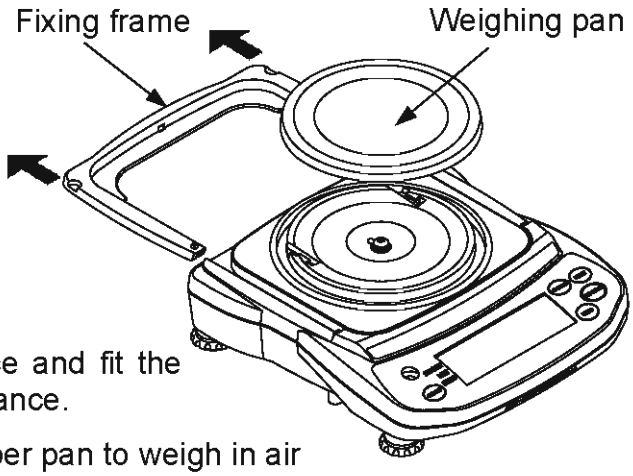
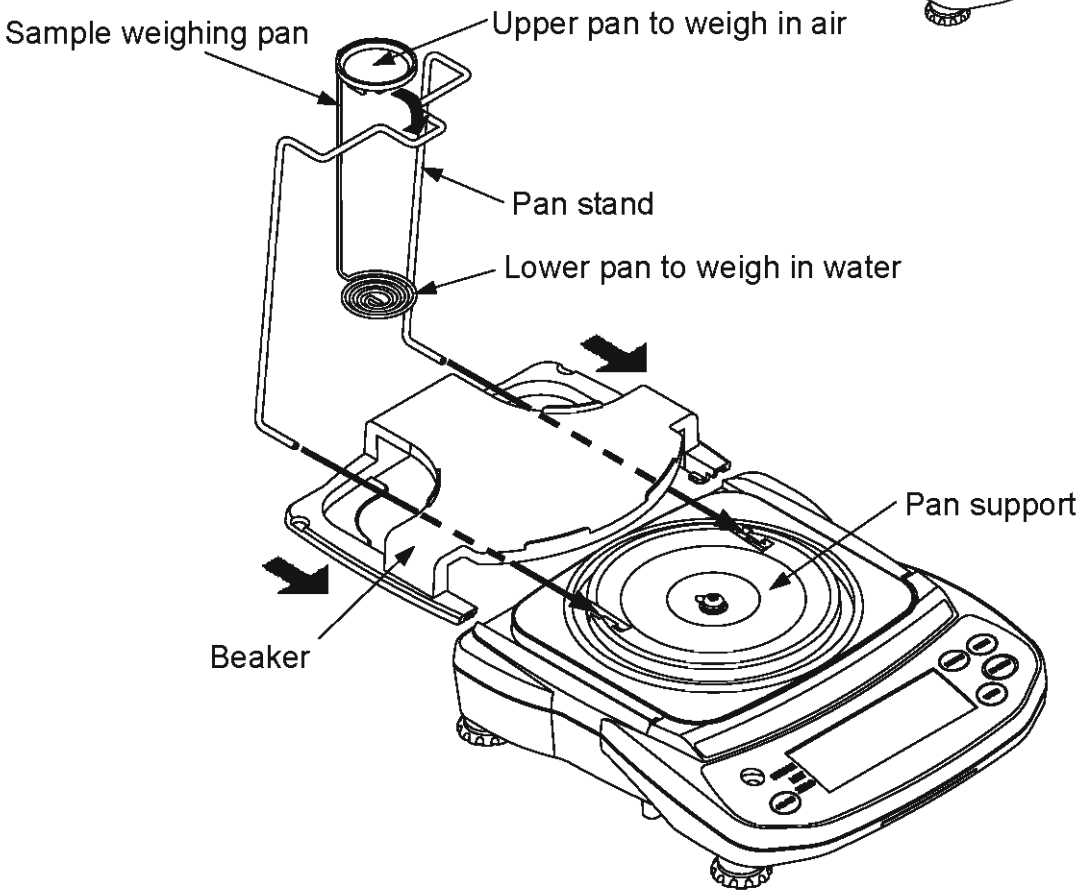
EJ-13 Density Determination Kit

Using this option and calculation program, the balance can determine the density (specific gravity) of a sample.



EJ-13 Installation

- ❑ Push the fixing frame out, and remove the weighing pan.
- ❑ Attach the beaker stand to the balance and fit the pan stand to the pan support of the balance.



- ❑ Place a beaker filled with water on the beaker stand and place the sample weighing pan on top of the pan stand.

Density (specific gravity) measurement

- ❑ The density of a liquid can be changed and there are two ways of setting. One is to set the water temperature and the other is to set density value directly.
- ❑ The factory setting for density of a liquid is 25 °C as water temperature (the density value ρ = 0.99704 (g/cm^3) is used to calculate).
- ❑ The density (specific gravity) is calculated by the following formula.

$$S = \frac{A}{A-B} \times \rho$$

S: Density (specific gravity) of a sample
A: Weight in air
B: Weight in liquid
ρ: Density of liquid (water)

- ❑ The result is shown with two decimal places.

Change the function table

Selecting a way to set the density of a liquid

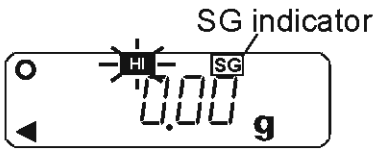
Select the liquid density input method from the function table below. The function table is available only when the density measurement mode is selected.

Class	Item	Param-eter	Description	
Func	Ld in Liquid density input	◆ 0	Water temperature	The way to input liquid density.
		1	Liquid density	

◆ Factory setting

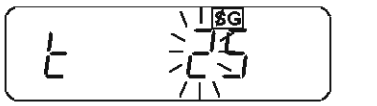
Setting the density of a liquid

1. Press the [UNITS] key to select [SG] .



2. Press and hold the [UNITS] key to display liquid density input mode.

Ld in = 0: Water temperature
This shows 25 °C.



Ld in = 1: Liquid density
This shows ρ = 1.0000 (g/cm^3).

3. Using the [RE-ZERO] (to increment the value) and [SAMPLE] key (to shift the selected digit), set the value and press the [PRINT] key to store.

❑ To cancel the setting procedure and return to the density measuring mode, press the [UNITS] key. The input value is not stored.

❑ The relation between the water temperature and density is shown below.

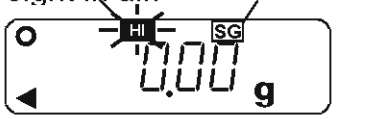
°C	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
0	0.99984	0.99990	0.99994	0.99996	0.99997	0.99996	0.99994	0.99990	0.99985	0.99978
10	0.99970	0.99961	0.99949	0.99938	0.99924	0.99910	0.99894	0.99877	0.99860	0.99841
20	0.99820	0.99799	0.99777	0.99754	0.99730	0.99704	0.99678	0.99651	0.99623	0.99594
30	0.99565	0.99534	0.99503	0.99470	0.99437	0.99403	0.99368	0.99333	0.99297	0.99259
40	0.99222	0.99183	0.99144	0.99104	0.99063	0.99021	0.98979	0.98936	0.98893	0.98849
50	0.98804	0.98758	0.98712	0.98665	0.98618	0.98570	0.98521	0.98471	0.98422	0.98371
60	0.98320	0.98268	0.98216	0.98163	0.98110	0.98055	0.98001	0.97946	0.97890	0.97834
70	0.97777	0.97720	0.97662	0.97603	0.97544	0.97485	0.97425	0.97364	0.97303	0.97242
80	0.97180	0.97117	0.97054	0.96991	0.96927	0.96862	0.96797	0.96731	0.96665	0.96600
90	0.96532	0.96465	0.96397	0.96328	0.96259	0.96190	0.96120	0.96050	0.95979	0.95906

Example of density measurement

Selecting the SG measurement mode

1. Press the [UNITS] key to select [SG] .
(The weight unit is “g”.)

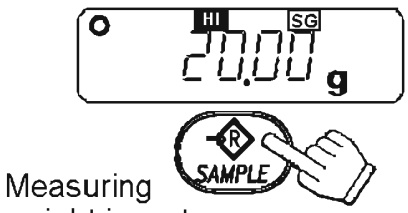
Measuring weight in air. SG indicator



❑ The weighing unit is “g”.
❑ The display shows that HI blinks and the balance is measuring weight in air.
❑ When the display does not show zero, press the [RE-ZERO] key to set the display to zero.

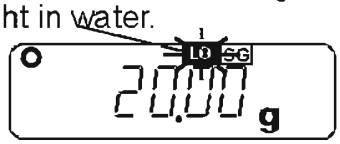
2. Place a sample on the upper pan.

3. Wait for the STABLE indicator to be displayed and press the [SAMPLE] key to store the weight in air.



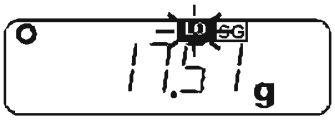
Measuring weight in water.

4. The display shows that **LO** blinks and the balance starts to measure weight in water.

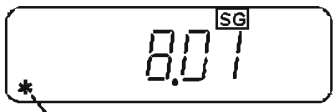


5. Place the sample on the lower pan in water.

- ❑ Adjust the amount of water so that the sample is about 10 mm below water surface.



6. Wait for the STABLE indicator to be displayed and press the [SAMPLE] key. Then the balance reads the weight in water and shows the density (specific gravity) of the sample.



* The display shows the density.

7. To continue the specific gravity measurement, press the [SAMPLE] key again. To exit this measurement, press the [UNITS] key.

To weigh in air.

To weigh in water.