FINE

AUTOMATIC CHECK WEIGHER

Operator Manual

FAC5300A / FAC5300 Series

INTER KOREA CORP

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CHAPTER 1. PREFACE

1.1. Introduction

Thank you very much for purchasing Automatic Checkweigher from
FINE INTER KOREA CORP. This check weigher has been designed and manufactured to provide you with the best weighing accuracy combined with ease of maintenance and reliable performance.

This manual will help you to understand the basic operation and maintenance, please read it carefully, make a spare copy and keep it in a safe place

Precautions to be observed

a) Before making any electrical connections please ensure that the supply voltage is the same as that shown on the system I.D. label.
b) Avoid subjecting the system to sudden or extreme temperature variations.
c) Keep the system dry, it is not waterproof. Clean by carefully wiping down with a damp cloth. Do not use aggressive chemicals on non stainless steel parts.
d) Avoid positioning the system in a location subjected to vibration and draughts as these may affect weighing accuracies.
e) Please don`t press the weighing part conveyor installed with a high sensitive loadcell except of placing the actual product for calibrations or putting a test weighter.

1.2. Features

- 3Step Password protection of CALIBRATION, DYNAMIC OFFSET
  And ENGINEERING menus.
- 50 product memory
- Automatic data back-up during power down or other electrical supply interruption
- Auto calibration of ZERO and SPAN
- Remote Control Mode Function
- Auto Zero tracking
- Temperature stabilisation and noise compensation
- Special electrical noise filter
- Programmable alarm functions
- Multi mode LCD graphical display
- Histogram display with detailed production statistics
- Data communication to printer or computer can:
  - Print a copy of any screen selected from the graphical display
  - Print individual product weight
  - Transmit data to a computer
- Accept input commands from other equipment (option), e.g. barcode reader, metal detector, computer
- Provide outputs (option) to:
  - Variable Weighing Speed Control
  - Feedback Control System.
  - Auto Tracking System.
  - Random Checking System.
  - B-A Type (Tare) Accumulated Weight Control System.
  - Can control 2 of the above at the same time
    (e.g. Feedback Control System + B-A Tare).
  - Modular HARDWARE for ease of service and maintenance

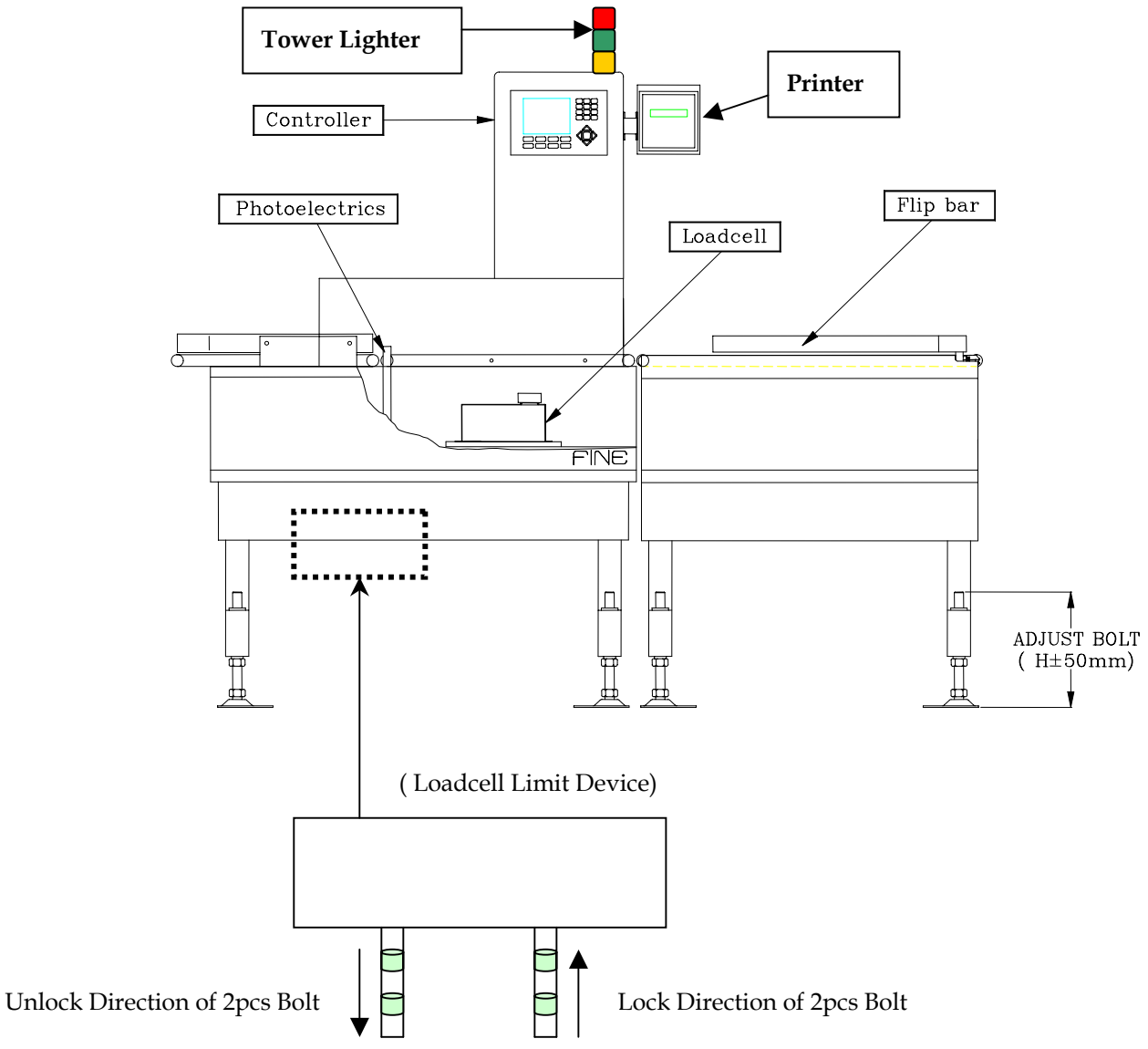
CHAPTER 2. INSTALLATION

2.1 The checkweigher must be levelled.

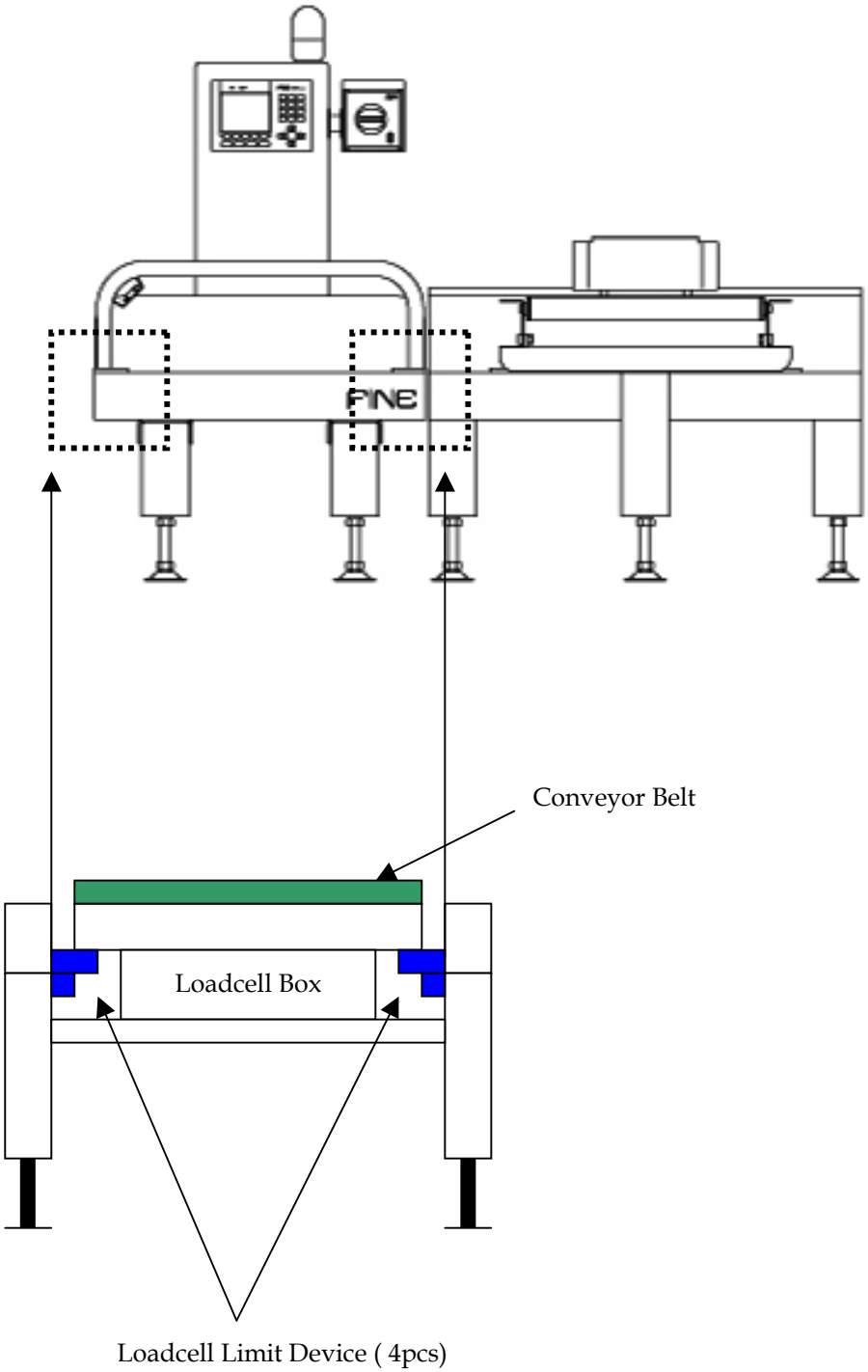
2.2 Unlock the Limit Device of loadcell, refer to separate Installation Instructions.

- When you will move them to another site then Limit device must be locked again.
- If you moved them without locking the limit device then the loadcell may be damaged by even a little impact
- The Limit Device was positioned depending on the model.

2.3 How to unlock and lock the loadcell limit device for High Speed Model (FAC5300A Series Only)



2.4 How to unlock and lock the loadcell limit device for Heavy Duty Model (FAC5300 W353 or W363 or W373)



- This Loadcell Limit Device should be unlocked or locked before the power ON

2.5 Cascade relative conveyor heights to reduce the risk of product bumping into following conveyor during product transfer.

2.6 Check supply power and compare with system rating on the checkweigher I.D. label before making connection using a suitable cable gland, the power supply must be within ±10% of the system rating as indicated.

* *Operating Environment*

2.7.1 The system must not be subjected to excessive draught or vibration

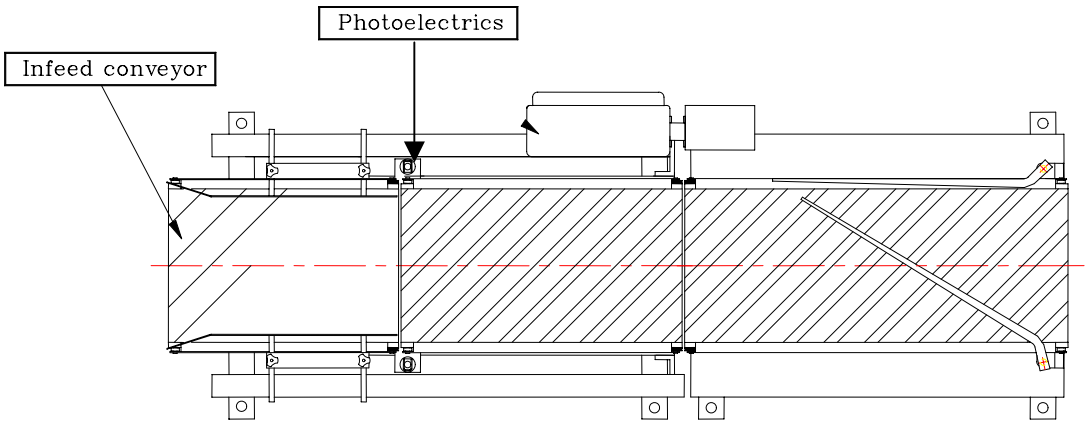
2.7.2 Keep the system clean and dry, it is not waterproof.

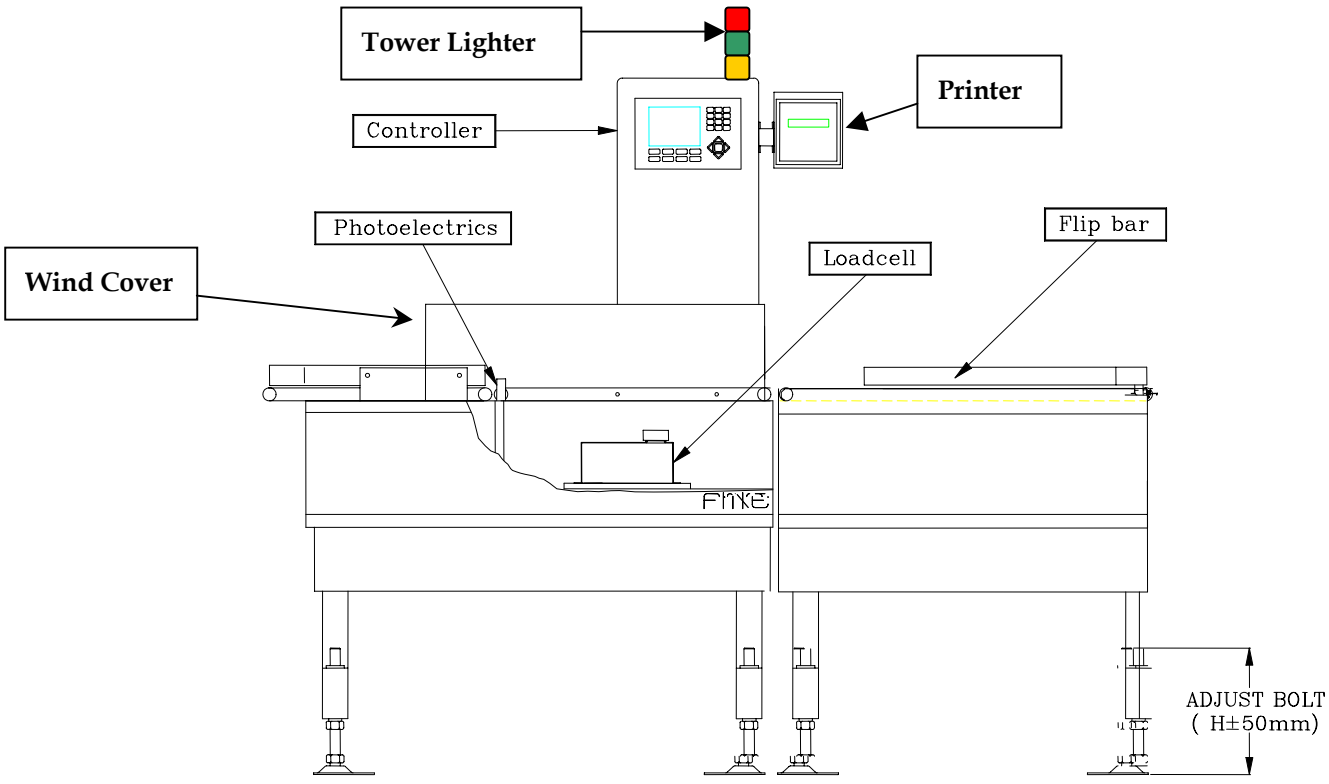
2.7.3 Ambient temperature to be 5-35 degree C

2.7.4 Relative humidity 35%-85%

CHAPTER 3. TYPICAL CHECKWEIGHER

3.1 Layout





3.2. Structure

3.2.1 **Infeed conveyor.**

This conveyor is necessary to assist with matching of product speed and gap for correct weighing.

3.2.2 **Weighing conveyor.**

This conveyor is designed to support and transfer the product during the weighing function.

3.2.3 **Outfeed conveyor.**

This conveyor is designed to accept products from the weighing conveyor and to return it to the production line.

3.2.4 **Rejection system.**

Automatically removes out of tolerance product from the production stream according to programmed decision parameters.

3.2.5 **Controller.**

A micro-processor based management system interfacing between the loadcell, photo electrics and rejection system, with external communication options.

3.2.6 **Photoelectric sensor.**

Registers presence of product as it enters the weighing conveyor and initiates all timing sequences.

3.2.7 **Loadcell.**

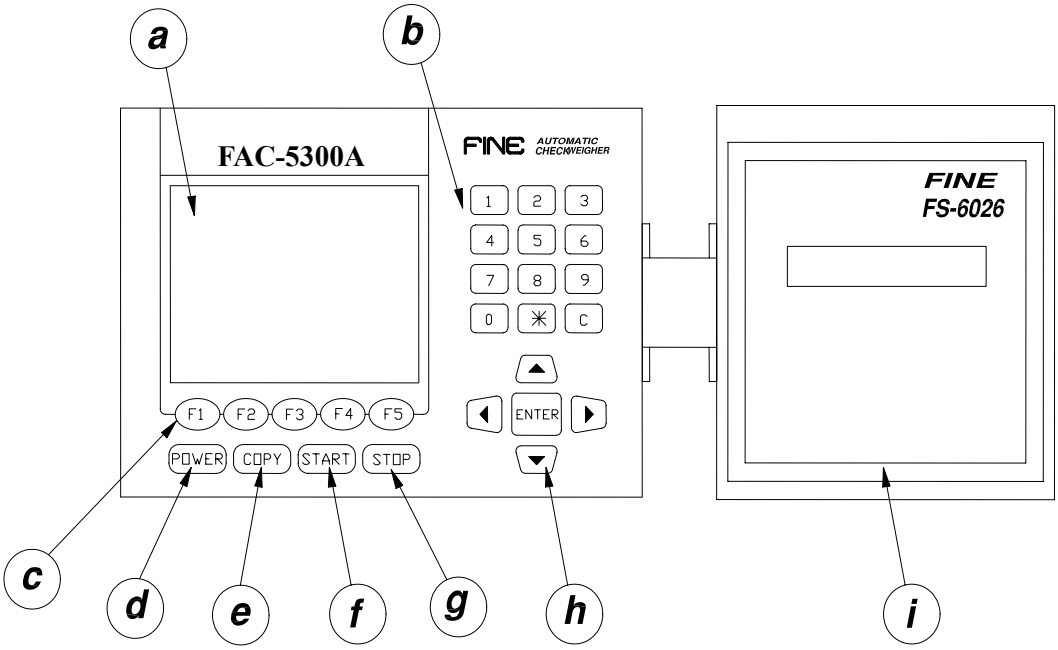
Converts the product weight into a proportional analog signal to be processed within the controller.

This loadcell includes internal mechanical overload protection.

CHAPTER 4. Control panel

4.1 Layout and functions

<Fig 1> Front Panel



ⓐ 320 X 240 Dot Graphical LCD

ⓑ Key Pad - Input the setting point

ⓒ Function Key - Function depending on the screen.

ⓓ POWER - It had better use this power ON/OFF insteady of Main Power

ⓔ COPY - Printing all contents in the screen

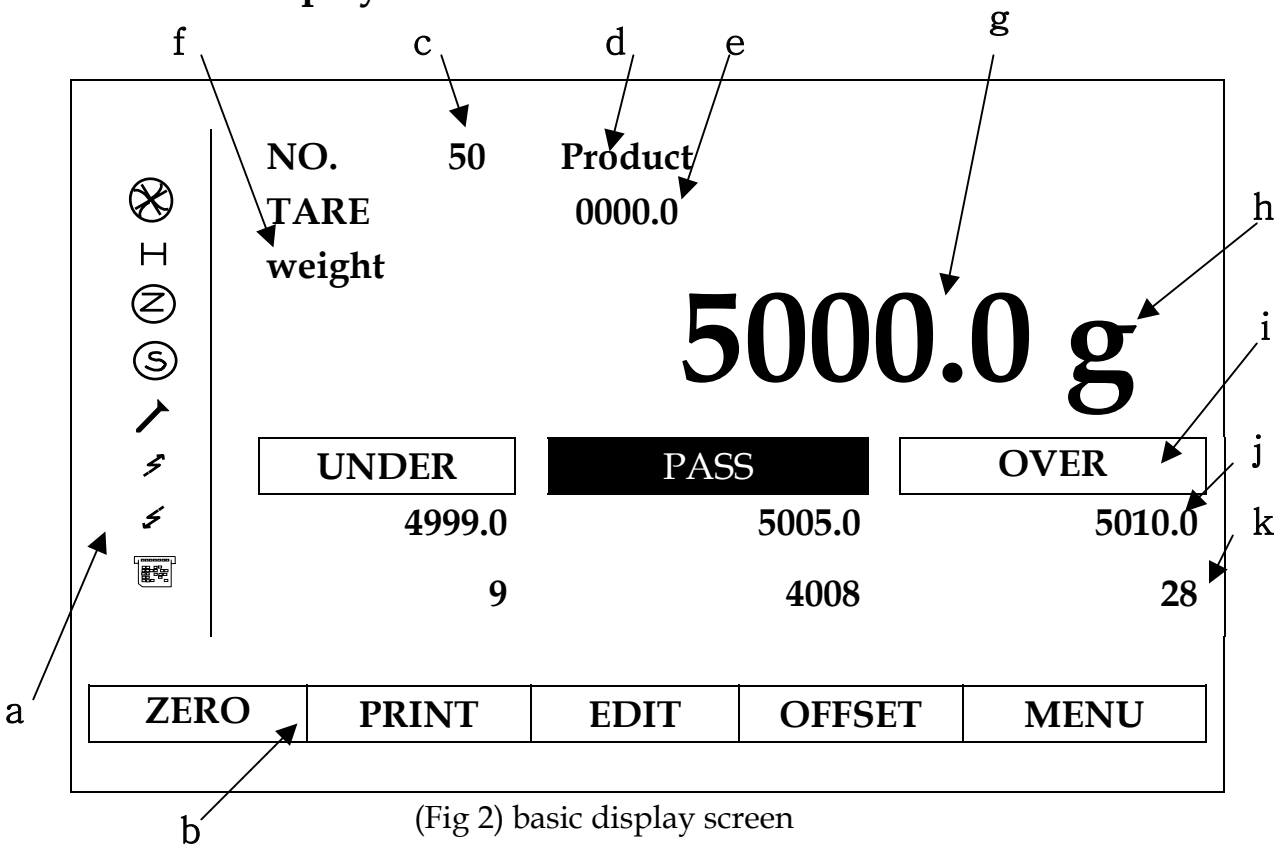
ⓕ START - Start to work , the conveyor motor running

ⓖ STOP - Finish to work,the conveyor motor stopping

ⓗ DIRECTION Key - Cursor moving in the screen

ⓘ PRINTER - Graphical Printing(OPTION)

4.2 The basic display screen



(Fig 2) basic display screen

a) ICONS in the graphical display indicate the current operating status (top to bottom)
   - Conveyor motors running
   - H Holding the displayed weight
   - Auto zero
   - Stability sensing
   - Metal detected (option)
   - Transmitting data
   - Receiving data
   - Printing

b) Function keys
c) Product number (P.N.) – Available to set up until 50items
d) Product name, maximum 8 characters
e) Tare weight, maximum 5 digits
f) Weight Display mode, select actual weight (Net/Gross) or offset from (Net/Gross)
g) Weight (either actual weight or offset), maximum 5 digits
h) Unit of weight(g,kg,ton,lb)
i) Decision Status (under/pass/over)
j) Decision points (under/pass/over)
k) Decision Total count (under/pass/over)

CHAPTER 5. Operation

5.1 General

5.1.1 Power up

The system may be powered up by operating the isolator switch mounted on the side of the controller cabinet.

When the check weigher is first switched on from cold there will be a short warming up period during which time the unit will carry out self test routines and the display will show the software issue installed in the machine.

Following completion of the self test routine the display will change to basic screen format and the check weigher is ready for use.

5.1.2 Standby mode

When not in use it is recommended to leave the check weigher powered up (isolator ON) and to use the screen save function by pressing the POWER key on the keypad, when the check weigher is required for use, press this POWER key once more.

5.1.3 Conveyor Start/ Stop

The check weigher conveyor motors can be switched on/off by the **START** , **STOP** keys on the controller keypad. When motors are switched on , the  icon will be displayed in the icon screen.

5.1.4 Zero

If the displayed weight of the empty weigh conveyor is not "0 (Zero)", it can be zeroed by pressing **F1** **ZERO**

5.1.5 Printing each product weight

Press **F2** **PRINT** to enable serial printing of each product weight as it is weighed. The icon screen will display to "  " icon.

5.1.6 Clear

Press **F3** **EDIT** key and use cursor keys to select any value for editing or to reset counts (e.g. select value, press C, press ENTER).

5.1.7 Basic operation

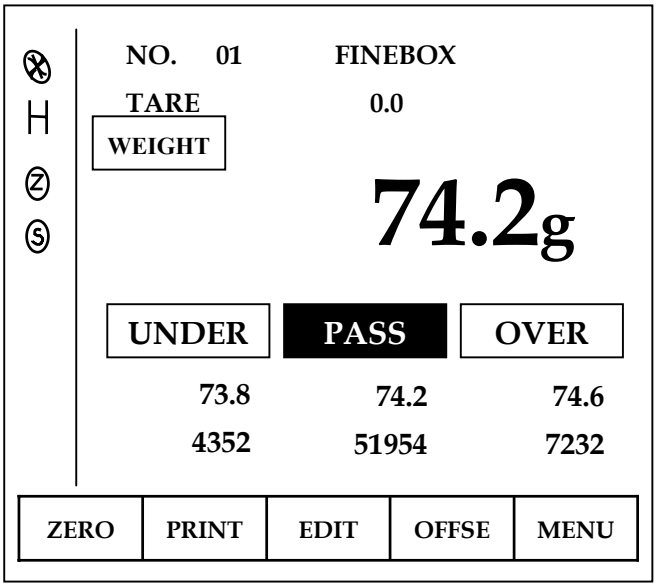
The functions of keys **F1** **F2** **F3** **F4** **F5** will vary according to the screen which is displayed

5.2 Application of Basic Screens

Each form of the basic screen will display the P.N., product name, tare & weight. Keys F1 – F5 will display their current function. F3 (edit key) in conjunction with cursor can be used to select and reset counts, select product from memory, modify tare or weight decision points.

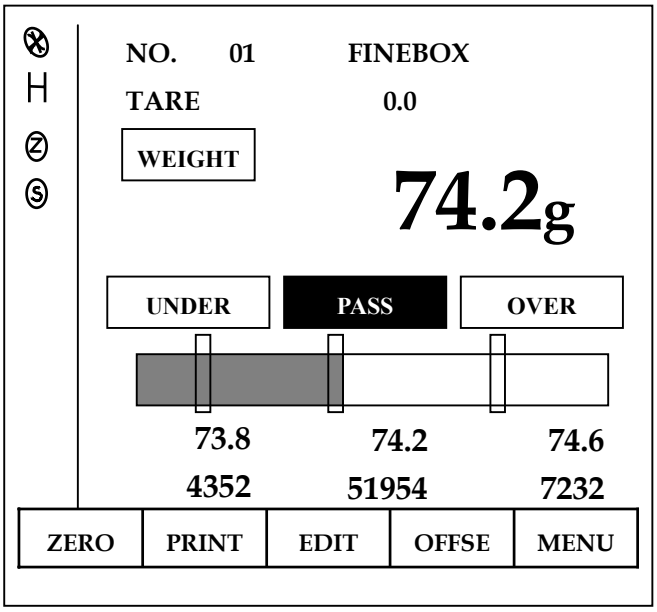
There are 3 basic display screens (see <Fig3>～<Fig5>) and a histogram display which contains much more detailed information. To select an alternative display from that shown in Fig 3, press MENU, then move the cursor to highlight the desired display, press ENTER:

Basic screen <*fig 3*>



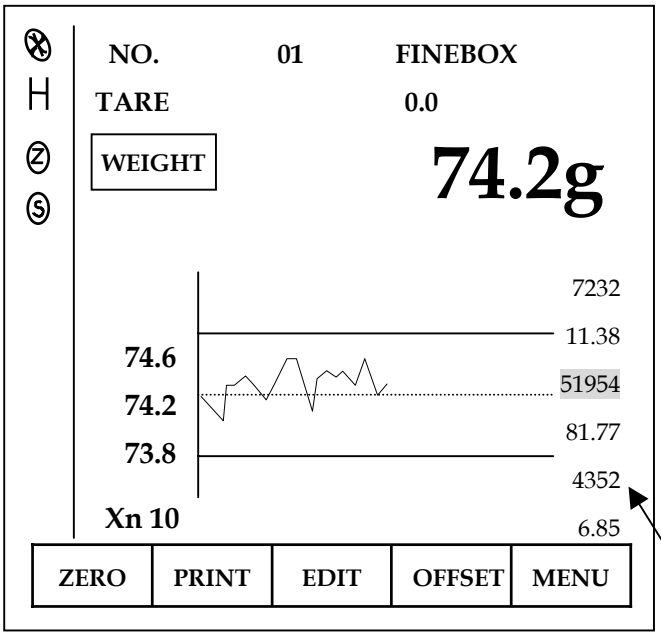
The decision box is highlighted according to the classification of the last weighed product.

Level screen <*fig 4*>



The shaded area in the weight band is proportional to the last weight compared with the weight decision points. The respective decision box is also highlighted e.g. PASS in the example shown.

X-bar screen *<fig 5>*



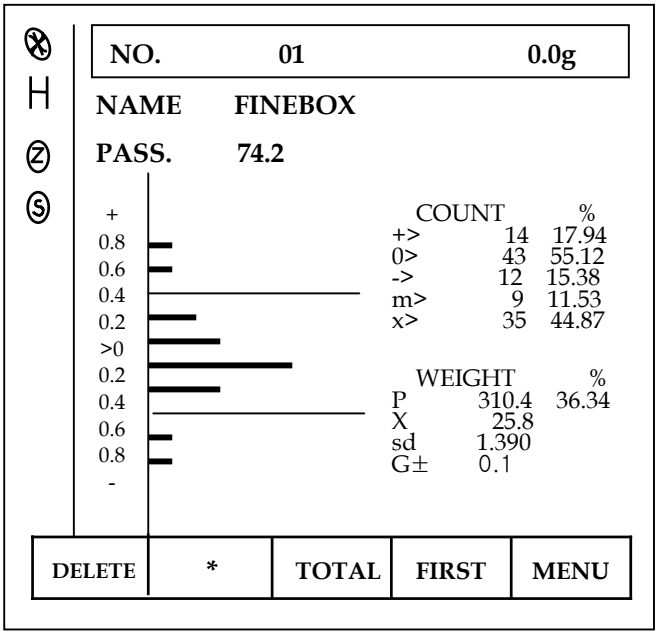
This screen displays in graphical form the value of the moving average. The value Xn sets the number of weights to be averaged for each plotting point in the graph. So with Xn 10, the next 10 weights will be averaged and a point plotted, then the next 10 and so on.

The value of Xn may be edited by use of the EDIT key, values may be set in the range 0-999

Over weight Total Count
Total %
Pass weight Total Count
Total %
Underr weight Total Count
Total %

5.3 Histogram Screens

histogram screen *<fig 6>*



F1 **DELET** Resets production data to zero.

F3 **TOTAL** Prints a summary of the accumlated data by classification (under / over / pass) with date, start / stop times and PN

F4 **FIRST** Returns to basic screen.

**** Notes ****

a) Weight grades. Weight dispersion in increments of display resolution (i.e. 0.2gm in sample) above and below the pass weight.

b) Distribution bar graph. The % of product in each weight grade, note this particular data field does not update whilst this screen is displayed (the rest do), revert to basic screen momentarily to update.

c) Over/under limit lines.

Count Accumulation

a) +V : Over quantity & percentage in 100%

b) 0> : Pass quantity & percentage in 100%

c) -> : Under quantity & percentage in 100%

d) X> : Total of over & under quantity & percentage in 100%

Weight accumulation

a) P : The accumulated weight of all pass product & as a percentage of total weighed products

b) x: Mean weight of all weighed products

c) sd : Standard Deviation

d) G = the weight increment of the weight grades

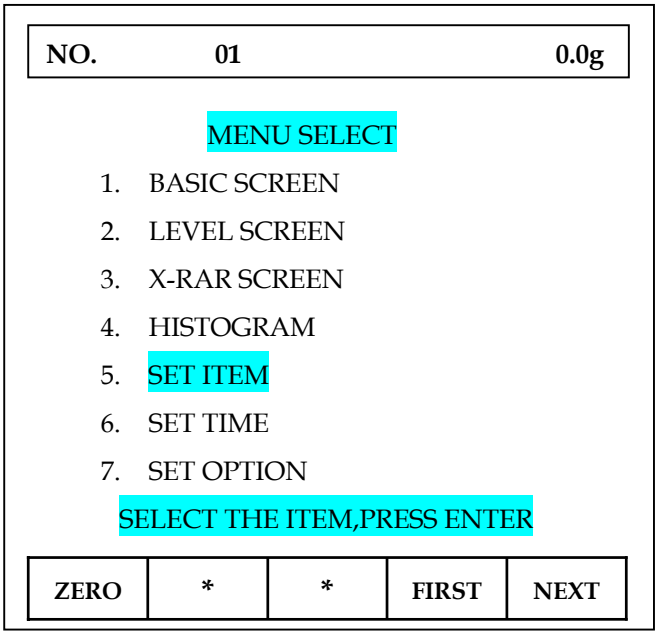
CHAPTER 6. SETTING UP

6.1 Product Settings

Once the system has been set up it is a good idea to record and keep a copy of all settings in a safe place for possible future reference.

6.1.1 Menu Select and Password.

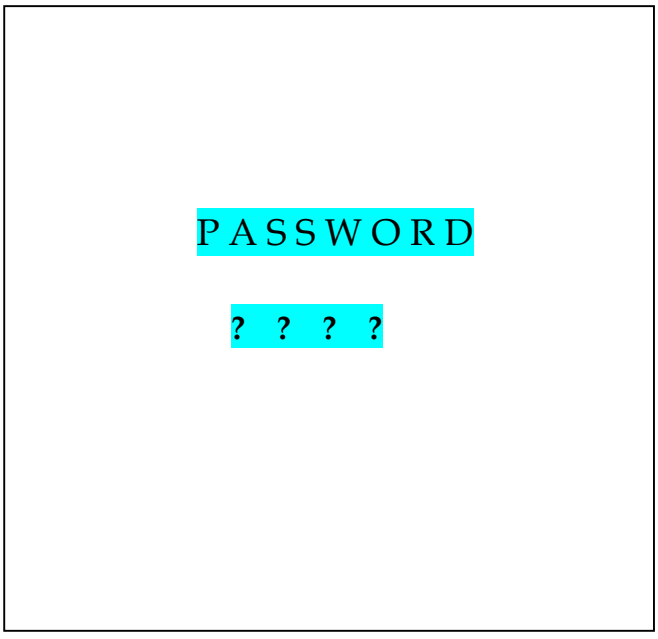
MENU SELECT < *Fig 7*>



If you press MENU Button in the basic screen,
Then you will go to this MENU SELECT

And after choosing SET ITEM by direction key,
Please press ENTER Key to go to SET ITEM

PASSWORD < *Fig 8*>



Since SET ITME was important to a manager,
this mode was normally locked by password.

Pease input password(4100) and press ENTER

If this mode was unlocked by password,
It can be accessible to any persons.
So,after editing all seting point in this SET ITEM,
Please POWER OFF and POWER ON in the panel

Then this mode can be locked by password.

6.1.2 **Creating a product in memory**. <Fig 9>. (menu, set item)

***SET ITME <** Fig9>*

NO. 01			74.2	g

SET ITEM

NAME	FINEBOX		
PASS	73.8	OFFSET	
OVER	74.2	0.4	
UNDER	74.6	0.4	
TARE	0.0	SPEED	2
DYNAMIC OFFSET	100000		

PRESS ENTER AND INPUT NAME

ZERO	*	*	**FIRST**	**MENU**

Move the cursor to select a value to be edited, input required value, press ENTER to store the new value.

Note that the loadcell output is in analogue form so will vary continuously as the weight of the product varies. This analogue output is however converted in to a digital signal which has incremental values and so there will be rounding up/down of the analogue value to the nearest digital one. There will also be some variation in the analogue value for each successive pass of the same product due to inherent noise generated by vibration, draughts or possibly electrical interference. The weight decision parameters must be calculated to take account of these variations, usually by adding margins of error to ensure that product is correctly classified regardless of these variations.

When correctly adjusted the AVERAGE product weight will be the same as the actual product weight when calculated over a number of repeat weighings.

6.1.3 **Creating a product name** <fig 10> (menu, set item, edit name)

To give any product a name move the cursor to the name edit box, press ENTER to display the character map <fig 10>, move cursor to select character, press ENTER each time until name has been set. Press END to return to previous screen.

Character map *<fig 10>*

INPUT NAME

PART NAME FINEBOX

	!	”	#	$	%	&	(	)	*	,	.
0	1	2	3	4	5	6	7	8	9	+	-
A	B	C	D	E	F	G	H	I	J	K	L
M	N	O	P	Q	R	S	T	U	V	W	X
Y	Z	a	b	c	d	e	f	g	h	i	J
k	l	m	n	o	p	q	r	s	t	u	V
w	x	y	z	/	\	{	|	_	‘	:	~

*	*	*	CANCEL	END

For example

If you want to input product name with FINEBOX

Please ENTER after the cursor going to “ F “

Please ENTER after the cursor going to “ I “

Please ENTER after the cursor going to “ N “

Please ENTER after the cursor going to “ E “

Please ENTER after the cursor going to “ B “

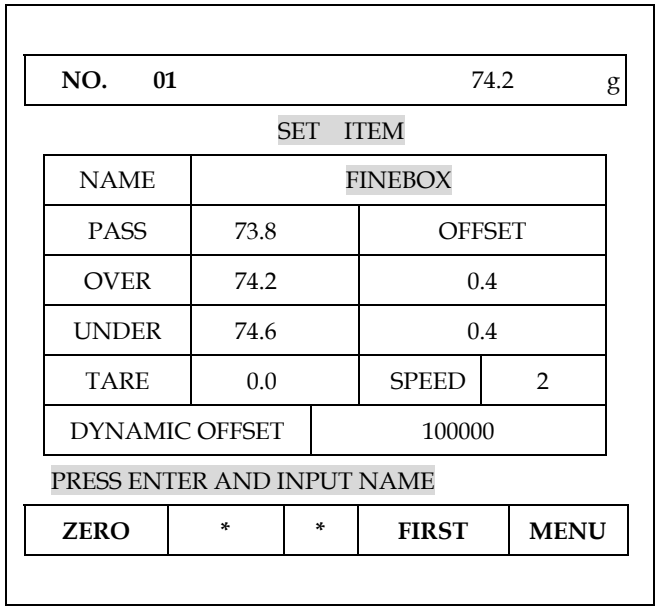
Please ENTER after the cursor going to “ O “

Please ENTER after the cursor going to “ X “

Finally please Press END after finishing to input product name.

Also if you press CANCEL in this mode then it will go back to the previous screen.

SET ITME **<** *Fig9***>**



Pass weight. Example with product minimum target weight of 101gm. Establish weighing accuracy when system is correctly installed by using a product sample that has been independently verified on a lab type scale. This will determine the weigh error in terms of a +/- weight variation. If this error is +/- 0.4gm then the calculated weight of a 101gm product could vary between 100.6gm and 101.4gm and the PASS point should be set at 101.4gm.

Under weight. Using the same example as above the UNDER point should be set at 100.6gm. If an OFFSET value of 0.4gm were entered then the target weight would be calculated automatically.

Over weight. This is determined according to application as usually there is no legal requirement concerning maximum pack weight.

Tare weight. By entering a tare weight value the checkeigher will automatically classify the product according to nett weight, note the weight displayed is the NET value when conveyor motors are running but is the GROSS value when static.

Speed . This OPTION function can control the conveyor belt speed by low speed and high speed.
1 number means “Low Speed” and 2number means “ High Speed “
So,if you want to speed up while this check weigher is being runned by speed No 1,
Then please use to speed up the conveyor belt speed after changing No 1 to No 2.
If you want to get more speed up informatins please refer to a Engineer operating manuals

Dynamic Offset. Static weights (conveyor motors not running) will also be different from dynamic weights due to the movement of the product across the weigh conveyor. This error can be compensated for by applying a DYNAMIC OFFSET value.

This value can be edited to automatically compensate for dynamic weighing errors that affect the average weight of the product. To calculate dynamic offset value weigh the product statically then weigh it a number of times dynamically to determine the average value.

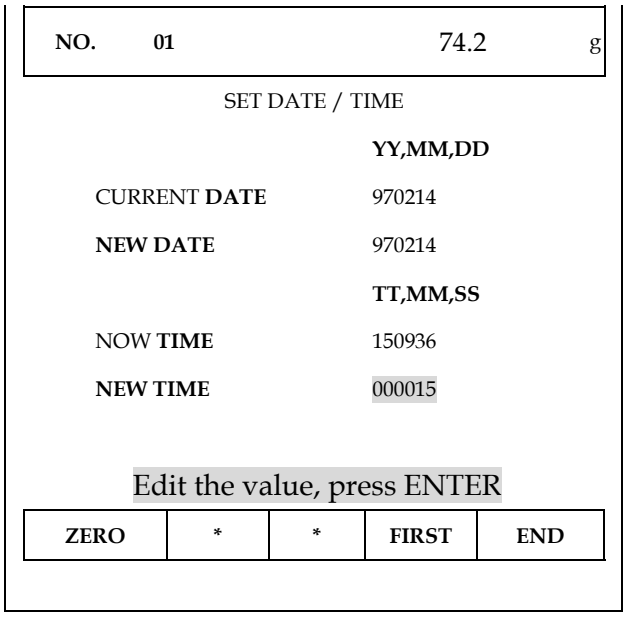
Static weight/dynamic average weight = dynamic offset value. e.g. static weight is 100gm, average dynamic weight is 101gm, 100/101 = 099009

Note that each edited value must be saved by pressing ENTER key.

6.2 System settings

6.2.1 Time and date setting <fig 11>*(menu, set time)*

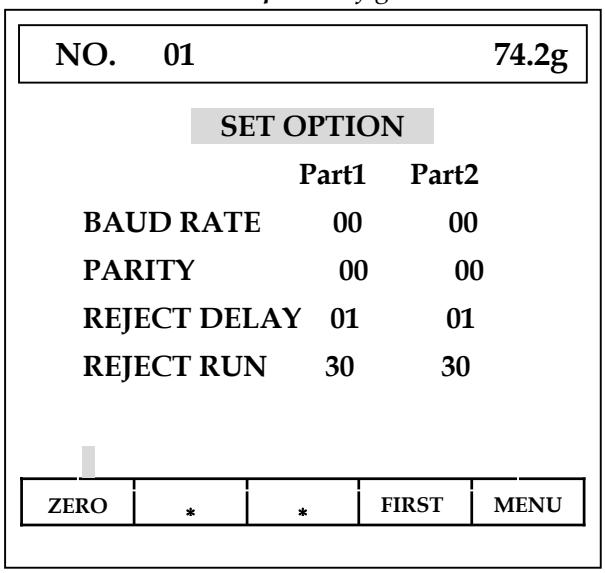
Set time/date <*fig 11*>



Only 2 fields, New Date and New Time are adjustable. Use cursor to select field to be edited, key in new values. Press ENTER followed by FIRST to return to first basic screen or ENTER followed by END to return to menu.

6.2.2 Set Option *fig 12 (menu, set option)*

Set option *<fig12>*



* **BAUD RATE :** Can be set from 600bps up to 9600bps

0 : 9600 1 : 4800 2 : 2400 3 : 1200 4 : 600

* **PARITY:** none, odd, even

* **REJECT DELAY** : Time for rejected product to reach rejection position.

- 1 Count = 0.02Sec
- Maximum Reject Delay = 1.98 sec.

* **REJECT DURATION** : Duration of rejection cycle.

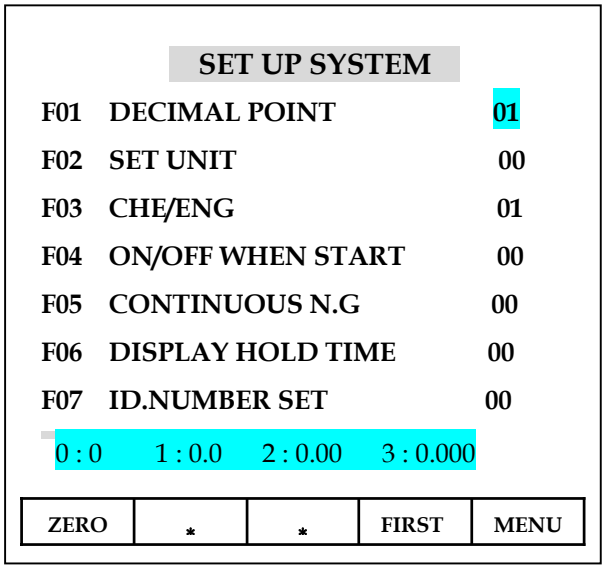
- 1 Count = 0.02Sec
- Maximum 1.98 sec.

* **PART 1 :** Section of Reject Delay and Reject Duration for SPEED NO 1(Low Speed)

* **PART 2 :** Section of Reject Delay and Reject Duration for SPEED NO 2(High Speed)

6.2.3 Set up System *fig 13 (menu, next, set up)*

Set up System *<Fig. 13>*



FO1 Decimal point can be set to 0, 0.0, 0.00, 0.000

- 00 : 0
- 01 : 0.0
- 02 : 0.00
- 03 : 0.000

FO2 Unit of weight can be set to Metric gm/kg or Imperial oz/lb

- 00 : g
- 01 : kg
- 02 : oz
- 03 : lb

FO3 Chainese or English language display

- 00 : Chainese Language
- 01 : English Lanuage

FO4 Conveyor auto start on power up

- 00 : OFF of conveyor when the main power ON
- 01 : ON of auto starting of conveyor when the main power ON

FO5 Alarm output and screen warning message for continuous out of tolerance product

FO6 Time displayed weight is held on screen

- 00 : Continous to hold the weight until the next product coming on the weighing conveyor
- 1 Count = 0.1sec,Maxium Hold time 9.9 sec

FO7 ID.NUMBER of automatic check weigher when 1pc computer control over 2units of check weigher at the same time

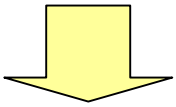
CHAPTER 7. WEIGHT CALIBRATION

7.1 It is recommended that the checkweigher is routinely calibrated to maintain peak operating accuracies, the frequency of calibration should be determined by management.

7.2 Calibrations Flow Chart

Calibration Password (Fig 14)

* Calibration Password : 4100
* Please ENTER after input password



Minimum Digit (Fig 15)

* Minium Digit : 1,2,5
* Digit can be changed by the direction key (Left or Right key) of Keypad

Maximum Weight (Fig 16)

Set up system(Fig 17)

SET UP SYSTEM

F01	DECIMAL POINT	01
F02	SET UNIT	00
F03	CHE/ENG	01
F04	ON/OFF WHEN START	00
F05	CONTINUOUS N.G	00
F06	DISPLAY HOLD TIME	00
F07	ID.NUMBER SET	00

0 : 0 1 : 0.0 2 : 0.00 3 : 0.000

ZERO	*	*	FIRST	MENU

* This Maxium Weight was based on 600g of total weight and 0.0 of Decimal Point (F01 : 01) in the SET UP SYSTEM Then please input 6000 point and ENTER

This Max.weight(6000) and decimal point(0.0) will show 600.0g in the basic screen.

* If the basic screen will show 600g without the decimal point in the basic screen, Then please change the decimal point to F01 : 00 in the SET UP SYSTEM and input 600 point In the Maximum Weight

Then Max.weight(600) and decimal point(0) will show 600g in the basic screen.

* Later if you want to look at 60.0g in the basic screen, First,please finish the calibrations and please change the decimal point to F01 : 01 in the set up systems*(Fig 17)* and ENTER

Then the basic screen will show the actual weight(600g) into 60.0g

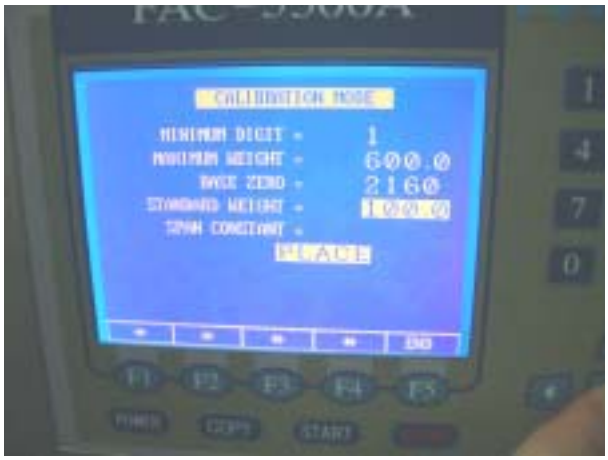
Finally
Normally before the weight calibrations,
Please make the decimal point with F01 : 01 and calibrate the above Maximum weight.

Base Zero (Fig 18)

* The output from the loadcell under no load conditions. This may be adjusted by use of internal DIP switches if out of range, usually set to a value of 2000 – 4000

* Baze Zero was the same with ZERO Value of Analog in the A/D Convertor mode.

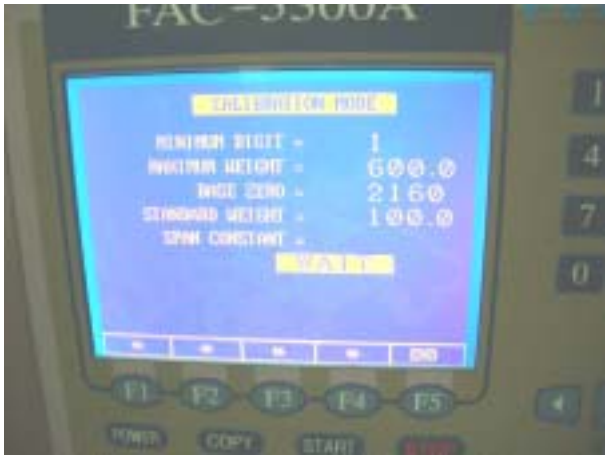
Standard weight(Fig 19)



* Please place the test weighter on the weighing part conveyor and put 1000 point and ENTER.

* This standard weighter should be more than 1/10 of Maximum Weight.

Standard weight(Fig 20)



* If you will push ENTER after putting the standard weight value under placing the test weighter on the conveyor,

Then you will find out this screen " wait"

Standard weight(Fig 21)

* If it will show REMOVE message after Enter in the standard weight section,

Then please remove the test weighter from The conveyor and ENTER

Span Constant(Fig 22)

*This SPAN CONSTANT Value will automatically be counted by a program

If it will show " OK" then Press F5 Key

* If it will show "ERROR" then follow up the above flow chart again.

CHAPTER 8. MEINTENANCE

Daily Checking Point

■ Please Power off in the panel of check weigher while no working
And Check it out if the power code and air pipe was damaged or not

■ Keep the system dry, it is not waterproof. Clean by carefully wiping down with a damp cloth. Do not use aggressive chemicals on non stainless steel parts.

■ Avoid positioning the system in a location subjected to vibration and draughts as these may affect weighing accuracies.

■ Please don`t press the weighing part conveyor installed with a high sensitive loadcell except of placing the actual product for calibrations or putting a test weighter.

Yearly Checking Point

■ Inspection of a metal detector

■ Inspection of the conveyor belt and driving belt damaged

■ Inspection of Motor and Drive Roller and Free Roller

■ Inspection of Electric Circuit Damage

 **WARNING**	Please don`t modify, improve, take out a automatic check weigher by any persons not authorized by us.
 **CAUTION**	Please don`t open the real control panel of automatic check weigher by any persons not authorized by us.

CHAPTER 9. NOTE

INTER KOREA CORP
#149, DAEHEUNG-DONG, MAPO-GU,SEOUL,KOREA