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Operating and Installation Instructions Density determination set pour KERN EMB / EMB-V

KERN YDB-04

Type:
TYDB-04-A
Version 1.0
2019-08
GB



GB

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Operating and Installation Instructions

Density determination set pour KERN EMB / EMB-V

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English

1 Introduction



- In order to guarantee a safe and trouble-free operation, please read carefully the operating instructions.
- These operating instructions only describe the operation of the density determination set. For further information on how to operate your balance please refer to the operating instructions supplied with each balance.

1.1 Scope of delivery

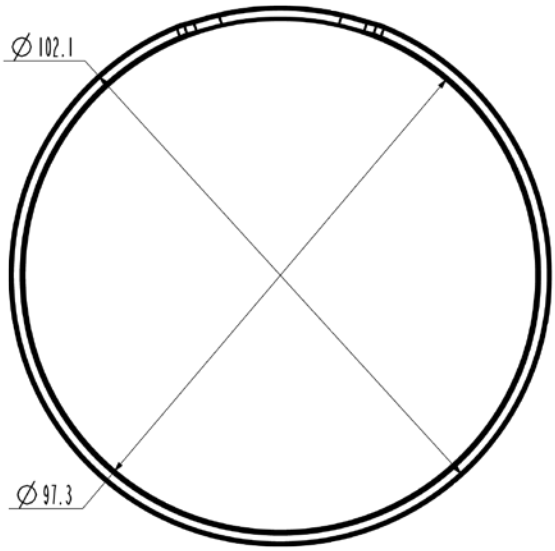
⇨ Check packaging and density determination set immediately when unpacking for possible visible damage.

⇨ Make sure that all parts are completely present.

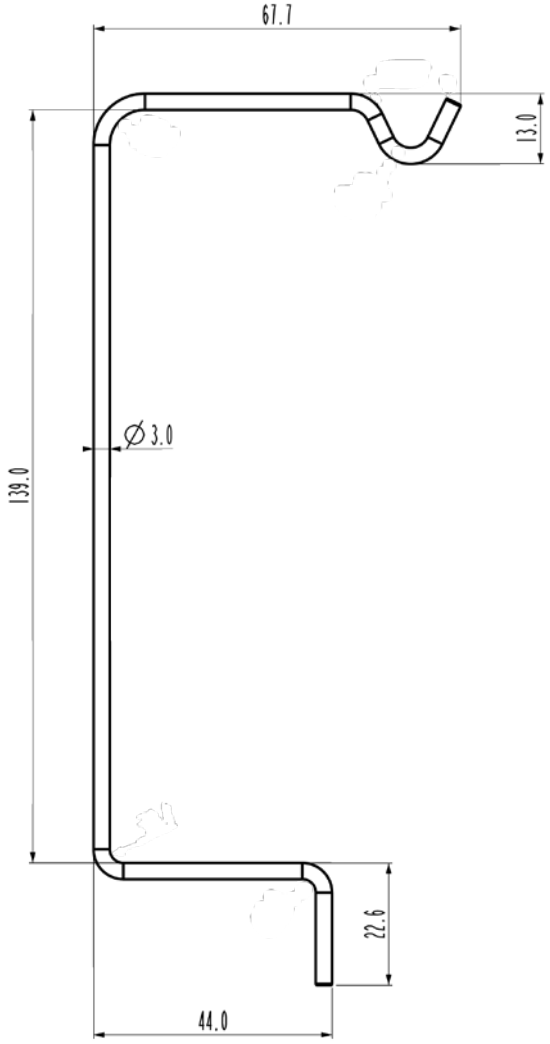


2 Dimension [mm]

Platform



Hooks



English

3 Commissioning

Compatible models:

- KERN EMB (only models with weighing plate Ø 82mm)
- KERN EMB 200-3V

3.1 Installation

3.1.1 Prepare the weighing balance

- If necessary, carry out necessary adjustment before installation of the density set.
- Correct adjustment is no longer possible after the density kit has been installed.
- For reasons of adjustment, take away the density set and place the standard weighing plate.

⇨ Disconnect scale from power supply.

⇨ Remove standard weighing plate.

3.1.2 Installing the density determination set

⇨ Insert hook into one of the two holes.



⇨ Place the platform for support of the glass beaker.



⇨ Arrange a beaker glass (not included in the scope of delivery)

⇨ Bring liquid and instruments to the right temperature until you achieve a constant temperature. Observe the warm-up time of the balance.

4 Density determination of solids

For the determination of the density of solids, the sample is first weighed in air and then in the aid liquid, whose density is known.
The buoyancy results from the weight difference.
In KERN EMB 200-3V the balance calculates automatically the density and displays it.
For models without density calculation function the density must be calculated according to the following formula.

$$\rho = \frac{A}{A-B}\,\rho_o$$

ρ	Density of sample
A	Weight of the sample in air
B	Weight of the sample in the aid liquid
ρ_o	Density of the aid liquid

The air buoyancy is not considered in the formula.

In most cases distilled water or ethanol are used as aid liquid.

Preparation:

⇨ Install density determination set, see chap. 3.1.2

English

4.1 KERN EMB 200-3V

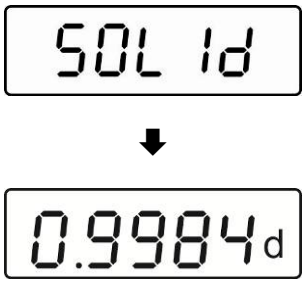
☞ **Invoke mode for density determination of solid material**

1. Turn on the scale with ON/OFF, "0.000g" is displayed.



2. If the scale does not display, "0.000g", press TARE

3. Access by pressing the density determination mode for solids.



(example water at 19°C)

"SOLId" is briefly displayed, followed by the actual entered density of the aid liquid. If necessary, change as described later.

☞ **Enter the density of the aid liquid considering the current temperature.**

4. Press REF, the last digit flashes.



5. Use ESC to increase the numeric value of the flashing cipher.

   Use REF to move the number selection to the right, the respective active position flashes.

6. Confirm input by PRINT.



(example water at 23°C)

English

☞ **Density determination “solids“**

7. Hang the sample on the hook.



8. Press , the weight of the sample in air is shown.

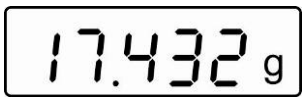


(example)

9. Wait for stability display
10. Immerse the sample into the aid liquid.



11. Press , for a short time the weight of the sample in the aid liquid is displayed.



(example)

The weighing scale calculates automatically and then displays the solid matter's density.



(example)

When connecting an optional printer, press 

, the result will be printed.

English

Printout example KERN YKB-01N:

D-REF:	0.9976 g/cm^3	Density aid liquid
D-RSL:	8.0409 g/cm^3	Result (density of the sample)
W-AIR:	020.000 g	Weight of the sample in air
W-LDQ:	017.432 g	Weight of the sample in liquid

Press 

, the balance will return to weighing mode.
For further measurements start at step 2.

4.2 KERN EMB

⇨ Install density determination set, see chap. 3.1.2

Weighing in air:

⇨ Hang the sample on the hook.



⇨ Wait for stability display. Read-off and record the weight value.

Weighing in liquid:

⇨ Immerse the sample into the aid liquid.



⇨ Wait for stability display. Read-off and record the weight value.

⇨ Calculate the density of solid matter (formula see chap. 4).

5 Determining density of liquids

At the density determination of liquids, a sinker is used whose density is known. The sinker is weighed first in air and then in the liquid whose density is to be determined. From the weight difference results the buoyancy from where the software calculates the density.

In KERN EMB 200-3V the balance calculates automatically the density and displays it.
For models without density calculation function the density must be calculated according to the following formula.

$$\rho = \frac{A-B}{V}$$

ρ	Density of test liquid
A	Weight of the sinker in air
B	Weight of the sinker in test liquid
V	Density of the sinker

The air buoyancy is not considered in the formula.

5.1 KERN EMB 200-3V

☞ **Install the density set, see chapter 3.1.2**

☞ **Mode to call up density determination of liquids.**

1. Turn on the scale with 

, "0.000" is displayed



2. If the scale does not display, "0.000", press 

3. Call up the density determination mode of liquids by pressing .

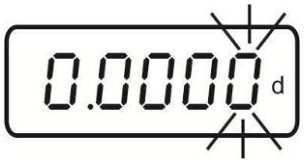


"Liquid" is displayed briefly, followed by the actual entered density of the sinker. Initial entry or if it is necessary to change them describes will be described later.

While using the same sinker, the entered density stays stored. Skip the following steps for additional measurements and start by determining the density of the liquid (step 7).

☞ **Enter the density of the sinker**

4. Press , the last digit flashes.



5. Use  to increase the numeric value of the flashing cipher.

   Use  to move the number selection to the right, the respective active position flashes.

6. Confirm input by  .



English

☞ **Density determination “liquids“**

7. Hang the sinker on the hook



8. Press , the weight of the sinker in air is displayed

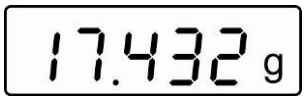


(example)

9. Wait for stability display
10. Immerse the sinker into the test liquid.

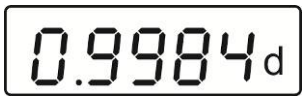


11. Press , the weight of the sinker in the test liquid is displayed for a short time.



(example)

The scale determines the density of the liquid and then displays the result.



(example)

When connecting an optional printer, pressing of PRINT will print the result.

Printout example KERN YKB-01N:

D-REF:	8.0409 g/cm^3	Sinker density
D-RSL:	0.9984 g/cm^3	Result (Density of the test liquid)
W-AIR:	020.000 g	Weight of the sinker in air
W-LDQ:	017.432 g	Weight of the sinker in liquid

Press ESC, the balance will return to weighing mode. For further measurements start at step 2.

English

5.2 KERN EMB

⇨ Install density determination set, see chap. 3.1.2

Weighing in air:

⇨ Hang the sinker on the hook



⇨ Wait for stability display. Read-off and record the weight value.

Weighing in test liquid:

⇨ Immerse the sinker into the test liquid.



⇨ Wait for stability display. Read-off and record the weight value.

⇨ Calculate the density of the liquid (formula see chap. 5).