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KERN
— eco —

Operating Manual Bench scale

KERN FCE

Type FCE_A

Version 3.0

2017-07

GB



FCE-N-BA-e-1730



KERN FCE

Type FCE_A
Version 3.0 2017-07

Operating Manual Compact balances

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1 Technical Data

KERN (Type)	FCE 3K-3A	FCE 6K-3A
Trademark	FCE 3K1N	FCE 6K2N
Readability (d)	1 g	2 g
Weighing range (max)	2.3 kg	6 kg
Reproducibility	2 g	4 g
Linearity	3 g	6 g
Warm-up time	10 minutes	
Weighing Units	g	
Recommended adjustment weight, not added (class)	3 kg (M2)	6 kg (M2)
Stabilization time (typical)	3 sec.	
Operating temperature	+5°C... + 35° C	
Humidity of air	max. 80 % (not condensing)	
Weighing plate mm	252 x 228	
Power pack	9 V / 300 mA	
Battery	9 V block	
Auto-off	3 minutes	
Rechargeable battery	optional	
Protective cover	✓	
Weight kg (net)	2.5	

KERN (Type)	FCE 10K-3A	FCE 30K-2A
Trademark	FCE 15K5N	FCE 30K10N
Readability (d)	5 g	10 g
Weighing range (max)	15 kg	30 kg
Reproducibility	10 g	20 g
Linearity	15 g	30 g
Warm-up time	10 minutes	
Weighing Units	g	kg
Recommended adjustment weight, not added (class)	15 kg (M2)	30 kg (M2)
Stabilization time	3 sec.	
Operating temperature	+5°C... + 35° C	
Humidity of air	max. 80 % (not condensing)	
Weighing plate mm	252 x 228	
Power pack	9 V / 300 mA	
Battery	9 V block	
Auto-off	3 minutes	
Rechargeable battery	optional	
Protective cover	✓	
Weight kg (net)	2.5	

2 Declaration of conformity

To view the current EC/EU Declaration of Conformity go to:

www.kern-sohn.com/ce

3 Device overview



Pos.	Designation
1	Weighing pan
2	Display
3	ON/OFF -key
4	TARE -key

4 Basic Information (General)

4.1 Proper use

The balance you purchased is intended to determine the weighing value of material to be weighed. It is intended to be used as a “non-automatic” balance, i.e. the material to be weighed is manually and carefully placed in the centre of the weighing plate. As soon as a stable weighing value is reached the weighing value can be read.

4.2 Improper Use

Do not use balance for dynamic weighing. In the event that small quantities are removed or added to the material to be weighed, incorrect weighing results can be displayed due to the “stability compensation” in the balance. (Example: Slowly draining fluids from a container on the balance.)

Do not leave permanent load on the weighing plate. This may damage the measuring system.

Impacts and overloading exceeding the stated maximum load (max) of the balance, minus a possibly existing tare load, must be strictly avoided. Balance may be damaged by this.

Never operate balance in explosive environment. The serial version is not explosion protected.

The structure of the balance may not be modified. This may lead to incorrect weighing results, safety-related faults and destruction of the balance.

The balance may only be used according to the described conditions. Other areas of use must be released by KERN in writing.

4.3 Warranty

Warranty claims shall be voided in case

- Our conditions in the operation manual are ignored
- The appliance is used outside the described uses
- The appliance is modified or opened
- mechanical damage and damage caused by media, liquids,
Natural wear and tear
- The appliance is improperly set up or incorrectly electrically connected
- The measuring system is overloaded

4.4 Monitoring of Test Resources

In the framework of quality assurance the measuring-related properties of the balance and, if applicable, the testing weight, must be checked regularly. The responsible user must define a suitable interval as well as type and scope of this test. Information is available on KERN's home page (www.kern-sohn.com) with regard to the monitoring of balance test substances and the test weights required for this. In KERN's accredited DKD calibration laboratory test weights and balances may be calibrated (return to the national standard) fast and at moderate cost.

5 Basic Safety Precautions

5.1 Pay attention to the instructions in the Operation Manual



Carefully read this operation manual before setup and commissioning, even if you are already familiar with KERN balances.

Versions in other languages are non-binding translations.
The only binding version is the original document in German.

5.2 Personnel training

The appliance may only be operated and maintained by trained personnel.

6 Transportation & Storage

6.1 Testing upon acceptance

When receiving the appliance, please check packaging immediately, and the appliance itself when unpacking for possible visible damage.

6.2 Packaging / return transport



- ⇒ Keep all parts of the original packaging for a possibly required return.
- ⇒ Only use original packaging for returning.
- ⇒ Prior to dispatch disconnect all cables and remove loose/mobile parts.
- ⇒ Reattach possibly supplied transport securing devices.
- ⇒ Secure all parts such as the glass wind screen, the weighing platform, power unit etc. against shifting and damage.

7 Unpacking, Setup and Commissioning

7.1 Installation Site, Location of Use

The balances are designed in a way that reliable weighing results are achieved in common conditions of use.

You will work accurately and fast, if you select the right location for your balance.

Therefore, observe the following for the installation site:

- Place the balance on a firm, level surface;
- Avoid extreme heat as well as temperature fluctuation caused by installing next to a radiator or in the direct sunlight;
- Protect the balance against direct draughts due to open windows and doors;
- Avoid jarring during weighing;
- Protect the balance against high humidity, vapors and dust;
- Do not expose the device to extreme dampness for longer periods of time. Non-permitted condensation (condensation of air humidity on the appliance) may occur if a cold appliance is taken to a considerably warmer environment. In this case, acclimatize the disconnected appliance for ca. 2 hours at room temperature.
- Avoid static charging of the material to be weighed, weighing container and windshield.

Major display deviations (incorrect weighing results) may be experienced should electromagnetic fields (e.g. due to mobile phones or radio equipment), static electricity accumulations or instable power supply occur. Change location or remove source of interference.

7.2 Unpacking

Carefully remove the balance from the packaging, remove plastic cover and setup balance at the intended workstation.

7.2.1 Placing

The balance must be installed in a way that the weighing plate is exactly in horizontal position.

7.2.2 Scope of delivery

Serial accessories:

- Balance
- Weighing plate
- Mains power supply
- 2 conveyor screws
- Protective cover
- Operating Manual

7.2.3 Basic structure

- Place the balance on a horizontal and solid base.
- Remove the transport security on the 4-point support.
- Pull off the protection foil from the weighing plate if existing.
- Attach the weighing plate.

7.3 Mains connection

Power is supplied via the external mains adapter. The stated voltage value must be the same as the local voltage.

Only use original KERN mains adapters. Using other makes requires consent by KERN.

7.4 Operation using a (rechargeable) battery (optional)

Lift-off the battery cover on the lower side of the balance. Connect 9 V compound battery.

Reinsert the battery cover.

For battery operation the balance has an automatic switch-off function. (after 3 minutes).

If there exists an optional rechargeable battery, it has to be connected in the battery compartment via a separate plug-in socket. Now the mains adapter delivered with the rechargeable battery must be applied.

7.5 Initial Commissioning

In order to obtain exact results with the electronic balances, your balance must have reached the operating temperature (see warming up time chap. 1). During this warming up time the balance must be connected to the power supply (mains, accumulator or battery).

The accuracy of the balance depends on the local acceleration of gravity. Strictly observe hints in chapter Adjustment.

7.6 Adjustment







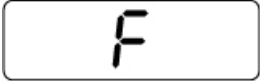

As the acceleration value due to gravity is not the same at every location on earth, each balance must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted to the location in the factory). This adjustment process must be carried out for the first commissioning, after each change of location as well as in case of fluctuating environment temperature. To receive accurate measuring values it is also recommended to adjust the balance periodically in weighing operation.

7.7 Adjustment

The adjustment should be made with the recommended adjustment weight (see chap. 1 "Technical data"). Adjustment is also possible with the weights of other nominal values, but not the optimum for measuring technique.

Procedure when adjusting:

Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization.


Operation	Display
⇒ Start balance by pressing 	
The balance displays for approx. 3 seconds [88888]	
and then goes to [0] . Now it is ready for operation.	
⇒ Press  and keep it pressed, [CAL] is displayed	
After approx. 5 seconds appears the size of the recommended adjustment weight	 (Example)
⇒ Place adjusting weight in the center of the weighing plate, short time later appears [F]	
Afterwards the balance automatically jumps back to normal weighing mode. In the display there appears the value of the adjustment weight.	 (Example)

An error during adjustment or the use of an incorrect adjusting weight will result in an error message „**CAL E**“. Repeat adjustment.

Keep the adjustment close to the balance. Daily control of the weighing exactness is recommended for quality-relevant applications.

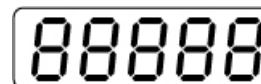
7.8 Weighing

Operation

⇒ Start balance by pressing 

The balance displays for approx. 3 seconds **[88888]**

Display



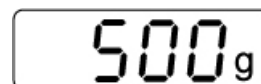
and then goes to **[0]**. Now it is ready for operation.



⇒ Only now (!) place goods onto weighing plate.

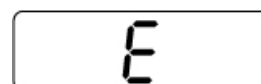
Take care that the weighed material does not touch the balance housing or the base mat.

Now the weight is displayed, after the standstill control appears the weighing unit **[g]** right-hand in the display.




(Example)

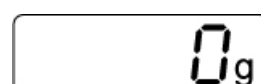
If the material to be weighed is heavier than the weighing range, the display will show **[Error]** (=Overload).




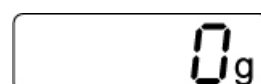
7.9 Taring

Operation

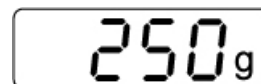
⇒ Switch on balance by pressing  and wait for the **[0]** display.




⇒ Place the tare vessel on the weighing plate and press the  button. The balance display goes to **[0]**.



⇒ Put the sample into the tare vessel.
The weight of the sample will be displayed.



(Example)


⇒ If after finishing the weighing process the  button is pressed again, **[0]** appears anew in the display.






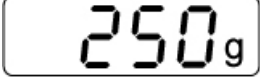



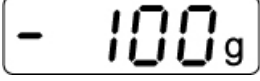

The taring process can be repeated any number of times, e.g. when adding several components for a mixture (adding).

The limit is reached when the whole weighing range is exhausted.

After removing the taring container the total weight is displayed as negative display.

By pressing anew the  button, the balance will go back to „0“.

7.10 Plus/minus weighings

Operation	Display
⇒ Switch on balance by pressing  and wait for the [0] display.	
⇒ Put the nominal weight on the weighing plate and tare to [0] using the  button.	 (Example)
⇒ Remove the nominal weight. The nominal weight is displayed as negative display.	
⇒ Put the test objects subsequently on the weighing plate, the respective deviation from the nominal weight is displayed with the respective sign to „+“ and „-“.	 (Example)
⇒ Back to weighing mode by pressing the  button.	 (Example)
	

8 Service, maintenance, disposal

8.1 Cleaning

Before cleaning, please disconnect the appliance from the operating voltage.

Please do not use aggressive cleaning agents (solvents or similar agents), but a cloth dampened with mild soap suds. Ensure that no liquid penetrates into the device and wipe with a dry soft cloth.

Loose residue sample/powder can be removed carefully with a brush or manual vacuum cleaner.

Spilled weighing goods must be removed immediately.

8.2 Service, maintenance

The appliance may only be opened by trained service technicians who are authorized by KERN.

Before opening, disconnect from power supply.

8.3 Disposal

Disposal of packaging and appliance must be carried out by operator according to valid national or regional law of the location where the appliance is used.

9 Instant help

In case of an error in the program process, briefly turn off the balance and disconnect from power supply. The weighing process must then be restarted from the beginning.

Help:

Fault

Possible cause

The displayed weight does not glow.

- The balance is not switched on.
- The mains supply connection has been interrupted (mains cable not plugged in/faulty).
- Power supply interrupted.
- Batteries are inserted incorrectly or empty
- No batteries inserted.

The displayed weight is permanently changing

- Draught/air movement
- Table/floor vibrations
- The weighing plate is in contact with foreign matter.
- Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)

The weighing result is obviously incorrect

- The display of the balance is not at zero
- Adjustment is no longer correct.
- Great fluctuations in temperature.
- Electromagnetic fields / static charging (choose different location/switch off interfering device if possible)

Should other error messages occur, switch balance off and then on again. If the error message remains inform manufacturer.