Instruction Manual

USS-DBS201/202 Density Balance

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Version: 202307

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Introduction

Thank you for choosing the U.S. Solid USS-DBS201/202 Density Balance.

The USS-DBS201/202 density balance is precise and reliable. It offers a high level of operating convenience and response sensitivity to facilitate determination of the density of your samples.

U.S. Solid's dedicated customer service staff are available to answer any inquiries regarding applications and accessories.

Please read the manual completely and follow the usage instructions before installation and operation as this will help you to make full use of the functions and performance of the USS-DBS201/202 density balance.

1.1 Safety Precautions

The U.S. Solid USS-DBS201/202 density balance qualifies as state-of-the-art technology and complies with all recognized safety rules. Improper use or handling, however, can result in damage and/or injury. Please follow the precautions below to ensure safe and trouble-free operation of your balance.

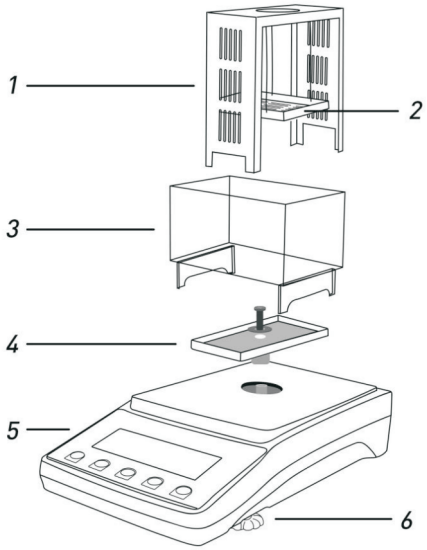
- The balance has a 3-pin power socket equipped with a ground terminal. To prevent electric shock and to maintain stability in operation of the balance, be sure to ground the balance.
- Avoid getting the balance wet as it is not water resistant. Any leakage of liquid into the balance may damage the balance or cause an electric shock to the user.

- Use a power source (voltage, frequency, outlet type) adapted to the specification of the balance. If excessive voltage is used, the balance may overheat and be damaged or cause a fire.

- Operate the balance on a stable, rigid and flat table.
- Handle the balance carefully. It is a precision device, subjecting it to impact may result in a malfunction.
- If the device is not be used for a long period of time, the power should be turned off and disconnect the power cable.
- Do not disassemble, remodel or repair this product or accessories.
- Do not weigh items larger than the balance's range, as this may damage the load cell of the balance.

Design and Function

2.1 Components



1: Bracket

2: Holder

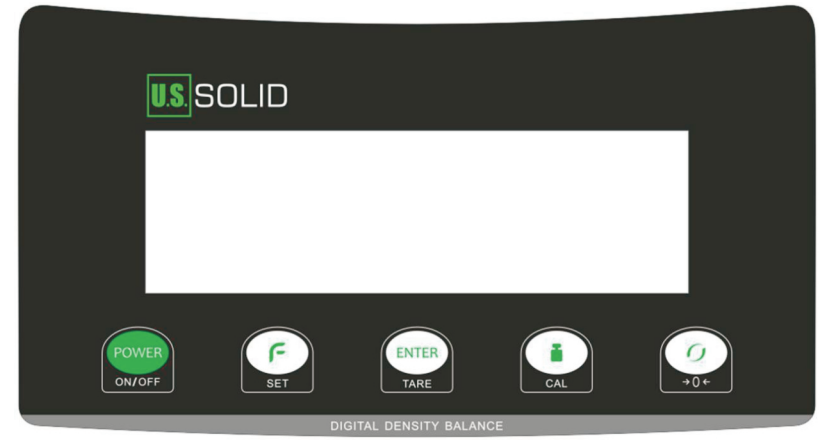
3: Container

4: Weighing Pan

5: Main Body

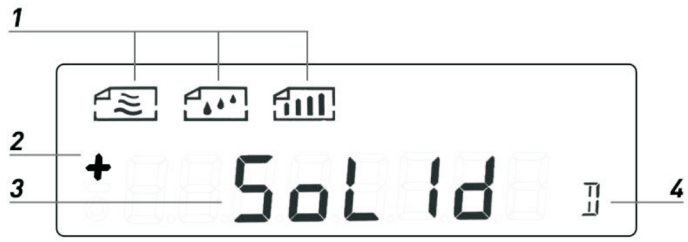
6: Leveling Feet

2.2 Keyboard



Key	Description
POWER ON/OFF	Turn the power on or off
SET	Select the type of sample to be tested
ENTER TARE	Weighing: Tare the balance
	Density Measuring: Confirm and go to next step
CAL	Weighing: Performs weight calibration
	Density Measuring: Back to weighing
→0←	Weighing: Long press to enter density measuring
	Density measuring: Tare the balance

2.3 Display Panel



No.	Description
1	: Solid
	: Liquid
	: Powder
2	“+”: Indicates positive values
	“-”: Indicates negative values
3	Weighing state: weight value
	Density measuring: sample state
4	Weight unit

Unpacking

The USS-DBS201/202 density balance is a precision instrument. Unpack the balance carefully and check the delivered items for completeness.

The following accessories are part of the standard equipment for your new USS-DBS201/202 density balance:

- 1 Balance Main Body
- 1 Density Kit (1 * Bracket, 1 * Holder, 1 * Container)
- 1 Weighing Pan
- 1 Power Cable
- 1 200 g Calibration Weight
- 1 Instruction Manual
- 1 Quality Certification

Check the instrument for damage in transit. Immediately inform the U.S. Solid customer service if you have any complaints or parts are missing.

Before Using

· Adjust the leveling feet of the density balance until the air bubble in the indicator is centered.

· Warm up for 30 to 60 minutes after starting up to improve the stability of weighing.

· Check the accuracy of the reading with the weight. If there is any deviation, please follow the calibration method below to calibrate the balance.

4.1 Leveling the balance

Accurate horizontal positioning necessary for repeatable measurements and exact results. To compensate for small irregularities or tilts at this location, the instrument needs to be leveled.

Adjust the leveling feet of the density balance until the air bubble in the indicator is centered. The level indicator is located under the cover towards the rear of the density balance.

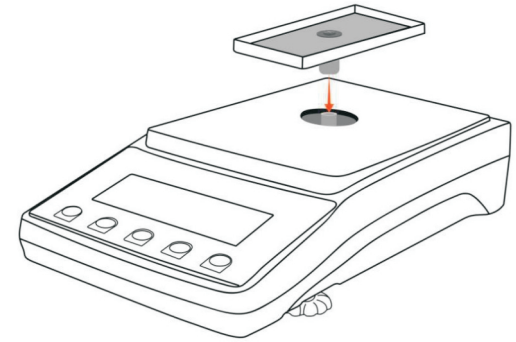
Installation

Before using, it is needed to install the density kit.

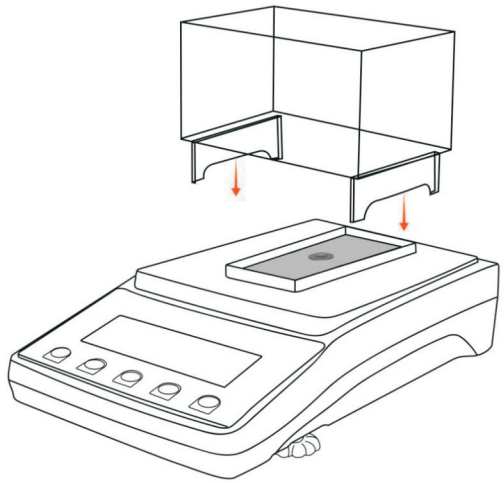
Note: Do not make the holder touch the inside of the container.

Steps:

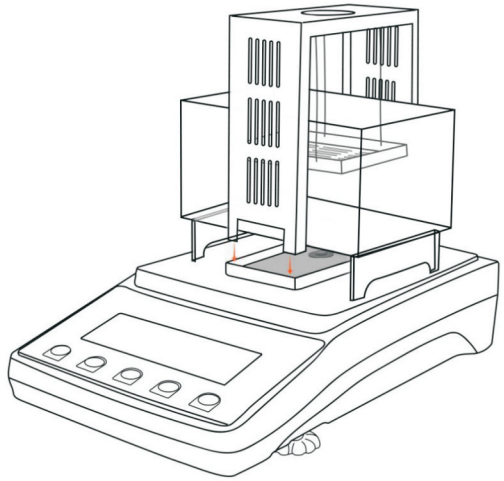
1. Place the weighing pan on the balance main body;



2. Place the container across the weighing pan;



3. Place the bracket across the top of the container and the bottom of the bracket fits into both ends of the weighing pan;



Operation

6.1 Calibration

Calibration is a necessary step to assure the density balance will accurately weigh the sample.

Perform calibration operations in the following situations:

- Changes in the location of use (including moving in the same room).
- Changes in ambient conditions.
- Prior to each use.

6.1.1 Single-point Calibaration

1. Press “ON/OFF” to turn on the balance, then press “CAL” to switch to the weighing state;
2. Long Press “CAL” until “--CAL--” displayed, after that “200.000” will be flashing displayed;
3. then place the 200 g calibration weight on the circle which located on the top of the density kit ;
4. “=======” will be displayed, then “200.000” (or “100.000”) will be

displayed again;

5. Remove the calibration weight and “=======” will again displayed.

6. The calibration is completed when the reading being “0.000”.

6.1.2 Multi-point Calibration

1. Immediately press and hold “CAL” after turning on the balance until “--CAL--” displayed;

2. Place corresponding calibration weight(s) (200 g) when “200.000” is flashing displayed, then “=======” will be displayed;

3. Remove the weight(s) when “200.000” again displayed, and then “=======” will be displayed again;

4. Place corresponding calibration weight(s) (100 g) when “100.000” is flashing displayed, then “=======” will be displayed;

5. Remove the weight(s) when “100.000” again displayed, and then “=======” will be displayed again;

6. Place corresponding calibration weight(s) (50 g) when “50.000” is flashing displayed, then “=======” will be displayed;

7. Remove the weight(s) when “50.000” again displayed, and then “=======” will be displayed again;

8. The calibration is completed when the reading being “0.000”.

6.2 Density Determination

6.2.1 States Selection

1. Press “CAL” after turn on the balance to switch to weighing state;

2. Long press “SET” to enter the sample selection;

3. Press mode to switch the states of sample among solid, gold, liquid, powder and water-absorbing, press “SET” to turn on the state to be selected;

* The density balance comes with density kit for solid and gold samples. To determine the density of samples in other states, please select certain density kits.

4. Press “CAL” to select and confirm the state.

6.2.2 Dertermination the Denstiy of Solid Sample

1. Select the solid state according to the steps in 6.2.1;

2. Long press “→0←” to return back to the density dertermination;

3. Press “TARE” to perform step 1, “Solid-1” and “0.000 g” will be displayed in turn, place the sample onto the circle which located on the top of the density kit;

4. Press “TARE” to perform step 2 after the reading stabilizes, “Solid-2” will be displayed, place the sample on the hanging shelf and immerse it

completely in water;

5. Press “TARE” to finish the determine procedure after the reading stabilizes, and then the density value will be displayed.

6.2.3 Dertermination the Denstiy of Gold Sample

1. Select the gold state according to the steps in 6.2.1;
2. Long press “→0←” to return back to the density dertermination;
3. Press “TARE” to perform step 1, “Gold-1” and “0.000 g” will be displayed in turn, place the sample onto the circle which located on the top of the density kit;
4. Press “TARE” to perform step 2 after the reading stabilizes, “Gold-2” will be displayed, place the sample on the hanging shelf and immerse it completely in water;
5. Press “TARE” to finish the determine procedure after the reading stabilizes, and then the density value will be displayed.

6.2.4 Dertermination the Denstiy of Liquid Sample

1. Select the liquid state according to the steps in 6.2.1;

2. Long press “→0←” to return back to the density dertermination;
3. Press “SET” to set the density of reference sample, press “TARE” and “S-Sd-1” displayed;
4. Press “SET” to switch and select one from “S-Sd-5” to “S-Sd-9”, press “TARE” to select and press “→0←” to set the density value;
5. Press “CAL” to switch digits and press “SET” to swtich numbers;
6. After density of reference samples is set, press “TARE” and “SET” to swtich to the one and press “TARE” to confirm;
7. Press “CAL” twice to return to the weighing interface;
8. Hook up the hanger and tare the balance, then remove the hanger;
9. Hook up the hanger with reference sample link together with it;
10. Press “TARE” enter “Liquid-2”, place the beaker with liquid onto the pan, immerse the reference sample into the liquid;
11. After the reading stabilizes, press “TARE” and the density result will be displayed.

6.3 Unit Switching

The USS-DBS201/202 density balance offers three weight units of “g”, “oz”, and “ct”. The unit selection function can be used to meet the unit requirements in various usage situations.

Press “CAL” to the weighing mode. In the weighing state, press the "mode" button to switch units among “g”, “oz”, and “ct”.

Technical Data

Model	USS-DBS201	USS-DBS202
Capacity	210 g	310 g
Readability	0.001g (1 mg)	0.005g (5 mg)
Repeatability	±0.002 g	±0.010 g
Linearity Deviation	±0.003 g	±0.015 g
Density Readability	0.001 g/cm^3	0.005 g/cm^3
Pan Size	60 x 152 mm	
Tray Size	70 x 110 mm	
Calibration Weight	200 g	
Stabilization Time	Within 3 seconds	
Interface	RS232	
Power	110V 60Hz AC	
Dimensions	17.4×12.2×11.8 inches	
Net Weight	11.03 lbs	
Shipping Weight	13.23 lbs	