GVS Archimedes

Weighing Platform

Frame

Nacelle

Scale

Water Bubble Level

Buttons:		Display:		Label:	
ON/OFF	Turns device on/off	**G**	Gold Mode	**S.C.**	Gold-Silver-Copper Alloy
A	Utility-button	**S**	Silver Mode	**C.**	Gold-Copper Alloy
	(switch through modes)	**P**	Platinum Mode		(e.g. Krugerrand)
B	Confirmation-button				
ENTER	Save-button	**M1**	Weight in air	**S.**	Gold-Silver Alloy
ZERO	Back to zero	**M2**	Weight in water	**SG**	Specific weight
C	Technician-button	**O**	Value is stable		

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Before switching on

1. Place the GVS Archimedes on an even and stable surface.

2. Check the water level bubble and adjust the stands by turning to place the bubble at the center.

3. Place the water tank on the scale (so that it remains stable in the grooves).

4. Carefully pour DISTILLED water into the water tank. The water tank should be filled up to the horizontal line. In case there are water drops on the tank, remove them with a paper towel.

5. Place the frame on the scale. The 4 stands are flush with the bulges. The nacelle is completely submerged in the distilled water. Also, there should be no direct contact between frame, nacelle and water tank.

Calibration before first use and changed place

1. Turn on the GVS Archimedes with the switch on the side and press the button ON/OFF.

2. Wait 30 minutes. During this time, the electric circuits will stabilize (IMPORTANT for calibration).

3. Press the button ZERO to return the device to 0.00.

4. Press and hold ZERO until the display shows "CAL".

5. The scale is now in calibration mode and shows "500.00".

6. Place the calibration weight at the center of the weighing platform.

7. The GVS Archimedes will now be calibrated automatically.

8. The calibration is finished when the display shows "END".

9. Remove the calibration weight. The GVS Archimedes returns automatically to the weighing mode.

Temperature Compensation

1. For correct results, please set the water temperature. Place the included thermometer in the water.

2. After 2 minutes read the temperature value. The default value is 25°C. If your water temperature is different, change the value as follows:

3. When the display shows "0.00" press and hold button A until "C25" is displayed.

4. With button A you can change the figure, with ZERO you can switch to the next figure.

5. Press ENTER when you have finished your temperature settings.

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Operation

The GVS Archimedes calculates the precious metal portion of your test objects. For this, you first measure the weight in air ("M1") and compare it with the weight in water ("M2"). Save the obtained values by pressing the ENTER button.

1. Switch to the desired mode by pressing the button A 2x.

   G stands for gold mode

   P stands for platinum mode

   S stands for silver mode

2. "M1" is flashing on the display. Place your test object at the center of the weighing platform.

3. The value is stable as soon as "O" appears on the display (top left). Save this value by pressing ENTER.

4. "M2" is now flashing on the display. Open the lid (weighing platform) and gently place the

   test object with the included tweezers at the center of the nacelle. Avoid the formation of air bubbles.

5. The value is stable as soon as "O" appears on the display (top left). Save this value by pressing ENTER.

Gold-Mode

6. The display will now show the carats of the according alloy. Press button A to switch between the alloys. At first, the carat value for gold-silver-copper will be displayed, then gold-copper (e.g. Krugerrand) and then for gold-silver. After this, the specific gravity (S.G.) value will be displayed in [g/cm³].

7. Press ENTER again to show the percentage of gold of the according alloy. Press A to switch between the alloys.

8. By pressing ENTER again, the scale will return to the weighing mode ("M1" will flash on the display).

Platin-Mode

6. The portion of platinum will be displayed. Pure platinum will show 1000 parts.

7. To display the specific gravity (S.G.) in g/cm³, press the button A.

8. To display the volume of the test object in [cm³], press the button A again.

9. By pressing ENTER again, the scale will return to the weighing mode ("M1" will flash on the display).

Silver-Mode

6. The portion of silver will be displayed. Pure silver will show 1000 parts.

7. To display the specific gravity (S.G.) in g/cm³, press the button A.

8. To display the volume of the test object in [cm³], press the button A again.

9. By pressing ENTER again, the scale will return to the weighing mode ("M1" will flash on the display).

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Results

„LO" is shown on the display: The density of the test object is too low.

- Check if you are measuring in the correct mode. E.g. when measuring silver in the gold mode, the result will always show "LO".

- Check if there are any materials being measured other than the metal.

- Make sure there are no air bubbles.

- Make sure the test object is not hollow.

„HI" is shown on the display: The density of the test object is too high.

- Check if you are measuring in the correct mode. E.g. when measuring gold in the silver mode, the result will always show "HI".

Important notes

- For accurate results please clean your test objects before weighing with cleaning ethanol.

- Never reach into the water tank directly with your bare hands.

- Clean the water tank regularly on the inside with paper towels and cleaning ethanol. Avoid finger prints on the inside of the water tank.

- Replace the distilled water regularly (every 1 – 2 months).

- The maximum capacity is 1,200 g. Avoid overloading the GVS Archimedes.

Troubleshooting / FAQs

Why does the calibration not work?

- Try longer warm-up phase before calibration (leave it turned on for 30 – 60 minutes).

My results differ from what I expect.

- Temperature compensation: Check if the set temperature is the same as the measured water temperature.

- Dust particles and dirt can change the weight and therefore the result: clean the test object with cleaning ethanol.

- Air bubbles can change the weight in water: avoid the formation of air bubbles on the bottom side of the test object when submerging the test object.

- If the GVS Archimedes was moved or the environment has changed: calibrate again.

- Water is dirty or evaporated: check or replace the distilled water. The water should always be clean and filled up the horizontal line.

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Density Values

Gold	Percentage	Specific weight
K24	100%	19.13 - 19.51
K22	91.6%	17.45 - 18.24
K20	83.4%	16.03 - 17.11
K18	75%	14.84 - 16.12
K14	58.4%	12.91 - 14.44
K10	41.7%	11.42 - 13.09

Platinum	Alloy [g/cm³]	
	Nickel	Palladium
Pt. 1000	21.45	21.45
Pt. 950	20.04	20.64
Pt. 900	18.80	19.88
Pt. 850	17.71	19.18
Pt. 800	16.73	18.53
Pt. 750	15.86	17.92

Precious metals	Specific weight [g/cm³] at 20°C
Platinum	21.45
Gold	19.32
Rhodium	12.44
Palladium	12.02
Silver	10.53

Other metals	Specific weight [g/cm³] at 20°C
Ruthenium	12.41
Palladium	12.02
Lead	11.36
Copper	8.93
Nickel	8.90
Cobalt	8.85
Iron	7.87
Tin	7.30
Zinc	7.13
Titan	4.51
Aluminium	2.70