To select the digit blinking to change.

 key To set the value of the digit selected.


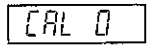
 key To store the value and return to step 2.

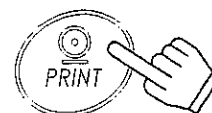
 key To cancel the value and return to step 2.

Release the CAL switch.

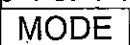


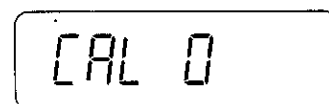
Set the value using the relevant keys.

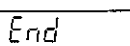
4. After setting the value, press the  key.  
 is displayed again.

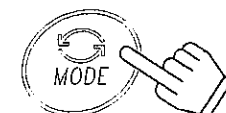


To store

5. If it is necessary to calibrate the balance using a calibration weight, go to step 4 of 4-1.  
To finish the setting, press  key.



6.  appears and the balance returns to the weighing mode.



Returns to the weighing mode



### 4.3 Calibration of the CAL prohibition models

Calibration of the CAL prohibition models is performed as follows. After calibration set the function of CAL prohibition.



### 4.4 Cancelation of CAL prohibition mode

1. While display OFF, holding the [ZERO] and [PRINT] key, then press the [ON/OFF] key about 2.5 seconds.
2. "SCAL 0" will be displayed, then press the [ZERO] key to display "SCAL 1"
3. Press the [PRINT] key. "End " will be displayed. CAL prohibition mode is canceled.



### 4.5 Procedure of calibration

Refer to "4.1 Calibration using a weight" and "4.2 Gravity acceleration correction"



### 4.6 Set the CAL prohibition mode

1. With display OFF, holding the [ZERO] and [PRINT] key, then press the [ON/OFF] key about 2.5 seconds.
2. "SCAL 1" will be displayed, then press the [ZERO] key to display "SCAL 0"
3. Press the [PRINT] key. "End " will be displayed. CAL prohibition mode is set.

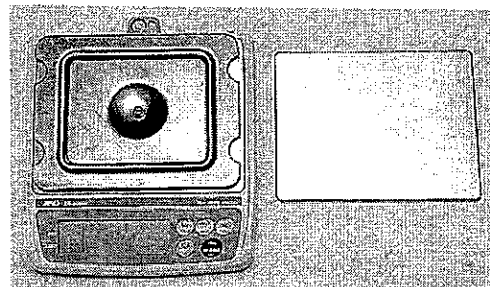


## 5. Disassembling and Assembling

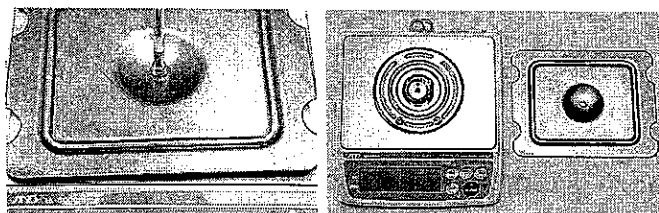


### 5.1 Disassembling

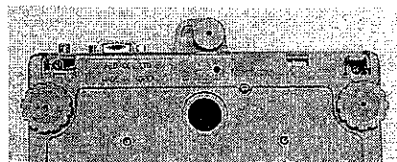
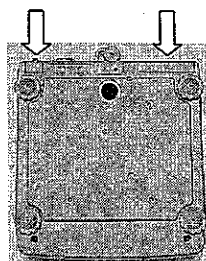
1. Remove the weighing pan.



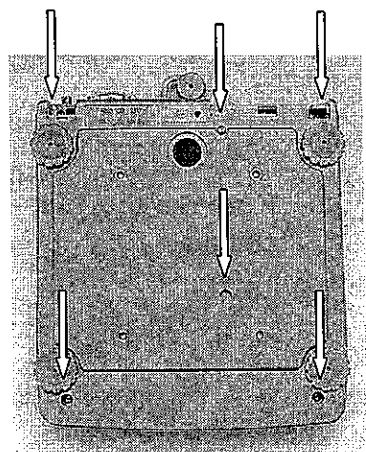
2. Remove the screw securing the pan support. Then remove the pan support



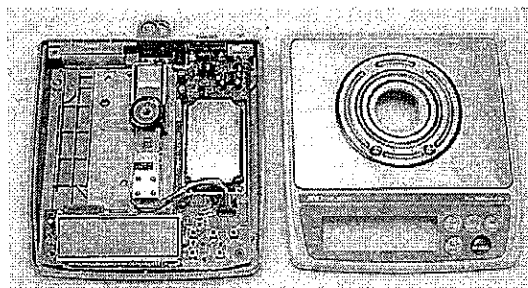
Place the main unit upside down.  
Then remove the CAL cover and  
optional port cover.



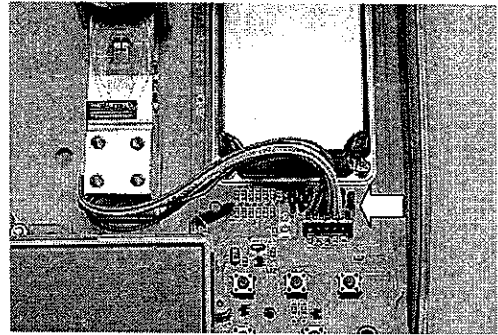
4. Remove the six screws and place the main unit upside down holding the upper and lower case.



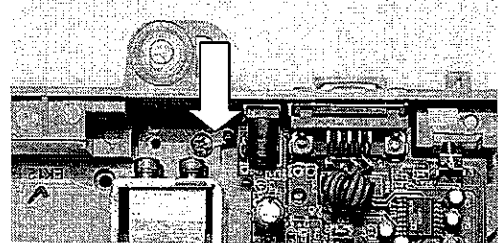
5. Remove the upper case.



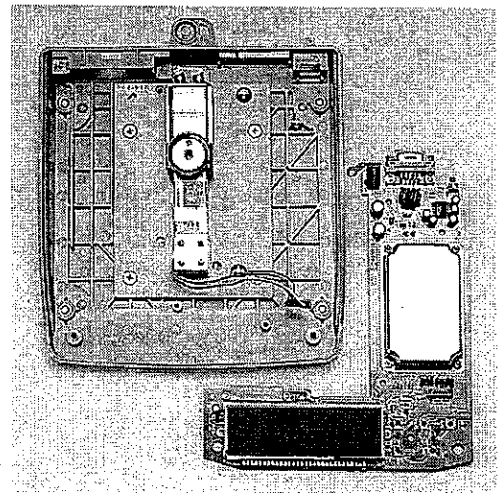
6. Remove the load cell cable from the main board.



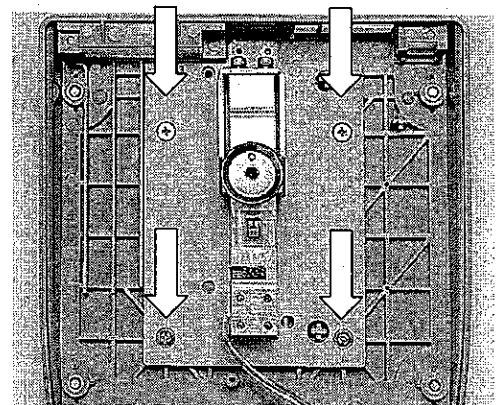
7. Remove the screw holding the ground cable.



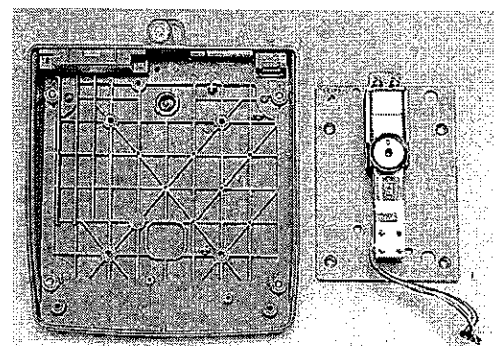
8. Remove the main board from lower case.



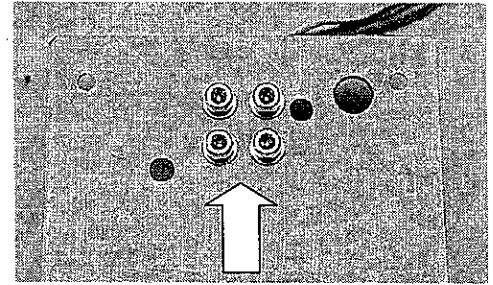
9. Remove the four screws securing the load cell unit.



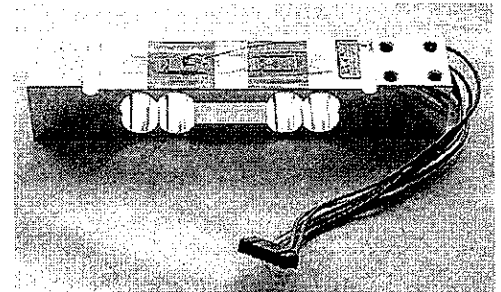
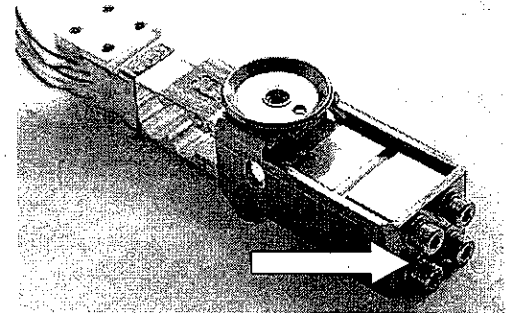
10. Remove the load cell unit.



11. Place the load cell unit upside down. Remove the four bolts securing the load cell.



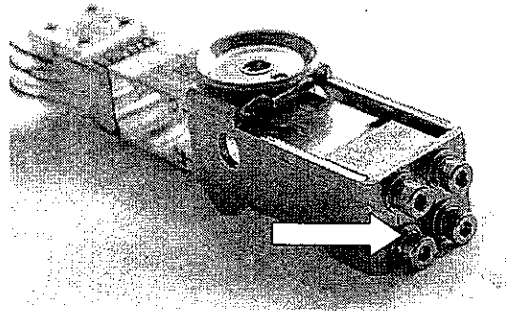
12. Remove the four bolts securing the load angle. Then remove the load angle.



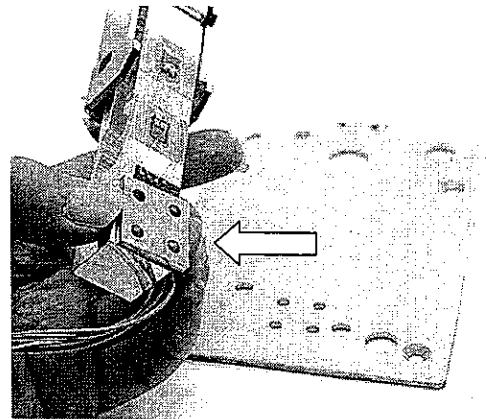


## 5.2 Assembling

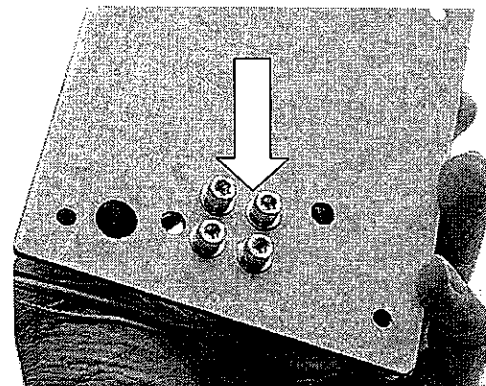
1. Attach the load angle to the load cell using four bolts.



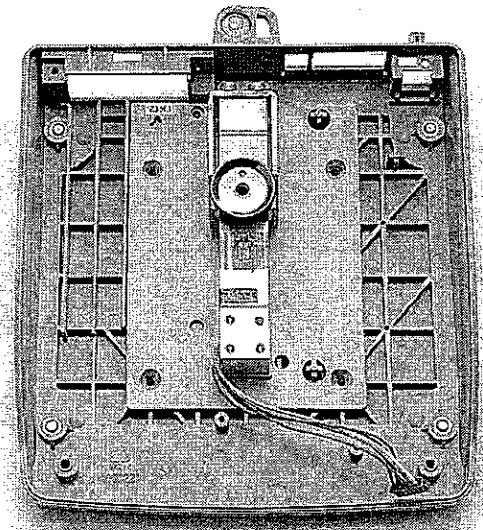
2. Place the spacer to the load cell. Then attach the load cell to the load cell plate.



3. Attach the load cell to the load cell plate using four bolts.

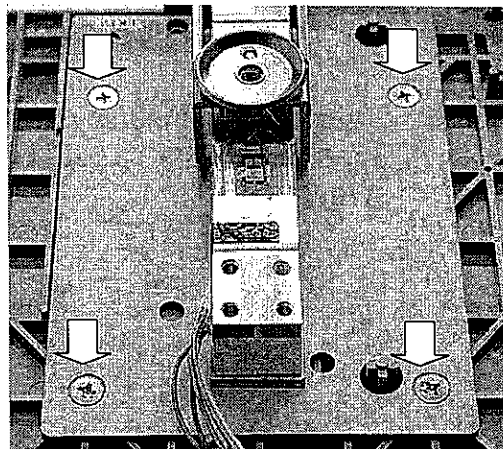


4. Place the load cell unit in the lower case.

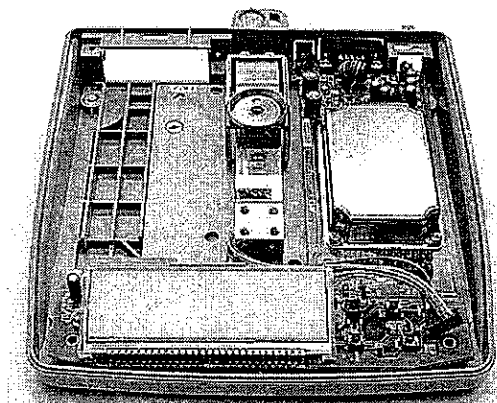




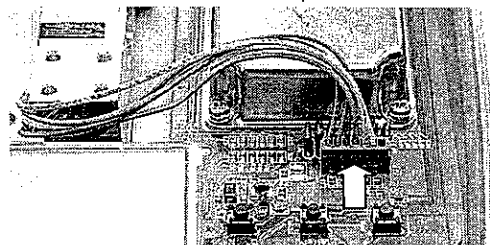
5. Secure the four screws holding the load cell unit to the lower case.



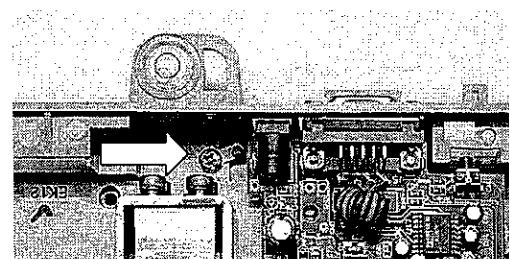
6. Place the main board in the lower case.



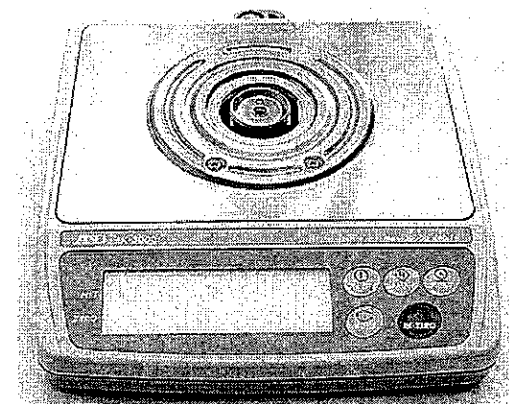
7. Connect the load cell cable to the main board.



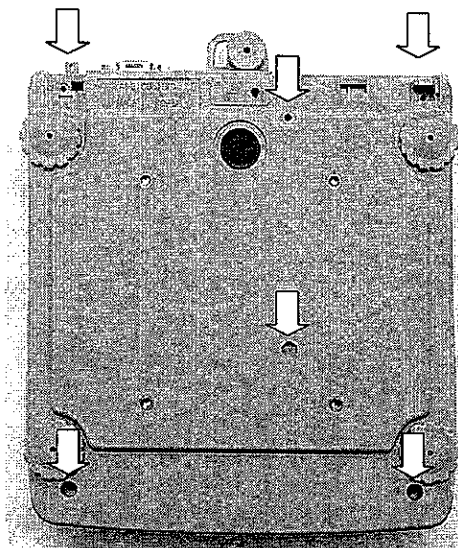
8. Secure the screw holding the earth cable.



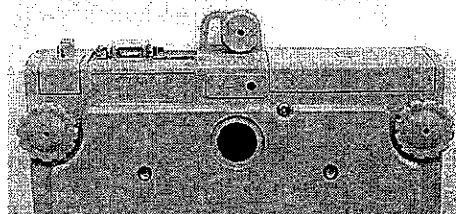
9. Place the upper case on the lower case.



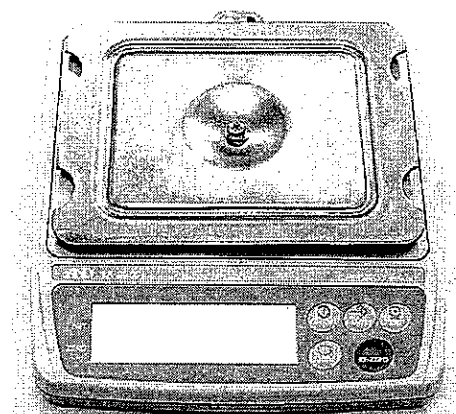
10. Place the main unit upside down holding upper and lower case. Then secure the six screws.



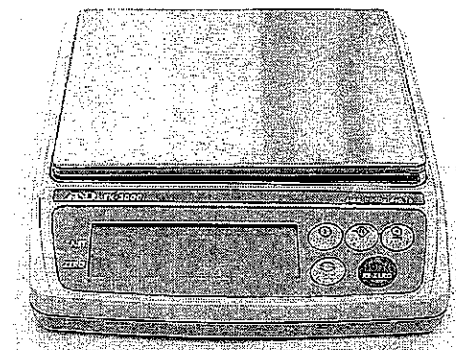
11. Attach the CAL cover and option cover.



12. Place the main unit upside down again. Place the pan support and secure the screws.



13. Place the weighing pan on the pan support.





## 6. Internal settings



### 6.1 Setting for replacing the maintenance load cell

#### 6.1.1 Input the characteristic revised data of load cell (Set the item of "cr" to zero)

1. Enter the check mode.
2. Display "d-SEt" of function setting group. Press the [PRINT] key to enter the internal data setting mode.
3. Press the [SAMPLE] key 7 times to display "cr". Then press the [PRINT] key.
4. Set the "0". Then press the [PRINT] key. (0 point is stored)
5. "End" is displayed. Press the [MODE] key exit the check mode.

#### 6.1.2 Calibration procedure for maintenance load cell

1. Enter the check mode.
2. Display "CAL" of function setting group. Press the [PRINT] key to enter the calibration mode.
3. "LC 0" is displayed.
4. Press and hold [ZERO] key about 1 second. "LC 1" will be displayed. Then press the [PRINT] key to set the "LC 1".
5. After "End" is displayed, "CAL 0" will be displayed.
6. After 3 times of preliminary weighing, press the [PRINT] key with nothing on the weighing pan. After stabilized input the data.
7. Weighing value is displayed. Place the calibration weight of the same value as displayed. (If there is no calibration weight of the same value, it is impossible to change the amount.) Press the [PRINT] key to input the data.
8. "End" will be displayed. The calibration is finished.



## 6.2 Setting for replacing the main board / E2PROM

### 6.2.1 Initialize

1. Enter the check mode.
2. Display "init" of function setting group. Press the [PRINT] key to enter the initialize mode.
3. "ALL no" will be displayed.
4. Press the [ZERO] key. "ALL Go" will be displayed. Then press the [PRINT] key. Stabilize mark is on, then initialize will be done.
5. After about 1 second, "End" will be displayed. Initialize will be finished.

### 6.2.2 Setting of function

1. Enter the check mode.
2. Display "C-Func" of function setting group and press the [PRINT] key to enter the function setting mode.
3. Set the function "CF1" to "CF8".

### 6.2.3 Input the adjustment data

Adjustment data is shown on the inside of upper case around optional connection.

Enter the ten data from <a> to <j>

A&D company, LTD  
Version : X, X, XX

-----  
< \*\*a \*\* > < \*\*b \*\* > < \*\*c \*\* > ,  
< \*\*d \*\* > < \*\*e \*\* > < \*\*f \*\* > ,  
< \*\*g \*\* > < \*\*h \*\* > < \*\*i \*\* > < \*\*j \*\* > ,  
.....

1. Enter the check mode.
2. Display "d-Set" and press the [PRINT] key enter the internal data setting mode.
3. Enter the adjustment data.
  - Input <a> data to "HO"
  - Input <b> data to "HF"
  - Input <c> data to "Ht"
  - Input <d> data to "LO"
  - Input <e> data to "LF"
  - Input <f> data to "Lt"
  - Input <g> data to "rt"
  - Input <h> data to "cr"
  - Input <i> data to "cH"
  - Input <j> data to "cK1"
4. Check the 10 data are correct and press the [MODE] key to exit the check mode.

## 6.2.4 Calibration

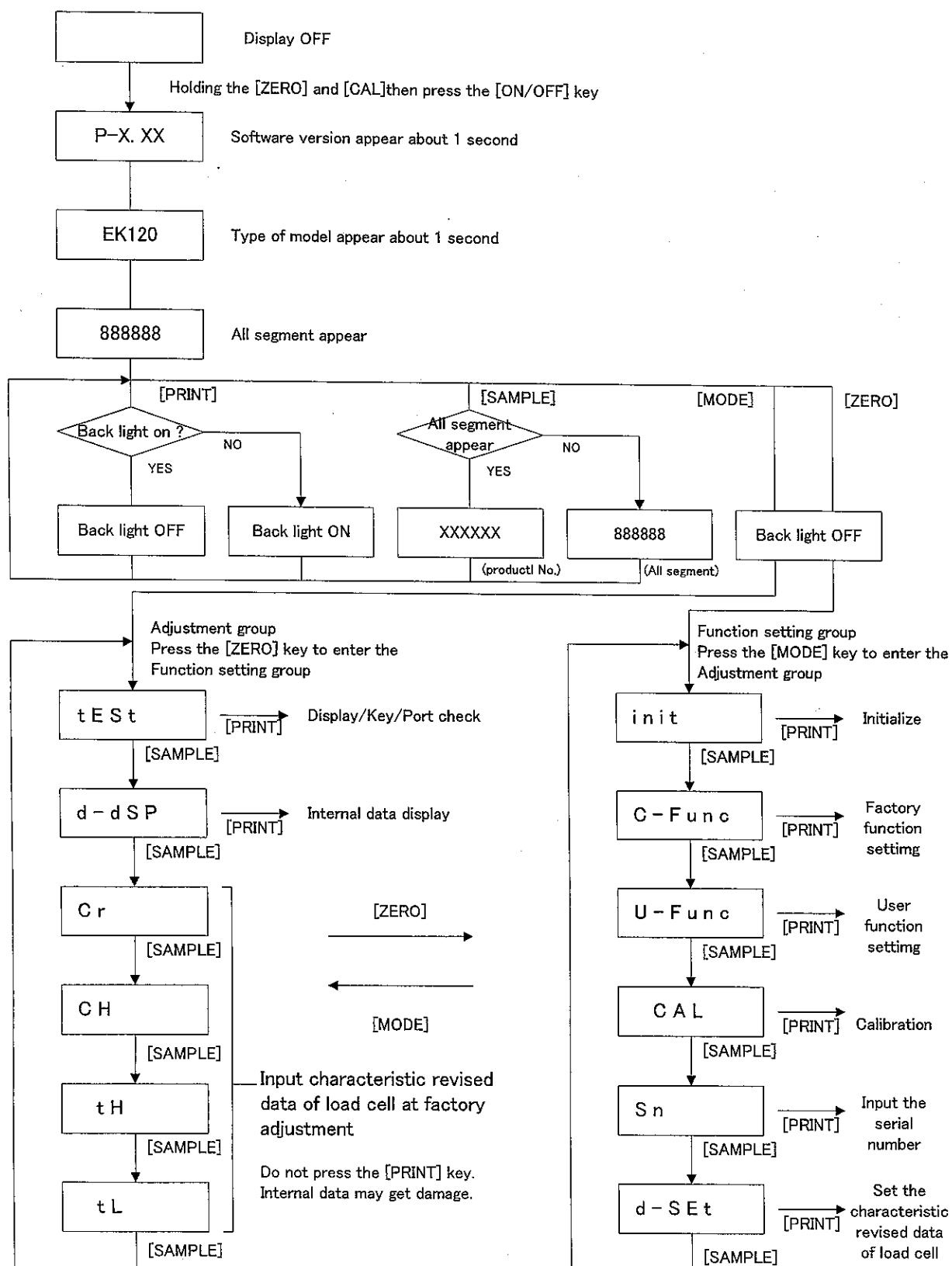
1. Enter the check mode.
2. Display "CAL" of function setting group and press the [PRINT] key to enter the calibration mode.
3. Check the "LC 0" is displayed.
4. Press the [MODE] key ( or [PRINT] key ) "CAL 0" will be displayed.
5. After 3 times of preliminary weighing, press the [PRINT] key with nothing on the weighing pan. After stabilized input the data.
6. Weighing value is displayed. Place the calibration weight of the same value as displayed. (If there is no calibration weight of the same value, it is impossible to change the amount.) Press the [PRINT] key to input the data.
7. "End" will be displayed. The calibration is finished.



## 7. Check mode



### 7.1 Check mode Flow chart





## 7.2 Adjustment group

### 7.2.1 **tEst** (display/key/port check)

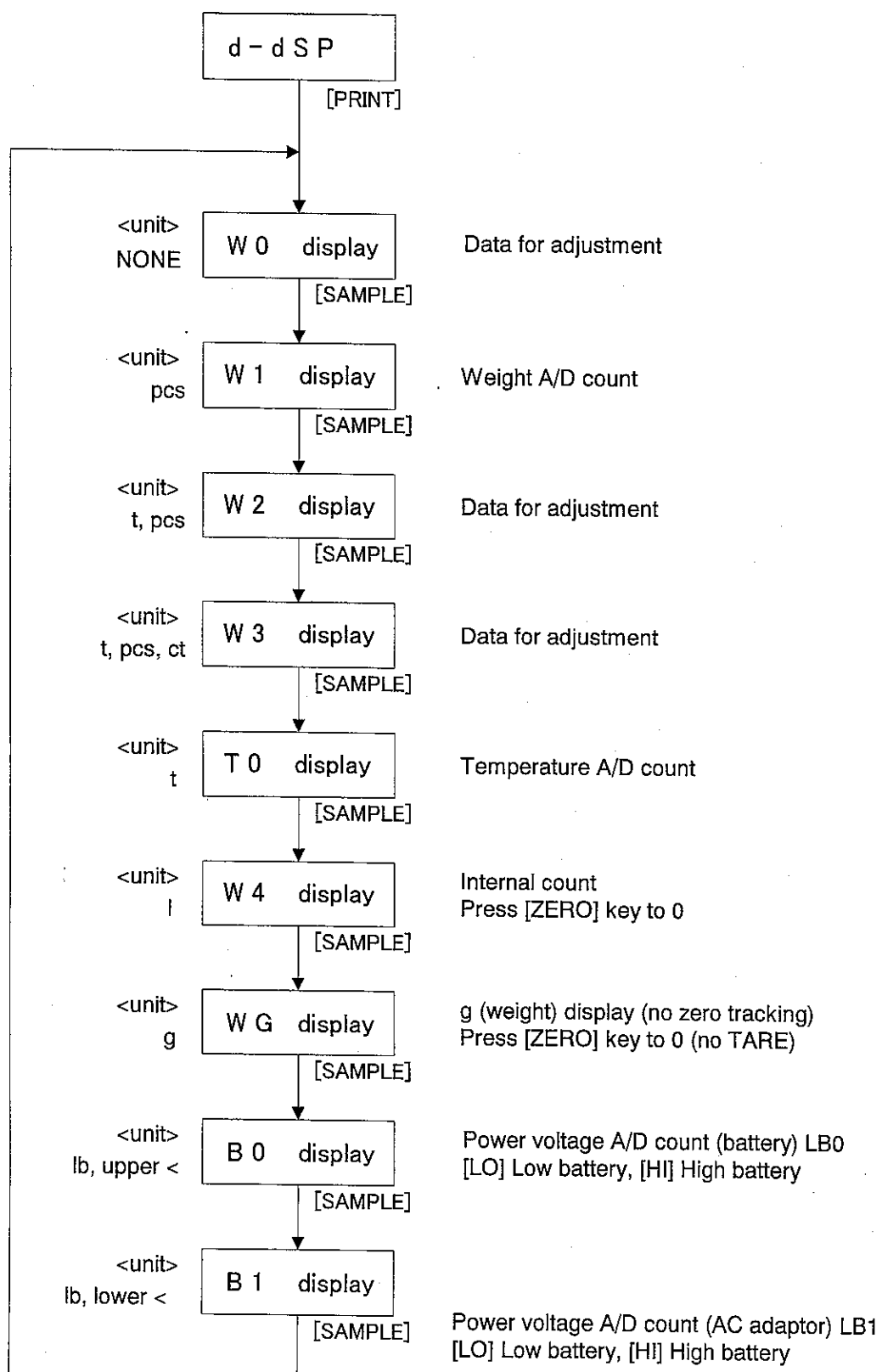
1. Version display
2. Number sift
3. Number inclement
4. The segment will display the order
5. All segment display
6. Press the [PRINT] key to start the key and the port check

[ON/OFF]	P [HI]	The signal of [HI] output
[SAMPLE]	4 [OK]	The signal of [OK] output
[PRINT]	3 [LO]	The signal of [LO] output
[MODE]	2	The buzzer signal output
[ZERO]	1	The backlight on
[CAL]	0	

Short the RXD and TXD, " rS232c [OK] " will be displayed.
7. [PRINT] and [MODE] to exit the test mode. The " End" will be displayed, Then exit the " test" mode.

### 7.2.2 **d-dSP** (The internal data)

[SAMPLE]	Changing the display item
[ZERO]	Display to zero when W4, WG and displayed.
[PRINT]	Press once to turn the back light, press once more buzzer on, then press again buzzer off.
[MODE]	exit → " Cr







## 8. Function setting mode



### 8.1 Initialize

All initialize (All clear of EEPROM)

Clear the following items

- The characteristic revised data of load cell that set the shipping
- The factory function and the calibration
- The user function, user setting data (unit, comparator, pcs, % etc.)

Half initialize

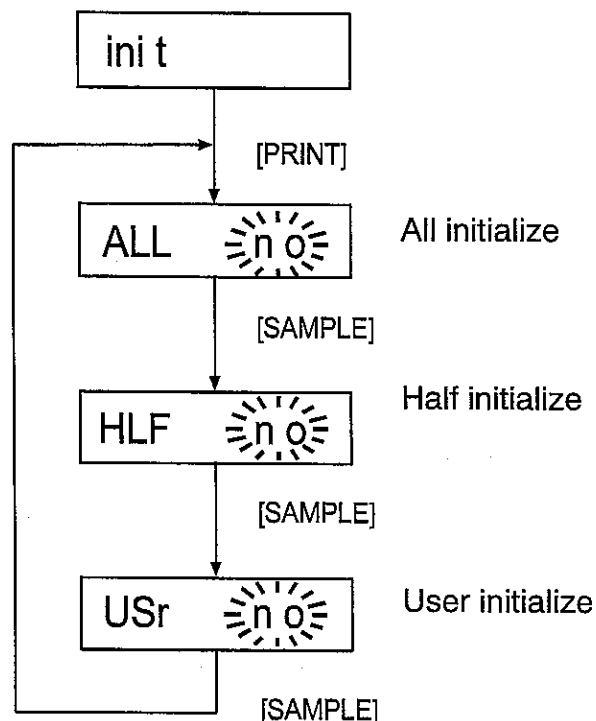
Clear the following items

- The factory function and the calibration
- The user function, user setting data (unit, comparator, pcs, % etc.)

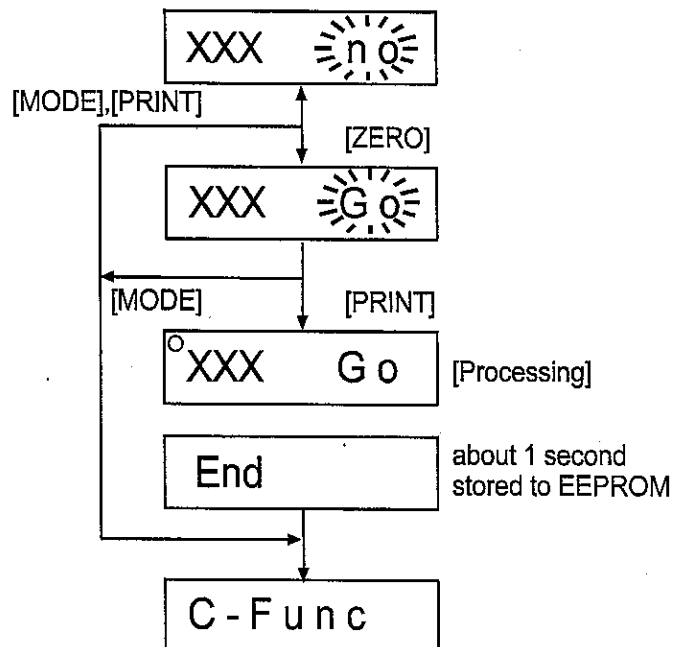
User initialize

Clear the following items

- The user function, user setting data (unit, comparator, pcs, % etc.)



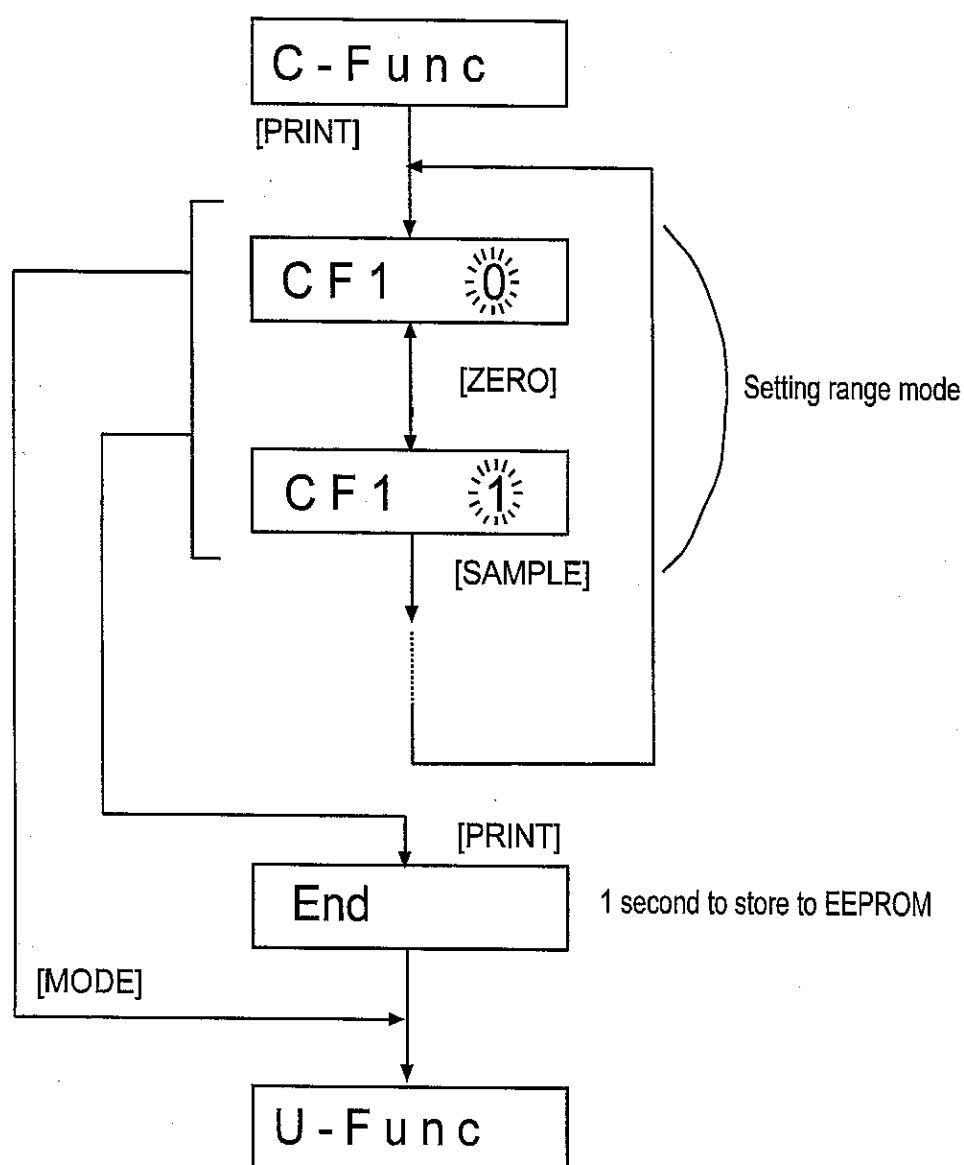
\*XXX is ALL or HLF, USr





## 8.2 C-Func (The function setting at manufactured

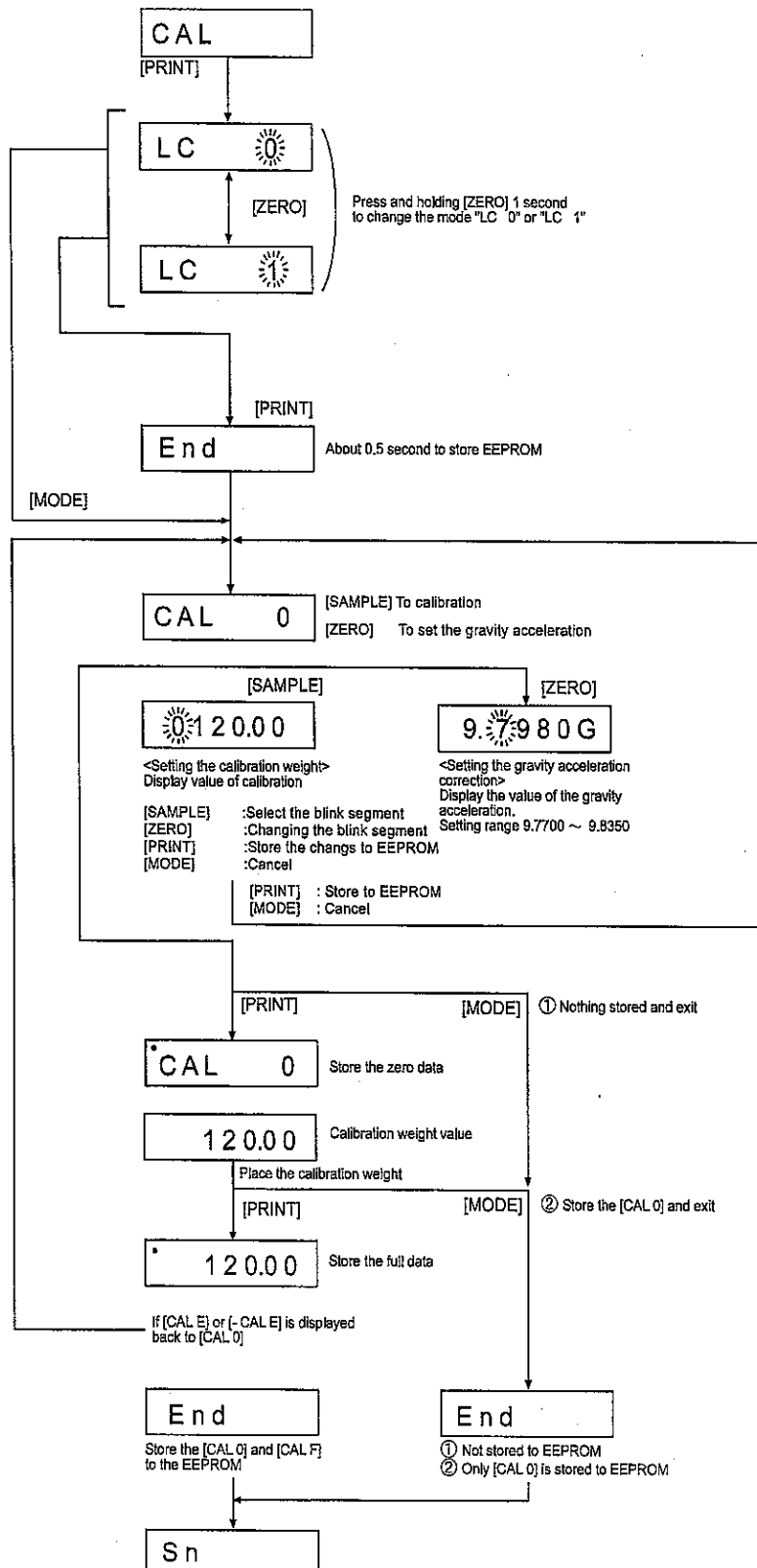
- [SAMPLE] Select
- [ZERO] Change the item of blinking
- [PRINT] Store the new setting and step to next menu.
- [MODE] Cancel (not change the setting and step to the next menu).
- Display the setting that set before.
- Stable mark is on if setting is the same as before.





## 8.3 CAL (Calibration)

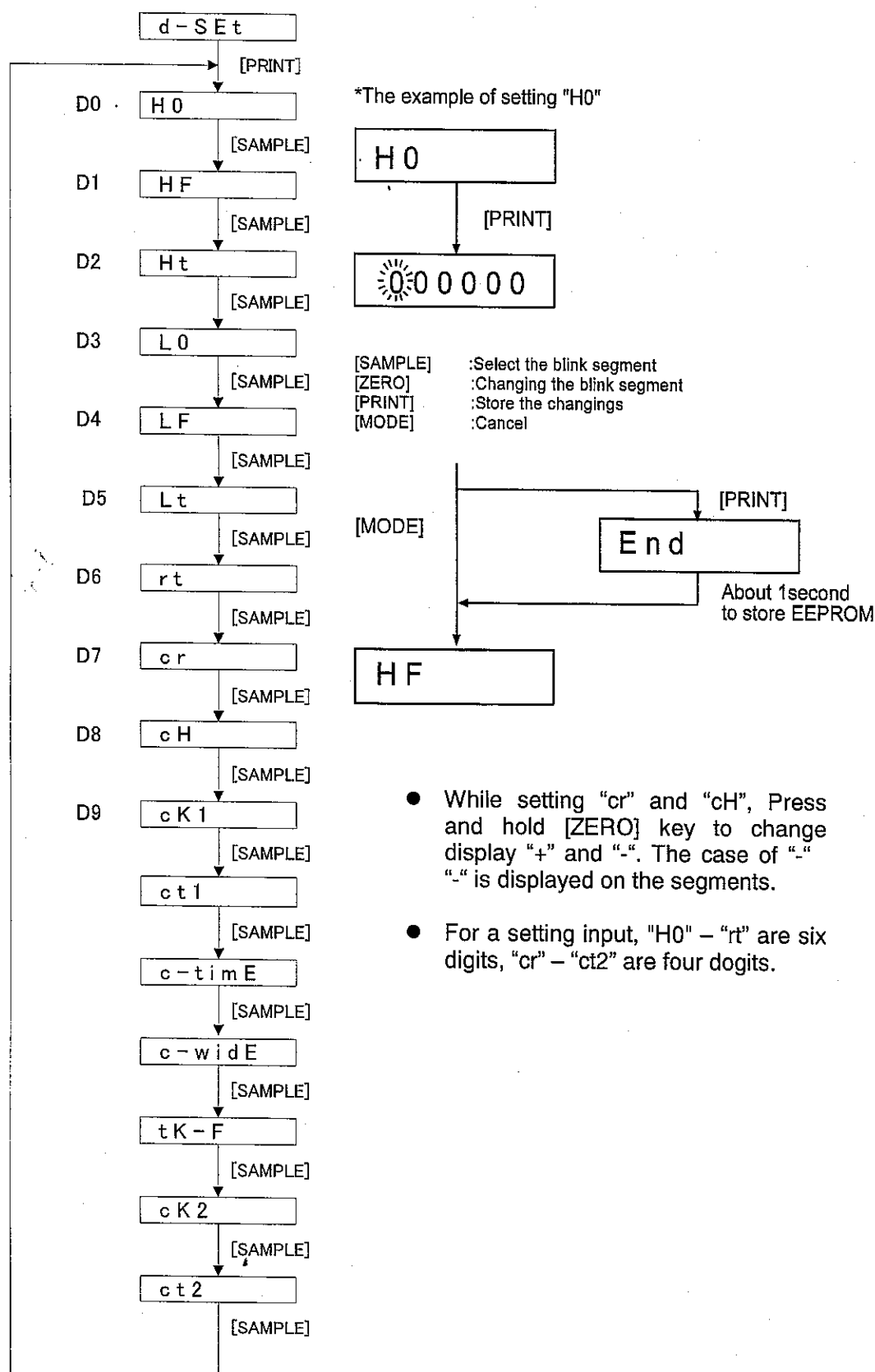
- LC=0 Usually, the calibration for load cell's currently attached to the product. In the case of rectifying by calculation based on the characteristic revised data of load cell.
- LC=1 In the case of when using an adjusted load cell and not carrying out the compensation by calculation.





## 8.4 d-SEt (Internal data setting)

- The mode for carrying out the display of characteristic revised data of load cell recorded by factory adjustment, and setup.
- When exchanging Board/EEPROM of EK/EW-I, the characteristic revised data of load cell that shown on the upper case are entered in D0-D9. ("H0" – "cK1")




- While setting "cr" and "cH", Press and hold [ZERO] key to change display "+" and "-". The case of "-" "-" is displayed on the segments.
- For a setting input, "H0" – "rt" are six digits, "cr" – "ct2" are four digits.



## 8.5 C-Function list

Series			
CF1	0	(EK series)	
	1	(EW series)	
Model			
CF2		EK series	EW series
	0	120	150
	1	200	1500
	2	300	12K
	3	600	----
	4	1200	----
	5	2000	----
	6	3000	----
	7	6000	----
	8	12K	----
Unit			
CF3	0		
		g	
	1	Metric	
		g,pcs,%	
	2		
		g,pcs,%,ct,mom	
	3		
		g,pcs,%,newton,DS,MLT	
	4		
		g,pcs,%,ozt,ct,mom,DS,MLT	
	5		
		g,pcs,%,ct,	
	6	Non Metric	
		g,pcs,%,oz,lb,ozt,ct,mom,dwt,GN	
	7		
		g,pcs,%,oz,lb,ozt,ct,mom,dwt,GN,newton,DS,MLT	
	8		
		g,pcs,%,oz,lb,ozt,ct,mom,dwt,GN,tl HG,DS,MLT	
	9		
		g,pcs,%,oz,lb,ozt,ct,mom,dwt,GN,tl HJ,DS,MLT	
	A		
		g,pcs,%,oz,lb,ozt,ct,mom,dwt,GN,tl T,DS,MLT	
Power on zero			
CF4	0	±10% / Power on TARE	
	1	±50% / Power on TARE	
	2	±10% / Power on no TARE	
	3	±50% / Power on no TARE	
Zero tracking			
CF5	0	±0.5 count / 1 second	
	1	±0.75 count / 1 second	
	2	±1 count / 1second	
Range			
CF6	0	Normal range	
	1	Floating	
Calibration			
CF7	0	Prohibited	
	1	Allowed	
Type			
CF8	0	Normal	

Class	Item	Para- meter	Description	
Func	P <sub>OFF</sub>	0	Auto power-off disabled	Automatically power off
	Auto powwer-off	1	Auto power-off enabled	
	r <sub>NG</sub>	0	Manual range change	range change setting for EW-I series
	Range	1	Automatic range change	
		2	Fixed to the lowest range	
		3	Fixed to the middle range	
		4	Fixed to the highest range	
	Cond	0	Fast / sensitive	Software filtering
	Respons	1		
		2		
		3		
		4		
	St-b	0	Stable when within ± 0.5d/0.5s	Conditions to turn on the stability mark
	Stability band	1	Stable when within ± 1d/0.5s	
	width	2	Stable when within ± 2d/0.5s	
	trc	0	Disabled	Tracking zero sift
	Zero tracking	1	Enabled	
	P <sub>nt</sub>	0	Point (.)	Decimal separator
	Decimal point	1	Commma (,)	
	C <sub>P</sub>	0	Comparator disabled	Conditions to compare
	Compara tor	1	Compares all data	
		2	Compares all stable data	d = the minimum display division
		3	Compares plus data > +4d	
		4	Compares stable plus data > +4d	
		5	Compares data > +4d or < -4d	
		6	Compares stable data > +4d or < -4d	Buzzer sounds according to the comparator results
	bEP	0	Buzzer does not sound.	
	Buzzer output	1	Buzzer sounds at LO.	
		2	Buzzer sounds at OK.	
		3	Buzzer sounds at OK and LO.	
		4	Buzzer sounds at HI.	
		5	Buzzer sounds at HI and LO.	
	6	Buzzer sounds at HI and OK.		
	7	Buzzer sounds at HI, OK and LO.	Auto-print A: + data	
P <sub>rt</sub>	0	Command and stream modes		
Data output	1	Command and PRINT key	Auto-print B: +/- data	
	2	Command, PRINT key and auto-print A		
	3	Command, PRINT key and auto-print B	Interval between continuous data	
P <sub>USE</sub>	0	No pause (general equipment)		
Data out put	1	1.6 second (for AD-8121)	GLP out put data	
inF <sub>o</sub>	0	No out put		
GLP output	1	AD-8121 format		
	2	General format		
b <sub>PS</sub>	0	2400 bps		
Baud	1	4800 bps		
	2	9600 bps		

▪ Factory setting

Class	Item	Para- meter	Description	
Func	Data and parity	0	7 bits, even parity	
		1	7 bits, odd parity	
		2	8 bits, non parity	
	ACAI function	0	ACAI disabled	If "0" is set, no additional samples required.
		1	ACAI enabled	
	Minimum unit weight	0	1 d	d = the monimum display division.
		1	1/8 d	
		2	total sample weight $\geq 5d$ (*)	
	Sample number	0	10 pcs	The number of samples shown first when entered into the unit weight storing mode
		1	25 pcs	
		2	50 pcs	
		3	100 pcs	
		4	5 pcs	
	Ld in	Not used (settings are not important )		
	LEUP	0	Always off	To contorol how the LCD backlight turns off. Weight change or key operation will turn the back light on.
		1	Turns off after 3 seconds	
		2	Turns off after 10 seconds	
		3	Turns off after 30 seconds	
		4	Turns off after 60 seconds	
	5	Always on		
CPH <sub>1</sub>	Comparator upper	Setting the upper limit value		
CPL <sub>0</sub>	Comparator lower	Setting the lower limit value		
Unit	Weighing units to	Sets to display units		
id	ID number for GLP	Sets the ID number		

▪ Factory setting

(\*)Even if the weight display is "5d", these may be a range that is not accepted.  
This is because the weight display data is rounded off internally.



## 9. Specification



### 9.1 EK-i series

MODEL	EK-120i	EK-200i	EK-300i	EK-600i
Weight capacity	120 g	200 g	300 g	600 g
Min. display "d"	0.01 g	0.01 g	0.01 g	0.1 g
No. of samples	5, 10, 25, 50 or 100 pieces			
Max. count *)	12,000 pcs	20,000 pcs	30,000 pcs	6000 pcs
Min. unit weight *)	0.01 g	0.01 g	0.01 g	0.1 g
Min. % display	0.1 %			
Min. 100 % weight	1 g	1 g	1 g	10 g
Repeatability (Std. deviation)	0.01 g	0.01 g	0.01 g	0.1 g
Linearity	±0.01 g	±0.01 g	±0.02 g	±0.1 g
Sensitivity drift	±20 ppm / °C (10°C~30°C / 50°F~86°F)			
Display	7 segment LCD display with backlight (Character height 16 mm)			
Display update	10 time per second			
Operating temp.	-10°C~40°C / 14°F~104°F, less than 85% R.H. (non-condensing)			
Power supply	AC adapter or optional Ni-MH battery pack			
Battery operation	Approximately 9 hours (backlight off)			
Weighing pan size	110 mm ø			133mm x 170mm
Weight (approximately)	1.1 kg	1.1 kg	1.1 kg	1.3 kg
Calibration weight (factory setting)	120 g	200 g	300 g	600 g

MODEL	EK-1200i	EK-2000i	EK-3000i	EK-6000i	EK-12Ki
Weight capacity	1200 g	2000 g	3000 g	6000 g	12 kg
Min. display "d"	0.1 g	0.1 g	0.1 g	1 g	1 g
No. of samples	5, 10, 25, 50 or 100 pieces				
Max. count *)	12,000 pcs	20,000 pcs	30,000 pcs	6000 pcs	12,000 pcs
Min. unit weight *)	0.1 g	0.1 g	0.1 g	1 g	1 g
Min. % display	0.1 %				
Min. 100 % weight	10 g	10 g	10 g	100 g	100 g
Repeatability (Std. deviation)	0.1 g	0.1 g	0.1 g	1 g	1 g
Linearity	±0.1 g	±0.1 g	±0.2 g	±1 g	±1 g
Sensitivity drift	±20 ppm / °C (10°C~30°C / 50°F~86°F)				
Display	7 segment LCD display with backlight (Character height 16 mm)				
Display update	10 time per second				
Operating temp.	-10°C~40°C / 14°F~104°F, less than 85% R.H. (non-condensing)				
Power supply	AC adapter or optional Ni-MH battery pack				
Battery operation	Approximately 9 hours (backlight off)				
Weighing pan size	133 mm x 170 mm				
Weight (approximately)	1.5 kg	1.5 kg	1.5 kg	1.5 kg	1.5 kg
Calibration weight (factory setting)	1200 g	2000 g	3000 g	6000 g	12 kg

\*) In case of "0.01 in 0" (factory setting)





## 9.2 EW-i series

MODEL	EW-150i			EW-1500i			EW-12Ki		
Weight capacity	30g	60g	150g	300g	600g	1500g	3kg	6kg	12kg
Min. display "d"	0.01g	0.02g	0.05g	0.1g	0.2g	0.5g	1g	2g	5g
No. of samples	5, 10, 25, 50 or 100 pieces								
Max. count *)	15,000 pcs			15,000 pcs			12,000 pcs		
Min. unit weight *)	0.01 g			0.1 g			1 g		
Min. % display	0.1 %								
Min. 100 % weight	1 g			10 g			100 g		
Repeatability (Std. deviation)	0.01g	0.02g	0.05g	0.1g	0.2g	0.5g	1g	2g	5g
Linearity	±0.01g	±0.02g	±0.05g	±0.1g	±0.2g	±0.5g	±1g	±2g	±5g
Sensitivity drift	±20 ppm / °C (10°C~30°C / 50°F~86°F)								
Display	7 segment LCD display with backlight (Character height 16 mm)								
Display update	10 time per second								
Operating temp.	-10°C~40°C / 14°F~104°F, less than 85% R.H. (non-condensing)								
Power supply	AC adapter or optional Ni-MH battery pack								
Battery operation	Approximately 9 hours (backlight off)								
Weighing pan size	110 mm ø			133 mm x 170 mm					
Weight (approximately)	1.1 kg			1.5 kg			1.5 kg		
Calibration weight (factory setting)	150 g			1500 g			12 kg		

\*) In case of "Unit in g" (factory setting)



## 9.3 Other weighing units

MODEL		EK-120i	EK-200i	EK-300i	EK-600i	EK-1200i	EK-2000i	EK-3000i	EK-6000i	EK-12Ki
oz.	Capacity	4.2330	7.0550	10.5820	21.165	42.330	70.550	105.820	211.65	423.30
	Min. display	0.0005	0.0005	0.0005	0.005	0.005	0.005	0.005	0.05	0.05
lb	Capacity	-----	-----	-----	1.3230	2.6455	4.4090	6.6140	13.230	26.455
	Min. display	-----	-----	-----	0.0005	0.0005	0.0005	0.0005	0.005	0.005
ozt	Capacity	3.8580	6.4300	9.6450	19.290	38.580	64.300	96.450	192.90	385.80
	Min. display	0.0005	0.0005	0.0005	0.005	0.005	0.005	0.005	0.05	0.05
ct	Capacity	600.00	1000.00	1500.00	3000.0	6000.0	10000.0	15000.0	-----	-----
	Min. display	0.05	0.05	0.05	0.5	0.5	0.5	0.5	-----	-----
mo m	Capacity	32.000	53.335	80.000	160.00	320.00	533.35	800.00	1600.0	3200.0
	Min. display	0.005	0.005	0.005	0.05	0.05	0.05	0.05	0.5	0.5
dwt	Capacity	77.16	128.60	192.90	385.8	771.6	1286.0	1929.0	3858	7716
	Min. display	0.01	0.01	0.01	0.1	0.1	0.1	0.1	1	1
GN	Capacity	1851.8	3086.4	4629.8	9260	18518	30864	46298	-----	-----
	Min. display	0.2	0.2	0.2	2	2	2	2	-----	-----
tl	Capacity	3.1745	5.2910	7.9365	15.875	31.745	52.910	79.365	158.75	317.45
	Min. display	0.0005	0.0005	0.0005	0.005	0.005	0.005	0.005	0.05	0.05

### Note

The unit "tl (Hong Kong General / Singapore)" is for special versions only.

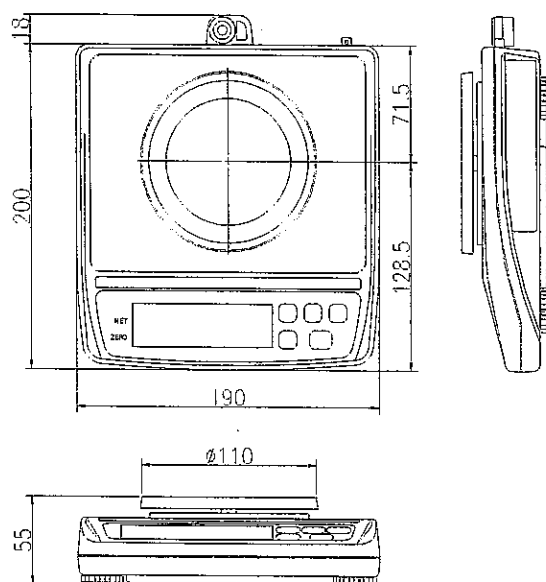
MODEL		EW-150i			EW-1500i			EW-12Ki		
oz.	Capacity	1.0580	2.116	5.292	10.580	21.16	52.92	105.80	211.6	423.2
	Min. display	0.0005	0.001	0.002	0.005	0.01	0.02	0.05	0.1	0.2
lb	Capacity	-----	-----	-----	0.6615	1.323	3.306	6.615	13.23	26.46
	Min. display	-----	-----	-----	0.0005	0.001	0.002	0.005	0.01	0.02
ozt	Capacity	0.9645	1.929	4.822	9.645	19.29	48.22	96.45	192.9	385.8
	Min. display	0.0005	0.001	0.002	0.005	0.01	0.02	0.05	0.1	0.2
ct	Capacity	150.00	300.0	750.0	1500.0	3000	7500	-----	-----	-----
	Min. display	0.05	0.1	0.2	0.5	1	2	-----	-----	-----
mo m	Capacity	8.000	16.00	40.00	80.00	160.0	400.0	800.0	1600	3200
	Min. display	0.005	0.01	0.02	0.05	0.1	0.2	0.5	1	2
dwt	Capacity	19.29	38.58	96.45	192.9	385.8	964.5	1929	3858	7715
	Min. display	0.01	0.02	0.05	0.1	0.2	0.5	1	2	5
GN	Capacity	463.0	926.0	2315	4630	9260	23150	-----	-----	-----
	Min. display	0.2	0.5	1	2	5	10	-----	-----	-----
tl	Capacity	0.7935	1.587	3.968	7.935	15.87	39.68	79.35	158.7	317.4
	Min. display	0.0005	0.001	0.002	0.005	0.01	0.02	0.05	0.1	0.2

### Note

The unit "tl (Hong Kong General / Singapore)" is for special versions only.

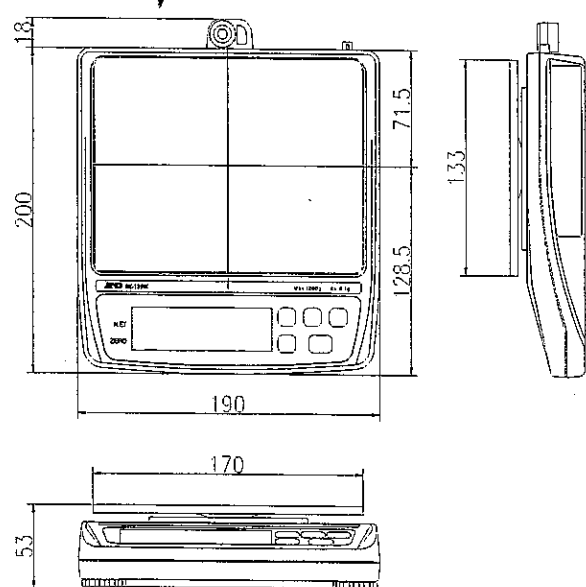


## 10. Dimensions



EK-120i / EK-200i / EK-300i

EW-150i

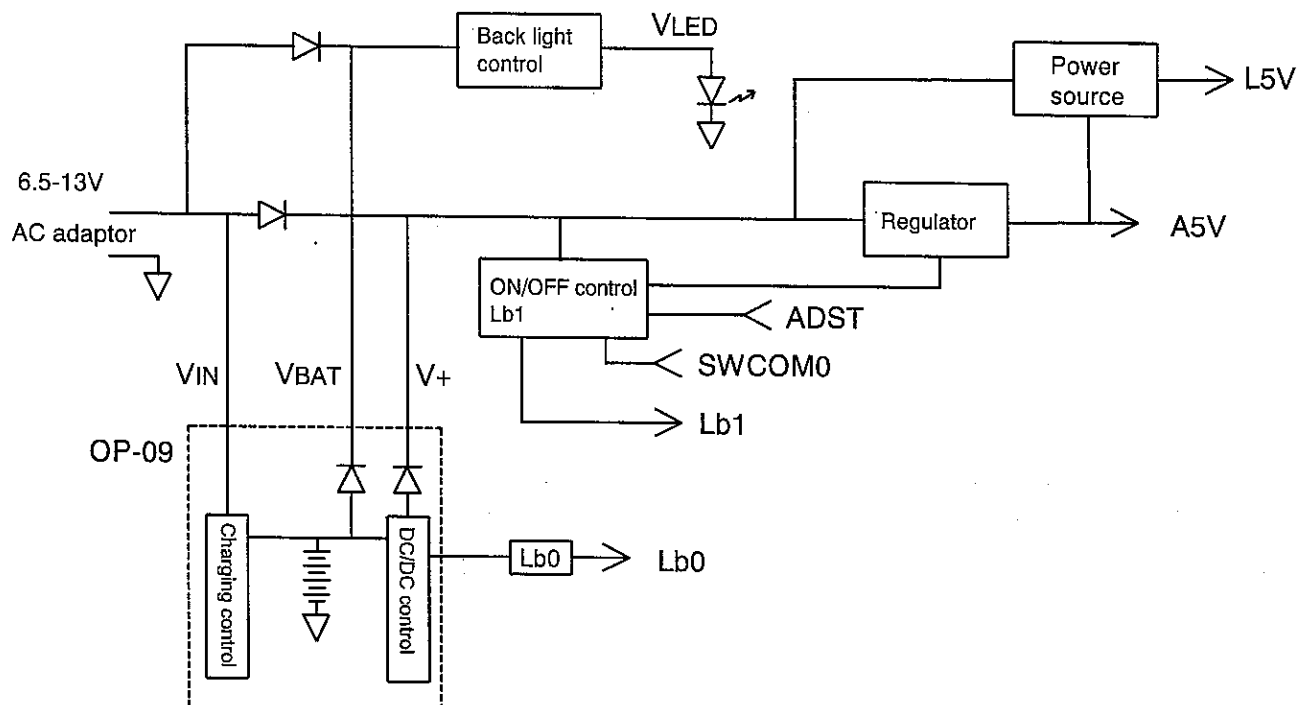


EK-600i / EK-1200i / EK-2000i/  
EK-3000i / EK-6000i / EK-12Ki  
EW-1500i / EW-12Ki



## 11. Maintenance

### Power supply

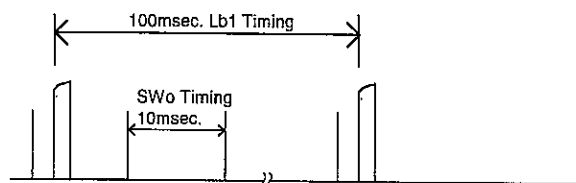


VIN	AC adaptor input 6.5 - 14V
V+	6 - 13V
VBAT	4 ~ 13V
VLED	Power source of back light 4V/40mA
Lb1	V+: less than 6.1v Lb1 V+: more than 13.6v Hb1
Lb0	OP_09 battery voltage less than 4v Lb0
VA	Analog 5v
VL	Logic 5v

ADST AD control signal = Power on signal

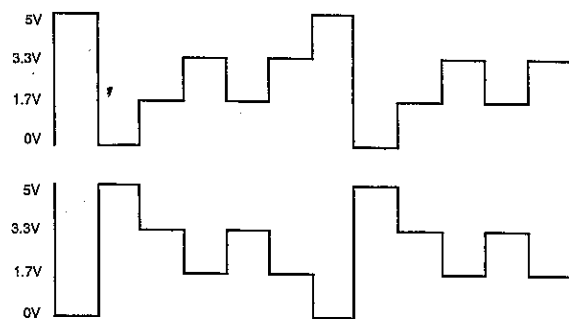
Lbl Lbl measurement input

SWCOM0SW common signal = Lbl measure timing

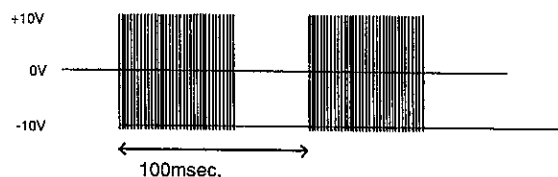


LCD      COM signal

          SEG signal

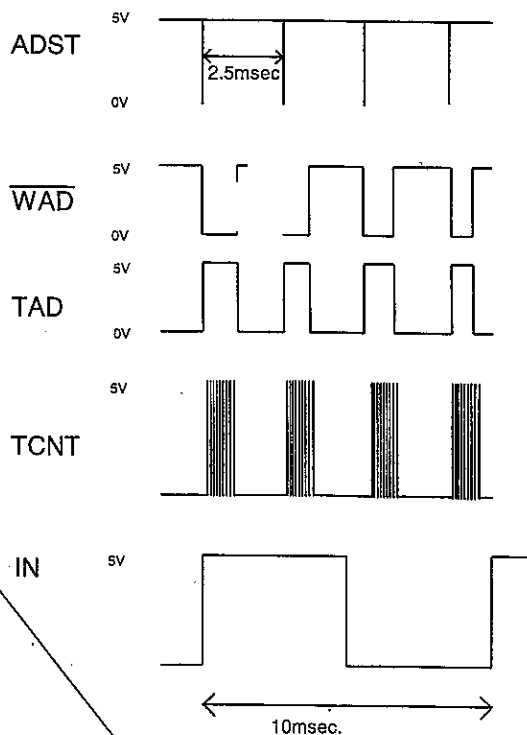


RS232C J5-2       $\pm 5 \sim \pm 10v$   
Stream mode  
          J5-3      0v  
          J5-5      0v  
          J5-6       $+5 \sim 10v$



#### A/D control TIMING

Maintenance will be performed following as "Troubleshooting flow chart" to judge how to maintain. Please judge whether they are a setup, reexamination of a calibration, redo of a main part assembly, repair of the logic board, and repair of the load cell.



J2

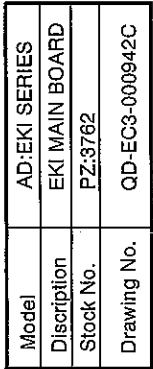
- 1 Load cell connector
- 2 Temperature resistor about 2.4v
- 3 Temperature resistor about 2.3v
- 4 Load cell Impression voltage +5v
- 5 Load cell output Hi 2.5v
- 6 Load cell output Lo 2.5v
- 7 0v

Voltage between 4 pin and 5 pin 0 ~ 14 mv, For PZ:3762A 0 ~ 7.5 mv

Voltage between 1 pin and 2 pin 90 ~ 110 mv, Resistor 550  $\Omega$

[Blank page]

12. Circuit diagram of PZ3762

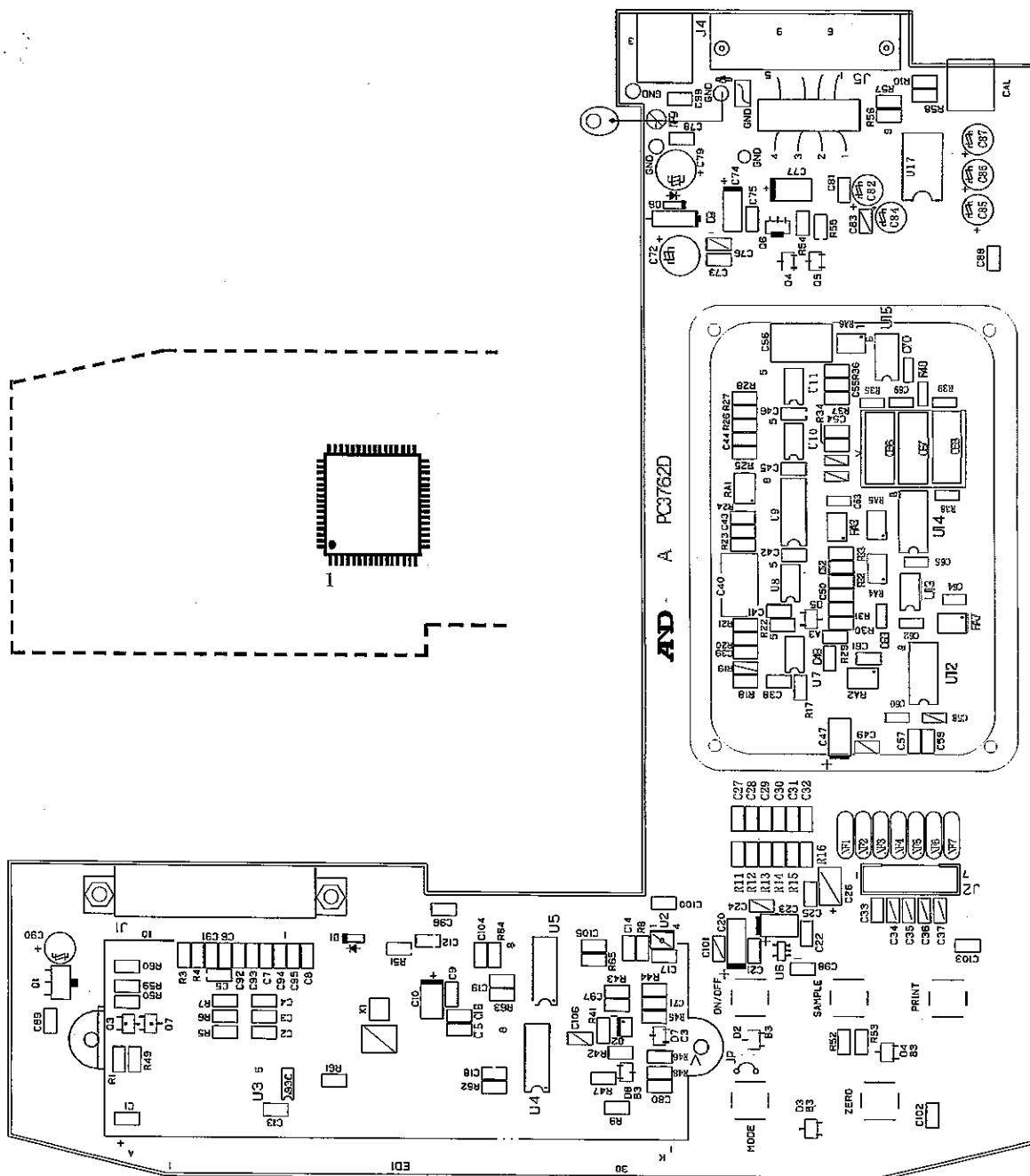


[Blank page]





### 13. Parts layout of PZ:3762



Model	AD EK-i/EW-i Series
Description	Main board
Stock No.	PZ:3762E
Drawing No	QD-KZ3-000650N

[Blank page]



## 14. Parts list of circuit (PZ:3762)

\* Except parts of A/D unit

No.	Part name	Stock No.		Q'ty
	PCB	PC	3762	1
U1	MASK CPU	UC	MN101C58-AD1	1
U3	EEPROM	UC	93C66LM8	1
U17	RS232C DRIVER	UC	MAX232CWE	1
U4	F/F	UC	HC74F	1
U5	NAND	UC	HC00F	1
U6	REGULATOR	UR	TAR5S50	1
Q6	TRANSISTOR	QT	A1201Y-C	1
Q3,4,5,7		QT	C2712Y-C	4
Q2		QT	RN4608	1
D2,3,4,8		DI	ISS184-C	4
D7		DI	ISS226-C	1
D1,6		DI	MA729	2
Q1	TRANSISTOR	QT	C2982B	1
EDI	LCD	ED	BTJ038	1
	BACK LIGHT UNIT	ED	BDJ038	1
X1	OSC 20MHz	XT	CSACW20,0M	1
NF1, 2, 3, 4, 5, 6, 7		NF	EXCEMT102BC	7
J5	RS-DSUB CONNECTOR	JA	17LE-23090-I	1
J4	DC-JACK	EJ	0470-01-230	1
J2	L/C CONNECTOR	JI	7P-S2T2-EF	1
J1	OPTION CONNECTOR	JI	CL581-0101-3	1
	KEY SW	SK	SKHHAK	5
	CAL SW	SK	EVQPF06K	1
C72, 79		CK	SME35VB100	2
C82, 84, 85, 86, 87, 90		CK	SME25VB10	6
C10, 23, 77		CT	1A4R7-C	3
C20, 74		CT	1V101-C	2
C1, 2, 3, 4, 9, 12, 13, 14, 17, 18, 19, 22, 25, 33, 81, 88, 98, 102, 103		CC	0.1U25V-C	19
0.1U spare C58, 49, 107				
C5, 6, 7, 8, 16, 21, 73, 75, 78, 89, 91, 92, 93, 94, 95, 96, 97, 99, 100		CC	0.001U-C	19
C15, 27, 28, 29, 30, 31, 32, 71, 80		CC	100P-C	9
C104, 105		CC	22P-C	2
R11, 12, 13, 14, 15, 16, 52, 54, 64, 65		RC	1/10W 101J	10

R59		RC	1/10W 181J	1
R47,50,51,53		RC	1/10W102J	4
R46, 55, 8		RC	1/10W472J	3
R41, 42		RC	1/10W 223J	2
R9, 56, 57		RC	1/10W 473J	3
R10, 48, 58, 61		RC	1/10W 104J	4
R1, 60		RC	1/10W 2R0J	2
R49		RC	1/10W 330J	1
R62, 63		RC	1/10W 470J	2
R44		RC	1/10W 1501F	1
R5, 6, 7		RC	1/10W 1102F	3
R43		RC	1/10W 2202F	1
R3, 4, 45		RC	1/10W 3920F	3
	CORE (RS232C I/O)	LR	BFR120507	1
AWG26 - 30 (UL1007, UL1571)	Brown 8cm	KB	126008 BN44	1
	Red 8cm	KB	126008 RD44	1
	Orange 8cm	KB	126008 OG44	1
	Yellow 8cm	KB	126008 YW44	1



## 15. Options



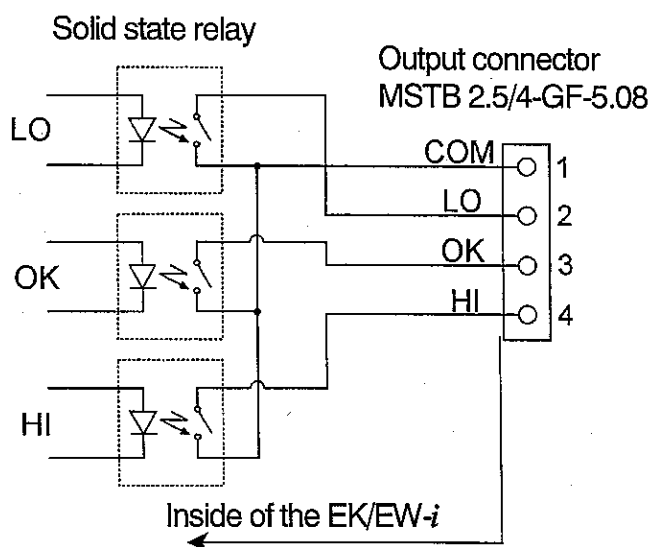
### 15.1 OP-04 Comparator relay output and buzzer

Allows output of the HI, OK or LO signal results to an external device as a solid state relay output.

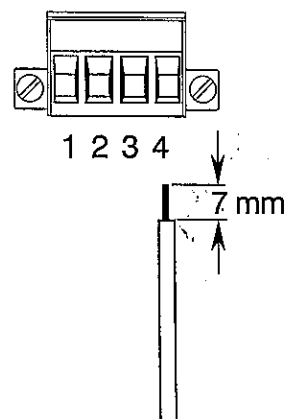
It is possible to sound a buzzer according to the comparison result. See the function "bEP" to set which result will make a buzzer sound.

- ☐ *The comparator function on/off, the comparison mode and comparator buzzer output can be selected using the function settings. See the settings "cP" and "bEP".*
- ☐ *OP-04 cannot be used together with OP-09.*

#### Output circuit



Mating connector  
MSTB 2.5/4-STF-5.08  
(Attached to the OP-04)



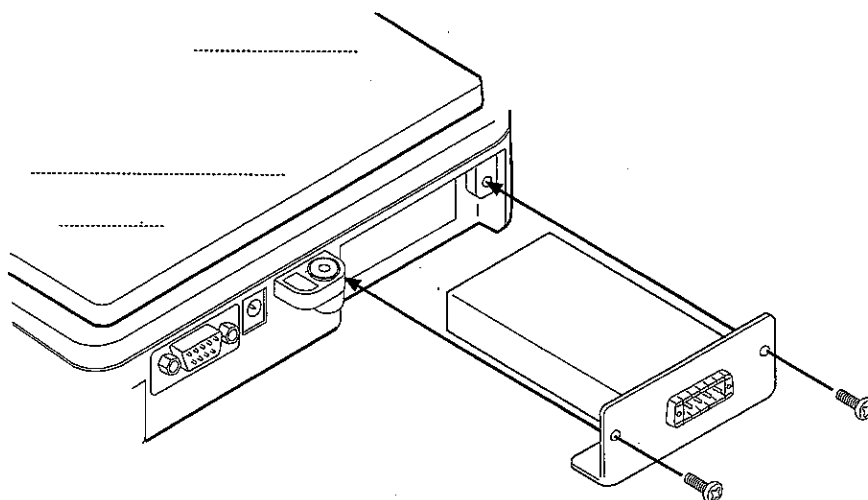
#### Maximum rating

The maximum rating of the relay output is as follows.

- ☐ Maximum voltage: 50V DC
- ☐ Maximum current: 100mA DC
- ☐ Maximum ON resistance: 8Ω

## OP-04 Installation

1. Remove the cover of the option slot on the rear of balance by pressing and lowering it down.
2. Insert the option into the slot and secure it with the screws attached.



## 15.2 OP-09 Rechargeable battery pack (Ni-MH)

By installing the rechargeable battery pack (Ni-MH) into the balance, cordless operation can be carried out for approximately 9 hours (used with the LCD backlight off).

- ☐ ***OP-09 cannot be used together with OP-04.***
- ☐ ***The battery life will vary depending on how the balance is used, ambient temperature and so on.***

### Charging the battery pack

Connect the AC adapter to the balance and turn the power off, then charging starts. It will take approximately 12 hours to reach full charge.

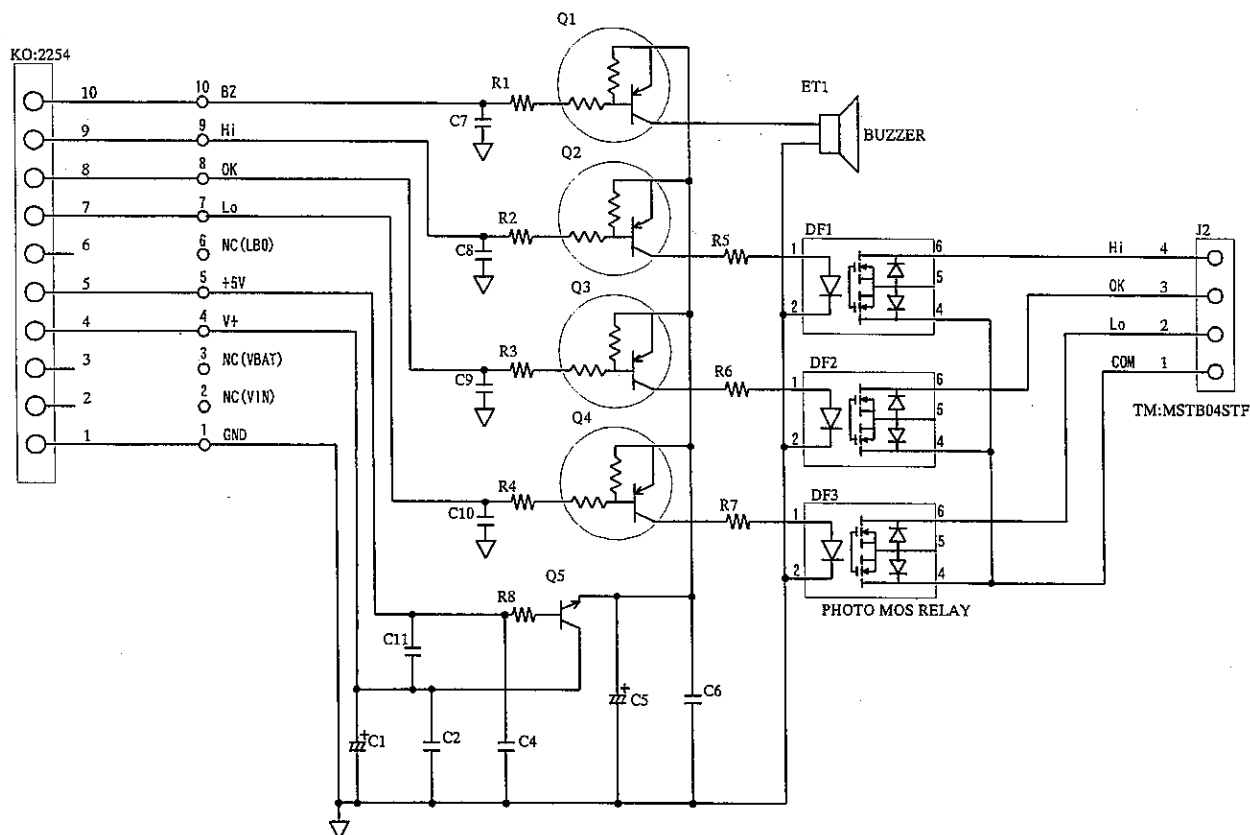
- ☐ ***If "Lb0" is displayed when using the battery pack, immediately stop using it, and recharge the battery pack or use the AC adapter.***
- ☐ ***Charge the battery pack at a temperature between 0°C (32°F) and 40°C (104°F).***
- ☐ ***Do not charge too long. Overcharging will reduce the life of the batteries.***
- ☐ ***Be sure to charge the battery pack when using for the first time or if it has not been used for a long time (more than one month). Recharging two or three times may be needed to reach full charge.***
- ☐ ***Be sure to use only the AC adapter that is provided with the EK/EW-i balance.***

## OP-09 Installation

See the OP-04 installation.



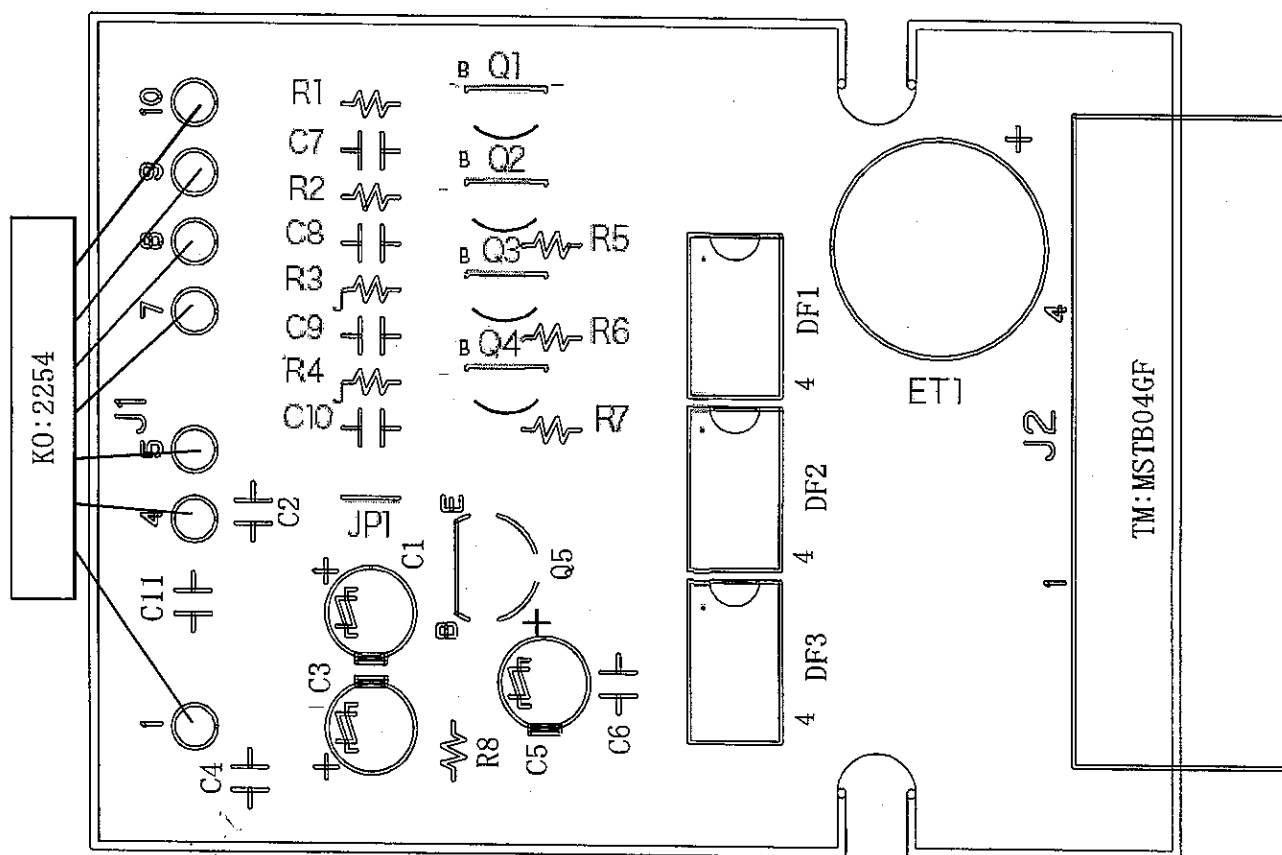
## 16. Circuit diagram of PZ:3764



Model	AD EK-04i
Description	AD:EK04i Comparater Relay output
Stock No.	PZ:3764
Drawing No	QD-EC4-000304



## 17. Parts layout of PZ:3764



Model	AD EKW-04i
Description	Comparator / buzzer board
Stock No.	PZ:3764
Drawing No	QD-KZ3-000228



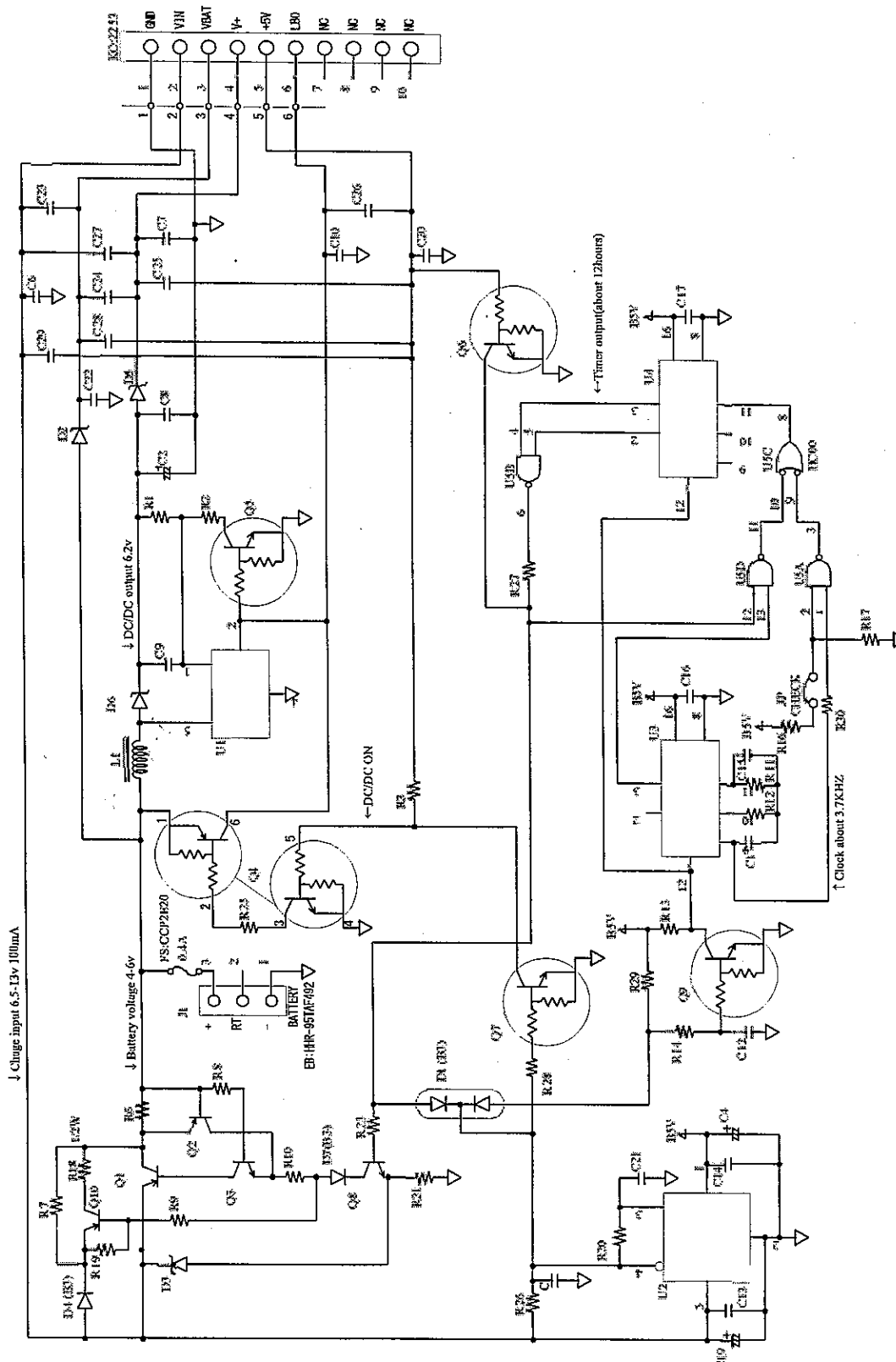


## 18. Parts list of circuit (PZ:3764)

No.	Part name	Stock No.		Q'ty
		PC	3764A	1
ET1	BUZZER	ET	MEB-12C-5	1
DF1,2,3	PHOTO MOS RELAY	DF	AQV253	3
Q1,2,3,4	TRANSISTOR	QT	BN1A4PT	4
Q5		QT	C1815Y	1
R8	RESISTOR	RC	NAT100R	1
R1,2,3,4,5,6,7		RC	NAT1K	7
C1,5, (3)	ALUMINIUM CAPACITOR	CK	SME25VB10	2
C2,4,7,8,9,10,11	CERAMIC CAPACITOR	CC	0.01U	8
J2	OUTPUT TERMINAL	TM	MATB04GF	1
J1	CABLE	KO	2254	1



## 19. Circuit diagram of PZ:3765

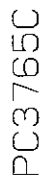


Model	AD EKWI-09
Description	NiMH Battery option
Stock No.	PZ:3765
Drawing No	QD-EC4-000305



PC37650

▶



Model	AD EK-i Series
Description	EK-i Battery BOARD
Stock No.	PZ:3765
Drawing No.	QD-KZ3-000729A

[Blank page]



## 21. Parts list of circuit (PZ:3765)

No.	Part name	Stock No.		Q'ty
		PC	3765C	1
U1	DC/DC CONVERTER	UR	S-8323D50MC	1
U2	REGULATOR	UR	S-875061CUP	1
U3, 4	TIMER	UC	HC4060F	2
U5	NAND	UC	HC00F	1
Q1	TRANSISTOR	QT	A1242Y	1
Q2,10		QT	A1162Y-C	2
Q3,8, (11)		QT	2712Y-C	2
Q4		QT	RN4608	1
Q5,6,7,9		QT	FAIL4M-C	4
D1,4,7	DIODE	DI	1SS184-C	3
D2,5,6		DI	MA729	3
D3		DZ	RD13MB-C	1
R18	1/2W RESISTOR	RC	1/2W 331J	1
R1	1/10W RESISTOR 1%	RC	1/10W 1202F	1
R2		RC	1/10W 4702F	1
R12		RC	1/10W 4302F	1
R6	1/10W RESISTOR 5%	RC	1/10W 6R8J	1
R21		RC	1/10W 681J	1
R7,8,19,30		RC	1/10W 102J	4
R10		RC	1/10W 122J	1
R16		RC	1/10W 472J	1
R9,14,23,26,27,29, (4,15)		RC	1/10W 103J	6
(R5)	CARBON RESISTOR 5%			2
R3,25		RC	1/10W 223J	4
R13,17,20,28		RC	1/10W 473J	
(R22)				
R11		RC	1/11W 224J	1
C2	TANTALUM 47u/16v	CT	1C470-C	1
	1u/35	CT	1V010-C	1
C4	ALMINIUM CAPACITOR	CK	X00-D10UM	1
(C5)				
C1	CERAMIC CAPACITOR	CC	0.0022UCH-C	1

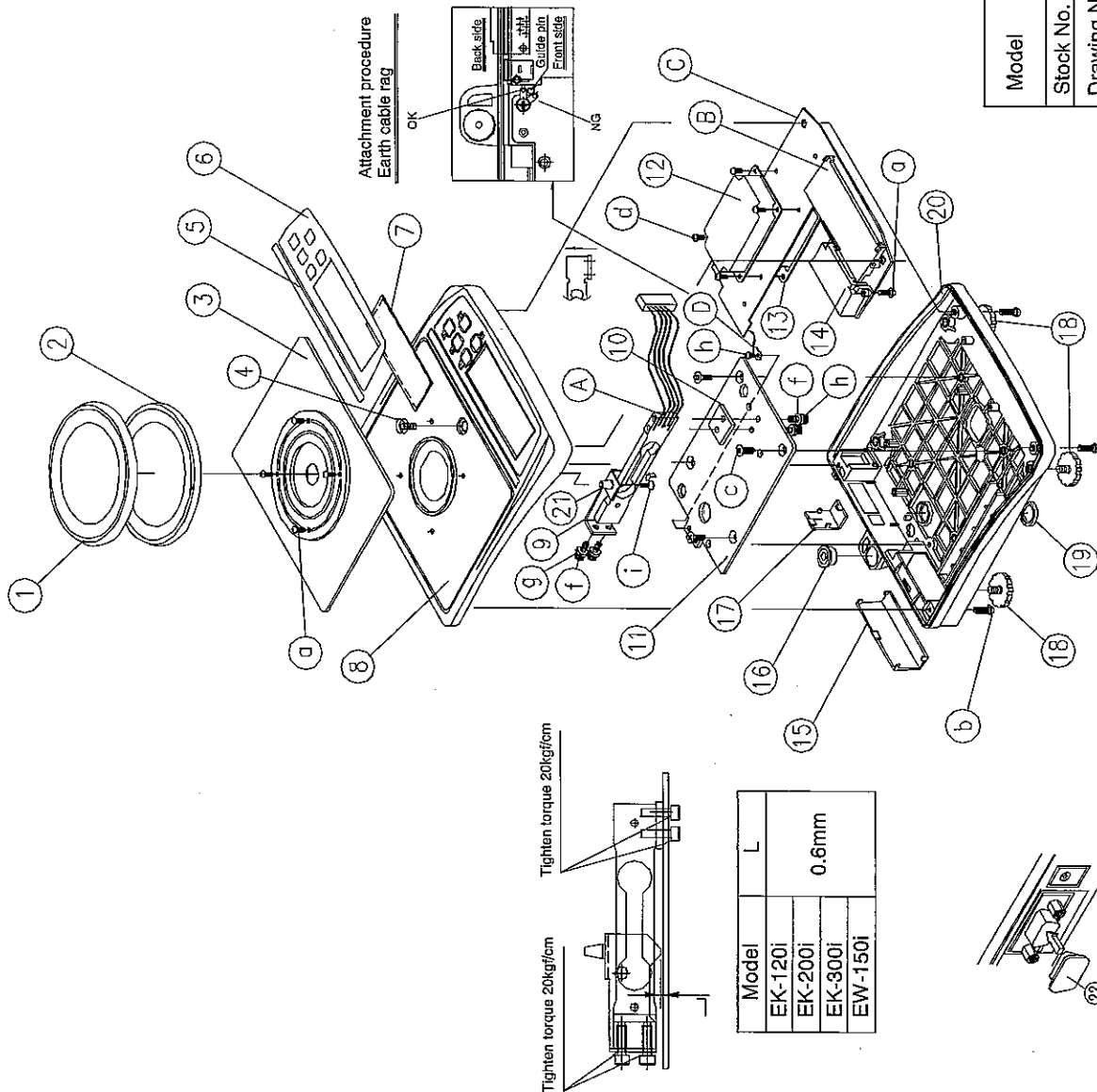
Parts No.	Description	Stock No.		Q' ty
C15		CC	3P-C	1
C9		CC	0.001U-C	1
C3,6,7,8,10,12,13,14,16,17,18,20,2, 22,23,24,25,26,27,28,29, (11)		CC	0.01U-C	21
L1	COIL	LL	LQN6C101M04	1
FSI	FUSE 0.8A	FS	CCP2E20	1
J1	BATTERY CONNECTOR	JI	3P-S2T2-EF	1
J2	CABLE	KO	2253	1



## 22. Exploded view and parts list



### 22.1 EK-120i/200i/300i/EW-150i



Model	EW-150i/EK120i/200i/300i
Stock No.	
Drawing No.	QD-AS3-001234C

[Blank page]



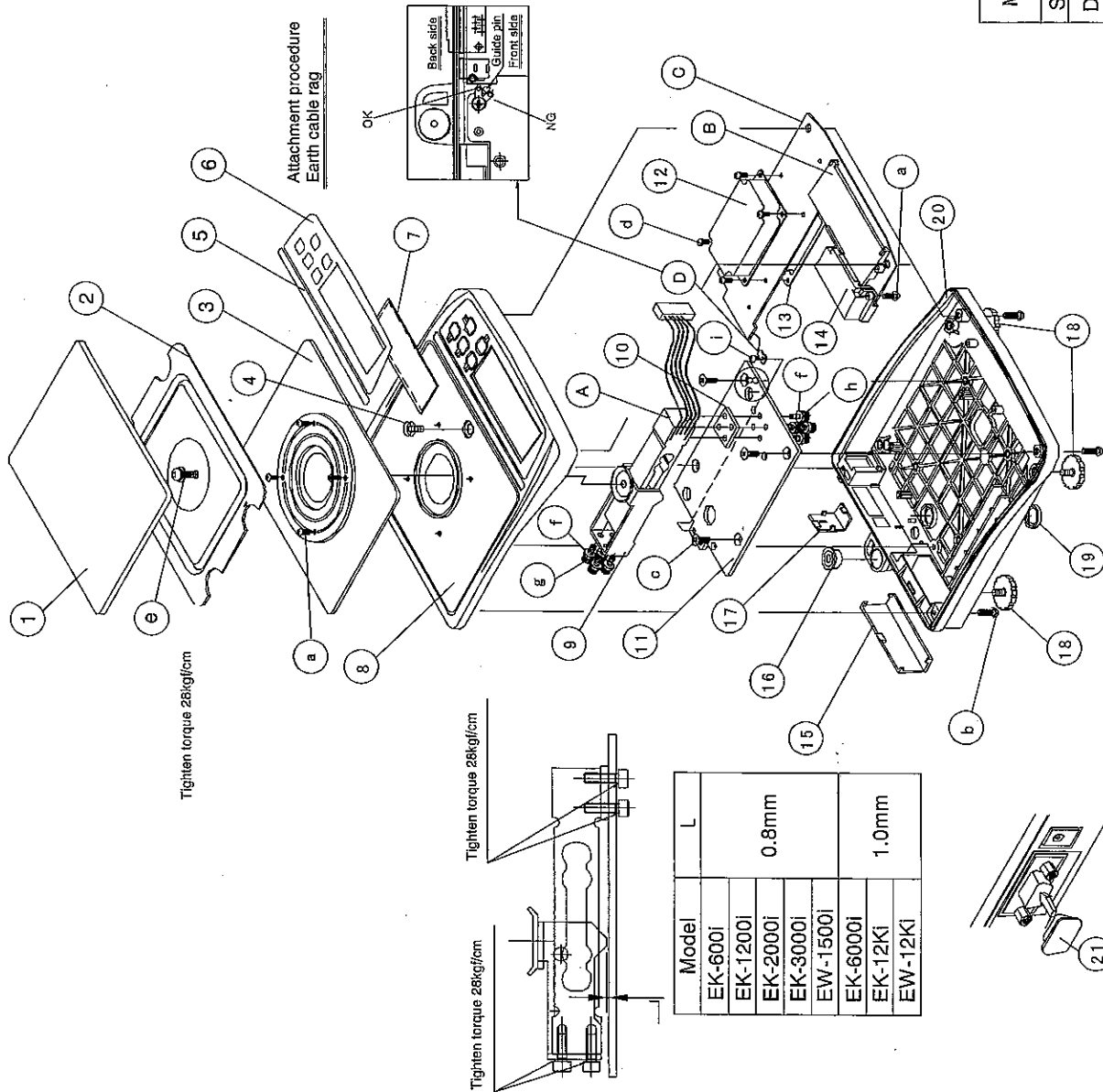
Parts List of EK-120i/200i/300i/EW-150i

No	Parts Name	Stock No.	Q'ty
1	110 Pan	04:A46385	1
2	Pan Support (S)	07:4001229	1
3	Earth Plate (S)	04:3005648B	1
4	Earth spring	15:4011703B	1
5	Model label (EK)	08:3005660	1
	Model label (EW)	08:3005661	
6	Key sheet (sheet)	08:3005577	1
	Key sheet (EW)	08:3005578	1
7	Filter	07:4011704	1
8	Upper Case	07:1000220B	1
9	Load angle (S)	04:4011699A	1
10	Cell spacer (S)	04:4011701	1
11	Chassis (S)	04:4012015	1
12	Shield case (A)	04:4005255	1
13	Shield case (B)	04:3004953	1
14	Conector holder	07:3005346A	1
15	Blank cover	07:3005343A	1
16	Level Vial	10:MR14	1
17	CAL. cover	07:3005344A	1
18	Level foot	06:4011084A	1
19	Cap (B)	07:4000318	1
20	Lower case	07:1000221A	1
21	Angle pin	05:4012867	1
22	RS232C cover	JA:17-9PN	1
A	Load cell (300g)	LC:148-300	1
B	Back light		1
C	PCB	PZ:3762	1
D	Earth cable		1
a	B-Tight M3x6 Fe Ni	17:14FN-B3X6	6
b	B-Tight M3x10 Fe Ni	17:14FN-B3X10	5
c	Flat head M4x8 Fe Ni	17:01FN-S4X8	4
d	Sems M3x6 Fe Ni	17:02FN-B3X6	4
e	Washer M4 Fe Ni	17:04-23-FN4	4
f	Cap bolt M4x8 Zn SW	17:06FZ-B4X8	2
g	Cap bolt M4x12 Ni SW	17:06FN-B4X12	2
h	Bind M3x4 Fe Ni	17:01FN-B3X4	1
i	Flat head M3x4 Fe Ni	17:01FN-S3X4	1

[Blank page]



## 22.2 EK-600i/1200i/2000i/3000i/6000i/12Ki/EW-1500/12Ki



Model	EK-600i/1200i/2000i/3000i/6000i/12Ki EW-1500i/12Ki
Stock No.	
Drawing No.	QD-AS3-001235C

[Blank page]

Parts Lis of EK-600i/1200i/2000i/3000i/6000i/12Ki/EW-1500i/12Ki

No	Parts Name	Stock No.	Q'ty
1	Pan	04:4007526	1
2	Pan Support (Ni)	04:3006015A	1
3	Earth Plate (L)	04:3005647A	1
4	Earth spring	15:4011703B	1
5	Model label (EK)	08:3005660	1
	Model label (EW)	08:3005661	
6	Key sheet (sheet)	08:3005577	1
	Key sheet (EW)	08:3005578	1
7	Filter	07:4011704	1
8	Upper Case	07:1000220B	1
9	Load angle (L)	04:4011697	1
10	Cell spacer (L)	04:4011700	1
11	Chassis (L)	04:40112014	1
12	Shield case (A)	04:4005255	1
13	Shield case (B)	04:3004953	1
14	Conector holder	07:3005346A	1
15	Blank cover	07:3005343A	1
16	Level Vial	10:MR14	1
17	CAL. cover	07:3005344A	1
18	Level foot	06:4011084A	1
19	Cap (B)	07:4000318	1
20	Lower case	07:1000221A	1
21	RS232C cover	JA:17-9PN	1
A	Load cell (3k)	LC:140-3K	1
	Load cell (12k)	LC:140-12K	1
B	Back light		1
C	PCB	PZ:3762	1
D	Earth cable		1
a	B-Tight M3x6 Fe Ni	17:14FN-B3X6	6
b	B-Tight M3x10 Fe Ni	17:14FN-B3X10	5
c	Flat head M4x8 Fe Ni	17:01FN-S4X8	4
d	Sems M3x6 Fe Ni	17:02FN-B3X6	4
e	D.Sems L M5x10 Fe N	17:02FN-L5X10	1
f	Washer M4 Fe Ni	17:04-23-FN4	8
g	Cap bolt M4x18 Zn SW	17:06FZ-B4X8	4
h	Cap bolt M4x12 Ni SW	17:06FN-B4X12	4
i	Bind M3x4 Fe Ni	17:01FN-B3x4	1

[Blank page]





**A&D Company, Limited**

3-23-14 Higashi-Ikebukuro, Toshima-ku, Tokyo 170-0013 JAPAN  
Telephone: [81] (3) 5391-6132 Fax: [81] (3) 5391-6148