HW-G Series

Digital Platform Scales

Instruction Manual

0Z1M v1a

HW-10KGL	HW-10KGV
HW-60KGL	HW-60KGV
HW-100KGL	HW100KGV
HW-200KGL	HW-200KGV

A&D

A&D WEIGHING
...Clearly a Better Value

⚠ This is a hazard alert mark.

This mark informs you about the operation of the product.

Note This manual is subject to change without notice at any time to improve the product. No part of this manual may be photocopied, reproduced, or translated into another language without the prior written consent of A&D Mercury Pty. Ltd..

Product specifications are subject to change without any obligation on the part of the manufacturer.

Contents

1 Compliance

1.1 Compliance with FCC rules

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

2 Outline and Features

The HW-G series is a platform scale with a minimum resolution of 1/10000 .

Type L scales have an LCD (Liquid Crystal Display) and use batteries as a power source to provide portability. This type can also use an AC mains adaptor.

Type V scales have a fluorescent display so the weighing value can be read in dim light. This type uses the AC power line as a power source.

The base unit (platform) is water-resistant in accordance with IP-65 specifications.

The counting mode function converts the total mass value (total weight) of articles to a count, assuming all items to have the same mass.

The percentage mode function displays the mass of an item as a percentage of a stored 100% mass.

The accumulation function accumulates each weighing value and counts the number of weighings.

The comparator function compares the display value with the upper limit value (HI) and the lower limit value (LO) and displays the result. The result can output if option OP-03 is installed.

The simple batch function or full/dribble batch function can be used for filling to a target mass value. The status of a weighing value can be output if option OP-03 or OP-04 is installed. The outputs are Zero Band, Preliminary and Final.

The optional RS-422/RS-485 serial interface can control up to 16 scales from a computer when this option is installed in place of the standard RS-232C serial interface.

Type V scales can be equipped with option OP-06, a built-in impact dot matrix printer.

Products
HW-10KGL
HW-10KGV

Display Unit

Products
HW-60KGL   HW-60KGV

Pan

Caution
Do not pull the load-cell cable.

Pan

Base Unit
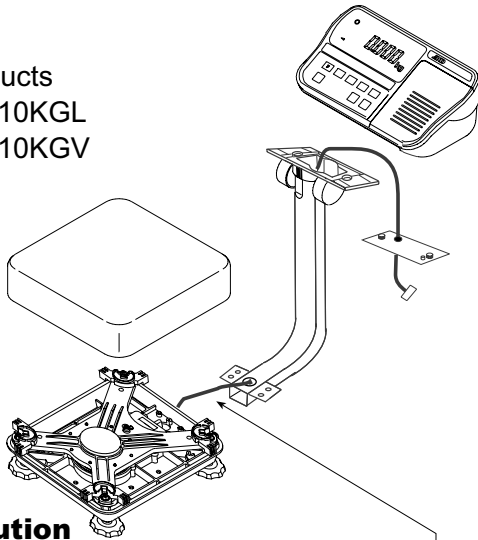
Caution
Do not pull the load-cell cable.

Products
HW-100KGL   HW-100KGV
HW-200KGL   HW-200KGV

Display Uint

Pan

Base Unit
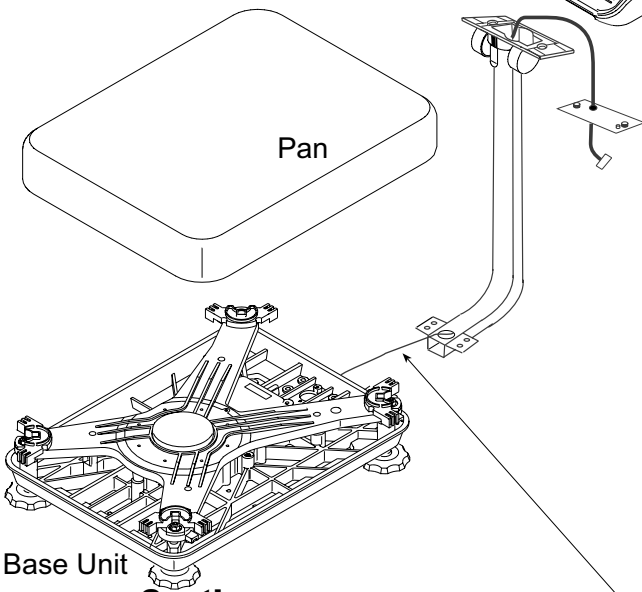
Caution
Do not pull the load-cell cable.

All Accessories
Refer to the accessries on page 6. The combination of accessories depends upon the model.

⚠ AC Adaptor
Please confirm that the AC adaptor type is correct for your local voltage and receptacle type.

Display unit cover

5mm allen wrench

Type V

Fluorescent display

Option built-in printer

⚠ Mains power cord

Type L

LCD display

⚠ AC Adaptor

Batteries
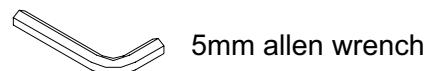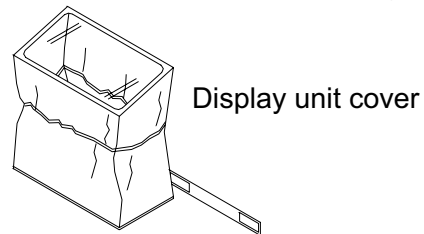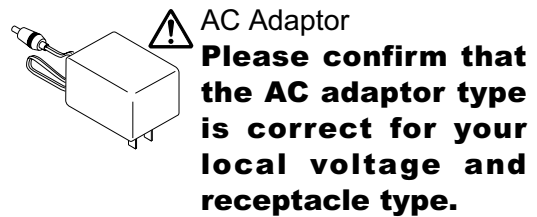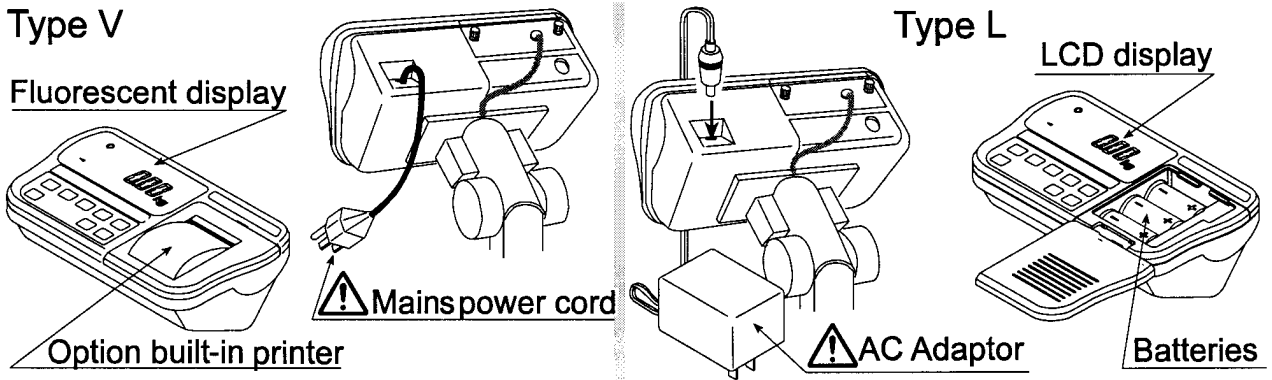
Please confirm that the mains power type or AC adaptor type is correct for your local voltage and receptacle type.

⯯ 3.1 Accessories and Options list

Accessories for HW-G series

Type	Products	Accessories
Type V	HW-10KGV	Display unit cover Instruction manual
	HW-60KGV HW-100KGV HW-200KGV	Display unit cover 5mm Allen wrench Instruction manual
Type L	HW-10KGL	Display unit cover AC adaptor Instruction manual
	HW-60KGL HW-100KGL HW-200KGL	Display unit cover 5mm Allen wrench AC adaptor Instruction manual

Options List

Order code or option name		Accessories
OP-03	RS232C interface / Relay output / Buzzer	Connector JA:TCP0586
OP-04	RS422/485 interface / Relay output	Connector TM:BLA9 AC adaptor
OP-06	Built-in printer for type V	Paper PP156 Ink ribbon ERC-05
AX-K0557A	RS232C cable, D-sub 25 pin, 2m	
AX-KO1786-200	RS232C cable, D-sub 9 pin, 2m	

Consumables

AX-PP156-S	Special roll paper (10 rolls in a set)
AX-ERC-05-S	Ink ribbon (5 ribbons in a set)

AX-K0557A AX-K01786-200
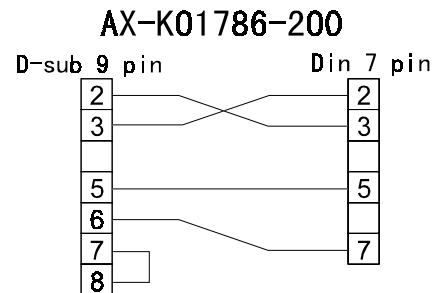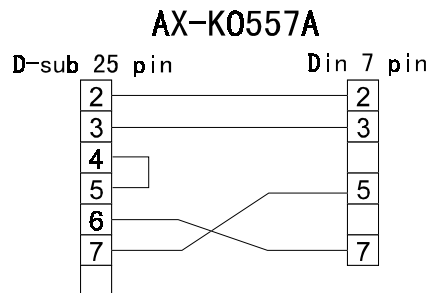
4 Caution

4.1 Precautions for Installing the Scale

Consider the following conditions to get the most from your scale.
The best operation is where the temperature and relative humidity are stable, the scale is installed on a solid floor or bench and there is no draft.
Do not install the scale in direct sunlight.
Do not install the scale near heaters or air conditioners.
Do not install the scale where there is flammable or corrosive gas present.
Do not install the scale near equipment which produces magnetic fields.
Do not install the scale where there is likely to be static electricity discharges in a place where the relative humidity is lower than 45%RH. Plastic and isolators are likely to be charged with static electricity.
The display unit is **not water resistant**. Use the display unit cover to avoid damage.
Do not use an unstable power source.

4.2 Precautions for Operating the Scale

Periodically check the scale with a known weight.
Calibrate the scale before using it and after moving it to another location.
Do not place anything on the pan which is heavier than the weighing capacity
Do not drop anything onto the pan.
Do not use a sharp instrument such as a pencil or ball-point pen to press the switches. Press the switches gently using only your finger.
We recommend pressing the ZERO or TARE switch before each weighing to prevent possible error.
Replace used dry cells with six new ones when the BATT symbol is displayed.
Dry cell (battery) is size D.

4.3 Precautions for Storing the Scale

Do not disassemble the scale.
Do not use solvents to clean the scale.
For best cleaning of the display unit, wipe with a dry lint free cloth or a lint free cloth which is moistened with warm water and a mild detergent.
The base unit can be cleaned with gentle water jets while brushing the base unit. Weigh only after the unit is dry.
Protect the display unit from dust and water by using the vinyl cover.
Remove batteries from display unit when the scale is not in use for a long time. If you leave the batteries installed they may leak and damage the scale.

⏬ 5 Installing the Scale

This procedure includes all of the steps for installing the HW-G series scales

Step 1 Unpacking
Remove the weighing pan from the carton and place to one side. Remove the base unit and column from the carton, taking care not to pull on the loadcell cable.

Step 2   Secure the Column
Step 2a   Remove the 4 Allen screws from the column lower bracket.
Step 2b Pull the excess loadcell cable through the column as you position the column to the base unit, so as not to damage the loadcell cable. Affix the column to the base unit using four 5mm Allen screws.

Stpe 3   Secure the Display Unit
Step 3a   Remove the 2 screws from the rear of the display unit, position the display unit onto the column bracket and pull the excess cable back down the centre of the column to the base unit. Ensure that the cable exits via the cut out in the display unit column bracket and secure the headwork with the 2 screws.

Step 3b   Carefully make the connection between the cable connector and J1 inside the headwork, then secure the rear display panel.

Step 4   Fit the Pan
Step 4 Fold the excess cable at the basework end and secure with the 'twist and tie' strip provided.
Fit the pan to the base unit.

Column

Step 2a

Step 1

Base unit

Load-cell cable

Step 2b

5mm allen screws

Allen wrench

Step 3

Screws

Step 4

Tie excess cable here
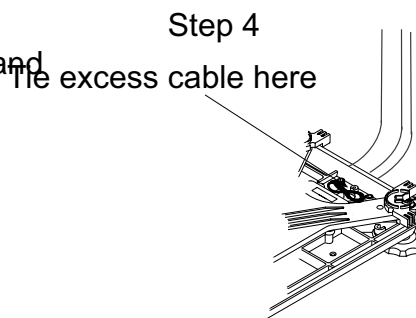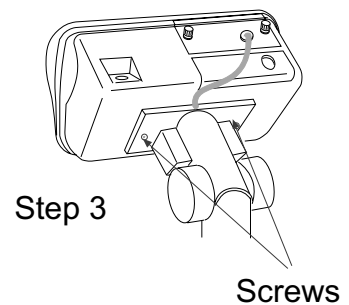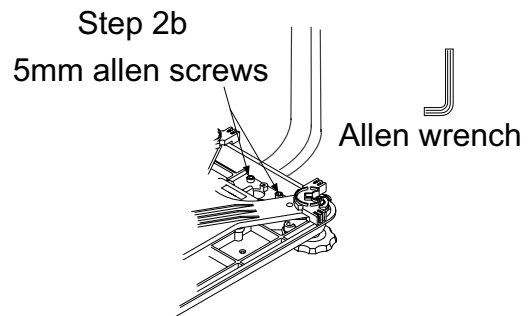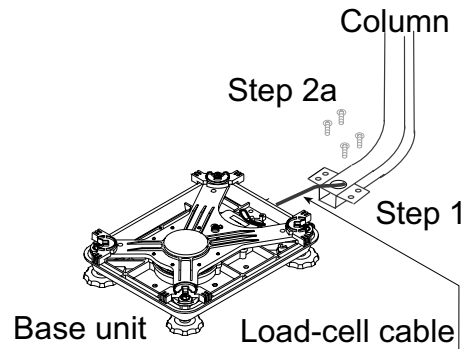
Select the place where you intend to instal the scale. Consider "4. Caution" on page 8.

Bubble spirit level

Step 5   Level the Scale
Level the base unit by using the "Bubble spirit level" and "Levelling feet".

Leveling foot

Step 5   OK   NG
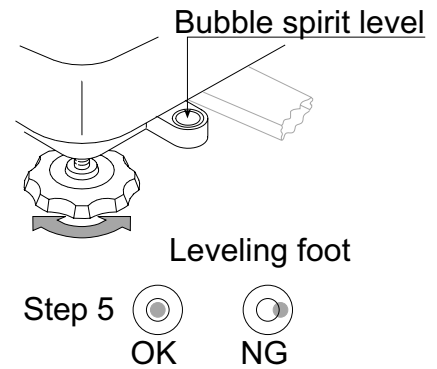
Step 6   Adjust the Display Unit
Press the caps at the pole top from both sides and adjust the angle of the display unit.

Step 6
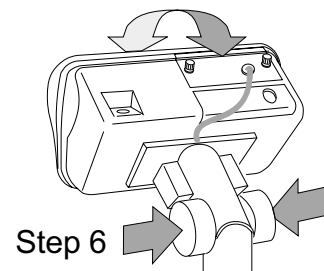
Step 7   Connect the Power
Install the batteries (see page 11) or connect the AC adaptor or mains cable. Check the weighing accuracy. If the scale needs calibration, refer to "14 Calibration".

⬇ 5.1 Installing the Batteries for Type L

Step 1   If necessary turn off the display
and remove the AC adaptor.
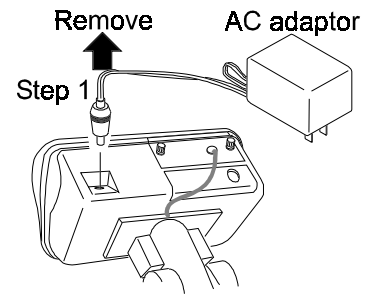
Step 2   Press and slide downwards to remove the
external cover.
Press the hook of the internal cover to the
left side and lift off the cover.
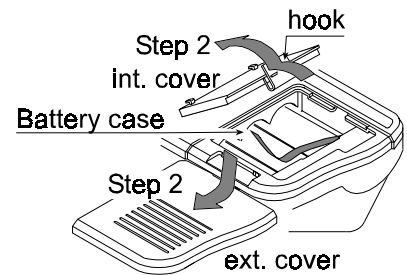
Step 3   Insert six new dry cells ensuring correct
polarity (+,-). Battery size is 'D'.
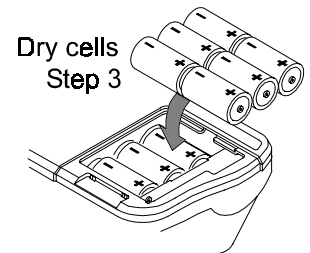
Step 4   Replace the covers removed in step 2.
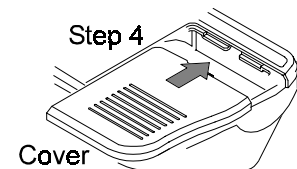
Caution

Replace used dry cells with six new ones, when BATT is displayed.
Do not mix used and new batteries. It may cause damage to the battery
or product.
Check the polarity when installing the batteries. If you do not observe
this it may cause battery leakage. Also if the polarity of a battery is
wrong the scale may only work temporarily.
The battery life is dependent upon the environmental temperature.
Remove batteries from the display unit when the scale is not to be used
for a long time. They may leak and cause damage.
Damage which is due to battery leakage is not covered under warranty.

HW-G OZIM v1a

⬇ 6 Names

Display unit

Angle adjustment

Column

Weigh pan

Base unit
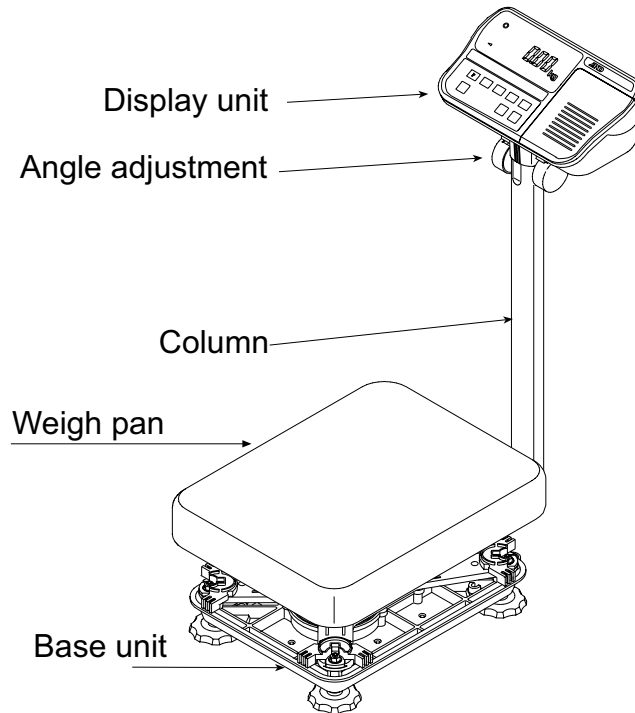
RS-232C Interface connector
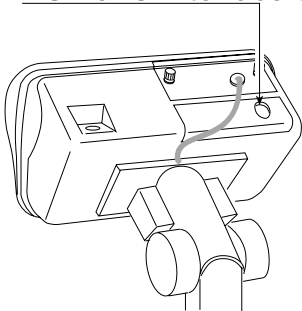
Type L

Battery Case
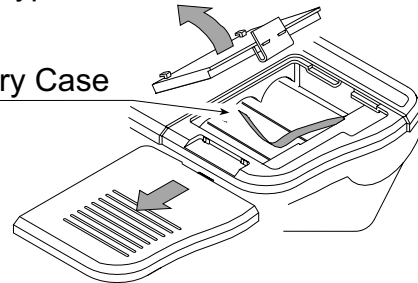
CAL switch
Calibrating the scale to weigh it correctly.
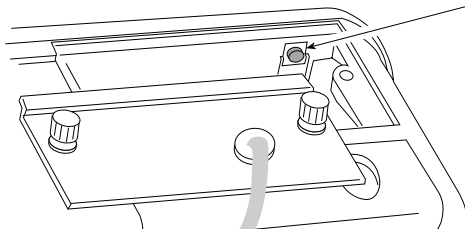
Caution
It is necessary to use classified mass.
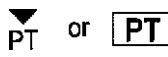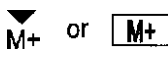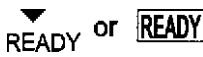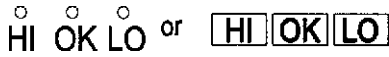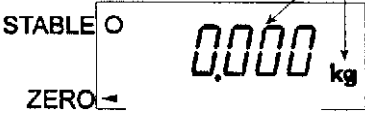
Leveling Foot
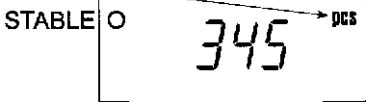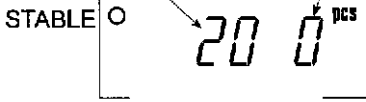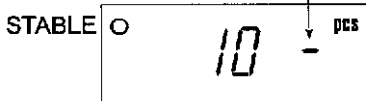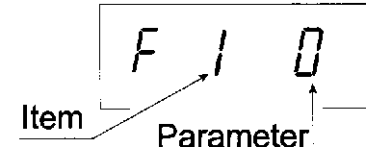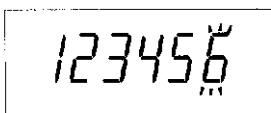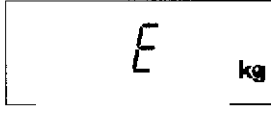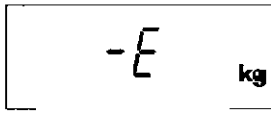
Bubble Spirit Level
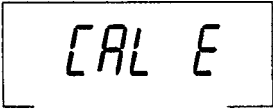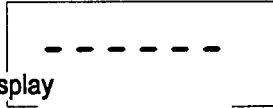
Display and Symbols	Meaning
STABLE O	Stability mark. When the current weight value is not changing, this mark is displayed. The reading may now be taken.
NET ZERO ◄	Zero point mark. With nothing on the pan and pressing the ZERO switch or with a mass on the pan and pressing the TARE switch, this mark is displayed. The zero point is the starting point to weighing.
NET ◄ ZERO	Net mark. After pressing the TARE switch this mark is displayed to show net weight is displayed
▼ or PT PT	Preset tare mark. When storing a tare with digital input this mark blinks.
▼ or M+ M+	Accumulation mark. When using the accumulation function, this mark is displayed.
BATT	Low battery mark for type L. When the battery power is low this mark is displayed. Replace with six new batteries.
▼ or READY READY	Ready mark for the full/dribble batch function. This mark shows: ON The weighing value is within the zero-band. OFF The full/dribble batch process is above the zero-band. Blinking The start or end of the full/dribble batch process above the zero-band.
HI OK LO or HI OK LO	The comparator indicator. Using the comparator function and comparing a weighing value with the upper and lower limits, the result is indicated. Using the full/dribble batch function, the full flow gate indicator is shown as OK, the dribble flow gate indicator as HI and the zero band indicator as LO.
Weighed mass value unit STABLE O 0.000 kg ZERO ◄	Example:- Display of zero (zero point). With an empty weighing pan by pressing the ZERO switch:- The Zero mark is displayed. The stability mark is displayed.
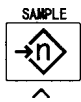
Display and Symbols	Meaning
Unit of counting mode STABLE ○ _345_ ► PCS	Example:- Display of the counting mode. This mode uses the registered unit mass, counts the quantity of articles on the pan. The unit is PCS.
20 pieces Zero point STABLE ○ _20 0_ PCS	Example:- Storing the unit mass in the counting mode. This is a display of zero point for counting mode and uses 20 pieces for the unit mass registration.
Not a zero value STABLE ○ _10_ - PCS	Example:- Storing the unit mass in the counting mode. Sign "-" means "weighing value is not zero". Sample number is 10 pieces.
STABLE ○ _130_ % Unit of percentage	Example:- Percentage mode. This mode uses the registered 100% mass, converts the weighing value to a percentage. The unit is % .
_F 1 0_ Item Parameter	Example:- Display of the function table. This function table sets parameters of items. ◁ switch Selecting an item. △ switch Selecting a parameter of the item. ENTER switch Storing new parameters.
_123456_	Example:-. Preset tare. Entering tare with digital input. ◁ switch Selecting a figure. △ switch Selecting a number. ENTER switch Storing new tare.
Fixed value kg	Example:- Hold display The hold display is set using _F 12_ of the function table. When weighing value is "near-zero" or changes more than 25% +30 digits, the hold is cancelled.
_E_ kg	Overload display. Remove everything from the pan.
_-E_ kg	Weighing error. Check the base unit and weighing pan.
-CAL E	Calibration error. Means "Calibration mass is too light". Check the base unit and weighing pan.

Displays and Symbols	Meaning
[RL E	Calibration error. Means "Calibration mass is too heavy". Check the base unit and weighing pan.
888888 Fixed display	Weighed value is unstable due to drift, vibration etc. when turning on the scale. Check around the weighing pan. Check the connection of the load cell cable.
- - - - - - Fixed display	Remove everything from the weighing pan. Check around weighing pan. Perform zero point calibration of the scale.
Blinking ☀ M+ or M+	Accumulated data count
Blinking ☀ M+ kg or M+ kg	Total mass value of the accumulated data.
Blinking ☀ HI or HI	Comparator function = display is an upper limit. Full/dribble batch function = display is a final value.
Blinking ☀ OK or OK	Full/dribble batch function = display is a preliminary value.
Blinking ☀ LO or LO	Comparator function = display is a lower limit. Full/dribble batch function = display is the zero band.
CAP. MAX. 10kg d=1g	Description of the weighing capacity and minimum graduation.

6.2 Switches

ON/OFF ①	Power switch. Note Type V is in standby status when power is connected.
ZERO →O←	Zero switch. When there is nothing on the pan and the ZERO switch is pressed, the scale displays zero and the zero point mark. Any stored tare is cancelled.
TARE →T←	Tare switch. Used to store the weight of a container when carrying out net weighing.
SAMPLE →ⁿ▷ ^	Sample switch. Storing the unit mass it is used to select a sample number. In the function table it is used to select a parameter.

SET ◇R◇ <	Set switch. Can be used to turn the comparator on/off. (Refer to $F6$) Counting mode, it is used to enter the mode to store the unit mass. Percentage mode, it is used to enter the mode to store the 100% mass. In the full/dribble batch function, it is used as a start switch. In the preset tare, and selecting calibration mass, it is used to select a figure.
MODE ↻ ENTER	Mode switch. Used to change the current unit. While setting modes, this switch is used for "storing a parameter and proceeding the next step".
F	F switch Full/dribble batch function it is used to finish the process. (Refer to $F10$) Hold switch. (Refer to $F12$) Setting a preset tare, selects polarity (+,-).
PRINT ⊙	Print switch. Used to print or output data. (Refer to $F5, F9$)
Display off ⬇ ZERO Press and hold →0← ON/OFF And press ⏻	Used to enter the function table
SET Press and hold →R◇ TARE And press →T←	Used to enter the mode to set a preset tare
PRINT Press and hold ⊙ And press F	Used to perform paper feed for the optional printer for type V.

⬇ 7 Basic Operation

⬇ 7.1 Turning the Scale On/Off & Basic Weighing

7.1.1 Type V or Type L with AC adaptor

Step 1 Ensure that the pan is empty.

Step 2 Confirm that local voltage and receptacle type match your scale.

Step 3 The scale turns on/off using the ON/OFF switch alternately.

Step 4 Check the accuracy of weighing. If you calibrate the scale, perform it after allowing the scale to warm up for 30 minutes.

Step 5 Press the ZERO switch to display zero. (With nothing on the pan.)

Step 6 Place something gently onto the pan.

Step 7 You can read the weight after the stability mark is displayed.

Step 8 Remove the item from the pan.

Step 9 Turn the scale off using the ON/OFF switch.

Memo

With the power cord connected, type V consumes only sufficient power for standby status after turning off the scale.

With the AC adaptor connected, type L consumes only the power of the AC adaptor after turning off the scale.

7.1.2   Type L with Batteries

Step 1   Install six new batteries. Refer to "5.1. Installing the batteries for Type L".

Step 2   Ensure that the pan is empty.

Step 3   The scale turns on/off using the $\boxed{\text{ON/OFF}}$ switch alternately.

Step 4   Check the accuracy of weighing. If you calibrate the scale, perform it after warming up the scale for 30 minutes. You will need to disable the auto power off function. See 15.2 page 43.

Step 5   Press the $\boxed{\text{ZERO}}$ switch to display zero. (With nothing on the pan.)

Step 6   Gently place something on the pan.

Step 7   You can read the weight value after the stability mark is displayed.

Step 8   Remove the item from the pan.

Step 9   Turn the scale off using the $\boxed{\text{ON/OFF}}$ switch.

Caution
Replace used dry cells with six new ones when $\boxed{\text{BATT}}$ is displayed.
Battery life is affected by the environmental temperature.
Remove batteries from the display unit when the scale is not to be used for a long time. The batteries may leak and cause damage.

⬦ 7.2   Tare (and Net Display)

The "Tare" is used to cancel the mass of a container, receptacle, case, bag, etc. which is put on the pan to contain the item to be weighed.
Caution
The tare reduces the available weighing range.
The current tare value is reset by pressing the ZERO switch when the pan is empty, or by turning the scale off. (Reset value is zero.)

7.2.1 Semi-Automatic Tare (Input by Weighing)

Step 1   Put the container onto the pan.

Step 2   Press the TARE switch. The display becomes zero and the net mark is displayed.

Step 3   It is now possible to put something into the container and to read its net display.

Step 4   Remove all items from the pan.

7.2.2 Preset Tare (Digital Input of Known Tare)

Step 1   Press and hold the SET switch and press the TARE switch. Then the blank or stored tare value is displayed. This blank display means that the tare value is zero (reset value) and ⚖ or PT blinks.

Step 2   Set the preset tare value by using the following switches.
∧ switch   selecting the value of a digit.
< switch   selecting a digit.

Step 3   Press the ENTER switch to store the new preset tare value.
The scale displays a net value i.e. the tare value subtracted from the gross weight value.

Step 4   It is now possible to put something onto the pan and to read its net weight.

Step 5   Remove all items from the pan.

Pressing the MODE switch the display changes as shown below. Refer to the function table $F3$ for available units. Useable units are according to the factory settings.

Pound	**lb**
Ounce	**OZ**
Pound-Ounce	L **OZ**

If the law in your area premits, you may use all of the units. Also, some dealers may initially turn off units which are not regularly used.

Non metric units

| Metric kg | **kg** |

Metric unit

| Counting Mode | **pcs** |

| Percentage Made | **%** |

Inactive Comparator ($F6\ 0$)
and
Inactive Accumulation Function ($F8\ 0$)

Either function is active.
  Comparator ($F6\ 1 \sim F6\ 7$)
  Simple Batch Function ($F6\ 8$)
  Full/Dribble Batch Function ($F6\ 9$)
  Accumulation Function ($F8\ 1$)

| Accumulation Count | ▼ M+ or M+ |

No Accumulation Data

| Accumulation Value | **kg** ▼ M+ or M+ |

Active Simple Batch Function or
Active Full/Dribble Batch Function
($F6\ 8, F6\ 9$)

Active Comparator
($F6\ 1 \sim F6\ 7$)

| Comparator Upper limit | HI or HI |

| Final value | HI or HI |

| Comparator Lower limit | LO or LO |

| Preliminary value | OK or OK |

| Zero band | LO or LO |

8 Counting Mode

In counting mode the total weight of articles is converted to a count and assumes all articles have the same mass value.

It is necessary to store a unit mass to count articles.

8.1 Storing a Unit Mass

Step 1 Press the MODE switch to display the unit ᴾᶜˢ.

Step 2 Press the SET switch to enter the mode to store a unit mass.

Step 3 Press the ∧ switch to select the number of samples. The greater the quantity of samples, the greater the accuracy of the count. Select from 5 pieces, 10 pieces, 20 pieces, 50 pieces, 100 pieces

Step 4 Put the container onto the pan. Press the TARE switch.

Step 5 Put in the number of samples selected at step 3. Press the ENTER switch to store the weight after the stability mark is displayed. The count is then displayed.

Caution
When the sample is too light and it is not possible to calculate a unit mass, the scale displays ⌊Lo ut⌋ **and returns to step 3. It is necessary to increase the number of samples.**
Pressing the ENTER switch after the ⌊Lo ut⌋ **is displayed, the next unit is displayed.**
When the unit mass is too light to store, the scale displays ⌊Lo ut⌋ **.**

Step 4 Remove all items from the pan.
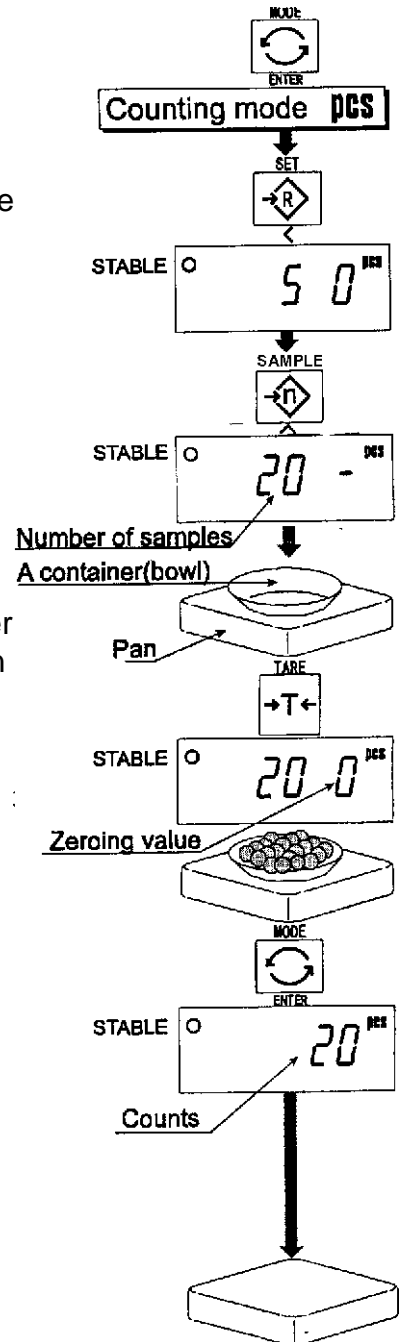
⬇ 8.2   Counting the number of articles

Step 1   Press the [MODE] switch to display the unit **PCS**

Step 2   Store the unit mass of the item.
Refer to "8.1 Storing a Unit Mass"

Step 3   Put the container only onto the pan.
Press the [TARE] switch.

Step 5   Put articles into the container and read the count.

Step 6   Remove all items from the pan.
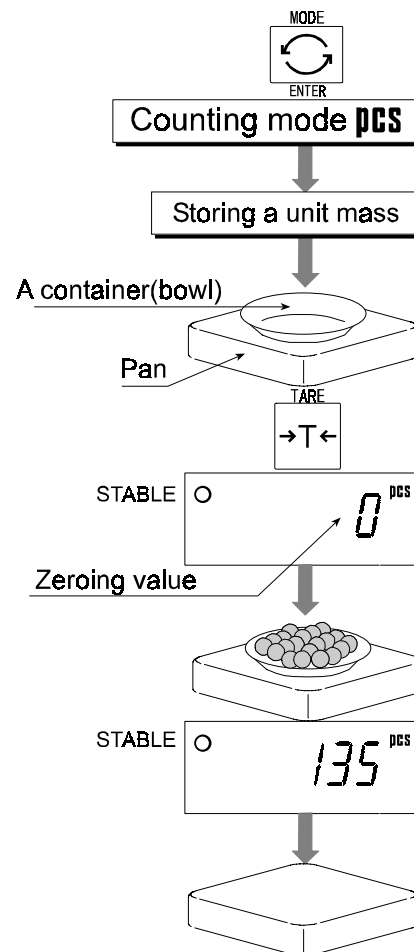
⬇ 9 Percentage Mode

The percentage mode is to display a mass value in the unit of "%".

It is necessary to store a 100% mass value in advance to use this function.

⬇ 9.1 Storing a 100% Mass

Step 1   Press the MODE switch to display the unit %.

Step 2   Press the SET switch to enter the mode that stores a 100% mass.

Step 3   If necessary, with nothing on the pan press the ZERO switch to display zero.

Step 4   Gently place the 100% mass onto the pan. Press the ENTER switch to store the mass after the stability mark is displayed. Then the percentage unit is displayed.

Caution
When the sample is too light and it is not possible to calculate a 100% mass, the scale displays `Lo .` **and returns to step 3.**
Pressing the ENTER switch after `Lo` **is displayed, the next unit is displayed.**

Step 5   Remove all items from the pan.
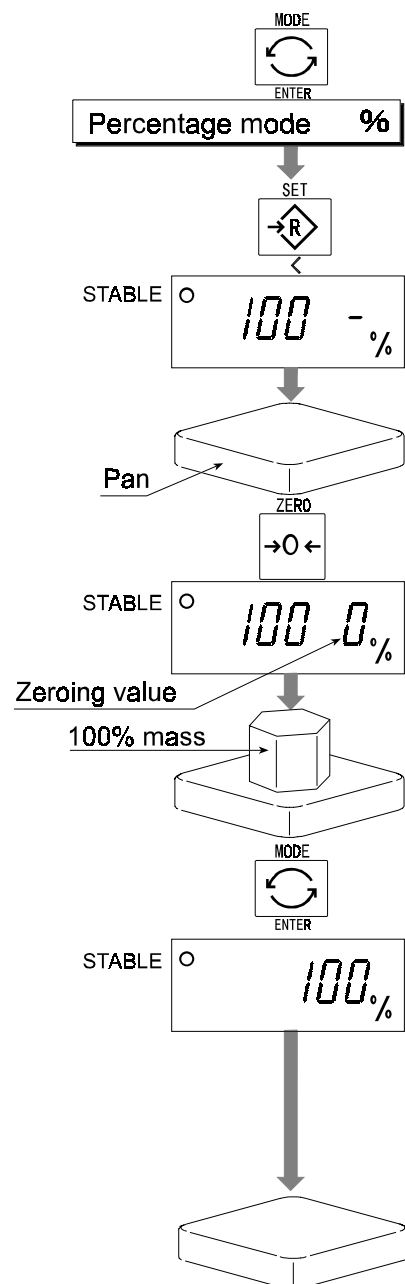
9.2   Reading Percentage

Step 1   Press the MODE switch to display the unit %.

Step 2   Store the unit mass of the article.
Refer to "9.1 Storing a 100% Mass "

Step 3   If a container is needed, put the container only onto the pan and press the TARE switch.

Step 4   It is now possible to put the item into the container and read the percentage.

Step 5   Remove all items from the pan.

MODE
ENTER

Percentage mode   %

Storing a 100% mass

A container(bowl)

Pan

TARE
→T←

○   *0* %
Zeroing value

○   *35* %
Percentage
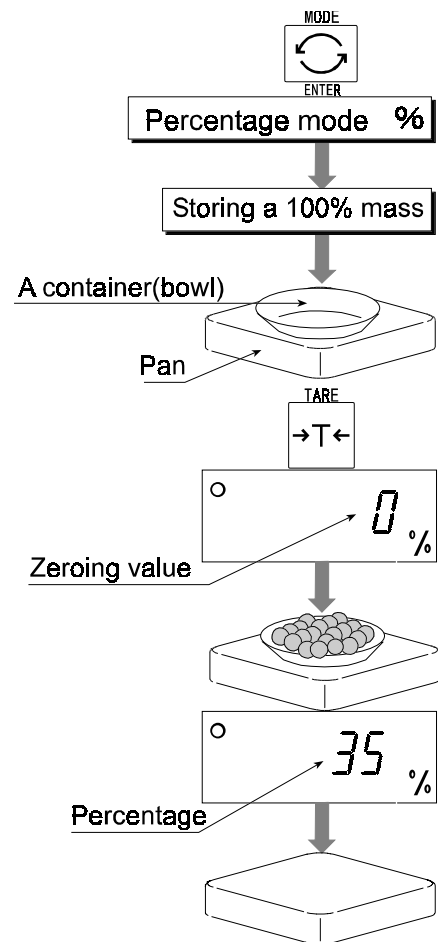
10   Accumulation Function

This function counts the number of weighed items, calculates the total mass value and can display the number and accumulated mass value.

It is necessary to set the parameters of the "accumulation function ($F8$)" in the function table in advance to use this function.

It is necessary to set the parameters of the "print mode ($F9$)" in the function table in advance to use the optional built-in printer.

Operation and Switches

The display of the accumulation count has a blinking ☒ or ☒ without a unit.

The display of the accumulation value has a blinking ☒ kg or ☒ kg with a unit. Pressing the MODE switch, the accumulation count and accumulation value is displayed.

Pressing the ZERO switch in the accumulation function while a blinking ☒ or ☒ is displayed, resets the current function. The count and accumulated value become zero.

When the optional built-in printer is installed and the PRINT switch is pressed, the accumulation data, date and data number are printed. Date is set at function table $F16$.

Caution

The accumulation function can only be used with the first weighing unit accumulated, e.g. you cannot accumulate pcs while displaying kg.

Parameter List and Word Definition
> The "near-zero" is within ±4 digits from the zero point in the unit of kg.
> The "digit", a unit of display, is equivalent to the minimum graduation.
> The "zero point" is the fundamental starting point to weighing.

Function table	Meaning & Purpose
$F8$ 0	Accumulation function not used.
$F8$ 1	The scale accumulates the data, if the F switch is pressed when the display is a positive stable value above near-zero. The next accumulation can be performed after the display returns to near-zero or to a negative value.
$F8$ 2	The scale accumulates the data, if the F switch is pressed, when the display is a stable value and outside near-zero. The next accumulation can be performed after the display returns to near-zero.
$F8$ 3	When the display is a positive stable value, the scale accumulates the data automatically. The next accumulation can be performed after the display returns to near-zero or to a negative value.

Function table	Meaning & Purpose
F8 4	When the display is a stable value, the scale accumulates the data automatically. The next accumulation can be performed after the display returns to near-zero. **Use** Recording the number and mass of articles removed from the pan. (Put the articles on the pan. Press the TARE switch at each removal.)
F8 5	At each finish of the full/dribble batch function, the scale accumulates the data automatically. **Use** Packaging articles like a powder, it is used for recording the bag number and total mass.

⧖ 10.1 Preparation (Setting Parameters)

Step 1 Turn off the display.
Press the ON/OFF switch while the ZERO switch is pressed and held. The function table is displayed.

Step 2 Press the ENTER switch to display an item of the accumulation function (F8).

Step 3 Select a parameter of the accumulation function (F8 1 ~ F8 4) with the ∧ switch.

Step 4 Press the ENTER switch to store the new parameter.
Press the F switch and then the ENTER switch to exit from the function table. Then the scale displays the weighing mode.
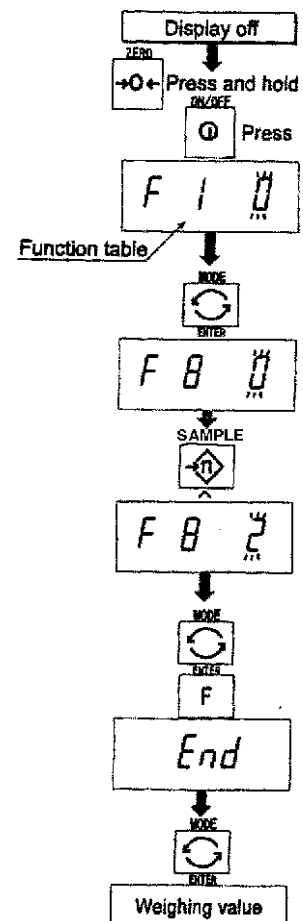
⬙ 10.2 Operation and Performance (Examples)

Example 1

Weighing each article, the scale makes the accumulation according to $\boxed{F8\ 3}$.

Step 1 Press the $\boxed{\text{MODE}}$ switch to display ⤓M+ or ⎣M+⎦.

Step 2 Press the $\boxed{\text{ZERO}}$ switch to reset the accumulation data.

Step 3 Return to the kg mode using the $\boxed{\text{MODE}}$ switch.
Press the $\boxed{\text{ZERO}}$ switch with nothing on the pan.

Step 4 Put an article on the pan. Wait for the stability mark to be displayed and the value to blink. Remove the article and, if necessary, press the $\boxed{\text{ZERO}}$ switch.

Step 5 Weigh additional articles using step 4.

Step 6 Press the $\boxed{\text{MODE}}$ switch to display the number of articles and total mass with ⤓M+ or ⎣M+⎦ displayed.

Example 2

This example accumulates the articles that were removed from the pan. The function parameter is set to $F8\ 4$.

Step 1 Enter into the kg mode using the $\boxed{\text{MODE}}$ switch.
Put all articles on the pan and press the $\boxed{\text{TARE}}$ switch.

Step 2 Press the $\boxed{\text{MODE}}$ switch to display ⤓M+ or ⎣M+⎦.

Step 3 Press the $\boxed{\text{ZERO}}$ switch to reset the accumulation data.
Retun to kg mode with the $\boxed{\text{MODE}}$ switch.

Step 4 Remove an article from the pan. Wait for the stability mark to be displayed and the value to be blinking. Press the $\boxed{\text{TARE}}$ switch.

Step 5 Remove additional articles using step 4.

Step 6 Press the $\boxed{\text{MODE}}$ switch to display the number of articles and total mass removed, with ⤓M+ or ⎣M+⎦ displayed.

⏷ 11 Comparator Function

This function compares a display value with the upper limit (HI) and the lower limit (LO) and displays these results.

It is necessary to set the "comparator function ($F6\ 0$ ~ $F6\ 7$)" parameters, upper limit value (HI) and lower limit value (LO) in the function table, in advance to use this function.

It is necessary to install option OP-03 or OP-04, if you use the relay output of the comparator.

Comparator Sign
Comparison results are displayed by indicators HI OK LO or [HI][OK][LO]

Comparison Condition
weighing value < lower limit value	LO is displayed and output.
lower limit value ≤ weighing value ≤ upper limit value	OK is displayed and output.
upper limit value < weighing value	HI is displayed and output.

Parameter List and Word Definition
The " near-zero " is within ±4 digits from the zero point in the unit of kg.
The "digit" is a unit of display, and is equivalent to the minimum graduation.
The "zero point" is the fundamental starting point to weighing.

Function table	Meaning and Purpose
$F6\ 0$	Having pressed the SET switch, the scale will always compare the current display value.
$F6\ 1$	The scale always compares the display value.
$F6\ 2$	Pressing the SET switch the scale always compares the display value if not near-zero.
$F6\ 3$	The scale always compares the display value if not near-zero.
$F6\ 4$	When the display value becomes stable after pressing the SET switch, the scale compares the display value. If the SET switch is pressed again the scale stops the comparison.
$F6\ 5$	When the display value is stable the scale compares the display value. It does not compare on an unstable condition.
$F6\ 6$	When the display value becomes stable while not near-zero, after pressing the SET switch, the scale compares the display value. It does not compare on an unstable condition. If the SET switch is pressed again the scale stops the comparison.
$F6\ 7$	When the display value becomes stable and not near-zero, the scale compares the value.

Caution
The upper limit value (HI) must be equal to or greater than the lower limit value (LO).
The parameters of the upper limit value (HI) and the final value (HI) use the same memory.
The parameters of the lower limit value (LO) and the zero band (LO) use the same memory.
The upper/lower comparator function, the simple batch function and the full/dribble batch function cannot be used at the same time because these parameters use common memory.

⬇ 11.1 Preparation (Setting Parameters)

Step 1 Turn off the display.
Press the ON/OFF switch while the ZERO switch is pressed and held. The function table is displayed.

Step 2 Press the ENTER switch to display an item of the accumulation function (F6).

Step 3 Select a parameter of the comparator function (F6 0 ~ F6 7) with the ∧ switch.

Step 4 Press the ENTER switch to store the new parameter.

Step 5 Press the F switch and the ENTER switch to exit from the function table. Then the scale displays the weighing mode.

HW-G OZIM v1a
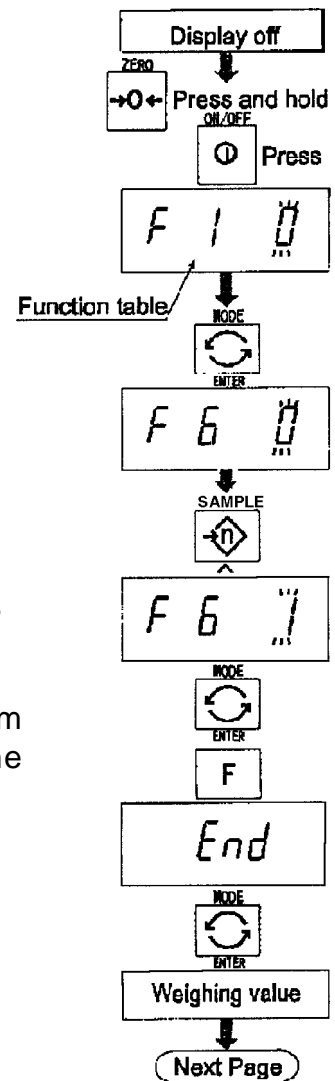
Step 6 If one of $\boxed{F6\ 0}$, $\boxed{F6\ 2}$, $\boxed{F6\ 4}$, $\boxed{F6\ 6}$ has been selected, press the $\boxed{SET}$ switch to use the comparator.

Step 7 Press the $\boxed{MODE}$ switch to display the HI, blinking.

Step 8 Set the upper limit value by using the following switches.
$\boxed{\wedge}$ switch   Selecting the value of a digit.
$\boxed{<}$ switch   Selecting a digit.
$\boxed{F}$ switch   Selecting the polarity (+,-).

Step 9 Press the $\boxed{ENTER}$ switch to store the new parameter and display the blinking LO.

Step 10 Set the lower limit value by using the following switches.
$\boxed{\wedge}$ switch   Selecting the value of a digit.
$\boxed{<}$ switch   Selecting a digit.
$\boxed{F}$ switch   Selecting the polarity (+,-).

Step 11 Press the $\boxed{ENTER}$ switch to store the new parameters and display the weighing mode.

Last page

select from
F6 0, F6 2
F6 4, F6 6

SET

MODE
ENTER
Blinking HI or HI

SET , SAMPLE , F

Upper limit value 7000

MODE
ENTER
Blinking LO or LO

SET , SAMPLE , F

Lower limit value 6500

MODE
ENTER

Weighing value and comparison result
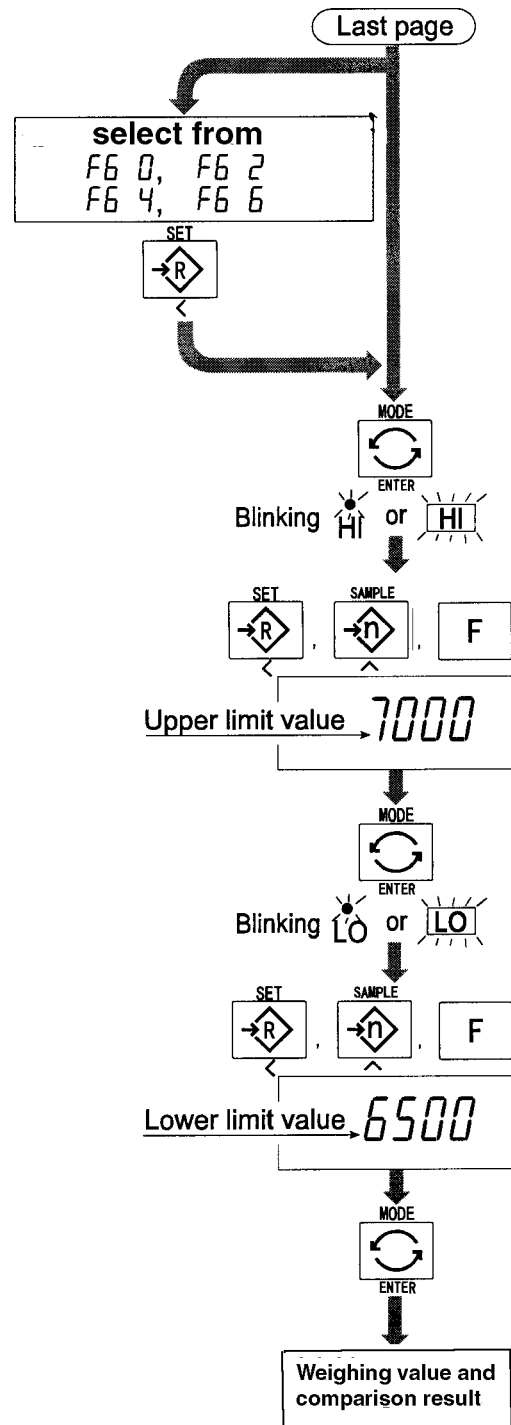
⬙ 11.2   Operation and Performance (Examples)

Example 1

This example is set as follows:

Function table   F6 3   (If the current display value is not near-zero,
                                      the scale compares the display value with the
                                      upper limit value and the lower limit value
                                      immediately.)

Upper limit value (HI)   7.000kg
Lower limit value (LO)   6.500kg

Case

The comparison starts at turning the scale on.
When the current value is less than 6.500kg, LO is displayed.
When the current value is between 6.500kg and 7.000kg, OK is displayed.
When the current value is greater than 7.000kg, HI is displayed.

Example 2

This example is set as follows:

Function table   F6 4   (Pressing the SET switch, after the stability
                                      mark is displayed, the scale compares the
                                      current display value with the upper limit value
                                      and the lower limit value immediately.)

Upper limit value (HI)   2.000kg
Lower limit value (LO)   -1.000kg

Case

Pressing the SET switch, after displaying the stability mark ,the comparison is
performed.

When the current value is less than -1.000kg, LO is displayed.

When the current value is between -1.000kg and 2.000kg, OK is displayed.

When the current value is greater than 2.000kg, HI is displayed.

⧨ 12   Full/Dribble Batch Function

This function changes the scale to a filling machine which sub-divides a bulk product like grain into loads of predetermined and virtually constant mass.

It is necessary to set the parameter of the "comparator function ($F6\ 9$)", " full/dribble batch sub-function ($F\ I0\ 0\ \sim\ F\ I0\ 3$)" in the function table, final value (HI), preliminary value (OK) and zero band (LO) in advance to use this function.

It is necessary to install option OP-03 or OP-04, if you use the relay output of the full/dribble batch function.

In the example of a filling machine with a scale and hopper, the performance and processing of the system are assumed to be as follows:

Procedure
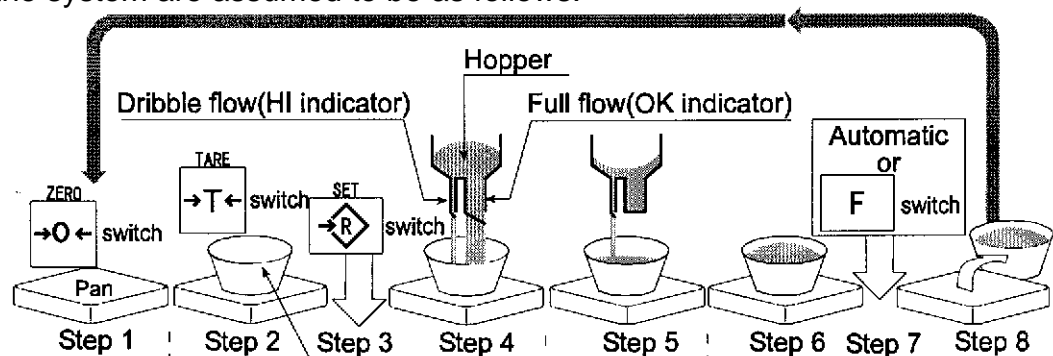
Weighing and Parameters
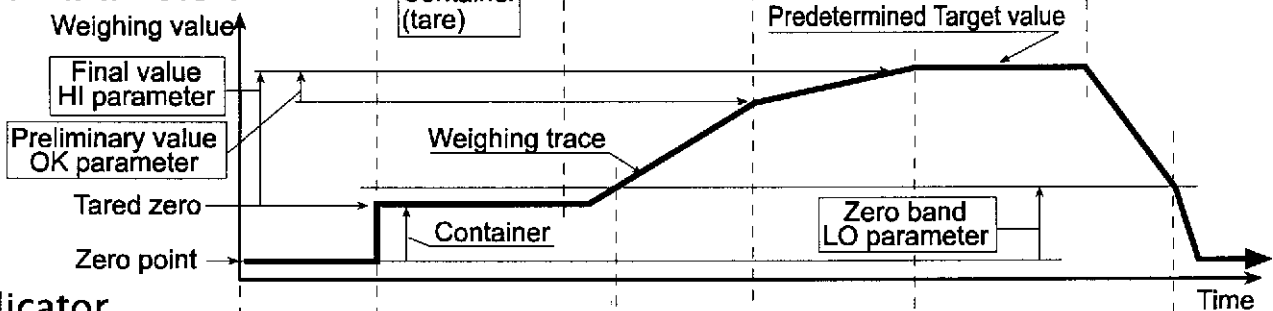
Indicator and Output

READY indicator	ON	OFF	OFF	Blinking	ON
Zero band, LO indicator	ON	OFF	OFF	OFF	ON
LO relay	Make	Break	Break	Break	Make
Full flow, OK indicator	OFF	ON	OFF	OFF	OFF
OK relay	Break	Make	Break	Break	Break
Dribble flow, HI indicator	OFF	ON	ON	OFF	OFF
HI relay	Break	Make	Make	Break	Break

	Zero Band indicator/ LO relay output	Preliminary value indicator/ OK relay output	Final value indicator/ HI relay output
Gross < Zero band (Zero detection level)	ON/Make	OFF/Break	OFF/Break
Net < Final - Preliminary	OFF/Break	ON/Make	ON/Make
Final - Preliminary ≤ Net < Final	OFF/Break	OFF/Break	ON/Make
Final ≤ Net	OFF/Break	OFF/Break	OFF/Break

Caution
The comparison of the full/dribble batch function is not reversible (One way sequence). If the display value becomes less than the final value after the value reached a predetermined target value, neither HI or LO is on.
The parameters of the upper limit value (HI) and the final value (HI) use the same memory. The parameters of the lower limit value (LO) and the zero band (LO) use the same memory.
The upper/lower comparator function, the simple batch function and the full/dribble batch function cannot be used at the same time because these parameters use common memory.
Set the zero band greater than the tare value.

Operation
Pressing the SET switch, the scale starts the batch process.
Selecting a parameter from F 10 0 or F 10 2 of the full/dribble batch sub-function, the F switch works as the finish switch.

Parameter List and Word Definition
The "gross" is a total weighing value, no tare value is subtracted.
The "net" is a measurement value with the tare value subtracted from the gross.
The "zero band" means the zero detection level.
The "zero point" is the fundamental starting point to weighing.

Comparator

Function table	Meaning and purpose
$F6$ 9	Full/Dribble batch function

Full/Dribble batch sub-function

Function table	Meaning and purpose
F 10 0	Reaching final value and pressing the F switch the current process is finished.
F 10 1	Reaching the final value and displaying the stability mark the current process is finished automatically.
F 10 2	Pressing the SET switch the scale automatically tares and starts the full/dribble batch process. Reaching final value anf pressing the F switch, the current process is finished.
F 10 3	Pressing the SET switch the scale automtically tares and starts the full/dribble batch process. Reaching the final value and displaying the stability mark the current process is finished.

Hold

Function table	Meaning and purpose
F 12 0	The hold function is not used

⬇ 12.1   Preparation (Setting Parameters)

Step 1   Turn off the display.
Press the ON/OFF switch while the ZERO switch is pressed and held. The function table is displayed.

Step 2   Press the ENTER switch to display an item of the comparator function (*F6*).

Step 3   Select a parameter of the full/dribble batch function (*F6 9*) with the ∧ switch.

Step 4   Press the ENTER switch to store the new parameter and display an item of the full/dribble batch sub-function (*F10*) .

Step 5   Select a parameter of the full/dribble batch sub-function (*F10 0* ~ *F10 3*) with the ∧ switch.

Step 6   Press the ENTER switch to store the new parameter

Step 7   Press the F switch and the ENTER switch to exit from the function table. Then the scale displays the weighing mode.

Display off

→O← Press and hold
ON/OFF

ⓞ Press

F 1 0

Function table

MODE
ENTER

F 6 0

SAMPLE

F 6 9

Full/dribble
batch function

MODE
ENTER

F 10 0

Full/dribble
batch sub-function

SAMPLE

F 10 3

MODE
ENTER

F

End

MODE
ENTER

Weighing value

(Next Page)
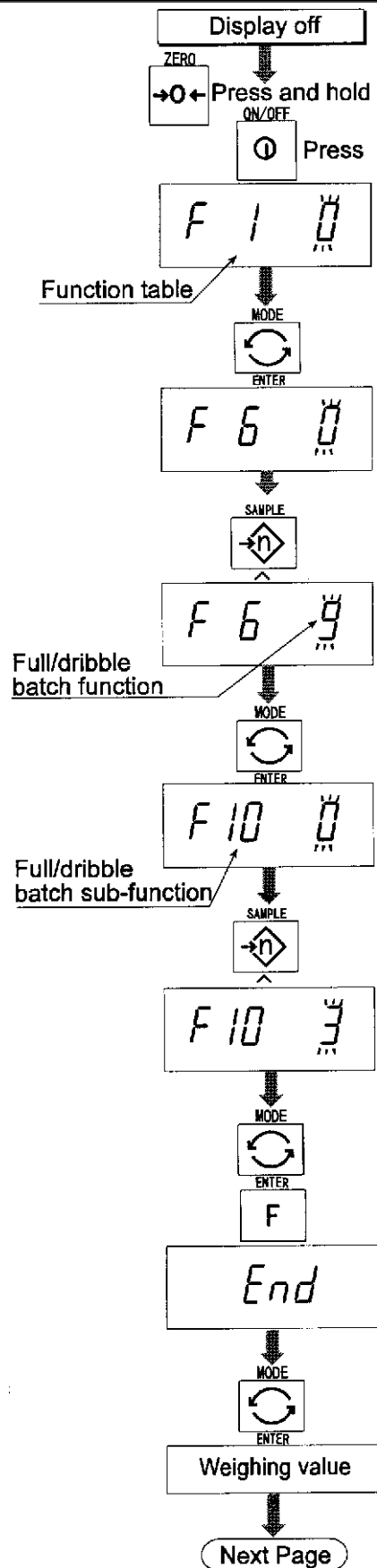
Step 8   Press the MODE switch to display the HI, flashing, (of the final value).

Step 9   Set the final value using the following switches:-
         ∧ switch   Selecting the value of a digit.
         ◁ switch   Selecting a digit.

Step 10   Press the ENTER switch to store the new parameter and display the blinking OK (of preliminary value).

Step 11   Set the preliminary value using the following switches.
         ∧ switch   Selecting the value of a digit.
         ◁ switch   Selecting a digit.

Step 12   Press the ENTER switch to store the new parameter and display the blinking LO (of zero band).

Step 13   Set a zero band which is greater than the tare value, using the following switches.
         ∧ switch   Selecting the value of a digit.
         ◁ switch   Selecting a digit.

Step 14   Press the ENTER switch to store the new parameter and display the weighing mode.

Last page

MODE
ENTER
Blinking HI or HI

SET   SAMPLE
→R , →n , F

Final value → 2000

MODE
ENTER
Blinking OK or OK

SET   SAMPLE
→R , →n   F

Preliminary value → 0100

MODE
ENTER
Blinking LO or LO

SET   SAMPLE
→R , →n   F

zero band → 0550

MODE
ENTER

Weighing value
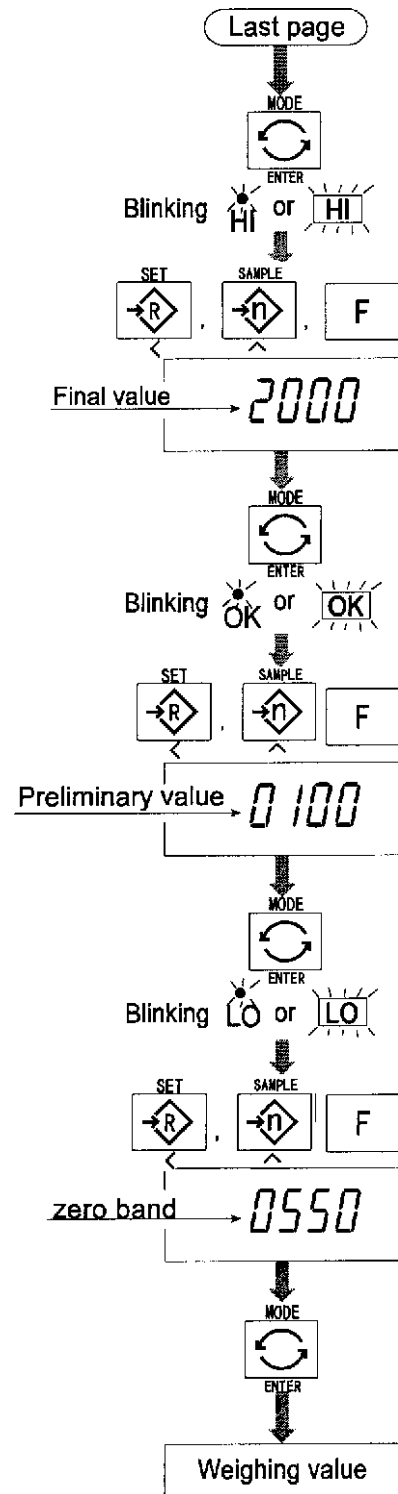
13 Simple Batch Function

This function compares a display value with the final value, preliminary value and zero band for the full/dribble batch function. The result is indicated to zero band (LO indicator), full flow (HI indicator) and dribble flow (OK indicator). Even if a weighing value increases and decreases this function continues to compare.

It is necessary to set the parameters of the "simple batch function ($F6$ 8)" in the function table, final value (HI), preliminary value (OK) and zero band (LO) in advance to use this function.

It is necessary to install option OP-03 or OP-04, to use the relay output of the comparator.

It is necessary to install option OP-03, to use the buzzer output of the comparator.

Weighing and Parameters
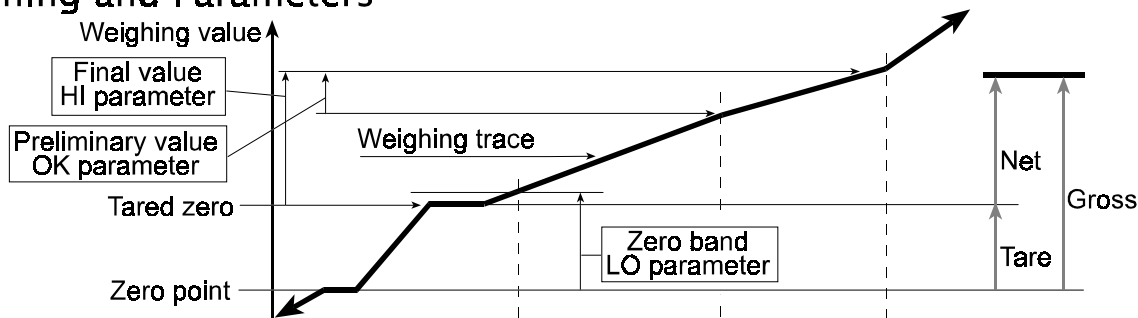
Indicator and Output

|				
Zero band, LO indicator	ON	OFF	OFF	OFF
LO relay output	Make	Break	Break	Break
Preliminary, OK indicator	OFF	OFF	ON	ON
OK relay output	Break	Break	Make	Make
Final, HI indicator	OFF	OFF	OFF	ON
HI relay output	Break	Break	Break	Make

Comparison Condition

Gross	<	Zero band LO is displayed and output.
Final - Preliminary	≤	Net OK is displayed and output.
Final	≤	Net OK, HI is displayed and output.

Parameter List and Word Definition

The "gross" is a total measurement value, no tare value is subtracted.
The "net" is a measurement value with a tare value subtracted from the gross.
The "tare" is an item put on the pan and its mass is subtracted from the gross.
The "zero band" means the zero detection level.
The "zero point" is the fundamental starting point to weighing.

Function Table	Meaning and purpose
$F6$ 8	Simple batch function

Caution

The parameters of the upper limit value (HI) and a final value (HI) use the same memory. The parameters of the lower limit value (LO) and the zero band (LO) use the same memory.

The upper/lower comparator function, the simple batch function and the full/dribble batch function cannot be used at the same time because these parameters use common memory.

13.1   Preparation (Setting Parameters)

Step 1 Turn off the display.
Press the ON/OFF switch while the ZERO switch
is pressed and held. The function table is displayed.

Step 2 Press the ENTER switch to display an item of the
comparator function (F6).

Step 3 Select a parameter of the simple batch function
(F6 8) with the ∧ switch.

Step 4 Press the ENTER switch to store the new
parameter.

Step 5   Press the F switch and the ENTER switch to exit
from the function table. Then the scale displays the
weighing mode.

Display off

ZERO
→0← Press and hold
ON/OFF
◍ Press

F 1 0

Function table

MODE
ENTER

F 6 0

SAMPLE

F 6 8

Simple batch function

MODE
ENTER

F

End

MODE
ENTER

Weighing value

Next Page
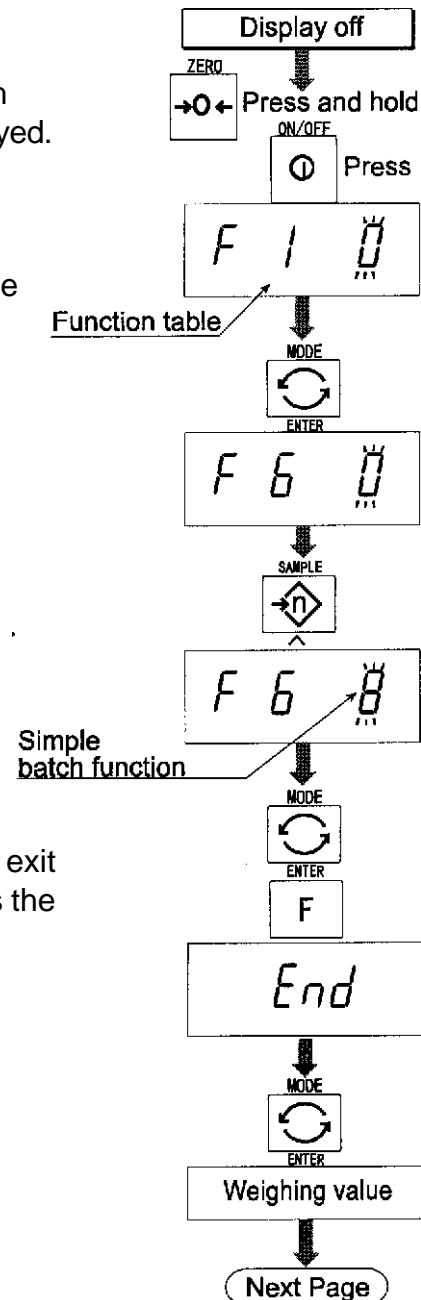
Step 6   Press the MODE switch to display the HI, blinking. (Final value).

Step 7   Set the final value using the following switches.
⬆ switch   Selecting the value of a digit.
◁ switch   Selecting a digit.

Step 8   Press the ENTER switch to store the new parameter and display the OK, blinking, (Preliminary value).

Step 9   Set the preliminary value using the following switches.

⬆ switch   Selecting the value of a digit.
◁ switch   Selecting a digit.

Step 10   Press the ENTER switch to store the new parameter and display the LO, blinking, (Zero band).

Step 11   Set the zero band using the following switches.
⬆ switch   Selecting the value of a digit
◁ switch   Selecting a digit.

Step 12   Press the ENTER switch to store the new parameter and display the weighing mode.

Last page

MODE
ENTER
Blinking HI or HI

SET   SAMPLE
→R , →n   F
Final value → 2000

MODE
ENTER
Blinking OK or OK

SET   SAMPLE
→R , →n , F
Preliminary value → 0100

MODE
ENTER
Blinking LO or LO

SET   SAMPLE
→R , →n , F
zero band → 0550

MODE
ENTER
Weighing value
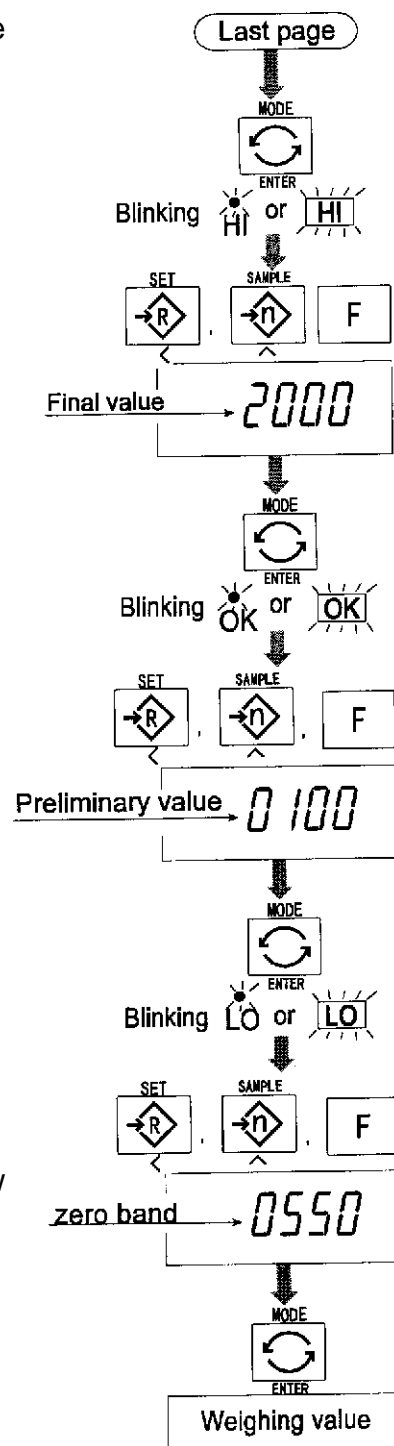
⬇ 13.2 Operation and Performance (Examples)

Step 1 Select the parameter *F6 8* of the function table.
Step 2 Set the parameters of the final value, preliminary value and zero band.
Step 3 The comparison result is always displayed.

14   Calibration (Adjusting the Scale)

Calibration is the adjustment function so that the scale can weigh correctly.

There are three steps to calibration.

Gravity Acceleration Correction ....When a calibrated scale is moved to a distant place, the scale can correctly weigh by adjusting to a new local gravity acceleration.
Refer to the "gravity acceleration table" on the next page.

Calibration of the Zero Point .... When there is nothing on the pan, it is the function that performs adjustment so as to display the zero point mark .

Comment The zero point, is the fundamental starting point to weighing, and influences the performance of the scale.

Span Calibration .... The function that adjusts the span with a calibrated mass so that the scale can accurately weigh anything within the weighing capacity.

Comment Span means the range of weighing capacity. Use a calibration mass at least two thirds of the weighing capacity.

Caution
It is necessary to calibrate the HW-G series using a mass of OIML class M1 or equivalent.
Periodically check the accuracy of weighing. Calibrate the scale if it is moved to another location or the environment has changed.
It is not necessary to correct for the gravity acceleration when calibrating your scale, with the calibration mass, at the place where your scale is used.

City	Value		City	Value
Amsterdam	9.813	m/s²	Manila	9.784 m/s²
Athens	9.800	m/s²	Melbourne	9.800 m/s²
Auckland NZ	9.799	m/s²	Mexico	9.779 m/s²
Bangkok	9.783	m/s²	Milan	9.806 m/s²
Birmingham	9.813	m/s²	New York	9.802 m/s²
Brussels	9.811	m/s²	Oslo	9.819 m/s²
Buenos Aires	9.797	m/s²	Ottawa	9.806 m/s²
Calcutta	9.788	m/s²	Paris	9.809 m/s²
Chicago	9.803	m/s²	Rio de Janeiro	9.788 m/s²
Copenhagen	9.815	m/s²	Rome	9.803 m/s²
Cyprus	9.797	m/s²	San Francisco	9.800 m/s²
Djakarta	9.781	m/s²	Singapore	9.781 m/s²
Frankfurt	9.810	m/s²	Stockholm	9.818 m/s²
Glasgow	9.816	m/s²	Sydney	9.797 m/s²
Havana	9.788	m/s²	Taiwan	9.788 m/s²
Helsinki	9.819	m/s²	Taipei	9.790 m/s²
Kuwait	9.793	m/s²	Tokyo	9.798 m/s²
Lisbon	9.801	m/s²	Vancouver, BC	9.809 m/s²
London (Greenwich)	9.812	m/s²	Washington DC	9.801 m/s²
Los Angeles	9.796	m/s²	Wellington NZ	9.803 m/s²
Madrid	9.800	m/s²	Zurich	9.807 m/s²
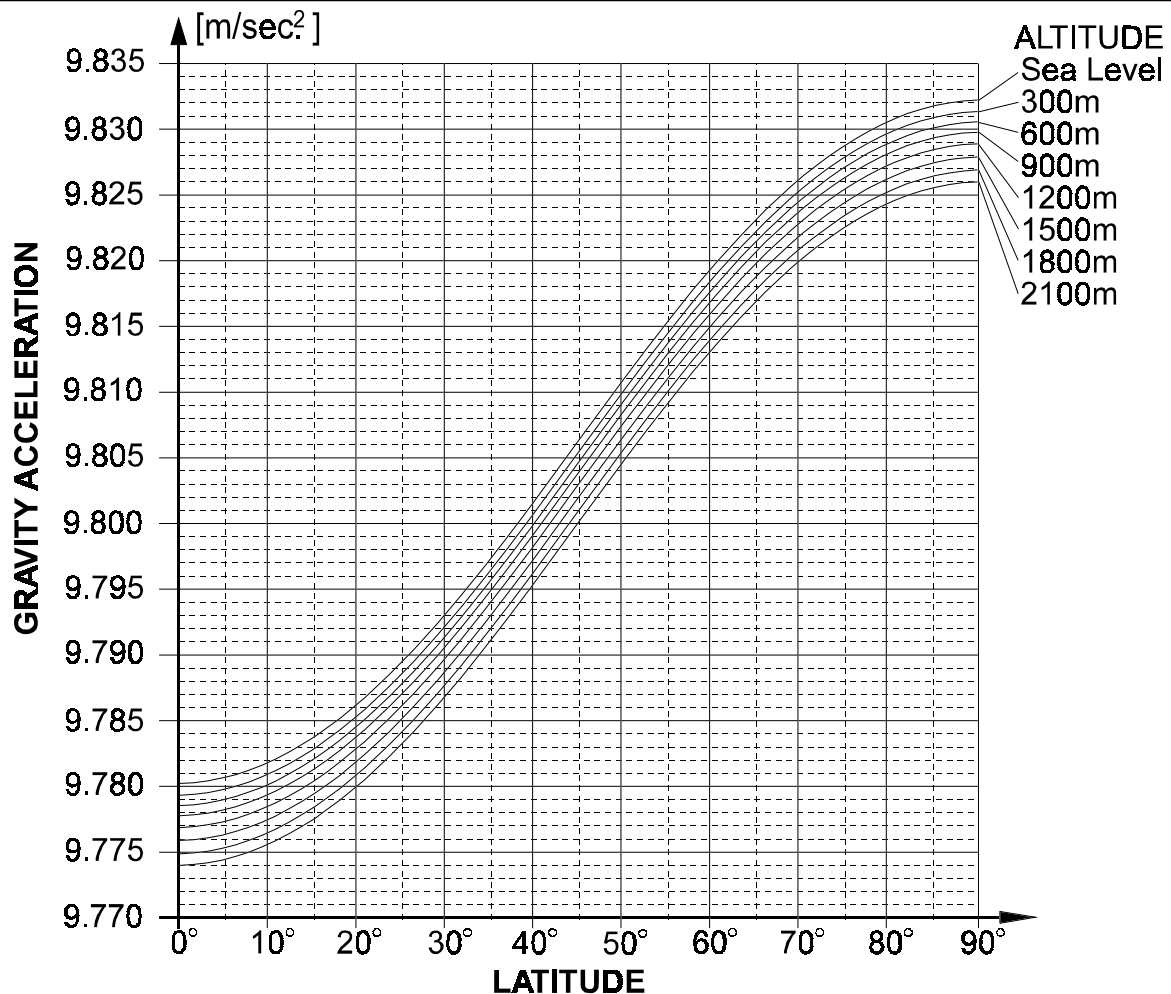
14.2.1 Gravity Acceleration Correction

Step1   Turn on the display.
           Open the rear cover of the display unit.
           Inside the display unit, press and hold the
           $\boxed{\text{CAL}}$ switch to enter the calibration mode.
           Then $\boxed{\text{CAL 0}}$ is displayed.

Step2   Press the $\boxed{\text{ZERO}}$ switch to enter the gravity
           acceleration correction mode.

Step3   Set your local gravity acceleration using
           the following switches.
           $\boxed{\wedge}$ switch Selecting the value of a digit.
           $\boxed{<}$ switch Selecting a digit.

Step4   Press the $\boxed{\text{ENTER}}$ switch to store the new
           value.

Step5   Press the $\boxed{\text{CAL}}$ switch again. Then the
           scale returns to the normal weighing
           mode.
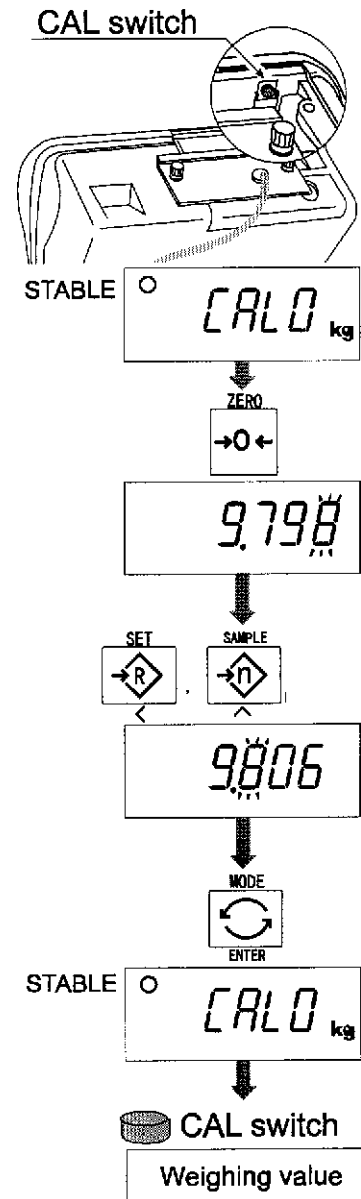
14.2.2 Preparation

Step 6 Confirm the environmental conditions as follows:
         Maintain a constant temperature and a stable power supply.
         Install the scale on a solid floor or bench where there is no draft,
         vibration, strong magnetic fields or direct sunlight.
         Consider section "4. Caution".

Step 7 Display normal weighing for at least 30 minutes to warm up the scale.

14.2.3 Calibration of the Zero Point

Step 8   Press and hold the [CAL] switch to enter the calibration mode after displaying normal weighing for 30 minutes.
Then the [CAL 0] is displayed.

Step 9   With nothing on the pan, press the [ENTER] switch while the stable mark is displayed. The scale stores the current condition as the zero point. .

Step 10   The scale displays [SPn 1] for several seconds. If finishing the calibration mode at this stage (Zero calibration only), press [CAL] to proceed to step 13.
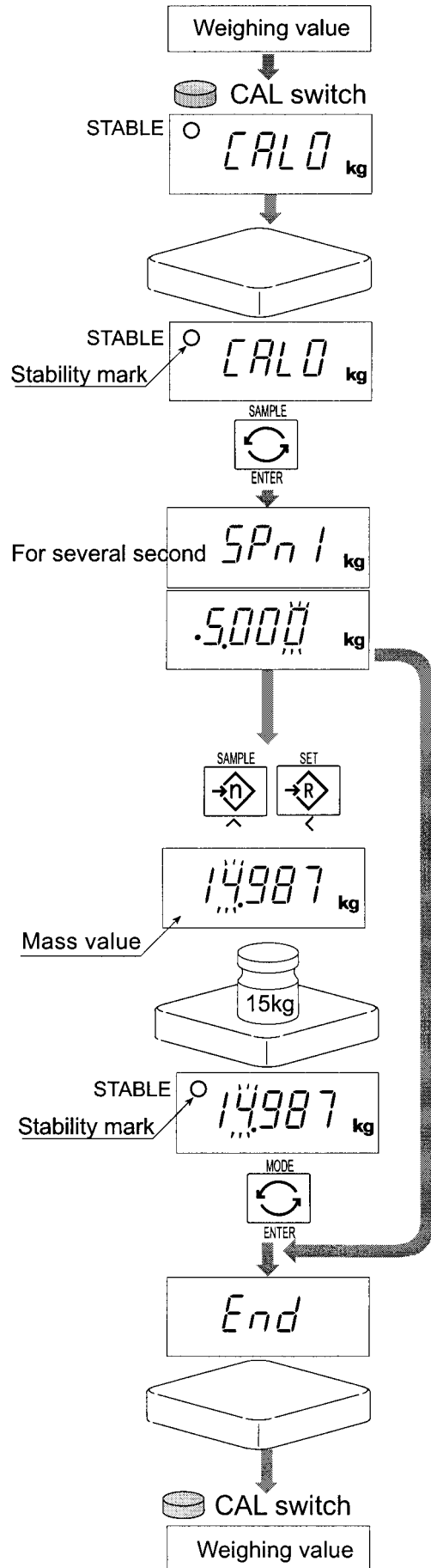
14.2.4 Span Calibration

Step 11   Set the value of the calibration mass using the following switches. (The initial value depends upon the particular model.)
[∧] switch   Selecting the value of a digit.
[<] switch   Selecting a digit.

Step 12   Place the mass' selected at step 11' onto the pan. When the stable mark is displayed press the [ENTER] switch.
The scale then calculates the span and stores the value.

Step 13   The scale displays [End] at the finish.
Remove the mass from the pan.

Step 14   Press the [CAL] switch to return to the normal weighing mode.

Weighing value

CAL switch

STABLE   ○   CAL 0   kg

STABLE   ○   CAL 0   kg
Stability mark

SAMPLE

ENTER

For several second   SPn 1   kg

.5.000   kg

SAMPLE   SET
∧   <

14.987   kg
Mass value

15kg

STABLE   ○   14.987   kg
Stability mark

MODE

ENTER

End

CAL switch

Weighing value

15 The Function Table

The function table is provided to store and reference items that determine the performance of the scale. Each item has a parameter.
The parameters are maintained even without power applied.

Item   Parameter

F l 0
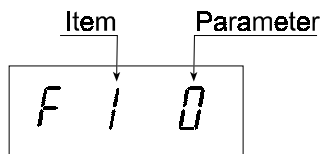
15.1 The Procedure for Setting Parameters

Step 1   Turn off the display.
Press the ON/OFF switch while the ZERO switch is pressed and held. The function table is displayed.

Display off

ZERO
→0← Press and hold
ON/OFF
Press

F l 0

Function table

Step 2   Set parameters for each item using the following switches.

∧ switch	Selecting the parameter of an item. Selecting the value of a digit at $F\ l6$.
< switch	Selecting a digit at $F\ l6$.
F switch	Proceeding to the end of the table without storing the parameter.
ENTER switch	Storing a parameter for the current item and proceeding to the next item. Returning to normal mode from the end of the table.

SAMPLE
→n

SET
→R   F

MODE
ENTER

Step 3   Press the ENTER switch to return to the normal mode, when End is displayed.

Note Pressing the ENTER switch on step 2, the parameter is stored in the scale.
Note Pressing the F switch at any time will cause End to be displayed. The press ENTER to return to the normal mode.

End

MODE
ENTER

Weighing value
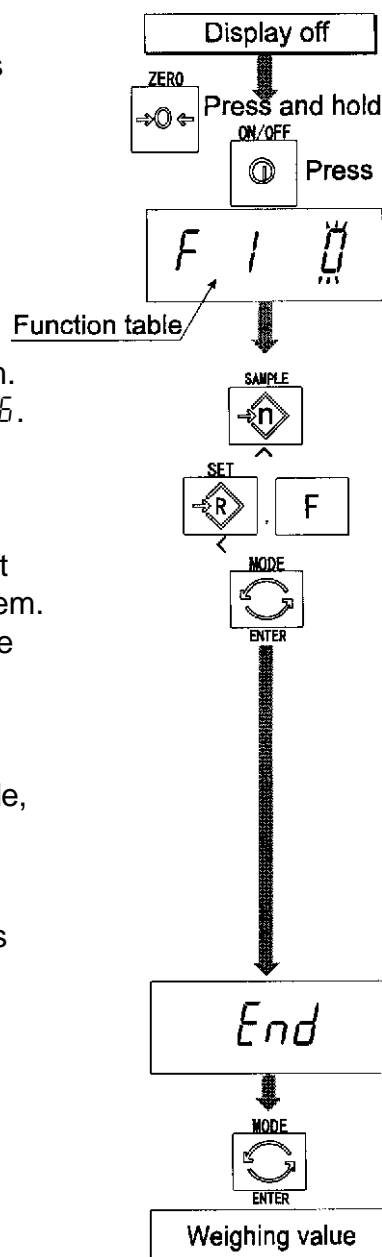
Item	Display	Meaning and purpose
Automatic turning off		*The type L scale is turned off after 5 minutes of no operation, when displaying zero.*
	F1 0 #	Not used
	F1 1	Used
Baud rate		*Transmission rate of the serial interface (RS-232C/ 422/485).*
	F4 0 #	2400bps
	F4 1	4800bps
	F4 2	9600bps
Output mode		*Mode selection for the serial interface (RS-232C/ 422/485).*
	F5 0 #	Stream mode. (Refer to "16.2 Stream Mode")
	F5 1	Command mode. (Refer to "16.3 Command Mode")
	F5 2	A data is output, when the ⎡PRINT⎤ switch is pressed.
	F5 3	Auto-print + When the display becomes a positive stable value above near-zero, the scale outputs the data automatically. Next output can be performed after the display becomes near-zero or a negative value.
	F5 4	Auto-print +/- When the display becomes a stable value outside near-zero, the scale outputs the data automatically. Next output can be performed after the display becomes near-zero.
	F5 5	At each finish of full/dribble batch function, the data is output.
Comparator		*Mode selection for the comparator*
	F6 0 #	Pressing the ⎡SET⎤ switch, the scale always compares the current display value.
	F6 1	The scale always compares the display value.
	F6 2	Pressing the ⎡SET⎤ switch, the scale always compares the display value when not near-zero.
	F6 3	The scale always compares the display value when not near-zero.

Notes

The "#" shows factory settings.

The "near-zero" is within ±4 digits from zero point in the unit of kg.

Item	Display	Meaning and purpose
Comparator	F6 4	When the display value becomes stable after pressing the [SET] switch, the scale compares the display value. It does not compare on an unstable condition. If the [SET] switch is pressed again, the scale stops the comparison.
	F6 5	When the display value becomes stable, the scale compares the display value. It does not compare on an unstable condition.
	F6 6	When the display value becomes stable and not near-zero after pressing the [SET] switch, the scale compares the display value. It does not compare on an unstable condition. If the [SET] switch is pressed again, the scale stops the comparison.
	F6 7	When the display value becomes stable when not near-zero, the scale compares the value.
	F6 8	Simple batch function. (Refer to section 13.)
	F6 9	Full/dribble batch function. (Refer to section 12.)
Buzzer		*The condition of the buzzer on option OP-03 by comparator function or full/dribble batch function.*
	F7 0 #	No buzzer.
	F7 1	The buzzer sounds at LO.
	F7 2	The buzzer sounds at OK.
	F7 3	The buzzer sounds at LO and OK.
	F7 4	The buzzer sounds at HI.
	F7 5	The buzzer sounds at LO and HI.
	F7 6	The buzzer sounds at OK and HI.
	F7 7	The buzzer sounds at LO, OK and HI.
	F7 8	The buzzer sounds at finishing the full/dribble batch process.
Accumulator		*The condition of the accumulator*
	F8 0 #	Accumulator is not used.
	F8 1	The scale accumulates the data, if the [F] switch is pressed, when the display becomes a positive stable value above near-zero. Next accumulation can be performed after the display becomes near-zero or a negative value.
	F8 2	The scale accumulates the data, if the [F] switch is pressed, when the display becomes a stable value outside near-zero. Next accumulation can be performed after the display be comes near-zero.
	F8 3	When the display becomes a positive stable value, the scale accumulates the data automatically. Next accumulation can be performed after the display becomes near-zero or a negative value.

Item	Display	Meaning and purpose
Accumulation	F8 4	When the display becomes a stable value, the scale accumulates the data automatically. Next accumulation can occur after the display becomes near-zero. Use: Recording number and mass of articles removed from the pan. (Put articles on the pan. Press TARE switch at each removal.)
	F8 5	At each finish of full/dribble batch function, the scale accumulates the data automatically. Use: Packing articles like a powder, it is used for recording the bag number and total mass.
Print Mode		*The printing condition when using option OP-06 for type V.*
	F9 0 #	No print.
	F9 1	Pressing the PRINT switch, the data is output.
	F9 2	Auto-print + When the display becomes a positive stable value above near-zero, the scale outputs the data automatically. Next output can be performed after the display becomes near-zero or negative value.
	F9 3	Auto-print +/- When the display becomes a stable value outside near-zero, the scale outputs the data automatically. Next output can be performed after the display becomes near-zero.
	F9 4	At each finish of full/dribble batch function, the data is output.
	F9 5	When the accumulation function is used, the data is output.
Full/Dribble Batch sub-function		*The details of the full/dribble batch function (F6 9)*
	F 10 0 #	Reaching final value and pressing the F switch, the current process is finished.
	F 10 1	Reaching final value and displaying the stability mark, the current process is finished automatically.
	F 10 2	Pressing the SET switch, the scale automatically tares and starts the full/dribble batch process. Reaching final value and pressing the F switch, the current process is finished.
	F 10 3	Pressing the SET switch, the scale automatically tares and starts the full/dribble batch process. Reaching final value and displaying the stability mark, the current process is finished.
Address		*Address for RS-422 / RS-485 for option OP-04*
	F 11 00 # to F 11 99	Use This address can be set from 01 to 99. Allows a computer to control a scale with the assigned address. (RS-232C should be set to "00".)

Item	Display	Meaning and purpose
Hold		*The function to hold the current display value. When the value becomes near-zero and the weighing value changes more than 25% +30 digits, hold display is cancelled.*
	$F\ 12\ 0$ #	Not used
	$F\ 12\ 1$	The hold function is ON or OFF alternately by the F switch.
	$F\ 12\ 2$	Displaying the stability mark, the display is held.
Averaging		*Selection of readability and response by averaging the weighing value.*
	$F\ 13\ 0$ #	Normal weighing.
	$F\ 13\ 1$	Scale for a person's weight.
	$F\ 13\ 2$	Animal weighing.
Precision of unit mass		*Selects a storable minimum unit mass in the counting mode.*
	$F\ 14\ 0$ #	Stores a unit mass using the unit of a digit.
	$F\ 14\ 1$	Stores a unit mass in the unit of one eighth digit.
	$F\ 14\ 2$	Stores a unit mass, if the total of sample mass is heavier than 5 digits.
Data Format		*Refer to "16.1. Data Format".*
	$F\ 15\ 0$ #	Format 1. (A&D general format for scales, balances)
	$F\ 15\ 1$	Format 2. (Older HV-A/ HW-A format)
Date		*It is necessary to use option OP-06 for type V.* *Use Print out of date. Caution Date is not updated.* *Print out of the management number for the scale.*
	$F\ 16$ 000000	No print out.
	other	The relation between printout and display is as follows: Display 990721 Printout $99/07/21$

16   RS−232C Serial Data Interface

RS-232C interface has the following two modes.
Stream mode   Outputs data countinuously and can be used for printing data.
Command mode Controls the scale using commands from a computer.

It is necessary to set the parameters of the "Baud rate ($F4$)",
"Output mode ($F5$)", " Format ($F15$)" in the function table in advance.

There are option cables as follows:
AX-KO557A RS-232C cable, D-sub 25 pin, 2m
AX-KO1786-200   RS-232C cable, D-sub 9 pin, 2m

Transmission system   EIA RS-232C
Transmission   Asynchronous, bi-directional, half-duplex
Data format   Baud rate: 2400, 4800, 9600 bps
                      Data: 7 bits
                      Parity: 1 bit, Even
                      Start bit 1 bit
                      Stop bit   1 bit
                      Code   ASCII
                      Terminator   CR LF   (CR: 0D[H], LF: 0A[H])

Pin Connections

Pin No.	Signal name	Direction	Description
1	-		
2	RXD	Input	Receive data
3	TXD	Output	Transmit data
4	-		
5	SG -		Signal ground
6	-		
7	DSR	Output	Data set ready

Circuit
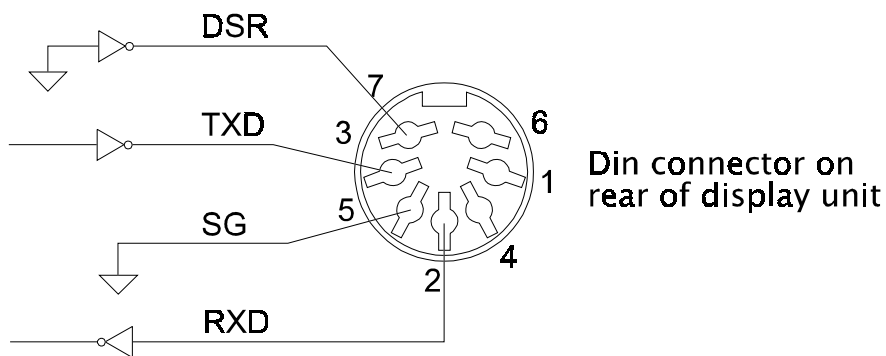
▼ 16.1 Data Format

Bit Format

RS-232C

1   -5V ~ -15V

0   +5V ~ +15V

Data bits · Start bit · Stop bit · Parity bit
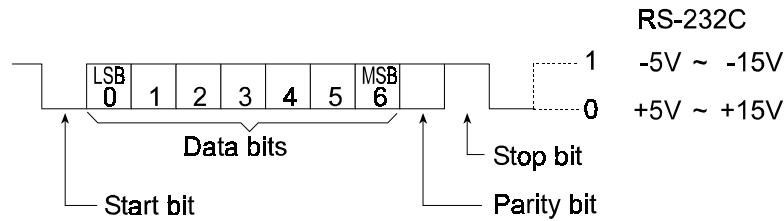
Format 1

There are four headers for the type of data and weighing condition.

Stable weighing data	S T	Unstable weighing data	U S
Stable counting data	Q T	Out of range (over)	O L

The weighing data consists of 9 characters including decimal point and polarity.

The polarity is always output.

There are three units. The unit is 3 characters.

In case of "out of range", numbers become all 9's.

The terminator is always output as CR LF.

Data in the unit of kg   `S T , + 0 0 0 1 2 . 4 0 ⊔ k g CR LF`

Header   Weighing value   unit   Terminator

Counting mode   `Q T , + 0 0 0 0 3 0 0 0 ⊔ P C CR LF`

Header   Weighing value   unit   Terminator

Percentage mode   `S T , + 0 0 0 3 0 0 . 0 ⊔ ⊔ % CR LF`

Header   Weighing value   unit   Terminator

Out of range   `O L , + 9 9 9 9 9 . 9 9 ⊔ k g CR LF`

Header   Polarity

Definition of symbols

CR (carriage return) $\begin{smallmatrix}C\\R\end{smallmatrix}$ LF (line feed) $\begin{smallmatrix}L\\F\end{smallmatrix}$

0D[H]   0A[H]

Space   ⊔

20[H]

Format 2

There are four headers for the type of data and weighing condition.

Stable weighing data $\boxed{\text{S}\,\text{T}}$ Unstable weighing data $\boxed{\text{U}\,\text{S}}$

Stable counting data $\boxed{\text{Q}\,\text{T}}$ Out of range (over) $\boxed{\text{O}\,\text{L}}$

The weighing data consists of 7 characters including decimal point and polarity.
The data consists of 7 characters in the counting mode.

The polarity is always output.

There are three units. The unit is 2 characters.

In case of "out of range", numbers become all 9's.

The terminator is always output as CR LF.

Caution

When the data is longer than 7 characters in the counting or percentage mode, the overflow is ignored.

Data in the unit of kg   `S T , + 0 0 2 . 4 0 k g CR LF`
                                  Header   Weighing value   unit   Terminator

Counting mode   `Q T , + 0 0 3 0 0 0 P C CR LF`
                                  Header   Weighing value   unit   Terminator

Percentage mode   `S T , + 0 3 0 0 . 0 ␣ % CR LF`
                                  Header   Weighing value   unit   Terminator

Out of range   `O L , + 9 9 9 . 9 9 k g CR LF`
                                  Header ⌐ Polarity

Definition of symbols
CR (carriage return) $\boxed{^\text{C}_\text{R}}$ LF (line feed) $\boxed{^\text{L}_\text{F}}$
0D[H]   0A[H]

Space $\boxed{\text{␣}}$
20[H]

16.2   Stream Mode

The scale outputs the current display data at the same time as refreshing the display.
The scale does not output data while in the setting mode.

Averaging function table	Refresh rate
F I3 0 Normal weighing	Approximately 7 times/s while the display is unstable. Approximately 4 times/s when the display is stable
F I3 I A person's weight	Approximately 4 times/s
F I3 I Animal weighing	Approximately 4 times/s

16.2.1 Preparation and Performance (Examples)

Step 1   Turn off the display.
Press the ON/OFF switch while the ZERO switch is
pressed and held. The function table is displayed.

Step 2   Select a parameter for the "baud rate (F4)"
using the ENTER and ∧ switches.

Step 3   Select "stream mode (F5 0)" of "output" using
the ENTER and ∧ switches.

Step 4   Select "format 1 (F I5 0)" of "format" using the
ENTER and ∧ switches.

Step 5   Press the ENTER switch to store the new
parameters. The scale returns to normal weighing
and outputs the data continuously.

ST,0000.000⌴kg ᶜᴿ ᴸꜰ
US,0010.645⌴kg ᶜᴿ ᴸ
     ᶜ44⌴kg ᶜᴿ ᴸ⌐
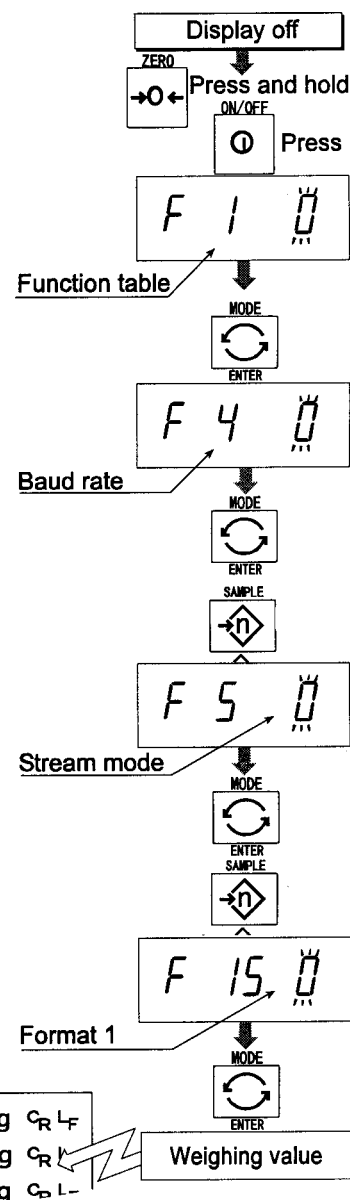
⬇ 16.3 Command Mode

The command mode is the function which can perform "output data", "controlling the scale" and "setting parameters" by a command transmitted from a computer.

__Caution__   **Allow at least 500 milliseconds between commands.**

16.3.1 __Command List__

The following explanation uses "format 1 ($F15\ 0$)"

Data output

The current weighing data is output.

Template Q

Command `Q` `CR` `LF`

Reply `S` `T` `,` `+` `0` `0` `0` `1` `2` `.` `4` `0` `␣` `k` `g` `CR` `LF`

Selection of mode and unit

Selects the mode and unit. This is the same as the MODE *switch.*

Template U

Command `U` `CR` `LF`

Response The scale changes mode and unit.

Zero

The current mass value is set to the zero point.

This is same as the ZERO switch.

Template Z

Command `Z` `CR` `LF`

Response The mass value becomes zero and zero point mark is displayed.

Tare

The current mass value is set to zero after placing a tare (container, receptacle, case, etc) and the net is displayed. This is the same as the TARE *switch.*

Template T

Command `T` `CR` `LF`

Response The current mass value becomes zero and net mark is displayed.

Cancel of tare

The display value becomes the gross and the net mark is turned off. (The tare value becomes zero.)

Template CT

Command `C` `T` `CR` `LF`

Response Gross is displayed and the net mark is turned off.

Preset tare

Tare value is set and the net is displayed. The net mark is displayed.

Template   PT, [parameter]

Command | P | T | , | + | 0 | 0 | 1 | 2 | 0 |C_R|L_F|

Response   Net is displayed.

Upper limit value

An upper limit value is stored.

Template   HI, [parameter]

Command | H | I | , | + | 0 | 1 | 2 | 0 | 0 |C_R|L_F|

Response   The upper limit value is stored.

Lower limit value

A lower limit value is stored.

Template   LO, [parameter]

Command | L | O | , | – | 0 | 0 | 4 | 0 | 0 |C_R|L_F|

Response   The lower limit value is stored.

Caution   **The lower limit value must be less than the upper limit value.**

Accumulation data output

Accumulated data is output.

Template   A

Command | A |C_R|L_F|

Reply | A | , | + | 0 | 2 | 3 | 1 | 2 | . | 4 | 0 | ␣ | k | g |C_R|L_F|

Accumulation count output

Number of accumulations is output.

Template   N

Command | N |C_R|L_F|

Reply | N | , | + | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | ␣ | ␣ | ␣ |C_R|L_F|

Reset of Accumulation data and number

Data and number of accumulations become zero

Template   CA

Command | C | A |C_R|L_F|

Response   Data and number of accumulations become zero.

Final value

The final value is stored.

Template   S0, [parameter]

Command | S | 0 | , | + | 0 | 2 | 0 | 0 | 0 | C_R | L_F |

Response   The value is stored.

Preliminary value

The preliminary value is stored.

Template   S1, [parameter]

Command | S | 1 | , | + | 0 | 0 | 2 | 0 | 0 | C_R | L_F |

Response   The value is stored.

Zero band

The zero band is stored.

Template   S2, [parameter]

Command | S | 2 | , | + | 0 | 0 | 5 | 0 | 0 | C_R | L_F |

Response   The value is stored.

⯮ 16.4 Preparation (Setting Parameters)

Step 1 Turn off the display.
Press the [ON/OFF] switch while the [ZERO] switch is pressed and held. The function table is displayed.

Display off
↓
ZERO
→0← Press and hold
ON/OFF
⏻ Press

$F \; 1 \quad 0$

Function table ↙

Step 2 Select a parameter of the "baud rate ($F4$)" using the [ENTER] and [∧] switches.

MODE
↻
ENTER

$F \; 4 \quad 0$

Baud rate ↙

Step 3 Select "command mode ($F5 \; 1$)" of the "output" using the [ENTER] and [∧] switches.

MODE
↻
ENTER
SAMPLE
→n↑
∧

$F \; 5 \quad 1$

Command mode ↙

Step 4 Select "format 1 ($F15 \; 0$)" of the "format" using the [ENTER] and [∧] switches.

MODE
↻
ENTER
SAMPLE
→n↑
∧

$F \; 15 \quad 0$

Format 1 ↙

MODE

Step 5 Press the [ENTER] switch to store the new parameters.
Return to the normal weighing mode using the ENTER switch.

↻
ENTER
Weighing value

Step 6 Receiving a command, the scale responds.

HW-G OZIM v1a
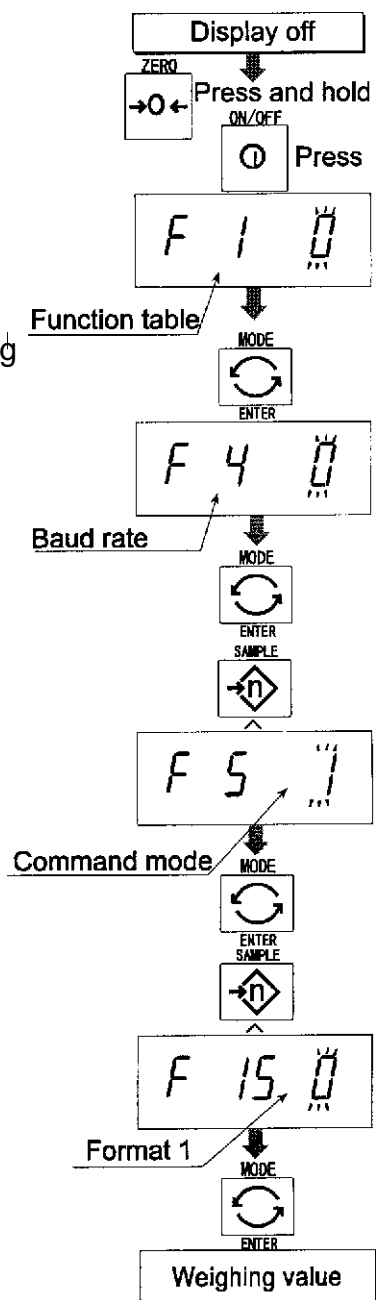
17   Options

17.1   RS–232C / Relay output / Buzzer (OP–03)

Replacing RS-232C interface with this option, refer to " RS-232C Serial Interface" for its specification.

The following option cables can be used, when you do not use the relay output.
    AX-KO557A,   AX-KO1786-200

Pin connections

Pin No.	Signal name	Direction	Description
1	HI	Output	Relay output of HI
2	RXD	Input	Receive data
3	TXD	Output	Transmit data
4	LO	Output	Relay output of LO
5	SG	-	Signal ground (RS-232C)
6	OK	Output	Relay output of OK
7	DSR	Output	Data set ready
8	COM	-	Relay common terminal

Mating connector   DIN 8pin, JA:TCS0586 (of accessory pack)

Circuit
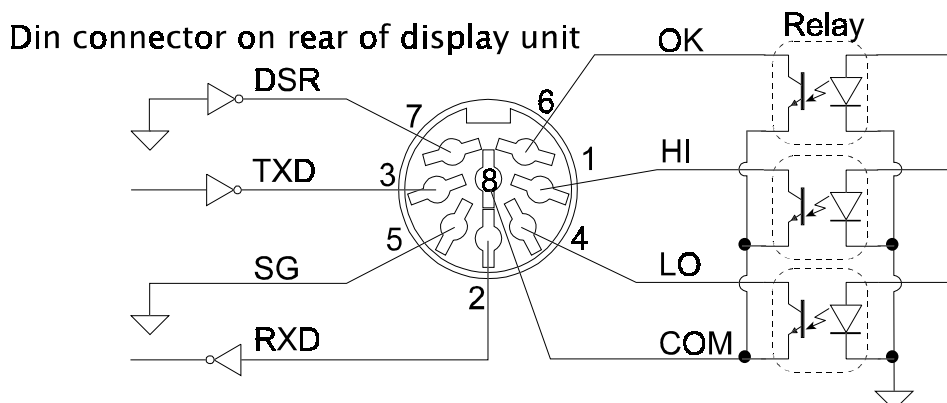
Relay   Solid-state-relay   Maximum voltage   DC50V
                                  Maximum current   DC100mA
                                  Maximum ON resistance   8 Ω

Installing OP-03

Step 1   Remove two screws that attach the RS232C board on the rear of the display unit. Remove the RS232C board.

Step 2   Switch the connections.

Step 3   Insert the option board into the display unit and afix with screws

⬙ 17.2 RS–422 / RS–485 / Relay output (OP–04)

Replacing RS-232C interface with this option, the RS-422/ RS-485 interface can connect up to 16 scales and control them from a computer.
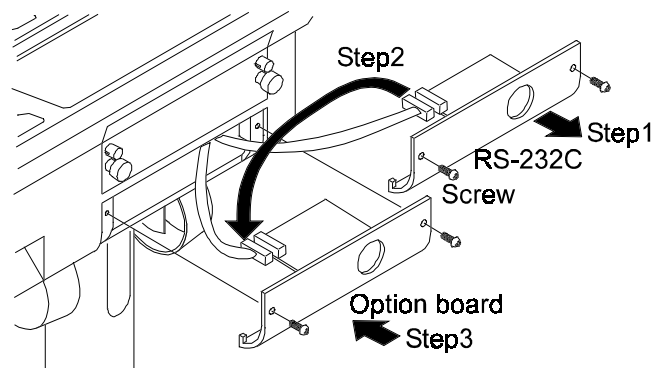
The RS-422/ RS-485 interface has the following two modes.

    Stream mode   Outputs data countinuouslly.
    Command mode   Controls the scale using commands from a computer.

It is necessary to set the parameters of the "Baud rate ($F4$)", "
Output mode ($F5$)", " Format ($F15$)" in the function table in advance.

Transmission system EIA RS-422/ RS-485
Transmission   Asynchronous, bi-directional, half-duplex
Data format   Baud rate: 2400, 4800, 9600 bps
             Data: 7 bits
             Parity: 1 bit, Even
             Start bit 1 bit
             Stop bit 1 bit
             Code   ASCII
             Terminator CR LF (CR: 0D[H], LF: 0A[H])

Address   01 ~ 99   Address parameter ($F10$) of function table.

Relay   Solid-state-relay
          Maximum voltage   DC50V
          Maximum current   DC100mA
          Maximum resistance 8 Ω

Mating connector   TM:BLA9 (of accessory pack)

Pin connections

Pin No.	Signal name	Direction	Description
1	SDA	Output	RS-422 transmission A terminal
2	SDB	Output	RS-422 transmission B terminal
3	RDA	Input	RS-422 receive A terminal
		Input / Output	RS-485 transmission/ receive A terminal
4	RDB	Input	RS-422 receive B terminal
		Input / Output	RS-485 transmission/ receive B terminal
5	TRM -		120Ω terminator
6	HI	Output	Relay output of HI
7	OK	Output	Relay output of OK
8	LO	Output	Relay output of LO
9	COM -		Relay common terminal

Circuit

RS-422 input
RS-485 input

RS-485 output

RS-422 output

1	2	3	4	5	6	7	8	9
SDA	SDB	RDA	RDB	TRM	HI	OK	LO	COM

RS-422/485 terminal | Relay output ⚠ AC adaptor jack

Mating connector TM:BLA9
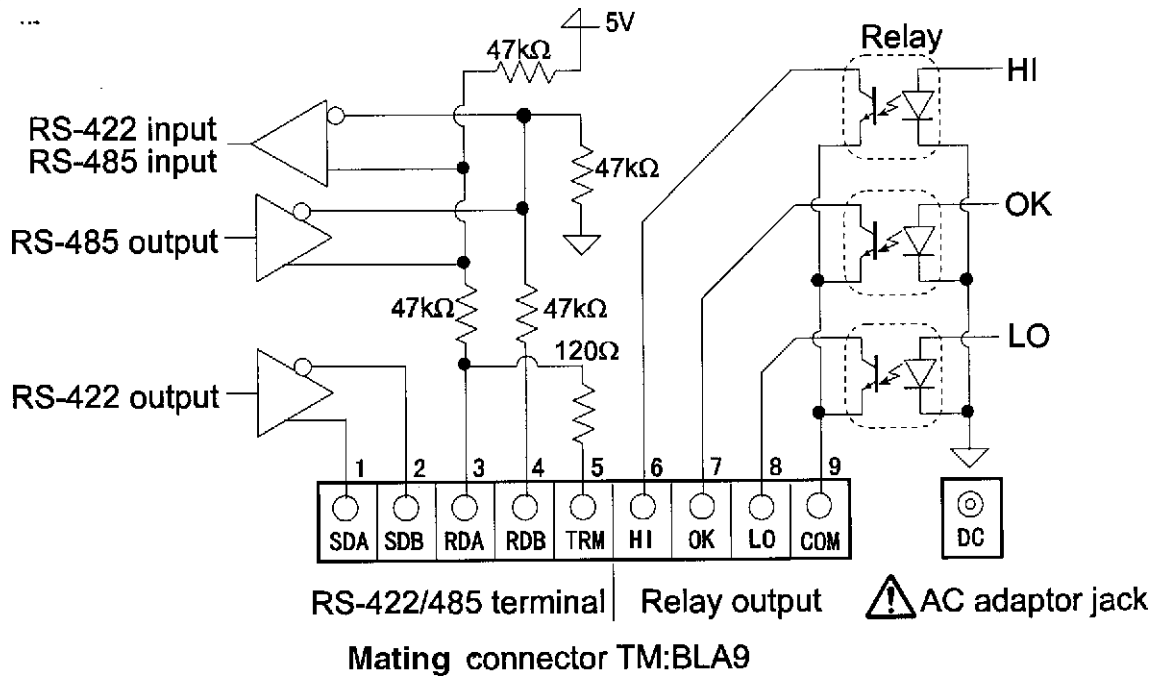
Caution

⚠ **Please confirm that the AC adaptor type is correct for your local voltage and receptacle type.**

Selection switch for the RS-422/ RS-485 interface

Selects either of RS-422 or RS-485 interface using a switch on the board.

Installing OP-04

Step 1   Remove two screws that attach the RS232C board on the rear of the display unit. Remove the RS232C board.

Step 2   Switch the connections.

Step 3   Insert the option board into the display unit and afix with the screws
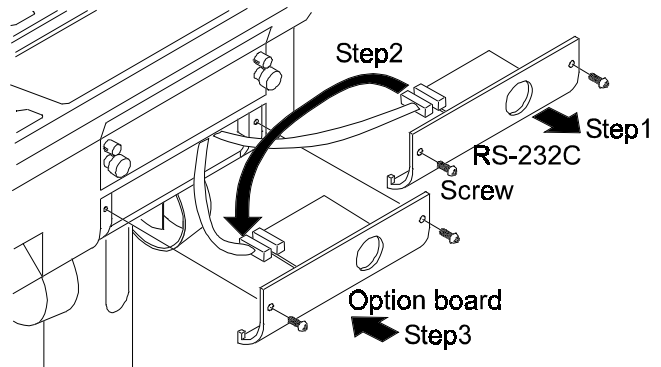
17.2.1 Communication Format

Commands consist of an address and the same command as for the RS-232C.
Commands return the same command when there is no transmitting data.
If address is 23, the repl y is as follows:

Normal response

| @ | 2 | 3 | T | $^{C}_{R}$ | $^{L}_{F}$ |

    └ Terminator
    └ Reply command
    └ Address

Response of impossible command

| @ | 2 | 3 | I | $^{C}_{R}$ | $^{L}_{F}$ |

    └ Terminator
    └ Code of impossible command
    └ Address
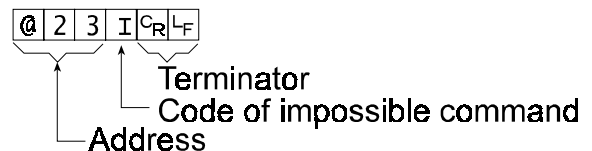
Undefined command response

| @ | 2 | 3 | ? | $^{C}_{R}$ | $^{L}_{F}$ |

    └ Terminator
    └ undefine code
    └ Address

Bit format

Differential (A - B)

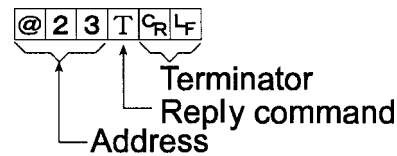| LSB 0 | 1 | 2 | 3 | 4 | 5 | MSB 6 |

Data bits
Start bit
Stop bit
Parity bit

1   -2V ~ -5V
0   +2V ~ +5V
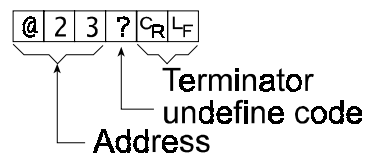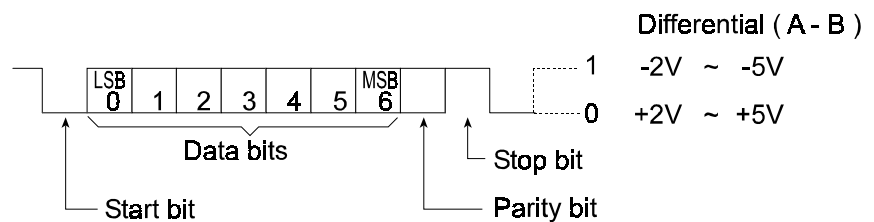
17.2.2 Command List

The following explanation uses "format 1 (F 15 0)" and assumes address is 23

Data output

The current weighing data is output.

Template   Q

Command

| @ | 2 | 3 | Q | $^{C}_{R}$ | $^{L}_{F}$ |

Reply

| @ | 2 | 3 | S | T | , | + | 0 | 0 | 0 | 1 | 2 | . | 4 | 0 | ␣ | k | g | $^{C}_{R}$ | $^{L}_{F}$ |

Selection of mode and unit

Selects the mode and unit. This is same as the MODE *switch.*

Template   U

Command

| @ | 2 | 3 | U | $^{C}_{R}$ | $^{L}_{F}$ |

Reply

| @ | 2 | 3 | U | $^{C}_{R}$ | $^{L}_{F}$ |

The scale changes mode and unit

Zero

The current mass value is set to the zero point, this is same as the ZERO *switch.*

Template   Z

Command   @ 2 3 Z ^C_R ^L_F

Reply   @ 2 3 Z ^C_R ^L_F

           The mass value becomes zero and zero point mark is displayed.

Tare

The current mass value becomes zero after placing a tare (receptacle, case, etc) and the net is displayed. This is same as the TARE *switch.*

Template   T

Command   @ 2 3 T ^C_R ^L_F

Reply   @ 2 3 T ^C_R ^L_F

           The current mass value becomes zero and net mark is displayed.

Cancel of tare

The display value becomes the gross and the net mark is turned off. (The tare value becomes zero.)

Template   CT

Command   @ 2 3 C T ^C_R ^L_F

Reply   @ 2 3 C T ^C_R ^L_F

           Gross is displayed and the net mark is turned off.

Preset tare

The tare value is set and the net is displayed. The net mark is displayed.

Template   PT,[parameter]

Command   @ 2 3 P T , + 0 0 1 2 0 ^C_R ^L_F

Reply   @ 2 3 P T , + 0 0 1 2 0 ^C_R ^L_F

           Net is displayed.

Upper limit value

An upper limit value is stored.

Template   HI,[parameter]

Command   @ 2 3 H I , + 0 3 2 1 0 ^C_R ^L_F

Reply   @ 2 3 H I , + 0 3 2 1 0 ^C_R ^L_F

           The upper limit value is stored.

Lower limit value

A lower limit value is stored.

Template   LO, [parameter]

Command   @ 2 3 L O , – 0 0 4 0 0 ^C_R ^L_F

Reply   @ 2 3 L O , – 0 0 4 0 0 ^C_R ^L_F

           The lower limit value is stored.

<u>Caution</u> The lower limit value must be less than the upper limit value.

Accumulation data output

Accumulated data is output.

Template   A

Command | @ | 2 | 3 | A | C_R | L_F |

Reply | @ | 2 | 3 | A | , | + | 0 | 0 | 0 | 1 | 2 | . | 4 | 0 | ␣ | k | g | C_R | L_F |

Accumulation count output

Number of accumulations is output.

Template   N

Command | @ | 2 | 3 | N | C_R | L_F |

Reply | @ | 2 | 3 | N | , | + | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | ␣ | ␣ | ␣ | C_R | L_F |

Reset of Accumulation data and number

Data and number of accumulations become zero.

Template   CA

Command | @ | 2 | 3 | C | A | C_R | L_F |

Reply | @ | 2 | 3 | C | A | C_R | L_F |

Data and number of accumulations become zero.

Final value

The final value is stored.

Template   S0, [parameter]

Command | @ | 2 | 3 | S | 0 | , | + | 0 | 2 | 0 | 0 | 0 | C_R | L_F |

Reply | @ | 2 | 3 | S | 0 | , | + | 0 | 2 | 0 | 0 | 0 | C_R | L_F |

The value is stored.

Preliminary value

The preliminary value is stored.

Template   S1, [parameter]

Command | @ | 2 | 3 | S | 1 | , | + | 0 | 0 | 2 | 0 | 0 | C_R | L_F |

Reply | @ | 2 | 3 | S | 1 | , | + | 0 | 0 | 2 | 0 | 0 | C_R | L_F |

The value is stored.

Zero band

The zero band is stored.

Template   S2, [parameter]

Command | @ | 2 | 3 | S | 2 | , | + | 0 | 0 | 0 | 5 | 0 | C_R | L_F |

Reply | @ | 2 | 3 | S | 2 | , | + | 0 | 0 | 0 | 5 | 0 | C_R | L_F |

The value is stored

17.3   Internal Printer for Type V (OP–06)

It is necessary to set the parameter of the "Print mode ($F9$)" in the function table in advance.

It is necessary to set the parameter of the "Date ($F16$)" on the function table in advance.

Caution   **The date Parameter is not updated automatically.**

Specification

      Kind   5x7 dot matrix impact type
      Characters   16 characters per line
      Width of roll paper   44.5mm
      Accessories   a special roll paper, an ink ribbon

Consumables

      Special roll paper   AX-PP156-S   (Including 8 rolls in a set)
      Ink ribbon   AX-ERC-05-S (Including 5 pieces in a set)

Operation and Print Samples

Pressing the F switch while pressing and holding the PRINT switch, paper feed is performed.

Print sample of selecting print mode $F9\ 1$ ~ $F9\ 4$

```
            2.345 kg
            2345PC
            76.98%
```

Print sample of selecting print mode $F9\ 5$

```
99/12/31
001      1.345 kg
002      1.325 kg
         1.330 kg
```

Print sample of displayed accumulation data

```
99/12/31
N            3
Total
         7.810 kg
```

Installation of OP-06

<u>Caution</u>
   **This option cannot be used with type L (Liquid Crystal Display) scales.**

Packed with the option OP-06 are the following items which are used to install the printer into your scale.

| Reference No.	Description	Quantity
6	Printer cover	1
7	Printer unit	1
8	Printer control board	1
a	Self tapping screw	3
b	Screw with washer	4
	Paper roll (PP-156)	1
	Spare ink ribbon (ERC-05)	1

Installation Method

1. Disassembly
   a) Disconnect the scale power plug from the AC mains supply socket.
   b) Loosen the lock screws and remove the rear cover unit (Item 3)
   c) Loosen 4 x screws (Item c) and remove the upper case unit.
   d) Remove 2 screws (Item a) and remove the Battery Cover.
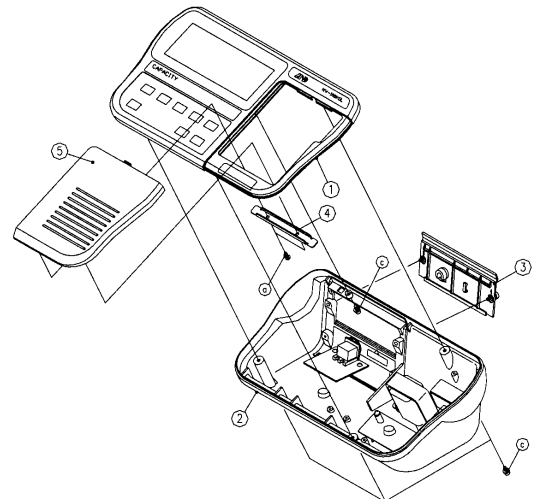
2. Installation
   (a) Connect CN2, of the printer board (Item 8), to J5 on the main board (Item 1)
   (b) Install the printer board (Item 8) to the 4 stand-offs on the board on the upper case (Item 1).
   (c) Secure the printer unit (Item 7) to the upper case (Item 1).
   (d) Connect the printer unit cable to CN4 on the printer board (Item 8).
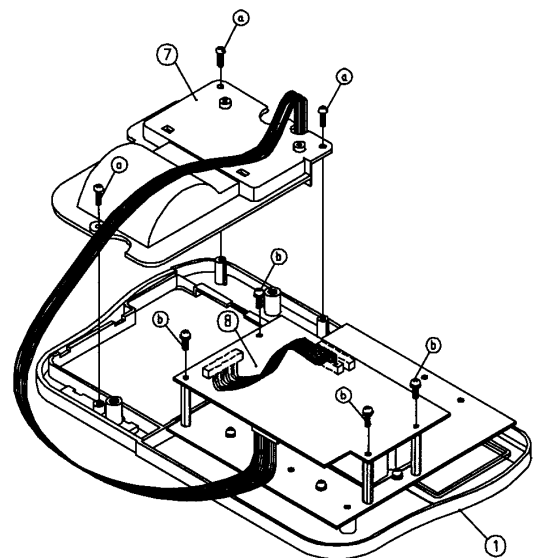
(a) Connect the cable between J2 and J3 on the upper case (Item 1).
(b) Free the 2 pin cable on the lower case (Item 2) and connect it to CN1.
(c) Screw the upper case (Item 1) to the lower case (Item 2) using the 4 screws (Items c).
(d) Secure the rear cover (Item 3) to the lower case (Item 2) with the 2 lock screws.
(e) Secure the printer cover (Item 6 to the upper case (Item 1).
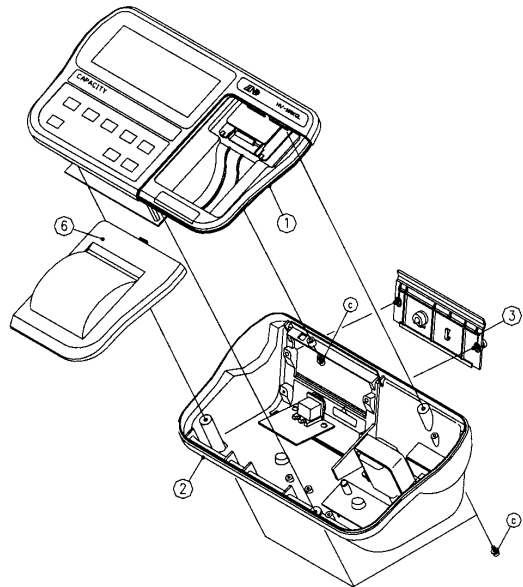
3. Performance Check

a) Press $\boxed{\text{ON/OFF}}$ key while holding the $\boxed{\text{ZERO}}$ key pressed.
b) F1 will be displayed - press the $\boxed{\text{MODE}}$ key.
c) F 9 0 will be displayed - press the $\boxed{\text{RANGE}}$ key.
d) F 9 1 will be displayed - press the $\boxed{\text{MODE}}$ key.
e) F10 will be displayed - press the $\boxed{\text{F}}$ key
f) End will be displayed - press the $\boxed{\text{MODE}}$ key.
g) Prepare the paper roll and open the printer cover.
h) While holding the $\boxed{\text{F}}$ key, press the $\boxed{\text{PRINT}}$ key and feed in the paper.
i) Place a weight onto the scale and when the stable mark flashes press the $\boxed{\text{PRINT}}$ key.

If the printed weight is correct then the installation has been successful.

HW-G series

| Product	HW-10KGL HW-10KGV	HW-60KGL HW-60KGV	HW-100KGV HW-100KGL	HW-200KGV HW-200KGL
Weighing Capacity [kg]	10	60	100	220
Min. weighing (1 digit) [g]	1	5	10	20
Number of samples in counting mode [units]	5 can be changed to 10 20 50 100			
Max. count number [units]	10,000	12,000	10,000	11,000
Display HW-GL HW-GV	7 segment liquid crystal display, Character height 25mm 7 segment fluorescent display, Character height 20mm			
Repeatability [g]	±2	±10	±20	±40
Linearity [g]	±2	±10	±20	±40
Span drift	20ppm/°C typ. (5°C ~ 35°C)			
Power source HW-GL HW-GV	AC adaptor Please confirm that the AC adaptor type is correct for your local voltage and receptacle. Battery x 6 pieces type 'D' Please confirm that the Main power type is correct for your local voltage and receptacle type.			
Battery life (HW-GL)	Approximately 600 hours with alkaline dry cell battery			
Ambient temperature and humidity	-10°C ~ 40°C, Less than 85%R.H. (Non- condensing)			
Weighing pan size [mm]	250 x 250	330 x 424	390 x 530	390 x 530
Dimension [mm] Width x Depth x Height	275 x 474 x 368	330 x 621 x 771	390 x 712 x 773	390 x 712 x 773
Mass of scale [kg] HW-GL HW-GV	6 7	11 12	17 18	17 18

Dimensions
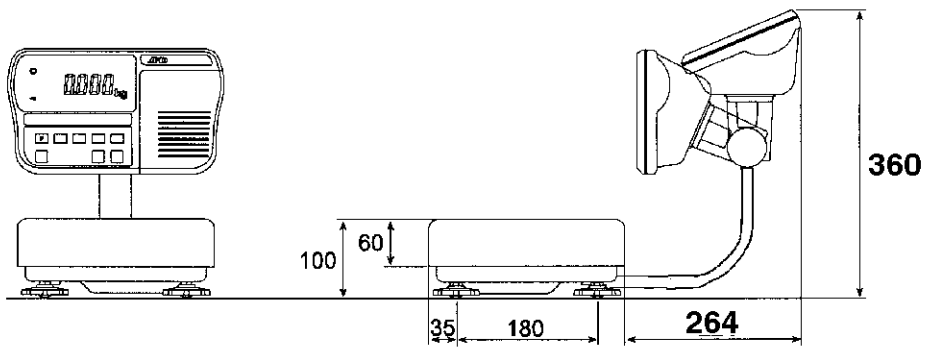
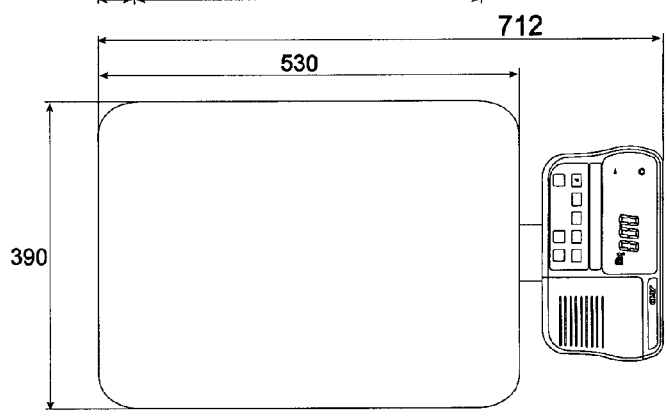**Products**
HW-10KGL
HW-10KGV
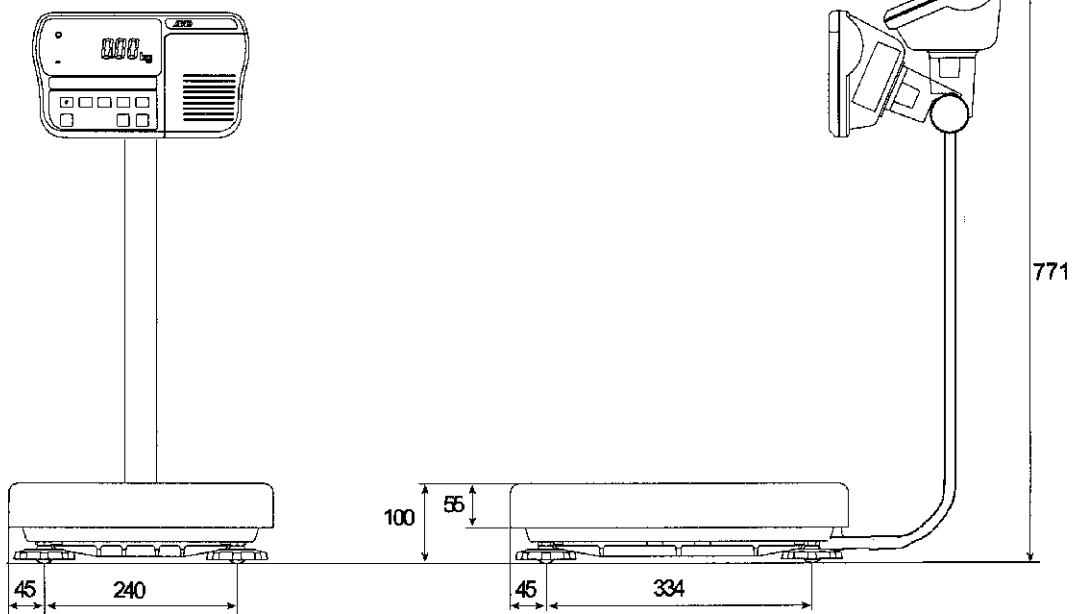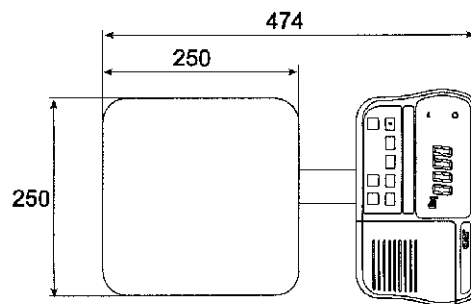
Products
HW-60KGL
HW-60KGV

Products

HW-100KGL HW-100KGV
HW-200KGL HW-200KGV

HW-G OZIM v1a
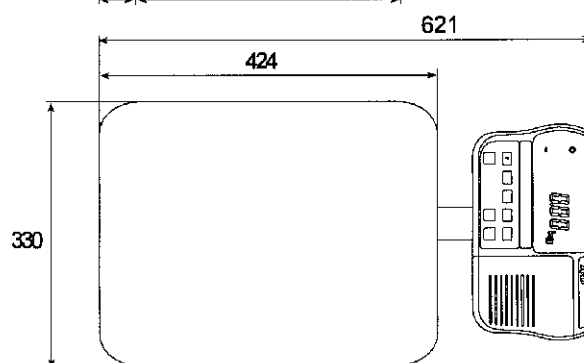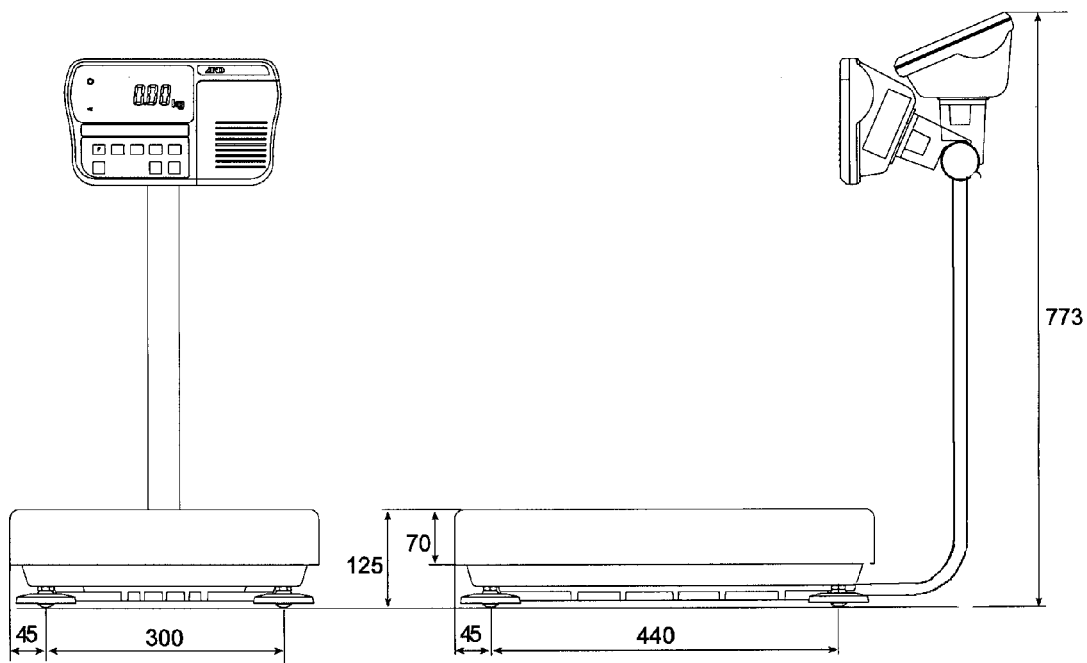
⬇ 19 Maintenance

Refer to "4. Caution" for use.

Refer to "6.1. Display and Symbols " and corresponding mode for displayed error code.

Refer to "14. Calibration (Adjusting Scale)" for precision weighing.

Periodically check the accuracy of weighing. Calibrate the scale, if it is moved to another location or the environment has changed.

⬇ 19.1 Repair

Do not disassemble/ assemble the scale without an authorised service engineer. It may cause an electric shock or damage to the scale, etc. In this case, repair is not covered under warranty. Contact your local A&D dealer if your scale needs service or repair.

⬇ 19.2 Check Points Before Calling Maintenance

In this situation	Confirm these items
Nothing displayed. Scale does not turn on.	Is the AC adaptor properly connected? Is the AC adaptor the correct voltage ? Are the batteries dead ? Is the battery polarity correct ?
The scale does not display	Check around weighing pan for foreign bodies.
zero at first. _888888_ is displayed and does not proceed	Is there anything on the pan? The weighing value is unstable due to drift, vibration or other Check around weighing panfor foreign bodies.
_- - - - - -_ is displayed and does not proceed.	Check the connection of load cell cable. Check around weighing pan. Remove anything on the pan. Make zero point calibration of the scale.
CAL E is displayed	Calibration error that means "Too heavy".
-CAL E is displayed	Calibration error that means "Too light".
_E_ is displayed	Weighing error that means "Over load".
_-E_ is displayed	Weighing error that means "Under load".
Fixed display	Do you use the "hold function". Turn the scale off then on.

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