MEASURE STATION

MS－1000

User's Manual

ATTENTION!

- Please read this manual for operation of this manual.
- Please retain this manual for further reference.

ViBRA

SHINKO DENSHI CO., LTD

ITINERARY(contents)

1. General Safety ・・・・・・・・・・・・・・・・・・・・ 2
2. Specifications ・・・・・・・・・・・・・・・・・・・・ 5
3. Components and Functions ・・・・・・・・・・・・ 6
4. Principal for measurement ・・・・・・・・・・・・ 7
5. Operation ・・・・・・・・・・・・・・・・・・・・・・ 8

Chapter 1 General Safety

The Measure station measures 3 dimensions and weight at one time, installing infrared and ultrasonic sensors and scale.

Purpose of this manual:

This manual explains the methods and procedures for safe and appropriate operations with MEASURE STATION.

Expected readers:

- Personnel who operates MEASURE STATION

Usage of this manual:

The first time readers should read this manual carefully from beginning to end.

At service, carry this manual with you for easy access to reference as needed.

Contents of this manual:

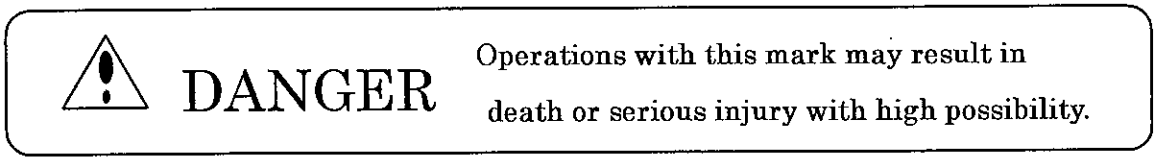
This manual covers all information necessary when operating MEASURE STATION.

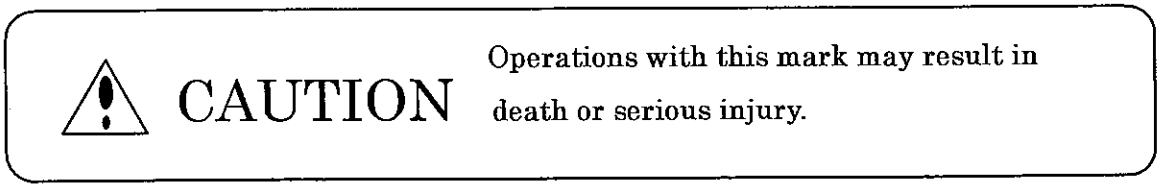
REMARKS FOR SAFETY – Follow all the remarks below

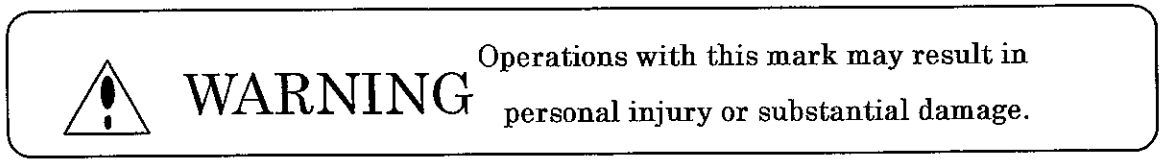
In order to prevent damage to the users and bystanders, and loss of their properties, all the remarks explained in the below must be followed.

1.1 Definitions of remarks

The remarks are classified into the following categories with their marks. These marks indicate the degree of possible damage or loss in case of careless operation or disobedience to the indicated specific operational instructions.







* Remarks that should be followed by the operator are categorized with their respective marks as shown below.

 PROHIBITED	Contents with this mark are subjects that must never be done.
 MANDATORY	Contents with this mark are subjects that must be done.

1.2 Warning and Cautions

 WARNING

 MANDATORY	■ Turn off the power when inspecting or cleaning. ・or it may cause an accident.
 PROHIBITED	■Do not use any power source other than AC 230 V. ・ It can cause failures or excess heat generation. ・ Excess heat generation can cause an explosion or fire.
 MANDATORY	■Connect the earth line to the ground. ・or it may cause an err run to bring accident.
 PROHIBITED	■Do not use in a location where it may be subjected to excess dust. ・It may cause an explosion or fire. ・It can cause a failure of the table measure.

 PROHIBITED	■Do not touch with wet hand. ・It may cause an electric shock.
 PROHIBITED	■Do not use the table measure if the AC adaptor cord is damaged. ・It may cause a fire or electrical shock.
 PROHIBITED	■Do not use the measure in a location were it may be subjected to rain or water spray. ・Electric shock or short-circuiting could be caused.

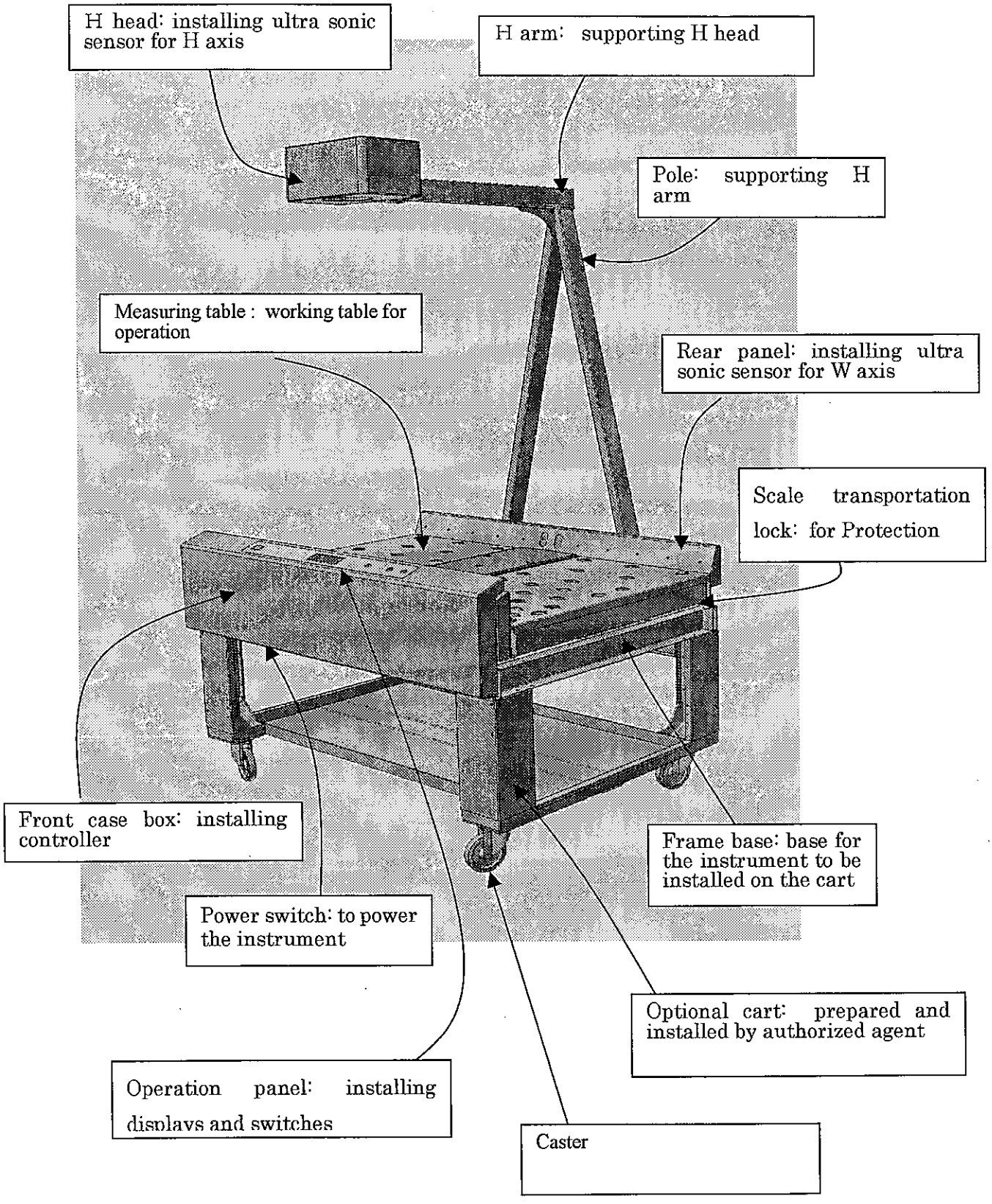
 CAUTION

 PROHIBITED	■ Do not transfer the Measure Station with holding conveyor ・conveyor is a part of scale part Excess force may damage the scale
 PROHIBITED	■Do not place the Measure Station in ①where it may be subjected to vibration or wind ② where there is big temperature up and down ③ there is excess dust、④ high temperature and humidity ⑤ direct sunlight ・It may cause a problem for performance and maintaining of the Measure Station.

Section 2 Specifications

1. Model Name		MS－1000
2. Measured by		Semi automatically and statically
3. Measuring principal	Dimension	Infrared beam and ultrasonic
	Weight	Load cell
4. Dimension measurement range	Length [L]	10～100 c m
	Width [W]	20～70 c m
	Height [H]	3～70 c m
5. Weight measurement range		0.1～60 k g
6. Dimension interval		0. 5 c m
7. Weight interval	0≦weight≦10kg	D1=0. 02 k g
	10＜weight≦60kg	D2=0. 05 k g
8. Measuring time		In about 3 seconds after setting
9. Measuring table height		185mm
10. Data output		Bilateral RS232C, two channels
11. Power source		AC120V～230V Max 200VA、50/60Hz
12. Operation temperature and humidity		0～40℃ 、 35～85%R h
13. Unit dimension		Width=1079mm
		Length=998mm
		Height= 1391mm
14. Unit weight		Approx 120kg

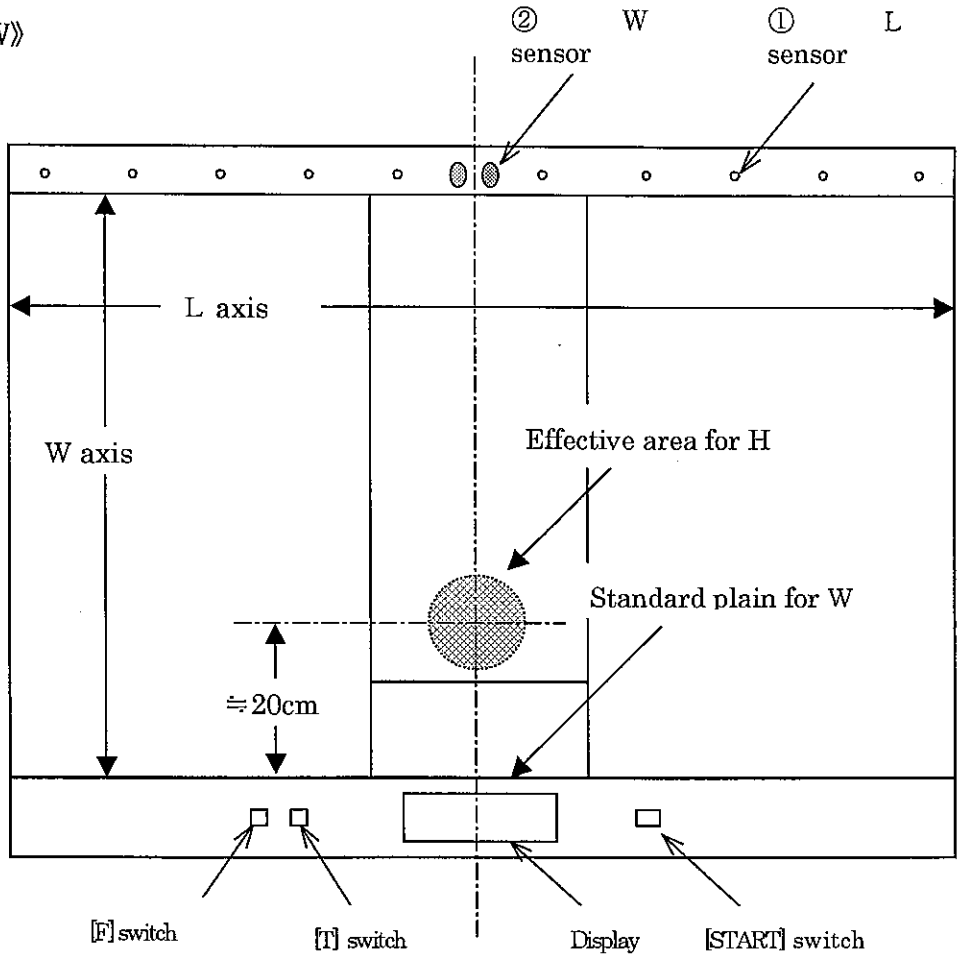
Section 3 Components and Functions



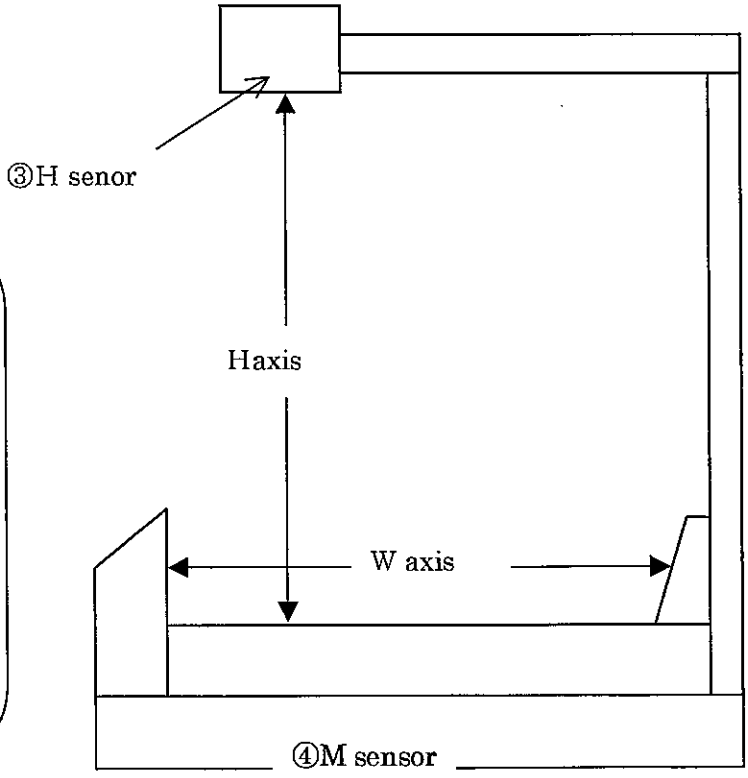
Section 4 Principal for measurement

For right and accurate measurement, it is important to understand the principal of the measurement.

《TOP VIEW》



《 SIDE VIEW》



①L axis: by counting light beams shuttered.
②W axis: derived from period of reflected sound.
③H axis: derived from period of reflected sound.
④M(Weight): measured by load cell.

Section 5 Operation

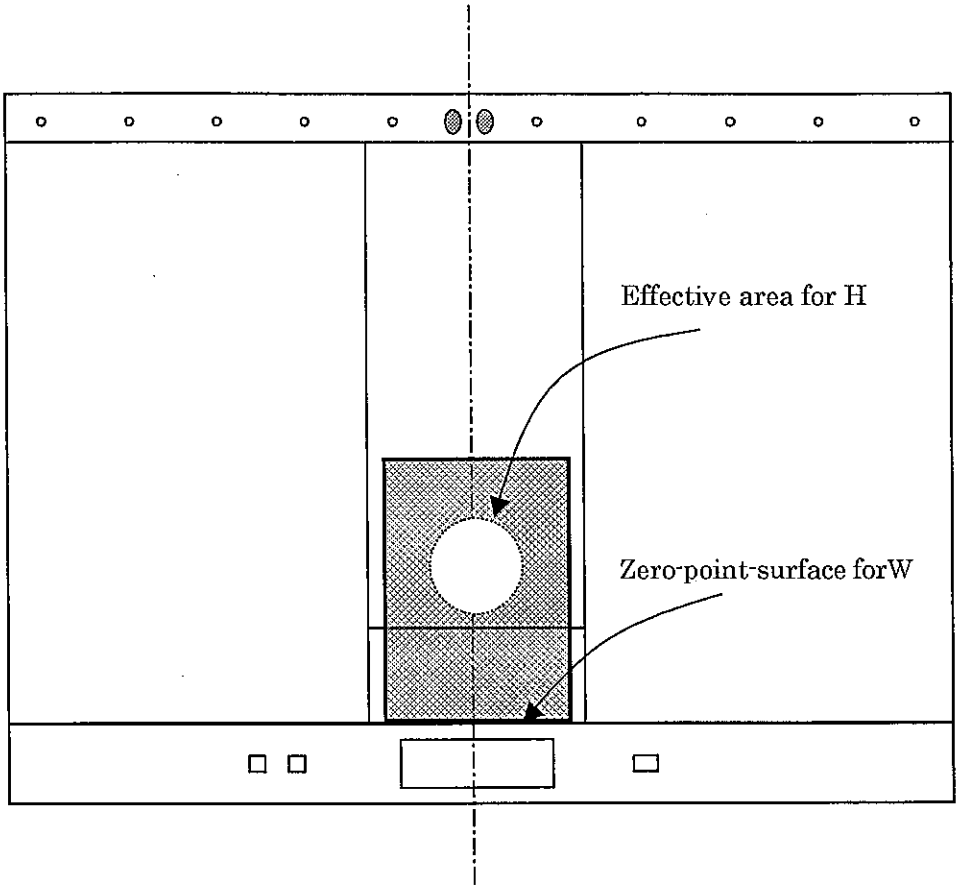
5. 1 Position to place object

For right and accurate measurement, it is very important to place an object in the designated area in the measuring table Failure to follow this condition may result in measurement error.

1) Place an object at the center of the table.

2) Place an object so that it covers the effective area for H. To do this, a small object should be placed with long line in W direction.

3) Place an object so that there is no space between the zero-point-surface for W and the object.



5.2 Requirement for the object kind

With the Measure Station, it is impossible or difficult to measure kinds of objects as listed below

1) Non rectangular object
2) object without right angle
3) objects with rough (non flat) surface
4) objects with round edge
5) Transparent objects
6) Objects with soft material (e.g. sponge)

These requirements are due to measurement principal of the Measure Station where ultrasonic and light beams are used.

5. 3 Initial check

Make sure nothing is on the measuring table.

Turn the power switch on.

1) Scale check

The scale is set at zero. The display shows the program number for about 7 seconds, while

```
MEASURE STATION
    MS0***    ****. **. **
```

The scale status is checked while communicating with the main controller.

If there is no error, move on to the display described in step 2).

In case there is an error, the display shows the following message.

《Scale communication error》

```
SCALE ERROR
                M:ERR-1F *
```

In this case, re-set the power. If you still have the same after re-setting several times, contact an authorized agent.

2) Dimensional sensor check (W、H、L axis)

Check each sensor for each axis

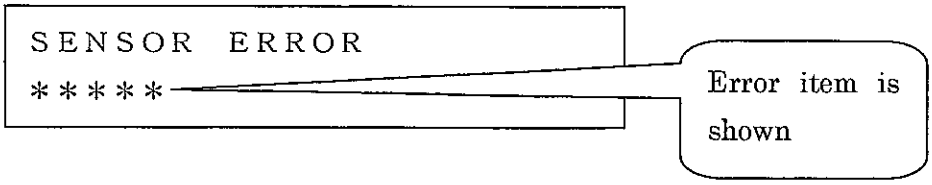
```
SENSOR CHECK NOW
```

```
SENSOR CHECK OK
```

If there is no error, move on to the display described in 3)

In case there is an error, the display shows

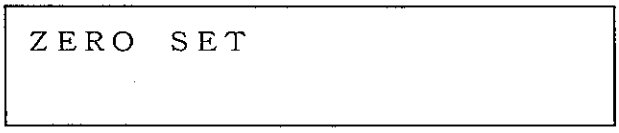
《Sensor error》



In this case, check if there is nothing loaded on the measuring table and press the [MEASURE] switch.
If you still have the same after pressing several times, contact an authorized agent.

3) Motor is activated for measurement to be ready.

4) Zero point is set with the following display



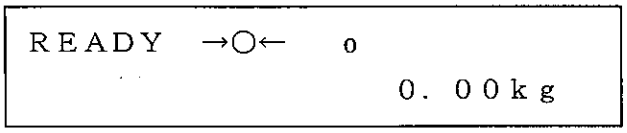
If there is no error, the display move to a next message in 7. 2.

In case there is an error, the above display continues then measurement in one or more axis could fail ——> Sensors should be checked

To manually escape from the state above, press the [T]switch.

5.4 Ready for measurement

After initial check, the following message is shown



「READY」 display

indicates scale and dimensional sensor is stable at zero position, and measurement is ready.

In case 「READY」 is not shown, check if there is any obstacle on the measuring table, and press the [T] switch to readjust the zero.

5.5 Measurement

Under 「READY」 display, set an object at the designated position specified in 5. 1.

(Misplacing an object may cause an measurement error.) , then press the [START]

Be sure not to touch the object or the measuring table at this point. (note the table is on the scale) the size and the weight of object are measured in about

3 seconds (measured data is output via RS-232C simultaneously)

```
L=  **. *cm    W=  **. *cm
H=  **. *cm  M=  **. **  kg
```

If an object is removed from the measuring table, move back to 「READY」 display in 7.2.

《Measurement error》

There is an measurement failure when the display shows 『ERR－**』 Consult the 「Measurement error table」 in 7. 5. to find out the cause and the solution.

《selection of display》

Measured data continue to be displayed until the object is removed from the measuring table, then the display goes back to 「5.4 Ready for measurement」.

If you want to see the previous data, press [F] switch, and the data is again on display.

```
L=  **. *cm    W=  **. *cm
H=  **. *cm  M=**. **kg
```

Press the [F] switch again, and calculated volume in meter and weight are displayed.

```
                V=0. *****m3
              M=    **. **kg
```

Press the [F]swtich again and the display goes back to 7.2.

5.6 Display modes

There are 3 display modes. To change the mode, press the [F].

《 measurement data》

```
L=  **. *cm    W=  **. *cm
H=  **. *cm  M=  **. **  kg
```

《 volume & weight》

```
                V=0. *****m3
              M=    **. **kg
```

《 Ready state sign 》

```
READY    →○←    o
                M=    0. 00kg
```

5.7 Measurement Error List

Errors at power on

Pos.	Error No.	Description	Countermeasure
L	SENSOR ERROR L-(①)(②) P.D. NOT ON Where ①Photo diode number (0→9 from right to left) ②LED number (1→5,8→C from right to left)	Photo diode No. ① is not working in light beams①-②.	Remove an object(s) on the measuring table. Clean up dusts in LED and/or Photo diode surface.
	SENSOR ERROR L-(①)(②) LED NOT ON Where ①Photo diode number (0→9 from right to left) ②LED number (1→5,8→C from right to left)	LED No.② is not working in light beams①-②.	
W	SENSOR ERROR AA	Unable to detect signal in A-A pair of W sensor.	Check to see if something is on the measuring table. Check if there is strong wind affects the measuring table. If there is no obstacle found, contact an authorized agent.
	SENSOR ERROR AB	Unable to detect signal in A-B pair of W sensor.	
	SENSOR ERROR BA	Unable to detect signal in B-A pair of W sensor.	
	SENSOR ERROR BB	Unable to detect signal in B-B pair of W sensor.	
H	SENSOR ERROR H	Unable to detect signal in H sensor.	

Errors in measuring mode

Pos.	Error No.	Description	Countermeasure
L	01	Unable to measure in L, due to object location (at too much left side)	Shift the object to the center.
	02	Unable to measure in L, due to object location (at too much right side)	Shift the object to the center.
	03	Unable to measure in L.	Shift the object to the center. Check the object size in L.
	04	Out of measuring area (beyond the right end)	Shift the object to the center.
	05	Out of measuring area (beyond the left end)	Shift the object to the center.
	12	Object length in L is too short.	Check the object size in L.
	13	Object length in L is too long.	Check the object size in L.
	14	Not to be measured due to short-length error(s) in W and/or H.	
W	01	Unable to detect object.	Shift the object to the center. Check if the angle against W axis of the object is big.

	10	Not to be measured due to disturbance.	Shut out the disturbance.
	12	Object length in W is too short.	Check the object size in W.
	13	Object length in W is too long.	Check the object size in W.
	14	Not to be measured due to short-length error(s) in L and/or H.	
	20	Unstable by bad sonic reflection.	Check the surface, angle against W axis(big?), material(soft?) of the object.
	40	Unstable by bad sonic reflection.	Check the surface, angle against W axis(big?), material(soft?) of the object.
	60	Unstable by bad sonic reflection.	Check the surface, angle against W axis(big?), material(soft?) of the object.
	80	Unstable by bad sonic reflection.	Check the surface, angle against W axis(big?), material(soft?) of the object.
	A0	Unstable by bad sonic reflection.	Check the surface, angle against W axis(big?), material(soft?) of the object.
	C0	Unstable by bad sonic reflection.	Check the surface, angle against W axis(big?), material(soft?) of the object.
	E0	Unstable by bad sonic reflection.	Check the surface, angle against W axis(big?), material(soft?) of the object.
H	01	Unable to detect object.	Shift the object to the center. Check if the angle against H axis of the object is big.
	10	Not to be measured due to disturbance.	Shut out the disturbance.
	12	Object length in H is too short.	Check the object size in H.
	13	Object length in H is too long.	Check the object size in H.
	14	Not to be measured due to short-length error(s) in L and/or W.	
	20	Unstable by bad sonic reflection.	Check the surface, angle against H axis(big?), material(soft?) of the object.
	40	Unstable by bad sonic reflection.	Check the surface, angle against H axis(big?), material(soft?) of the object.
	60	Unstable by bad sonic reflection.	Check the surface, angle against H axis(big?), material(soft?) of the object.
	80	Unstable by bad sonic reflection.	Check the surface, angle against H axis(big?), material(soft?) of the object.
M	01	Scale is unstable	Check if something touches the object or measuring table.
	12	Object is too light. (Under error in scale sensor.)	Check if the object weight is in the measuring range.
	13	Object is too heavy. (Over error in scale sensor.)	Check if the object weight is in the measuring range.
	1E	Abnormal state of the scale sensor.	Something wrong with the scale. Contact authorized agent.
	1F	Error in communication between scale and main controller	Something wrong with the scale. Contact authorized agent.
V	10	Unable to calculate volume due to error in one or some of L, W, H	

5.8 Data output

- Measurement data is output through COM1 TEANIAL at
- COM2 is used for communication with barcode reader(option)

Name	Description	Interface	Connector type
COM1 (right)	Measurement data	RS-232C	D-SUB-9P
COM2 (left)	For bar code reader only	RS-232C	D-SUB-9P

- Listed is pin assignment in COM1 & COM2 connector

Terminal	Signal	Symbol	In/Out
②	Receiving data	R x D	Input
③	Transmitting data	T x D	Output
④	Data terminal ready	D T R	Output
⑤	Signal ground	S G	

At Measure Station (Connector : D-Sub 9p) DE-9P-N JAE compatible

Output : Measure Station → External device

Input : Measure Station ← External device

※ To connect personal computer, use " cross cable" where the ② & ③ pins at one side are connected to ③—② at the other side.

※ For more details about communication, contact an authorized agent.