F770 *Weighing Indicator*

OPERATION MANUAL

UNIPULSE

12 Dec. 2008
Rev. 1.14

WELCOME!

Thank you very much for your UNIPULSE purchase!

F770 Weighing Indicator with built-in Printer

F770 Weighing Indicator with built-in Statistical Printer is a versatile instrument capable of static weighing, counting and check weighing. Its design is convenient for desktop, panel mount and tower placement.

The Unipulse model F770 is also a powerful industrial tool featuring: 100 preset tables with table number, unit weight memory with 7 other items, counting console, auto dual interval as well as check-weighing function. A large weight display with 17 status displays and extensive keypad, keep operation easy and convenient. 12 keys for input of numeric and setpoint functions along with 5 dedicated function keys and 7 printer keys make setup a snap.

High speed A/D conversion (50 times per second) and HI-LIM/HI/GO/LO/LO-LIM comparative outputs make the F770 your choice for a variety of check-weighing and sorting applications. Features include: Multi Hold function: Random sampling hold, Stable value hold, Average value hold with specific section, Check value hold with specific section and Peak hold with specific section. A couple of strokes of the key pad is all you need to input a sample amount or recall a unit weight when using the F770 as a counting console.

Unipulse standard 2-wire serial interface SI/F is for connecting remote displays. Optional bi-directional RS-232C interfaces to a computer. Built-in printer gives Sub-total, Grand total, Batch total, Statistical data: Average weight, Max. weight, Min. weight, Max-Min, General standard deviation, Sample standard deviation and Count of data (n) for each code number.

SAFETY PRECAUTION

◇ The integrated circuits used in this equipment are highly immune to noise and RFI when properly installed in the unit.
The F.G. terminal on the rear panel must be grounded directly, not with the AC ground.

◇ Therefore, when shipping please always use original packing (conductive material) for shipping. Remove equipment from the shipping container and examine the external surfaces of the equipment for physical damage.

◇ The F770 should be positioned in a safe area where there is no combustible gas, the operating temperature is +14°F to +104°F (-10℃ to +40℃), storage temperature –40°F to +176°F (-40℃ to +80℃).

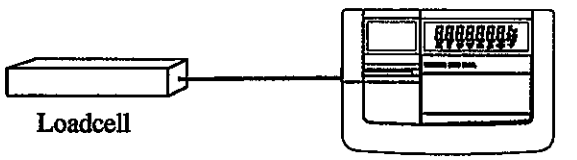
◇ Confirm the AC voltage of all equipment before power-up. The F770 can operate within a -15% to +10% voltage variation.

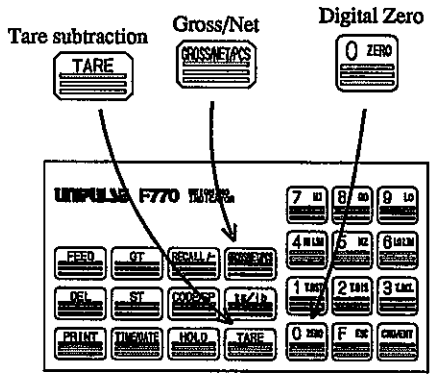
Table of Contents

1 The Proficient Operation of F770

1.1 Used as a Weighing Indicator

F770 possesses all necessary and convenient function. It is ideal for weighing applications requiring push bottom Tare, Gross/Net display, Tare subtraction and Digital Zero.

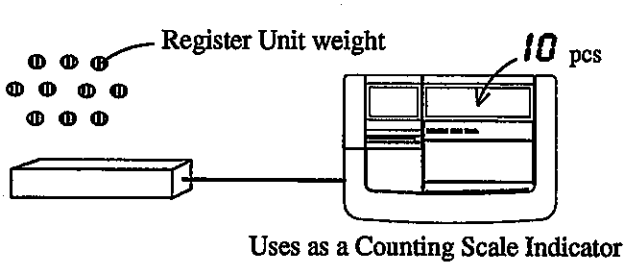


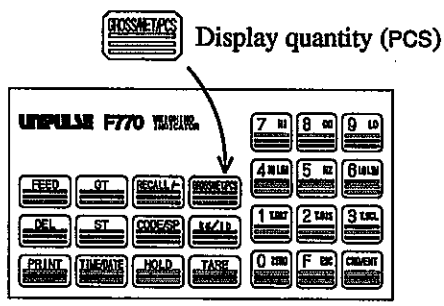


Refer to...
P. 37 Span Calibration P. 52 Digital Zero
P. 54 One Touch Tare Subtraction
P. 57 Tare Weight Display

1.2 Used as a Counting Scale Indicator

F770 is a multipurpose indicator which can be utilized in a wide variety of applications. The F770 can be used for weighing spare parts, for a know unit weight, storing the unit weight in Memory 1 ~ 9, for a know group quantity, setting sample then storing the unit weight to Memories. The memories can be recalled on demand to simplified and speed up to get weight and quantities of parts.

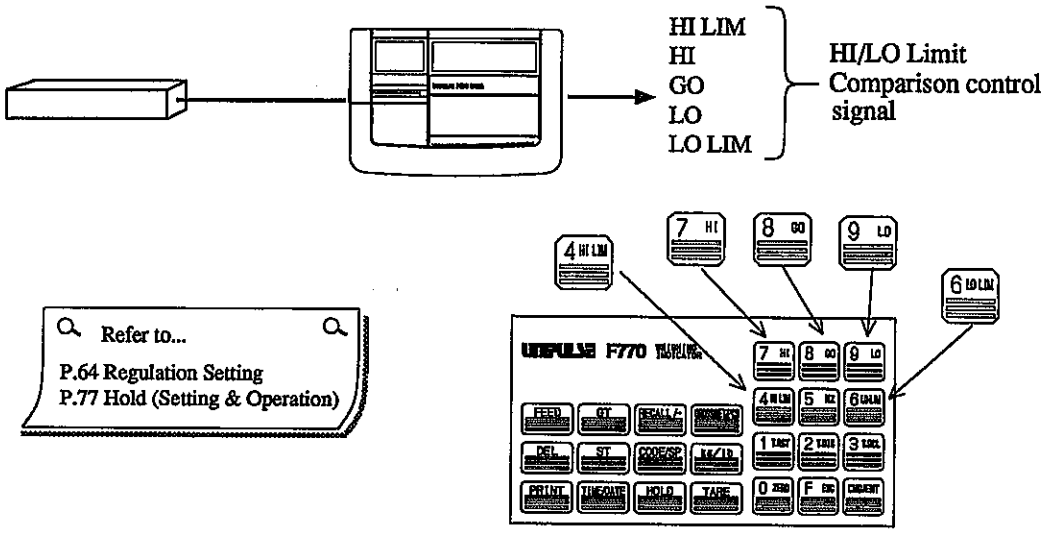




Refer to...
P.73 Counting Display Setting and Operation

1.3 Used as a Checker Scale

F770 has 5 comparison functions, combine with Hold function it can be used as a Checker Scale.



Refer to...
P.64 Regulation Setting
P.77 Hold (Setting & Operation)

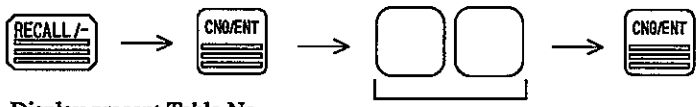
F770 has 5 Hold function.

Sample hold:	Hold whenever inputting hold signal
Stable hold:	Hold while weighing value gets stable.
Average hold:	Hold average value with specified section
Checker Scale hold:	Hold checking value within ±12.5% between the center of specified section.
Peak hold:	Peak hold with specified section

Refer to...
P.77 Hold (Setting & Operation)

1.4 Preset Tables

F770 has 100 preset tables with table number, unit weight memory, Code number ··· for recording weighing parameters. To change weighing tables by keypad, RS-232C or external input signal on the rear panel.



Display present Table No.

Table No. (2 digit)

Refer to...
P.84 Table Setting & Operation

00~99 Table

Table	Unit weight Memory	Preset Tare Weight	Code No.	HI LIM	LO LIM	HI	GO	LO
00	3	20.0	123456	500.0	0.0	300.0	200.0	10.0

1.5 Built-In Printer

F770 has a Built-In Printer for printing and sorting weighing values. It prints Weights with Year/Month/Date, Time, Code Number, Count (times), Comparison result, Sub total, Grand total, Batch total and Statistical value up to 100 Code number respectively.

Refer to...
P.90 Printer Setting & Operation

Press FEED key, feeds paper by one line

Press DEL key for 2 seconds, reprint the preceding printing data and delete it from accumulation

Press GT key for 2 seconds, prints the Grand total, clearing the previous printed data

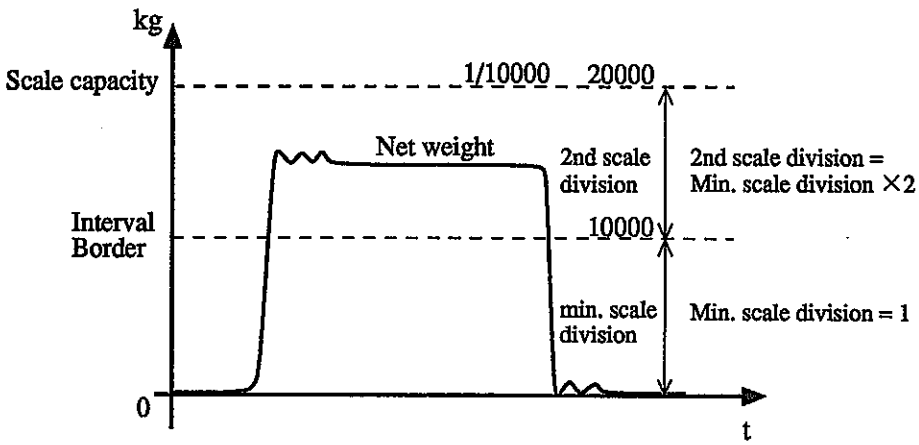
Press ST key for 2 seconds, prints the Sub total. When Batch mode is selected ON in Setting Mode 3-2, prints Batch total

Press PRINT key, print out weighing value

Press TIME/DATE key for 2 seconds, prints Year/Month/Date and Time

1.6 Multi-Interval Function

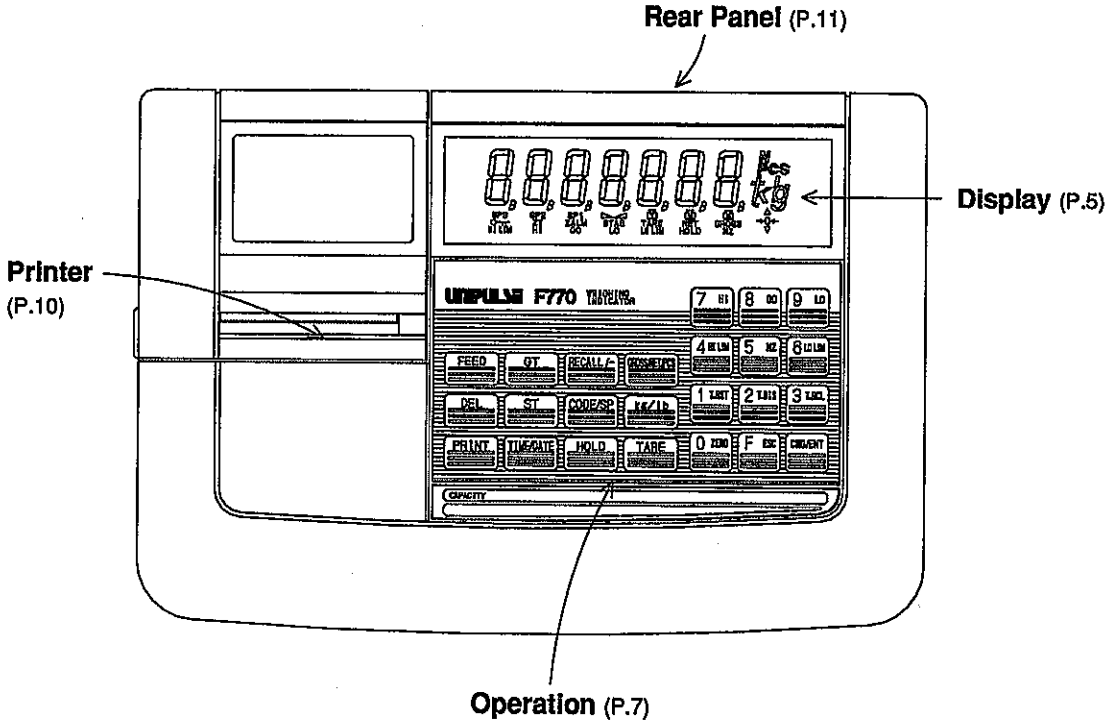
One weighing range which is divided into partial weighing ranges each with different scale division, the weighing range is determined automatically according to the load applied, both on increasing and decreasing load. Multi-Interval function is effective by Net weight.



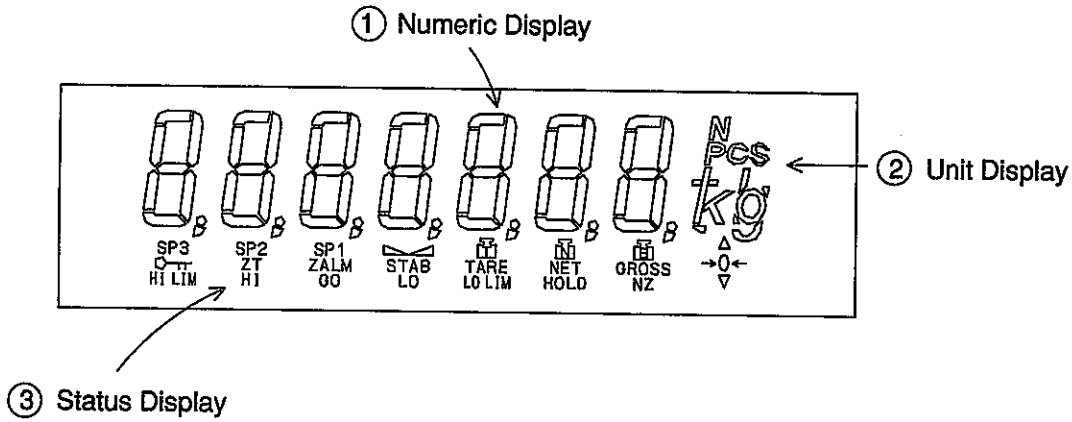
Min. scale division	1~100	2	20
Second scale divosion	Min. scale division × 2 automatically	5	50

Refer to...
P.88 Multi-Interval Function

2 Appearance Description



2.1 Display



① Numeric Display

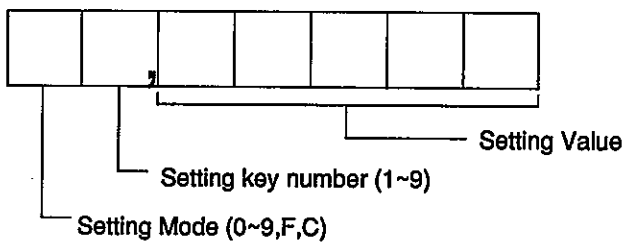
Weight display: Display Gross, Net and Tare weight (5 digits, decimal point, minus sign)

Counting number display: Display number with pcs (4 digits, minus sign)

Overflow display/ Error display:

· When an input signal from the loadcell exceeds the Span adjustment range.	**'LoAd'**
· Net weight > 99999	**'oFL1'**
· Gross weight > Capacity +9 scale division	**'oFL2'**
· Gross weight > 99999	**'oFL3'**
· −99999 > Tare weight > +99999	**'oFL4'**
· pcs in Counting Mode > 9999	**'oFL5'**
· pcs in Counting Mode < −9999	**'-oFL5'**
· Unit weight > 9999	**'oFL6'**
· Unit weight < 0001	**'oFL7'**
· Wrong loadcell wiring or ±EX is shorted. Calibration errors	**'Adc;Err, cErr'**

Setting value display: Display Calibration and other setting value



② Unit Display

Displays selected system of weight measurement (**t / kg / g / lb / N**)

③ Status Display

STAB : Turns on when weighing value display is stable

TARE : Turns on when Tare subtraction is on

Blinks when the weighing display shows Tare weight

NET : Turns on when the weighing display shows Net weight

GROSS : Turns on when the weighing display shows Gross weight

: Turns on when the Calibration Lock on the rear panel is enabled

ZT : Turns on when Zero Tracking is operating

Z ALM : Blinks when zero drift exceeds the set Digital Zero Regulation entered in Digital Zero or Zero Tracking

HI LIM : Turns on when High-high Limit signal is outputted from Control Connector on the rear panel

HI : Turns on when High Limit signal is outputted from Control Connector on the rear panel

GO : Turns on when GO signal is outputted from Control Connector on the rear panel

LO : Turns on when Low Limit signal is outputted from Control Connector on the rear panel

LO LIM : Turns on when Low-low Limit signal is outputted from Control Connector on the rear panel

HOLD : Turns on when weight display is held

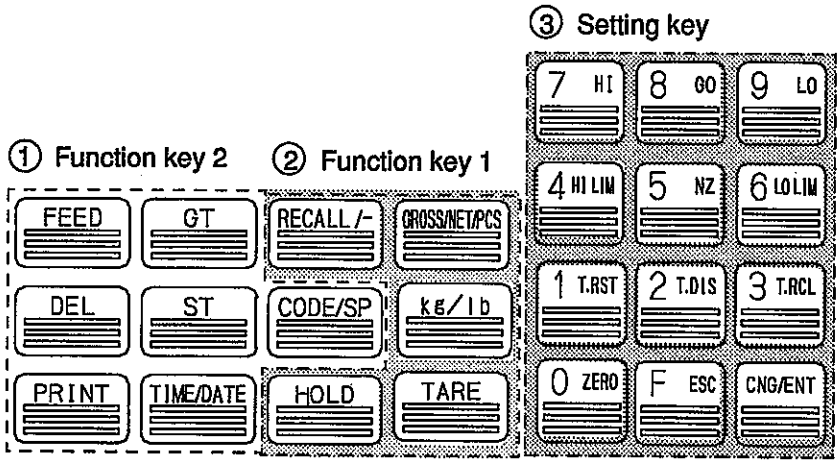
NZ : Turns on when weight value ≦ Near Zero value

Δ : Turns on when the weight value is at +1/4 scale division

→0← : Turns on when the weight value is at Center Zero or each Center division

∇ : Turns on when the weight value is at −1/4 scale division

2.2 Keypad



① Function key 1 for weighing

GROSS/NET/PCS : Press GROSS/NET/PCS key, the weighing value display is switched between Gross, Net and pcs (number).

(Gross → Net → pcs (number))

The weighing value display is switched between GROSS and NET, when Counting Mode OFF is selected in Setting Mode 1-2.

This key is not available if Setting Mode 1-3 (G/N) Function key 1 Disablement is selected.

TARE : Press TARE key, the Tare weight is subtracted, the Net weight becomes zero, T turns on.
The range of Tare Subtraction is selected in Setting Mode 9-5, full range or from 0 < Tare ≤ Capacity.

0 ZERO : Press 0 ZERO → CNO/ENT keys zeros the weighing value, the Gross weight becomes zero. If value exceeds the set Digital Zero Regulation in Setting Mode 8-4, Zero alarm "Z ALM" blinks.

RECALL/- : Press RECALL/- → CNO/ENT keys, input Table number recall the set Table, there are Unit weight, Tare, Code number and etc. on each Table, also setting tables.
When input Code number, press RECALL/- key gets hyphen "-".

HOLD : Press HOLD key, the weighing value is held, the kind of held value is selected in Setting Mode 2-6.

kg/lb : Press kg/lb key switches the weighing value between pound and kilogram weight. The weighing unit annunciators will alternate between "lb" and "kg".

② Function key 2 for Printer

FEED : Press FEED key, feeds paper by one line.

DEL : Press DEL key for 2 seconds, reprint the preceding printing data and delete it from accumulation.

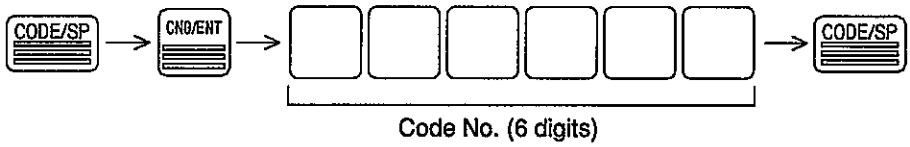
PRINT : Press PRINT key for 2 seconds, prints the latest weighing value.

GT : Press GT key for 2 seconds, prints the Grand total, clearing the previous printed data.

ST : Press ST key for 2 seconds, prints the Sub total. When Batch mode is selected "ON" in Setting Mode 3-2, prints Batch total.

TIME/DATE : Press TIME/DATE key, the display is switched between Time and Date, after 10 seconds return to display weighing value.
Press TIME/DATE key for 2 seconds, prints Year/Month/Date and Time.

CODE/SP : Press CODE/SP → CNO/ENT keys, inputs Code number prints Total for selected Code number, also setting code number.
When input Code number, press CODE/SP key gets space.



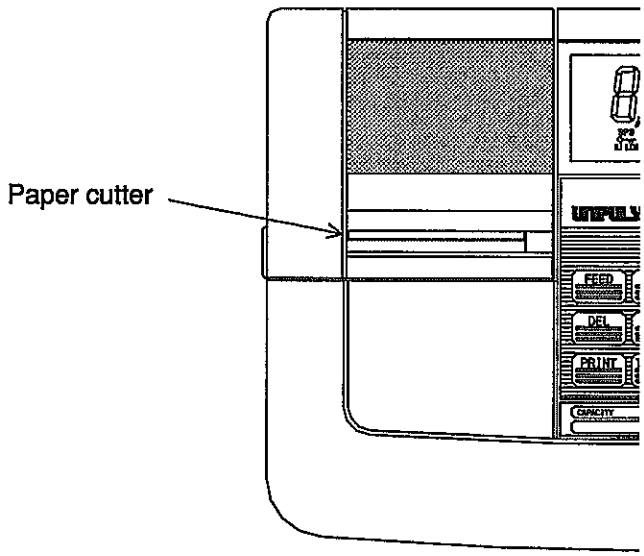
③ Setting key

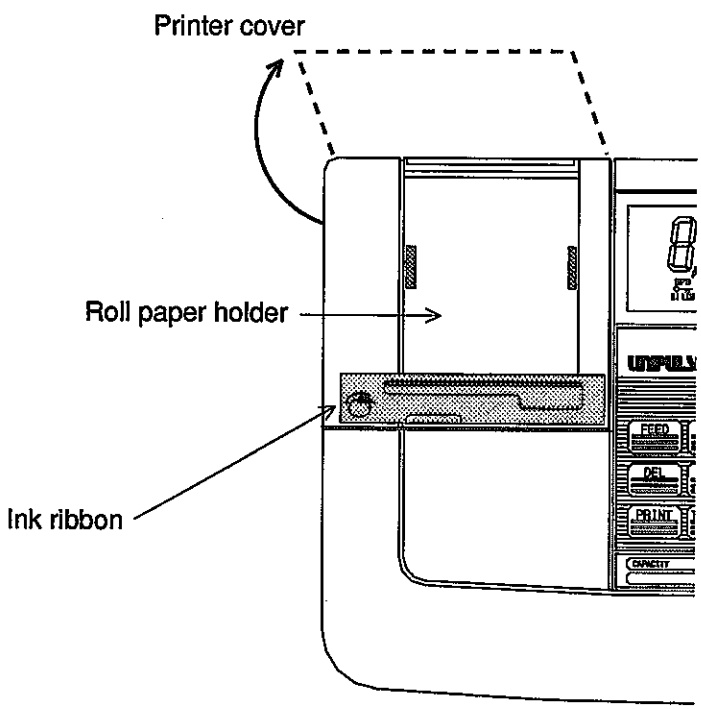
0 ZERO ~ 9 LO : Numeric keys for inputting data.

F ESC : Press F ESC key, changes Setting Mode or escape from the operation.

CNO/ENT : Press CNO/ENT key to enter the set or change value.

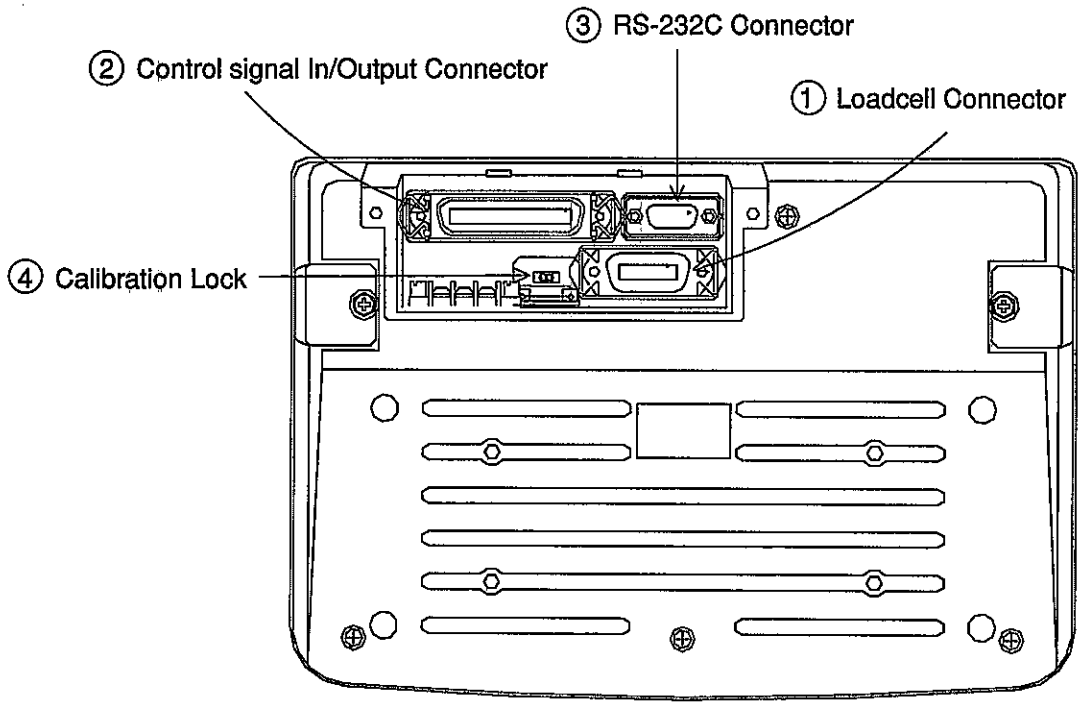
2.3 Printer

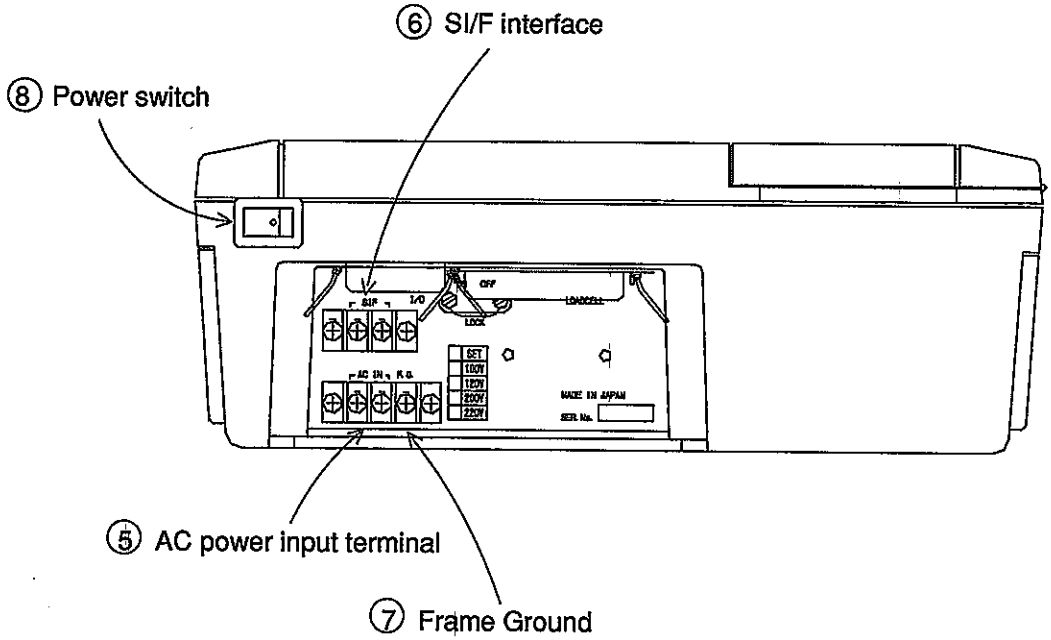




Please refer to page 139 for changing roll paper and ink ribbon.

2.4 Rear Panel





① Loadcell Connector

Refer to page 13 for pin assignment and connection configuration.

② Control signal In/Output Connector

Refer to page 111. (Control Connector)

③ RS-232C (For F770R2 only)

9 pin JAE-DE-09SN connector for RS-232C

④ Calibration Lock

Switch locks and change in calibration or preset values. (Switch "ON" → Lock)

⑤ AC power input terminal

AC input is labeled with the standard AC voltage of the country in which the unit was purchased.
Available voltage are: 100V, 120V, 200V and 220V.
Confirm the correct voltage on your F770. AC frequency is 50/60 Hz.

⑥ SI/F interface

2-wire serial interface is for connecting the F770 to peripheral equipment such as remote displays (up to 3 units).

⑦ Frame Ground

The F.G. terminal must be grounded to avoid electric shocks and static interface. The F.G. terminal on the rear panel must be grounded directly, not with the AC ground.

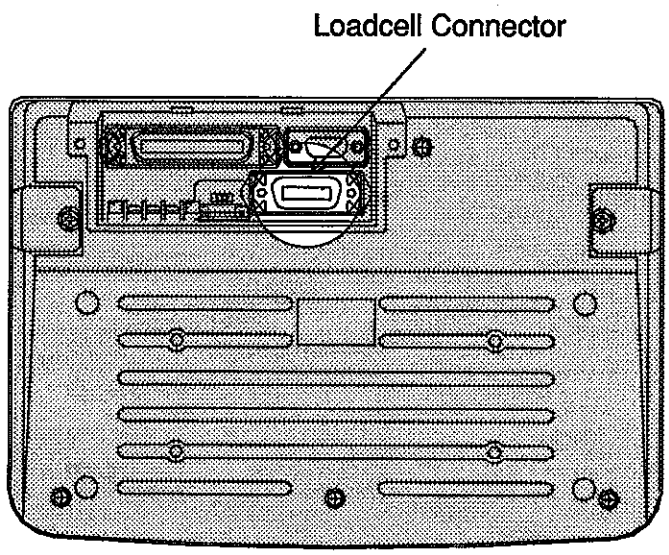
⑧ Power switch

The low side (•) is ON, and upper side is OFF.

3 Connection

3.1 Loadcell Connector

The excitation voltage of F770 is 10V DC at a maximum current 180mA. This can drive up to six (6) 350 ohm loadcells. Refer the diagram below for loadcell pin assignment.



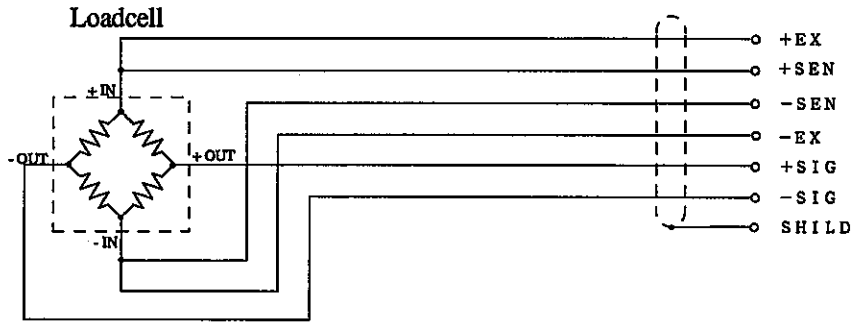
14 pin connector for 6 wire connection with loadcells. Adaptable plug is DDK-57-30140

Pin No.	Signal (6-wire)	Signal (4-wire)
1	+EX	+EX
2	-EX	-EX
3	+SEN	+EX (Connect 1 to 3)
4	-SEN	-EX (Connect 2 to 4)
5	SHIELD	SHIELD
6	+SIG	+SIG
7	-SIG	-SIG
8 14	not used	not used

DDK-57-30140 Loadcell connector is included

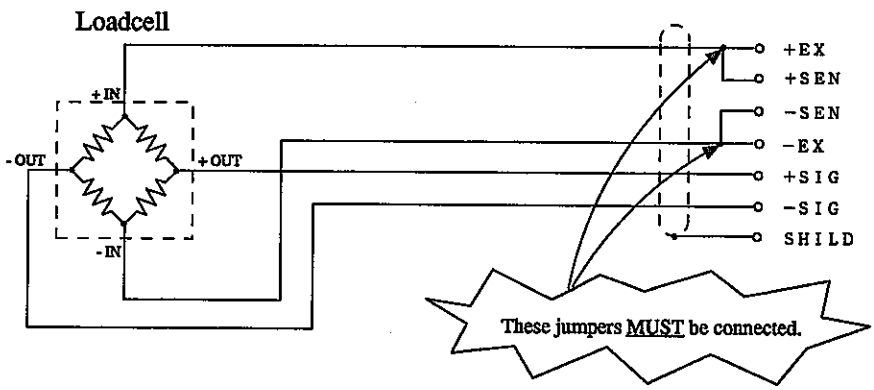
(1) 6-wire connection

The loadcell input of the F770 is for a 6-wire (remote sense) connection. 6-wire shielded loadcell cable should be used and kept separate from AC or other noise generating wire.



(2) 4-wire connection

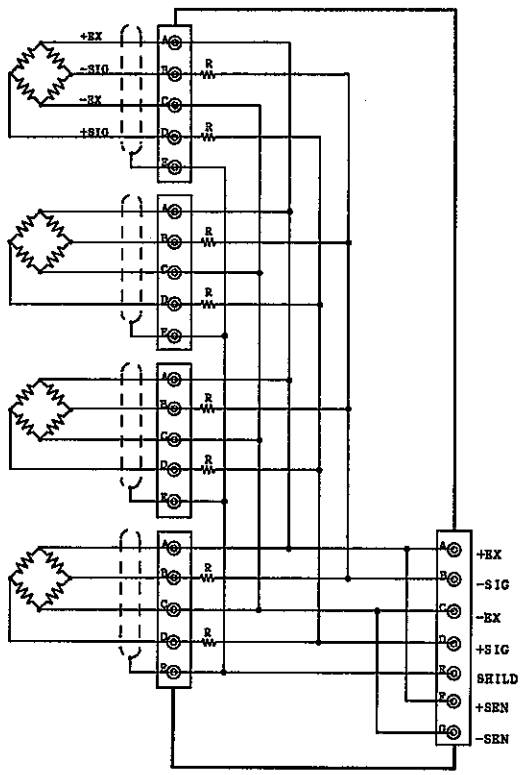
Jumper the Sense lines to the Excitation lines (+EX to +SEN; -EX to -SEN) in a 4 wire system (shown below). Failure to comply may result in system damage.



The F770 excitation voltage is 10V DC. Using a loadcell with a maximum excitation voltage less than 10V may generate heat or damage the unit.

(3) Connecting loadcells in parallel

The following diagram shows how to connect several loadcells in parallel for a truck scale or flow scale.

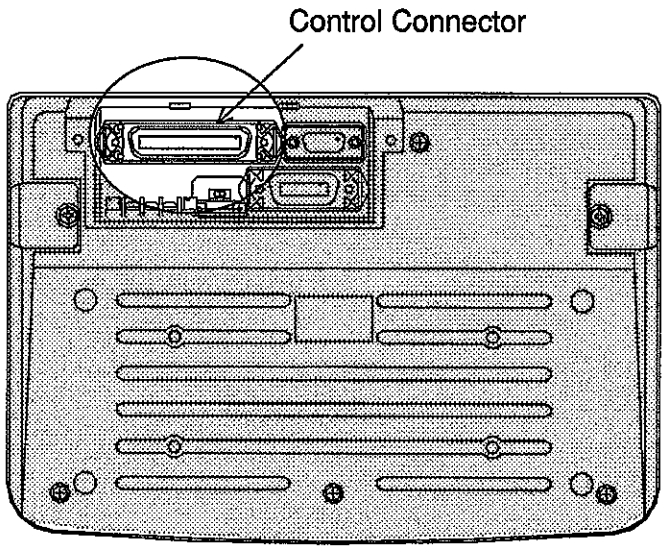


'n' (number) loadcells connected in parallel are considered one unit whose capacity is 'n' x rated capacity of loadcells (loadcells must have the same capacity, bridge resistance, and mV/V).
The averaging resistor (R) must be in same relative ratios with a low temperature coefficient.
Averaging resistors are not needed if loadcells were designed for parallel connection.

NB

When connecting loadcells in parallel, choose loadcells with a higher capacity than calculated. This will help with overload protection and shock loading.

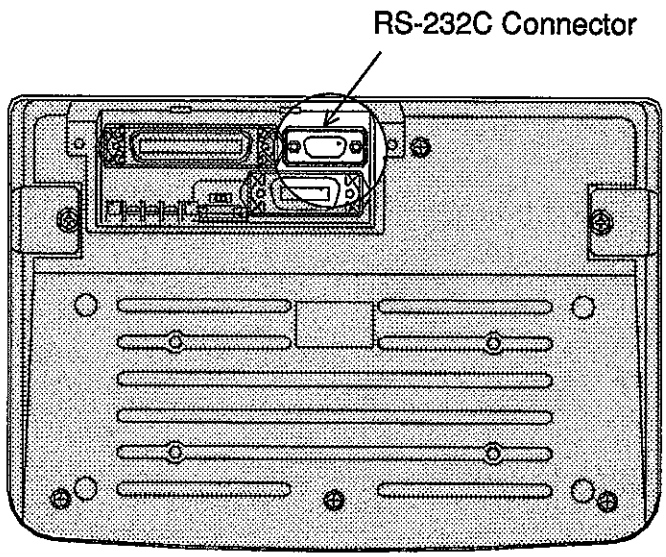
3.2 Control Signal Input/Output Connector



This connector is for inputting signals to the F770 and outputting control signal to external devices. Connector DDK 57-30360 is included. Please refer to page 111.

3.3 RS-232C Connector (For F770R2 only)

Bi-directional RS-232C communication interface for transmitting/ receiving data between PC and F770.

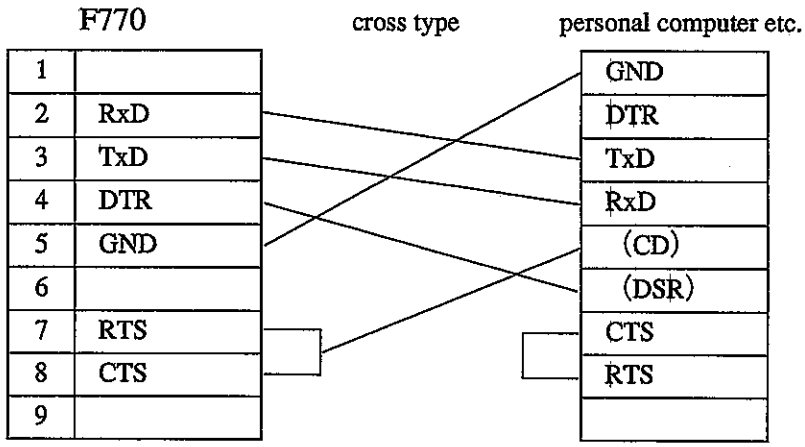


· Connector pin assignment

1			6		
2	in	RxD	7	out	RTS
3	out	TxD	8	in	CTS
4	out	DTR	9		
5	*	GND			

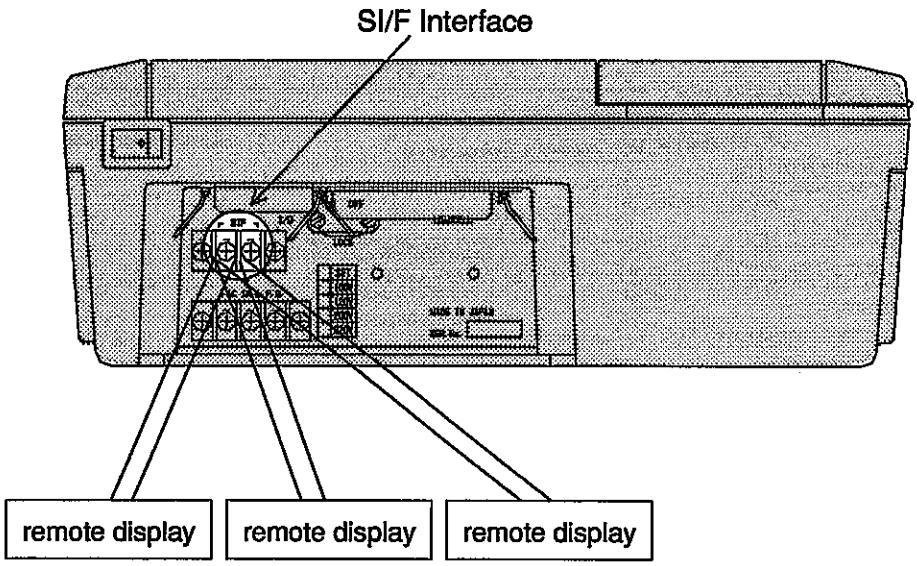
9 pin JAE-DE-09SN connector is included.

· Cable



The above diagram is for connecting a personal computer as a DTE (Data Terminal Equipment) device. If it is a DCE (Data Circuit-terminating Equipment) device, connect pin to pin (DTR to DTR, DSR to DSR etc.) Cables should be prepared after checking connector type and pin assignments of the connected device.

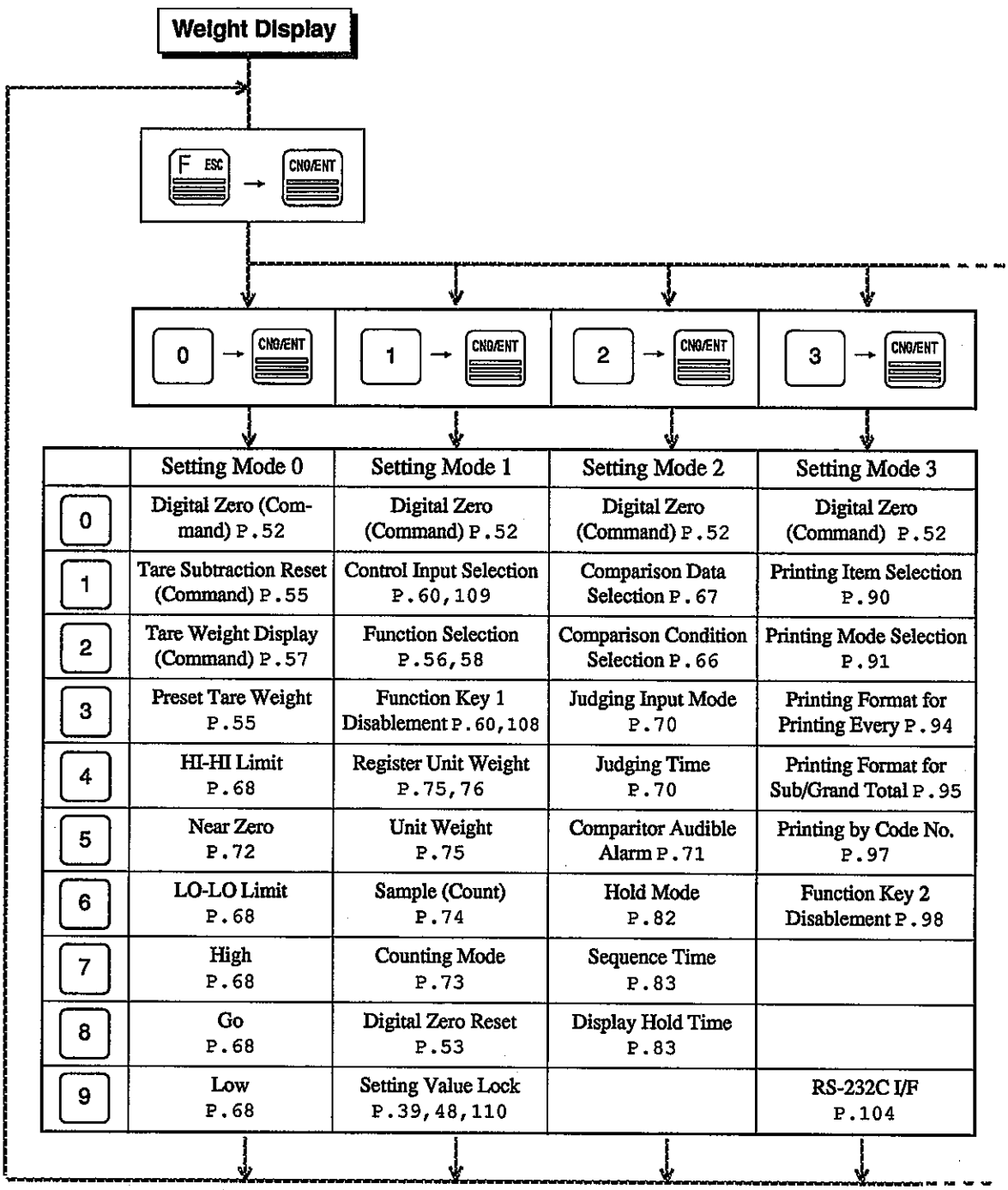
3.4 SI/F Interface



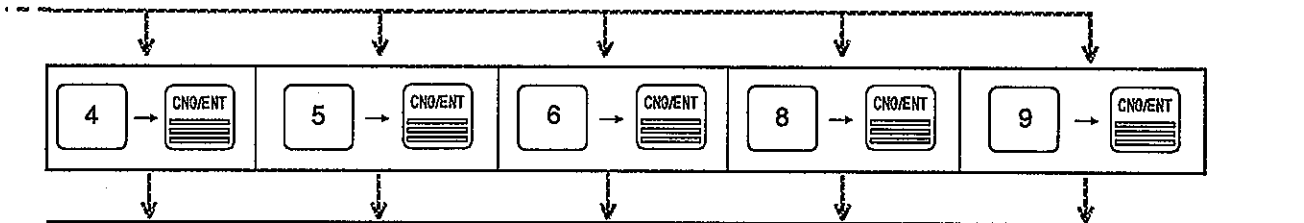
This 2-wire serial interface is for connecting the F770 to peripheral equipment such as remote displays. Up to 3 peripheral unit can be connected in parallel. The wire may be 2-core twisted or shielded cable. It should not run along side AC or other high-voltage wiring.

4 Function

4.1 Setting Mode Chart



	Setting Mode 0	Setting Mode 1	Setting Mode 2	Setting Mode 3
0	Digital Zero (Command) P.52	Digital Zero (Command) P.52	Digital Zero (Command) P.52	Digital Zero (Command) P.52
1	Tare Subtraction Reset (Command) P.55	Control Input Selection P.60,109	Comparison Data Selection P.67	Printing Item Selection P.90
2	Tare Weight Display (Command) P.57	Function Selection P.56,58	Comparison Condition Selection P.66	Printing Mode Selection P.91
3	Preset Tare Weight P.55	Function Key 1 Disablement P.60,108	Judging Input Mode P.70	Printing Format for Printing Every P.94
4	HI-HI Limit P.68	Register Unit Weight P.75,76	Judging Time P.70	Printing Format for Sub/Grand Total P.95
5	Near Zero P.72	Unit Weight P.75	Comparitor Audible Alarm P.71	Printing by Code No. P.97
6	LO-LO Limit P.68	Sample (Count) P.74	Hold Mode P.82	Function Key 2 Disablement P.98
7	High P.68	Counting Mode P.73	Sequence Time P.83	
8	Go P.68	Digital Zero Reset P.53	Display Hold Time P.83	
9	Low P.68	Setting Value Lock P.39,48,110		RS-232C I/F P.104

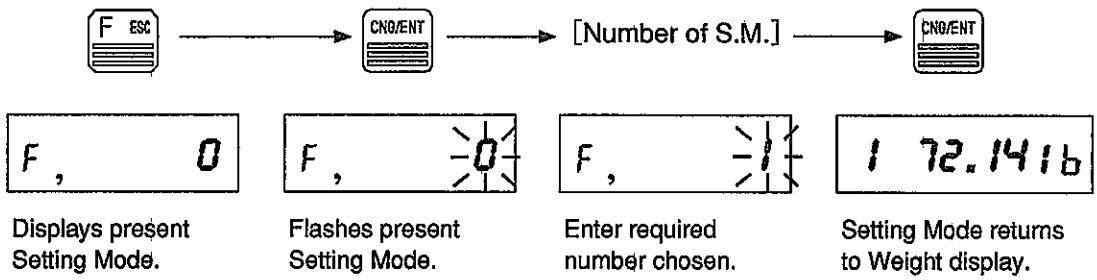


Setting Mode 4	Setting Mode 5 [Table Setting]	Setting Mode 6 [Display Statistical value]	Setting Mode 8	Setting Mode 9	
Digital Zero (Command) P.52	Digital Zero (Command) P.52	Digital Zero (Command) P.52	Zero Calibration P.46	Digital Zero (Command) P.52	0
Memory 1 P.75,76	Unit Weight Memory P.86	Max. Weight P.107	Balance Weight P.45	Digital Filter P.40	1
Memory 2 P.75,76	Code No. P.86	Min. Weight P.107	Capacity P.44	Motion Detection P.41	2
Memory 3 P.75,76	Preset Tare Weight P.86	Max.− Min. P.107	Min. Scale Division P.44	Zero Tracking P.50	3
Memory 4 P.75,76	HI-HI Limit P.86	Average Weight P.107	Digital Zero Regulation Value P.72	Standard/NTEP Mode Selection 1 P.53,57	4
Memory 5 P.75,76	Table Item Selection P.84	General Standard Deviation P.107	Unit/Decimal Point/ Dual Range P.43,88	Standard/NTEP Mode Selection 2 P.51,54,56	5
Memory 6 P.75,76	LO-LO Limit P.86	Sample Standard DeviationP.107	Display Frequency P.49	Gravitational Acceleration P.62	6
Memory 7 P.75,76	High P.86	Count of Data P.107	Interval Border P.89		7
Memory 8 P.75,76	Go P.86				8
Memory 9 P.75,76	Low P.86		Span Calibration P.47		9

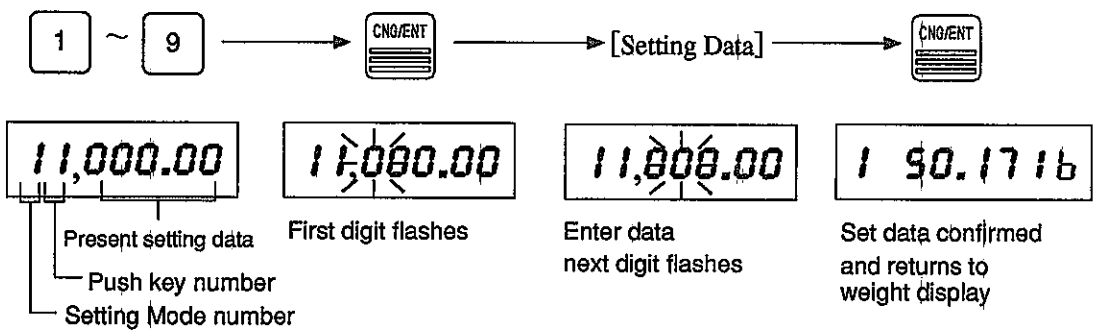
4.2 Setting Procedure

Please follow this procedure for entering data

1. Enter Setting Mode

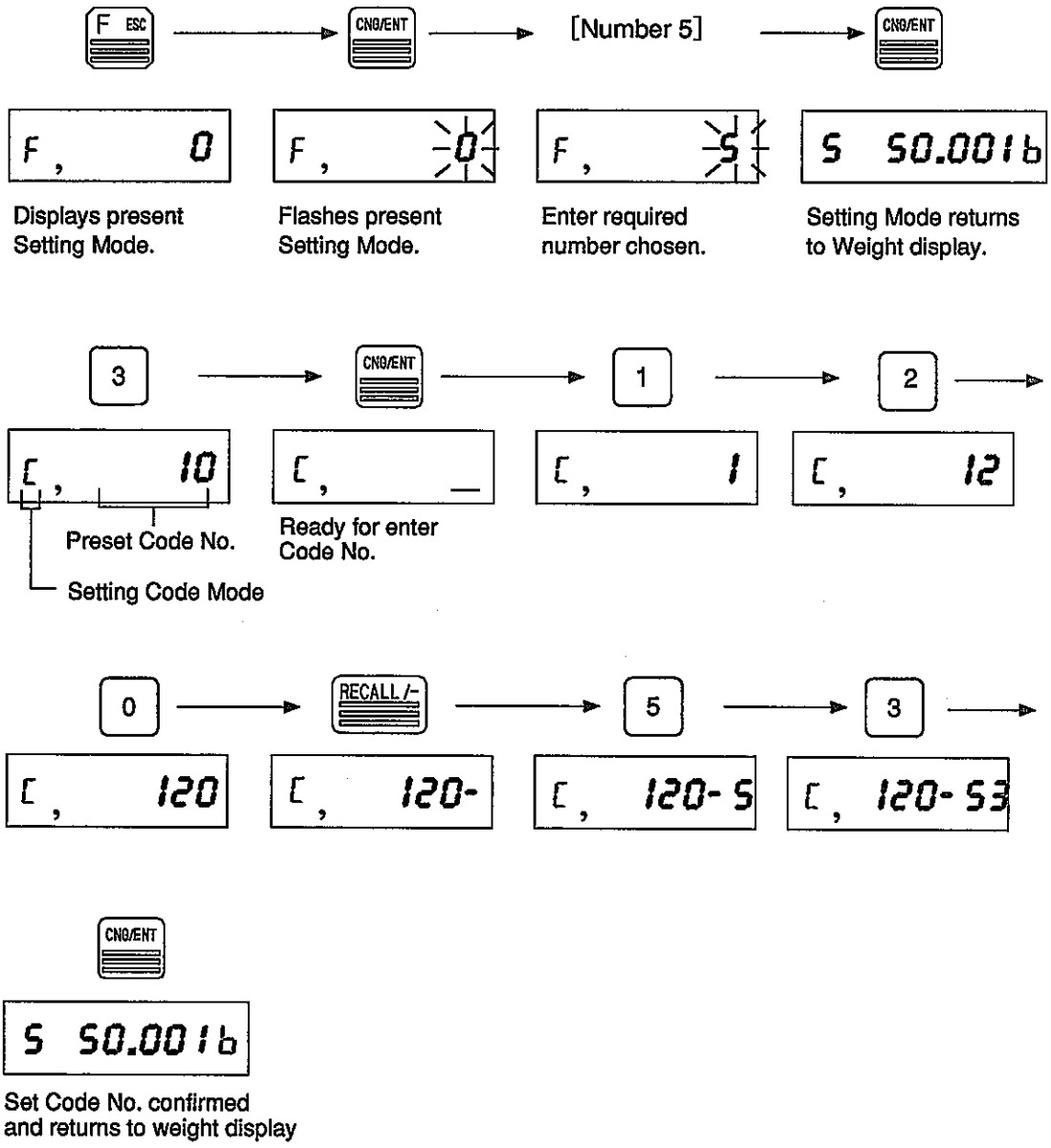


2. Choose Setting Item. Enter Setting Data

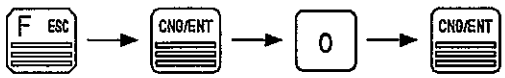


3. Data may be entered randomly or in set order within each Setting Mode. Repeat procedure 1 to change Setting Mode.

4. Input Code No. [ex. 120-53 (Max. 6 digits)]

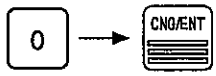


4.3 Setting Mode 0



Setting Mode 0

■ Digital Zero (Command)

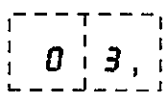


■ Tare Subtraction Reset (Command)

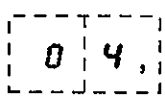
■ Tare Weight Display (Command)

■ Preset Tare Weight

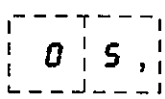
Guidance Display



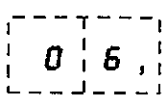
■ HI-HI Limit



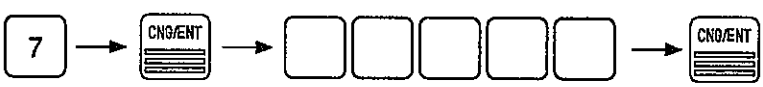
■ Near Zero

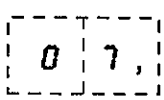


■ LO-LO Limit

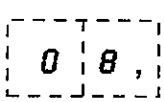


■ High

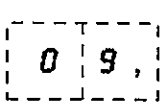




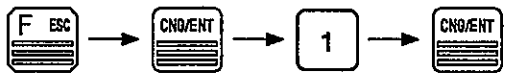
■ GO



■ Low



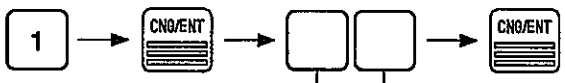
4.4 Setting Mode 1



Setting Mode 1

■ Control Input Selection

Guidance Display



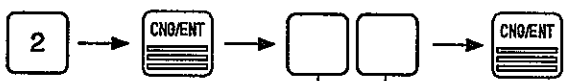
Control Signal Input/ Output Connector 2 pin (open/close)

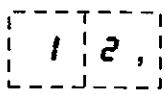
- 0 : Gross/Net weight
- 1 : Net/pcs
- 2 : pcs/Gross

Control Signal Input/Output Connector 29 pin (select)

- 0 : OFF
- 1 : Tare Reset
- 2 : Zero Reset
- 3 : Sequence Reset

■ Function Selection





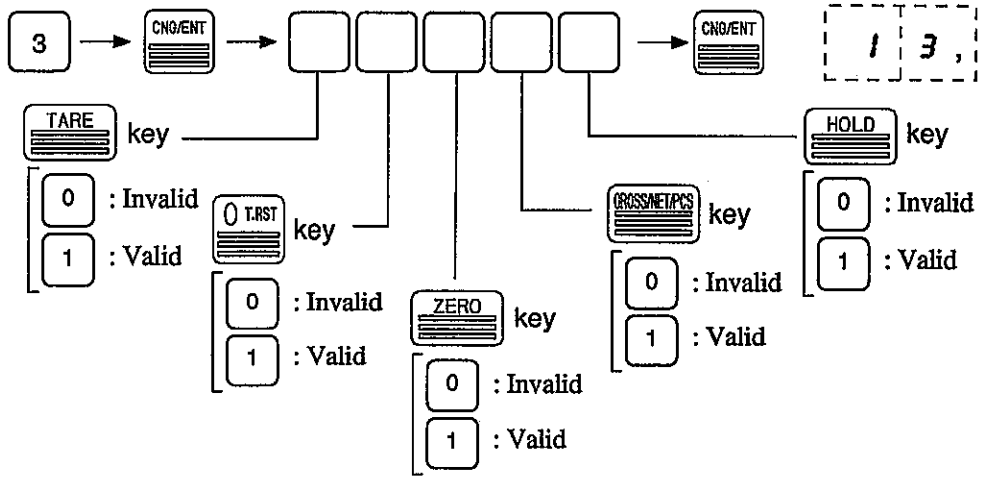
Digital Preset Tare Subtraction

- 0 : OFF
- 1 : ON

Net weight sign reverse in polarity (Net weight × -1)

- 0 : OFF
- 1 : ON
- 2 : by external signal

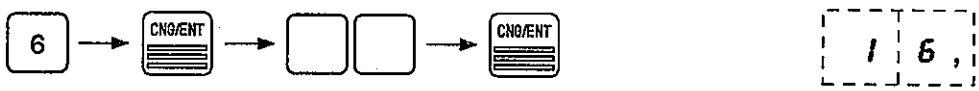
■ Function Key 1 Disablement



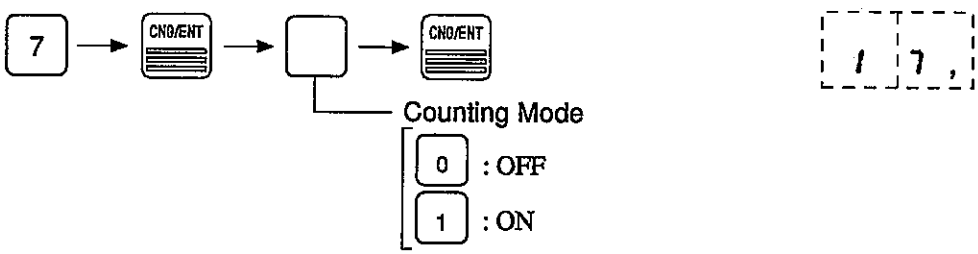
■ Register Unit Weight

■ Unit Weight

■ Sample (Count)

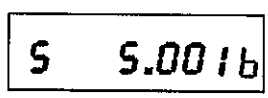


■ Register Unit Weight

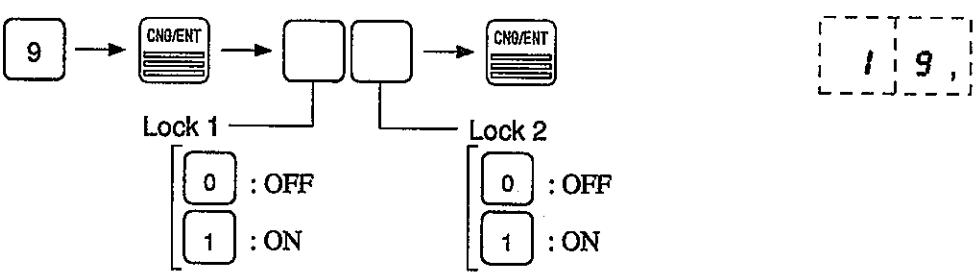


■ Digital Zero Reset (Command)

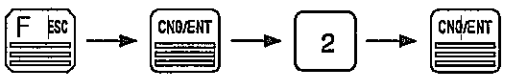
When Z ALM blinks 8



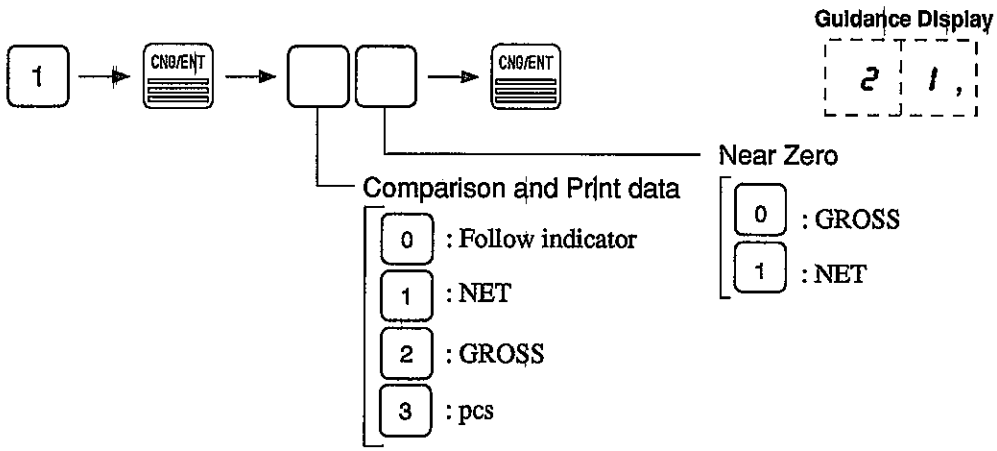
■ Setting Value Lock



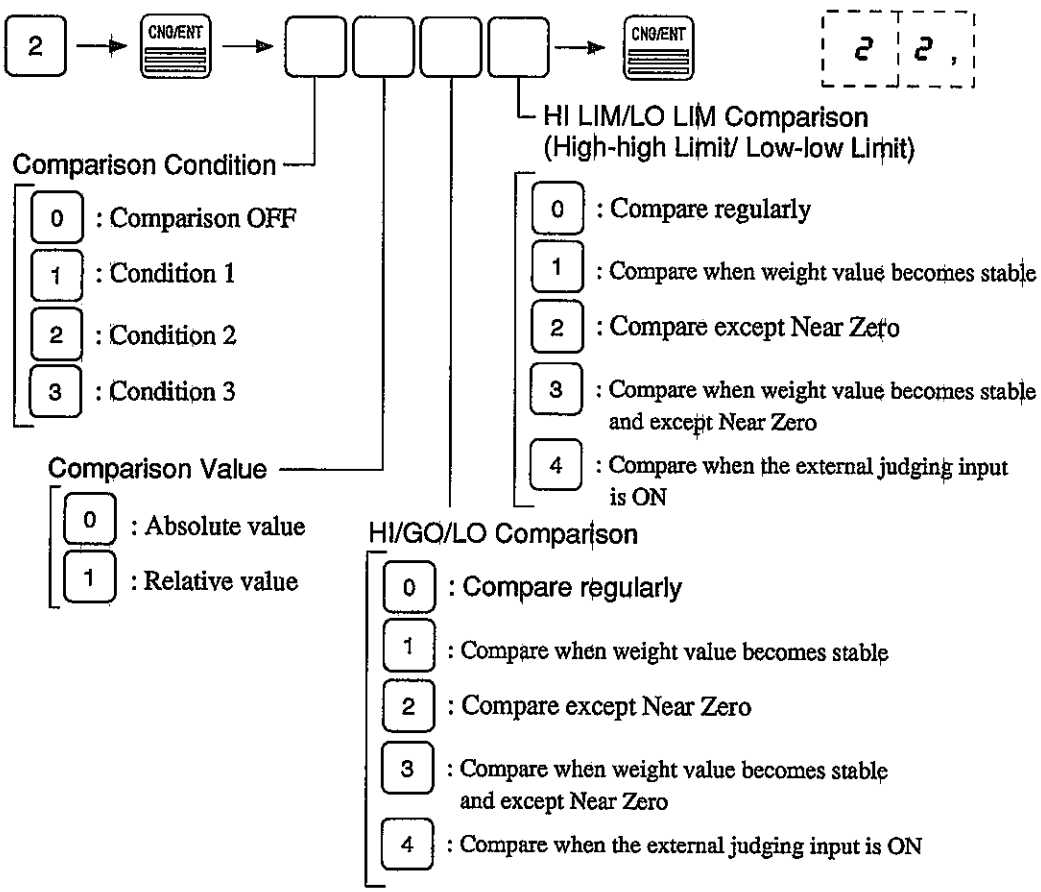
4.5 Setting Mode 2



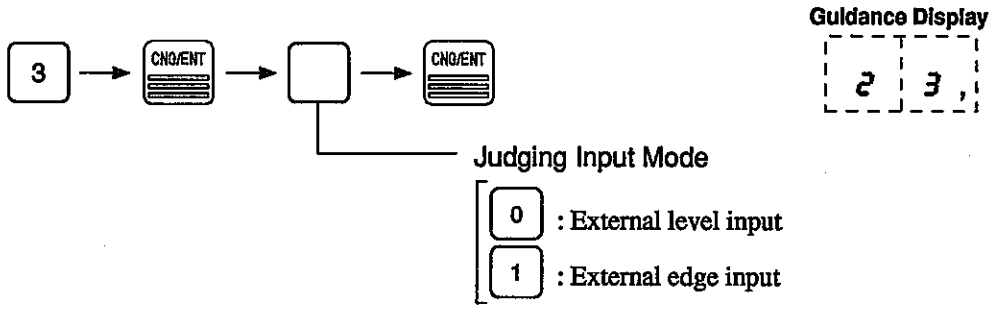
■ Comparison data selection



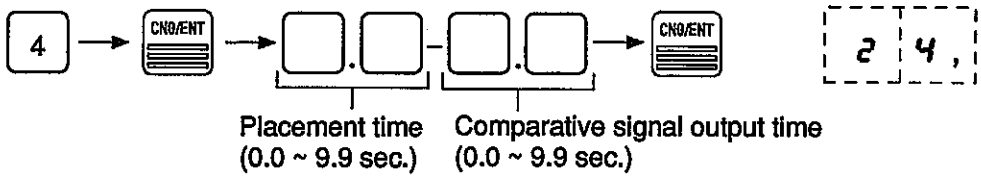
■ Comparison Condition selection



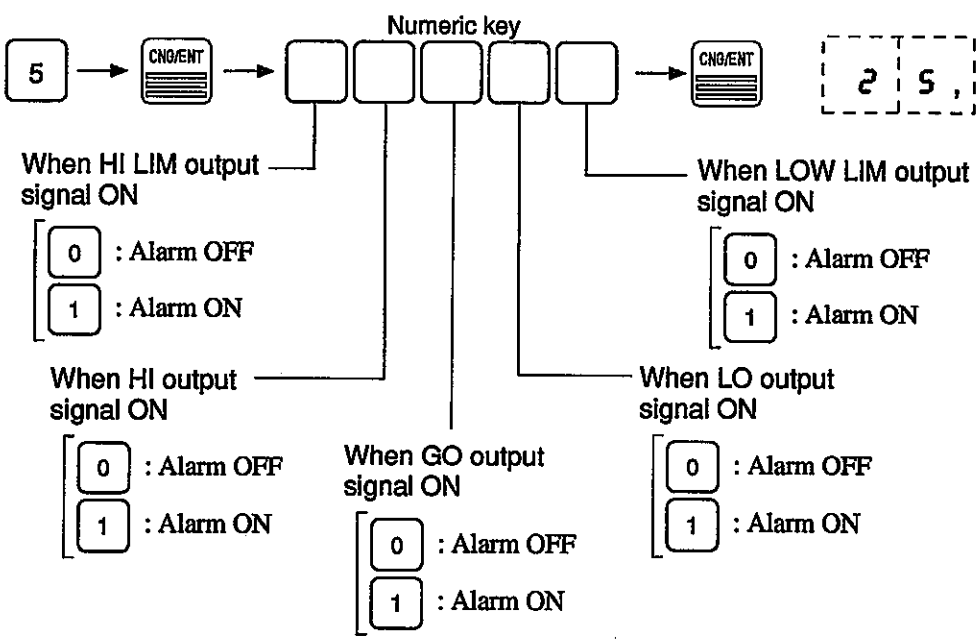
Judging Input Mode



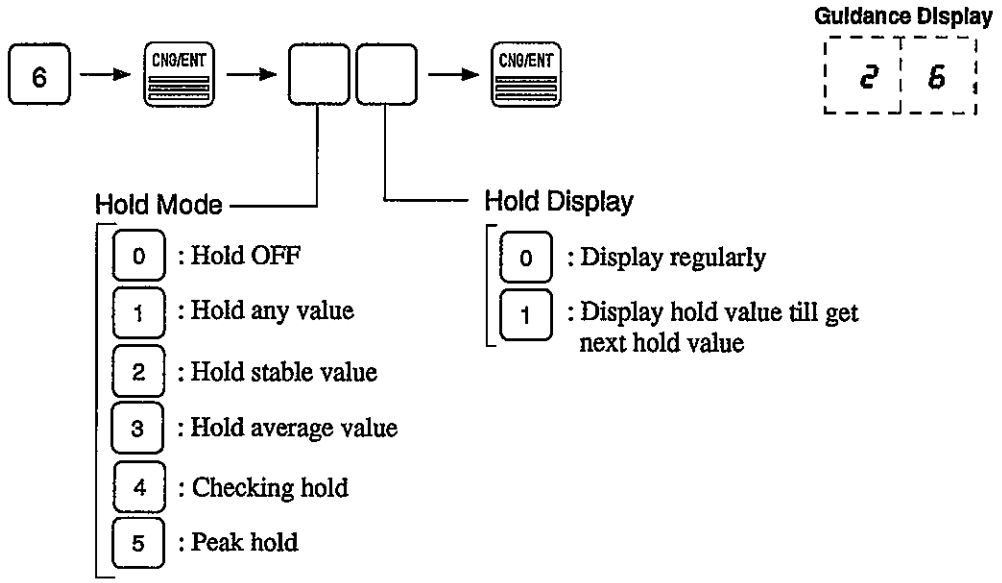
Judging Time



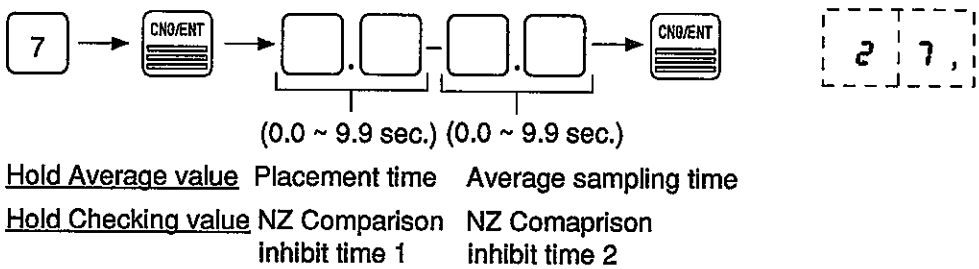
Comparison Audible Alarm



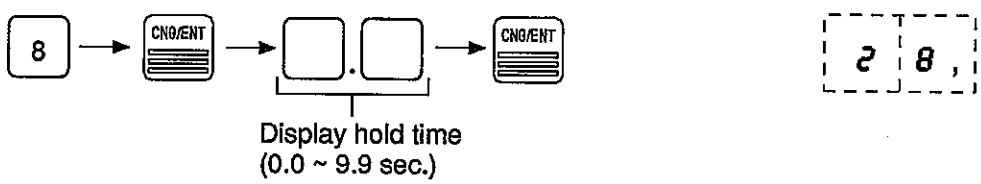
Hold Mode



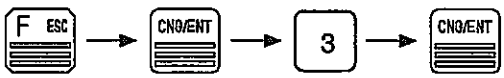
Sequence Time



Display Hold Time

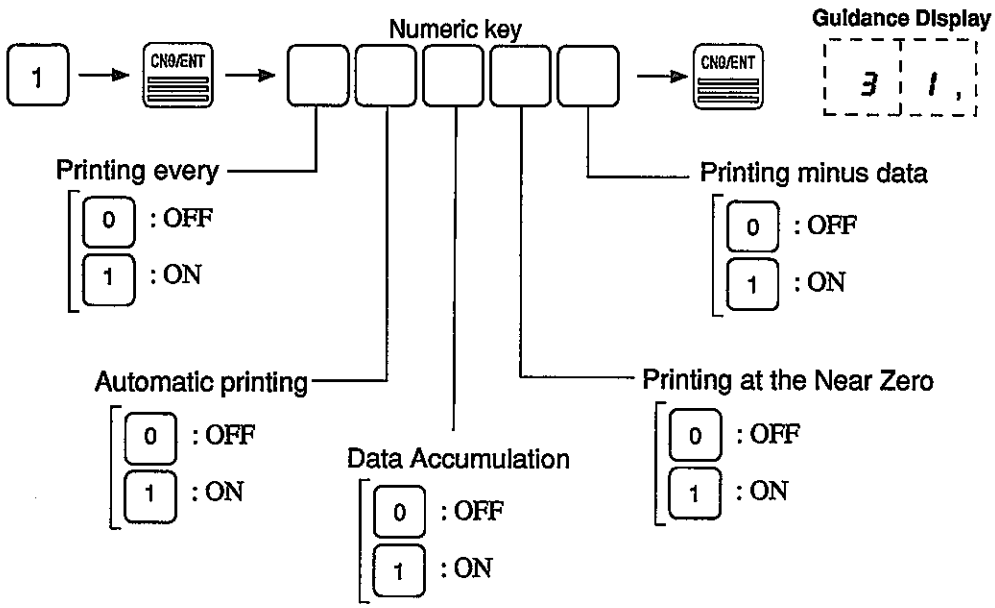


4.6 Setting Mode 3

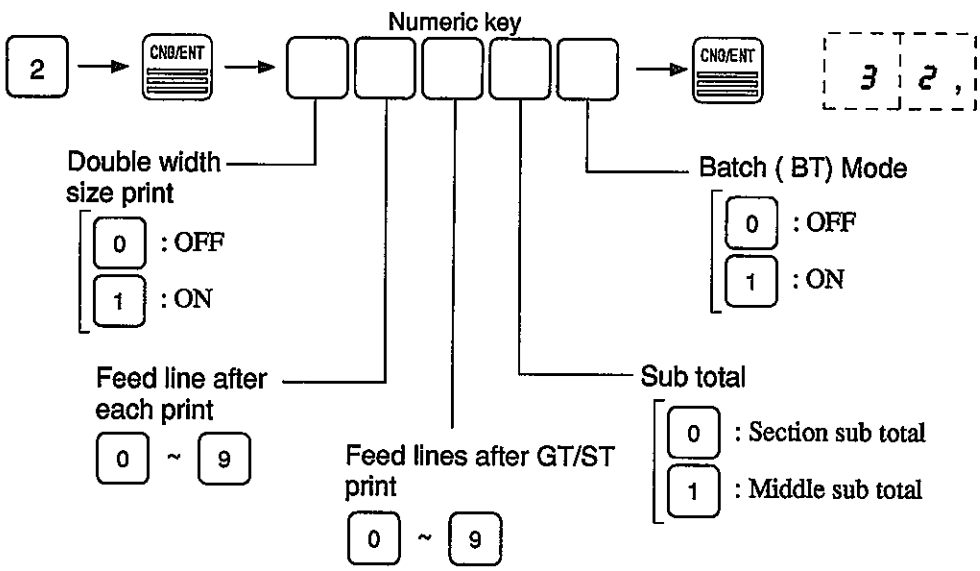


Setting Mode 3

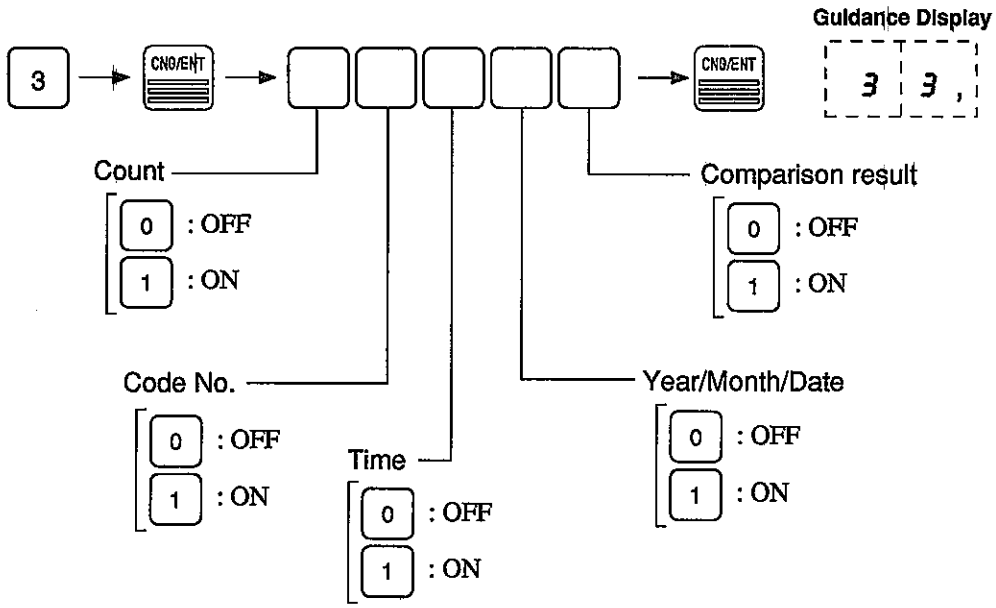
■ Printing Item Selection



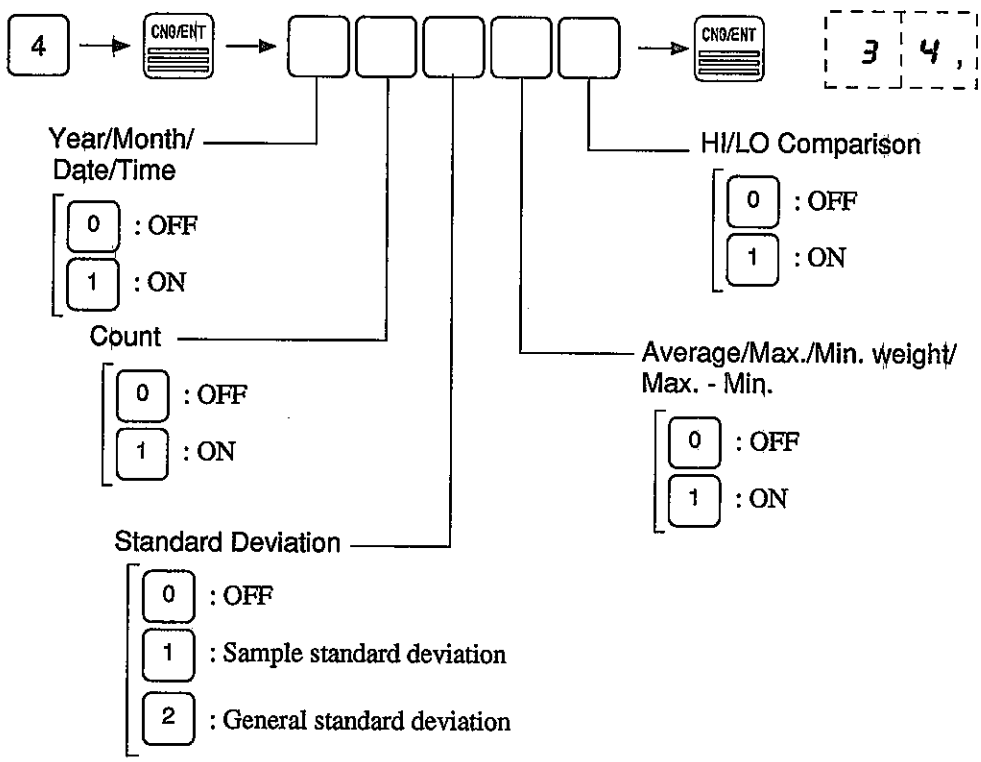
■ Printing Mode Selection



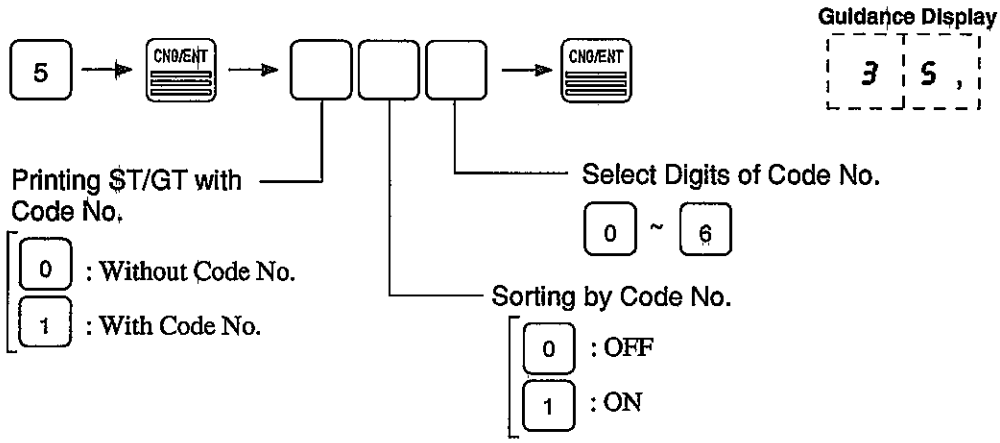
■ Printing Format for Printing Every



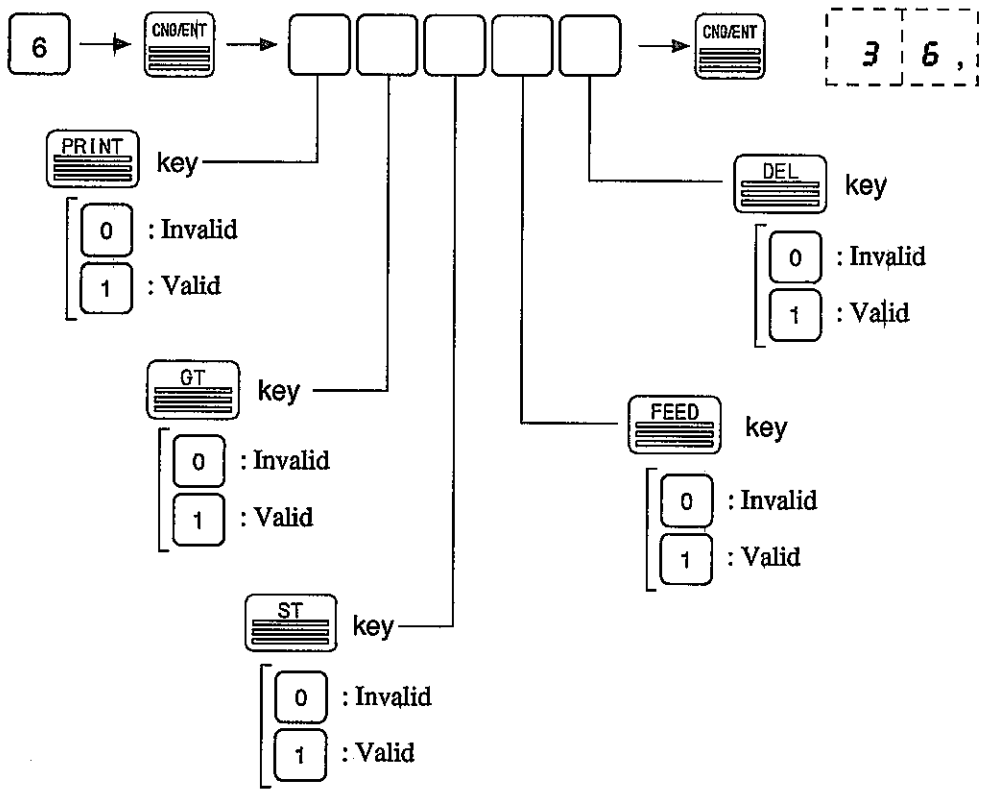
■ Printing Format for Sub/Grand Total



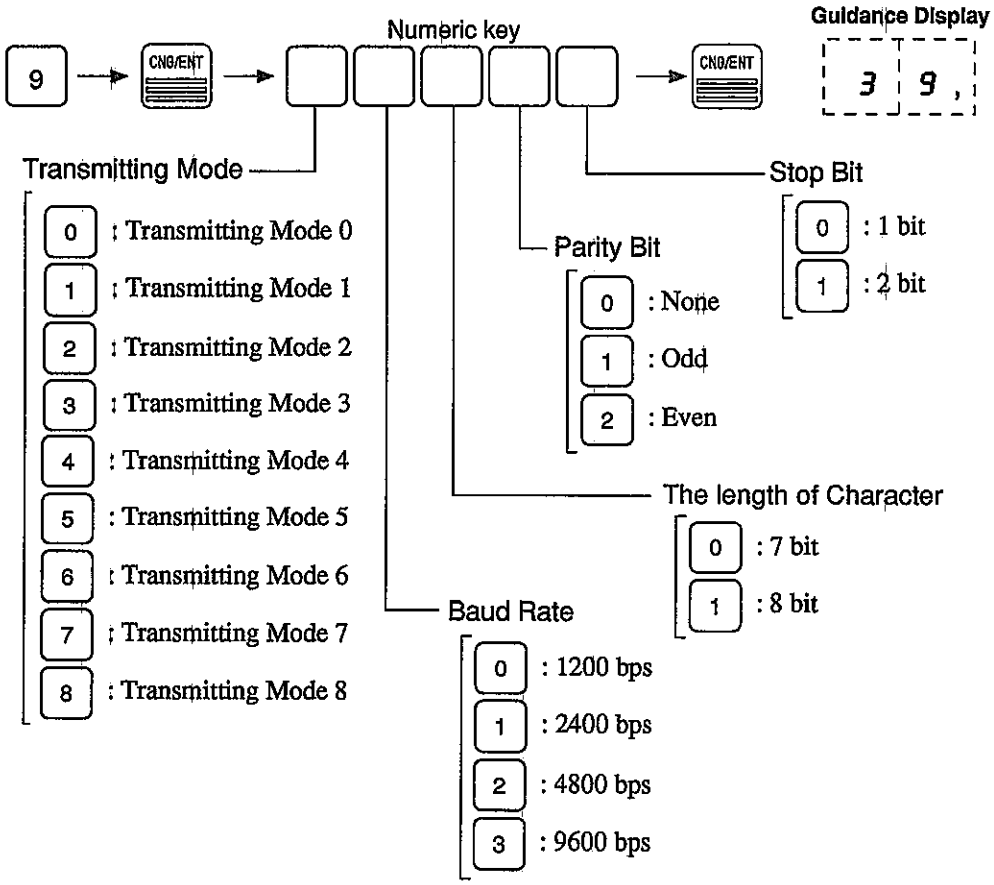
Printing by Code Number



Function key 2 Disablement



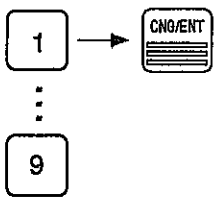
RS-232C Interface



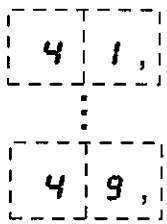
4.7 Setting Mode 4

Setting Mode 4

■ Read Out Memory 1 ··· 9

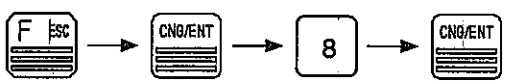


Guidance Display



* **Setting Mode 5** for Table Setting, **Setting Mode 6** for Display Statistical data.

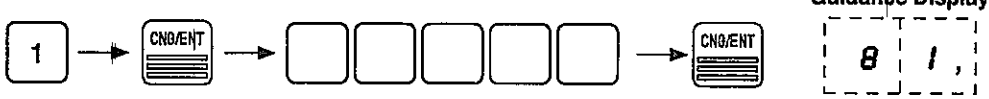
4.8 Setting Mode 8



Setting Mode 8

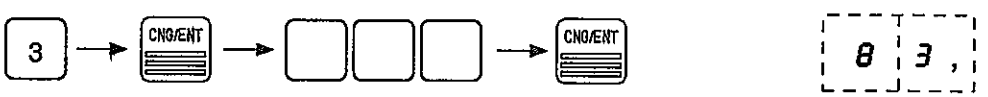
■ Balance Weight

Guidance Display



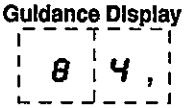
■ Capacity

■ Minimum Scale Division

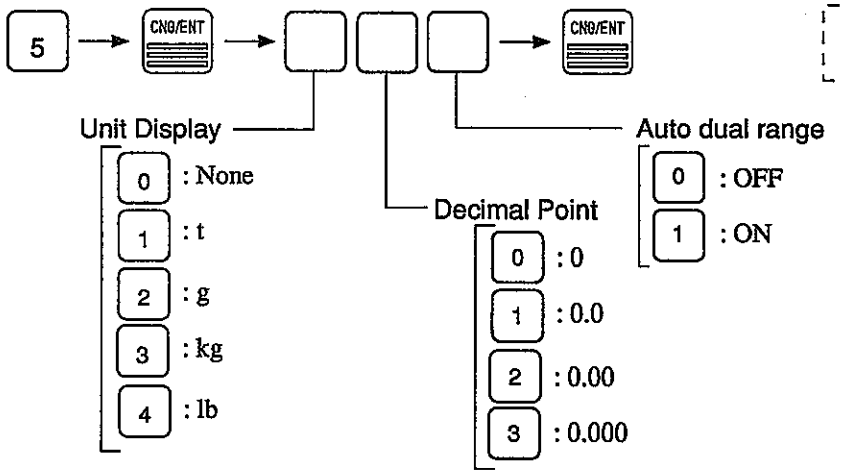


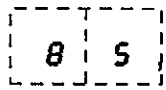
Digital Zero Regulation Value

Guidance Display

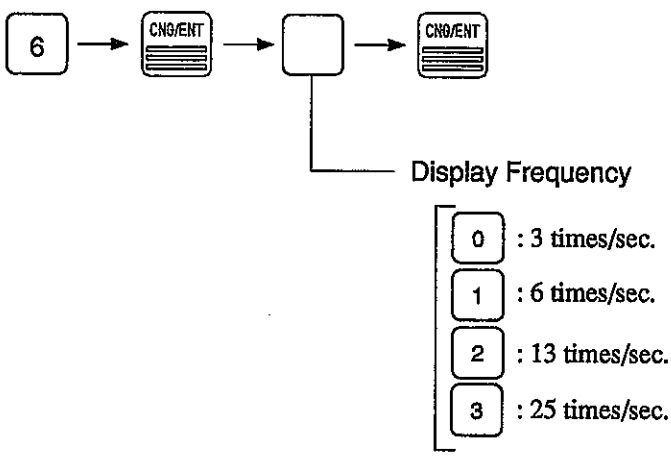


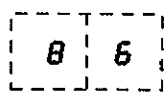
Unit/ Decimal Point/ Dual Range



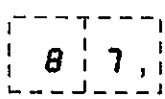


Display Frequency

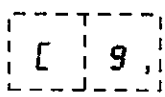




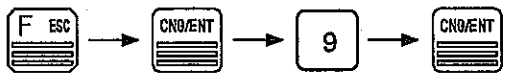
Interval Border



Span Calibration

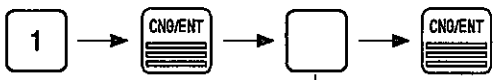


4.9 Setting Mode 9

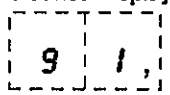


Setting Mode 9

■ Digital Filter



Guidance Display



Digirtal Filter

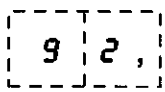
0	: OFF
1	: 2 times
2	: 4 times
3	: 8 times
4	: 16 times
5	: 32 times
6	: 64 times
7	: 128 times

(quick) ↓ (slow)

■ Motion Detection

Stable period (0.0 ~ 9.9 sec.)

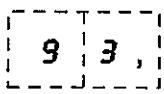
Stable range (00 ~ 99 division)



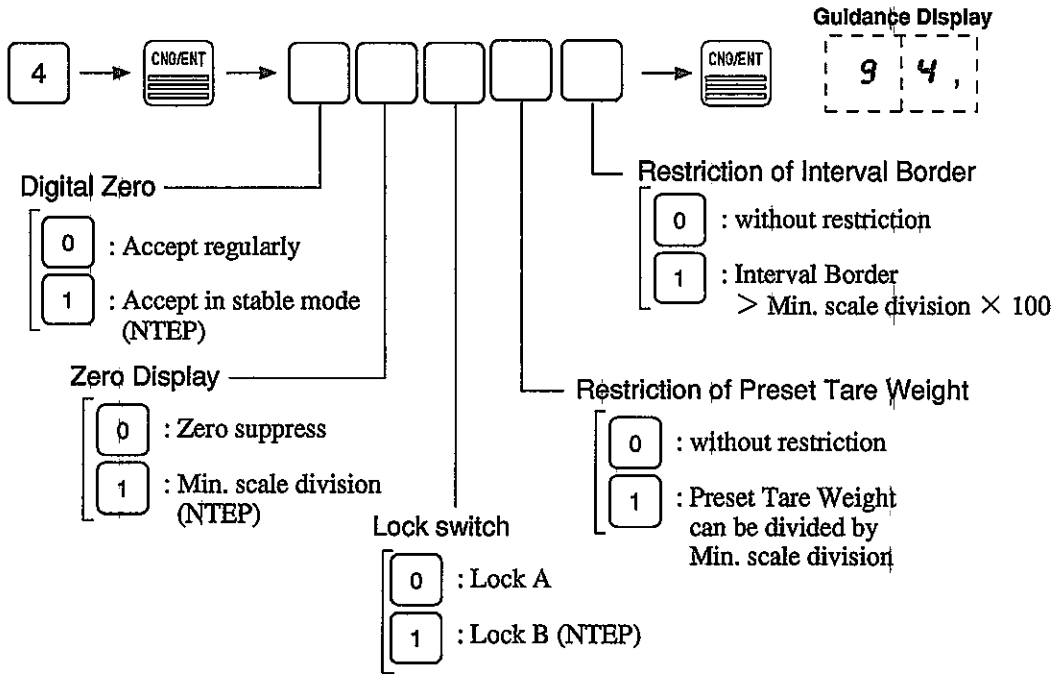
■ Zero Tracking

Zero Tracking period (0.0 ~ 9.9 sec.)

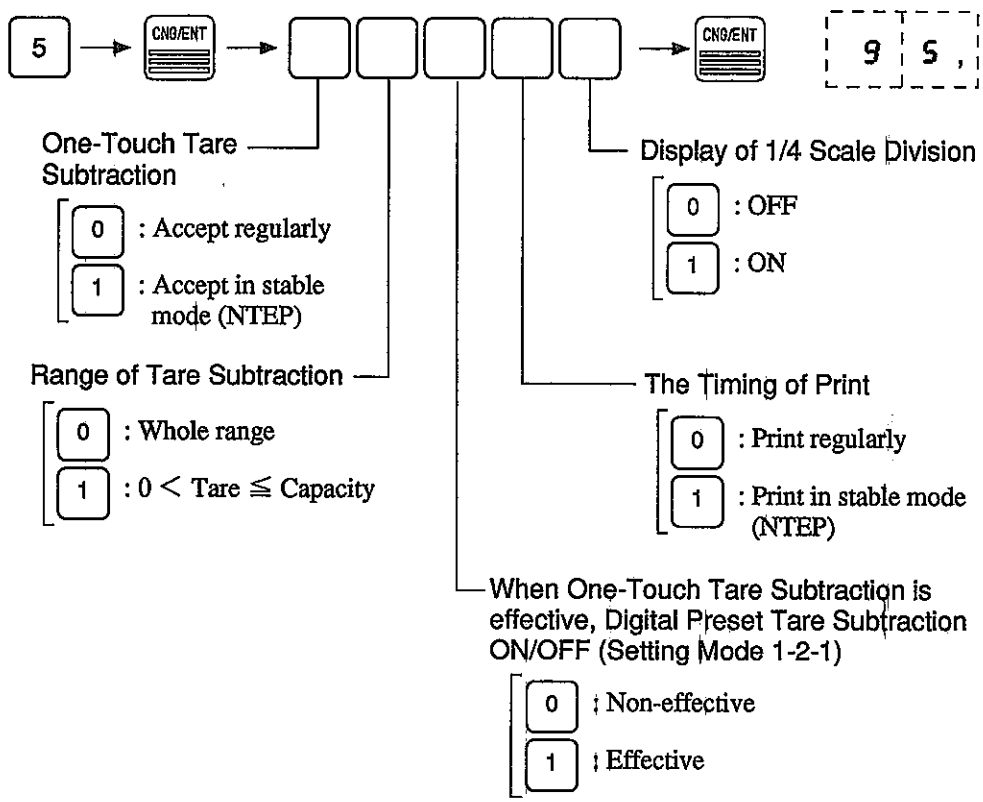
Zero Tracking range (00 ~ 99 digit)



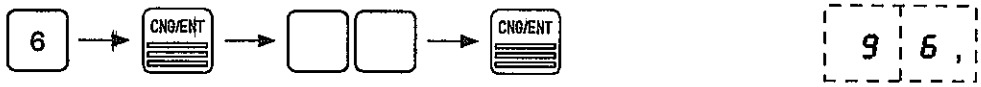
Standard/NTEP Mode Selection 1



Standard/NTEP Mode Selection 2



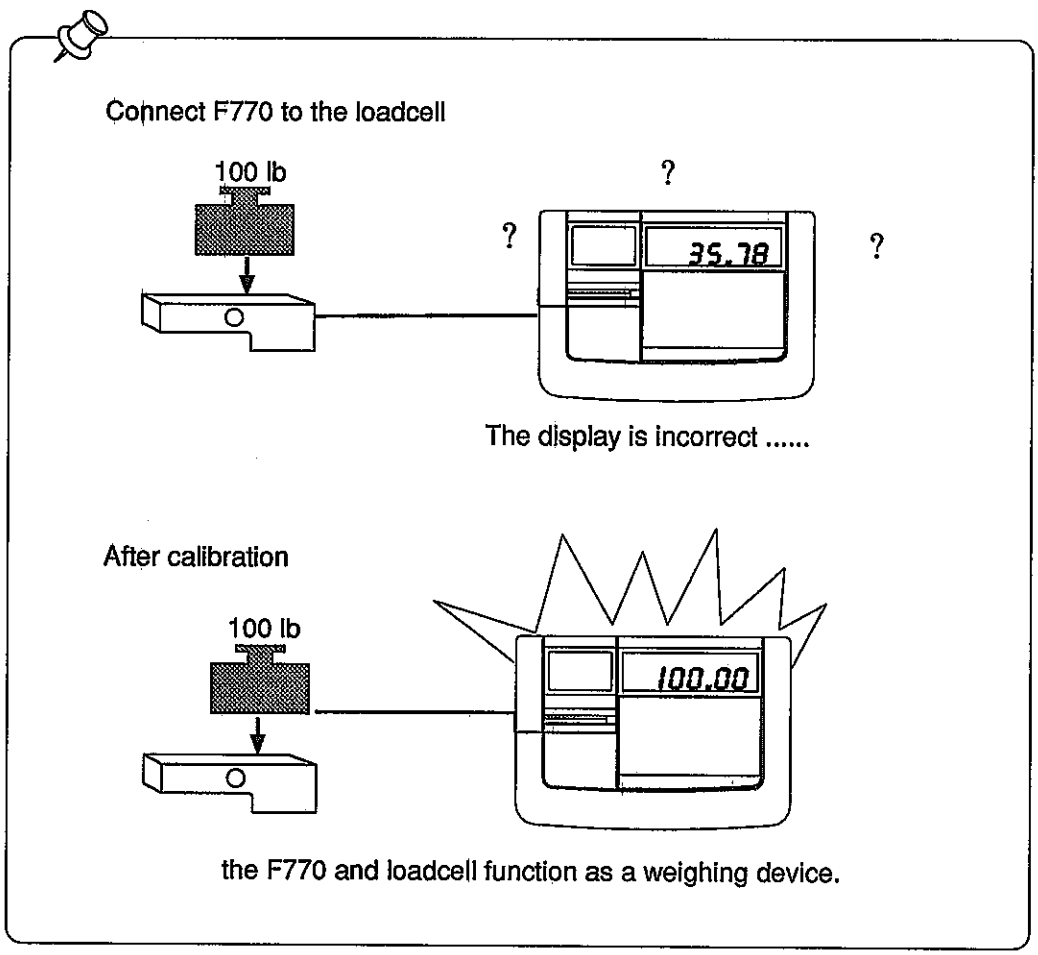
Gravitational Acceleration



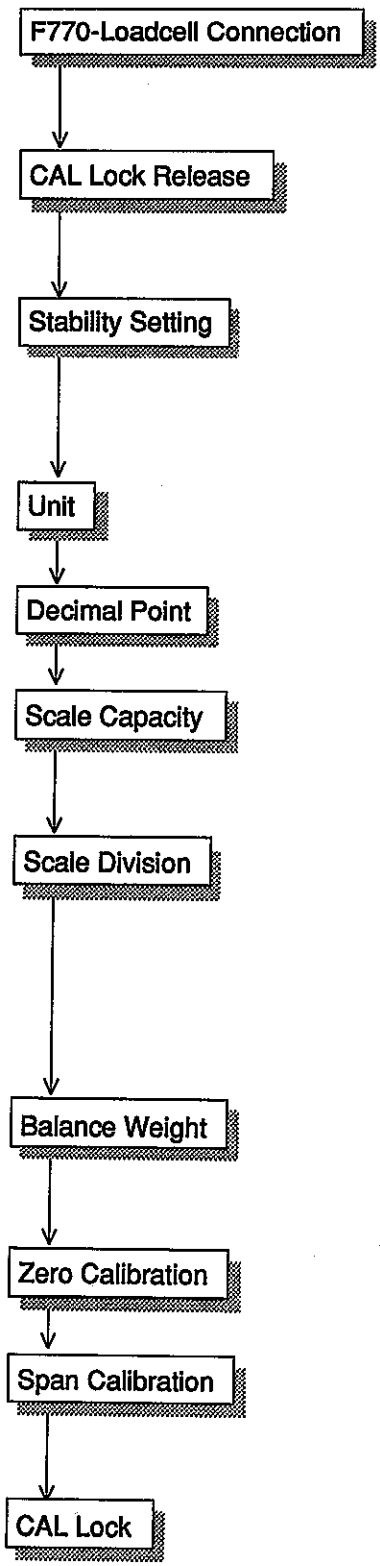
5 Span Calibration

5.1 What is Calibration

Span Calibration means putting a load (test weight) on the loadcell (or scale) and calibrating so the F770 indicates the correct weight (100.00 lb test wt. = 100.00 lb display).



5.2 Span Calibration Procedure



Connect the F770 to the loadcell and turn on power. Check that a weight value or an over scale message is displayed.

Release the calibration and setting value lock with the slide switch on the rear panel and through Setting Mode 1-9.

Adjust the Digital Filter and Motion Detection settings so the " STAB " display is lit when weight display becomes stable. (Setting Mode 9-1, 2)

Register the unit of the scale.

Register the position of the decimal point. (Setting Mode 8-5)

Register the maximum capacity of the scale. If the registered value is exceeded by 9 scale division, display shows over scale, 'oFL2'.

Register the minimum unit (scale division) of the scale. The value of the maximum scale capacity divided by the minimum scale division becomes the display resolution. The display resolution can be up to 30,000 divisions.
[10,000 Legal for Trade] (Setting Mode 8-3)

Register the value of the load (balance weight) for calibration. (Setting Mode 8-1)

Register the initial zero point (Setting Mode 8)

Place the load (balance weight) on the loadcell and register the span value. (Setting Mode 8-9)

Disable calibration (Slide switch ON rear panel)

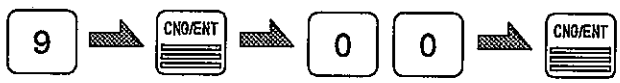
CAL Lock Release

The F770 features a Lock function for disabling changes in calibration and setting values. The F770 calibration Lock function must be disable before calibration. The Hardware Lock is located on the rear panel; the Software Lock is in Setting Mode 1-9.

Release Software Lock

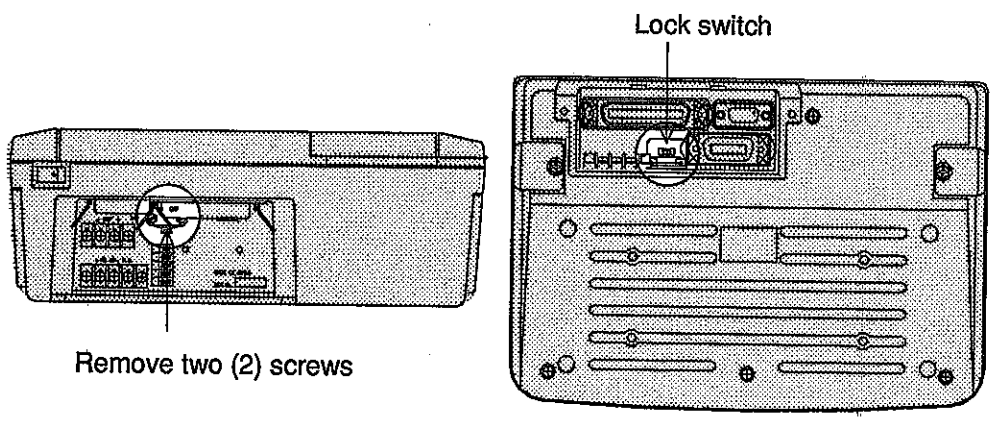
1) Choose Setting Mode 1

2) Select 9, Setting Value Lock, enter "00" to Lock 1 and Lock 2



Release Hardware Lock

1) Remove two (2) screws on the rear panel, take off the cover.
2) Remove two (2) screws on the Calibration Lock Cover, take off the cover.
3) Slide the switch to the OFF position to perform calibration.
   Calibration cannot be performed if switch is in the ON position.



4) After calibration has been completed, slide switch to the ON position.

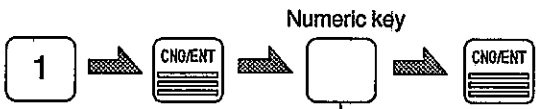
Digital Filter

This function minimizes instability of the weight value by calculating the average frequency of the data converted from analog to digital. The frequency of the moving average can be from 2 to 128. A higher frequency will make a more stable display with slower response. A lower frequency will have quicker response but a more unstable display. The amount of averaging is set with the following procedure.

Setting Digital Filter

1) Choose Setting Mode 9

2) Select 1, Digital Filter

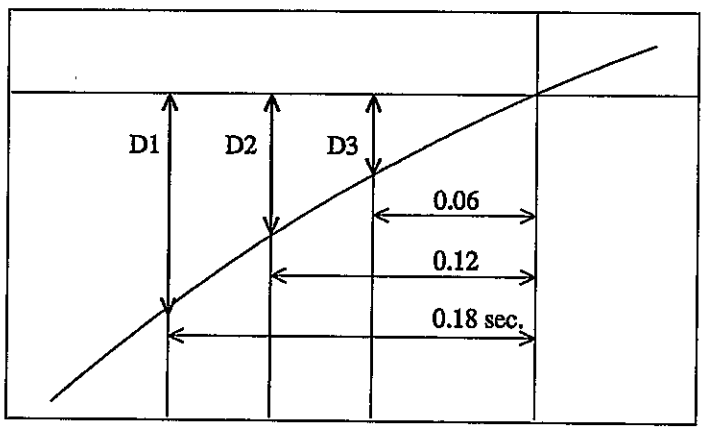


Digital Filter

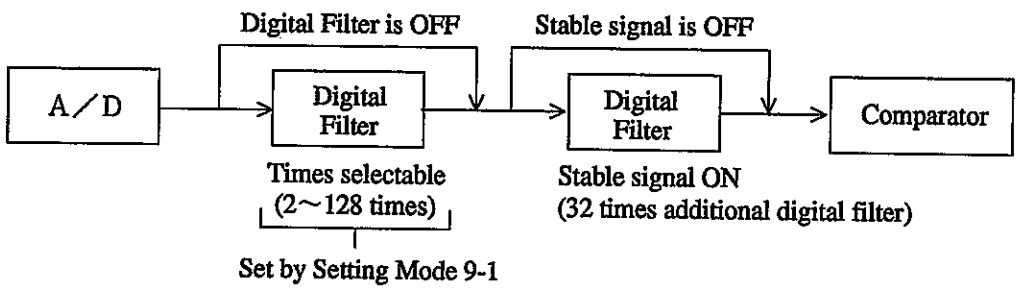
0	:	OFF	(Quick)
1	:	2 times	
2	:	4 times	
3	:	8 times	
4	:	16 times	
5	:	32 times	
6	:	64 times	
7	:	128 times	(Slow)

Motion Detection

Sets a parameter for detecting the stability. When signal fluctuation is less than the set Range and is within the set Period, weighing value is stable and " STAB " display lights. Per each A/D conversion, the current weight is compare to 0.18 second previous (D1).
If any of the set parameters are exceeded, " STAB " display goes out. (Refer to following chart)



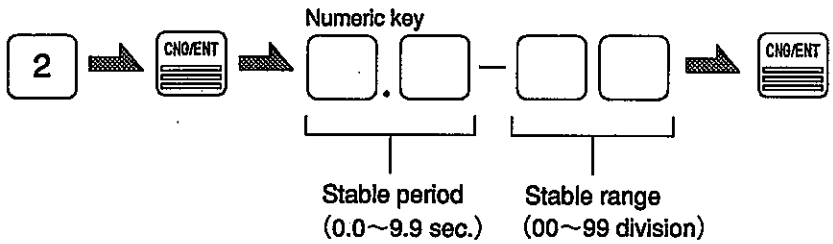
When the " STAB " display is on, an additional digital filter may be inserted to help stabilize the signal.



Setting Motion Detection

1) Choose Setting Mode 9

2) Select 2, Motion Detection



Unit / Decimal Point

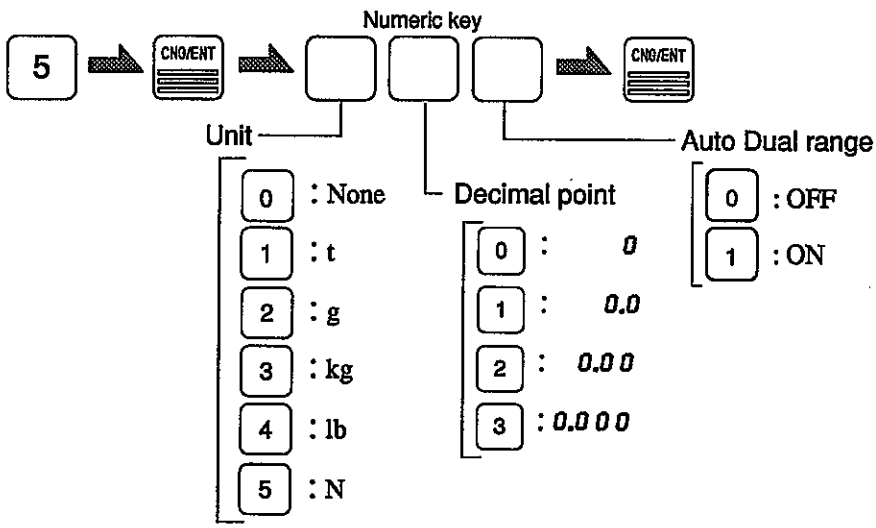
This operation sets the position of the Unit and Decimal point. The decimal point position options are : 00.0.0.0

The Unit can select from kg, g, t, lb, N, or None unit. If the selected Unit is kg or lb, the "kg" weight can change to "lb" weight without redo calibration by selecting unit only and vice versa.

Setting Unit / Decimal Point

1) Choose Setting Mode 8

2) Select 5, Decimal Point/Dual Range



- kg <-> lb Weight Conversion Table.
  1 kg = 2.2046228 lb approximately
  1 lb = 0.45359238 kg
  (NBS) National Bureau of Standard

- Press 

key switches the weighing value between pound and kilogram. But the communication data transmit by SI/F interface follows the selected Unit on Span Calibration.

- The display resolution ignores the Decimal point.
  For example: When Minimum Scale Division is 001 then 10.000 display resolution is 1/10000;
  100.00 display resolution is 1/10000;
  8.000 display resolution is 1/8000.

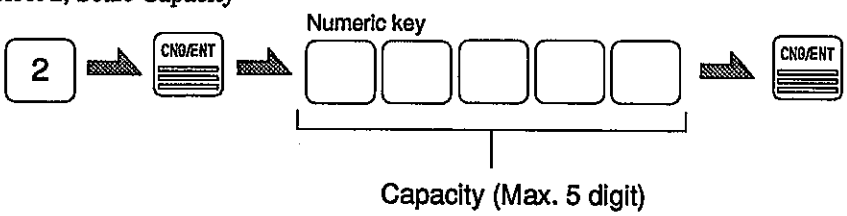
Setting Capacity

Input the Scale Capacity and Min. Scale Division desired. The Capacity must be within the rated load of all loadcells combined. Display resolution is 1/10,000 Legal For Trade or 1/30,000 expanded.

Setting Scale Capacity

1) Choose Setting Mode 8

2) Select 2, Scale Capacity



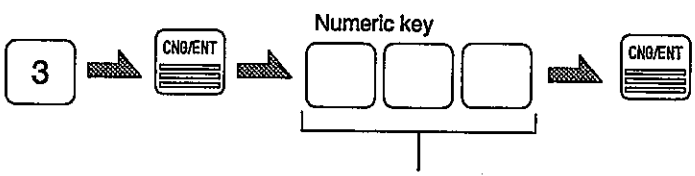
Minimum Scale Division

The Minimum Scale Division can be from 001 to 100. The display resolution obtains from dividing Minimum Scale Division By Scale Capacity.

Setting Minimum Scale Division

1) Choose Setting Mode 8

2) Select 3, enter the Scale Division



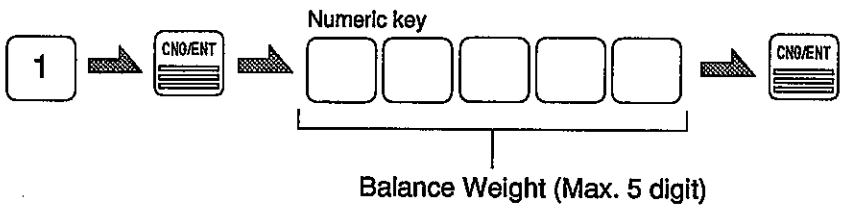
Balance Weight

The load value (balance weight) that is applied to the loadcell for calibration.

Setting Balance Weight

1) Choose Setting Mode 8

2) Select 1, enter the balance weight



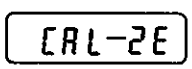
Zero Calibration

- Verify there are no excess loads applied to loadcell or scale.
- Verify that the " STAB " display is on. Correct Calibration cannot be completed if signal is unstable.

Zero Calibration

1) Choose Setting Mode 8

2) Press



Zero Calibration is complete after the display at left is replaced by zero (0).

If a Calibration Error is displayed, redo Zero Calibration using the following Error codes.

cErr 2: Initial Dead Load is above Zero adjustment range.
Remove any excess load from loadcell or scale. If cErr2 is still displayed, connect a resistor between +EX and -SIG. loadcell connections. This should shift the Zero point. Do Zero Calibration again.

cErr 3: Initial Dead Load is negative.
Check that loadcell is mounted in the correct direction; check that load is being applied to the loadcell in the correct direction; check that the +SIG. and -SIG. lines are properly connected.
If cErr3 is still displayed, connect a resistor between -EX and -SIG. loadcell connections. This should shift the Zero point. Do Zero Calibration again.

Span Calibration

Apply the load (balance weight) to the loadcell or scale.

- The Balance weight should be full capacity to get the best linearity. The Balance weight must be at least 50% of scale capacity.
- Verify there is no excess load (except balance weight) applied to the loadcell or scale.
- Verify the " STAB " (stable) indicator is lit for correct Calibration.

Span Calibration

1) Choose Setting Mode 8

2) Select 9 Span Calibration

When used Balance Weight is not equal to the Capacity, input the real weight here CNG/ENT

CAL-SP Span Calibration is complete after the display at left is replaced by Balance Weight.

If a Calibration Error is displayed, redo Span Calibration using the following Error codes.

cErr 4: The entered Balance weight value is greater than the maximum capacity. Re-enter a Balance weight value lower than the maximum capacity.

cErr 5: The entered Balance weight value is "00000". Re-enter the correct value.

cErr 6: The loadcell does not reach the Span range of the F770. Check how load is applied to loadcell; check does the loadcell have sufficient output (mV/V) to reach Span range. Do Span Calibration again.

cErr 7: The loadcell output is negative. Verify that the +SIG. and -SIG. loadcell lines are connected properly.

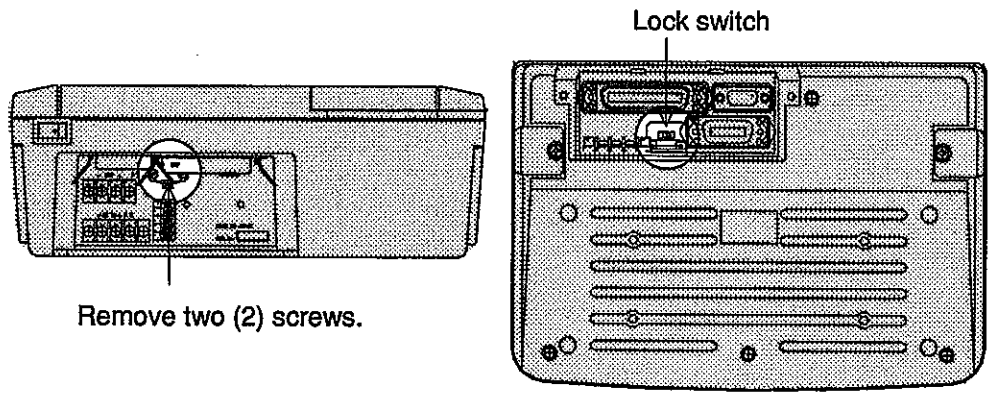
cErr 8: The loadcell output is beyond the Span adjustment range. Verify that the loadcell output is within the Span adjustment range of the F770.

Calibration Lock

After Zero and Span Calibration, set the Calibration Lock switch on the rear panel to ON.

Hardware Lock

1) Remove the Lock switch cover screws and remove cover.

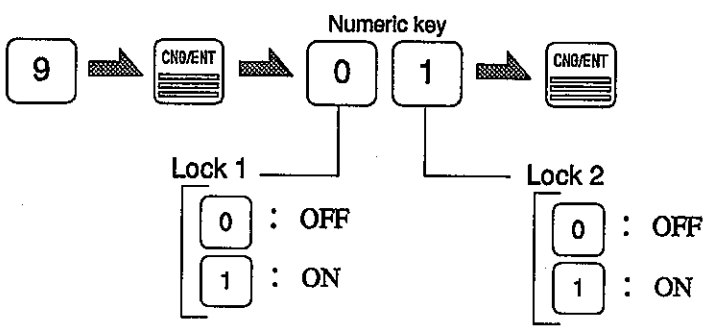


2) Turn the Lock switch to ON, lock calibration and restore the cover.

Software Lock

1) Choose Setting Mode 1

2) Select 9, Setting Value Lock



Refer to page 142 The List of Initial Setting Value for detail of Lock 1 and Lock 2. These Locks are useful tools for your application.

6 Function Settings

6.1 Display Setting

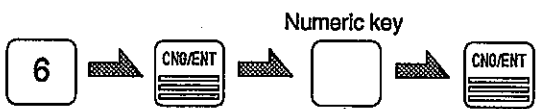
Display Frequency

Select the F770 Display Frequency. The internal conversion speed is fixed at 50 updates per second. The available display frequencies are : 25 times per second, 13 times per second, 6 times per second and 3 times per second.
25 times per second is recommended for normal operation. If the display flickers, select a lower frequency.

Setting Display Frequency

1) Choose Setting Mode 8

2) Select 6, Display Frequency



Display Frequency

- 0 : 3 times/second
- 1 : 6 times/second
- 2 : 13 times/second
- 3 : 25 times/second

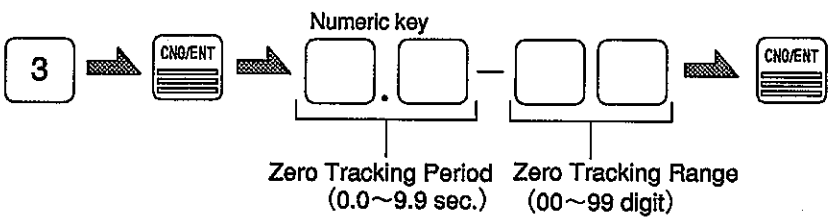
Zero Tracking

This function automatically adjusts slow drifts and slight shifting of the zero point due to small amounts of accumulation on a scale.

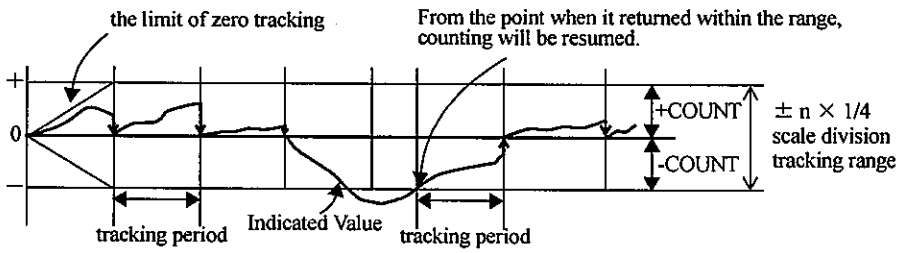
Setting Zero Tracking

1) Choose Setting Mode 9

2) Select 3 Zero Tracking



- Zero Tracking adjusts the zero point every set period when the shifting of the zero point is within the set range.
- The Tracking period must be set between 0.1 and 9.9 seconds. The Tracking range must be set using a 1/4 scale division as a unit. (02 = 0.5 divisions, 12 = 3 divisions) Zero Tracking does not work when the period is set 0.0 or the range is set to 00.

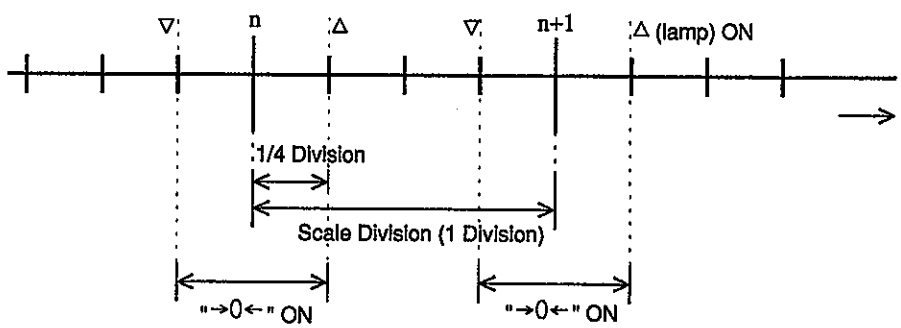


NB

- Zero Tracking is operated at the Zero Point of Gross weight and does not work when the weight value is beyond the tracking range. Adjust the Zero point by Digital Zero or Zero Calibration.
- The ZALM (Zero Alarm) turns on when the drift (from the calibrated zero point) to be adjusted by Zero Tracking or Digital Zero exceeds the Digital Zero Regulation Value. There is no adjustment of the Zero point when this occurs.

1/4 Scale Division

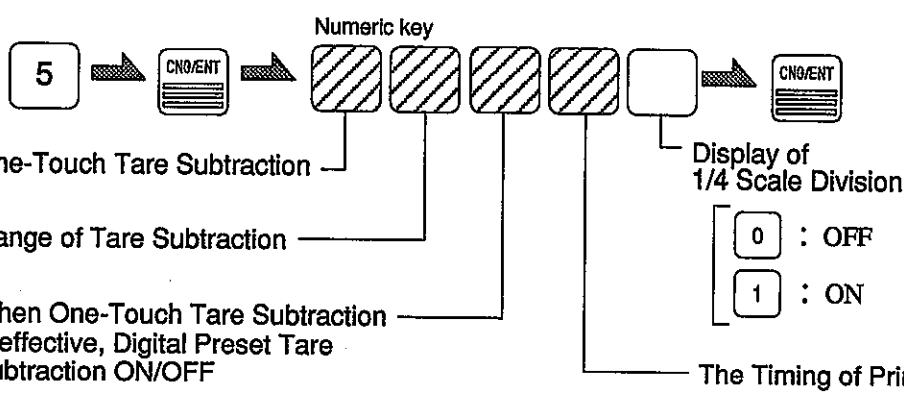
It divides the Minimum Scale Division into four (4) parts. The " →0← " (Center Zero) lamp turns on when the weight value is between +1/4 and -1/4 division.



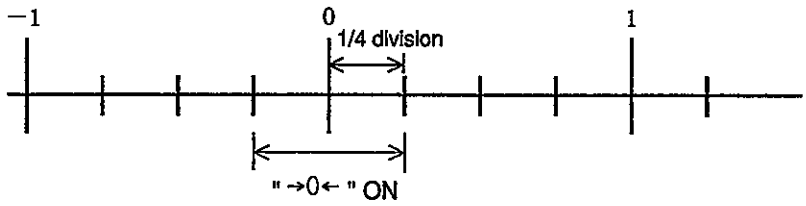
Setting 1/4 Scale Division

1) Choose Setting Mode 9

2) Select 5, Standard/NTEP Mode Selection 2



When the 1/4 scale division display setting is OFF, the " →0← " lamp only works at the Zero Point.



Digital Zero & Digital Zero Reset

Digital Zero

The Gross weight can be zeroed through the front panel. The "Z ALM" (Zero Alarm) will blink if you use Digital Zero when the weight value is above the set Digital Zero Regulation.

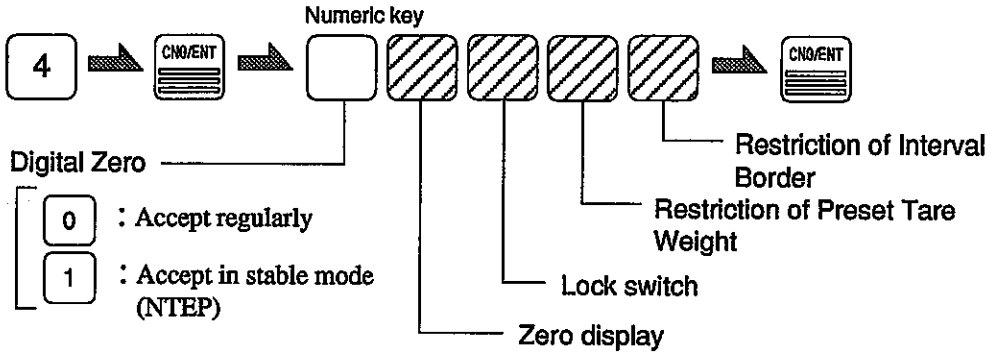
The Operation of Digital Zero

Except in Setting Mode 8, the following operation is to do Digital Zero.

Select the condition of Digital Zero

1) Choose Setting Mode 9

2) Select 4 , Standard/NTEP Mode Selection 1.



Digital Zero Reset

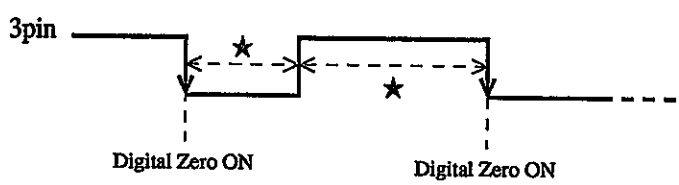
This function cancels Digital Zero. If you operate this function when the "Z ALM" is blinking, Digital Zero will be canceled and the "Z ALM" will turn off.

Digital Zero Reset

1) Choose Setting Mode 1

2) Select 8, Digital Zero Reset

To operate Digital Zero via the Control Connector on the rear panel, input an ON edge (OFF →ON) signal to pin 3 (D/Z ON) and the COM (Common)



★pulse range : 100ms min.

If Auto dual range in Setting Mode 8-5 is selected 'ON' and Digital Zero is in NTEP mode, when Tare Subtraction is working, then Digital Zero can not be done.

One Touch Tare Subtraction / Tare Reset / Digital Preset Tare Subtraction

One Touch Tare Subtraction

Tare is subtracted and the Net weight is zeroed by pressing [TARE] key, display T TARE . The Gross weight will not be changed by this function. Note that depending on setting in Tare mode and range of Tare Subtraction may be selected from the whole range or from 0 < Tare ≦ Capacity.

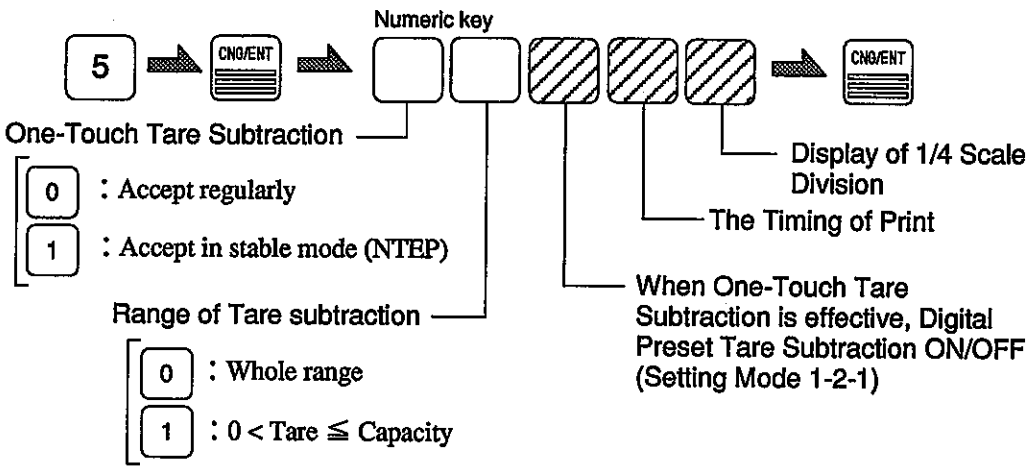
The Operation of One Touch Tare Subtraction

1) Press [TARE] key, the Tare weight is subtracted.

Setting Tare Subtraction

1) Choose Setting Mode 9

2) Select 5, Standard/NTEP Mode Selection 2



Tare Reset

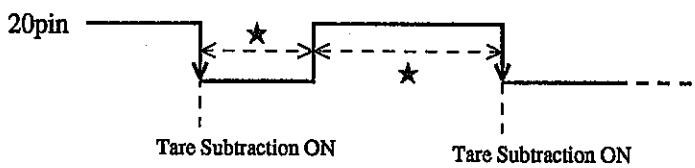
The subtracted Tare can be restored and Net weight becomes equal to the Gross weight.

The Operation of Tare Subtraction Reset

1) Choose Setting Mode 0

2) Select 1, Tare Subtraction Reset

To operate Tare Subtraction via the Control Connector on the rear panel, input an ON edge signal to the pin 20 (Tare ON) and COM.



★pulse range : 100ms min.

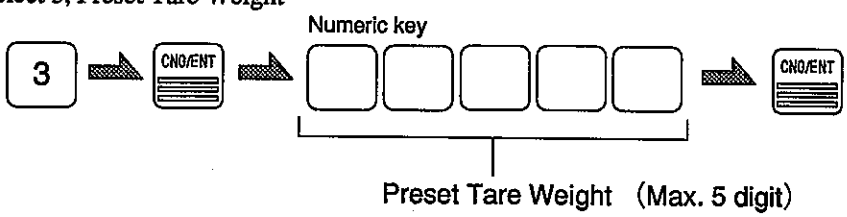
Digital Preset Tare Subtraction

In addition to the One-touch Tare Subtraction, there is a Preset Tare Weight function. Following is the procedure for setting Preset Tare Weight.

Setting Preset Tare Weight

1) Choose Setting Mode 0

2) Select 3, Preset Tare Weight

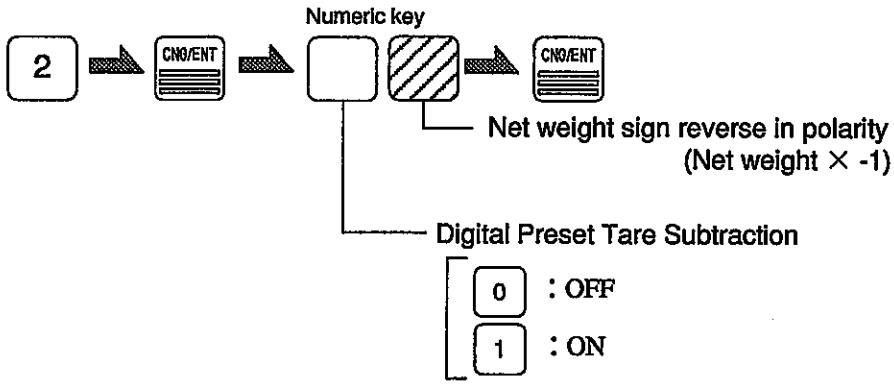


To subtract the above tare setting from the Net weight, the Digital Preset Tare Subtraction must be set to ON using the following procedure.

Setting Digital Preset Tare Subtraction ON/OFF

1) Choose Setting Mode 1

2) Select 2, Function Selection

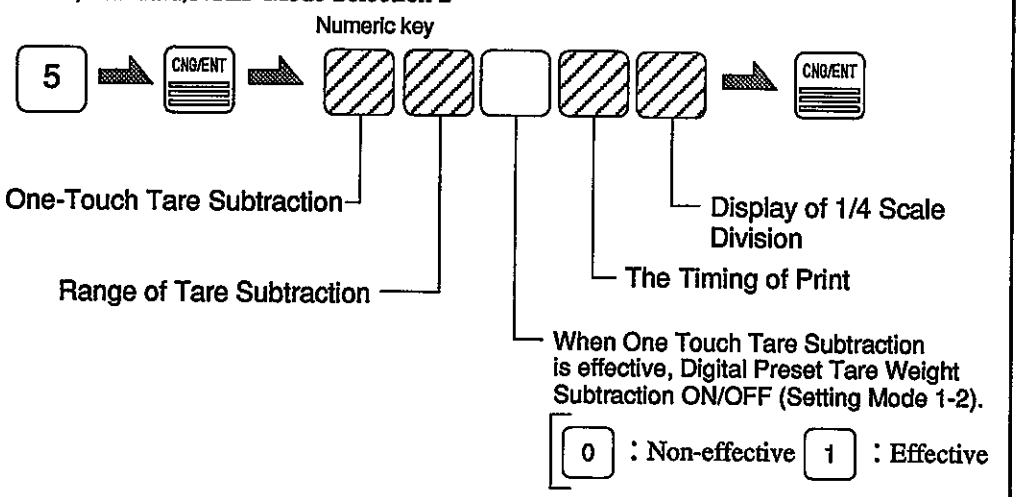


If you activate One-Touch Tare Subtraction while the Preset Tare is also active, you cannot reset or change the Preset Tare Weight. Select [1] : Effective here, Tare Subtraction is canceled, now you can reset Preset Tare Weight ON/OFF and Change Preset Tare Weight.

Setting Digital Preset Tare Subtraction

1) Choose Setting Mode 9

2) Select 5, Standard/NTEP Mode Selection 2

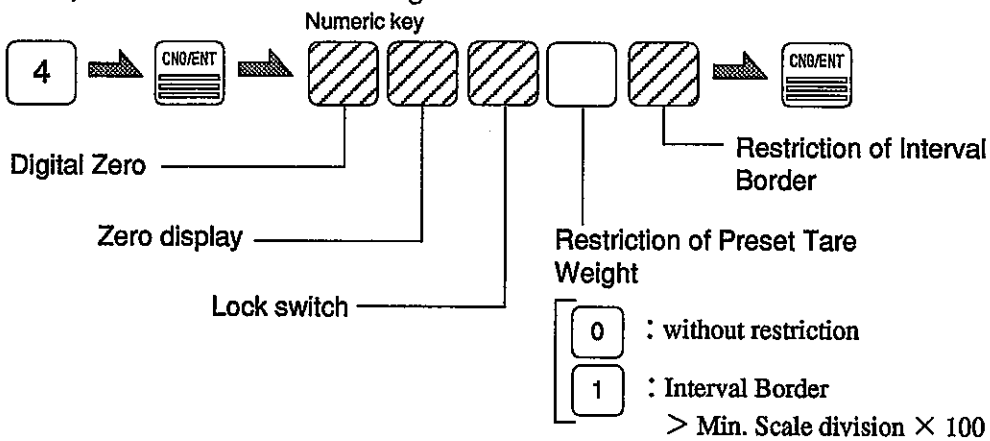


If there is a restriction for Preset Tare Weight using the following procedure.

Select the condition of Digital Zero

1) Choose Setting Mode 9

2) Select 4 , Restriction of Preset Tare Weight



Tare Weight Display

This operation indicates the Tare Weight value.

The Operation of Tare Weight Display

1) Choose Setting Mode 0

2) Select 2, Tare Weight Display (TARE blinks)

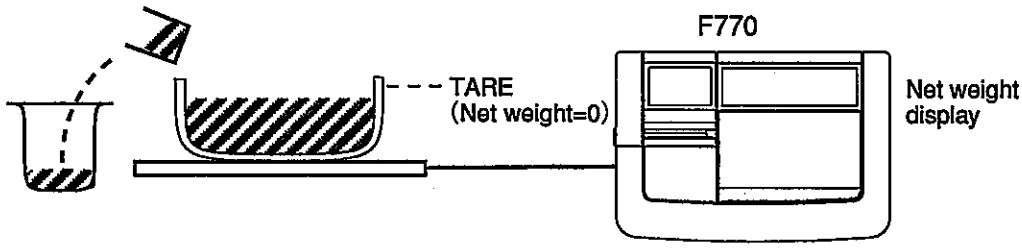
(When Preset Tare Weight is available,
Tare Weight = Preset Tare Weight + One-Touch Tare Subtracted Weight)

3) Press 

key, return to show the Gross or Net weight value.

Net Weight Sign Reverse in Polarity

Do Tare Subtraction to Tank with the material (Net weight = 0), Discharge the material from Tank, the Net weight display is with minus sign.

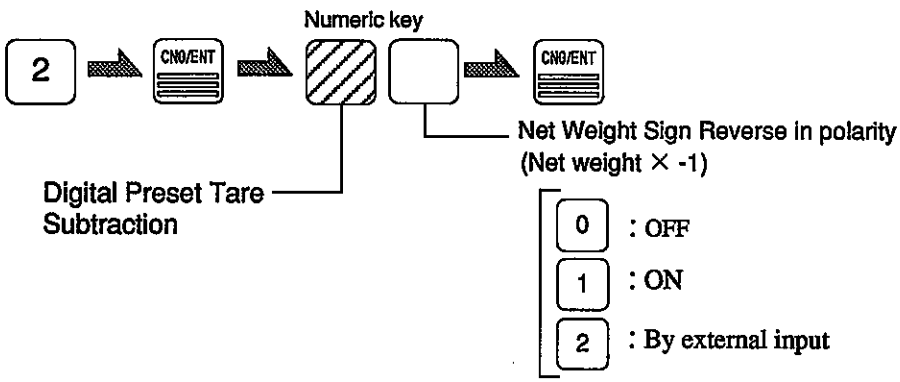


Some applications need a plus Net weight displayed or print plus Net weight, reverse Net weight sign using the following procedure.

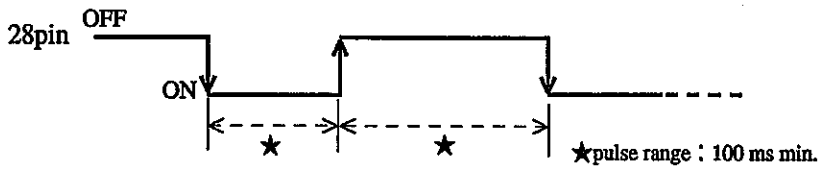
Setting Net Weight Sing Reverse

1) Choose Setting Mode 1

2) Select 2, Function Selection



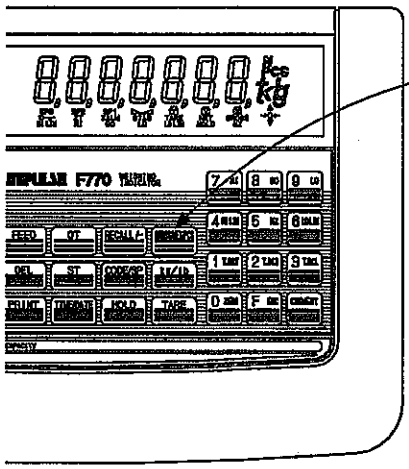
If selected [2] : By Control input here, to operate Net weight sign reverse in polarity via Control Connector on the rear panel, input an level signal to pin 28.

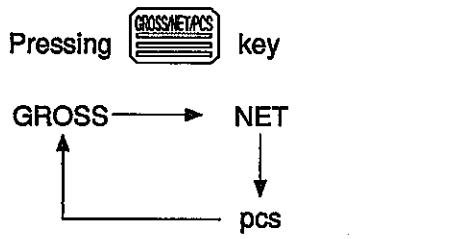


GROSS/NET/PCS Switching

CONTROL

Gross, Net weight and pcs display can be changed back and forth by pressing GROSS/NET/PCS key, input an edge signal to Control Connector on the rear panel or input an level signal.

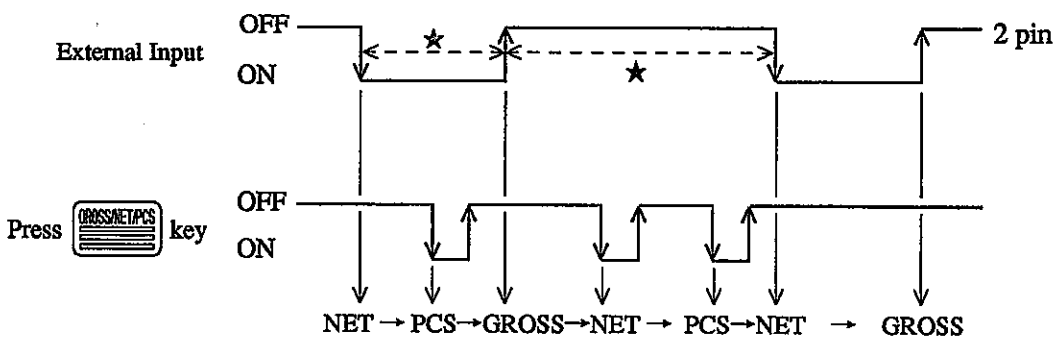




The weighing value display is switched between Gross and Net, when Counting Mode OFF is selected in Setting Mode 1-2.

To switch the display via Control Connector on the rear panel, input an edge signal to pin 2, Gross/Net, Net/ pcs or pcs/Gross which is selected in Setting Mode 1-1 External Input Selection.

ON→OFF edge	OFF→ON edge
GROSS	NET
NET	PCS
PCS	GROSS



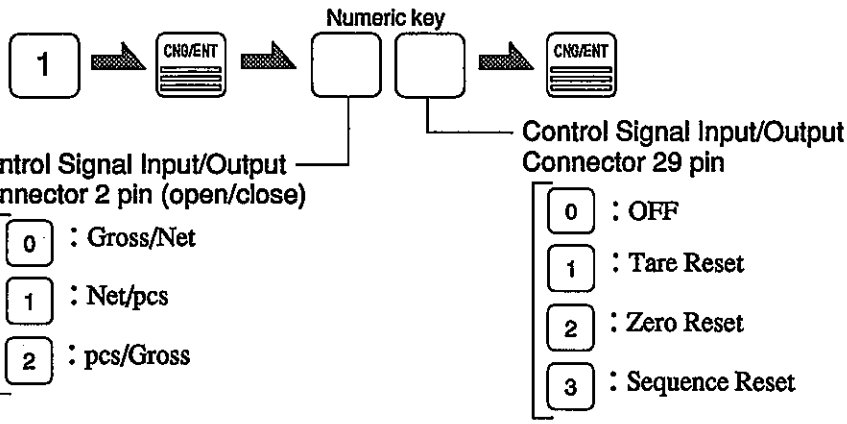
★pulse range : 100 ms min.

If Gross/Net is selected and GROSS/NET/PCS key is valid, input an edge signal to pin 2 (OFF → ON) display Net weight and (ON→OFF) display Gross weight.

Setting Control Input Selection

1) Choose Setting Mode 1

2) Select 1, Control Input Selection



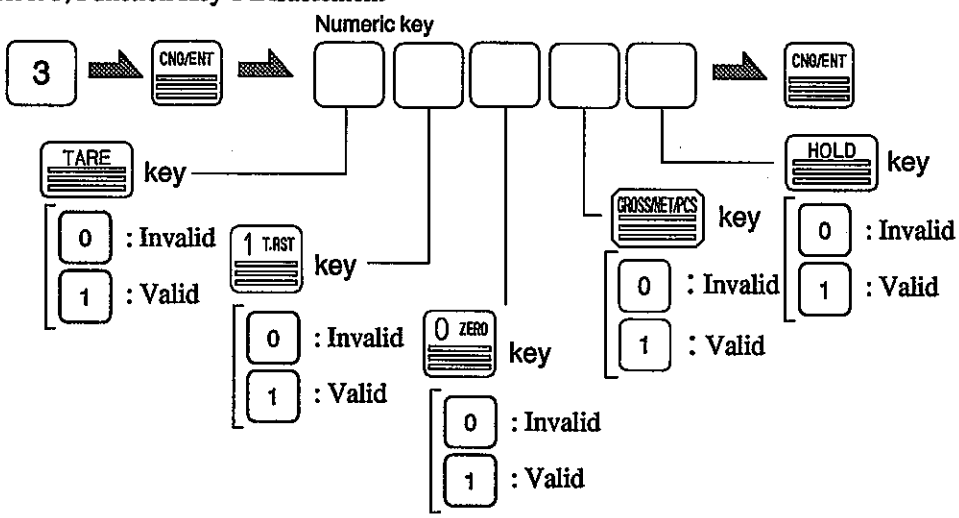
The following operation is used to inhibit the TARE 1 T.RST 0 ZERO HOLD GROSS/NET/PCS keys

If these keys are inhibited, their function operation is disable.

Setting Function Key 1 Disablement

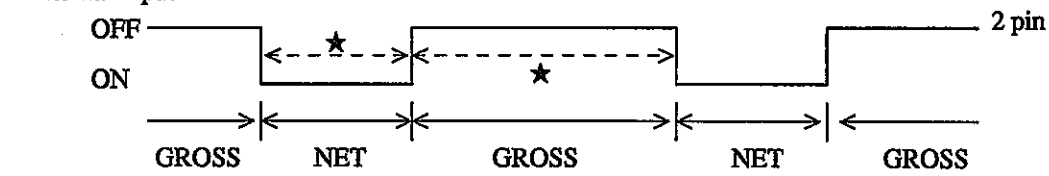
1) Choose Setting Mode 1

2) Select 3, Function Key 1 Disablement



If Gross/Net is selected and GROSS/NET/PCS key is invalid, input level signal to pin 2, OFF display Gross weight and ON display Net weight.

<External Input>



★pulse range : 100 ms min.

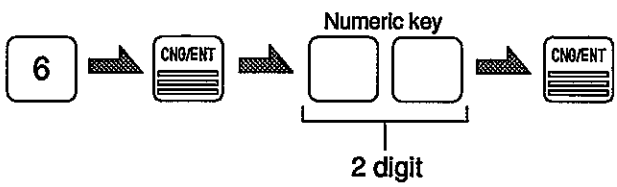
Gravitational Acceleration

Slight errors may occur if the scale moved from the location of calibration due to gravitational changes.
If the scale is used in the location of calibration, this function is not necessary. But after calibration if the scale will be shipped to a different location, before Span Calibration do operation 1, and 2 then 4 using the following procedure.

Setting Gravitational Acceleration

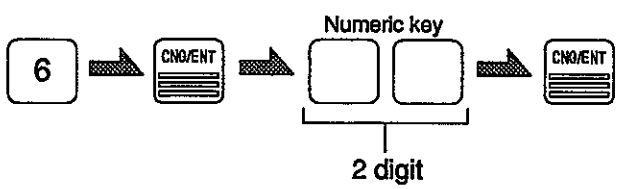
1) Choose Setting Mode 9

2) Select 6, Gravitational Acceleration, input the relatively number to located Gravitational Acceleration.



3) Do Span Calibration

4) Input the 2 digit number following new place Gravitational Acceleration



Gravitational Acceleration

01	9.806	02	9.805	03	9.804	04	9.803
05	9.802	06	9.801	07	9.800	08	9.799
09	9.798	10	9.797	11	9.796	12	9.795
13	9.794	14	9.793	15	9.792	16	9.791

Amsterdam	9.813 m/s^2	Ottawa	9.806 m/s^2
Athens	9.800 m/s^2	Paris	9.809 m/s^2
Auckland NZ	9.799 m/s^2	Rio de Janeiro	9.788 m/s^2
Bangkok	9.783 m/s^2	Rome	9.803 m/s^2
Birmingham	9.813 m/s^2	San Francisco	9.800 m/s^2
Brusseles	9.811 m/s^2	Singapore	9.781 m/s^2
Buenos Aires	9.797 m/s^2	Stockholm	9.818 m/s^2
Calcutta	9.788 m/s^2	Sydney	9.797 m/s^2
Capetown	9.796 m/s^2	Taichung	9.789 m/s^2
Chicago	9.803 m/s^2	Taiwan	9.788 m/s^2
Copenhagen	9.815 m/s^2	Taipei	9.790 m/s^2
Cyprus	9.797 m/s^2	Tokyo	9.798 m/s^2
Djakarta	9.781 m/s^2	Vancouver, BC	9.809 m/s^2
Frankfurt	9.810 m/s^2	Washington DC	9.801 m/s^2
Glasgow	9.816 m/s^2	Wellington NZ	9.803 m/s^2
Havana	9.788 m/s^2	Zurich	9.807 m/s^2
Helsinki	9.819 m/s^2		
Kuwait	9.793 m/s^2		
Lisbon	9.801 m/s^2		
London (Greenwich)	9.812 m/s^2		
Los Angeles	9.796 m/s^2		
Madrid	9.800 m/s^2		
Manila	9.784 m/s^2		
Melbourne	9.800 m/s^2		
Mexico City	9.779 m/s^2		
Milan	9.806 m/s^2		
New York	9.802 m/s^2		
Oslo	9.819 m/s^2		

6.2 Regulation Setting

High/Low Comparison

This operation sets the HI-LIM (HI-HI Limit), HI, GO, LO and LO-LIM (LO-LO Limit) values. When the weight exceeds or lessens than the set values gives out different comparison signals. There are 5 setting items here: Comparison value (absolute/ Relative)
Comparison condition
Comparison mode
Comparison data selection
High/Low, HI-HI Limit/ LO-LO Limit and GO value

1. Comparison value (Absolute/Relative) (Setting Mode 2-2)

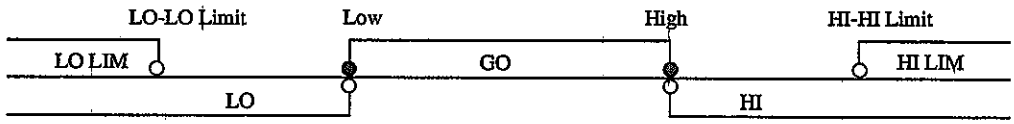
	Absolute value	Relative value
HI LIM	HI-HI Limit value	GO + HI-HI Limit
HI	High value	GO + High
GO	GO (Final) value	GO
LO	Low value	GO - Low
LO LIM	LO-LO Limit value	GO - LO-LO Limit

2. Comparison condition

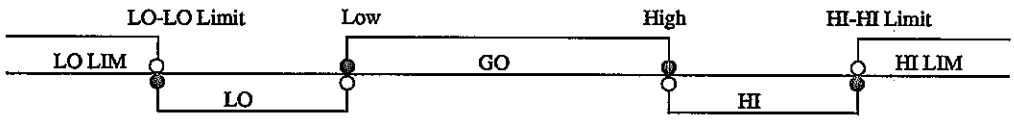
The following explanation is for selected absolute value as Comparison value. If selected Relative value as Comparison value, just change the comparitor.

Condition 1	HI-LIM output signal goes ON	the set HI-HI Limit	< weighing value
	HI output signal goes ON	the set High	< weighing value
	GO output signal goes ON	the set Low	≦ weighing value ≦ the set High
	LO output signal goes ON		weighing value < the set Low
	LO-LIM output signal goes ON		weighing value < LO-LO Limit
Condition 2	HI-LIM output signal goes ON	the set HI-HI Limit	< weighing value
	HI output signal goes ON	the set High	< weighing value ≦ the set HI-HI Limit
	GO output signal goes ON	the set Low	≦ weighing value ≦ the set High
	LO output signal goes ON	the set LO-LO Limit	≦ weighing value < the set Low
	LO-LIM output signal goes ON		weighing value < LO-LO Limit
Condition 3	HI-LIM output signal goes ON	the set HI-HI Limit	≦ weighing value
	HI output signal goes ON	the set High	≦ weighing value
	GO output signal goes ON	the set GO	≦ weighing value
	LO output signal goes ON	the set Low	≦ weighing value
	LO-LIM output signal goes ON	the set LO-LO Limit	≦ weighing value

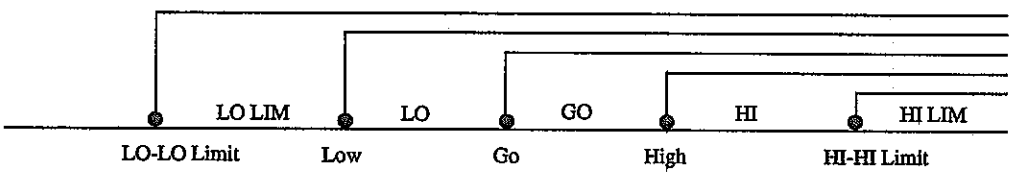
· Condition 1



· Condition 2



· Condition 3



● Include this point ○ Not include

3. Comparison Mode

This operation of the HI/LO, HI LIM/LO LIM comparison allows you to select the Weighing mode that comparison takes place in as well the comparison conditions (timing).

Setting Comparison Value/ Condition/ Mode

1) Choose Setting Mode 2

2) Select 2, Comparison Condition Selection

Comparison Condition
- 0 : Comparison OFF
- 1 : Condition 1
- 2 : Condition 2
- 3 : Condition 3

Comparison Value
- 0 : Absolute value
- 1 : Relative value

HI/GO/LO Comparison
- 0 : Compare regularly
- 1 : Compare when weight value becomes stable
- 2 : Compare except Near Zero
- 3 : Compare when weight value becomes stable and except Near Zero
- 4 : Compare when the external judging input is ON

HI LIM/LO LIM Comparison (High-high Limit/ Low-low Limit)
- 0 : Compare regularly
- 1 : Compare when weight value becomes stable
- 2 : Compare except Near Zero
- 3 : Compare when weight value becomes stable and except Near Zero
- 4 : Compare when the external judging input is ON

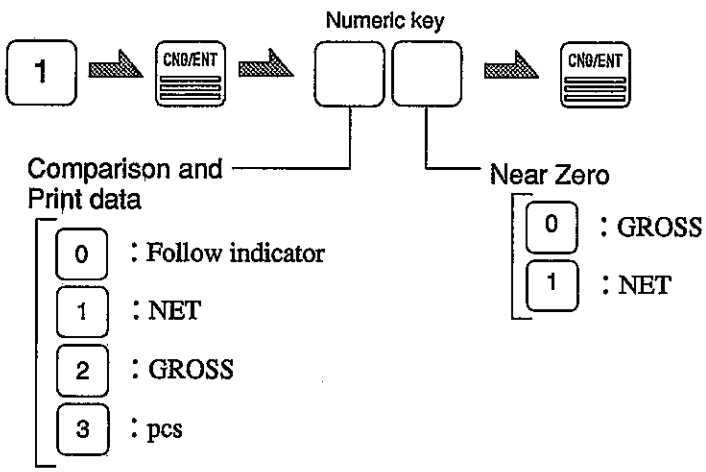
4. Comparison data selection

This operation selects the data for comparison, the HI/LO comparitor works in either counting, Net weight, or Gross weight mode.

Setting Comparison Data Selection

1) Choose Setting Mode 2

2) Select 1, Comparison data selection



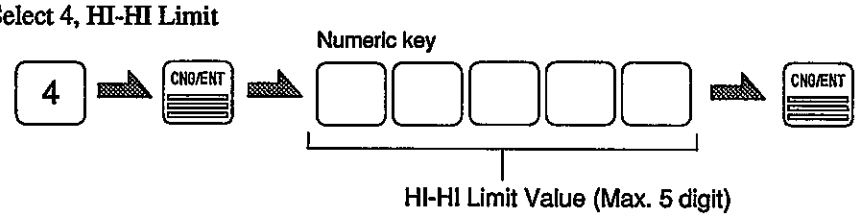
5. HI/LO, HI-LIM/LO-LIM and GO values

This operation is setting the comparison parameter.

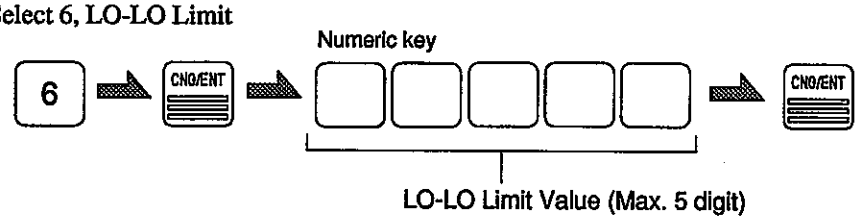
Setting High/Low Limit

1) Choose Setting Mode 0

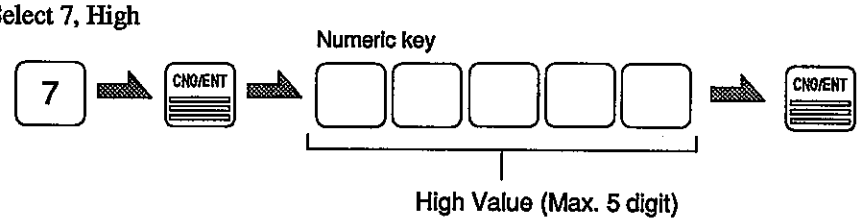
2) Select 4, HI-HI Limit



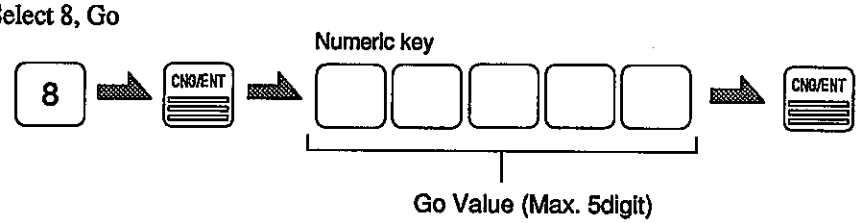
3) Select 6, LO-LO Limit



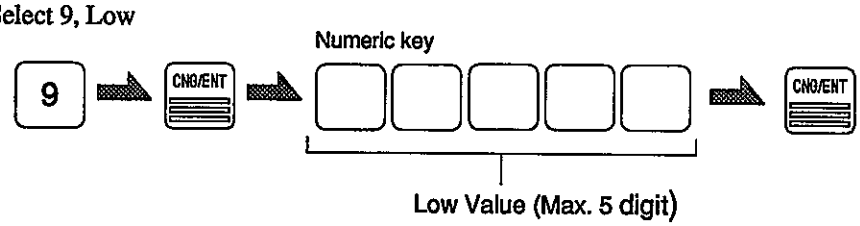
4) Select 7, High



5) Select 8, Go



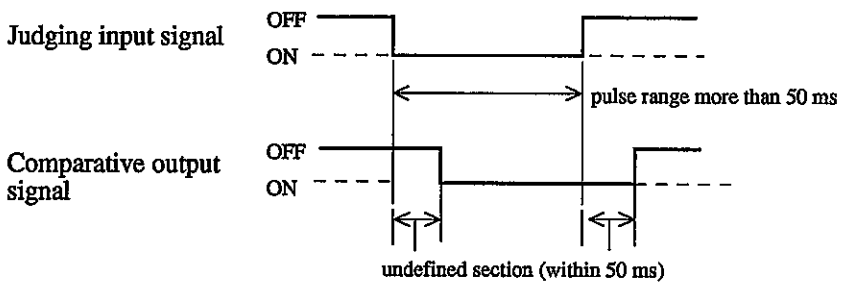
6) Select 9, Low



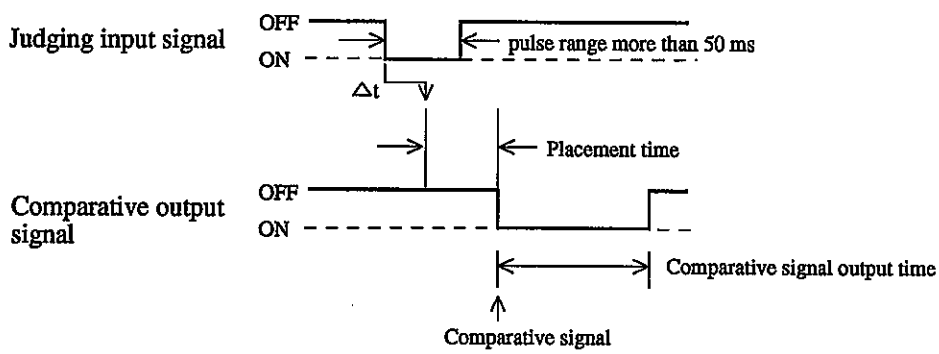
Judging Input Mode

This operation is for selecting Judging input signal (Level/Edge) to start HI/LO, HI LIM/LO LIM Comparison.

· Level signal input



· Edge signal input

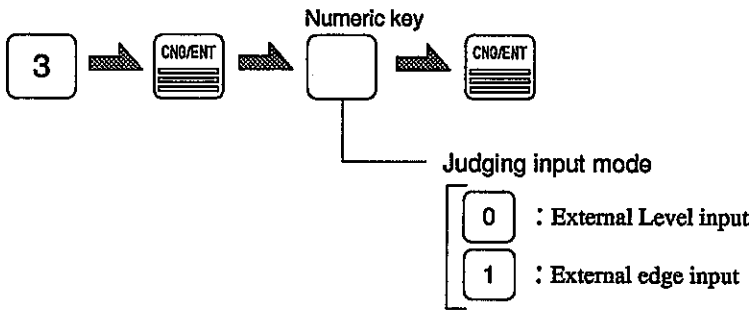


△t : Undefined time
(within 50 ms)

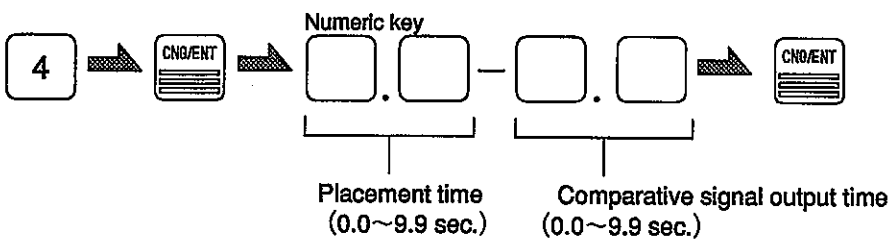
Setting Judging Input Mode

1) Choose Setting Mode 2

2) Select 3, Judging Input Mode



3) If Judging input mode selected, edge input must set and the Judging Time in Setting Mode 2-4. (level input, the following setting is not necessary).



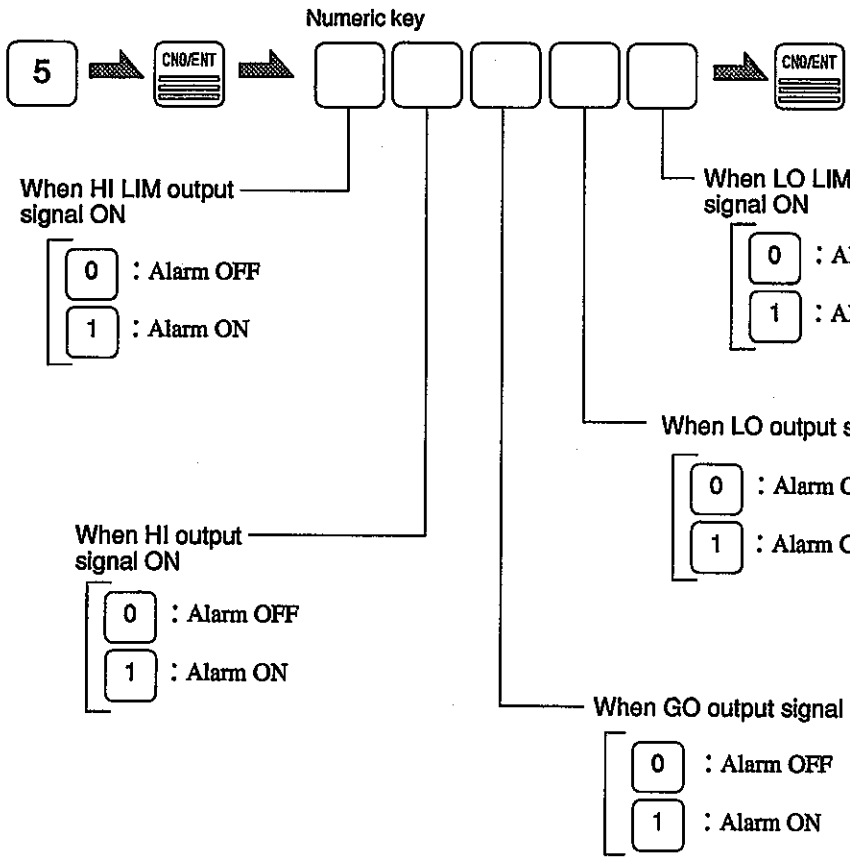
Comparison Audible Alarm

This operation enable the availability of the HI/LO, HI LIM/LO LIM audible alarm.

Setting Comparison Audible Alarm

1) Choose Setting Mode 2

2) Select 5, Comparison Audible Alarm



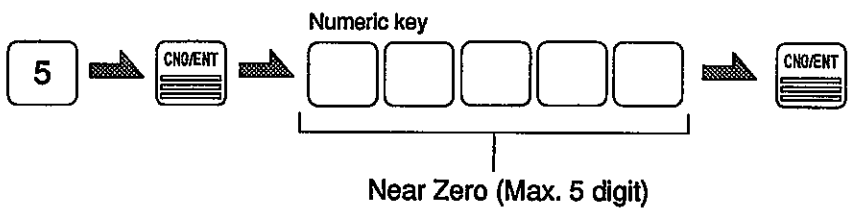
Near Zero

This function is used for detecting whether the weights is Near Zero.
When the weights is less than or equal to the set Near Zero value, "NZ" lamp turns on.

Setting Near Zero

1) Choose Setting Mode 0

2) Select 5, Near Zero



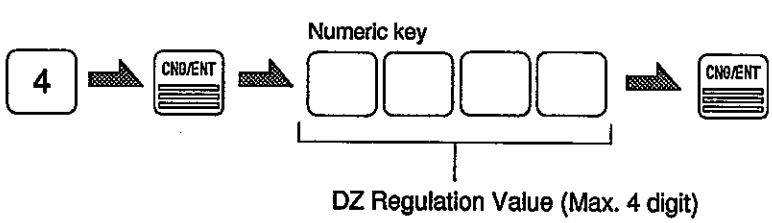
Digital Zero Regulation Value

This operation selects the Digital Zero Regulation Value. The recommended choices are ±2% or ±10% of Scale Capacity but any value may be entered.
If this range is exceeded, then the "Z ALM" display blinks.
(To turn "Z ALM" off, do a Zero Calibration or remove excess weight and press Digital Zero again, or Digital Zero Reset Setting Mode 1-8)

Setting Digital Zero Regulation Value

1) Choose Setting Mode 8

2) Select 4, Digital Zero Regulation Value



6.3 Counting Display Setting and Operation

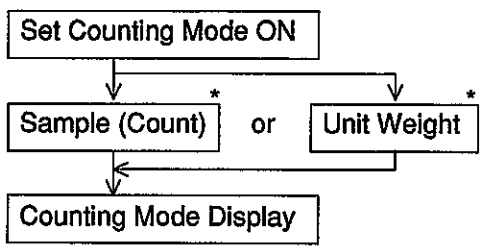
Counting Mode Display

The count value calculated by (Net weight ÷ Unit weight), the counting display is "pcs"

Press GROSS/NET/PCS key, the weighing value display is switched between Gross, Net and counting display "pcs"

GROSS → NET → pcs

In order to get counting display, the following setting procedure is necessary.

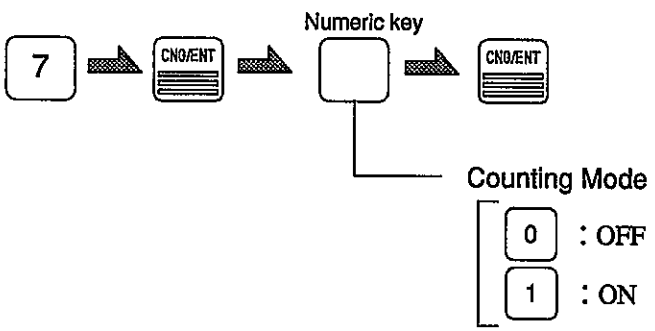


**For a known group quantity setting
Sample (Count);
for a known unit weight setting
Unit weight.

Setting Counting Mode

1) Choose Setting Mode 1

2) Select 7, Counting Mode



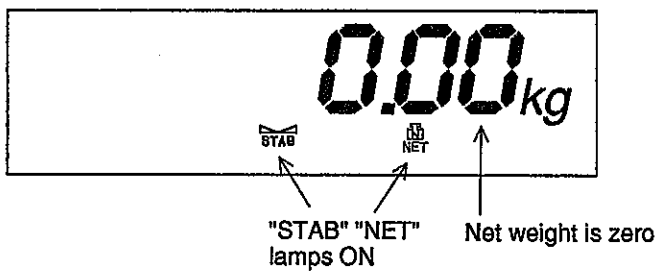
Setting Sampling Mode

This operation calculates the unit weight.

1) Choose Setting Mode 1

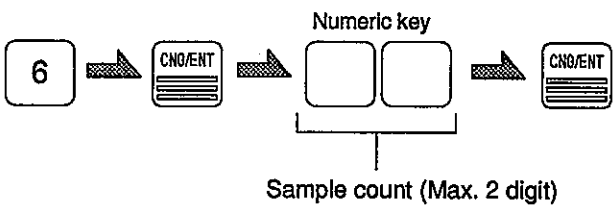
2) Press  key, getting Net weight display.

3) Check that the Net weight is zero and stable. (If not press  key to get zero Net weight dispaly)



4) Load the known quantity on the scale. The sampling range is 1 to 99.

5) Enter the sample count, after " STAB " lamp turns on.



If sampling fails, LO (the weight is within 5 scale division) or HI (the weight is more than 9999) alarm is displayed.

There are three ways to remove the alarm:

- Press  key twice;

- Re-sampling correctly;
- Waiting for 60 seconds.

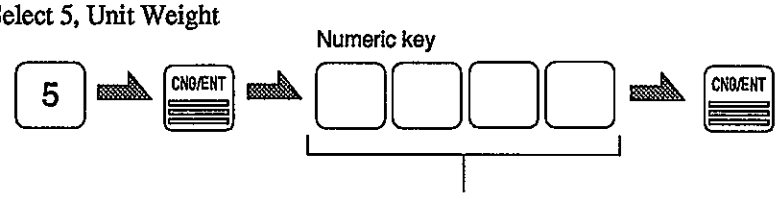
The sampling function is disabled if the known group quantity weight is less than 5 scale division.

Setting Unit Weight

A known unit weight may be entered instead of sampling.

1) Choose Setting mode 1

2) Select 5, Unit Weight



If setting unit weight fails, oFL6 or oFL7 alarm is displayed.

oFL6: Unit weight exceeds 9999

oFL7: Unit weight is less than 0001

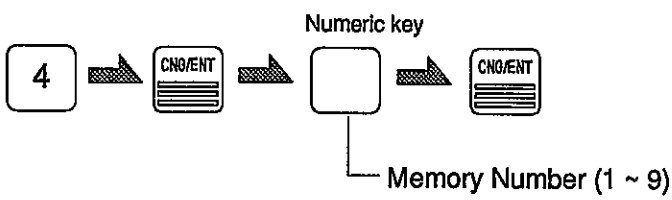
Memory & Recall of Unit Weight

Unit weights may be put into memory to be recalled on demand. The F770 has Nine (1~9) memory locations.

Memory from Sampling

1)Execute the sampling operation (Setting Sampling Mode)

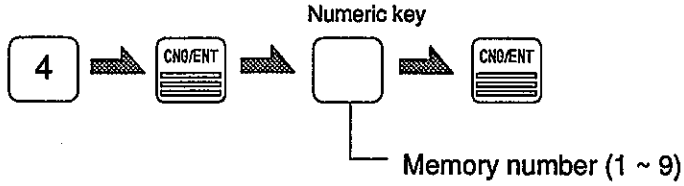
2) Enter value into memory, select 4 Register Unit Weight



Memory from a known unit weight

1) Execute the unit weight operation (Setting Unit Weight)

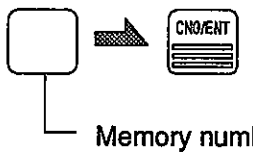
2) Enter value into memory, select 4 Register Unit Weight



Read out Registered Memory

1) Choose Setting Mode 4

2) Read out Registered Memory 1 ~ 9



NB

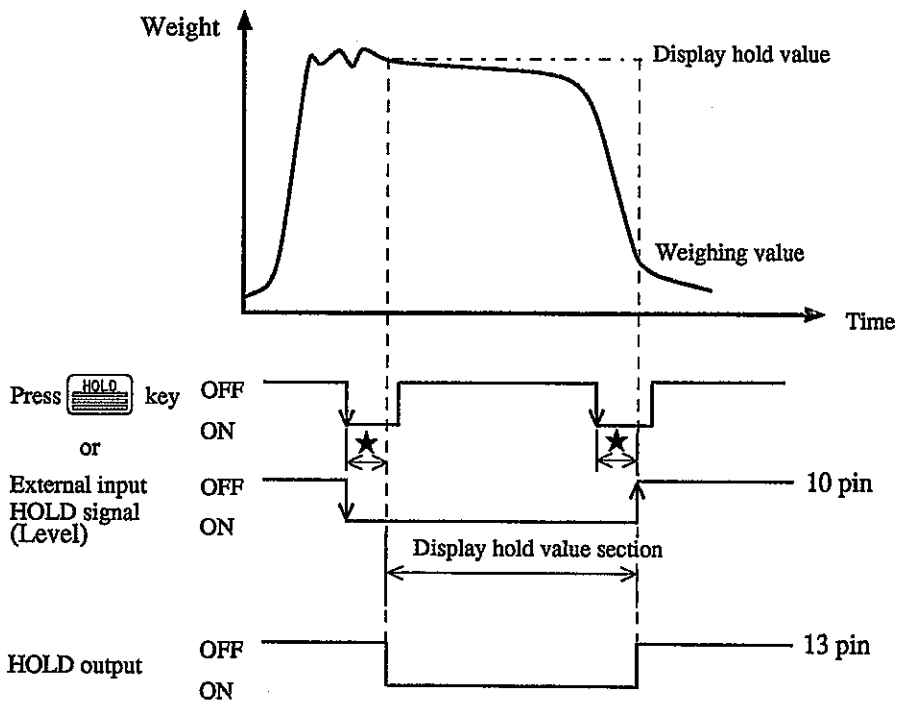
Memory 1 ~ 9, unit weight and sampling data will miss after Span Calibration

6.4 Hold (Setting & Operation)

This function is to hold a weight value or a comparison. F770 has 5 kinds hold functions.

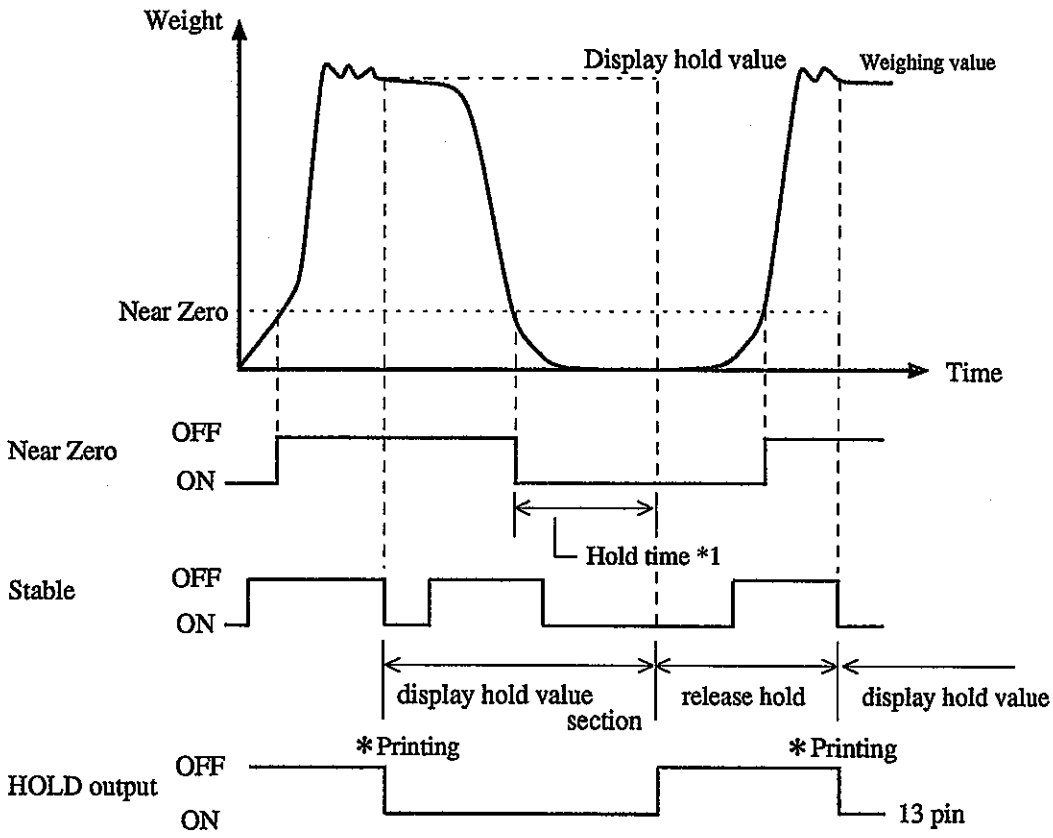
1) Sample Hold

Press HOLD key, or input a hold signal to pin 10 (short pin 10 to COM)



★ Undefined section (within 100 ms)
pulse range : 100ms min.

2) Hold while weighing value gets stable



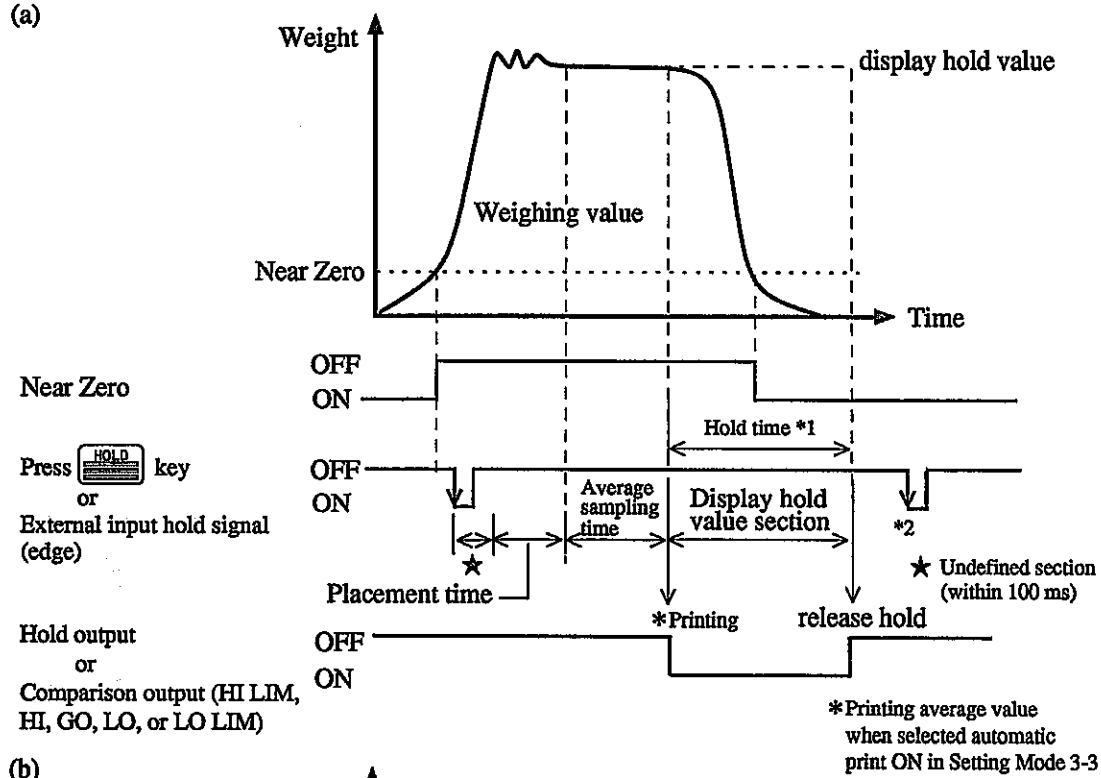
*Printing hold value when selected automatic print ON in Setting Mode 3-3.

Even if in this Hold Mode (Hold while weighing value gets stable), the sample hold operation is available.

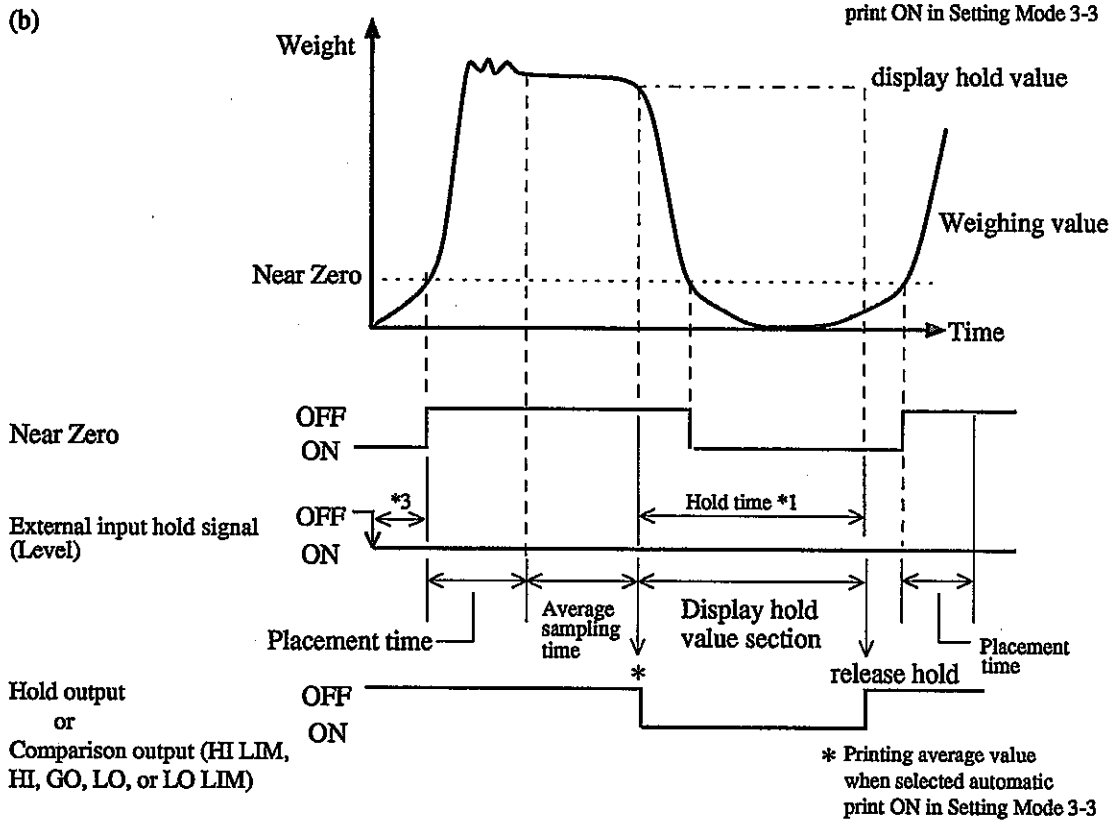
3) Hold average value

Detect the average value with specified section. The average one can be Net, Gross weight or quantity (pcs) in counting mode, which is decided in Setting Mode 2-1 Comparison and print data of Comparison Data Selection.

(a)

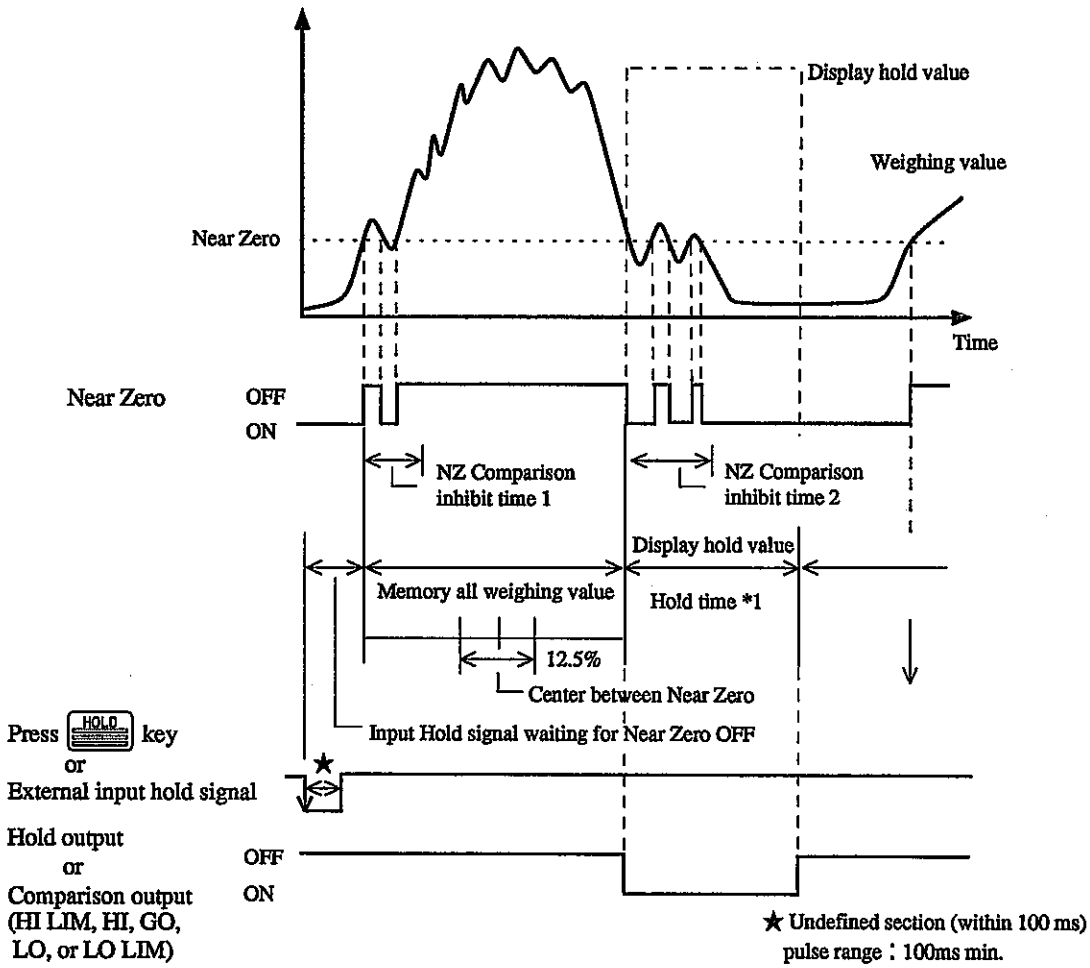


(b)



4) Hold checking value

Detect the average value within ±12.5% between the Center of specified section (near Zero OFF section). The checking value can be Net, Gross weight or quantity (pcs) in counting mode, which is decided in Setting Mode 2-1.



*1: Hold time can be selected from 0.0s to 9.9s. If Hold time selected is 0.0s, F770 displays previous hold value till Near Zero is OFF.

*2: When Near Zero is ON a Hold signal is not accepted.

*3: 1 second after input Hold signal through Control connector, Near Zero turns OFF while start.

In Hold average value and Hold checking value mode, the timing of output Comparison signals are the same as Hold signal.

NB

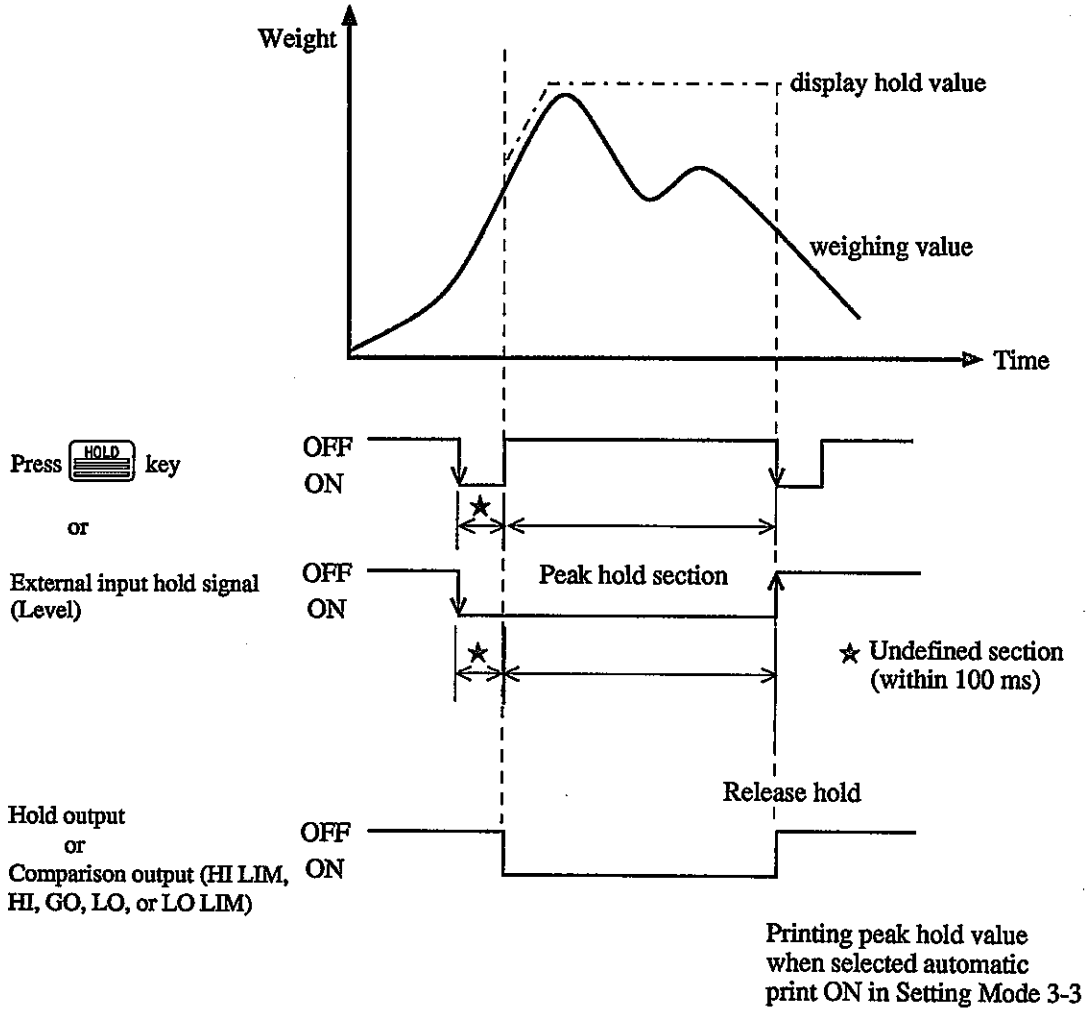
During Hold average value and Hold checking value mode, if the errors of LoAd, -LoAd, oFL1, oFL2, oFL3 or Z ALM happened display Err1 message. There are three ways to clear Err1:

(1) Release Hold;

(2) Redo Hold, if the Hold is done normally;

(3) Input sequence reset signal (When 29 pin selected. Sequence reset in Setting Mode 1-4 External Input Selection).

5) Peak Hold with specified section



NB

The target value in the Hold Mode can be Net, Gross, pcs or follow indicator which is selected in Setting Mode 2-1 Comparison Data Selection. In Peak Hold Mode, if the errors of LoAd, -LoAd, oFL1, oFL2, oFL3, oFL5 or Z ALM happened, display Err2 message. To clear Err2 by input signal to pin 30 (short pin 30 with COM) of Control Connector on the rear panel.

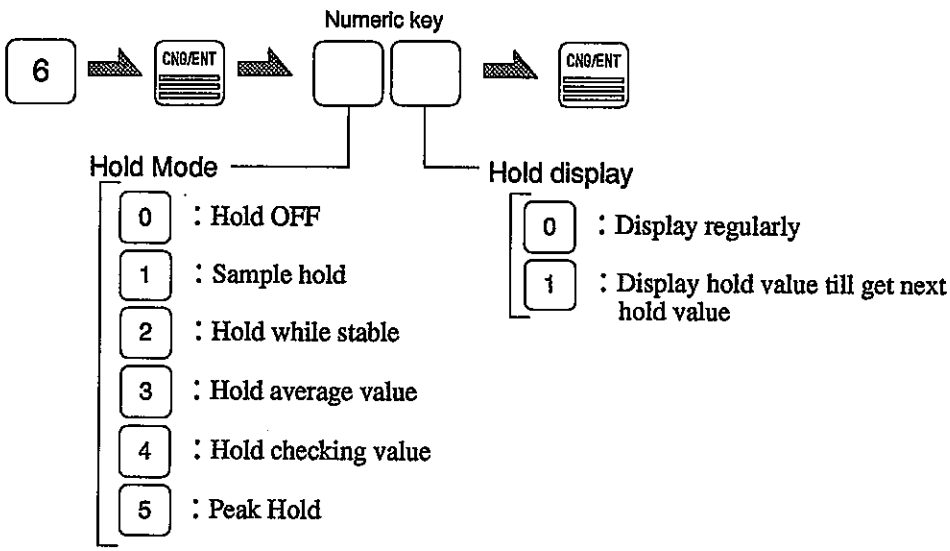
Hold Mode

This operation is for selecting Hold Mode and Hold display.

Setting Hold Mode

1) Choose Setting Mode 2

2) Select 6, Hold Mode

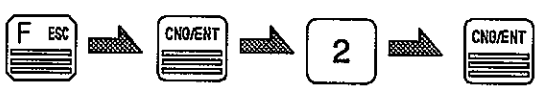


Sequence Time & Display Hold Time

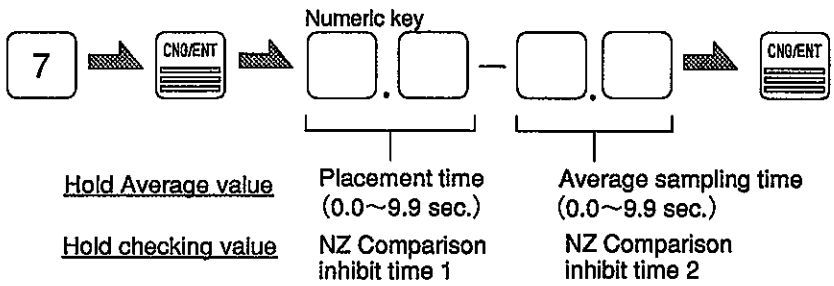
This operation is setting the Placement time and Average sampling time or NZ Comparison inhibit time in Sequence and Display Hold time.

Setting Sequence Time & Display Hold Time

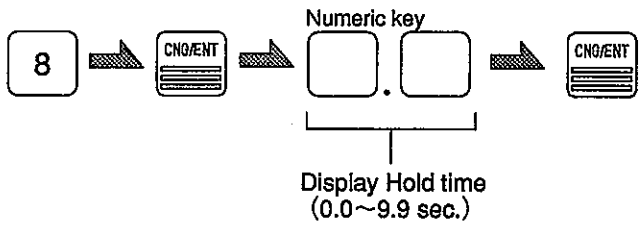
1) Choose Setting Mode 2

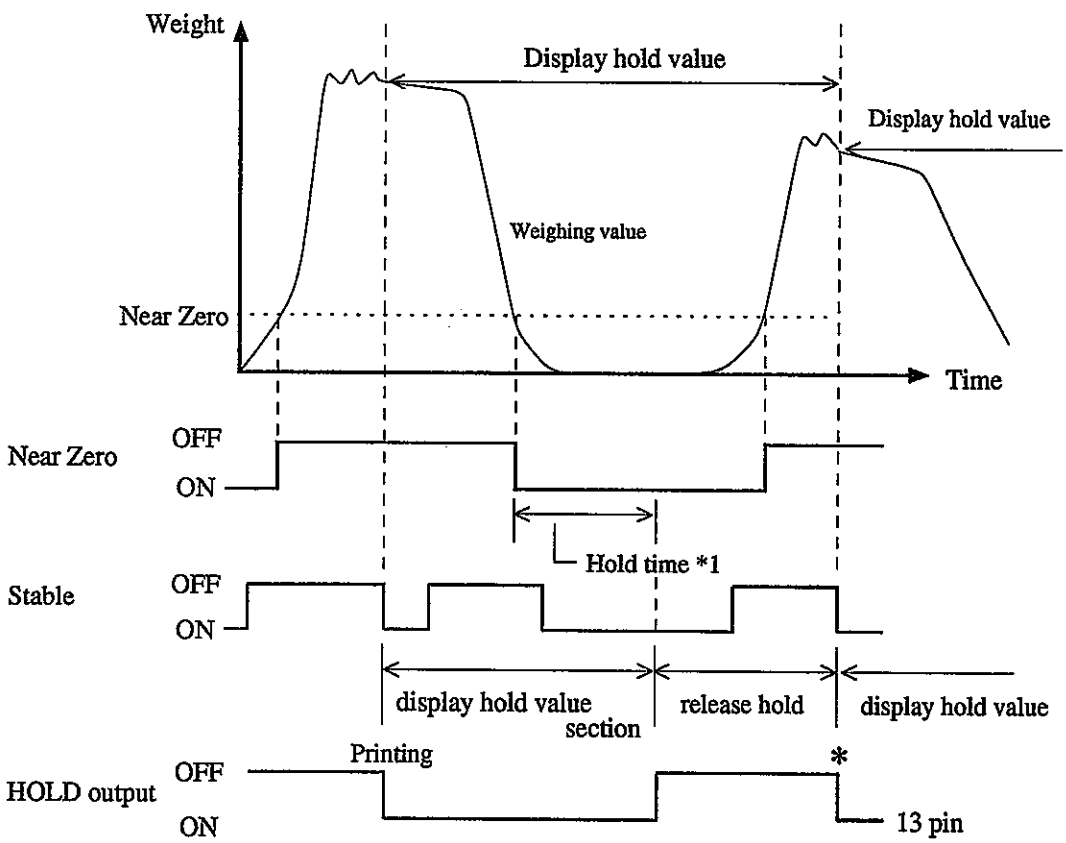


2) Select 7, Sequence Time



3) Select 8, Display Hold Time





* Printing hold value when selected automatic print ON in Setting Mode 3-3.

6.5 Table setting & Operation

F770 has 100 preset tables with table number, Unit weight, Preset Tare Weight, Code No., HI LIM, LO LIM. HI, GO, LO for recording weighing parameters.
Table can be changed by keypad, RS-232C or external input signal.

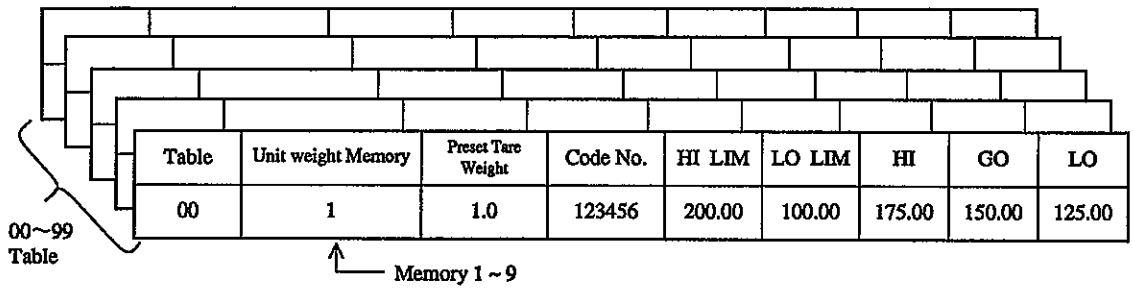


Table Items Selection

This operation select the Table item. If each of the Unit weight memory, Preset Tare Weight, Code Number or the Comparatives selects OFF, the Relative item will be canceled from the Table.

Setting Table Items Selection

1) Choose Setting Mode 5

2) Select 5, Table Item Selection 1

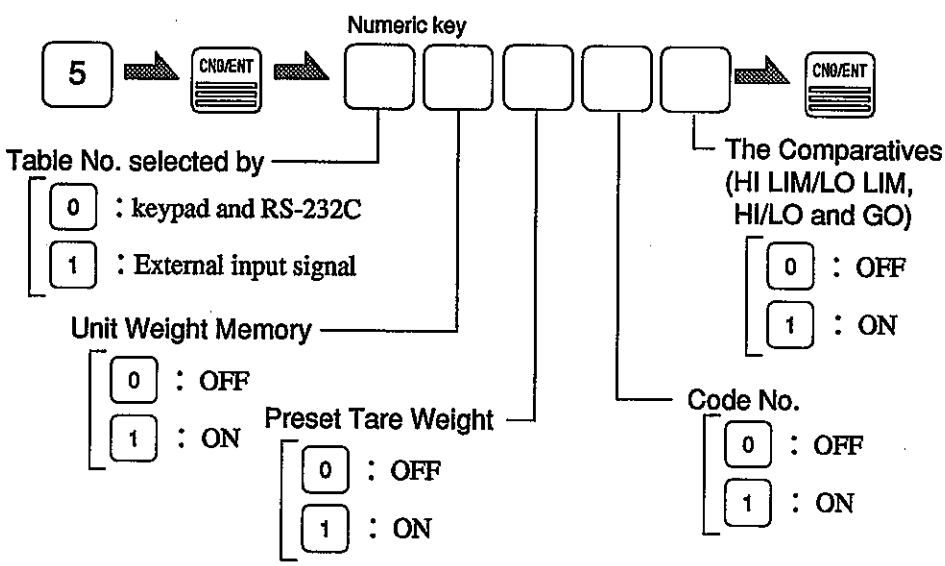
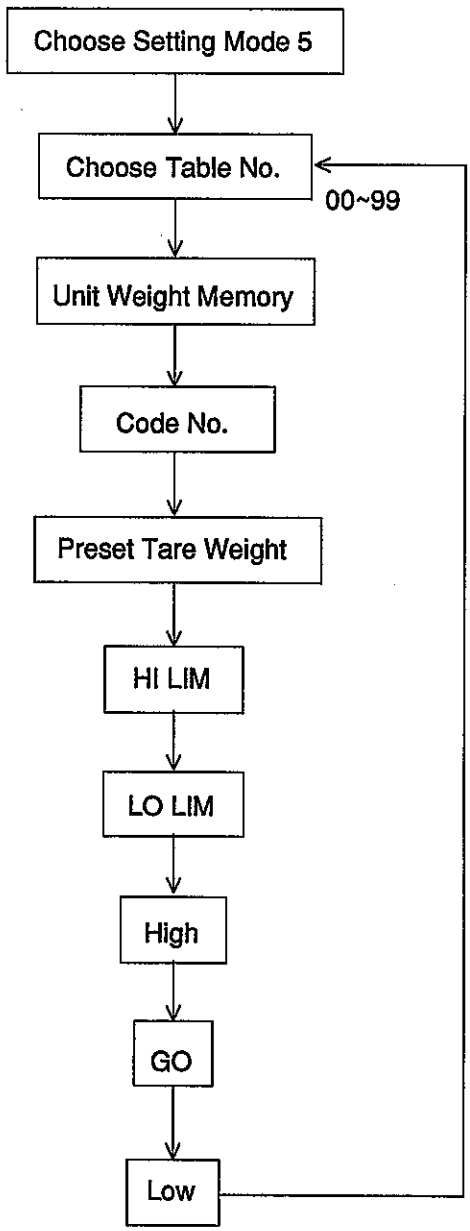


Table Setting Procedure

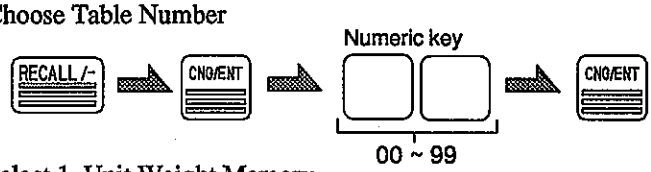
The following procedure is for all items selected ON in Setting Mode 5-5 Table items selection.



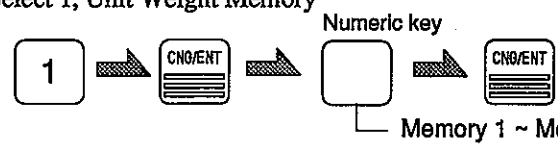
Setting Table

1) Choose Setting Mode 5

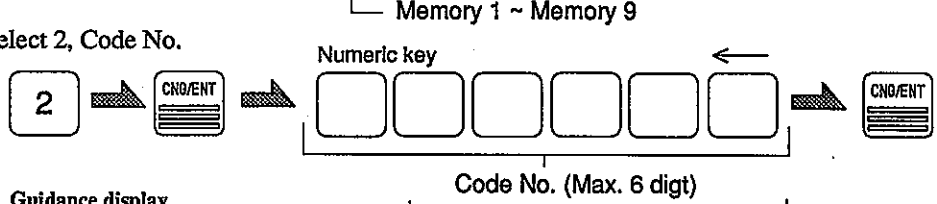
2) Choose Table Number



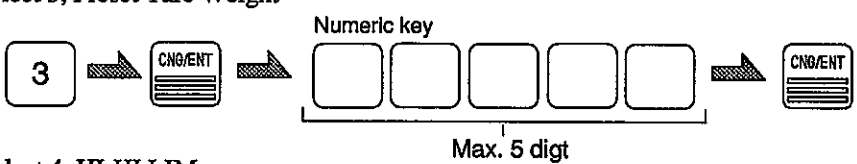
3) Select 1, Unit Weight Memory



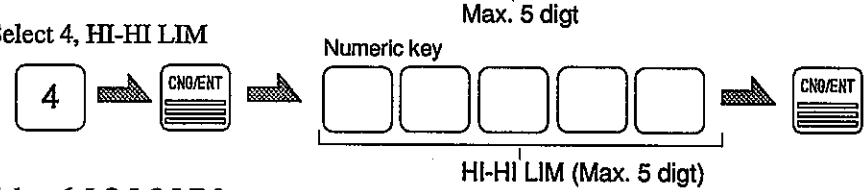
4) Select 2, Code No.



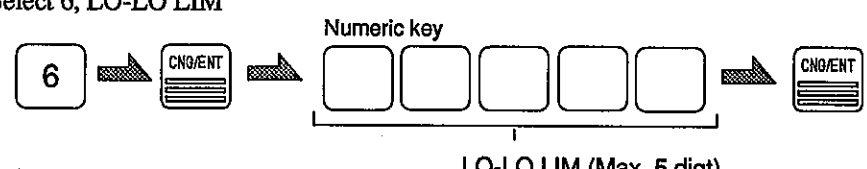
5) Select 3, Preset Tare Weight



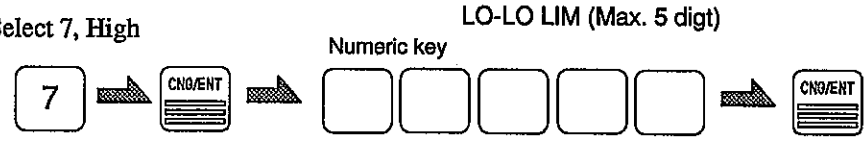
6) Select 4, HI-HI LIM



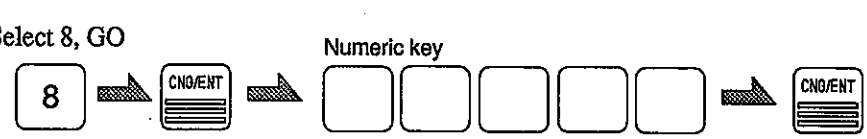
7) Select 6, LO-LO LIM



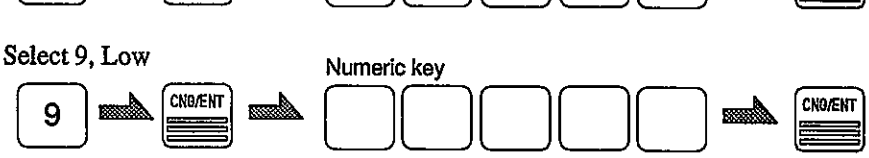
8) Select 7, High



9) Select 8, GO



10) Select 9, Low

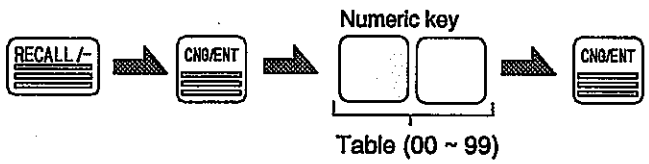


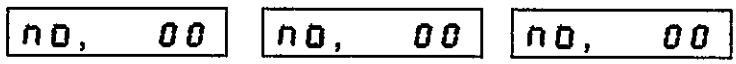
Recall Table

Recall table is used to change weighing parameters which are preset in Tables. To change weighing tables by keypad, RS-232C or external input signal on the rear panel.

Recall Table by keypad

Except Setting Mode 5,

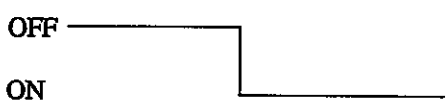




Recall Table by External Input Signal

Control Connect pin assingment

1	COM	19	COM	
6	Table 1	24	Table 2	tens
7	Table 4	25	Table 8	
8	Table 10	26	Table 20	units
9	Table 40	27	Table 80	



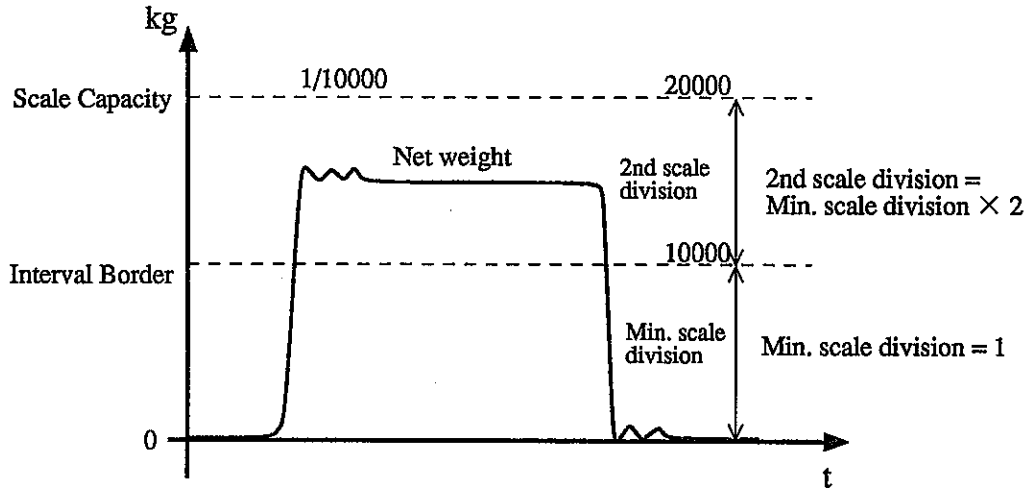
The specified Table is recalled when input signal to pin 6 ~ 9, 24 ~ 27 (short-circuited COM with pins)

Example: to recall Table number 97

8: Table 10	6: Table 1
27: Table 80	24: Table 2
90 +	7: Table 4
	7 = 97

6.6 Multi-Interval Function

This function divides the weighing range into two parts. Each range has its own scale division according to the chart below. The F770 changes the scale division automatically, whether increasing or decreasing load. Multi-interval function is effective in Net weight mode but does not work in Counting Mode.

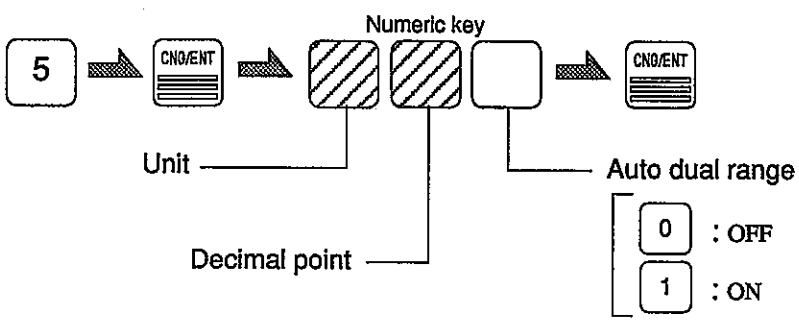


Min. scale division	1 ~ 100	2	20
Second scale division	Min. scale division × 2 automatically	5	50

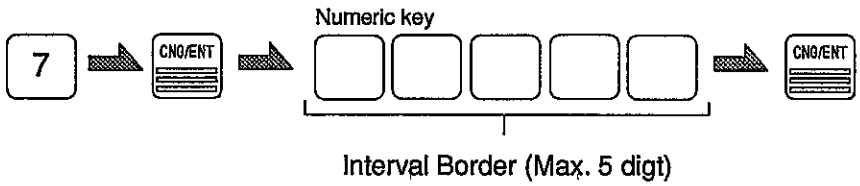
Setting Dual Range

1) Choose Setting Mode 8

2) Select 5, Unit/Decimal Point/Dual Range



3) Select 7, Interval Border



6.7 Printer Setting & Operation

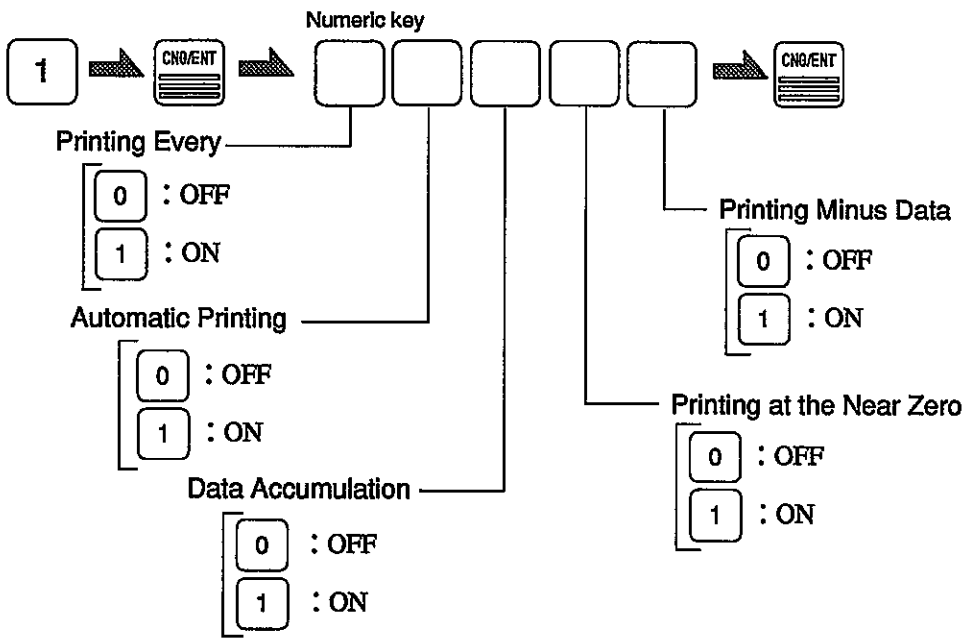
Printing Item Selection

This operation select printing items. Whether printing each time, automatic printing (Near Zero signal ON→OFF, printing while the weighing value gets stable); the printed data do accumulate; printing minus data and printing at the Near Zero.

Setting Printing Item Selection

1) Choose Setting Mode 3

2) Select 1, Printing Item Selection



NB

- If Automatic Printing selected OFF, print by pressing PRINT key, by external input signal to pin 23 of Control Connector or RS-232C print command.
- If Data accumulation selected OFF, the printed data is not added to Sub-Total and Grand Total.
- The Minus data is not accumulated.
- Hold Mode ignores the setting of Printing Minus Data and Printing at the Near Zero.

Printing Mode Selection

This operation select printing mode.

Setting Printing Mode

1) Choose Setting Mode 3

F ESC → CN0/ENT → 3 → CN0/ENT

2) Select 2, Printing Mode Selection

Numeric key

2 → CN0/ENT → [ ] [ ] [ ] [ ] [ ] → CN0/ENT

Double width size Printing
- 0 : OFF
- 1 : ON

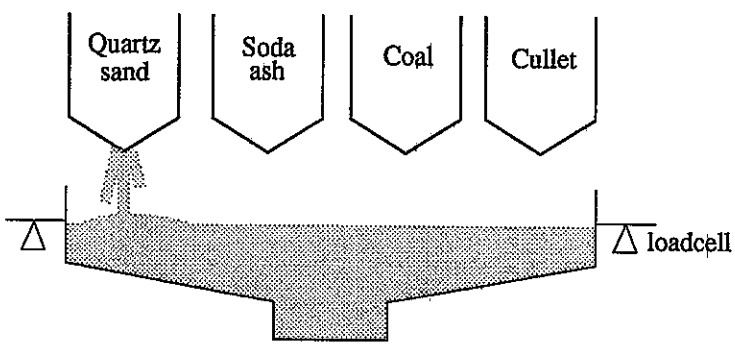
Feed line after each print
0 ~ 9

Feed lines after GT/ST print
0 ~ 9

Batch (BT) Mode
- 0 : OFF
- 1 : ON

Sub total
- 0 : Section sub total
- 1 : Middle sub total

If Batch (BT) Mode selected ON, Press ST key prints Batch total.
Batch Total prints each weight of multi-ingredient and batch weight.
For example the multi-ingredient batching of glasses, need to weigh each material: Quartz sand, Soda ash, Coal, Cullet and others.



Batch total Printing Sample:

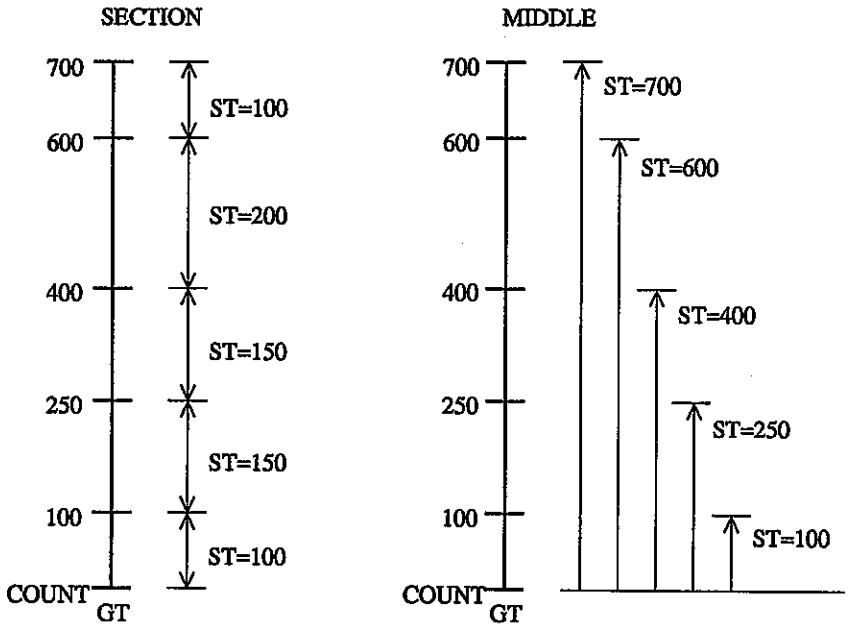
```
100-01    G    91.17 kg HO
200-01    G    50.81 kg
300-01    G    49.82 kg
400-01    G    89.92 kg HO

---    BATCH  TOTAL    ---

DATE     1996/09/17/11:41
COUNT                 1
BT               281.72 kg
------------------------

100-01    G    90.25 kg HO
200-01    G    50.45 kg
300-01    G    50.70 kg
400-01    G    91.68 kg HO

---    BATCH  TOTAL    ---

DATE     1996/09/17/11:42
COUNT                 2
BT               283.08 kg
------------------------

100-01    G    91.34 kg HO
200-01    G    49.61 kg
300-01    G    50.45 kg
400-01    G    90.00 kg HO

---    BATCH  TOTAL    ---

DATE     1996/09/17/11:43
COUNT                 3
BT               281.40 kg
------------------------

100-01    G    89.79 kg HO
200-01    G    49.00 kg
300-01    G    49.95 kg
400-01    G    90.43 kg HO

---    BATCH  TOTAL    ---

DATE     1996/09/17/11:44
COUNT                 4
BT               279.17 kg
------------------------
```

```
---    GRAND  TOTAL    ---

DATE     1996/09/17/11:44

CODE              100-01
COUNT                  4
GT               362.55 kg
------------------------
CODE              200-01
COUNT                  4
GT               199.87 kg
------------------------
CODE              300-01
COUNT                  4
GT               200.92 kg
------------------------
CODE              400-01
COUNT                  4
GT               362.03 kg
------------------------

---    GRAND  TOTAL    ---
COUNT                 16
GT              1125.37 kg
------------------------
```

100-01 : Quarts sand
200-01 : Soda ash
300-01 : Coal
400-01 : Cullet

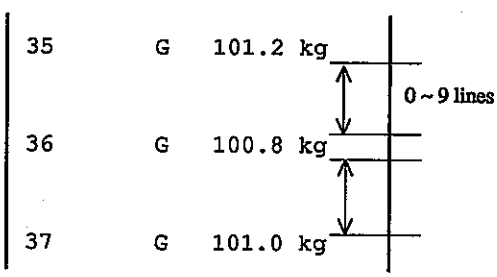
- There are two kinds of Sub total in F770, Section Sub total and Middle Sub total.

  Section Sub total: Prints Section Sub total from previous Sub total
  Middle Sub total: Prints Sub total from previous Grand total.

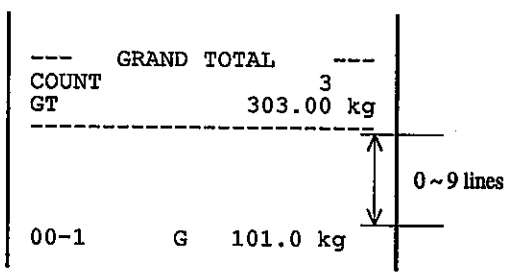


- Double width size printing, referring page 100 Printing sample.

- Feed line after each printing



- Feed line after GT/ST printing



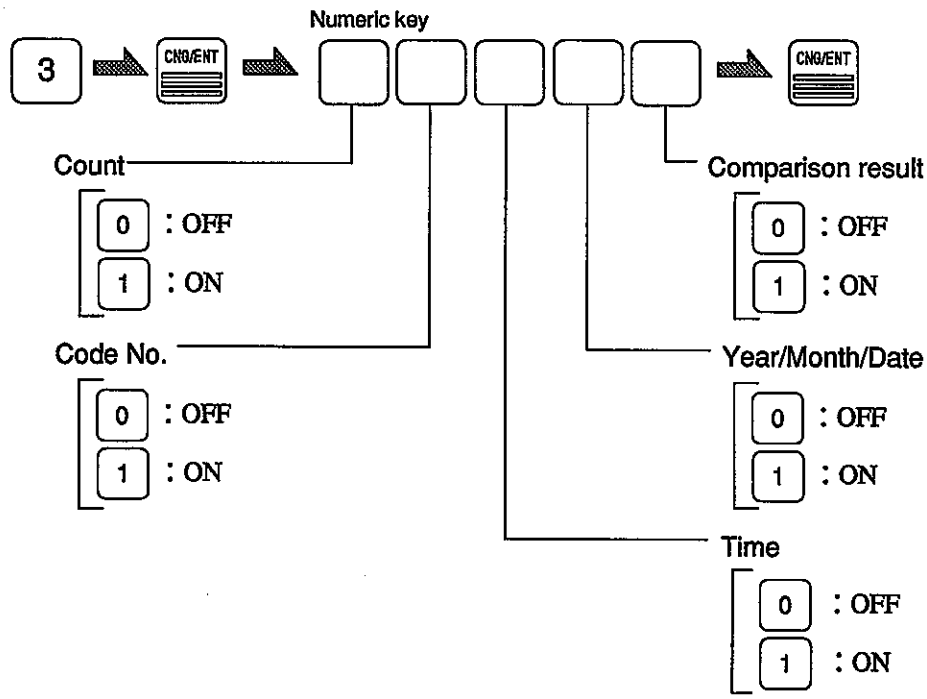
Printing Format for Printing Every

This operation sets the format for printing every in Setting Mode 3-1.
When ON is selected in which item, prints relative information.

Setting Printing Format for Printing Every

1) Choose Setting Mode 3

2) Select 3, Printing Format for Printing Every



NB

- The Max. Count number is 9999, more than 9999 prints (GT) and clear the accumulated value and counts.
- After printing GT, the Count goes to 0.

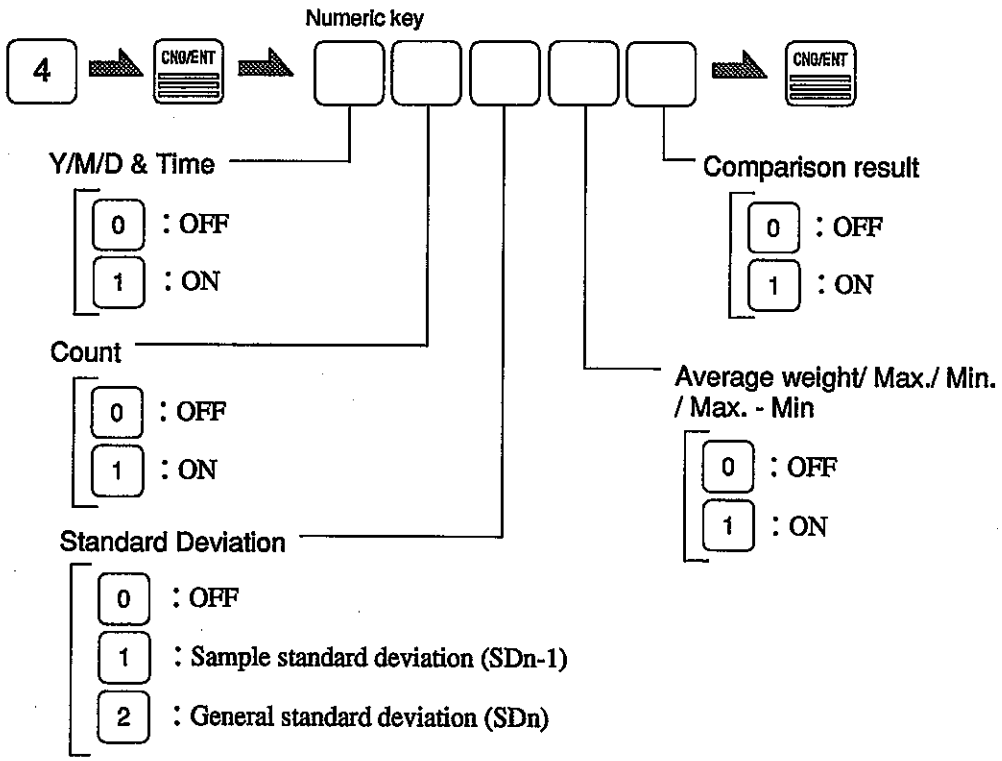
Printing Format for Sub/Grand Total

This operation sets the format of printing Sub total and Grand total.
When ON is selected in each item, then relative information is printed.

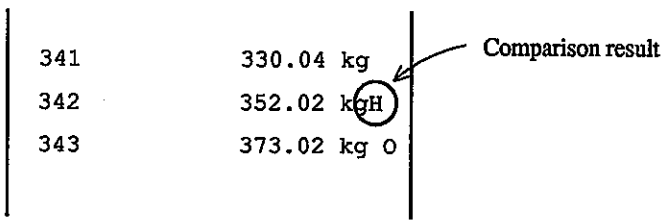
Setting Printing Format for Sub/Grand Total

1) Choose Setting Mode 3

2) Select 4, Printing Format for Sub/Grand Total

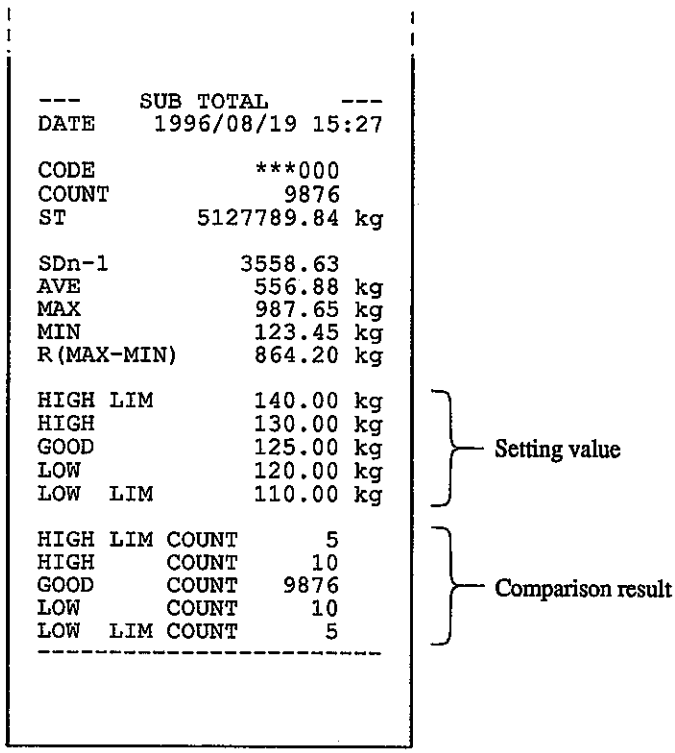


When Comparison result selects "ON", each printing data goes with the comparison result.



Printing Mark	Comparison Condition
H	HI
L	LO
K	HI & GO & LO
J	HI & GO
N	HI & LO
I	GO & LO
O	HI LIM
U	LO LIM
P	HI LIM & LO LIM
__ (Space)	GO or Comparison result "OFF"

Printing Sample for Comparison result "ON"



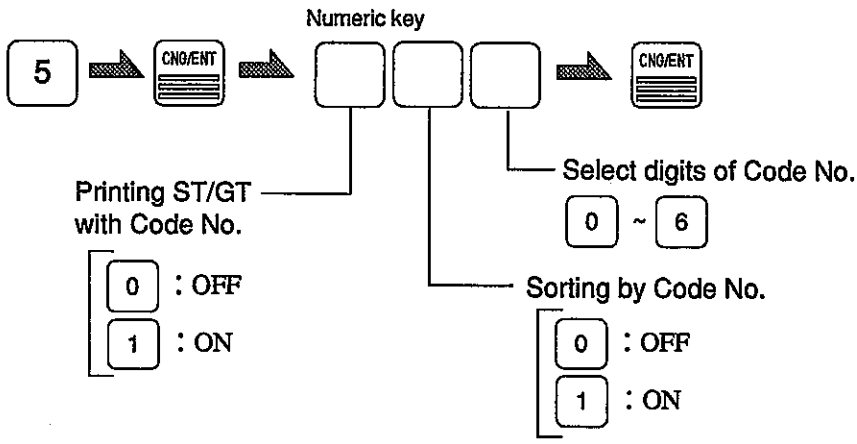
Printing by Code No.

This operation sets the format regarding Code No., refer to page 102 for sorting data by Code No.

Setting Printing by Code No.

1) Choose Setting Mode 3

2) Select 5, Printing by Code No.



Function Key 2 Disablement

This operation is used to inhibit the PRINT GT ST DEL FEED keys.

If Invalid is selected, then their key function is disabled.

Setting Function key 2 Disablement

1) Choose Setting Mode 3

F ESC → CNG/ENT → 3 → CNG/ENT

2) Select 6, Function key 2 Disablement

6 → CNG/ENT → [Numeric key] [Numeric key] [Numeric key] [Numeric key] [Numeric key] → CNG/ENT

PRINT key
- 0 : Invalid
- 1 : Valid

GT key
- 0 : Invalid
- 1 : Valid

ST key
- 0 : Invalid
- 1 : Valid

DEL key
- 0 : Invalid
- 1 : Valid

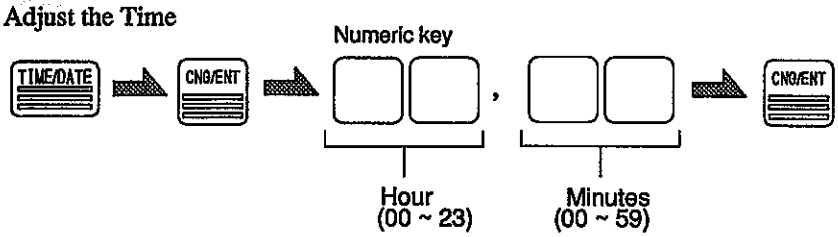
FEED key
- 0 : Invalid
- 1 : Valid

Time / Date

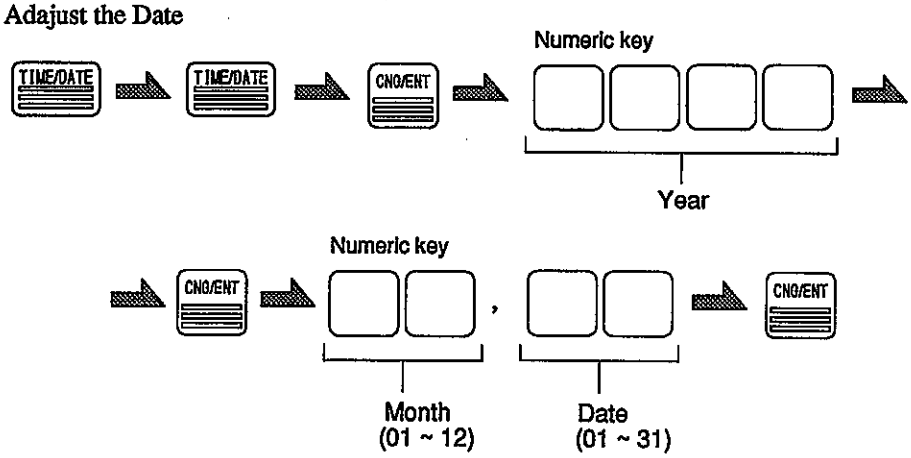
This is to adjust the internal calendar and clock of F770.

Adjustment of Time/ Date

1) Adjust the Time



2) Adajust the Date



Printing Samples

```
<< Sample Every Print >>
-------------------------
Every Printing format 01
<<  Mode 3-3 = 00000  >>
         G  12345  kg

-------------------------
Every Printing format 02
<<  Mode 3-3 = 10000  >>
9876     G  12345  kg

-------------------------
Every Printing format 03
<<  Mode 3-3 = 01000  >>
770-00   G  12345  kg

-------------------------
Every Printing format 04
<<  Mode 3-3 = 11000  >>
770-00
9876     G  12345  kg

-------------------------
Every Printing format 05
<<  Mode 3-3 = 00100  >>
12:34    G  12345  kg

-------------------------
Every Printing format 06
<<  Mode 3-3 = 10100  >>
12:34
9876     G  12345  kg

-------------------------
Every Printing format 07
<<  Mode 3-3 = 01100  >>
12:34
770-00   G  12345  kg

-------------------------
Every Printing format 08
<<  Mode 3-3 = 11100  >>
770-00             12:34
9876     G  12345  kg

-------------------------
Every Printing format 09
<<  Mode 3-3 = 00010  >>
1996/07/07
         G  12345  kg

-------------------------
```

Setting Mode 3-3
Printing Format for Printing Every

- *All settings in 3-3 are : OFF*
- *Count : ON*
- *Code No. : ON*
- *Count : ON*
  Code No. : ON
- *Time : ON*
- *Count : ON*
  Time : ON
- *Code No. : ON*
  Time : ON
- *Count : ON*
  Code No. : ON
  Time : ON
- *Y/M/D : ON*

```
Every Printing format 10
<<  Mode 3-3 = 10010  >>
1996/07/07
9876     G  12345  kg

-------------------------
Every Printing format 11
<<  Mode 3-3 = 01010  >>
1996/07/07
770-00   G  12345  kg

-------------------------
Every Printing format 12
<<  Mode 3-3 = 11010  >>
770-00  1996/07/07
9876     G  12345  kg

-------------------------
Every Printing format 13
<<  Mode 3-3 = 01110  >>
1996/07/07 12:34
770-00   G  12345  kg

-------------------------
Every Printing format 14
<<  Mode 3-3 = 10110  >>
1996/07/07 12:34
9876     G  12345  kg

-------------------------
Every Printing format 15
<<  Mode 3-3 = 01110  >>
1996/07/07 12:34
770-00   G  12345  kg

-------------------------
Every Printing format 16
<<  Mode 3-3 = 11110  >>
770-00  1996/07/07 12:34
9876     G  12345  kg

-------------------------
Every Printing format 17
<<  Mode 3-3 = 11111  >>
770-00  1996/07/07/12:34
9876     G  12345  kg HO

-------------------------
Every Printing format 18
<<  Mode 3-3 = 11111  >>
770-00  1996/07/07 12:34
9876
G  12345  kg HO
```

- *Count : ON*
  Y/M/D : ON
- *Code No. : ON*
  Y/M/D : ON
- *Count : ON*
  Code No : ON
  Y/M/D : ON
- *Code No. : ON*
  Time : ON
  Y/M/D : ON
- *Count : ON*
  Time : ON
  Y/M/D : ON
- *Code No. : ON*
  Time : ON
  Y/M/D : ON
- *Count : ON*
  Code No. : ON
  Time : ON
  Y/M/D : ON
- *All settings in 3-3 are ON*

Setting Mode 3-2
Double width size printing ON.

```
<< Sample Total Print >>
-------------------------
Total Printing format  1
---     SUB TOTAL      ---
ST          5127789.84 kg
-------------------------
Total Printing format  2
---     SUB TOTAL      ---
CODE             ***000
ST          5127789.84 kg
-------------------------
Total Printing format  3
---     SUB TOTAL      ---
DATE    1996/08/19 15:26
ST          5127789.84 kg
-------------------------
Total Printing format  4
---     SUB TOTAL      ---
COUNT               9876
ST          5127789.84 kg
-------------------------
Total Printing format  5
---     SUB TOTAL      ---
ST          5127789.84 kg

SDn-1          3558.63
-------------------------
Total Printing format  6
---     SUB TOTAL      ---
ST          5127789.84 kg

AVE             556.88 kg
MAX             987.65 kg
MIN             123.45 kg
R(MAX-MIN)      864.20 kg
-------------------------
```

All settings in 3-4 are OFF
Printing ST/GT with Code No. : OFF (Seeting Mode 3-5)

All settings in 3-4 are OFF
Printing ST/GT with Code No. : ON
Select digit of Code No. : 3
(Setting Mode 3-5)

Y/M/D & Time : ON

Count : ON

Sample Standard Deviation (SDn-1) : ON

Average weight/ Max./ Min./ Max.-Min. : ON

```
Total Printing format  7
---     SUB TOTAL      ---
DATE    1996/08/19 15:27

CODE             ***000
COUNT              9876
ST          5127789.84 kg

SDn-1           3558.63
AVE              556.88 kg
MAX              987.65 kg
MIN              123.45 kg
R(MAX-MIN)       864.20 kg

HIGH LIM         140.00 kg
HIGH             130.00 kg
GOOD             125.00 kg
LOW              120.00 kg
LOW  LIM         110.00 kg

HIGH LIM COUNT       5
HIGH     COUNT      10
GOOD     COUNT    9876
LOW      COUNT      10
LOW  LIM COUNT       5
-------------------------
```

Y/M/D & Time : ON
Count : ON
Standard Deviation : Sample Standard Deviation
Comparison Result : ON
Average weight/ Max./ Min./ Max.-Min. : ON (Setting Mode 3-4)
Printing ST/GT with Code No. : ON
Select digit of Code No. : 3 (Setting Mode 3-5)

```
9876     G  200.01 kg *
9877     G  200.01 kg -
9878     G  200.01 kg R
```

Data Accumulation : OFF

Press DEL *key for 2 second*

Alarm Print

NB

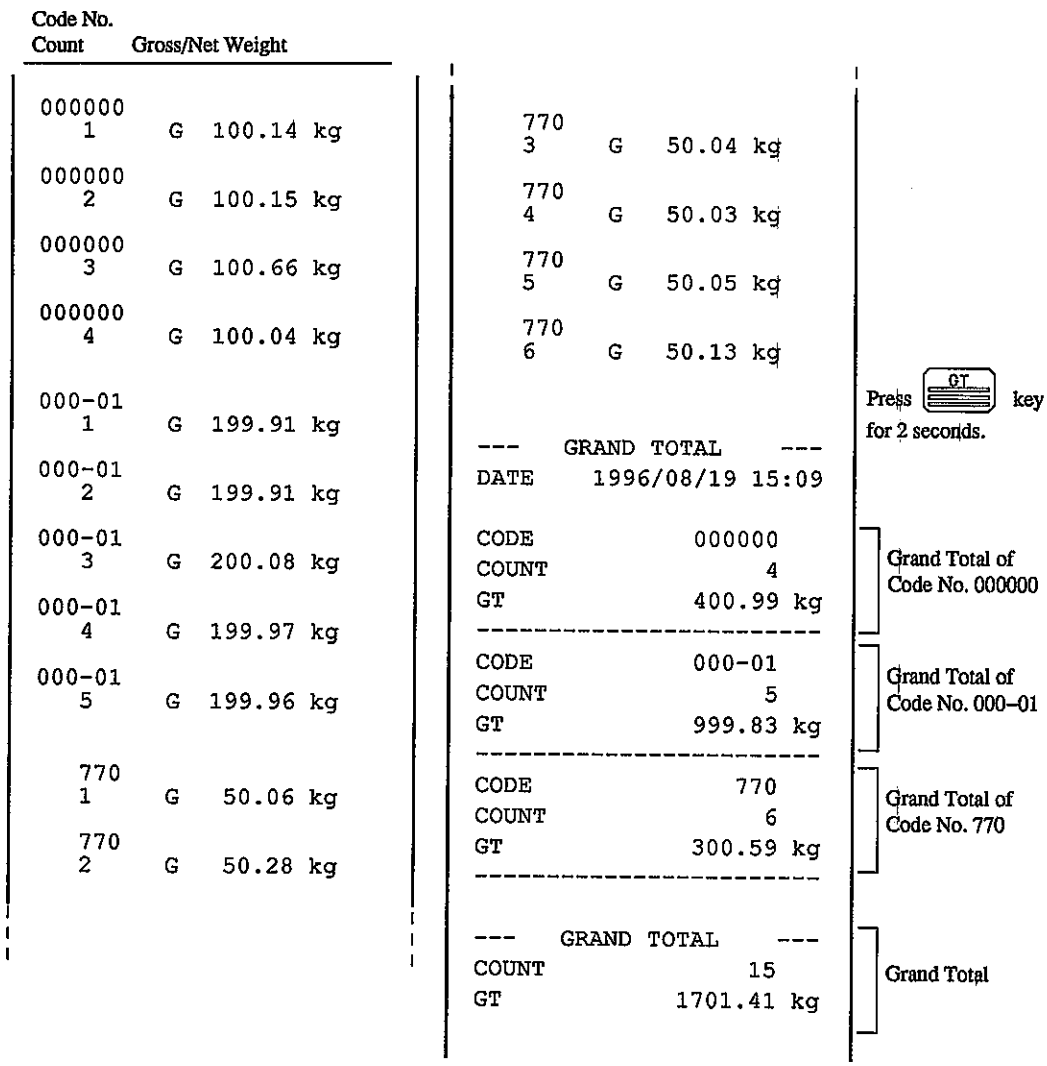
F770 is not printed on the following conditions.

- Wiring error — **Adc,Err**
- Loadcell exceeds the span adjustment range. — **LoAd**
- Overflow — **oFL1, oFL2, oFL3, oFL4**
- Zero drift exceeds the set Digital Zero Regulation entered in Digital Zero or Zero Tracking. — **ZALM**

6.8 Setting & Operation Regarding Sort of Code No.

F770 can sort your data by up to 100 different categories.

Printing Sample:



```
Code No.
Count        Gross/Net Weight

000000
   1      G   100.14 kg
000000
   2      G   100.15 kg
000000
   3      G   100.66 kg
000000
   4      G   100.04 kg

000-01
   1      G   199.91 kg
000-01
   2      G   199.91 kg
000-01
   3      G   200.08 kg
000-01
   4      G   199.97 kg
000-01
   5      G   199.96 kg

   770
   1      G    50.06 kg
   770
   2      G    50.28 kg
   770
   3      G    50.04 kg
   770
   4      G    50.03 kg
   770
   5      G    50.05 kg
   770
   6      G    50.13 kg

--- GRAND TOTAL ---
DATE    1996/08/19 15:09

CODE          000000
COUNT              4
GT            400.99 kg
----------------------
CODE          000-01
COUNT              5
GT            999.83 kg
----------------------
CODE            770
COUNT              6
GT            300.59 kg
----------------------

--- GRAND TOTAL ---
COUNT             15
GT          1701.41 kg
```

Press GT key for 2 seconds.

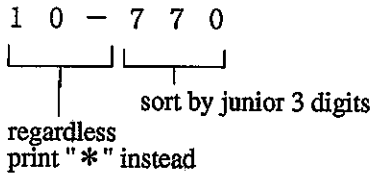
Grand Total of Code No. 000000

Grand Total of Code No. 000–01

Grand Total of Code No. 770

Grand Total

The digits of sorting Code No. is selected by Setting Mode 3-5. If 3 digits is selected, the data sort by junior 3 digits.



Code No.
Count Gross/Net Weight

```
10-770
   1      G  100.14 kg

10-770
   2      G  100.19 kg

10-000
   1      G  200.04 kg

10-000
   2      G  200.03 kg

90-770
   3      G  100.09 kg

90-770
   4      G  100.17 kg

90-000
   3      G  200.02 kg

90-000
   4      G  200.01 kg
```

Press GT key for 2 seconds

```
---    GRAND TOTAL     ---
DATE     1996/08/19 15:18

CODE              ***770
COUNT                  4
GT                400.59 kg
------------------------
CODE              ***000
COUNT                  4
GT                800.10 kg
------------------------

---    GRAND TOTAL     ---
COUNT                  8
GT              1200.69 kg
```

Grand Total of Code No. ***770 (10-770, 90-770)

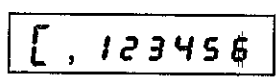
Grand Total of Code No. ***000 (10-000, 90-000)

Grand Total

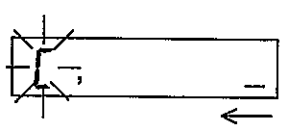
The procedure of input/change Code No.

Guidance display

1) Press CODE/SP key.



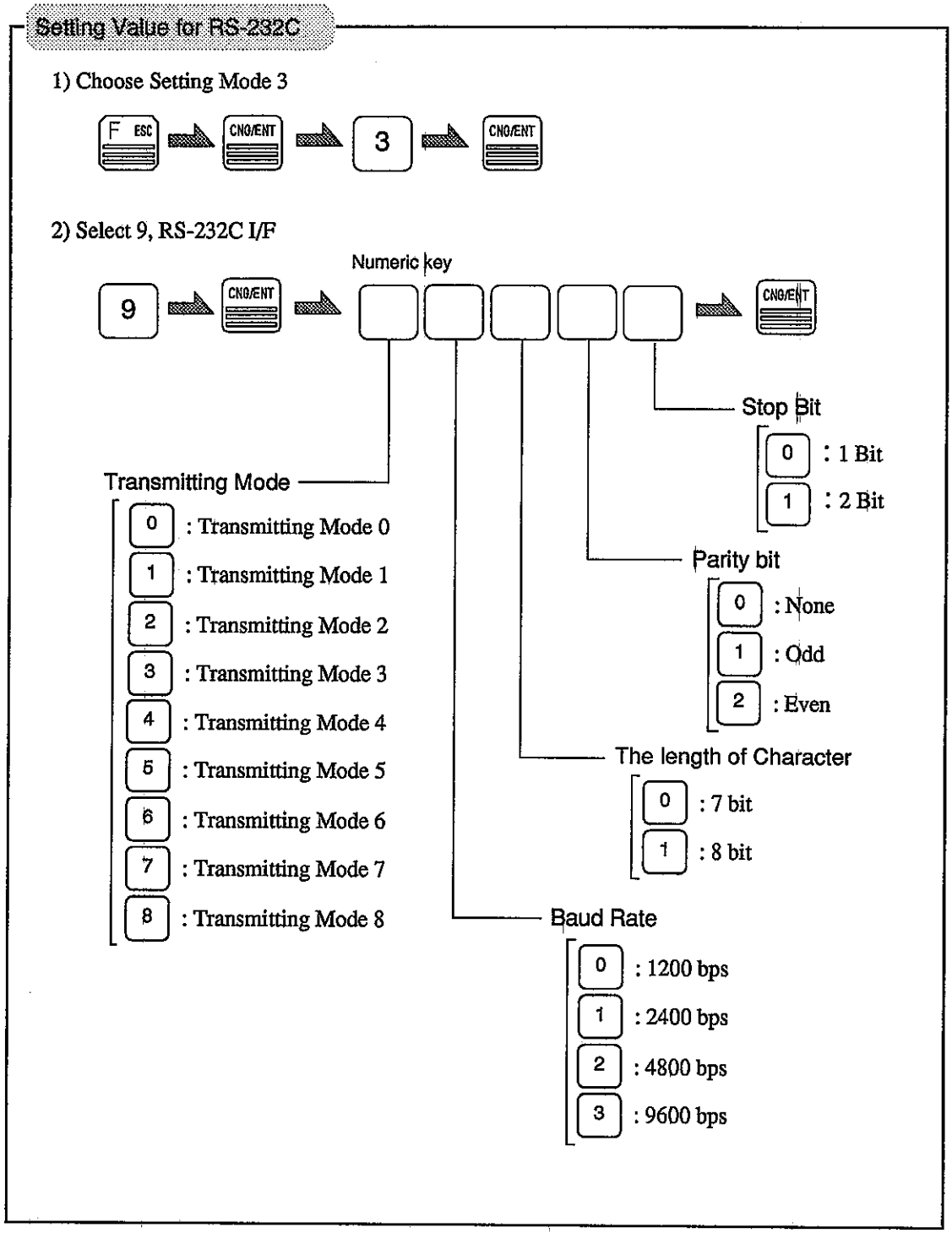
2) Press CNO/ENT key.



3) Input Code No. by Numeric keys 0 ~ 9, Space CODE/SP and hyphen RECALL/-.

4) Press CNO/ENT key to enter the setting.

6.9 Setting Value for RS-232C

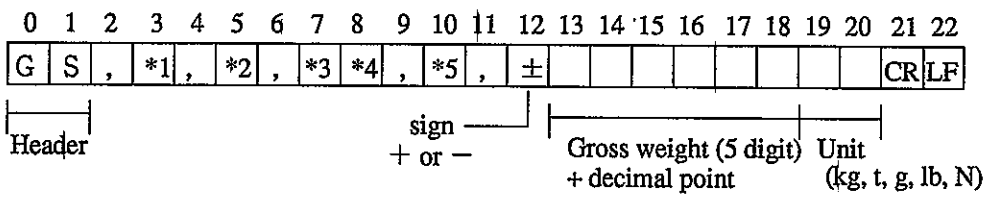


Each selection must synchronize with the connected computer.

Transmitting Mode 0	Correspond to Command
Transmitting Mode 1	Transmission Format 1 Transmitting Gross weight continuously
Transmitting Mode 2	Transmission Format 2 Transmitting Net weight continuously
Transmitting Mode 3	Transmission Format 3 Transmitting quantity (pcs) continuously
Transmitting Mode 4	Transmission Format 4 Transmitting Gross, Net and quantity (pcs) Continuously
Transmitting Mode 5	Transmission Format 1 Printing out Gross weight while transmitting Gross weight
Transmitting Mode 6	Transmission Format 2 Printing out Net weight while transmitting Net weight
Transmitting Mode 7	Transmission Format 3 Printing out quantity (pcs) while Transmitting pcs
Transmitting Mode 8	Transmission Format 4 Printing out Gross, Net and quantity (pcs) while transmitting them

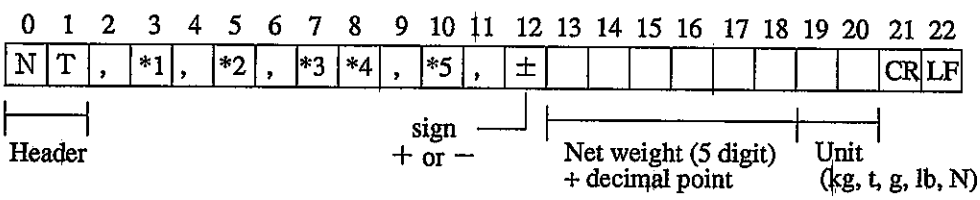
· Transmission Format 1

Transmission format of Gross weight



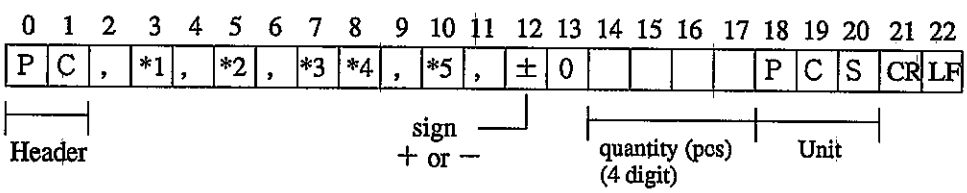
· Transmission Format 2

Transmission Format of Net weight



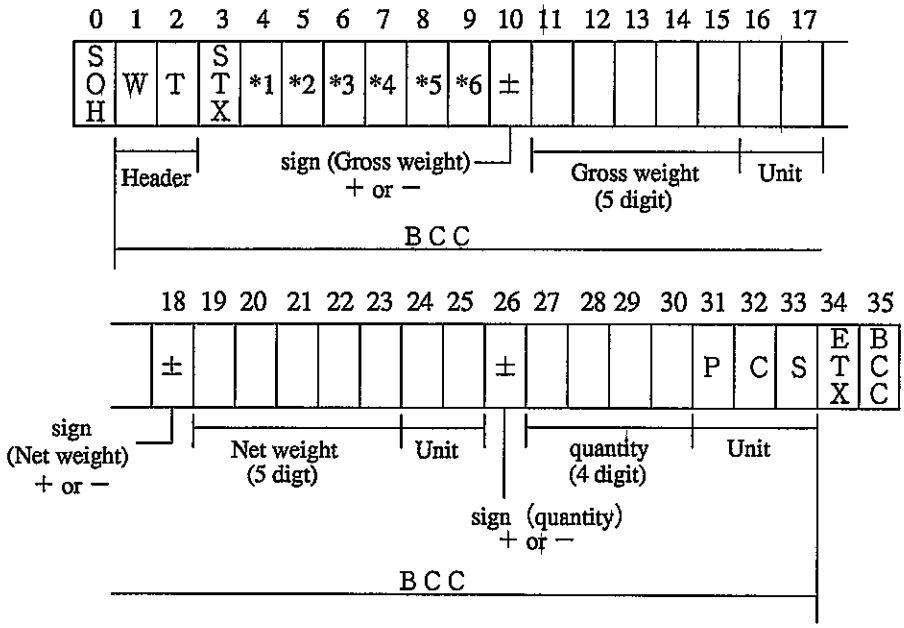
· Transmission Format 3

Transmission Format of quantity (pcs)



- **Transmission Format 4**

Transmission format of Gross, Net and quantity (pcs)



*1
- O ··· Overscale (LoAd, oFL)
- S ··· Stable
- M ··· No Stable
- H ··· Hold

*1−Priority
H > O > (S or M)

*2
- A ··· Zero Tracking OFF
- T ··· Zero Tracking ON
- Z ··· Zero Alarm (Z ALM)

*2−Priority
Z > (T or A)

*3
- L ··· LO output ON
- G ··· GO output ON
- H ··· HI output ON
- I ··· LO and GO output ON
- J ··· HI and GO output ON
- N ··· HI and LO output ON
- K ··· HI and LO and GO ON
- M ··· HI and LO and GO OFF
- F ··· Comparison OFF

*4
- U ··· LO LIM output ON
- O ··· HI LIM output ON
- P ··· LO LIM and HI LIM ON
- M ··· LO LIM and HI LIM OFF
- F ··· Comparison OFF

*5
- N ··· Near Zero OFF
- Z ··· Near Zero ON

*6 Decimal Point
- 3 ··· 0.000
- 2 ··· 0.00
- 1 ··· 0.0
- 0 ··· 0.

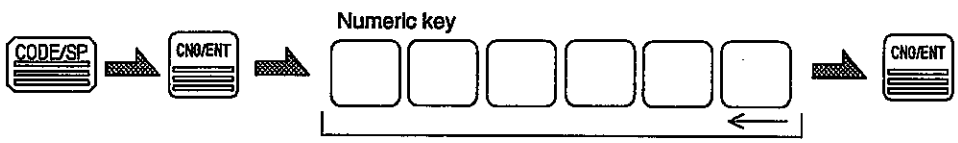
6.10 Statistical Function (According to each Code No.)

F770 can sort and make statistics of your data by 100 different Code No.. The statistical data are Max. weight, Min. weight, Max. - Min., Average weight, General Standard Deviation, Sample Standard Deviation and Count of Data. The following operation can be display by statistical data for selected Code No., but after Grand total/ Sub total printing the data will be cleared automatically and cannot be display.

Display Statistical Data

1) Choose Setting Mode 6

2) Press CODE/SP key, input Code No.



3) Press 1 key, display Max. Weight;

Press 2 key, display Min. Weight;

Press 3 key, display Max. - Min.;

Press 4 key, display Average Weight;

Press 5 key, display General Standard Deviation;

Press 6 key, dispaly Sample Standard Deviation;

press 7 key, display Count of Data.

4) Press F ESC to escape from current display.

6.11 Function Key 1 Disablement & External Input Signal Selection

Function key 1 Disablement

This operation is used to inhibit the TARE, 1 T.RST, 0 ZERO, GROSS/NET/PCS, HOLD keys.

If Invalid is selected, then their key function is disabled.

Setting Function key 1 Disablement

1) Choose Setting Mode 1

F ESC → CNG/ENT → 1 → CNG/ENT

2) Select 3, Function key 1 disablement

Numeric key

3 → CNG/ENT → [ ] [ ] [ ] [ ] [ ] → CNG/ENT

TARE key
- 0 : Invalid
- 1 : Valid

1 T.RST key
- 0 : Invalid
- 1 : Valid

0 ZERO key
- 0 : Invalid
- 1 : Valid

GROSS/NET/PCS key
- 0 : Invalid
- 1 : Valid

HOLD key
- 0 : Invalid
- 1 : Valid

kg/lb Setting Function key 1 Valid/Invalid

kg/lb Valid/Invalid Selection

This operation is used to inhibit the kg/lb key.
Select Invalid when auto conversion function (kg<-> lb) is not used.

kg/lb Key Valid/Invalid Selection

1) Choose Setting Mode 9

F ESC → CNG/ENT → 9 → CNG/ENT

2) Select 7, kg/lb key valid/Invalid

7 → CNG/ENT → [ ] → CNG/ENT

[ ] → kg/lb key

- 0 : Invalid
- 1 : Valid

External Input Signal Selection

This operation is to select the input signal of pin 2 and pin 29.
The open and close (short 2 pin with COM) input to pin 2 can change display between Gross and Net weight, Net weight and pcs in Counting Mode or pcs and Gross weight . The edge input to pin 29 can be Tare Reset , Zero Reset or Sequence Reset.

External Input Selection

1) Choose Setting Mode 1

F ESC → CNG/ENT → 1 → CNG/ENT

2) Select 1, External Input Selection

1 → CNG/ENT → [ ] [ ] (Numeric key) → CNG/ENT

Control Signal Input/Output Connector 2 pin (open/close)

- 0 : Gross/Net weight
- 1 : Net/pcs
- 2 : pcs/Gross

Control Signal Input/Output Connector 29 pin (select)

- 0 : OFF
- 1 : Tare Reset
- 2 : Zero Reset
- 3 : Sequence Reset

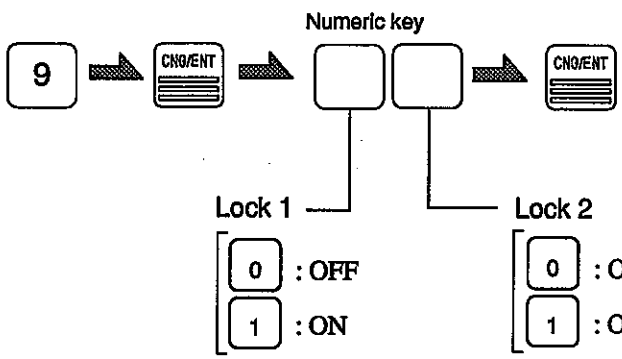
6.12 Lock Setting

Calibration Lock function, F770 features a software Lock disabling changes of setting values. Refer to page 142 The list of Initial Setting Value for details on the Setting values covered by Lock 1 and Lock 2. These Locks are useful tools for your applications.

Setting Value Lock

1) Choose Setting Mode 1

2) Select 9, Setting Value Lock



7 Control Input/Output Signal

The Input/Output circuits are opto-isolated from the internal circuitry.

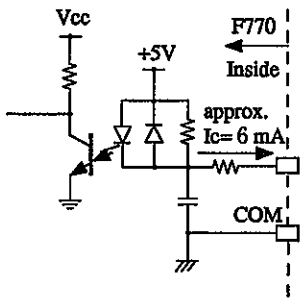
7.1 Control I/O Connector-Pin Assignment

DDK 57-30360 plug is included

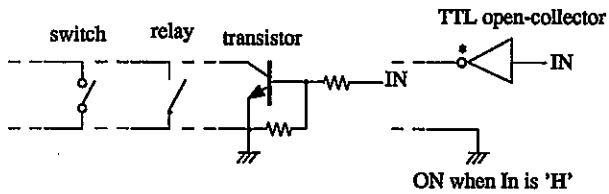
1	*	COM	19	*	COM
2	in	Gross/Net (or Net/Pcs)	20	in	Tare ON
3	in	DZ ON	21	in	Feed
4	in	ST	22	in	GT
5	in	BT	23	in	Print Command
6	in	Table 1	24	in	Table 2
7	in	Table 4	25	in	Table 8
8	in	Table 10	26	in	Table 20
9	in	Table 40	27	in	Table 80
10	in	Hold	28	in	Net Weight Sign Reverse in Polarity
11	in	Judge (Level or Edge)	29	in	Select
12	out		30	out	Error
13	out	Hold	31	out	Near Zero
14	out	HI-HI Limit	32	out	HI Limit
15	out	GO	33	out	LO Limit
16	out	LO-LO Limit	34	out	Stable
17	out	Weight Error	35	out	Run
18	*	COM	36	*	COM

7.2 Equivalent Circuit (Input)

Signals are inputted by shorting or opening input and COM terminals. A relay, switch or transistor may be used for this application.



switch or transistor	Input data
Open (OFF)	0
Short (ON)	1

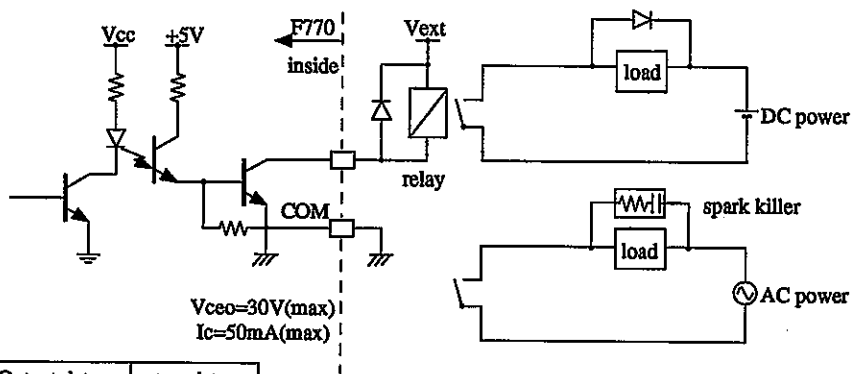


NB

- Do not apply external voltage to the signal input circuit.
- Use external elements which withstand IC=10 mA.
- Leakage from external elements must be 100 μ A or less.

7.3 Equivalent Circuit (Output)

The output signal circuit is an open-collector output of a transistor.



Output data	transistor
0	OFF
1	ON

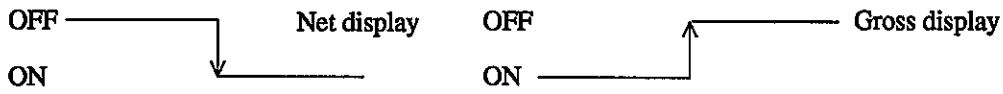
NB

- Use an external power source (up to DC 30V) for driving the relay (Vext).
- Do not short-circuit any load such as a relay coil. This may damage the output transformer.
- Connect a surge suppresser or a spark killer to the relay circuit as shown in the figure to reduce the noise trouble and extend the life of the relay.

7.4 Control Input Signal

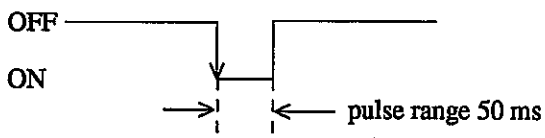
(1) Gross/Net switching (or Net/pcs switching) [pin 2]

When Control Input pin 2 is shorted to COM (OFF → ON) the Net weight is displayed. When Control Input pin 2 is open to COM (ON → OFF) the Gross weight is displayed. The detail refer to Gross/Net/pcs Switching on page 59.



(2) Digital Zero <edge input> [pin 3]

When Control input pin 3 is shorted to COM (OFF → ON) it brings the Gross weight to zero.



Digital Zero Regulation Value is set through Setting Mode 8-4, if these values are exceeded, the "Z ALM" blinks.

(3) Hold <level or edge input> [pin 10]

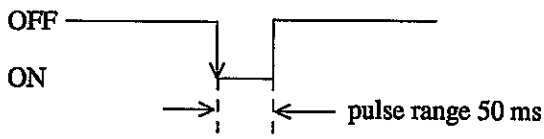
The weighing value will be in a hold mode if pin 10 is shorted to COM. Refer to "6.4 Hold (Setting & Operation)" for detail.

(4) Judge <level or edge input> [pin 11]

Judging Mode is activated by shorting pin 11 to COM. Refer to Judging Input Mode page 69 of "6.2 Regulation Setting".

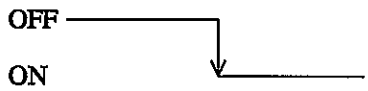
(5) Tare Subtraction (Tare ON) <edge input> [pin 20]

When Control Input pin 20 is shorted to COM (OFF → ON) it brings the Net weight to zero.



(6) Net Weight Sign Reverse in Polarity <level input> [pin 28]

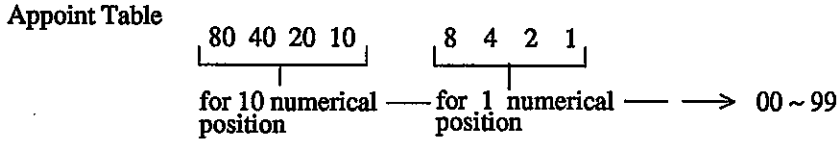
When Control Input pin 28 is shorted to COM (OFF → ON) and in Setting Mode 1-2 selected Net Weight Sign Reverse by control input, it brings Net weight × -1.



(7) Selection [pin 29]

The selection of pin 29 can be Tare Reset, Zero Reset or Sequence Reset. When Control input pin 29 is shorted to COM (OFF → ON) the Reset is done, which is selected in Setting Mode 1-4.

(8) Table [pin 6 ~ 9, pin 24 ~ 27]



(9) ST [pin 4], BT [pin 5], FEED [pin 21], GT [pin 22] and Print Command [pin 23]

When control input pin 4, 5, 21, 22 or 23 is shorted to COM (OFF → ON) print relative item. If the Batch (BT) Mode selected OFF in Setting Mode 3-2, BT [pin 5] is not available.

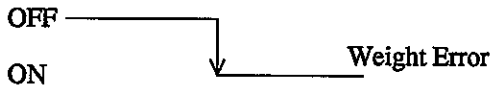
7.5 Control Output Signal

(1) Hold [pin 13]

During display hold value section, output Hold signal. Refer to "6.4 Hold (Setting & Operation)" for detail.

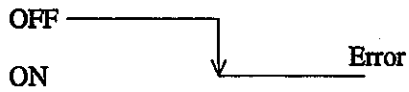
(2) Weight Error [pin 17]

The output turns on when ADC errors (Adc, Err), Input over (±LoAd), Over flow (oFL1, 2, 3, 4) Happen or Z ALM lamp blinks.



(3) Error [pin 30]

When an Error has occurred in the Hold Mode, the Error output turns on.



(4) Near Zero [pin 31]

When weighing value ≦ Near Zero set value, output turns on.

(5) Stable [pin 34]

This output turns on when the weighing value is stable. Refer to the "Motion Detection".

(6) Run [pin 35]

This output turns on when the F770 is ready to operate.

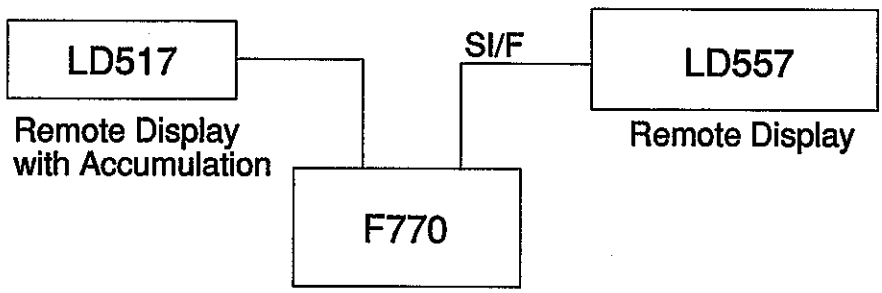
(7) HI-HI Limit [pin 14], GO [pin 15], LO-LO Limit [pin 16], High [pin 32] and Low [pin 33]

These output turn on when the weighing value follows Comparison condition. Refer to "6.2 Regulation Setting" for detail.

8 Interface

8.1 2-Wire Serial Interface (SI/F)

This 2-wire serial interface is for connecting the F770 to peripheral equipment such as remote displays. No polarity is needed for this simple, low-cost installation. The transmitting distance is about 300 m (328 yd.). Up to three (3) peripheral units can be connected in parallel.
The wire may be 2-core twisted or shielded cable. It should not run along side AC or other high-voltage wiring.



8.2 The RS-232C Interface for F770R2

8.2.1 Specifications

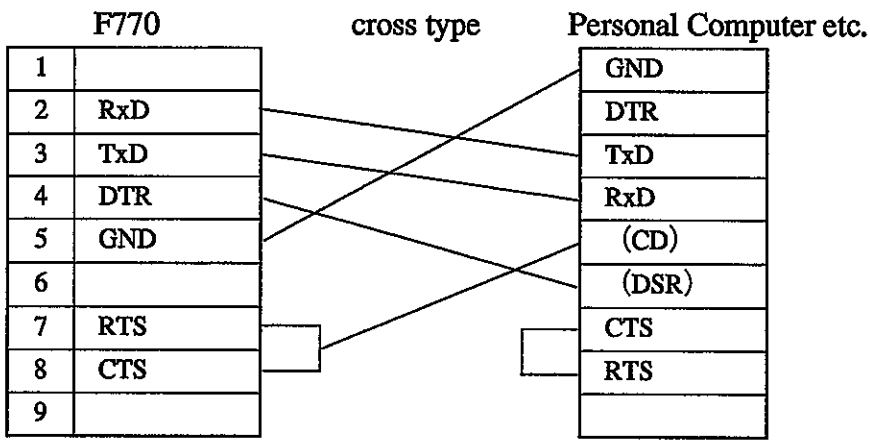
Signal level	: Based on the RS-232C
Transmitting distance	: Approx. 15m (16.4yd.)
Transmitting method	: Asynchronous, full duplex
Transmitting speed	: 1200, 2400, 4800 or 9600 bps selectable
Bit configuration	: Start 1 bit
	Character length 7 or 8 bits selectable
	Stop 1 or 2 bits selectable
	Parity none, odd or even selectable
Code	: ASCII

8.2.2 Connector Pin Assignment

Connecting plug; JAE DE-09SN

1			6		
2	in	RxD	7	out	RTS
3	out	TxD	8	in	CTS
4	out	DTR	9		
5	*	GND			

8.2.3 Cable



NB

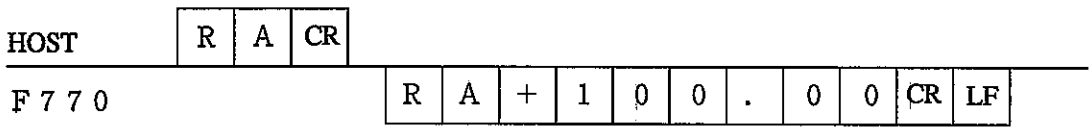
The diagram is for connecting a personal computer as a DTE (Data Terminal Equipment) device. If it is a DCE (Data Circuit-terminating Equipment) device, connect pin to pin (DTR to DTR, DSR to DSR etc.)

Cable should be prepared after checking connector type and pin assignments of the connected device.

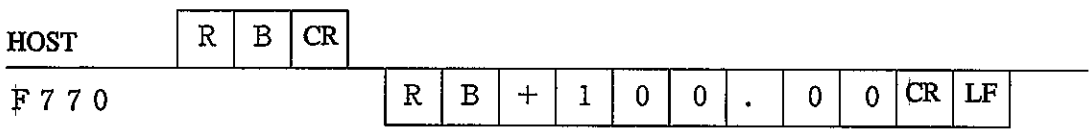
8.2.4 Communication Format

◇ Reading out weight value

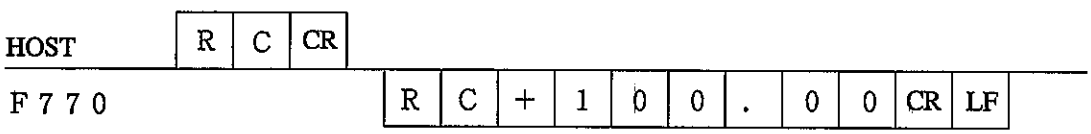
· Reading out the Gross weight (sign, 5-digit weighing value, decimal point)



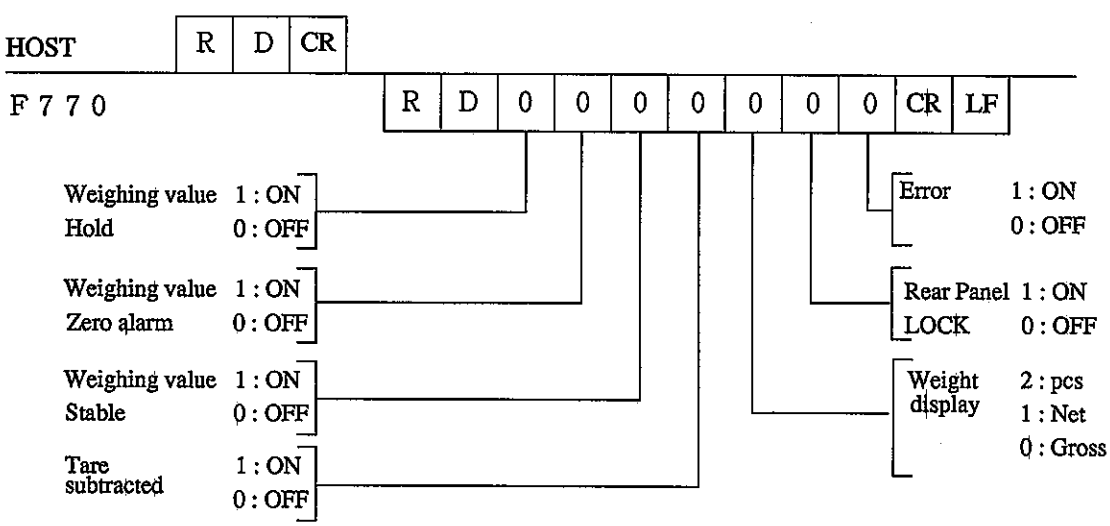
· Reading out the Net weight (sign, 5-digit weighing value, decimal point)



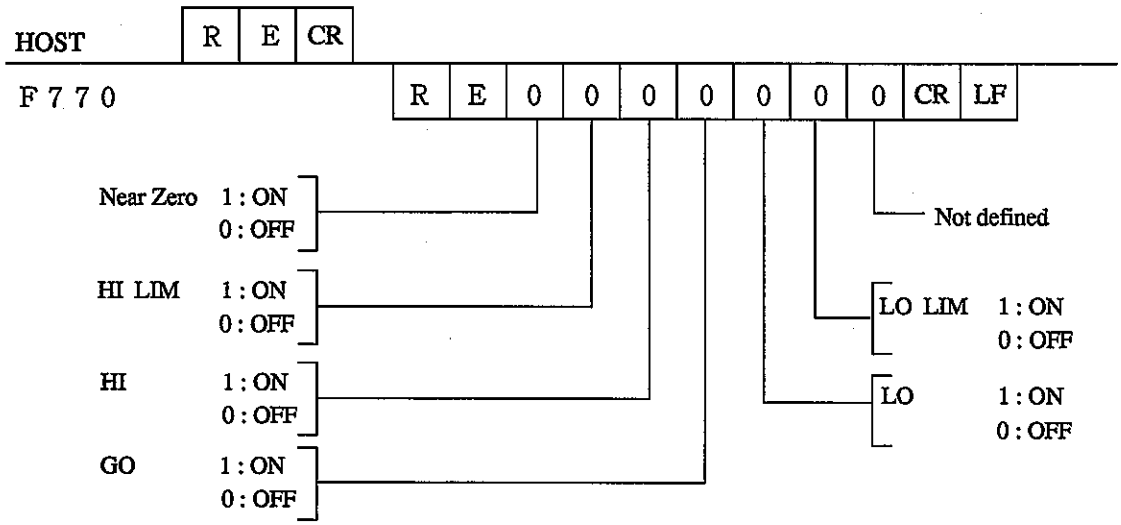
· Reading out the Tare (sign, 5-digit weighing value, decimal point)



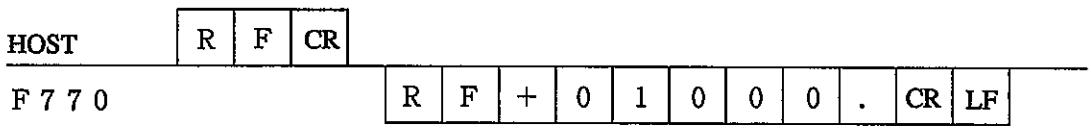
· Reading out Status 1 (7-digit)



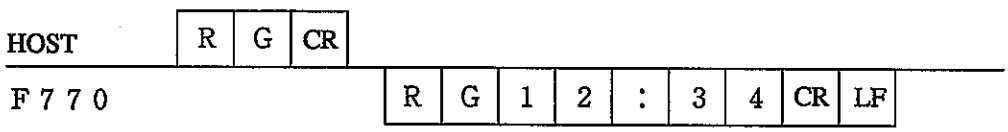
- Reading out Status 2 (7-digits)



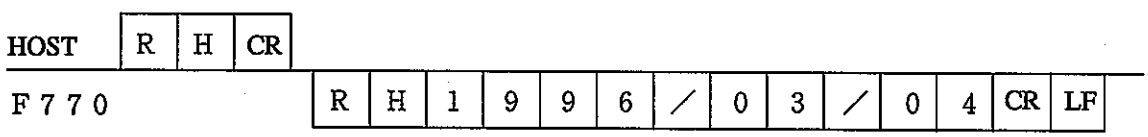
- Reading out the Counting value (sign, 5-digit counting value, decimal point)



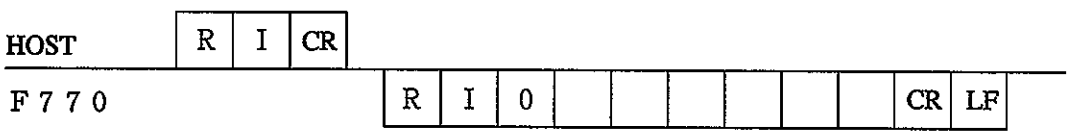
- Reading out Time (5 digit)



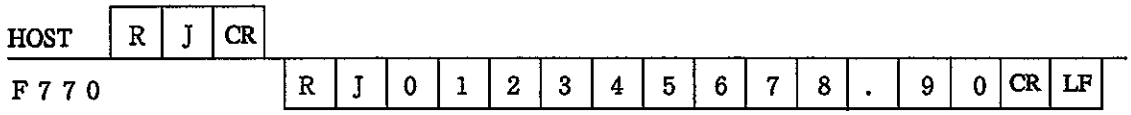
- Reading out Date (10 digit)



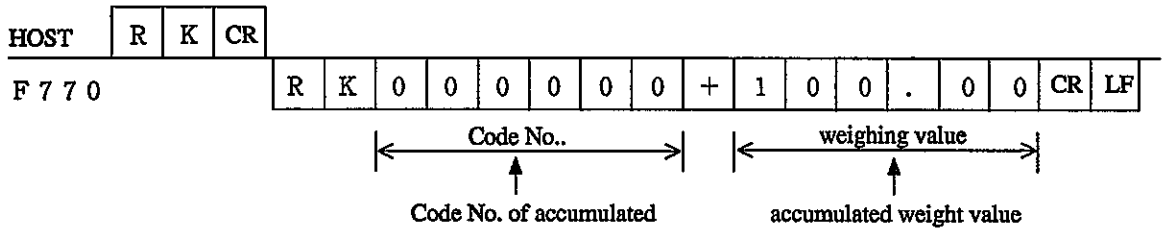
- Reading out the Count of Data [accumulation times] (for each Code No., "△ ", 6-digit)



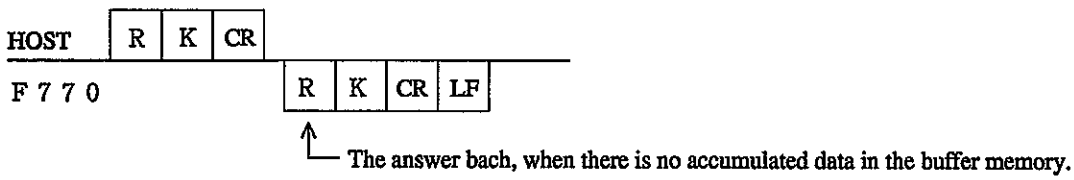
· Reading out The Accumulated value (for each Code No., 11-digit, decimal point)



· Reading out The accumulated weight (Code No. 6-digit, weighing value 5-digit, decimal point)

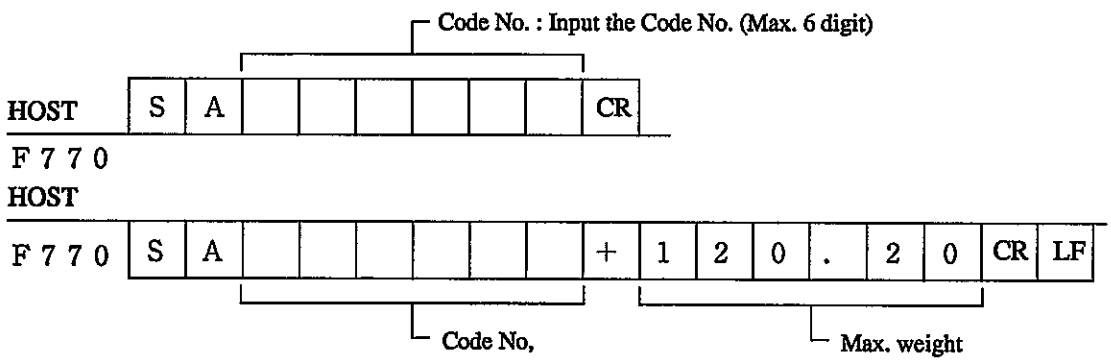


* Up to 256 data entries are stored in the memory buffer. Oldest data will be cleared when buffer is read.

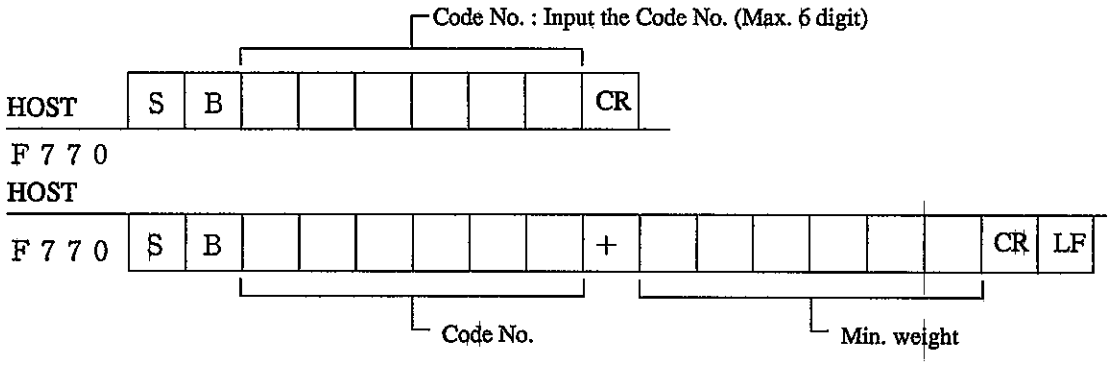


◇ Reading out Statistical value (for up to 100 Code No.)

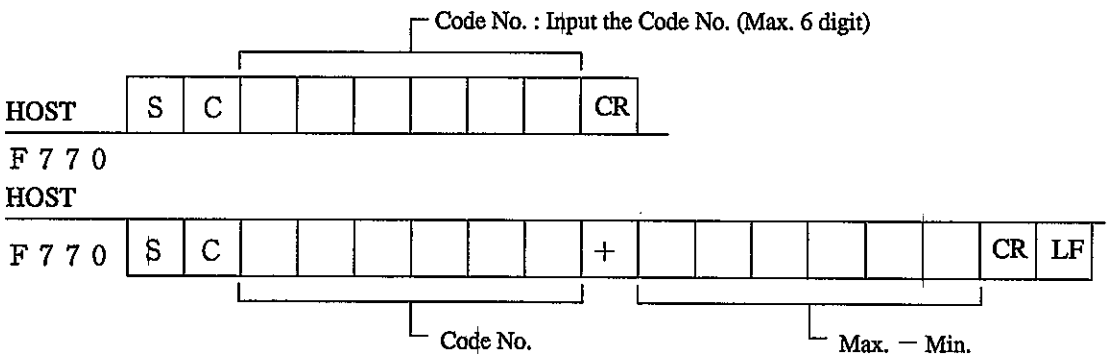
· Max. weight (5 digit, decimal point)



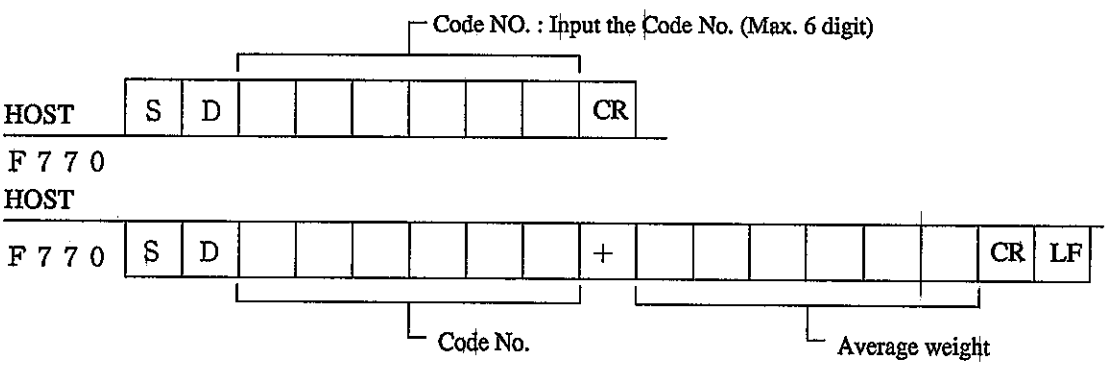
· Min. weight (5 digit, decimal point)



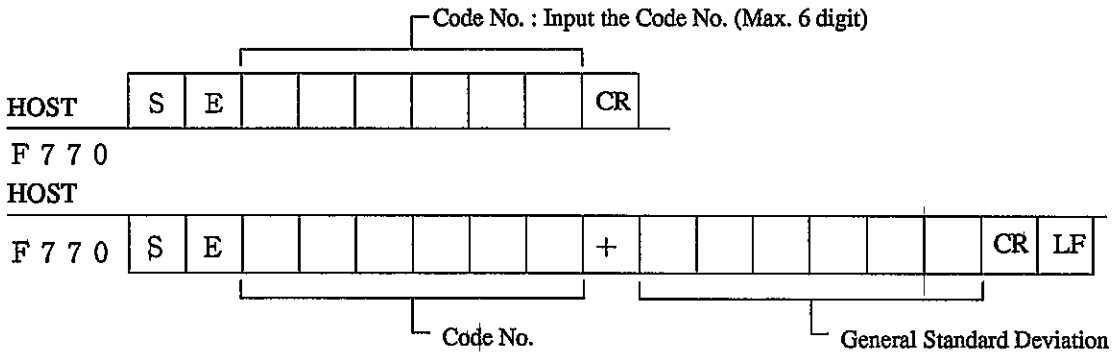
· Max. − Min. (5 digit, decimal point)



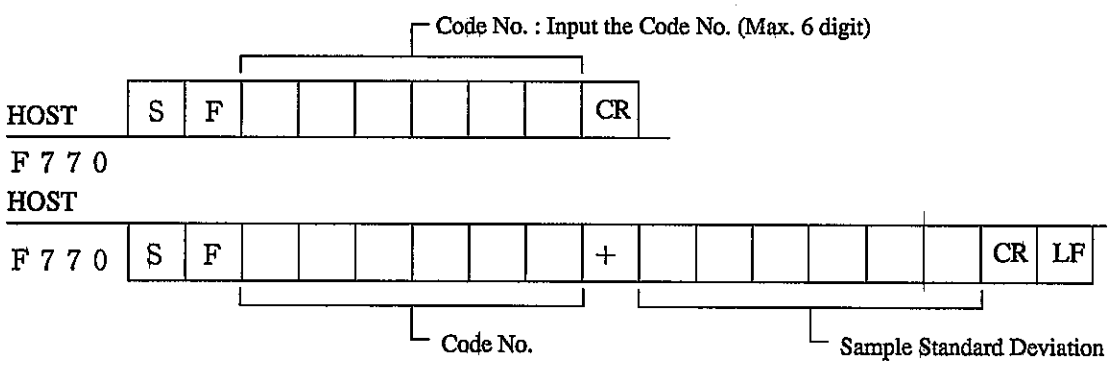
· Average weight (5-digit, decimal point)



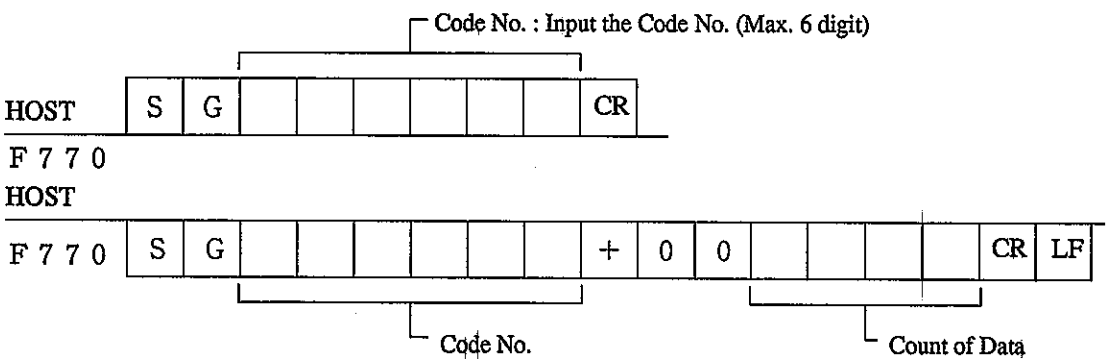
· General Standard Deviation (5-digit, decimal point)



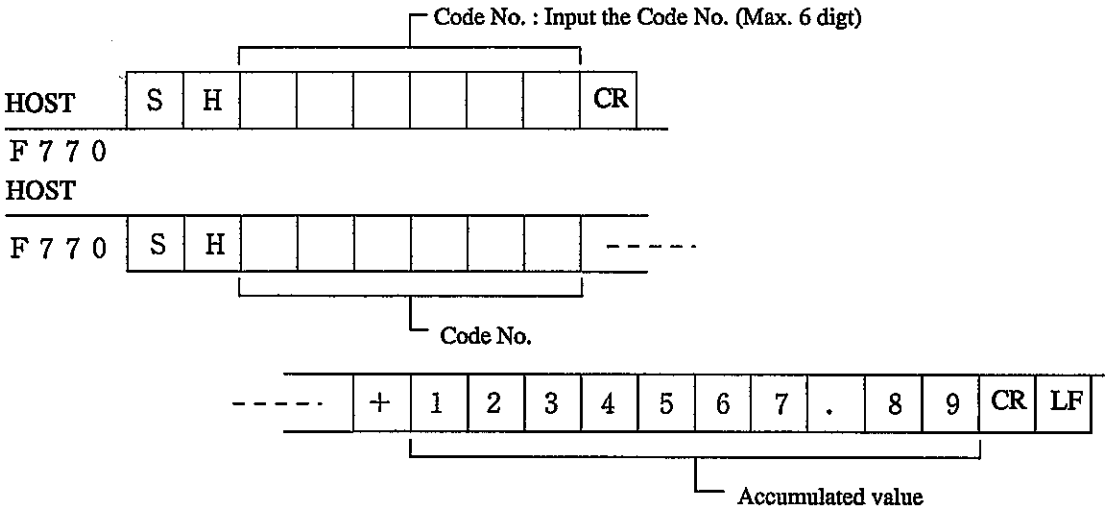
· Sample Standard Deviation (5-digit, decimal point)



· Count of Data



· Accumulated value



◇ Table for Set Value

Preset Tare Weight	W	0	3						CR	LF	for each Table number
HI-HI Limit (HI LIM)	W	0	4						CR	LF	for each Table number
Near Zero (NZ)	W	0	5						CR	LF	
LO-LO Limit (LO LIM)	W	0	6						CR	LF	for each Table number
High (HI)	W	0	7						CR	LF	for each Table number
Go (GO)	W	0	8						CR	LF	for each Table number
Low (LO)	W	0	9						CR	LF	for each Table number

Control Input Selection	W	1	1	0	0	0			CR	LF
Function Selection	W	1	2	0	0	0			CR	LF
Function Key 1 Disablement	W	1	3						CR	LF
Registered Unit Weight No.	W	1	4	0	0	0	0		CR	LF

Read out only

Unit weight (for memory 0)	W	1	5	0					CR	LF

Read out only

Sample (Count)	W	1	6	0	0	0			CR	LF

Read out only

Counting Mode	W	1	7	0	0	0	0		CR	LF
Setting Value Lock	W	1	9	0	0	0			CR	LF
Comparison Data Selection	W	2	1	0	0	0			CR	LF
Comparison Condition Selection	W	2	2	0					CR	LF
Judging Input	W	2	3	0	0	0	0		CR	LF
Judging Time	W	2	4			0			CR	LF

Placement time (*.*sec.) Comparative signal output time (*.*sec.)

Comparison Audible Alarm	W	2	5						CR	LF
Hold Mode	W	2	6	0	0	0			CR	LF
Sequence Time	W	2	7			0			CR	LF

(*.*sec.) Placement time Average sampling time (*.*sec.)

for Hold Average value

NZ Comparison inhibit time 1 NZ Comparison inhibit time 2 for Hold checking value

Display Hold Time	W	2	8	0	0	0			CR	LF

Display hold time (*.*sec.)

Printing Item selection	W	3	1						CR	LF
Printing Mode Selection	W	3	2						CR	LF

Printing Format for Printing Every	W	3	3						CR	LF
Printing Format for Sub/Grand Total	W	3	4						CR	LF
Printing by Code No.	W	3	5	0	0				CR	LF
Function Key 2 Disablement	W	3	6						CR	LF
RS-232C I/F	W	3	9						CR	LF (Read out only)
Table Items Selection	W	5	5						CR	LF
Balance Weight	W	8	1						CR	LF
Capacity	W	8	2						CR	LF
Minimum Scale Division	W	8	3	0	0				CR	LF
Digital Zero Regulation value	W	8	4	0					CR	LF
Unit/Decimal Point/ Dual Range	W	8	5	0	0				CR	LF
Display Frequency	W	8	6	0	0	0	0		CR	LF
Interval Border	W	8	7						CR	LF
Digital Filter	W	9	1	0	0	0	0		CR	LF
Motion Detection	W	9	2			0			CR	LF

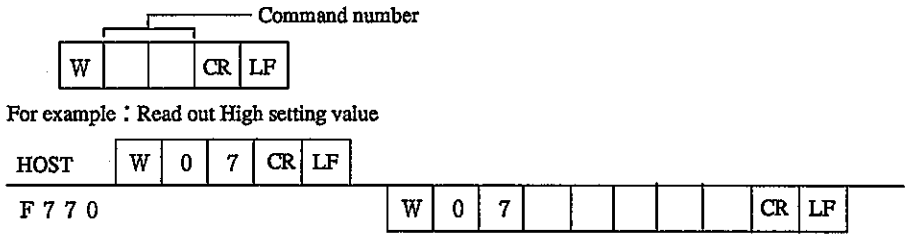
Stable period(*.*sec.) Stable range (**division)

Zero Tracking	W	9	3			0			CR	LF

Period (*.*sec.) range(**digit)

Standard/NTEP Mode Selection 1	W	9	4	0	0				CR	LF
Standard/NTEP Mode Selection2	W	9	5						CR	LF
Gravitational Acceleration	W	9	6	0	0	0			CR	LF

◇Read out by Command number (Setting Mode number)



◇ Table Setting

Setting Table No. T A CR LF

Recall Table Read out
HOST T A CR LF
F 7 7 0 T A CR LF

Unit weight T B 0 0 0 0 0 CR LF
(Table No. / Memory 1 ~ 9)

Unit weight Read out
HOST T B CR LF
F 7 7 0
(Table No.)
T B 0 0 0 0 0 CR LF
(Table No.)

Code No. T C CR LF
(Table No.)

Preset Tare Weight T D 0 CR LF
(Table No.)

HI-HI Limit T E 0 CR LF
(Table No.)

LO-LO Limit T F 0 CR LF
(Table No.)

High T G 0 CR LF
(Table No.)

Go T H 0 CR LF
(Table No.)

Low T I 0 CR LF
(Table No.)

◇ Read out Memory value (Memory 1 ~ 9)

Memory 1	W	4	1	0					CR	LF	(Read out only)
Memory 2	W	4	2	0					CR	LF	(Read out only)
:			:								
Memory 9	W	4	9	0					CR	LF	(Read out only)

Enter 40 + Memory No. after "W"

◇ Recall Memory (Memory No.1~9)

Recall Memory 1	M	1	CR	Recall Memory 2	M	2	CR
:				:			
Recall Memory 8	M	8	CR	Recall Memory 9	M	9	CR

◇ Command (Host →F770)

Gross weight display	C	C	CR	Net weight display	C	D	CR
Tare subtraction	C	E	CR	Tare Subtraction Reset	C	F	CR
Digital Zero	C	G	CR	Digital Zero Reset	C	H	CR
pcs display	C	I	CR	Accumulation Clear	C	J	CR

◇ Printer Command

Print Data	P	A	CR	Delete preceding data	P	B	CR
Print GT	P	C	CR	Print ST	P	D	CR
Print BT	P	E	CR	FEED	P	F	CR
Print Y/M/D/T	P	G	CR	Setting Code No.	P	H	CR

Setting Code No.

P	H								CR	LF

└ 0 ~ 9, space, hyphen

Read out Code No.

HOST	P	H	CR	LF										
F 7 7 0					P	H							CR	LF

9 Trouble Shooting

9.1 Self-Check & Memory Clear

The F770 contains SELF-CHECK and WATCHDOG TIMER functions which automatically check the RAM, ROM & NOV.ROM detecting errors and doing a visual display check.

Operation of Self-Check

1) Turn off the power switch of F770

2) Hold 

while turning on power starts Self-Check

3) Self-Check procedure

	Self-Check Item	
1	The software version	display
2	All the display lamps turn on	display
3	RAM Read/Write check	automatid
4	ROM sum check	automatic
5	Each character discription display check in sequence	display
6	Numeric display (7-segment) check	display
7	NOV.RAM Read/Write check	automatic
8		display

* If there is something wrong in RAM Read/Write, display Error1 and stop self-check.
* If there is something wrong in ROM sum, display Error2 and stop self-check.
* If there is something wrong in NOV.RAM Read/Write, display Error3 and stop self-check.
* PASS has displayed, self-check completed.

4) Nov.RAM check cannot be performed if Calibration Lock is set on rear panel

5) If Error message appears during Self-Chek, contact your Distributor.

Operation of Memory Clear

1) Turn off the power switch of F770

2) Hold  +  keys while turning on power

3) All user data (Setting, Weighing and Accumulation values) will be cleared. Memory returns to the Initial Setting values except the values in NOV.RAM

- Refer to page 142 for initial setting value list after executing memory clear.
- If Self-Check aborts, please retry. If Error message appears during Self-Check, contact you Distributor please.

9.2 Over Scale Display & Error

- Over Scale

The input signal from the loadcell exceeds the Span adjustment range	LoAd
Net weight > 99999	oFL 1
Gross weight > Capacity + 9 scale division	oFL 2
Gross weight > 99999	oFL 3
−99999 > Tare > +99999	oFL 4
pcs in Counting Mode > 9999	oFL 5
pcs in Counting Mode < −9999	− oFL 5
Unit weight > 9999	oFL 6
Unit weight < 0001	oFL 7

· Calibration Error

The initial tare is beyond the zero adjustment range.	cErr 2
The initial tare is minus.	cErr 3
The input Balance weight is beyond the Capacity.	cErr 4
The input Balance weight is 0 0 0 0 0	cErr 5
The loadcell output does not reach the span adjustment range	cErr 6
The loadcell output is minus	cErr 7
The loadcell output is beyond the span adjustment range	cErr 8

· Wiring Error

Some wrong in wiring loadcells or ±EX is shorted	Adc;Err

· Function Error

During Hold average value (3) and Hold checking value (4) mode, if over scale error or Z ALM happened	Err 1
In peak hold mode, if over scale error or Z ALM happened	Err 2

9.3 Settlement

1. Over Scale Error

LoAd

An input signal from the loadcell exceeds F770 span adjustment range.
Check whether the loadcell output is beyond the calibrated span range, and whether the cable connecting the F770 to the loadcell is cut off. This display appears when nothing is connected to the loadcell connector on the rear panel.

oFL1

The Net weight is greater than 99999. Lower the loadcell signal until the oFL1 display goes out.

oFL2

The Gross weight is greater than the Capacity plus 9 scale divisions. Lower the loadcell signal until the oFL2 display goes out.

oFL3

The Gross weight is greater than 99999. Lower the loadcell signal until the oFL3 display goes out.

oFL4

The Tare weight is greater than 99999 or less than -99999, press 

key, Tare Subtraction Reset in Setting Mode 0..

oFL5

pcs in Counting Mode is greater than 9999. Lower the loadcell signal until the oFL5 display goes out.

oFL6

Unit weight is greater than 9999, check the unit display is as the same as Unit weight in the memory.

oFL7

Unit weight is less than 0001, check the unit display is as the same as Unit weight in the memory.

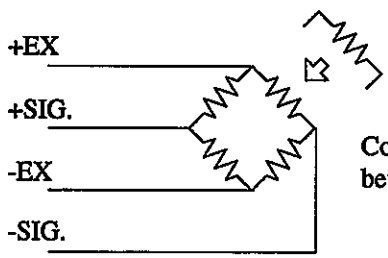
NB

Do not change the Capacity of the indicator to cancel oFL2. The Capacity is an important set value for the F770 to be a weighing instrument. If Capacity is changed, indicator must be re-calibrated.

2. Calibration Error

cErr2

Initial Dead Load is above Zero adjustment range.
Remove any excess load from loadcell or scale. If cErr2 is still displayed, connect a resistor between +EX and -SIG. loadcell connections. This should shift the Zero point. Do Zero Calibration again.



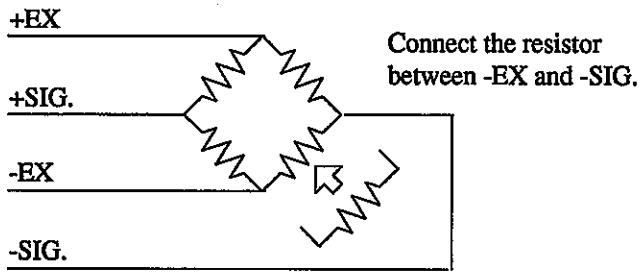
Connect the resistor between +EX and -SIG.

RESISTANCE		STRAIN	
calculated value	approx. value	μ-STRAIN	mV / V
875 KΩ	866 KΩ	200	0.1
437 KΩ	442 KΩ	400	0.2
291 KΩ	294 KΩ	600	0.3
219 KΩ	221 KΩ	800	0.4
175 KΩ	174 KΩ	1000	0.5
146 KΩ	147 KΩ	1200	0.6
125 KΩ	124 KΩ	1400	0.7
109 KΩ	110 KΩ	1600	0.8
97 KΩ	97.6KΩ	1800	0.9
87.3KΩ	86.6KΩ	2000	1.0
79.4KΩ	78.7KΩ	2200	1.1
72.7KΩ	73.2KΩ	2400	1.2
67.1KΩ	66.5KΩ	2600	1.3
62.3KΩ	61.9KΩ	2800	1.4
58.2KΩ	57.6KΩ	3000	1.5
54.5KΩ	54.9KΩ	3200	1.6
51.3KΩ	51.1KΩ	3400	1.7
48.4KΩ	48.7KΩ	3600	1.8
45.9KΩ	46.4KΩ	3800	1.9
43.6KΩ	43.2KΩ	4000	2.0
41.5KΩ	41.2KΩ	4200	2.1
39.6KΩ	39.2KΩ	4400	2.2
37.9KΩ	38.3KΩ	4600	2.3
36.3KΩ	36.5KΩ	4800	2.4
34.8KΩ	34.8KΩ	5000	2.5

- This table is for a 350 ohm loadcell.
- The temperature coefficient of the connected resistor directly influences the accuracy of the indicator.
- Use a resistor with a temperature coefficient

cErr3

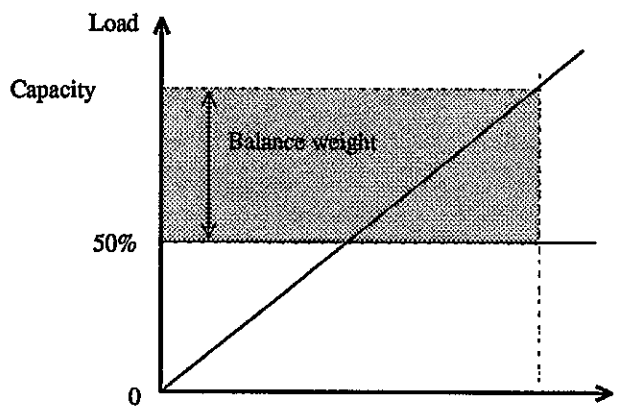
Initial Dead Load is negative.
Check that loadcell is mounted in the correct direction; check that load is being applied to the loadcell in the correct direction; check that the +SIG. and -SIG. lines are properly connected.
If cErr3 is still displayed, connect a resistor between -EX and -SIG. loadcell connections. This should shift the Zero point. Do Zero Calibration again. Refer to Table.



cErr4

The Balance weight is larger than the Capacity.
Re-enter the Balance weight equal to or less than the Capacity. Do Span Calibration again.

The relationship between Capacity and Balance weight.



Balance weight must be between 50% to 100% of Capacity in order to do Span Calibration correctly.

cErr5

The Balance weight setting is "00000". Set adequate Balance weight.

cErr 6

The loadcell output does not reach the Span range of the F770.
Check how load is applied to loadcell; check does the loadcell have sufficient output (mV/V) to reach Span range. Do Span Calibration again.

The span adjustment range of the F770 is between 0.3mV/V and 3.0mV/V. Span Calibration is not possible if loadcell output is not within this range.

cErr7

Loadcell output is negative.
Check that loadcell is mounted in the correct direction; check that load is being applied to the loadcell in the corrector direction; check that the +SIG. and -SIG. lines are properly connected.

cErr8

Loadcell output is beyond Span adjustment range.
Check how load is applied to loadcell; check loadcell has sufficient output (mV/V) to reach Span range. Do Calibration again.

3. Function Error

Err1

During Hold average value and Hold checking value mode, if the errors of LoAd, -LoAd, oFL1, oFL2, oFL3 or Z ALM happened display Err1 message. There are three ways to clear Err1:

(1) Release Hold;
(2) Redo Hold, if the Hold is done normally;
(3) Input sequence reset signal (When pin 29 is selected. Sequence reset in Setting Mode 1-4 External Input Selection).

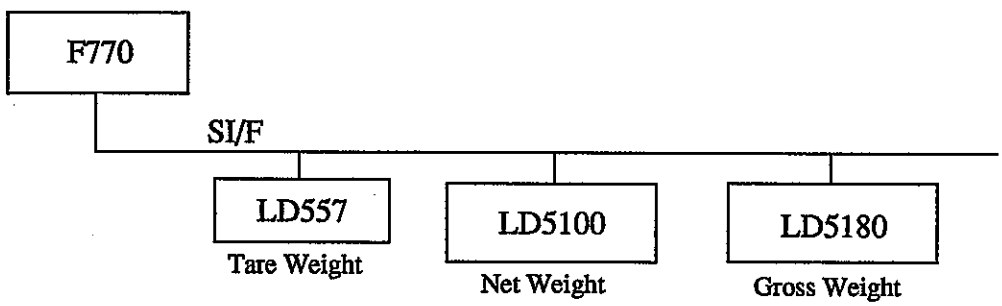
Err2

The target value in the Hold Mode can be Net, Gross, pcs or follow indicator which selected in Setting Mode 2-1 Comparison Data Selection. In Peak Hold Mode, if the errors of LoAd, -LoAd, oFL1, oFL2, oFL3, oFL5 or Z ALM happened display Err2 message. To clear Err2 by input signal to pin 30 (short pin 30 with COM) on Control Connector on the rear panel.

9.4 Interface

1. Communication problems using SI/F

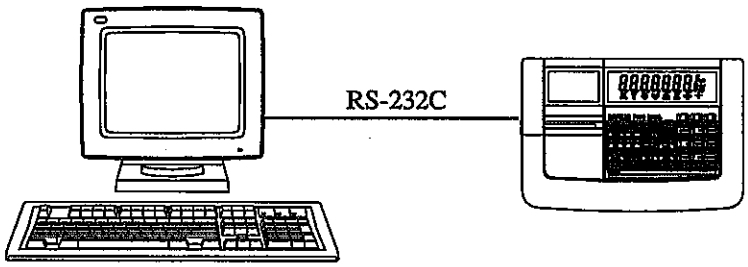
Verify the type of data to be received on the SI/F communication line. Transmission data available on the SI/F line includes: weight values; Net/Gross; Tare; instrument status; error codes, etc. Data other than the F770 display is received through other devices by changing the SI/F settings.



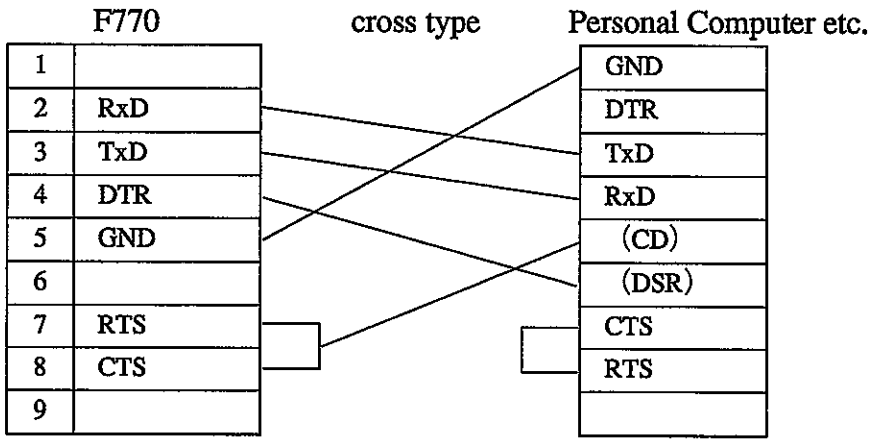
Verify there is only a maximum of 3 data receiving instruments connected with a total transmission distance of 300m (328 yds). Incorrect connection may prevent proper data communication.

2. Communication problems using RS-232C.

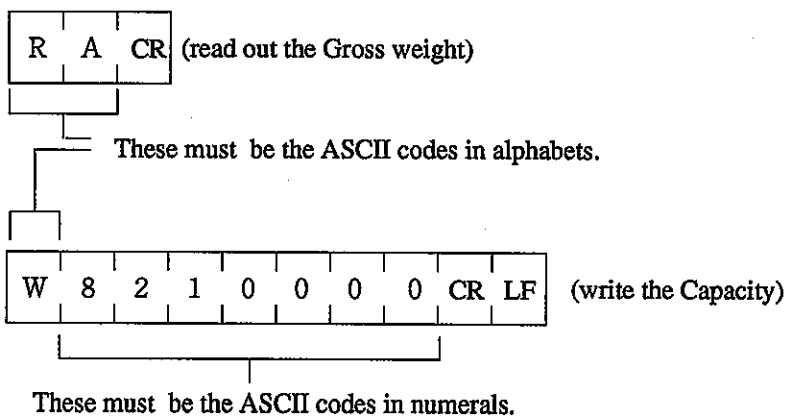
- Check whether the communication conditions set for the F770 correspond to those for your data transmitting equipment.



Check whether the wiring of the RS-232C is correct.



- Verify that ASCII codes are used for communication. The F770 ignores entered codes other than ASCII or codes other than numerals where numerals need to be entered.

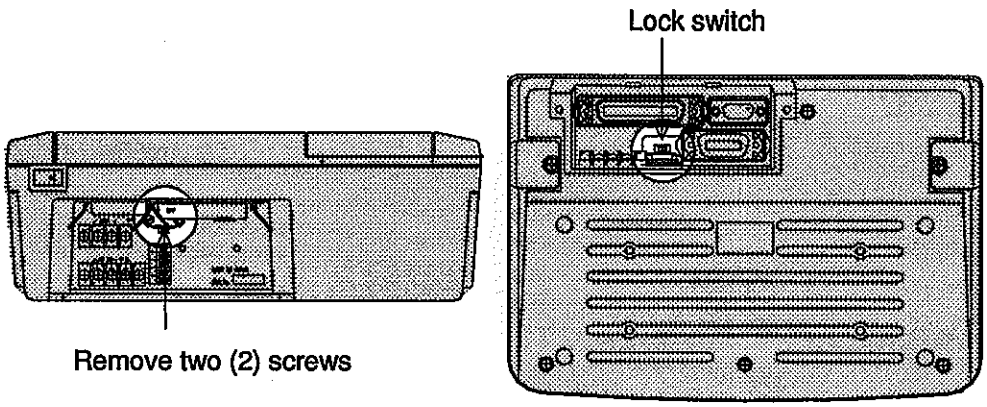


- Verify that there is communication between the F770 and the data transmitting/receiving equipment and it is working properly. If not, the F770 acts as if there is nothing connected to the data terminal.

9.5 Problems with Function Settings

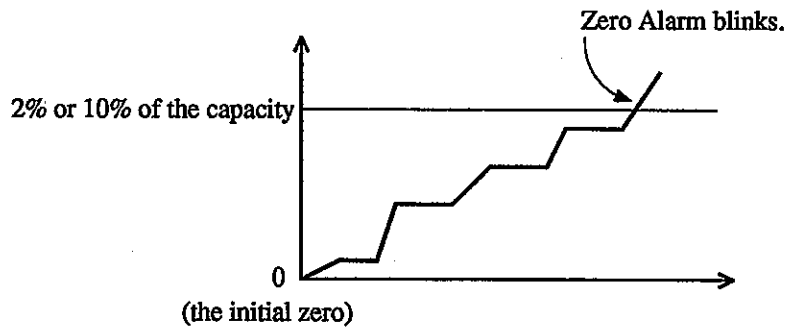
1. Cannot Calibration

Verify the Calibration Lock is OFF



2. Z ALM (Zero Alarm) is blinking

The Zero Alarm blinks when the accumulated drifts of the zero point from the initial (calibrated) zero point exceeds the set Digital Zero Regulation. Refer to page 72 "Digital Zero Regulation" for more details.



The Zero Alarm blinks when one of the following two functions is used.

1) **Digital Zero**

The Zero Alarm starts blinking if you operate the Digital Zero while the accumulation of drifts of the zero point exceeds the set Digital Zero Regulation.

2) **Zero Tracking**

The Zero Alarm starts blinking if the accumulation of the drifts of the zero point which are automatically adjusted, exceeds the set Digital Zero Regulation.

The Z ALM can be turned off by using the "Digital Zero Reset" in the Clear and Command Mode. Refer to the Function Section (Digital Zero & Digital Zero Reset).

NB

The Zero Alarm (when the difference between the zero point and the initial zero exceeds the Digital Zero Regulation) suggests something may be wrong with the loadcell. Check the loadcell and re-calibrate if needed.

3. Incorrect Weight Display

- Verify the display is in Net, Gross or Counting Mode. When Tare is subtracted, or Preset Tare Weight is used. Gross and Net weight are different. TARE will light if a Tare is entered.
- When weighing small amounts in a slow filling operation (up to 50 scale divisions), Zero Tracking parameters (period & range) are set to zero. Settings other than zero may force automatic Zeroing.
- Slight errors may occur if the scale moved from the location of calibration due to gravitational changes. Refer to page 62 Gravitational Acceleration.

4. The weight display is not stable.

The F770 operates at a high speed of 50 cycles per second so that the weight display can quickly follow the signals from the loadcell. However, the weight display may not be stable and hard to be read if the signals from the loadcell frequently changes in your application. The F770 is equipped with the two functions below to solve this problem.

1) **Digital Filter**

This function calculates the moving average of the A-D converted data to reduce unsteadiness of the weight value. The stability of the weight value will improve if you increase the frequency of the moving average.

2) **Display Frequency**

This function lowers the display frequency of the F770 to stabilize the apparent weight display.

5. Keys do not work.

The Function Key 1 and 2 keys can be disabled to prevent unwanted operation. Pressing a disabled key procedures a deep. Refer to the Disabling Function Keys section.

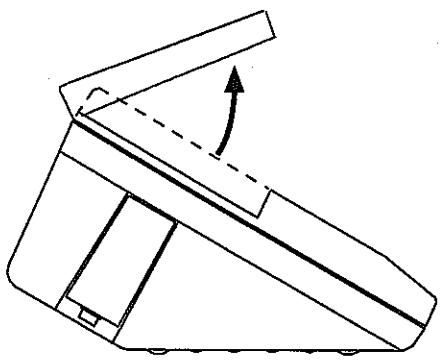
9.6 Printer

1. Prints No Data

Check whether the settings of printer is correct. Printing every, automatic printing. Refer to page 90 Printer Setting and Operation for detail.

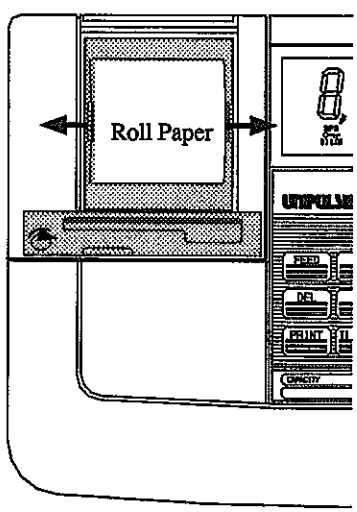
2. Setting Roll Paper

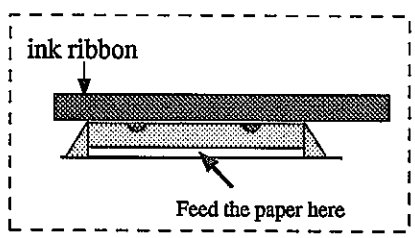
- Open the printer top cover



- Remove the roll shaft, set a new roll paper. Insert the end of paper into the roll paper slot, press the FEED key to pass the paper through printer mechanism.

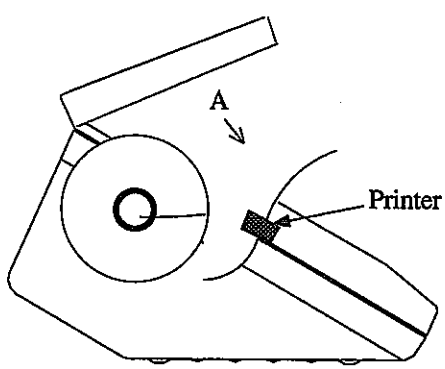
Bend the columns from side to side

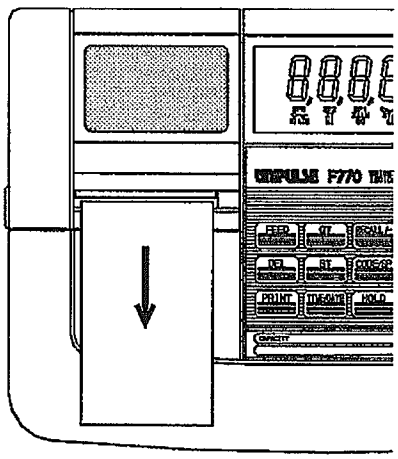




Printer mechanism as seen in the direction A

Set the roll paper





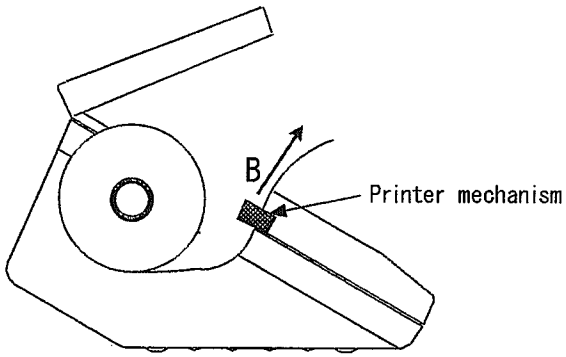
When the roll paper end is on the printer, passing paper through cover, close the cover.

Notice

It may cause some trouble if you pull the paper fast or backward when the paper jam occurred during the paper setting.

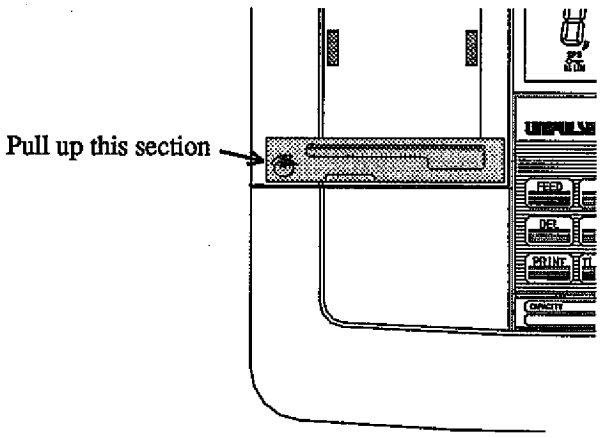
Please pull the paper in the direction of the arrow B slowly and straight to remove it after stopping the paper feed.

Cut the power then on again when it doesn't return normally after removing the paper.

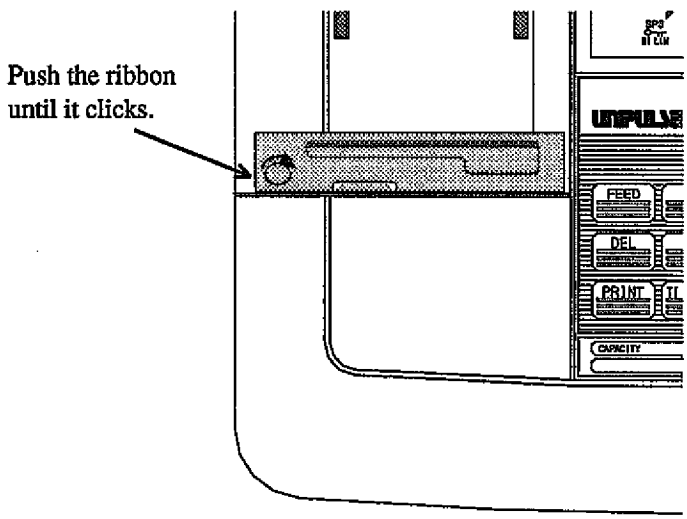


3. Setting Ink Ribbon

- Open the printer top cover, remove the roll paper.
- Remove the used ink ribbon.



Attach a new ink ribbon in the right direction.

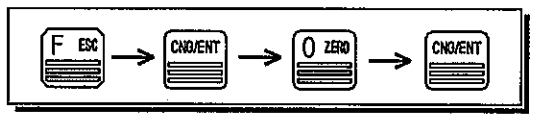


Reset printer paper.

10 Specifications

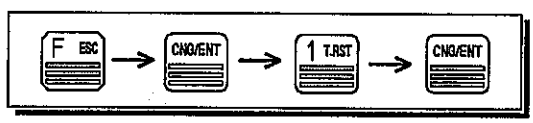
10.1 The List of Initial Setting Value

◇ Setting Mode 0



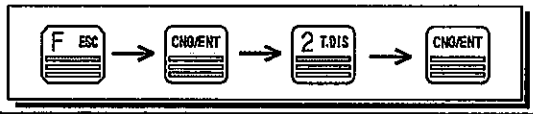
Item		Initial Value	NOV. RAM	LOCK SW		LOCK 1	LOCK 2	COUNT	TABLE	Display
				A	B					
0	Digital Zero (Command)									Command
1	Tare Subtraction Reset									Command
2	Tare Weight Display	0								○
3	Preset Tare Weight	000.00				○			○	
4	HI-HI Limit	999.99				○			○	
5	Near Zero	000.00				○				
6	LO-LO Limit	000.00				○			○	
7	High	999.99				○			○	
8	Go	000.00				○			○	
9	Low	000.00				○			○	

◇ Setting Mode 1



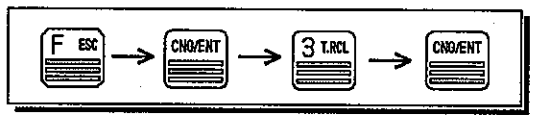
Item		Initial Value	NOV. RAM	LOCK SW		LOCK 1	LOCK 2	COUNT	TABLE	Display
				A	B					
0	Digital Zero (Command)									Command
1	Control Input Selection	00	○				○			
2	Function Selection	10	○				○			
3	Function Key 1 Disablement	11111	○		○		○			
4	Register Unit Weight	0				○		○		Command
5	Unit Weight	00.01				○		○		
6	Sample (Count)	05				○		○		Command
7	Counting Mode	0			○		○			
8	Digital Zero Reset									Command
9	Setting Value Lock	00	○							

◇ Setting Mode 2



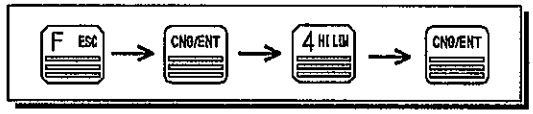
	Item	Initial Value	NOV. RAM	LOCK SW A	LOCK SW B	LOCK 1	LOCK 2	COUNT	TABLE	Display
0	Digital Zero (Command)									Command
1	Comparison Data Selection	00	○				○			
2	Comparison Condition Selection	1000	○				○			
3	Judging Input Mode	0	○				○			
4	Judging Time	0.0-0.0	○				○			
5	Comparison Audible Alarm	00000	○				○			
6	Hold Mode	00	○				○			
7	Sequence Time	0.0-0.5	○				○			
8	Display Hold Time	0.0	○				○			
9		0								○

◇ Setting Mode 3



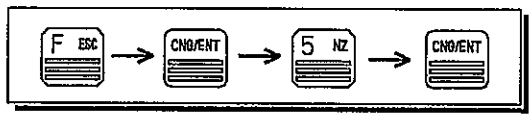
	Item	Initial Value	NOV. RAM	LOCK SW A	LOCK SW B	LOCK 1	LOCK 2	COUNT	TABLE	Display
0	Digital Zero (Command)									Command
1	Printing Item Selection	11111	○				○			
2	Printing Mode Selection	00010	○				○			
3	Printing Format for Printing Every	00000	○				○			
4	Printing Format for Sub/Grand Total	01000	○				○			
5	Printing by Code No.	006	○				○			
6	Function Key 2 Disablement	11111	○		○		○			
7		0								○
8		0								○
9	RS-232C I/F	03010	○				○			

◇ Setting Mode 4



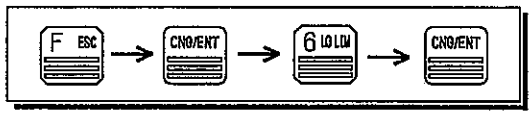
	Item	Initial Value	NOV. RAM	LOCK SW		LOCK 1	LOCK 2	COUNT	TABLE	Display
				A	B					
0	Digital Zero (Command)									Command
1	Memory 1	00.01				○		○		Command
2	Memory 2	00.01				○		○		Command
3	Memory 3	00.01				○		○		Command
4	Memory 4	00.01				○		○		Command
5	Memory 5	00.01				○		○		Command
6	Memory 6	00.01				○		○		Command
7	Memory 7	00.01				○		○		Command
8	Memory 8	00.01				○		○		Command
9	Memory 9	00.01				○		○		Command

◇ Setting Mode 5 [Table Setting]



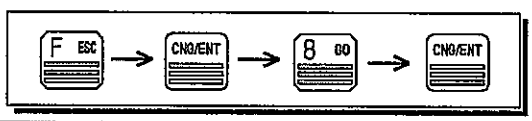
	Item	Initial Value	NOV. RAM	LOCK SW		LOCK 1	LOCK 2	COUNT	TABLE	Display
				A	B					
0	Digital Zero (Command)									Command
1	Unit Weight Memory	0				○		○	○	
2	Code No.	000.00				○			○	
3	Preset Tare Weight	000000				○			○	
4	HI-HI Limit	999.99				○			○	
5	Table Item Selection	00000	○				○			
6	LO-LO Limit	000.00				○			○	
7	High	999.99				○			○	
8	Go	000.00				○			○	
9	Low	000.00				○			○	

◇ Setting Mode 6



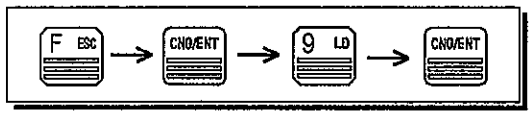
	Item	Initial Value	NOV. RAM	LOCK SW A	LOCK SW B	LOCK 1	LOCK 2	COUNT	TABLE	Display
0	Digital Zero (Command)									Command
1	Max. Weight	000.00							○	
2	Min. Weight	000.00							○	
3	Max. – Min.	000.00							○	
4	Average Weight	000.00							○	
5	General Standard Deviation	000.00							○	
6	Sample standard Deviation	000.00							○	
7	Count of Data	0000							○	
8		0								○
9		0								○

◇ Setting Mode 8



	Item	Initial	NOV. RAM	LOCK SW A	LOCK SW B	LOCK 1	LOCK 2	COUNT	TABLE	Display
0	Zero Calibration	0	○	○	○					Command
1	Balance Weight	100.00	○	○	○		○			
2	Capacity	100.00	○	○	○		○			
3	Minimum Scale Division	0.01	○	○	○		○			
4	Digital Zero Regulation Value	02.00	○	○	○		○			
5	Unit/Decimal Point/Dual Range	320	○	○	○		○			
6	Display Frequency	3	○				○			
7	Interval Border	050.00	○	○	○		○			
8		0								○
9	Span Calibration	100.00	○	○	○		○			Command

◇ Setting Mode 9



	Item	Initial value	NOV. RAM	LOCK SW		LOCK 1	LOCK 2	COUNT	TABLE	Display
				A	B					
0	Digital Zero (Command)									Command
1	Digital Filter	4	○		○		○			
2	Motion Detection	1.5-05	○		○		○			
3	Zero Tracking	0.0-00	○		○		○			
4	Standard/NTEP Mode Selection 1	00011	○	○	○		○			
5	Standard/NTEP Mode Selection 2	11110	○	○	○		○			
6	Gravitational Acceleration	0 9	○		○		○			
7		0								○
8		0								○
9		0000								○

Initial value: Values at the time of shipment.

NOV.RAM: Values are stored in the non-volatile RAM.

LOCK SW: Calibration Lock Switch on rear panel. When ON, prevents any changes in calibration held in NOV.RAM.
A: Japan
B: NTEP

LOCK 1: Software Lock (Setting Mode 1-9) prevents changing set values backed up in S-RAM by lithium battery.

LOCK 2: Software Lock (Setting Mode 1-9) prevents changing set values backed up in NOV.RAM.

COUNT: For Counting Mode.

TABLE: For Table Memory.

Display: Display only.

10.2 The Display of Setting Item

Setting Mode 0

(1) Tare Subtraction Reset	01;
(2) Tare Weight Display	02; 0
(3) Preset Tare Weight	03; 000.00
(4) HI-HI Limit	04; 999.99
(5) Near Zero	05; 000.00
(6) LO-LO Limit	06; 000.00
(7) High	07; 999.99
(8) Go	08; 000.00
(9) Low	09; 000.00

Setting Mode 1

(1) Control Input Selection	11; 00
(2) Function Selection	12; 10
(3) Function Key 1 Disablement	13; 11111
(4) Register Unit Weight	14; 0
(5) Function Key 1 Disablement	15; 00.01
(6) Register Unit Weight	16; 05
(7) Counting Mode	17; 0
(8) Digital Zero Reset	18;
(9) Setting Value Lock	19; 00

Setting Mode 2

(1) Comparison Data Selection	21; 00
(2) Comparison Condition Selection	22; 1000
(3) Judging Input Mode	23; 0
(4) Judging Time	24; 0.0 - 0.0
(5) Comparison Audible Alarm	25; 00000
(6) Hold Mode	26; 00
(7) Sequence Time	27; 0.0 - 0.5
(8) Display Hold Time	28; 0.0

Setting Mode 3

(1) Printing Item Selection	31; 111111
(2) Printing Mode Selection	32; 00010
(3) Printing Format for Printing Every	33; 00000
(4) Printing Format for Sub/Grand Total	34; 01000
(5) Printing by Code No.	35; 006
(6) Function Key 2 Disablement	36; 111111
(9) RS-232C I/F	39; 03010

Setting Mode 4

(1) Memory 1	41; 00.01
(2) Memory 2	42; 00.01
(3) Memory 3	43; 00.01
(4) Memory 4	44; 00.01
(5) Memory 5	45; 00.01
(6) Memory 6	46; 00.01
(7) Memory 7	47; 00.01
(8) Memory 8	48; 00.01
(9) Memory 9	49; 00.01

Setting Mode 5 [Table Setting]

(1) Unit Weight Memory	51; 0
(2) Code No.	C; 000000
(3) Preset Tare Weight	52; 000.00
(4) HI-HI Limit	54; 999.99
(5) Table Item Selection	55; 00000
(6) LO-LO Limit	56; 000.00
(7) High	57; 999.99
(8) Go	58; 000.00
(9) Low	59; 000.00

Setting Mode 6

(1) Max. Weight	61; 000.00
(2) Min. Weight	62; 000.00
(3) Max. – Min.	63; 000.00
(4) Average Weight	64; 000.00
(5) General Standard Deviation	65; 000.00
(6) Sample Standard Deviation	66; 000.00
(7) Count of Data	67; 0000

Setting Mode 8

(0) Zero Calibration	CA; 0
(1) Balance Weight	81; 100.00
(2) Capacity	82; 100.00
(3) Minimum Scale Division	83; 0.01
(4) Digital Zero Regulation Value	84; 02.00
(5) Unit/Decimal Point/Dual range	85; 320
(6) Display Frequency	86; 3
(7) Interval Border	87; 050.00
(9) Span Calibration	C9; 100.00

Setting Mode 9

(1) Digital Filter	91; 4
(2) Motion Detection	92; 1.5 - 05
(3) Zero Tracking	93; 0.0 - 00
(4) Standard/NTEP Mode Selection 1	94; 00011
(5) Standard/NTEP Mode Selection 2	95; 11110
(6) Gravitational Acceleration	96; 09
(9)	99; 0000

10.3 Specifications

1. ANALOG

a.	Loadcell excitation	DC 10V±5%
b.	Loadcell current	180mA
c.	Loadcell cabling	4-wire standard, 6-wire with remote sensing
d.	Zero adjustment range	±2.0mV/V
e.	Span adjustment range	0.5 to 3.0mV/V
f.	Analog input signal sensitivity	0.5 μ V/digit
g.	Stability	Zero drift: within 0.2 μ V/℃ RTI (referred to input) Gain drift: 10ppm/℃
h.	Non-linearity	within 0.01% FS
i.	Noise	within 0.3 μ Vp-p RTI
j.	Conversion rate	50 times/sec. (20mS)
k.	Resolution	16 bit
l.	Display resolution	1/10,000 (Legal for Trade) 1/30,000 expanded

2. DISPLAY

a.	Display tube	Original bright vacuum fluorescent display tube
b.	Numeric display	7 digits, character height 18 mm (0.71 inch)
c.	Weight value display	5 digits
d.	Counting display	4 digits
e.	Unit	lb, kg, g, t, N or None selectable
f.	Display update rate	3, 6, 13, 25 times/sec. selectable (internal 50 times/sec.)
g.	Minimum scale division	1 to 100 selectable
h.	Decimal point	Selectable 0, 0.0, 0.00, 0.000, 0.0000
i.	Scale capacity	5 digits (Up to 99999)
j.	Center zero	' →0← ' turns on when the displayed value is at the center zero. (0±1/4 scale).
k.	Status display	Indicated by fixed character display tube →0← / STAB / TARE / NET / GROSS / ⊶ / ZT/ Z ALM/ HI LIM/ HI/ GO/ LO/ LO LIM/ HOLD/ NZ

3. CONFIGURATION

a. Setting method	Keyboard operation (membrane keyboard with a key click buzzer)
b. Memory	Initial set values: NOV RAM (Non-volatile RAM) Other set values: C-MOS RAM backup by a lithium battery
c. Protection of set values (LOCK)	Initial set values and calibration can be protected from miss-operation. (LOCK SW, LOCK 1, LOCK 2)
d. Calibration	Zero Calibration/ Span Calibration/ Balance Weight/ Capacity/ Min. Scale Division/ Display Frequency/ Decimal Point/ Unit/ Digital Zero Regulation/ Gravitational Acceleration
e. Dual Range	Auto Dual Range · Interval Border ON/OFF
f. External output signal	High Limit/ Low Limit/ Stable/ Error/ Run Open-collector output of a transistor (the emitter = the COM terminal) The signals are ON when the transistor is ON.
g. External input signal	Digital Zero ON/ Hold The signals are ON when short-circuited with the COM terminal by contact (a relay, a switch etc.) or a contactless switch (a transistor, a TTL of the open collector output etc.).

4. INTERFACE

a. 2-wire serial interface (SI/F) (Standard)	Connects Unipulse indicator to other Unipulse device. Transmitting method: Asynchronous Transmitting speed: 600bps
b. RS-232C communication interface (Option)	Weight and status can be written or read from a host computer. Signal level: Based on RS-232C Transmitting distance: Approx. 15m (16.41 yard) Transmitting method: Asynchronous Transmitting speed: 1200, 2400, 4800 or 9600bps selectable Bit configuration: Start 1 bit Character length 7 or 8 bits selectable Stop 1 or 2 bits selectable Parity none, odd or even selectable Code: ASCII/ANK

5. GENERAL SPECIFICATIONS

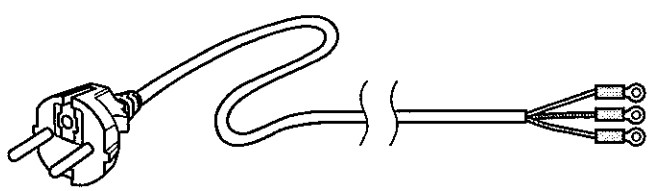
a.	**Voltage input**	**AC100V, 120V, 200V or 220V +10% -15% 50/60Hz**
b.	**Power consumption**	**Approx. 20VA**
c.	**Operating temperature**	**-10℃ to +40℃ (+14°Fto +104°F)**
	Storage temperature	**-40℃ to +80℃ (–40°Fto +176°F)**
d.	**Humidity**	**＜85%RH (non-condensation)**
e.	**Dimensions**	**263W×183H×95D mm (10.35W×7.20H×3.74D inch)**
f.	**Weight**	**Approx. 2.2 kg (5.95 lb)**

About the power cable

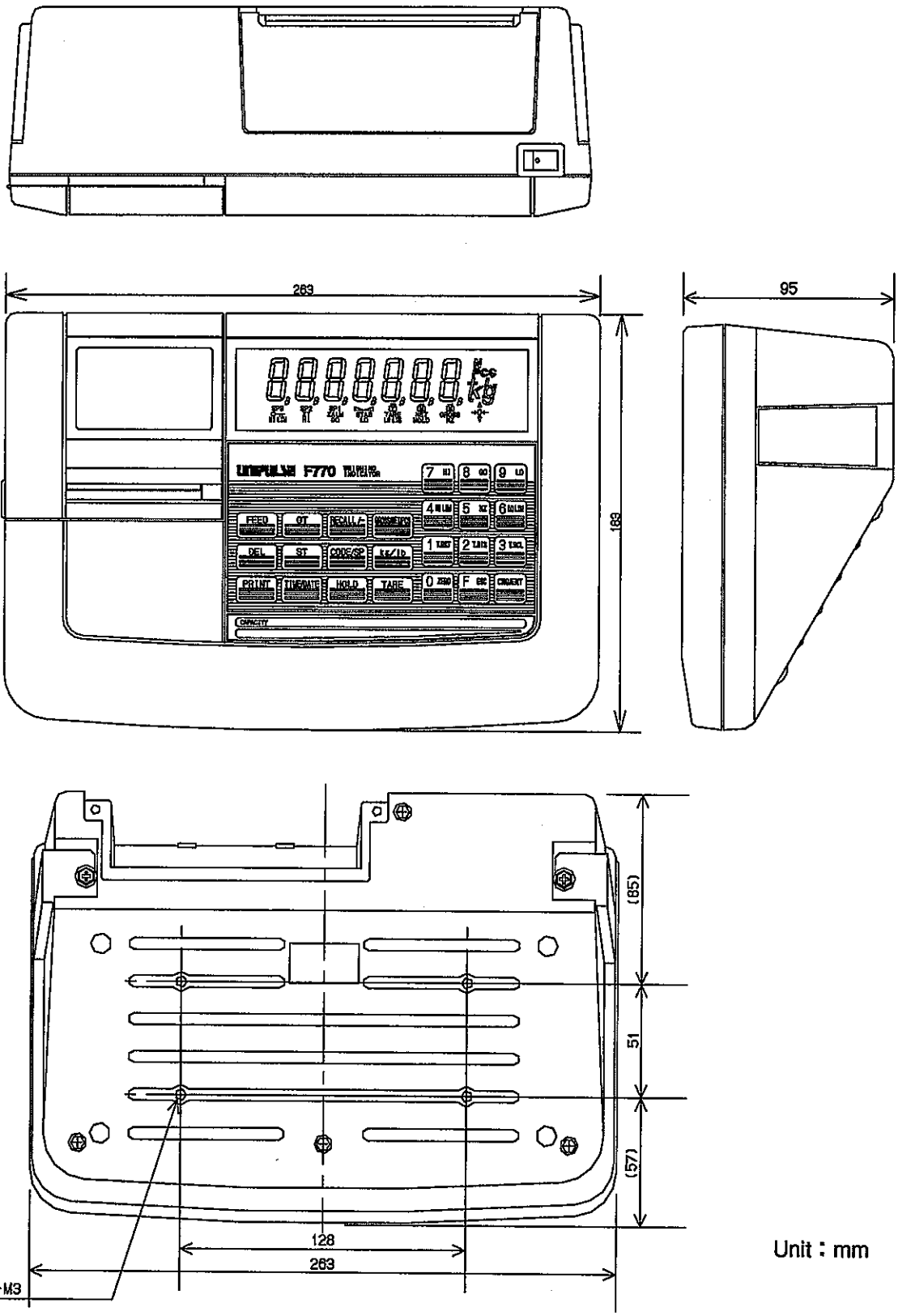
- The power cable attached to this product as standard equipment can be used in the AC100V power supply in Japan. (Official ratings voltage AC125V)
  Please use the power cable authorized in the country when you use this product outside Japan.

- Our company sells following resistance pressure cable AC250V (European standard product) separately.
  Please purchase it from us when you need after confirming its plug shape/ voltage.

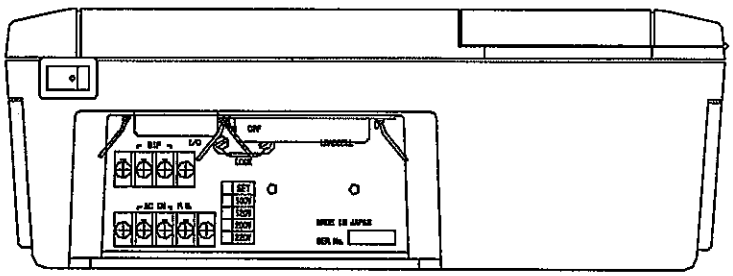
CAAC3P-CEE7/7-B2 : CEE7/7 Plug cable (2m)



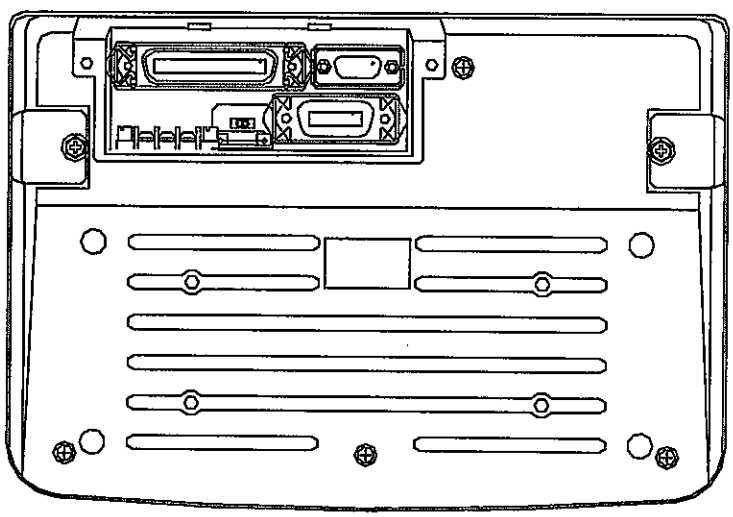
10.4 Dimensions

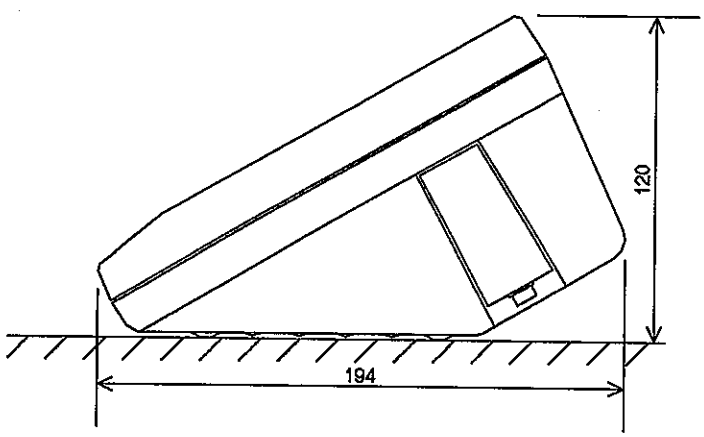


Remove the rear cover (side)



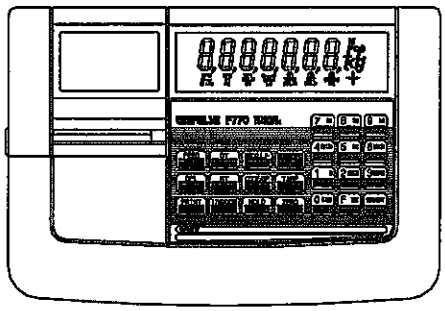
Remove the rear cover (buttom)



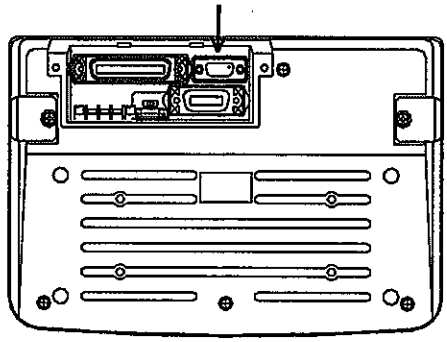


10.5 Accessories

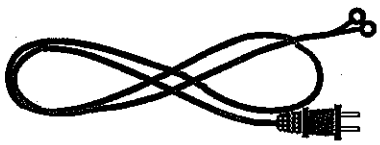
1. F770



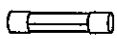
RS-232C Communication Interface (option)



2. AC power cable (2m)

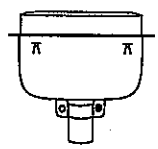


3. Fuse

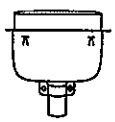


(250V 1A)

4. Control Connector



5. Loadcell connector



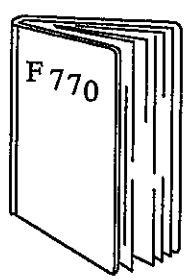
6. Terminal connector (5 pcs)

7. Ink ribbon cassett

8. Roll paper

9. Capacity seal

10. Operation manual



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