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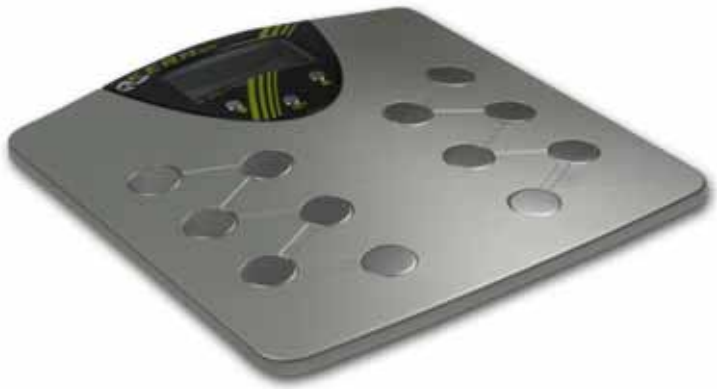
Operating Manual

Body fat balance

KERN MFB

Version 1.0
08/2008
GB



MFB -BA-e-0810

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KERN MFB 150K100

Version 1.0 08/2008

Operating Manual

Body fat balance

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1 Technical Data

KERN	***MFB 150K100***
Readability (d)	*100 g*
Weighing range (max)	*150 kg*
Weighing Units	*kg, lb*
Reproducibility	*+- (100 g +1%)*
Linearity	*+- (100 g +1%)*
Stabilization time (typical)	*2 – 3 sec.*
Electric Supply	*Battery operated 4 x 1.5V, size AAA* *Battery life for three times daily use: 1 year*
Auto Off	*after 5 seconds*
Operating temperature	*+ 5°C … + 35°C*
Storage temperature	*- 20°C … + 60°C*
Humidity of air	*max. 80 % (not condensing)*
Housing (B x D x H) mm	*300 x 320 x 55*
Weight kg (net)	*1.4*

2 Basic Information (General)

These body fat balance are designed for the determination of body fat, water content, muscle ratio and bone weight according to the so-called impedance method.
This method is applied to determine the resistance value of the human body with the help of electrical impulses. A high fat ratio in the body will for instance increase the resistance value.
For individual calculations, it is possible to store basic data (such as body height, age and gender) for up to 10 persons.

These balance are only designed to deliver reliable values for persons aged 10 – 80 and a body height of 100 - 220 cm. In order to obtain exact results it is recommended to step on the weighing plate lightly clad, whilst for the analysis of body components it is essential to be barefoot.

These balance should not be used by persons requiring a cardiac pacemaker, a respirator or other devices.

2.1 Proper use

These balance are designed for the determination of weight (in kg/lb), body fat ratio (in %), body water ratio (in %), muscle ratio (in %) and bone weight (in kg) of persons in a private domain. Utilisation of this balance in the medical field is not permissible.
The weighing process requires that the person steps on the weighing plate barefoot, with one foot at a time on the 6 metal platelets. Once a stable weighing value has been reached the weighing value can be read, followed by the other measured values. .

2.2 Improper Use

Do not use balance for dynamic weighings. 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.
Take care to avoid impacts and overloading of balance above the specified maximum load (max) under all circumstances. This could cause damage to the balance.
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.

2.3 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
- Dropping the balance

3 Basic Safety Precautions

3.1 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.

4 Transportation & Storage

4.1 Testing upon acceptance

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

4.2 Packaging

Keep all parts of the original packaging in case you need to return the appliance.
Only use original packaging for returning.

5 Unpacking, Setup and Commissioning

5.1 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, vapours 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 appliance for ca. 2 hours at room temperature.
- Avoid static charge of the balance and of the person to be weighed.
- Avoid contact with water.

If electro-magnetic fields or static charge occur, or if the power supply is unstable major deviations on the display (incorrect weighing results) are possible. In that case, the location must be changed.

5.2 Unpacking

Take the whole balance out of their packaging and place them at the intended position.
In addition to the balance, delivery includes the operating instructions and a battery.

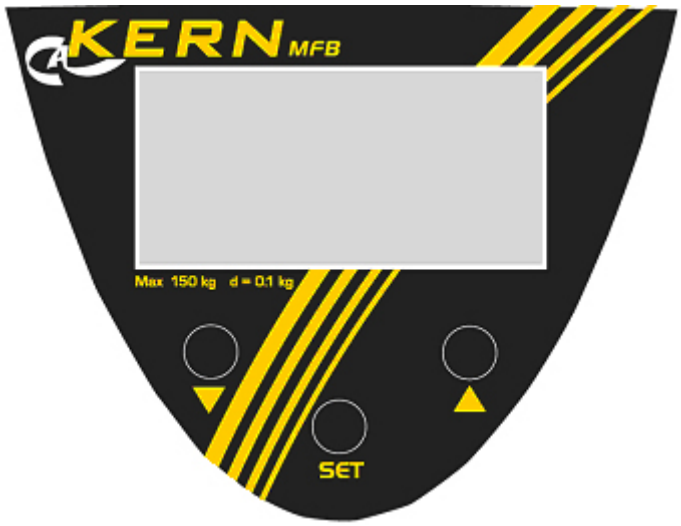
5.3 Battery operation (insertion and removal)

To insert your battery, open the battery compartment at the rear of the balance and insert 4 alkaline batteries of AAA size in the correct direction of the pole, then close the battery compartment.
If the balance is not used for a longer time, take out the batteries and store them separately. Leaking battery liquid could damage the balance.

6 Operation

6.1 Controls

6.1.1 Display



6.1.2 Keys and display overview

No.	Display	Description
1	**[arrow down]** ▼	Selecting parameters
2	**[SET]**	Selecting or confirming your selection
3	**[arrow up]** ▲	Selecting parameters
4		Default: Gender of person Male Female
5	age	Default: Age of person
6	cm	Default: Height of person
7	fat	Display: Body fat ratio in %

	TBW	Display: Body water ratio in %
	MUS	Display: Muscle ratio in %
	BONE	Display: Bone weight in kg

You can change the scale's weighing unit from "kg" to "lb" at the rear of the balance. When changing the weighing unit to lb you must enter the body height in ft.

7 Using the balance

To switch on balance, press **one** of the 3 **keys.**
Display unit "**PX"** (X may be selected from 0 to 9) starts to flash. To select a different digit, press the **arrow key up** or **arrow down**.
Prior to initial use enter gender, age and height for each person. These entries will be stored under the respective, previously selected number.
Set this individual number for each person before the weighing process by pressing the **arrow keys**.

7.1 Entering person-related data

a. With the balance switched on, select the respective number by pressing the **arrow** keys as described above and confirm by pressing the **SET** key. The display described below appears:

b. When the symbol used to select the gender starts to flash you can change between "**male**" and "**female**" by pressing the **arrow keys**. Confirm by pressing **SET**.

c. When **body height (cm)** starts to flash, you can change this value, too, by pressing the **arrow keys**. Again, confirm by pressing **SET**.

d. When **age** starts to flash, this too, can be changed by pressing the **arrow keys.** Complete your data entries by pressing **SET**.

After these entries have been made, the display will show "----" for a short while. Afterwards **0.0 kg** will be displayed and the balance are ready for weighing.

When the balance are not in use they automatically switch off after a short time.

7.2 Usage as body fat balance

After having carried out the previous settings the balance will be ready for operation. After start-up the data for the last person enabled will be shown one after the other (gender, height and age).
If the stored data is incorrect, you will have to enter the data again or make changes.

The balance are ready for operation when **0.0 kg** appears on the display. For this purpose, the person must step barefoot on the round elements of the weighing plate and stand as still as possible.

a. The weight will be shown automatically.

b. After the weighing value has come to a stop, the symbol "**o**" will drift across the display indicating that weighing is taking place.

c. After successful completion of the weighing process, the body fat ratio will be shown in percent. (**fat**)

On top of this, the bottom line on the display will show an evaluation of the body fat ratio in words.

Displayed words indicate the following:

Underfat = body fat ratio too low
Healthy = body fat ratio optimal
Overfat = body fat ratio too high
Obese = person tending towards obesity

d. The display will after a short while switch over to the percentage value for body water ratio (**TBW**)

e. Afterwards the display will switch over again in order to show the percentage value for body muscle ratio (**MUS**)

6. The display will switch over once again in order to show the absolute weight of the bones in the body. (**BONE**)

The 4 display values described above will run through twice in succession. Finally the balance will switch off.

Table for standard values body fat, body water, muscle and bone

Body fat (%):

Age	Female				Male			
	too low	normal	too high	obese	too low	normal	too high	obese
< 39	< 21	21-33	33-39	> 39	< 8	8 -19	19-25	> 25
40-59	< 23	23-35	35-40	> 40	< 11	11-22	22-28	> 28
>59	< 24	24-36	36-42	> 42	< 13	13-25	25-30	> 30

Body water (%):

Age	Female			Male		
	too low	normal	too high	too low	normal	too high
10-15	< 57	57-67	> 67	< 58	58-72	> 72
16-30	< 47	47-57	> 57	< 53	53-67	> 67
31-60	< 42	42-52	> 52	< 47	47-61	> 62
61-80	< 37	37-47	> 42	< 42	42-56	> 56

Muscle (%):

Female: normal : > 34 %
Male: normal : > 40 %

Bone (kg):

	Female			Male		
Body weight	< 45 kg	45-60 kg	> 60 kg	< 45 kg	45-60 kg	> 60 kg
Estimated bone weight	1.8 kg	2.2 kg	2.5 kg	2.5 kg	2.9 kg	3.2 kg

8 Error message

Messages can be displayed when the balance are switched on or in operation.

ERR 1: Weighing range exceeded

ERR 2: Measuring started without a
barefoot person present on weighing plate.

Lo : Batteries are run down

----- : Load was present on weighing plate when started
After the load was taken off the weighing plate, the display will again show "-----„.

9 Service, maintenance, disposal

9.1 Cleaning

Do not use aggressive cleaning agents but only a damp cloth with mild soapsuds, or household cleaner. Ensure that no liquid gets inside the unit and rub with a soft, dry cloth.
Loose dirt can be removed carefully with a brush or hand-held vacuum cleaner.
Balance must not be tilted or rotated for cleaning, as damage may occur.

Remove dirt immediately.

9.2 Service, maintenance

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

9.3 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.

10 Instant help

In case of a fault in the program sequence, the balance should be shortly switched off. 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.* • *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 bodies or is not correctly positioned.* • *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.