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# Operating Instructions Hanging scale

## KERN MHS 300K100M

Version 1.1  
12/2008  
GB



MHS-BA-e-0811



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Version 1.1 12/2008

## Operating Instructions Electronic hanging scale

### Contents

<b>1</b>	<b>Technical data</b>	<b>4</b>
<b>2</b>	<b>Declaration of conformity</b>	<b>5</b>
2.1	Explanation of graphical symbols	5
<b>3</b>	<b>Basic directions (general information)</b>	<b>7</b>
3.1	<b>Use</b>	<b>7</b>
3.1.1	Indication	7
3.1.2	Contraindication	7
3.2	Intended use	7
3.3	Inappropriate use	8
3.4	Guarantee	8
3.5	Monitoring the test substances	9
<b>4</b>	<b>Basic safety directions</b>	<b>10</b>
4.1	Observing the directions included in the Operating Instructions	10
4.2	Staff training	10
4.3	Avoidance of contamination	10
<b>5</b>	<b>Transport and storage</b>	<b>10</b>
5.1	Check upon delivery	10
5.2	Packaging	10
<b>6</b>	<b>Unpacking, installation and starting</b>	<b>11</b>
6.1	Place of installation, place of use	11
6.2	<b>Unpacking</b>	<b>11</b>
6.2.1	Scale assembly and positioning	11
6.2.2	Scope of delivery	12
6.3	Battery operation	12
6.4	Initial start-up	13
6.5	Menu overview of verified scales	14
<b>7</b>	<b>Operation</b>	<b>15</b>
7.1	<b>Operation elements</b>	<b>15</b>
7.1.1	Display	15
7.1.2	Overview of keyboard	15
7.1.3	Display view	15

<b>8</b>	<b><i>Using the scale</i></b>	<b>16</b>
8.1	Weighing	16
8.2	Taring	16
8.3	HOLD function	17
<b>9</b>	<b><i>Error messages</i></b>	<b>17</b>
<b>10</b>	<b><i>Service, maintenance, disposal</i></b>	<b>18</b>
10.1	Cleaning	18
10.2	Service, maintenance	18
10.3	Disposal	18
<b>11</b>	<b><i>Troubleshooting</i></b>	<b>19</b>
<b>12</b>	<b><i>Verification</i></b>	<b>20</b>
12.1	Adjusting	20
12.2	Adjustment key and seals	20
12.3	Checking the scale settings concerning scale verification	21
12.3.1	Menu overview	21
12.4	Validity period of verification (present status in Germany)	22


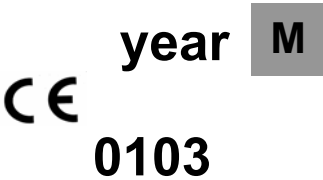
## 1 Technical data

<b>KERN</b>	<b>MHS 300K100M</b>
Display	6-position one
Weighing range (max.)	300 kg
Minimal (min.) load	2 kg
Verification value (e)	100 g
Eye bolts Diameter	12 mm
Display	LCD with 25 mm high digits
Recommended calibration weight, (class)	200 kg (M1)
Signal rise time (typical)	2 - 3 s
Warm-up time	10 min
Operating temperature	+ 0°C .... + 40°C
Storage temperature	- 20°C ... + 60°C
Air humidity	max. 80% (non-condensing)
Power supply	operation with 6 x 1.5 V battery supply, AA type batteries operation time 57 h
Auto-Off function	after 120/180/240/300 s without load change
Scale ready for operation (W x D x H) mm	120 x 56 x 160
Total (net) weight kg	0.75
Verification according to 90/384/EEC	medical, class III
Medical device according to 93/42/EEC	class I with measuring function

## 2 Declaration of conformity

Declaration of conformity: refer to the separate document with serial number of the device.

CE marking:

	93/42/EEC
	90/384/EEC The directive relating to non-automatic weighing instruments

### 2.1 Explanation of graphical symbols



This EC verification sign means that this scale is compliant with the EC Directive 90/384/EEC concerning non-automatic weighing instruments. The scales marked with this sign are permitted for medical applications in European Community.

**SN WOC 070563**

Serial number marking of each device (located on the device and packaging) (example number here)



**2008-03**

Production date marking of of medical devices (year and month here as an example)



„Note: follow the directions included in the attached document or „Follow the Operating Instructions”



Marking of the medical device manufacturer with its address

Kern & Sohn GmbH  
D – 72336 Balingen Ziegelei 1



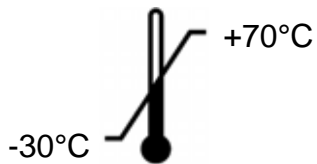
„Electro-medical equipment” with usable part  
of B type



Protection class III device



Old devices do not belong to municipal  
waste  
They may only be delivered to collection  
points of municipal waste.



Temperature limitation with  
lower and upper limit  
(storage temperature on the packaging)  
(example temperature data)

### 3 Basic directions (general information)



According to the Directive 90/384/EEC scales must be verified to the following application purposes. Article 1, paragraph 4 „Determination of weight in the course of medical practice i.e. weighing of patients for the purpose of health monitoring, diagnosis and medical treatment.”

#### 3.1 Use

##### 3.1.1 Indication

- Determination of body weight in the course of medical practice.
- Used as a „non-automatic scale” i.e. a person is to be placed carefully in the centre of the scale plate or in the suitable supporting device in the case of a hanging scale. In the case of baby scales, a baby is to be always laid down or seated on the scale pan. The weighing value can be read off after a stable weighing value has been obtained.

##### 3.1.2 Contraindication

No contraindications.

#### 3.2 Intended use

This scale is used to determine weight of patients who are in the suitable supporting devices in rooms intended for carrying out medical care. The scale is intended to diagnose, prevent and monitor diseases.

The weighing value can be read off after a stable weighing value has been obtained.

Before any use, the scale must be checked for correct condition by the authorised person.

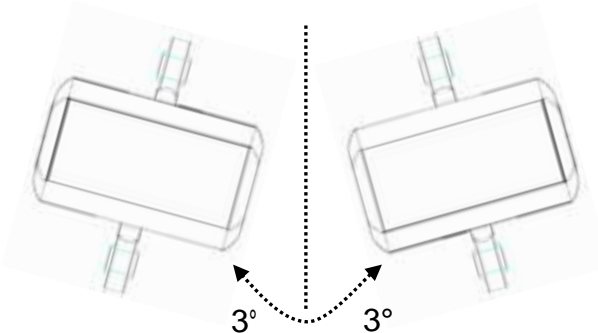
### 3.3 Inappropriate use

Do not use the scale for dynamic weighing.

Do not leave a permanent load on the weighing plate. This can damage the measuring equipment.

Be sure to avoid impact shock and overloading the scale in excess of the prescribed maximum load rating (max.), minus any possible tare weight that is already present. This could result in damage of the scale (risk of breakage).

The scale cannot be loaded with the specified maximal load in the switching off state. When an angle is  $> 3^\circ$ , the scale shows incorrect weighing values.



Never operate the scale in hazardous locations. The series design is not explosion-proof. Attention should be paid that flammable mixture may also be formed from anaesthesiological means that contain oxygen or laughing gas (nitrous oxide). Construction alterations may not be made to the scale. This can lead to incorrect weighing results, faults concerning safety regulations as well as to destruction of the scale.

The scale may only be used in compliance with the described guidelines. Other areas of application/planned use must be approved by KERN in writing.

Make sure that no people or objects are under the load.

Avoid any kind of shock, torsion and oscillating (e.g. caused by inclined suspending).

**In no case the load can cause the scale eye bolts to be screwed into the scale.**

### 3.4 Guarantee

The guarantee shall become void in the event of the following:

- non-observation of our guidelines in the Operating Instructions,
- use outside the described applications,
- alteration to or opening of the device,
- mechanical damage or damage caused by media, liquids,
- usual wear and tear,
- inappropriate erection or electric installation,
- overloading of the measuring equipment,
- allowing the scale to fall down.

### **3.5 Monitoring the test substances**

The metrology features of the balance and any possible available adjusting weight must be checked at regular intervals within the scope of quality assurance. For this purpose, the responsible user must define a suitable interval as well as the nature and scope of this check. Information is available on KERN's home page ([www.kern-sohn.com](http://www.kern-sohn.com)) with regard to the monitoring of balance test substances and the test weights required for this. Test weights and balances can be adjusted quickly and at a reasonable price at KERN's accredited DKD (Deutsche Kalibrierdienst) calibration laboratory (return to national standard).

## **4 Basic safety directions**

### **4.1 Observing the directions included in the Operating Instructions**

Please read these Operating Instructions carefully before erecting and commissioning the scale, even if you already have experience with KERN scales.

### **4.2 Staff training**

The device may only be operated and maintained by trained members of staff.

### **4.3 Avoidance of contamination**

To avoid cross contamination (mycosis, ...), the fastening devices are to be cleaned regularly (refer also to: operating instructions of the fixing device).

## **5 Transport and storage**

### **5.1 Check upon delivery**

Please check the packaging immediately upon delivery and the device during unpacking for any visible signs of external damage.

### **5.2 Packaging**

Please keep all parts of the original packaging in case it should be necessary to return items at any time.

Only the original packaging should be used for return shipments.

Before any shipment, disconnect all cables and loose/movable parts.

Install transport protection elements (if any). All parts such as scale platform, mains adapter, stand, operating panel etc. must be protected against sliding down or damage.

## 6 Unpacking, installation and starting

### 6.1 Place of installation, place of use

The scales are designed in such a way that reliable weighing results can be achieved under normal application conditions.

By selecting the correct location for your scale, you will be able to work quickly and precisely.

**Therefore, please observe the following when choosing a place of installation:**

- Fix a scale equipped with eye bolts on the hoist or stable lifting slings with suitable fastening elements and secure against self-loosening;
- Avoid extreme heat as well as temperature fluctuation caused by installing the scale next to a radiator or in the direct sunlight;
- Protect the scale against direct draughts due to open windows and doors;
- Avoid shaking during weighing;
- Protect the scale against high humidity, vapours and dust;
- Do not expose the device to extreme dampness for longer periods of time. Inadmissible bedewing (condensation of air moisture on the device) can occur if a cold device is taken into a significantly warmer environment. In this case, please keep the device for approx. 2 hours at room temperature after it has been disconnected from mains supply;
- Avoid static charge build-up on the scale and people to be weighed.

Major display deviations (incorrect weighing results) are possible if electromagnetic fields occur (e.g. coming from mobile phones or radio equipment) as well as due to static charging and instable power supply. It is necessary then to change the scale location or remove disturbance source.

### 6.2 Unpacking

Carefully remove individual scale parts or the whole scale from its packaging and position the scale in its intended working location.

#### 6.2.1 Scale assembly and positioning

This scale is delivered in an assembled state, with eye bolts protected against over-tightening.



## 6.2.2 Scope of delivery

### **Standard accessories:**

- Operating Instructions
- Batteries

## 6.3 Battery operation

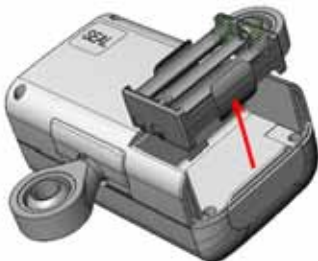
To open the battery compartment, turn over the scale.



Slide the battery compartment cover in the direction of arrow shown (to the right) and remove it.



Remove the battery holder.



Insert 6 x 1.5 V AAA type batteries into the holder.



Insert the holder back into the battery compartment.



Then replace and close the battery compartment cover.



To preserve battery life, the scale switches off automatically after 3 minutes if no weighing has taken place. Other switch off times can be set in the menu („A.OFF” function), refer to chapter 6.5.

When the batteries are exhausted, the display will show the „LOW” symbol. Press the **[ON/OFF]** key and change the batteries at once.

When the scale is not in use for a longer period of time, remove the batteries and keep them separately. Leakage of battery liquid might damage the scale.

#### **6.4 Initial start-up**

To obtain accurate weighing results with electronic scales, the appropriate operating temperature is to be provided for them (refer to „Warm-up time”, section 1).

During warm-up the scale must be connected to power supply and switched on (batteries).

The accuracy of the scale depends on the local acceleration of gravity.

The value of acceleration of gravity is given on the rating plate.

## 6.5 Menu overview of verified scales

The following settings are possible in this menu:

- setting the switching off time when the scale is not used (Auto off);
- switching on or off keyboard sounds.

Procedure:

When the scale is switched on, hold the **[HOLD]** key pressed for about 3 seconds until the display shows successively the „**SETUP**” and „**A\_OFF**” symbols.

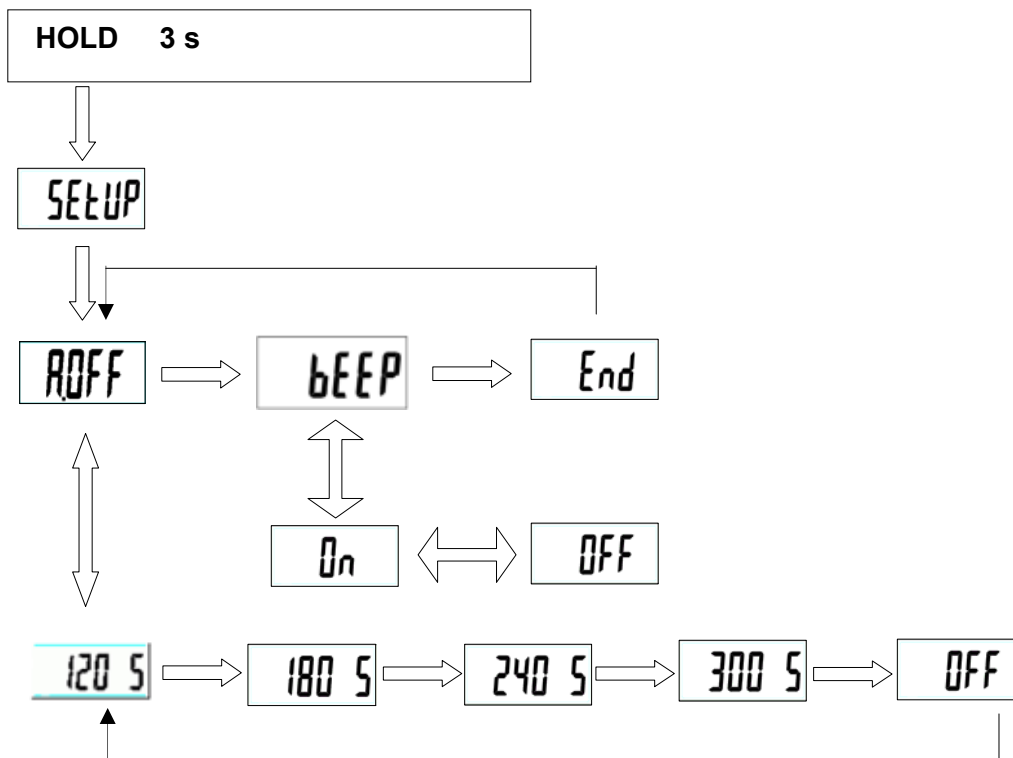
Select the **[HOLD]** key  $\rightarrow$  , horizontal movement

The **[TARE]** key for value selection  $\downarrow$  , vertical movement

<b>A_OFF</b>	<b>180 x 240 300 OFF 120</b>	Auto off function time in seconds
<b>bEEP</b>	<b>OFF On x</b>	Keyboard sound

### x Factory setting

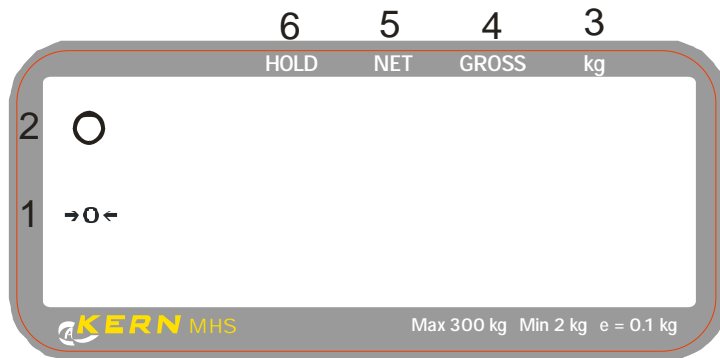
When the **END** symbol is displayed, pressing the **[TARE]** key will cause the menu is left, settings are saved and return to weighing mode occurs.



## 7 Operation

### 7.1 Operation elements

#### 7.1.1 Display



#### 7.1.2 Overview of keyboard

Key	Description
ON/OFF/ZERO/TARE	a.) Switching on the scale b.) Zeroing the scale (to 2% of maximal value) c.) Taring the scale (to maximal value) d.) Switching off the scale (pressing the key for 3 seconds)
HOLD	a.) Switching on the hold function / saving weighing value b.) Switching off the hold function when it is switched on c.) Menu

#### 7.1.3 Display view

No.	Display	Description
1	[→0←]	Scale zero display: If the scale does not show exactly zero value although the scale pan is unloaded, press the [→0←] key. After a short waiting time, the scale will be zeroed again.
2	[o]	Stabilisation display: If the display shows the stabilisation display [o], the scale is in the stable condition. When the scale is in the unstable condition, the stabilisation display [o] disappears.
3	kg	Weighing unit
4	GROSS	The total weight is displayed
5	NET	The net weight is displayed
6	HOLD	Hold function / saving function is active

## 8 Using the scale

### 8.1 Weighing

- ⇒ Switch on the scale with the **[ON/OFF]** key. The diagnostic scale self-check is performed and then the software version is displayed. The scale is ready for weighing when the „**0,00 kg**” weight display is shown.  
Direction: The **[→0←]** key makes it possible to zero the scale if necessary and at any time.
- ⇒ Suspend a person located in the suitable sling device on the scale. Wait until the stability display (●) is shown and then read the weighing result.

#### **Direction:**

If a person is heavier than the weighing range, the display will show the „Err” symbol (= overload).

### 8.2 Taring

The dead weight of any initial load used for weighing may be tared away by pressing the key, so that the following weighing shows the real weight of a person to be weighed.

- ⇒ The scale does not show 0 value when the sling device is hanging.
- ⇒ To start the taring process, press the **[TARE]** key. Now internal weight saving is performed and value of **0.0 kg** is displayed.
- ⇒ Place a person in the sling device.
- ⇒ Then read the weight on the display.

#### **Direction:**

The scale can store only one tare value.

When the scale is unloaded, the saved tare value is displayed with „negative” sign. To delete the saved tare value, unload the scale plate and then press the **[TARE]** key.

### 8.3 HOLD function

The scale is provided with the integrated hold function (determination of average value). It enables people to be weighed accurately although they are not still on the scale plate.

Note: Determination of average value is not possible when a person moves too much.

- ⇒ Switch on the scale with the **[ON/OFF]** key. The diagnostic scale self-check is performed. The scale is ready for weighing when the „**0,00 kg**” weight display is shown.
- ⇒ Place a person in the sling device .
- ⇒ Press the **[HOLD]** key. When the triangle is flashing on the display, the scale takes some measuring values and then the calculated average value is displayed.
- ⇒ Press the **[HOLD]** key again to return the scale to the normal weighing mode.
- ⇒ Pressing the **[HOLD]** key makes it possible to activate the function at any time.

## 9 Error messages

The following messages can be shown on the display during switching on or using the scale.

LobAT : Batteries are exhausted and should be changed.

ERRL: Too small weight on the scale during weighing mode.

00000: The scale plate was loaded during switching on the scale. Unload the scale plate.

00000: Too small weight on the scale during switching on the scale. Load the scale plate.

ERR: Overload, too large weight on the scale plate. Unload the scale plate.

## **10 Service, maintenance, disposal**

### **10.1 Cleaning**

Please disconnect the device from the power supply source before cleaning.

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

Loose impurities can be removed carefully by using a brush or hand vacuum cleaner. Do not tilt or turn the scale to carry out its cleaning because this may result in the scale damage.

To avoid cross contamination (mycosis, ...), the scale and sling device are to be cleaned regularly. Recommendation: after each weighing which could result in potential contamination (e.g. when there is a direct skin contact during weighing).

**Remove any impurities immediately.**

### **10.2 Service, maintenance**

The device may only be opened and maintained by trained service technicians who are authorised by KERN.

### **10.3 Disposal**

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

## 11 Troubleshooting

The scale should be switched off for a short time following an interruption in the program sequence and disconnected from mains supply. It is then necessary to repeat the weighing process from the beginning.

### ***Interruption***

### ***Possible cause***

*Weight display is not illuminated.*

- *The scale is not switched on.*
- *Batteries are incorrectly inserted or discharged*
- *No batteries.*

*Weight display changes continuously*

- *Draught/air movement*
- *Table/floor vibrations*
- *The weighing plate is in contact with foreign matters or is installed incorrectly.*
- *Electromagnetic fields/static charging (choose a different location for the scale, switch off an interfering device if possible)*

*The weighing result is obviously incorrect*

- *The scale display is not set to zero*
- *Incorrect adjustment.*
- *Great fluctuations in temperature.*
- *Warm-up time was ignored.*
- *Electromagnetic fields/static charging (choose a different location for the scale, switch off an interfering device if possible)*

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

## 12 Verification

If a scale is verified, then a verification office or manufacturer puts a verification mark and one or several seals (seals are damaged during removal) on or in the housing. Therefore, scale adjusting without a seal loss is not possible.

### 12.1 Adjusting

Observe stable environmental conditions. The warm-up time (refer to chapter 1) is required to ensure the scale stabilisation.

#### Note:

In the case of verified scales, adjustment is locked with the jumper. To enable adjustment, switch off the scale with the **[ON/OFF]** key and remove the seal from the scale back wall. Then, press the switch once through the hole in the housing to go to the parameters mode (refer to section 12.2).

When the adjustment is enabled, press the switch once again.

The display will show zero reading (200 ... 100000).

Then press the **[ON/OFF]** key and zero the scale. Hang the determined calibration weight. The display will show the 1000...2000000 symbol, and press the **[ON/OFF]** key again. The display will show the CAL --> 200,0 symbol. Then, to switch off the scale and finish adjustment, press and hold the **[ON/OFF]** key pressed for 3 seconds.

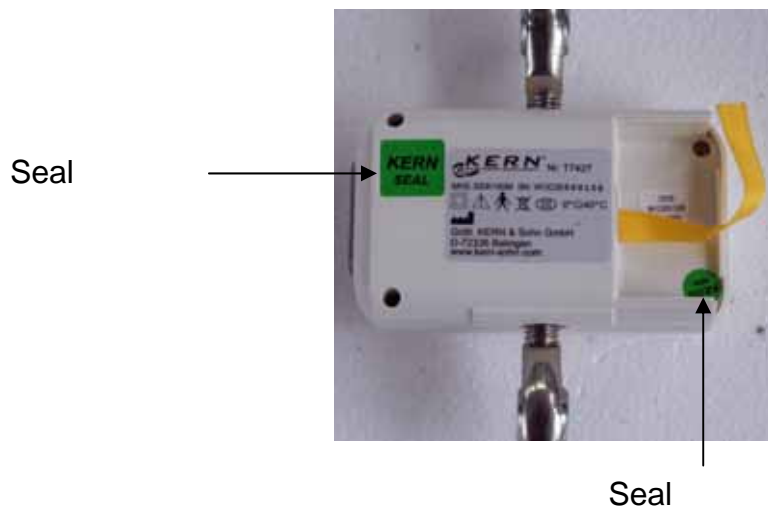
Attach a seal on the housing hole.

### 12.2 Adjustment key and seals

When verification of a scale is finished, the positions indicated on the scale are sealed.

**Verification of a scale without a seal is invalid.**

**Position of seals:**



### 12.3 Checking the scale settings concerning scale verification

In the case of verified scales, adjustment and parameters menu are locked. To enable adjustment and parameter menu, switch off the scale with the **[ON/OFF]** key and remove the seal from the scale back wall. Then, press the switch once through the hole in the housing to go to the parameters mode, and the „**SET**” symbol will appear on the display.

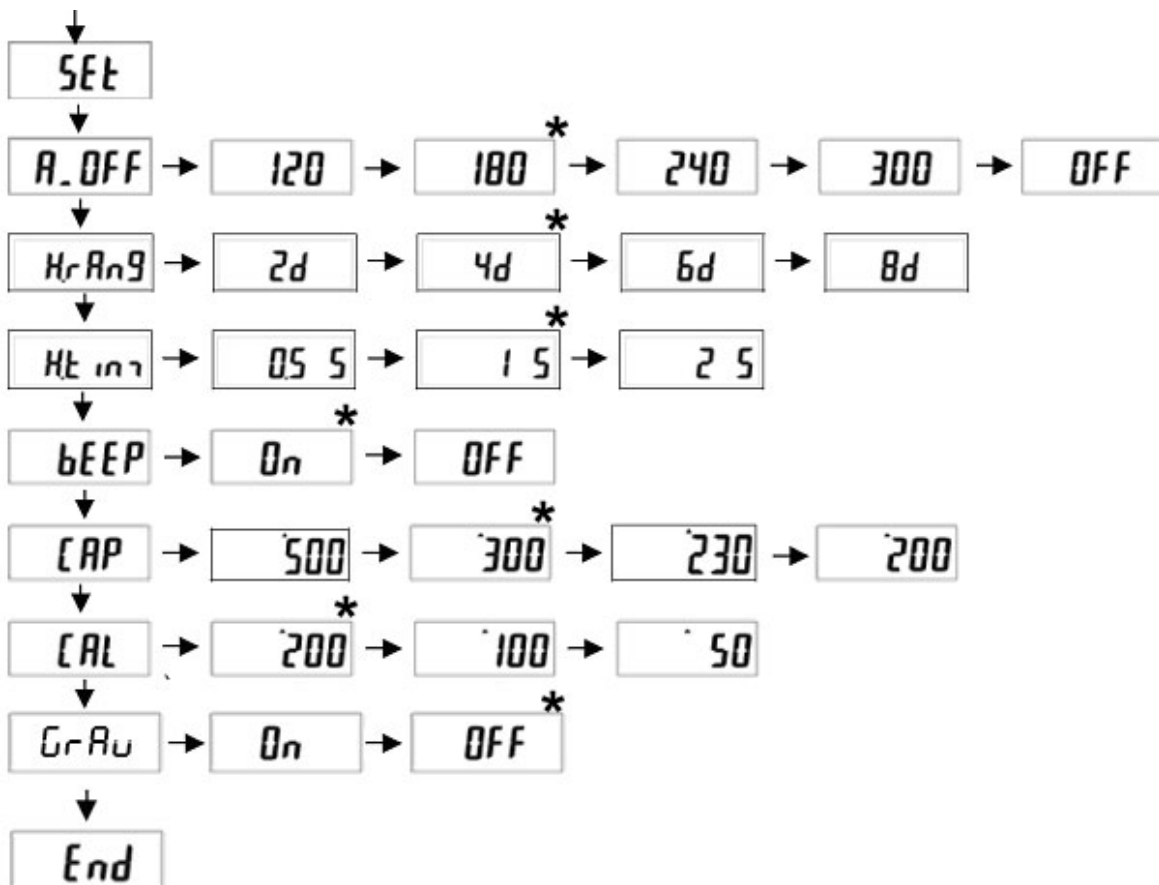
#### 12.3.1 Menu overview

Overview is only used to check the set parameters by authorised verification offices.

##### Navigation in menu:

- Press the **[HOLD]** key repeatedly until the required function is displayed ▼ .
- Confirm the selected function with the **[ON/OFF]** key → . The first parameter will be displayed. Select the required parameter with the **[HOLD]** key and confirm the selection with the **[ON/OFF]** key.

To exit the menu and save the settings, press the **[HOLD]** key until the „**END**” symbol is displayed and then confirm with the **[ON/OFF]** key. The scale is automatically returned to the weighing mode.



## Description

A_OFF	Auto off function: 120 s/ 180 s* / 240 s/ 300 s/ OFF
HrAn9	Stabilisation range: 4d* , 6d, 8d, 2d
H.t in	Stabilisation time: 1 s*, 2 s, 0,5 s
bEEP	Audible signal: ON*/OFF
CAP	Maximal scale load: 300*, 230, 200, 500 kg
CAL	Possible points of adjustment: 200*, 100, 50 kg
GrAu	Compensation of earth gravity: on, off*

\* Factory setting

### 12.4 Validity period of verification (present status in Germany)

- Personal weighing scales in hospitals (e.g. hanging scales) 4 years
- Personal weighing scales if placed outside hospitals without time limit
  
- Baby and mechanical scales
- Infant scales 4 years
- Bed scales 2 years
- Wheelchairs 2 years

The hospitals also include rehabilitation clinics and health centres (4-year validity of verification).

The hospitals do not include dialysis centres, care homes and consultation rooms (verification validity without time limit).

(Data on the basis: „Verification office informs, scales in medical applications”)