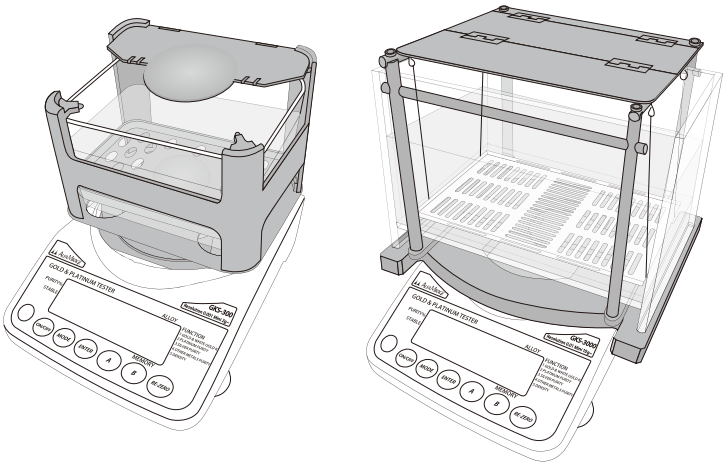
ALFA MIRAGE

PRECIOUS METAL TESTER GKS-300 & GKS-3000

INSTRUCTION MANUAL



PRECIOUS METAL TESTER:
GKS-300 & GKS-3000 which are combined the high-precision electronic balance, installed original software with the container for measuring the specific gravity, can calculate the purity of gold and other metals by measuring the specific gravity of sample and differentiate the real precious metal from the fake precious metal. Please use as directed.

GKS-300 & GKS-3000 PRECAUTIONS FOR USE

1. Samples that can be measured
① Precious metals such as Gold, White gold, Platinum and Silver or their alloyed precious metals
② Other metals or their alloyed metals
③ Jewelry which metals are listed above, such as ring, necklace, bracelet, watchband, coin and icon.

2. Accurate results cannot be achieved on the following occasions.
① When a sample has air hole which cannot be removed.
② When a lot of bubbles are sticking on the surface of a sample.
③ When dust or dirt is sticking on the surface of a sample.
④ When the specific gravity of a sample is almost the same as the prospective metal.
⑤ When jewelry or something except metal are sticking on a sample.

3. Be careful about the following matters to prevent failure and electric leakage.
① Do not spill water onto the machine body and spare parts.
② Do not spill water onto the machine body and spare parts when putting a sample in and out.
③ Refrain from placing the body on a tremulous location, which may spill water.
④ Empty the Water Tank and pull off the plug when not used.
⑤ GKS-300 can measure up to 300g, GKS-3000 can measure up to 3kg. Do not put an object over these weights.

4. Be careful about the following matters in order to measure accurately.
① Set up spare parts correctly.
② Install in a stable place avoiding vibration and shock.
③ Use the Airtight Wind Shield attached to GKS-300.
It is the optional parts for GKS-3000.
④ Measuring table should be solid and free from vibration, drafts and as level as possible.

5. GKS-300:
The Water Tank is made from Styrene resin and the Sensor & the Support are made from ABS resin.
GKS-3000:
The Water Tank is made from PET resin and the Measuring tray unit is made from Stainless.
Do not use such solution as to erode them.
Do not leave as it is after using other liquid except for water.

6. This machine can calculate the specific gravity and the purity based on the weight of sample.
Please calibrate periodically by using the 200g calibration weight for GKS-300 in order to measure accurately. 2kg calibration weight for GKS-3000 is an option.

7. The value such as the purity and % is calculated based on the specific gravity of sample.

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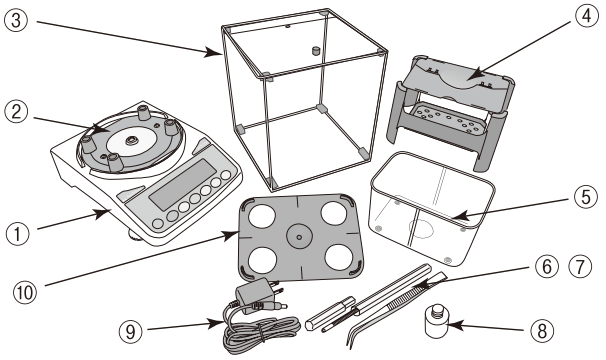
NAME & FUNCTION

ACCESSORIES & COMPOSITION

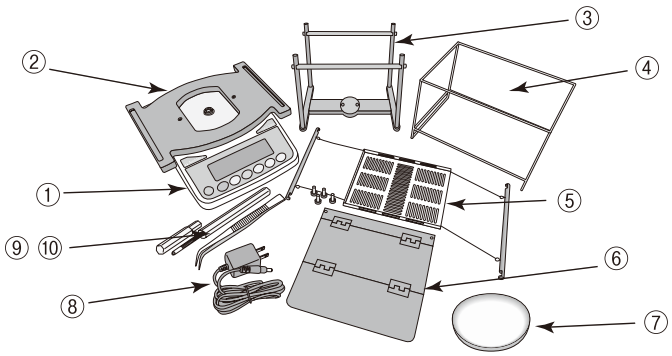
See the illustrations to confirm that everything is contained.

GKS-300



①MAIN BODY ②WATER TANK HOLDER
③AIRTIGHT WIND SHIELD ④SENSOR
⑤WATER TANK ⑥TWEEZERS ⑦THERMOMETER
⑧200g CALIBRATION WEIGHT ⑨AC ADAPTOR
⑩SUPPORT

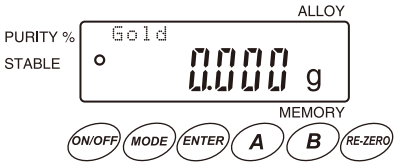
GKS-3000



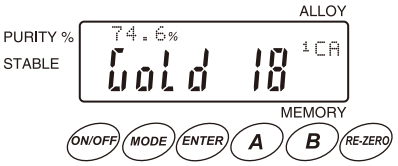
①MAIN BODY ②WATER TANK HOLDER
③SENSOR ATTACHMENT ④WATER TANK
⑤MEASURING TRAY UNIT ⑥LID
⑦DISH ⑧AC ADAPTOR ⑨TWEEZERS
⑩THERMOMETER

DISPLAY

Before measurement



After measurement



PURITY % : Before measurement, it indicates Measuring Mode.(Gold, Platinum, specific gravity or others)
After measurement, it displays % of the purity of main metal.
STABLE : Stable mark "○" appears on the upper left side when the numeric becomes stable.
MEMORY : ▼ appears right of g-mark when the aerial gravity is memorized.
ALLOY : This shows alloyed metal.

FUNCTION

Before measurement

g : This shows aerial gravity(gram) or underwater gravity(gram).
Gold : This is the Measuring Mode. This Mode turns to ***Gold***, ***Pt***, ***WG***, ***SiL***, and ***SG***.

After measurement

Gold 18 : Shows the result that the purity of Gold is 18K.
74.6% Shows the result that the purity of Gold is 74.6%.
1 CA : Shows alloyed metal. This result is assuming alloyed with Copper&Silver.

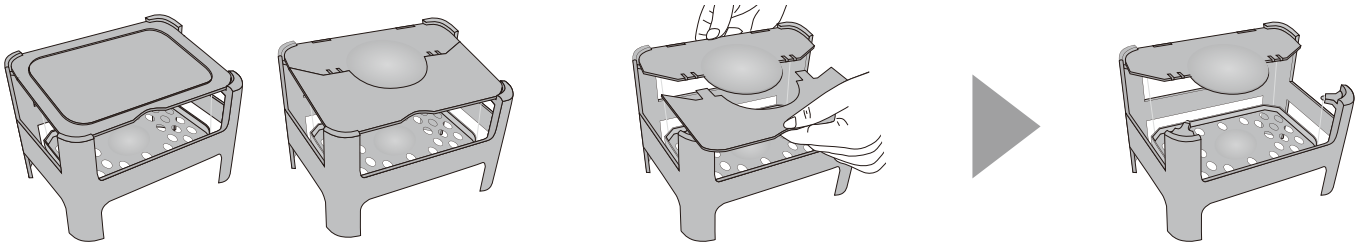
SWITCH KEY

Key	When pressed	When pressed and held (for 5 seconds)
ON/OFF	To turn the display on and off	
MODE	①Before measurement: To change the PAGE of Initial Setting ②After measurement: To change the Measuring Mode	To select Measuring Mode (Gold･Pt ⇔ WG･SiL)
ENTER	①Measurement: This is the main key for measuring ②Before measurement: To select the Initial Setting ③Before measurement: To calibrate	Before measurement: To set the temperature of water
A	①Before measurement: To change present value of the Initial Setting ②Before measurement: To increase the numeric in setting a value ③After measurement: To change the alloy metals	①Before measurement: To enter the Comparator ②After measurement: To change the alloy metals
B	①Before measurement: To change the CODE of the Initial Setting ②Before measurement: To decrease the numeric in setting a value ③After measurement: To output date	①Before measurment: To enter Calibration Mode ②During measurement: It returns to the last weight measurement
RE-ZERO	①To set the display to zero ②To cancel a present value in a setting mode	

HOW TO SET UP

◆CONVENIENT FUNCTION

GKS-300 can make the Lid into a half size so that it can be measured more efficient and accurate.
It is very convenient to use the Lid separated as following pictures for small samples.

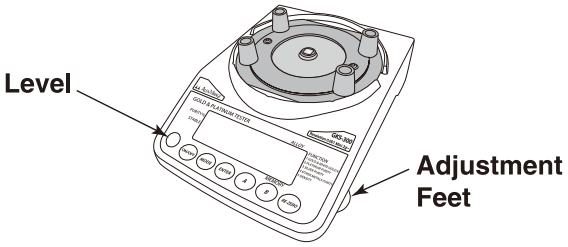


Previous Sensor | New Sensor | Remove the front part of the Lid gently. | The Lid becomes about a half size.

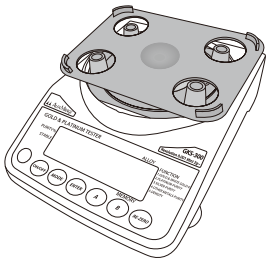
※*No need to open and close every time.*

GKS-300

①Place the Body on a stable location where is no vibration.
②The Body has a Sprit Level at the front left side.
Twist the Adjustment Feet on the underside to level.



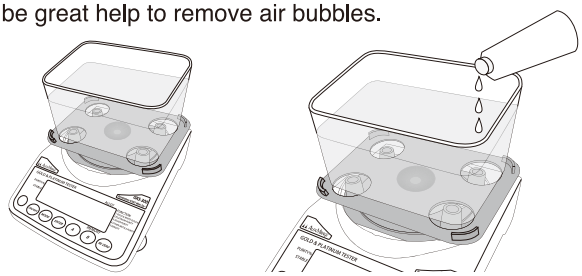
③This Body has been equipped with the Water tank Holder at the factory. Set up the Body and the Support following instruction.



Put a shaft underside of the Support into the center hole and press it down firmly.
※It does not cause a failure, even if it is pressed down firmly.

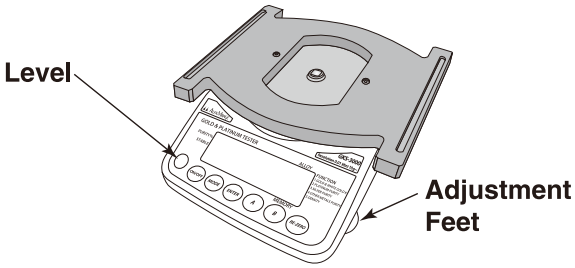
> Make sure that the Support and the Holder do not touch each other.

Pour water up to the inner line of the Water Tank.
Fit the underside convexities of the Water Tank.
Put a few drops of mild detergent in the Water Tank.
It will be great help to remove air bubbles.

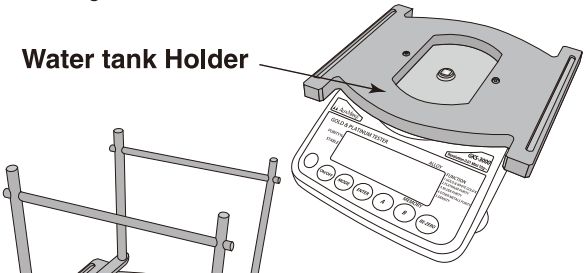


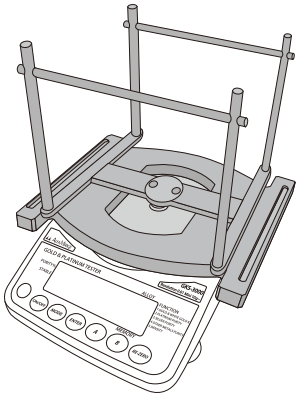
GKS-3000

①Place the Body on a stable location where is no vibration.
②The Body has a Sprit Level at the front left side.
Twist the Adjustment Feet on the underside to level.



③This Body has been equipped with the Water tank Holder at the factory. Set up the Body and the sensor Attachment following instruction.

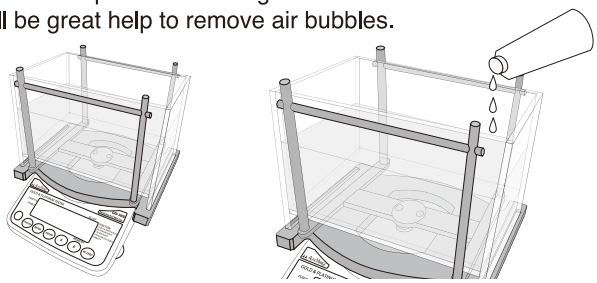




Put a shaft underside of the Sensor Attachment into the center hole.

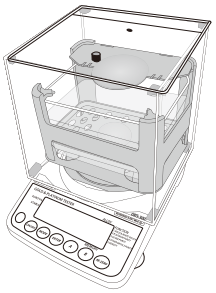
> Sensor Attachment, Measuring tray unit and Water tank have been assembled at the factory.
> To the beginning, decompose that into each part, and then assemble them again.

Pour water up to the 70% line of the Water Tank.
Fit it on the 2 concavities of the Holder.
Put a few drops of mild detergent in the Water Tank.
It will be great help to remove air bubbles.

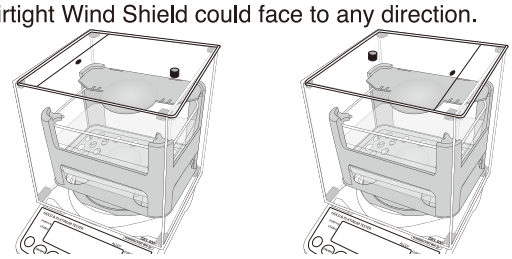


Put the Sensor over the Water Tank gently.
Make sure that the bottom of the Sensor is correctly positioned on the Support.
Sink the measuring tray into water.

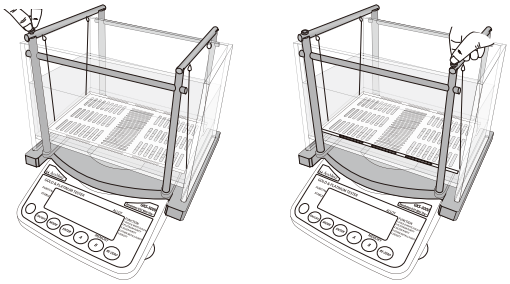
Over the Airtight Wind Shield.
It has finished setting. Please confirm that the AC adapter type is correct for your local voltage and receptacle type.



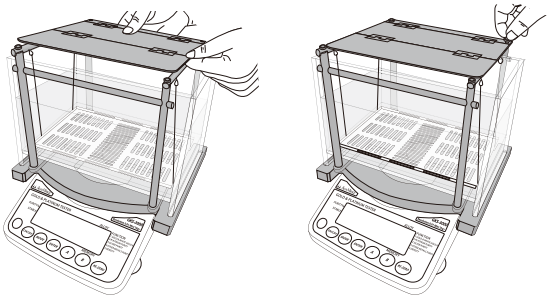
An Airtight Wind Shield could face to any direction.



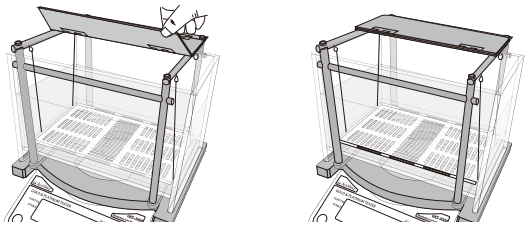
Equip two horizontal bars of the Measuring Tray unit at 4 vertical Sensor Attachment. At first, screw two positions of the front.



Attach the Lid and screw remaining two positions of the back.
It has finished setting. Please confirm that the AC adapter type is correct for your local voltage and receptacle type.



Fold the Lid in half size and no need to open-close the Lid every time.



GKS-300 is the precision instrument. Make sure that use the Airtight Wind Shield for accurate measurement.
GKS-3000 does not contain the Airtight Wind Shield. Airflow such as the air conditioner may interfere with the accurate measurement. If you measure in such a circumstance, we recommend purchasing out the optional Airtight Wind Shield for GKS-3000.

WARMING UP

1. This instrument is an electronic device. At the first time, it takes about 3 minutes for an electric circuit to become stable after plugged in. Plug in an AC adapter and turn on the power and warm up the machine at least 3 minutes.
2. When [8.8.8.8.8.8.8.8 g] does not turn to be [0.000 g] or the display does not get stable, zero point is out of position. Press (RE-ZERO) key to return the display to [0.000 g]. If it does not work, proceed calibration.
3. Once this procedure is completed, the electricity remains stable in the power distribution as long as the AC adapter is being plugged in even if power is turned off.

HOW TO CALIBRATE ZERO POINT AND SPAN

■Necessity of calibration (adjustment of balance)

High precision electronic balance is equipped with the Precious Metal Tester: GKS-300, GKS-3000 and it distinguishes a sample based on the weight and the specific gravity.
Accurate results come from measuring the gravity accurately. As a characteristic of the balance, the gravity differs from place to place. Calibrate the unit on the following occasions.

①When the unit is installed for the first time.
②When the unit is transferred.
③When the surroundings are changed.
④In regular adjustment(Once per a week or everyday as a need arises).

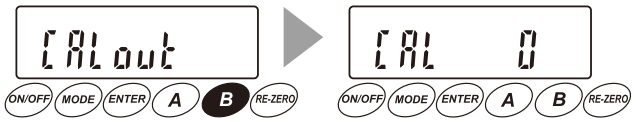
A calibration weight is necessary for calibration. 200g calibration weight is contained to GKS-300.
2kg calibration weight for GKS-3000 is an option. We recommend purchasing it.

HOW TO CALIBRATE

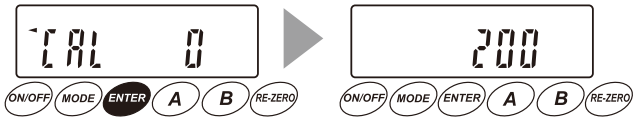
GKS-300

①Turn the display on. Hold down (B) key for about 5 seconds.

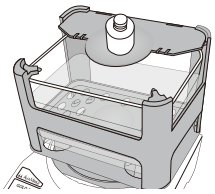
②Hold off (B) key, when CALout turns to be CAL 0.



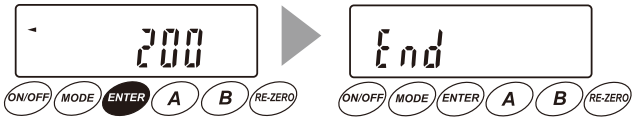
③Press (ENTER) key, and the display turns from CAL 0 to 200.



④Place the 200g calibration weight on the center of the Sensor gently. And press (ENTER) key.



⑤ 200 appears and a few seconds later, End will be displayed. Then remove the calibration weight.



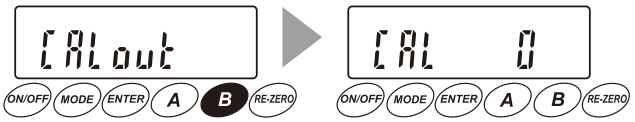
⑥Display returns to 0.000 g which means the calibration is completed. Place the calibration weight on the Sensor, and confirm that the value display is within ±1 digits of the specified value.

If it is not within the range of ±0.001g, check ambient condition such as draft, vibration and setting of all parts. Then repeat calibration again.

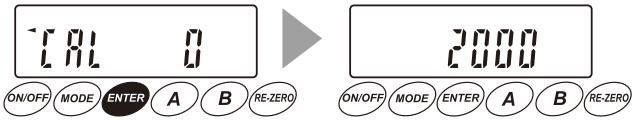
GKS-3000

①Turn the display on. Hold down (B) key for about 5 seconds.

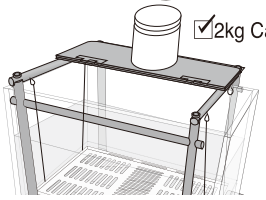
②Hold off (B) key, when CALout turns to be CAL 0.



③Press (ENTER) key, and the display turns from CAL 0 to 2000.

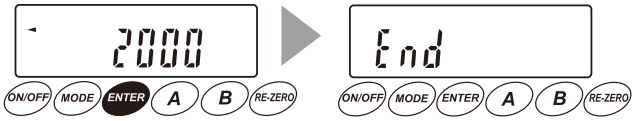


④Place the 2kg calibration weight on the center of the Sensor gently. And press (ENTER) key.



☑2kg Calibration weight is an option.

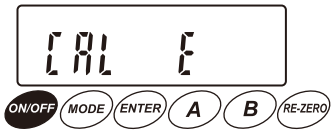
⑤ 2000 appears and a few seconds later, End will be displayed. Then remove the calibration weight.

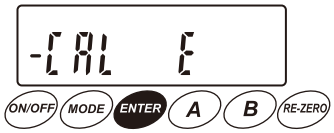


⑥Display returns to 0.00 g which means the calibration is completed. Place the calibration weight on the Sensor, and confirm that the value display is within ±1 digits of the specified value.

If it is not within the range of ±0.01g, check ambient condition such as draft, vibration and setting of all parts. Then repeat calibration again.

※ERROR INDICATION





In case the display is shown as left during the calibration, it indicates error.
Press (ON/OFF) key to return to 0, and start from the Step ① again.
Please make sure the following matters when the error indication still appears.
① Sensor, Water Tank, Holder, and Support and all parts are set properly.
② The correct 200g or 2kg calibration weight is used.
③ 200 or 2000 is displayed during the calibration.
④ Installed location is stable without vibration and air current.
If there is no problem with above, there may be some defect or failure in the instrument.
Please inform us or our agents.

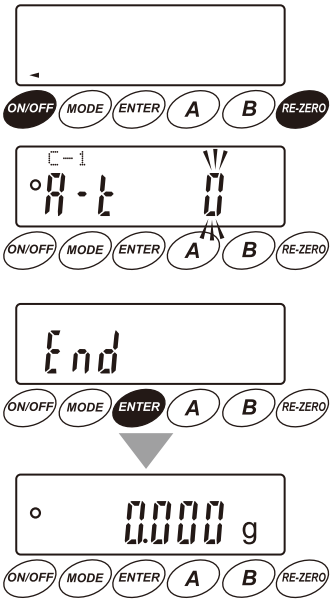
INITIAL SETTING

Change the Initial Setting before measuring in any of the following cases.

①When changing the measuring time ***(C-1 A-t or L-t)***
②When selecting Auto-weighing-enter function ***(C-1 At-E)***
③When using any liquid other than water as solution ***(C-1 Lqd)***
④When connecting to printers or computers

PROCEDURE OF INITIAL SETTINGS

Refer to Page 12 INITIAL SETTING LIST, select a value.



① Turn the display off.

② Hold down (RE-ZERO) key, and press (ON/OFF) key.
The first item, ***C-1 A-t 0*** is displayed.

③ Refer to INITIAL SETTING LIST, select PAGE, CODE and VALUE by the following keys.
a. ***C-1*** means the PAGE. Press (MODE) key to change.
b. ***A-t*** means the CODE. Press (B) key to change.
c. ***0*** means the VALUE. Press (A) key to change.

④ Press (ENTER) key to confirm the setting. Display shows [End] → [0.000 g].
☑GKS-3000 displays [0.00 g].

HOW TO SET UP OTHERS

HOW TO COMPENSATE WATER TEMPERATURE (In case of using water for measurement) (C-1,Lqd-0)

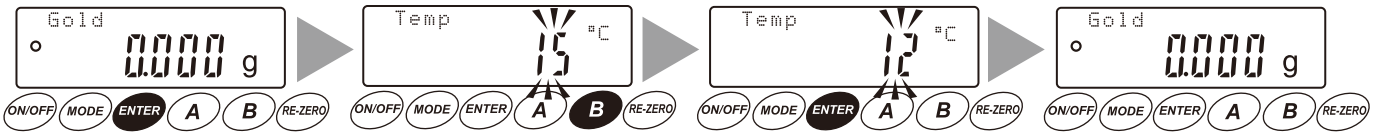
By using water as solution of measurement, this instrument can measure the specific gravity of a sample against the specific gravity of water. As the specific gravity of water depends on the water temperature, the specific gravity of a sample changes accordingly. It is necessary to compensate water temperature based on the specific gravity: 1.000 of 4°C water. The specific gravity of water being present in memory at every 0 to 99°C Celsius in advance, it is possible to compensate the specific gravity of a sample by setting water temperature.

■SETTING PROCEDURE(Temp ℃ appears on the display.)

①Measure water temperature by using the Thermometer.
②Turn on the power. Hold down (ENTER) key for about 5 seconds.
③The present water temperature blinks on the display. Factory setting at 15°C.
④Input the measured water temperature.

Press (A) key to plus 1.
Press (B) key to minus 1.

⑤After setting, press (ENTER) key to memorize it. The display returns to zero.
The compensation of water temperature is completed.



☑GKS-3000 display shows [0.00 g].

Preset Water density

temperature(℃)	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

TO INPUT THE SPECIFIC GRAVITY OF SOLUTION **This instrument can set up the specific gravity of the solution other than water.**

The solution other than water can be applied to this instrument. The result measured in the solution can be compensated for the result in water by inputting specific gravity of solution in advance. This works well for the following cases.

①Sample has too many bubbles when measured in water.
②Sample is so decorative that it is hard to sink it in water.
③Sample repels water.

☑GKS-300: The Water Tank is made from Styrene resin, and the Sensor and the Support are made from ABS resin. Do not use such a solution as to corrode them.
☑Ethanol (Specific gravity: about 0.798) is suitable for solution as well as water. It is inflammable, so handle with extra care.
☑GKS-3000 : The Water Tank made from PET resin, and the Measuring tray unit made from stainless. Do not use such a solution as to corrode them.

■SETTING PROCEDURE (SG appears on the display.)

①Select the Initial Setting for setting the specific gravity of solution. Change PAGE ***C-1***, CODE ***Lqd***, VALUE from ***0*** → ***1***.
②Turn on the power. Hold down (ENTER) key for about 5 seconds.
Present set value appears on the display. (factory setting 1.000) The numeric leftmost blinks, and can be changed the value following key operation below.

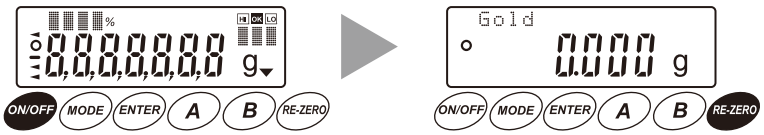
Press (A) key to plus 1.
Press (B) key to minus 1.
Press (MODE) key to move the cursor to the next digit.

③After setting, press (ENTER) key to memorize it. The display returns to zero.
Setting the specific gravity of solution is completed.

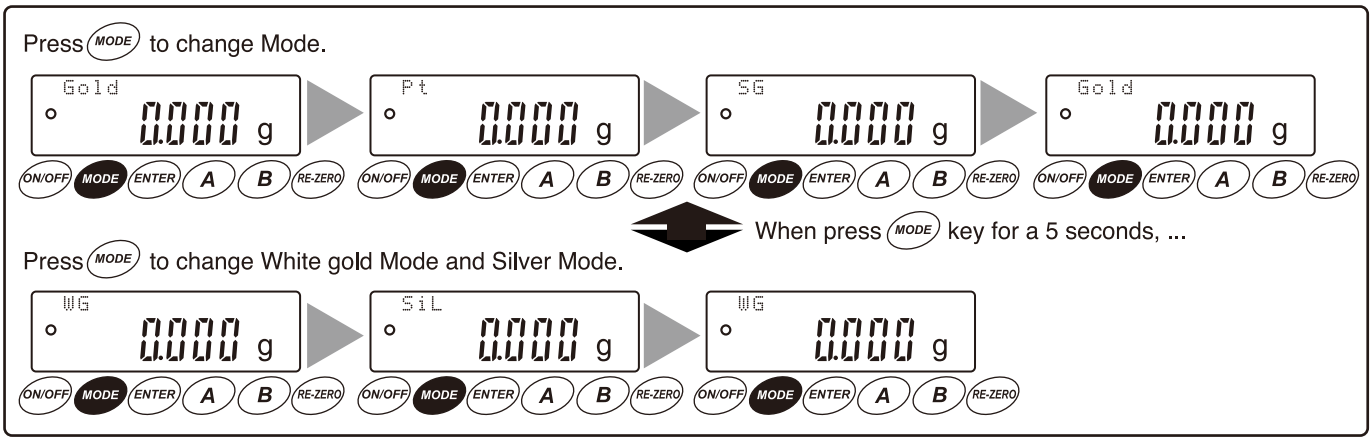
BEFORE OPERATION

The basic measuring procedure is the same for GKS-300 and GKS-3000, even changing the sample or Measuring Mode. Please measure according to the following directions.

1. **Turn on the power. The display turns to** [Gold 0.000 g] **(GKS-3000:** [Gold 0.00 g] **)**
Press (RE-ZERO) key, when the display does not change.



2. **Select the Measurement Mode by pressing (MODE) key. (※After getting result, the Measurement Mode can be changed.)**
a) Press a second, the display turns to ***Gold*** → ***Pt*** (platinum) → ***SG*** (specific gravity) → ***Gold***.
b) Press 5 seconds, the display turns to ***WG*** (white gold). And then press a second, it turns to ***WG*** → ***SiL*** (silver) → ***WG***.
c) By pressing the (MODE) key for 5 seconds, mode changes from a) to b) and vice versa.

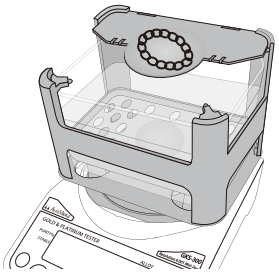


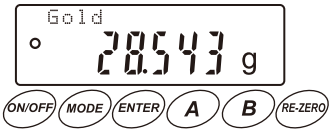
OPERATION

Select a Measurement Mode and proceed operation following.

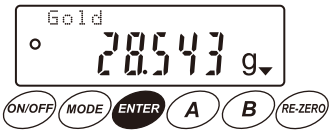
GKS-300

①Place the sample on the Sensor gently.
Weight will be displayed.

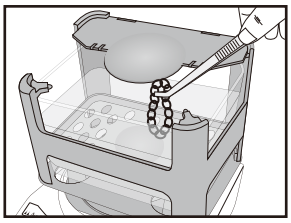


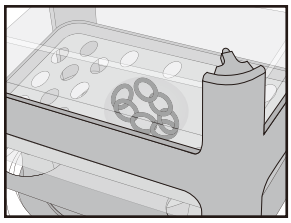


②Press (ENTER) key after the stable mark "○" appears.
It memorized the aerial gravity of a sample, then "▼" appears right of the "g" display.



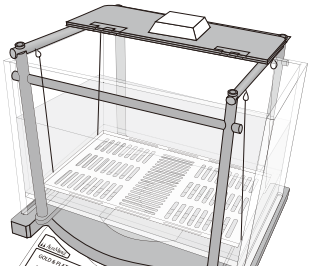
③Hold the sample by using Tweezers and place it on the central part of the measuring tray in water gently.

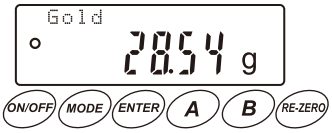




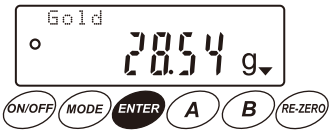
GKS-3000

①Place the sample on the Sensor gently.
Weight will be displayed.

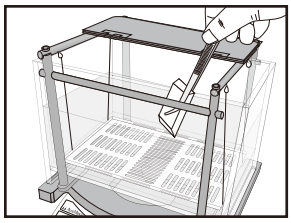


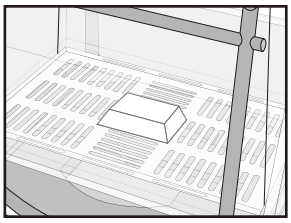


②Press (ENTER) key after the stable mark "○" appears.
It memorized the aerial gravity of a sample, then "▼" appears right of the "g" display.



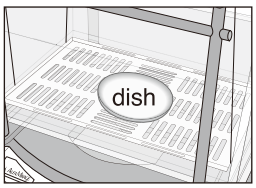
③Hold the sample by using Tweezers and place it on the central part of the measuring tray in water gently.



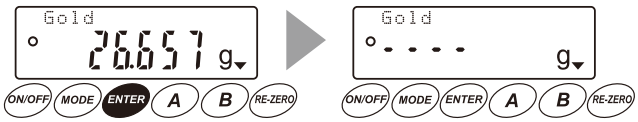


In doing so, remove bubbles sticking on the sample by shaking it slightly in water.
The bubbles may interfere with the accurate measurement.

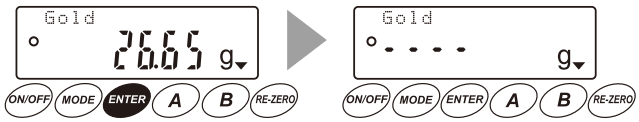
☑In case the bubbles cannot be removed, pour some Ethanol in any other container and wash the sample with the Ethanol before sinking it in water. Most bubbles can be removed by this way. It is all right to sink the sample in water with Ethanol remaining on its surface.
☑The sample has to be on measuring tray in water without touching Water tank or out of tray.
☑In case the sample is thin such as necklace, sink the petri dish in measuring tray in water before measurement. Then, the thin sample will not drop off from the measuring tray.



④Place a sample on the measuring tray in water to measure the underwater gravity. Press (ENTER) key after the stable mark "○" appears. It takes the average of underwater gravity.

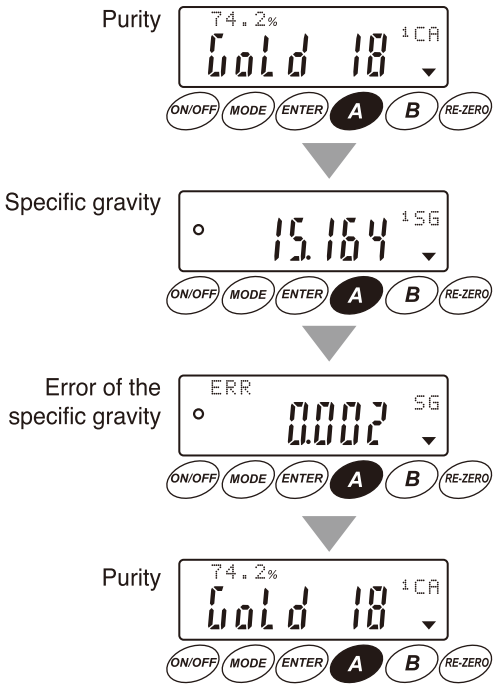


④Place a sample on the measuring tray in water to measure the underwater gravity. Press (ENTER) key after the stable mark "○" appears. It takes the average of underwater gravity.

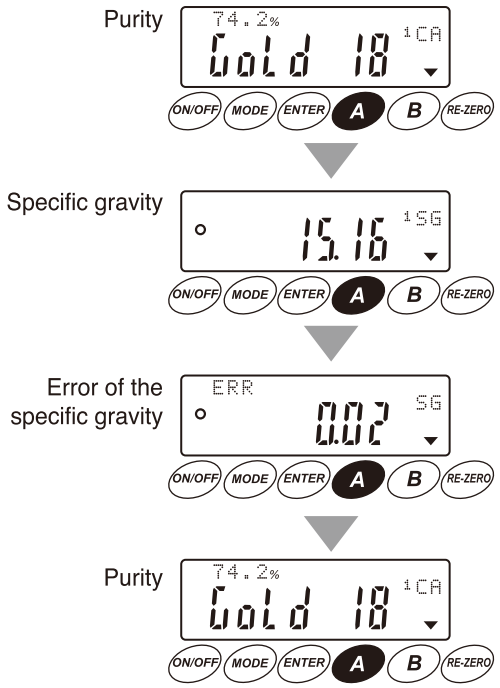


☑When "*E*" shows on display, confirm stable mark "○" and press (ENTER) key again.

⑤Measurement results are displayed.
When pressing (A) key for a second, the display turns to the followings.



⑤Measurement results are displayed.
When pressing (A) key for a second, the display turns to the followings.



SPECIAL ATTENTION

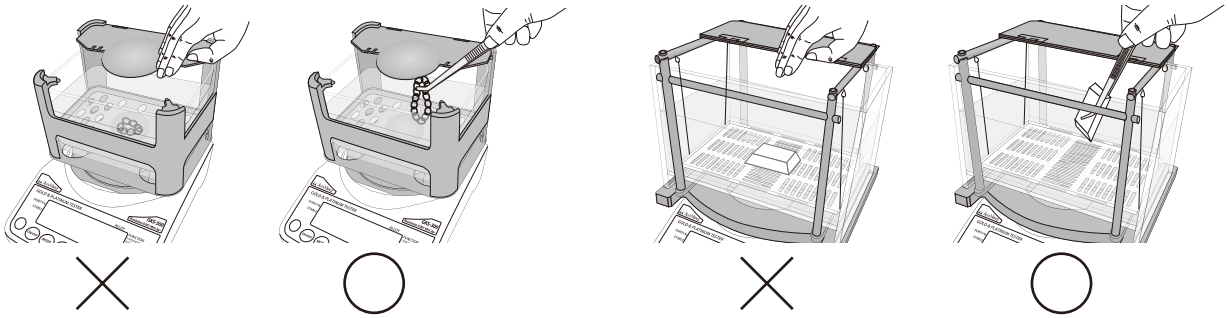
Check exactly not only the purity but also the specific gravity.
This is very effective to judge Gold 24K or Pt1000 whether it is genuine or not.

☑Refer to DENSITY TABLE at last page.

TO FINISH MEASUREMENT AND TO CONTINUE MEASUREMENT

Take a sample out by using the Tweezers. Press the (ENTER) key to return to the Step ①.
When continuing measurement, start from the Step ① and make sure the display is 0.000 g.
☑This instrument is a electric device. It may cause failure when the water is spilled on machine body.

a) Do not spill water on the unit or spare parts.
b) Do not pinch a sample inside the Water Tank with your fingers to prevent overflow.



c) When measuring the same sample again, dry it well. It may not get a proper result if the sample is semidry.

◆CONVENIENT FUNCTION

a) When you want to measure the aerial gravity again, press (B) key for 5 seconds.
By pressing the (B) key for 5 seconds, it goes one step back procedure.
b) When you want to measure ⑤ the underwater gravity again, press (B) key for 5 seconds.
The display returns to the Step ④～⑥.
c) Auto-weighing-enter function(***PAGE C-1, CODE At-E VALUE from 0 → 1***), the machine takes the average weight in water automatically when it becomes stable without pressing (ENTER) key.
This is the Auto-weighing-enter function. Do not have to press the key, so that the measurement is high precision without key pressing vibration. However, when the display once appears E, press (ENTER) key after checking the stable mark "○".

MEASUREMENT RESULTS

The measurement results by using this instrument are the value computed based on the specific gravity of a sample and evaluated the purity or %. It does not analyze the purity or %.
Change the Measuring Mode for the sample, and refer the results on the display.

MEASUREMENT RESULTS

When press (A) key for a second after the measurement results appears on the display, the display turns to the followings.

Gold	**Purity (*1CA*···copper&silver) → *1SG* → *SG Error* → *Purity* (*1CA*)**
Pt (Platinum)	**Purity (*1Pd*···palladium) → *1SG* → *SG Error* → *Purity* (*1Pd*)**
WG (White Gold)	**Purity (*1WG*···palladium light) → *1SG* → *SG Error* → *Purity* (*1WG*)**
SiL (Silver)	**Purity (*SV*···copper) → *1SG* → *SG Error* → *Purity* (*SV*)**

☑**Check exactly not only the purity but also the specific gravity, especially ingot Gold 24K or Pt1000.**
Even showing Gold 24K or Pt1000, there are possibilities of non-real if specific gravity is lower.

ALLOYED METAL

To check further measurement results, change the display of alloyed metals.

There are some of alloyed metal modes in *Gold*, *Pt* (Platinum) and *WG* (White Gold) .
Each display of alloyed metals are the followings.

①Press (A) key for 5 seconds, the display moves to the display of 2-alloyed-metal.
②Press (A) key for a second, the display turns to the purity and % for each alloyed metal.
③Press (A) key for 5 seconds again, it is finished to display 2-alloyed-metal, returns to display 1-alloyed metal.

Gold	***2CA***···**(copper&silver) → *2Cu*(copper) → *2Ag*(silver) →** ***2SG* → *SG Error* → *2CA*** ☑***2CA* and *1CA* is the same.**
Pt (Platinum)	***2Pd*(palladium) → *2Co*(cobalt) → *2Ru*(ruthenium) →** ***2SG* → *SG Error* → *2Pd*** ☑***2Pd* and *1Pd* is the same.**
WG (White Gold)	***2WG*(palladium medium) → *3WG*(palladium heavy) →** ***2SG* → *SG Error* → *2WG***

☑**The 2-alloyed metal Mode is effective for the followings.**
Gold: Measurement of reddish or bluish gold.
Platinum: Prediction of the alloyed metal.
White Gold: Prediction of the alloyed palladium amount.
☑**The WG Mode displays the purity by setting palladium as alloyed metal.**
When a sample is not alloyed with palladium but nickel, the result of measurement may show lower purity.
In that case, measure to reconfirm the purity by the Gold Mode.
On the other side, when WG measures in the Gold Mode, the result may show higher purity.
In that case, palladium may be alloyed in that white gold, so measure to reconfirm the purity in the WG Mode.

TO MEASURE SILVER

As for silver items, many products of 92.5% or 95% circulate mainly in the market.
The specific gravities of both of them are hardly different.
Only a little difference of the memorized weight influences a result of the purity.
Make sure to measure very carefully. Please measure gently not to vibrate.

⌈*Lo*⌋⌈*Hi*⌋INDICATION

The following cases may cause *"Lo"* or *"Hi"* indication. Refer to specific gravity as well.
①When the specific gravity of a sample is less than that of Measuring Mode lowest limit, it indicates ***"Lo"***.
②When measuring a sample of 24K gold (the specific gravity: 19.32) or Pt1000 (the specific gravity : 21.45), the measurement result comes out to be 5% or more than its actual specific gravity.
☑In the case of ***"Hi"***, there is possibility of operation or measurement error.
Dry the sample well and measure it again.
③When a sample precious metal has gemstone, it indicates ***"Lo"***.
☑The measuring specific gravity is averaged of a precious metal's and gemstone's, so the specific gravity and the purity are indicated lower than actual.
④When a sample has hollow which cannot be measured by this machine, it indicates ***"Lo"***.
⑤When there are a lot of bubbles stick to a sample, it might indicate ***"Lo"***.

COMPARATOR FUNCTION

This is the function that can judge measuring result compared with preset standard values, between the higher limit and the lower limit. This is useful for quality control of products, and setting limitation of the purity and specific gravity of products to deposit or purchase. HI , OK and LO will be displayed on the upper right side as well as the measuring result.

HI shows higher than preset standard values. (High purity)
OK shows within preset standard values.
LO shows lower than preset standard values. (Low purity)

Preset standard values (HI , LO) can be set in each MODE as follows.

①Set ***PAGE C-2***, ***CODE CP VALUE 0 → 1*** in the Initial Setting to enable to use Comparator Function.
②Select Measuring Mode with MODE key and set the standard values in each mode.

GOLD / WHITE GOLD MODE (When *Gold* or *WG* is displayed.)

OPERATION	SAMPLE DISPLAY
A key (press 5 seconds)··· To display the current higher limit	*Hi 20K (WG)*
A key ····· To increase the numeric	*Hi 24K (WG)*
B key ····· To decrease the numeric	*Hi 19K (WG)*
ENTER key ····· To memorize the higher limit and go on setting the lower limit	*Lo 20K (WG)*
A key ····· To increase the numeric	*Lo 22K (WG)*
B key ····· To decrease the numeric	*Lo 17K (WG)*
ENTER key ····· To memorize the lower limit and return to ZERO indication	*ZERO*

☑*Gold 9K to 24K can be set in increment of 1K. Factory setting 20K.*

PLATINUM MODE (When *Pt* is displayed.)

OPERATION	SAMPLE DISPLAY
A key (press 5 seconds)··· To display the current higher limit	*Hi 800Pt*
A key ····· To increase the numeric	*Hi 950Pt*
B key ····· To decrease the numeric	*Hi 750Pt*
ENTER key ····· To memorize the higher limit and go on setting the lower limit	*Lo 800Pt*
A key ····· To increase the numeric	*Lo 850Pt*
B key ····· To decrease the numeric	*Lo 600Pt*
ENTER key ····· To memorize the lower limit and return to ZERO indication	*ZERO*

☑*PT600 to 1000 can be set in increment of 50. Factory setting PT800.*

SILVER MODE (When *SiL* is displayed.)

OPERATION	SAMPLE DISPLAY
A key (press 5 seconds)··· To display the current higher limit	*Hi 800SV*
A key ····· To increase the numeric	*Hi 925SV*
B key ····· To decrease the numeric	*Hi 850SV*
ENTER key ····· To memorize the higher limit and go on setting the lower limit	*Lo 800SV*
A key ····· To increase the numeric	*Lo 850SV*
B key ····· To decrease the numeric	*Lo 650SV*
ENTER key ····· To memorize the lower limit and return to ZERO indication	*ZERO*

☑*SiL600 to 1000 Pt can be set in increment of 25. Factory setting SiL 800.*

SPECIFIC GRAVITY MODE (When *SG* is displayed.)

OPERATION	SAMPLE DISPLAY
A key (press 5 seconds)··· To display the current higher limit	*Hi 00.000SG*
A key ····· To increase the numeric	*Hi 10.000SG*
B key ····· To decrease the numeric	*Hi 19.000SG*
ENTER key ····· To memorize the higher limit and go on setting the lower limit	*Lo 00.000SG*
A key ····· To increase the numeric	*Lo 10.000SG*
B key ····· To decrease the numeric	*Lo 14.000SG*
ENTER key ····· To memorize the lower limit and return to ZERO indication	*ZERO*

☑*Set the numeric at each digit. Factory setting 00.000.*

CARAT INDICATION

GKS can display ct (carat) indication. Refer to the Page 5 INITIAL SETTING and set as the followings.

		GKS-300	GKS-3000
C-5 Unit 0 →	*C-5 Unit 1*	0.00 ct	0.0 ct
C-5 Unit 0 →	*C-5 Unit 2*	0.000 ct	0.00 ct

☑ *C-5 Unit 2* : Display one more decimal as reference value.

☑Carat indication cannot be used for trade or certifications.

☑Measurement of purity can not be done with carat indication.

DATA OUTPUT

This machine can output data of the measuring results and calibration records (GLP output) using the RS232C serial interface.

1. Connecting to the Simple Printer.
2. Connecting to A&D Original Printer.
3. Connecting to a PC (personal computer).

☑Prepare a straight cable (D-sub 9-pin, female connector)

HOW TO OUTPUT DATA (1 and 2 above)

1. Select the Initial Setting the follows.

①Set Data output mode ***PAGE C-3, CODE Print VALUE 0*** to ***2***.

☑Factory setting ***VALUE 1*** (Auto-print mode)

②Set Output data ***PAGE C-3, CODE dAtAt VALUE 0*** to ***2***

☑Factory setting ***VALUE 0*** (Displayed data)

③Set GLP output ***PAGE C-3, CODE inFo VALUE 1*** or ***2*** (Refer to printing sample)

☑Factory setting ***VALUE 0*** (Not output)

④When you use Simple Printer, set Data bit, parity bit ***Page C-4, CODE btPr, VALUE 2***.

☑Factory setting ***VALUE 0*** (7 bit, even)

⑤Set Data format ***PAGE C-4, CODE tyPE VALUE 0*** or ***1***.

☑Factory setting ***VALUE 0*** (AD format)

☑When set showing reference value on display, set ***tyPE 1*** (DP format).

When set AD format, reference value can not print out.

2. Contents of output data ☑The following is an example of GKS-300

Printing sample using the Simple Printer. ☑All available data are printed.

AD Format

```
ST,+00000018  K
ST,+000073.9  %
ST,+0030.315 ag
ST,+0028.312 wg
ST,+0015.122 SG
ST,+0000.004 DV
ST,+00000015  C
ST,+00000004  C
```

DP Format

```
GL       +18  K
PU      73.8  %
AW   +30.316  g
LW   +28.310  g
SG   +15.120
DV    +0.004
TR       +15
TA        +4
```

K , GL	Purity
% , PU	Percentage
ag , AW	Weight in air
wg , LW	Weight in water
SG	Specific gravity
DV	Error(SG)
C , TR	Water temperature
C , TA	Compensate water temperature

GLP outputting sample using the Simple Printer.

AD Format

```
        A Mirage
MODEL    GKS-300
S/N     15402832
ID       0000000

CALIBRATED(EXT.)
CAL.WEIGHT
     +200.000  g
SIGNATURE

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

General-data Format

```
        A Mirage
MODEL    GKS-300
S/N     15402832
ID       0000000
DATE

TIME

CALIBRATED(EXT.)
CAL.WEIGHT
     +200.000  g
SIGNATURE
```

INITIAL SETTING LIST

PAGE	CODE	VALUE	DISCRIPTION
C-1 Set up for measurement	*A-t* Measuring time in air	■ 0	0 second (Memorize immediately)
		1	5 seconds
		2	10 seconds
		3	20 seconds
		4	30 seconds
	L-t Measuring time in water	0	0 second (Memorize immediately)
		■ 1	5 seconds
		2	10 seconds
		3	20 seconds
		4	30 seconds
	Lqd Select a solution for measurment	■ 0	Use water, set the temperature of water
		1	Use solution except water, set the specific gravity of the solution
	Air Air density compensation	■ 0	No compensation
		1	Compensation (weight)
		2	Compensation (weight / specific gravity)
	Cond Response condition	0	Fast response, sensitive value
		■ 1	Normal
		2	Slow response, stable value
	St-d Stability band width GKS-300:1 digit =0.001g GKS-3000:1 digit =0.01g	0	Stable range is ±1 digits
		1	Stable range is ±2 digits
		■ 2	Stable range is ±3 digits
		3	Stable range is ±5 digits
	trc Zero tracking	0	OFF
		1	Normal
		■ 2	Strong
		3	Very strong
	At-r Auto-rezero	■ 0	OFF
		1	ON
	At-E Auto-enter	■ 0	OFF
		1	ON
	bEEP Beep	0	No sound
		■ 1	Sound
C-2 Set up for function	*diSP* Renewal frequency of density	■ 0	No renewal
		1	Renewal
	EdSP Calculative tolerance display-1 (specific gravity)	0	No display of the digit with error (Deleted)
		■ 1	Blink the digit with error (Flashing)
		2	Display the digit with error (Still)
	Err Calculative tolerance display-2 (specific gravity)	0	No display
		■ 1	Display
	Gr-d Digit number of weight	0	0.00g (GKS-3000 0.0g)
		■ 1	0.000g (GKS-3000 0.00g)
		2	0.0000g (GKS-3000 0.000g)
	SG-d Digit number of specific gravity	0	0.00g/cm³
		■ 1	0.000g/cm³
		2	0.0000g/cm³

■ Factory Settings.

PAGE	CODE	VALUE	DISCRIPTION
C-2 Set up for function	***CP*** Comparator mode	■ 0	OFF
		1	ON
	Point Decimal point display	■ 0	Dot(.)
		1	Comma(,)
	Pro Optional setting mode, number of entry	■ 0	OFF
		1	Optional entry: 1
		2	Optional entry: 2
		3	Optional entry: 3
		4	Optional entry: 4
		5	Optional entry: 5
C-3 Set up for output-1	***Print*** Data output mode	0	Key mode
		■ 1	Auto-print mode
		2	Stream mode
	dAtA Output data	■ 0	Displayed data
		1	Weight in air, weight in water, displayed data
		2	All avaiable data, weight in air, weight in water, specific gravity, purity, %
	S-td Time/Date (Using printer AD8127)	■ 0	No output
		1	Time only
		2	Date only
		3	Time and date
	PUSE Data ouput pause	■ 0	No pause
		1	Pause (1.6 seconds)
		2	Pause (3.2 seconds)
	inFo GLP output	■ 0	No output
		1	Output (AD format)
		2	Output (General data format)
C-4 Set up for output-2 (Serial)	***bPS*** Baud rate	0	600bps
		1	1200bps
		■ 2	2400bps
		3	4800bps
		4	9600bps
		5	19200bps
	btPr Data bit, parity bit	■ 0	7 bits, even
		1	7 bits, odd
		2	8 bits, none
	CrLF Terminator	■ 0	〈CR〉〈LF〉
		1	(CR)
	tyPE Data format	■ 1	AD format
		0	DP format
	t-UP Timeout	0	No limit
		■ 1	1 second
C-5 Set up for Unit	***Unit*** Weight unit g⇔Ct	■ 0	g (gram) display
		1	ct (carat) display
		2	ct (carat) display reference
C-6 ID number	Setting GPL output ID number		
C-9 System	***PF*** Change the initial setting	■ 0	Permitted
		1	Prohibited
		2	Initialization to factory settings

■ Factory Settings.

ERROR CODE

Error 1 (ON/OFF MODE ENTER A B RE-ZERO)	Stability error: The balance can not stabilize due to an environmental problem. Confirm to set up all parts correctly, and prevent vibration, drafts, temperature changes, static electricity and fields and try again. If it still shows Error 1 , inform us or our agents.
Lb (ON/OFF MODE ENTER A B RE-ZERO)	Power voltage or current is short. Confirm that ①Used equipped AC adaptor is correct for your local voltage ②Plugged receptacle outlet supply enough and stable power.
Hb (ON/OFF MODE ENTER A B RE-ZERO)	Power voltage or current is over. Confirm that ①Used equipped AC adaptor is correct for your local voltage ②Plugged receptacle outlet supply enough and stable power.

SPECIFICATION

Model	GKS-300	GKS-3000
Measuring Mode	Gold, Platinum, Silver, White Gold	
Display	Purty, % (of main metal) and Specific Gravity	
Minimum Specific Gravity (g/cm³)	0.001	0.01
Measuring range(g)	0.001～300	0.01～3000
Minimum weight of sample (g)	2	10
Calculative tolerance	Display	
Airtight windshield	Equipped	Option

DENSITY TABLE

GOLD

(±1%)

GOLD	CONTENT	ALLOYED METAL			DENSITY RANGE
		COPPER	COPPER & SILVER	SILVER	
K24	1000/1000	19.32			19.13～19.51
K22	916/1000	17.63	17.73	18.06	17.45～18.24
K20	834/1000	16.19	16.42	16.94	16.03～17.11
K18	750/1000	14.99	15.24	15.96	14.84～16.12
K14	584/1000	13.04	13.38	14.30	12.91～14.44
K10	417/1000	11.54	11.91	12.96	11.42～13.09

PRECIOUS METALS FOR JEWELRY

ELEMENT	DENSITY(20°C)[g/cm³]
GOLD	19.32
PLATINUM	21.45
TITANIUM	4.51
SILVER	10.53
RHODIUM	12.44

PLATINUM

(±1%)

PLATINUM	CONTENT	ALLOYED METAL			DENSITY RANGE
		COBALT	PALLADIUM	RUTHENIUM	
Pt.1000	1000/1000	21.45			21.24～21.66
Pt. 950	950/1000	20.04	20.64	20.70	19.84～20.85
Pt. 900	900/1000	18.80	19.88	19.99	18.61～20.08
Pt. 850	850/1000	17.71	19.18	19.34	17.53～19.38
Pt. 800	800/1000	16.73	18.53	18.73	16.56～18.72
Pt. 750	750/1000	15.86	17.92	18.12	15.70～18.10

METALS USED AS ALLOYS

ELEMENT	DENSITY(20°C)[g/cm³]
COPPER	8.93
NICKEL	8.90
COBALT	8.85
RUTHENIUM	12.41
PALLADIUM	12.02
OSMIUM	22.57

OTHER METALS

ELEMENT	DENSITY(20°C)[g/cm³]
ALUMINUM	2.70
IRON	7.87
LEAD	11.36
TIN	7.30
ZINC	7.13

OTHERS

ALLOYED METAL	DENSITY(20°C)[g/cm³]
STERING SILVER	10.40
COIN SILVER	10.35
K14, W.G.	14.82

※*The above values are theoretical. Finished ornament tends to show lower Density than theoretical values.*

Produced by

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JAPAN

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■1908.1000