



KERN & Sohn GmbH

Ziegelei 1
D-72336 Balingen
email: info@kern-sohn.com

Phone: +49-[0]7433- 9933-0
Fax: +49-[0]7433-9933-149
Internet: www.kern-sohn.com

Operating instructions Electronic Crane Scales

Logbook Regular maintenance and care

KERN HFM

Version 1.5
2022-02
GB



HFM-BA-e-2215

Table of Contents

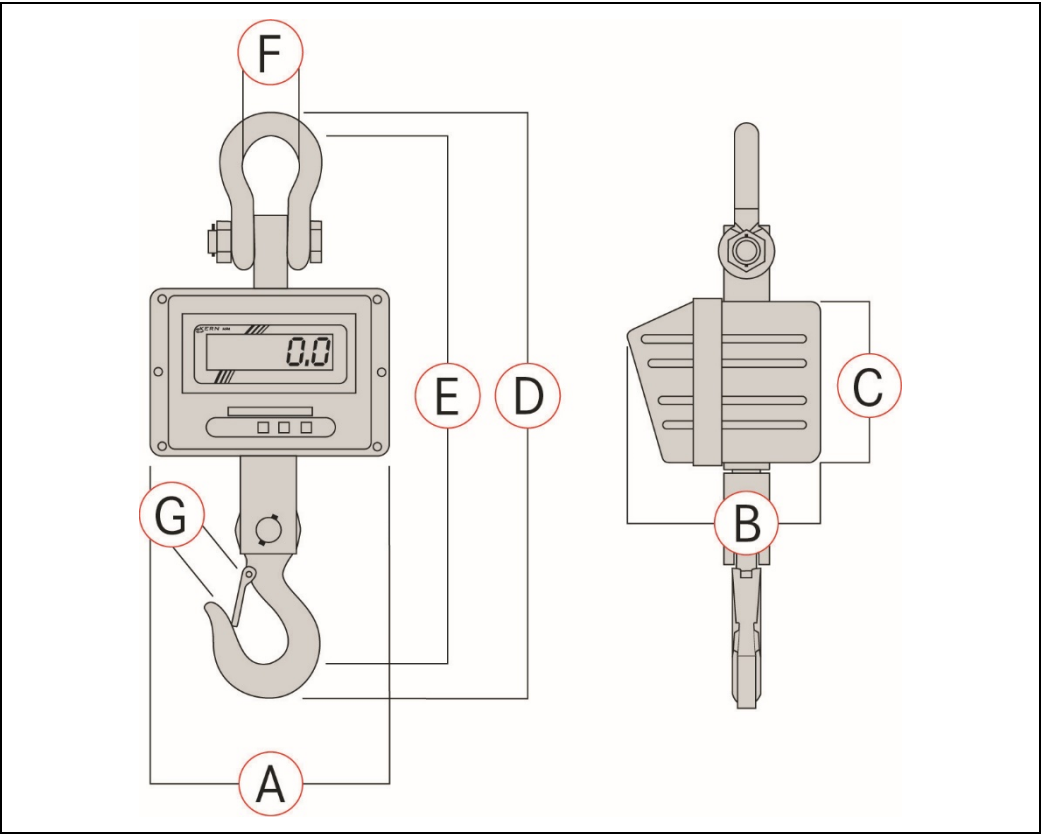
1.	Technical Data	3
1.1	Dimensions	4
1.2	Nameplate	5
1.3	EC-Declaration of -Conformity	6
2.	General Safety Instructions	8
3.	The crane scales at a glance	11
3.1	Overview	11
3.2	Display	12
3.3	Keyboard	12
3.3.1	Numeric entry	13
3.4	Radio remote control	13
3.5	Sticker	14
4.	Commissioning	15
4.1	Unpacking	15
4.2	Original dimensions	15
4.3	Rechargeable battery operation	16
4.3.1	Standby mode	17
4.4	Suspending the balance	18
5.	Operation	19
5.1	Safety instructions	19
5.2	Loading the crane scales	20
5.3	Turn on/off	23
5.4	Setting balance to zero	23
5.5	Taring	24
5.6	Weighing	24
5.7	Record weight value (freeze)	24
6.	Menu	25
7.	Adjustment	27
8.	Error messages	28
9.	Cleaning, Repair, Maintenance and Disposal	29
9.1	Cleaning and Disposal	29
9.2	Regular maintenance and care	30
9.3	Checklist „Regular maintenance“	31
9.4	Maintenance table	32
9.5	Drawings of a hook, shackle and crane scale	33
9.6	Inspection cycles	34
9.7	Drawing with “h” dimension	35
10.	Enclosure	36
10.1	Checklist „Enhanced maintenance“ (General revision)	36
10.2	List „spare parts and repair “	37
11.	Instant help	39

1. Technical Data

KERN	HFM 1T0.1	HFM 3T0.5	HFM 5T0.5	HFM 10T1
Readability (d)	0.1 kg	0.5 kg	0.5 kg	1 kg
Weighing range (max)	1 000 kg	3 000 kg	5 000 kg	10 000 kg
Taring range (subtractive)	1 000 kg	3 000 kg	5 000 kg	10 000 kg
Reproducibility	500 g	1 kg	2.5 kg	5 kg
Linearity	±1 kg	±2 kg	±5 kg	±10 kg
Recommended adjustment weight, not added (class)	1 t (M1)	3 t (M1)	5 t (M1)	10 t (M1)
Stabilization time	2 s			
Precision	0.2 % of max.			
Warm-up time	30 min			
Unit	kg			
Allowable ambient temperature	0...+40 °C			
Relative humidity	0 to 80 %, non-condensing			
Supply voltage	220V - 240V AC 50 Hz			
Secondary voltage powerpack	9V, 800 mA			
Rechargeable battery (standard equipment)	6 V, 10 Ah Service life – background illumination ON - 50 h Loading time 14 h			
Display	Digit height 30 mm			
Housing size W x D x H, (mm)	270 x 175 x 200		300 x 190 x 230	
Housing material	Metal, lacquered			
Material hook and shackle	Nickel plated steel			
Net weight (kg)	16	18	23	35
Remote control (standard equipment)	Battery Size 23A (1 x 12V) W x D x H 48 x 16 x 95 mm			

1.1 Dimensions

English



	A	B	C	D	E	F	G
	mm	mm	mm	mm	mm	mm	mm
HFM 1T0.1	270	175	200	610	540	68	40
HFM 3T0.5	270	175	200	610	540	74	40
HFM 5T0.5	300	190	230	730	650	74	55
HFM 10T1	300	190	230	840	750	92	60

1.2 Nameplate



1	KERN Logo
2	Model designation
3	Weighing range [Max]
4	Data for power supply
5	Company address
6	Readability [d]
7	Date of manufacture
8	CE mark
9	Disposal symbol
0	Serial number

1.3 EC-Declaration of -Conformity



KERN & Sohn GmbH
Ziegelei 1
72336 Balingen-Frommern
Germany

www.kern-sohn.com

+0049-[0]7433-9933-0
+0049-[0]7433-9933-149
info@kern-sohn.com

EU Declaration of Conformity | EU-Konformitätserklärung

EN We hereby declare and assume sole responsibility for the declaration that the product complies with the directives hereinafter. The object of the declaration described below is in conformity with the relevant Union harmonisation legislation.

DE Wir erklären hiermit unter alleiniger Verantwortung, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Richtlinien übereinstimmt. Das Produkt erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union.

Type | Typ |
HFM 10T1
HFM 1T0.1
HFM 3T0.5
HFM 5T0.5

Serial no. | Seriennr. |
XXXXXXXXXX

CE mark applied CE Kennzeichnung	EU directive EU-Richtlinie	Standards Normen
	2006/42/EC (MD)	EN 13155:2003+A2:2009
	2011/65/EU (RoHS)	EN 63000:2018
	2014/30/EU (EMC)	EN 55032:2015+A11:2020 EN 55035:2017 EN 61000-3-3:2013+A1:2019 EN 61326-1:2013 EN IEC 61000-3-2:2019
	2014/35/EU (LVD)	EN 61010-1:2010 EN 62368-1:2014+A11:2017
	2014/53/EU (RED)	EN 300 220-2 V3.1.1 EN 301 489-1 V2.1.1 EN 55032:2015+A11:2020 EN 55035:2017

Date | Datum | : 26.03.2021

Place of issue: 72336 Balingen,
Ort der Ausstellung: Germany

Albert Sauter
KERN & Sohn GmbH

Signature: Managing director
Signatur: Geschäftsführer



Further language versions you will find online under:

www.kern-sohn.com/ce

2. General Safety Instructions

Duties of the owner-operator

Follow the national accident prevention regulations as well as the working, operating and safety regulations of the owner-operator.

- Observe all safety regulations of the crane manufacturer.
- The balance may only be used for the proposed purpose. Any type of use which is not specified in these operating instructions, will be considered as improper use. The customer is solely responsible for material damage and injury of persons resulting from an improper use, Messrs. KERN & Sohn will not be liable under any circumstance.

Messrs. KERN & Sohn cannot be held liable, if the crane scales are modified or used improperly and if damage is resulting from such use.

- Carry out regular maintenance and care of the crane scales, the crane and the load suspension devices (see chapter 9).
- Log the test result and keep it in the logbook.

Organizational measures

- Only trained and instructed staff may operate the balance.
- Make sure that the operating instructions are kept nearby the operation site of the crane scales.
- Assembly, commissioning and maintenance should only be carried out by trained specialists.
- Use original spare parts only.
- All repair work must be carried out by trained specialists. Repairs and spare parts must be documented. (see list „spare parts and repair of safety-relevant parts“)
- All maintenance must be documented (see checklist „Regular maintenance“ chap. 9.3).
- Load suspending components may only be exchanged as a complete spare parts set. The dimensions of the new components must be recorded (see checklist „Regular maintenance“ chapter 9.3).

Ambient conditions

- Never operate the crane scales in explosive environment. The serial version is not explosion protected.
- Operate the crane scales only under environmental conditions as specified in these operating instructions (especially in chapter 1 „Technical data“).
- Do not expose the crane scales to strong humidity. 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.
- Do not operate the crane scales in corrosive environment.
- Protect the crane scales against high humidity, vapours and dust.
- Avoid extreme heat as well as temperature fluctuations e.g. caused by direct sun light..
- 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.

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 suspended on the crane hook only vertically, manually, carefully and without jerks. As soon as a stable weighing value is reached the weighing value can be read.

- Use the crane scales only for lifting and weighing of freely movable loads.
- Danger of injury due to improper use. Not allowed are e.g.:
 - Exceeding the allowed nominal load of crane, crane scales or any type of load attachment devices
 - Conveying persons,
 - Pulling loads over an inclined surface,
 - Tearing-off, pulling or towing loads.
- Modifications or reconstructions of the crane scales or of the crane are not allowed.

Intended use of rotating load hooks

- The rotatable load hook has been provided for a simple and comfortable hooking of the weighed material.
- The rotating function of the load hook under load is out of function. The load on the crane scales must not be swiveled. Any turning movement must be done by a rotatable crane hook.. A loaded crane scales generally must not be rotated. (static loading and unloading of a load).

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 suspended on the balance.) Do not leave permanent load suspended on the balance. This may damage the measuring system as well as safety-relevant parts.

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

Warranty

Warranty claims shall be voided in case

- Our conditions in the operation manual are ignored
- The appliance is used outside the described use
- 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

Safe working

- Do not stand underneath suspended loads!
- Position the crane in a way that the load is lifted vertically.
- When working with the crane and crane scales wear personal safety equipment (helmet, safety shoes etc.).

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.

Testing upon acceptance

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

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.

Check the original dimensions, see chap. 4.2.

Shutdown and storage

- Take off the crane scales from the crane and dismantle all load attachment devices from the crane scales.
- Do not store the crane scales at open air

3. The crane scales at a glance

The crane scales are a multi-purpose and cost-saving solution for overhead weighing applications such as e.g. recycling, metal processing, machine engineering, transport and logistics.

With the radio remote control, operation will be more comfortable yet.

3.1 Overview



Fig. 1: Front view of balance

- 1 Shackle
- 2 Display
- 3 Keyboard
- 4 Safety bracket
- 5 Hook, revolvable



Fig. 2: Radio remote control

- 6 Antenna
- 7 Keyboard,
see chapter 3.4

3.2 Display



LED	The LED lights up, if
HOLD	the data-hold function is active
	the weight display is stable
a	the weight is in the area around the zero point
	when the battery is being recharged

3.3 Keyboard



Button	Description of function
ON/OFF	Turn on or off the balance
d= 1/2/5 kg 	- Modification of readability HFM 1T0.1: 100g⇒200g⇒500g HFM 3T0.5: 500g⇒ 1 kg⇒2 kg HFM 5T0.5: 500g⇒ 1 kg⇒2 kg HFM 10T1: 1 kg ⇒ 2 kg⇒5 kg - Scroll forward in menu
HOLD	- Record weight value (freeze) - Exit menu
a	- Taring - Zeroing - Confirm entry

3.3.1 Numeric entry

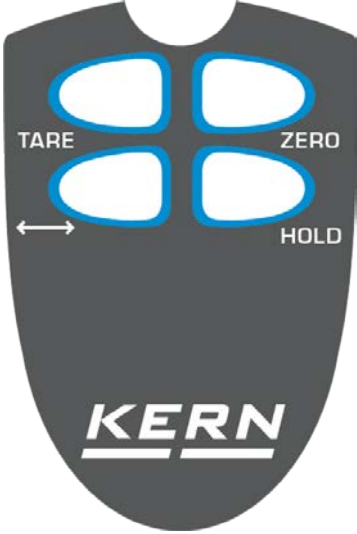
Button	Function
d= 1/2/5 kg ↔	Increase flashing digit
HOLD	Digit selection
a	Terminate input

3.4 Radio remote control

The balance can be operated by the radio remote control like by a keyboard. All functions (excepted **ON/OFF**) can be selected.

The red LED must light up when any button is pressed. If it does not light up, the batteries in the remote control must be exchanged.

Range on free surface (free of buildings) approx. 20 m.

	TARE	Taring
	ZERO	Zeroing
	↔	Modification of readability
	HOLD	Record weight value (freeze)

3.5 Sticker



- ⇒ Do not stand or go under suspended loads.
- ⇒ Do not use on building sites.
- ⇒ Suspended loads have to be observed constantly.



- ⇒ Do not exceed the nominal load of crane scales.

(Example)



- ⇒ The product meets the requirements of the German Equipment and Product Safety Act.

4. Commissioning

Attention: Always observe chapter 2 „General Safety Instructions“!

4.1 Unpacking

 SAFETY INSTRUCTIONS for protection against break	Once delivered and unpacked, crane scales will not be taken back. The crane scales have been sealed by Messrs. KERN. ⇒ Shackles and hooks are sealed by Sella tape. ⇒ The packaging is also sealed by adhesive tape. + Broken seal obliges to purchase.  Fig.: Seal Thanks for your comprehension. Your KERN Quality assurance team
 CAUTION Danger for the back!	The crane scales are compact and quite heavy. ⇒ Remove the scales from packaging only with the help of a second person. ⇒ Use a lifting device such as a crane or a forklift truck. ⇒ Secure the scales that they cannot fall down when they are lifted.

⇒ Make sure that all parts are completely present.

- Crane scales
- Mains adapter
- Remote control
- Operating instructions (logbook)

Only use original packaging for returning.

4.2 Original dimensions

- Determine the dimensions prior to the first use and document them in the checklist.
For that purpose enter the dimensions into the checklist „Regular maintenance“ according to the drawings in chap. 9.5. For this purpose use suitable test equipment.

4.3 Rechargeable battery operation



ATTENTION

- ⇒ The rechargeable battery and the charging unit match to each other. Only use the delivered mains adapter.
- ⇒ Do not use the crane scales during the loading process.
- ⇒ The rechargeable battery can only be replaced by the same or by a type which has been recommended by the manufacturer.
- ⇒ The rechargeable battery is not protected against all environmental conditions. If the rechargeable battery is exposed to certain environmental influence, the rechargeable battery may set on fire or explode. Persons can be severely injured or material damage may occur.
- ⇒ Protect the rechargeable battery against fire and heat.
- ⇒ Do not bring the rechargeable battery in contact with liquids, chemicals or salts.
- ⇒ Do not expose the rechargeable battery to pressure or microwaves.
- ⇒ The rechargeable battery and the charger may not be modified or manipulated under any circumstances.
- ⇒ Do not use a defective, damaged or deformed rechargeable battery
- ⇒ Do not connect or short-circuit the electrical contacts of the rechargeable battery with metallic objects.
- ⇒ From a damaged rechargeable battery may escape liquids. If the liquid comes into contact with skin or eyes, the skin and the eyes may be irritated.
- ⇒ Ensure the correct polarity when inserting or exchanging the rechargeable battery (see instructions in the rechargeable battery compartment)
- ⇒ The rechargeable battery operation is overridden when a mains adapter is being connected. If weighing more than 48 hours with mains operation, the rechargeable batteries have to be removed! (Danger of overheating).
- ⇒ If the rechargeable battery starts to smell, being hot, changing the colour or being deformed, it must be immediately unplugged from mains supply and from the balance if possible.

Loading the rechargeable battery:

Before the first use, the rechargeable battery should be charged by connecting it to the mains power cable for at least 24 hours. The operating time of the rechargeable battery is approx. 50 hours.

The capacity of the rechargeable battery will soon be exhausted, when the display begins to flicker. If „bat lo“ appears, the balance will remain operable for approx. 30 minutes more, then it switches off automatically. Connect the power cable as soon as possible to load the rechargeable battery.

During loading the LED display above  informs you about the loading status of the rechargeable battery.

red: Voltage has dropped below prescribed minimum.

green: Rechargeable battery is completely charged

yellow: Capacity of rechargeable battery almost exhausted

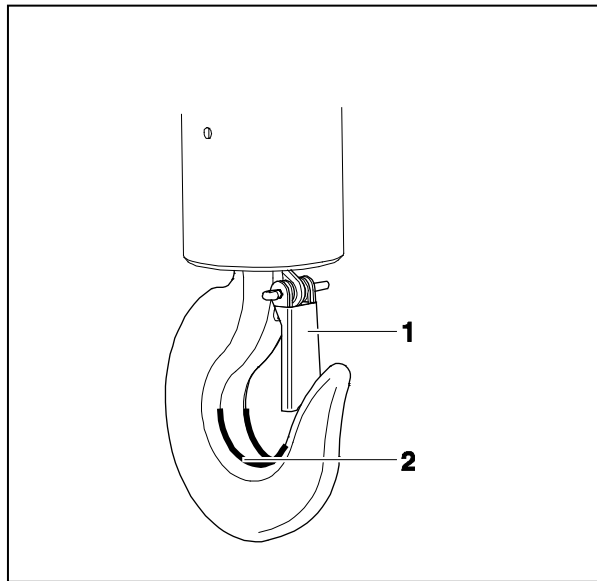
When the crane scales are out of operation for a longer period, remove the rechargeable battery.

4.3.1 Standby mode

The crane scales change into the standby mode when any key is pressed or when for 5 minutes (factory setting) no weight change has been measured. Only one segment remains lighting. In order to finish the standby mode, press any key on the keyboard or on the remote control.

Switch-off time selectable after 0, 5, 10, 20, 30 minutes, see chap. „F6 sl“.

4.4 Suspending the balance



Condition

The crane needs a safety bracket (1) that the unloaded crane scales cannot fall down.

If the safety bracket is missing or damaged, please contact the crane manufacturer in order to receive a hook with this safety equipment.

✚The hook scales can be used solely with a crane equipped with a swivel joint

- ⇒ Suspend the crane scales on the lower hook of a crane and close the safety bracket.
The crane scale's upper eyelet should rest in the saddle (2).

5. Operation

5.1 Safety instructions

	 DANGER Risk of injury due to falling loads!
    (Example)	⇒ Always work with particular care according to the general rules for crane operation. ⇒ Check all parts (hook, eyelet, rings, rope slings, cables, chains etc.) for excessive wear or damage ⇒ If faults can be seen on the safety bracket of the hook or if it is missing completely, the scales must not be used. ⇒ Work only with appropriate speed. ⇒ Always avoid vibrations and horizontal forces. Avoid any kind of shock, torsion and oscillating (e.g. caused by inclined suspending). ⇒ Do not use the crane scales for transport of loads ⇒ Do not stand or go under suspended loads. ⇒ Do not use on building sites. ⇒ Suspended loads have to be observed constantly. ⇒ Do not exceed the nominal load of crane, crane scales or any kind of load attachment devices at the crane scales. ⇒ For weighing dangerous goods (e.g molten masses, radioactive materials) the “Dangerous Goods Regulations” are to be regarded!

5.2 Loading the crane scales

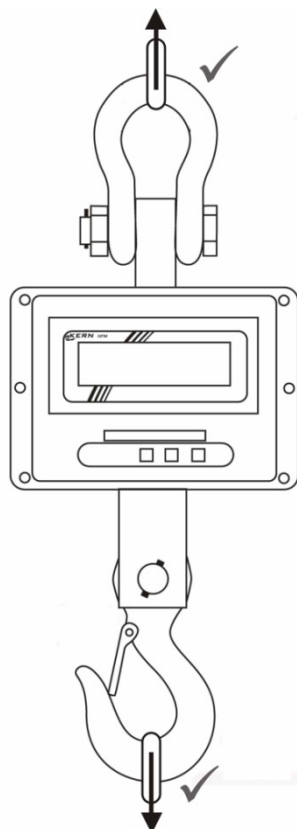
For good weighing results observe the following, illustrations see next page:

- ⇒ Only use load attachment devices which guarantee a one-spot suspension and where the scales can be suspended freely.
- ⇒ Do not use too large load attachment devices which do not guarantee any one-spot suspension.
- ⇒ Do not use multiple suspensions.
- ⇒ Do not pull or push the load or the loaded balance.
- ⇒ Do not pull the hook horizontally.

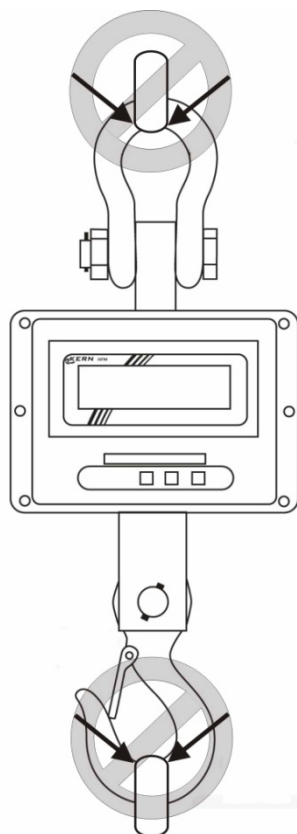
Loading the balance

1. Position the hook of the crane scales over the load.
2. Move downwards the crane scales until the load can be suspended on the hook of the balance. Reduce the speed when the respective height is going to be reached.
3. Suspend the load on the hook. Ensure that the safety bracket is closed. If the load is fixed by slings, ensure that the slings rest completely on the saddle of the balance hook.
4. Lift-off the load slowly.

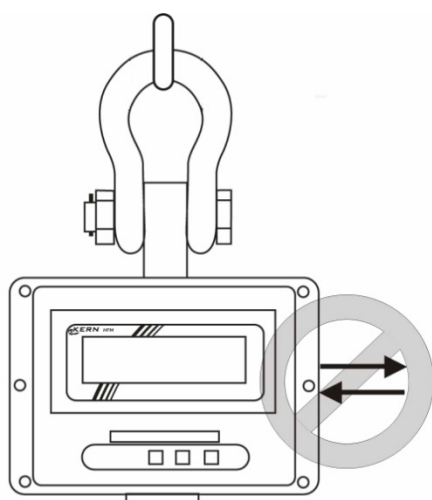
When the load is fixed by slings, ensure that the load is well balanced on both sides and that the slings are correctly positioned



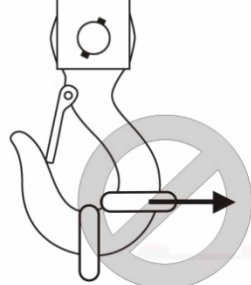
Only use load attachment devices which guarantee a one-point suspension and where the scales can be suspended freely.



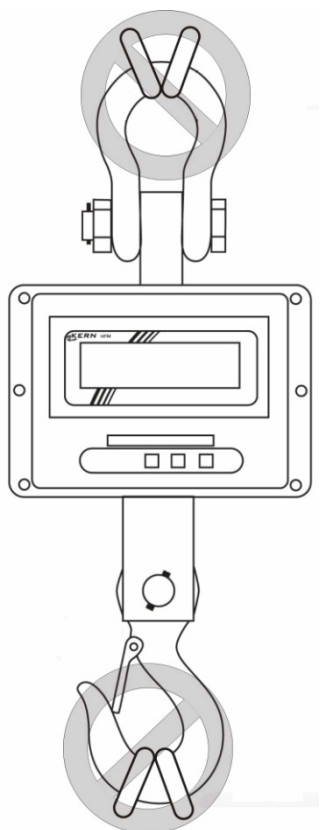
Do not use too large load attachment devices which cannot guarantee a one-point suspension.



Do not push or pull



Do not pull the hook horizontally



Do not use multiple suspensions

5.3 Turn on/off

Start-up

- ⇒ Press the **ON/OFF** button on the balance keyboard. The display lights up and the balance carries out a selftest. The selftest is completed when the weight value 0 appears on the display.



Switch on only possible at the keyboard of the balance.

Switching Off

- ⇒ Press the **ON/OFF** button on the balance keyboard.

5.4 Setting balance to zero

In order to obtain optimal weighing results, reset to zero the balance before weighing.

Manual

- ⇒ Unload the balance
- ⇒ Press the **ZERO** button.
In the display appears 0 (kg) and the **LED** a lights up.

Automatic

In the menu the amount of the automatic zero point correction can be changed, see chapter 6 / Function „F1 az“.

5.5 Taring

- ⇒ Suspend preload.
Press the **ZERO** button. In the display appears 0 (kg) and the **LED** a lights up.
The weight of the container is now internally saved.
- ⇒ Weigh the material, the net weight will be indicated.
- ⇒ After removing the preload weight appears as negative display.
- ⇒ To delete the tare value, remove load from crane scales and press the **ZERO** button.

5.6 Weighing

- ⇒ Load the crane scales.
The weight value will be displayed at once. After standstill control the LED  lights up.



Overload warning

Overloading exceeding the stated maximum load (max) of the balance, minus a possibly existing tare load, must be strictly avoided. This could cause damage to the balance.

Exceeding the maximum load is indicated by the display „--ol-“. Unload balance or reduce preload.

5.7 Record weight value (freeze)

- ⇒ Press the **HOLD** button to „freeze“ or to record the current weight value.
It remains displayed until it is deleted. The **LED HOLD** lights up
- ⇒ In order to delete the "frozen" or the recorded weight, press the **HOLD** button.
The **LED HOLD** extinguishes.

6. Menu

Navigation in the menu:

Call function	⇒ Switch on the balance and during the selftest press the ZERO and the $\overset{d=1/2/5\text{ kg}}{\longleftrightarrow}$ button at the same time. „P1 - - -“ is displayed. ⇒ Enter password: or select standard password „0000“ with HOLD number, increase the flashing number using $\overset{d=1/2/5\text{ kg}}{\longleftrightarrow}$ or personal password, see function F8 ci ⇒ Confirm with ZERO button. The first function „F0 di“ is displayed.
Select function	⇒ The $\overset{d=1/2/5\text{ kg}}{\longleftrightarrow}$ button allows to select the individual functions one after the other.
Select setting	⇒ Confirm the selected function by the ZERO button. The current setting will be displayed.
Change settings	⇒ Use the $\overset{d=1/2/5\text{ kg}}{\longleftrightarrow}$ button to switch over into the available settings.
Confirm setting	⇒ Press the ZERO button, the balance returns into the menu.
Exit menu / Return to weighing mode	⇒ Press the HOLD button.

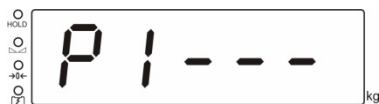
Overview:

Function	Available settings	Description
F0 di Modification of readability	Low	Modifications may only be carried out by a specialist with competent knowledge.
	High*	
	cap	
	d (low) d = 1/2/5 kg ↔	
	d (high) d = 1/2/5 kg ↔	
	1 t	
	2kg 1kg 500g 500g 200g 100g	
F1 az Automatic zero point correction (zero tracking)	AZn 0	0.5 d
	AZn 1*	1 d
	AZn 2	2 d
	AZn 3	4 d
F2 bt	Not documented	
F3 sp	Not documented	
F4 ip	Internal A/D converter value	
F5 ut	Not documented	
F6 sl Standby mode see chap. 4.3.1	SLP 0	Standby mode switched off
	SLP 1*	Standby mode after 5 minutes
	SLP 2	Standby mode after 10 minutes
	SLP 3	Standby mode after 20 minutes
	SLP 4	Standby mode after 30 minutes
F7 gv	Not documented	
F8 ci Password entry	In „P1- - “ display increase the flashing number using d = 1/2/5 kg ↔, select number using HOLD . Confirm entry by ZERO button.	
F9 CL	Adjustment, see chapter 7	

* = default setting

7. Adjustment

- ⇒ Switch-off balance and attach a carrying help if necessary.
- ⇒ Switch-on balance with attached carrying help and during the selftest press the **ZERO** and the $d = 1/2/5 \text{ kg}$ button at the same time. „P1 - - -“ is displayed.



- ⇒ Use the number keys to enter password:

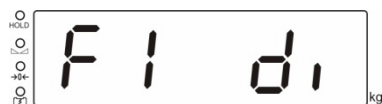
or

select standard password „0000“ with **HOLD** number, increase the flashing number using $d = 1/2/5 \text{ kg}$

or

personal password, see function F8 ci

- ⇒ Confirm with **ZERO** button, the first function „F0 di“ is displayed.



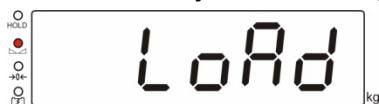
- ⇒ Press the $d = 1/2/5 \text{ kg}$ button repeatedly until „F9 CAL“ will be displayed.



- ⇒ Press the **ZERO** button, „UnLD“ will be displayed.
- ⇒ Unload the balance and wait until the LED  lights up.



- ⇒ Press the **ZERO** button, the currently set adjustment weight is displayed.
- ⇒ In order to change, select the number to be changed using the **HOLD** button and set the desired value using the $d = 1/2/5 \text{ kg}$ button, the respective active digit flashes.
- ⇒ Confirm by the **ZERO** button, „Load“ will be displayed.
- ⇒ Attach the adjustment weight and wait until the LED  lights up.



- ⇒ Press the **ZERO** button.
- ⇒ After successful adjustment the balance carries out a selftest, then it automatically returns to weighing mode.
An adjusting error or incorrect adjusting weight will be indicated by the error message; repeat adjustment procedure

8. Error messages

Error message	Description	Possible causes
--ol-	Maximum load exceeded	⇒ Reduce load ⇒ Check whether the balance has been damaged
Err 5	Keyboard error	⇒ Improper operation of the balance
Err 6	Value outside the A/D changer range	⇒ Weighing plate not installed ⇒ Damaged weighing cell ⇒ Damaged electronics
Ba lo	Capacity of rechargeable battery exhausted	⇒ Recharge battery

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

9. Cleaning, Repair, Maintenance and Disposal

	Prior to any maintenance, cleaning and repair work disconnect the device from the operating voltage.
---	---

 Danger	Risk of injury and risk of material damage! The crane scales are part of a hoisting device! For a safe operation please observe the following: ⇒ Employ trained specialists for the regular maintenance, according to chapter 9.2 „Regular maintenance and care“ and „Checklist Regular maintenance“ ⇒ Have the parts exchanged only by trained specialized staff. ⇒ If there arose discrepancies with the checklist, the balance must not more be put into operation. ⇒ Do not repair the crane scales by yourself. Repairs may only be carried out by trained specialised personnel.
--	---

9.1 Cleaning and Disposal

 CAUTION	Damage on the crane scales! ⇒ Do not use any industrial solutions or chemicals
---	--

- ⇒ Clean the keyboard and the display with a soft cloth soaked in mild window cleaning agent.
- ⇒ 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.

9.2 Regular maintenance and care

- ▲ Regular checks and maintenance must be carried out within the periods defined in chap. 9.6 „Check intervals“
- ▲ The regular 3-month maintenance may only be carried out by trained specialists with competent knowledge of working with crane scales. Thereby adhere to the national regulations for prevention of accidents as well as to the working, operation and safety regulations of the owner-operator.
- ▲ To check the dimensions only use suitable test equipment / feeler gauges.
- ▲ The regular 12-month maintenance must only be carried out by trained specialized staff.
- ▲ Enter the results of the regular and enhanced maintenance into the respective checklists.
- ▲ Enter the replaced spare parts into the list „Spare parts and repairs“.

Regular maintenance:

Initial start-up, every 3 months	▪ Enter and check all dimensions, see checklist „Regular maintenance“. ▪ Check the scales and the eyelet for wear and tear, such as e.g. plastic deformation, mechanical damage (unevenness), notches, striation, cracks, corrosion, thread damage and torsions. ▪ Visual and functional check of the articulated joint. ▪ Check the application of the safety bracket on the hook, moreover check for fault and correct function ▪ For balances of big construction size: Check that the split pin and the nut on the shackle are not loose If a dimension exceeds the admitted deviation from the original dimension or if other discrepancies have been found, the balance must be repaired by trained specialized staff. Never do repair it by yourself! Take balance out of operation immediately! All repair work and spare parts must be documented by trained specialists. See list „Spare parts and repairs“
Every 12 months	▪ All load suspending components must be checked by trained specialists and documented in the checklist „Enhanced maintenance“.

Hint

During the revision watch out for wear and tear according to the following drawings (see chap. 9.5)

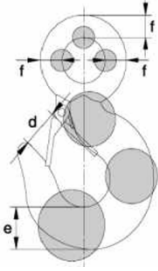
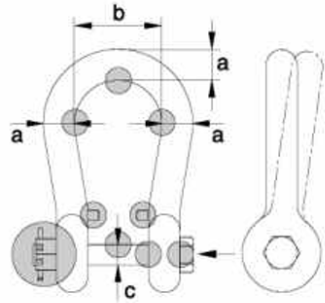
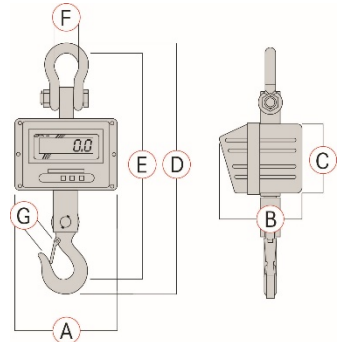
9.3 Checklist „Regular maintenance“

i Additional information on the maintenance works can be found in the table below (see chapter 9.4) and in figures in chapter 9.5.

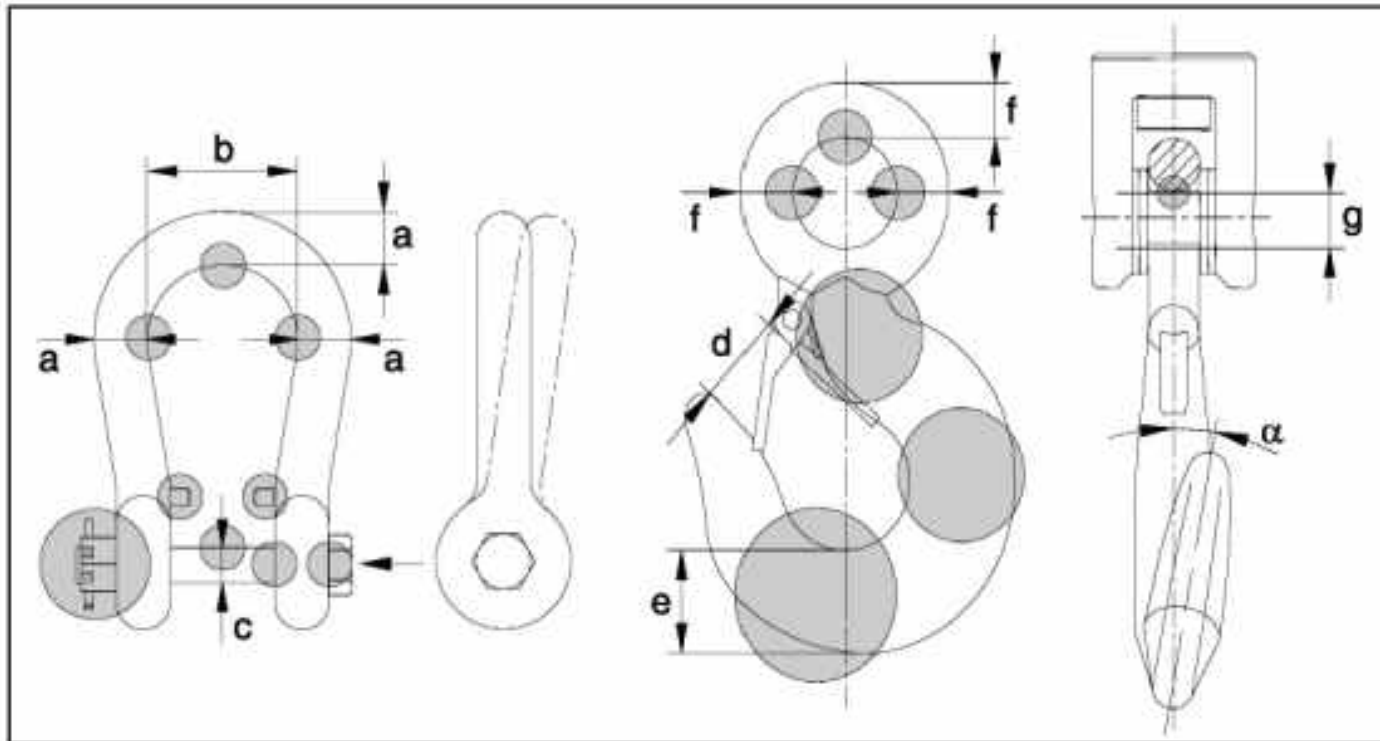
	Shackle					Hook										
	a	b	c	Wear (see grey fields)	Cotter pin and nut	d	e	f	g	h	Angle α	Wear (see grey fields)	Detent	Articulated joint	Date	Inspector
Max. acceptable deviation	5%	0%	5%	No deformations or cracks	Well fixed	10 %	5%	5%	5%	± 1 mm	10°	No deformation s or cracks	Correct operation	Check function		
Dimensions before first use																
3 months																
6 months																
9 months																
12 months																

„Maintenance work must be carried out by trained specialists.“

9.4 Maintenance table

Part	Drawing	Component	Inspection	Limits
Hook		Detent	Inspection concerning operation and damage	No damage is acceptable, operation must be ensured.
		Articulated joint	Check function	Correct operation
		Eye and hook	Inspection concerning dimensions and damage	As per Table 9.3
Shackle		Locking bolt	If it is not loose	It must not be loose.
		Shackle	Inspection concerning dimensions and damage	As per Table 9.3
		Cotter pin + nut	Inspection concerning damage and positioning	Correct positioning as per Table 9.3
Crane scale		Screw connections	Loose	It must not be loose.
		Crevice between the hook and the enclosure	Dimension check	As per Table 9.3

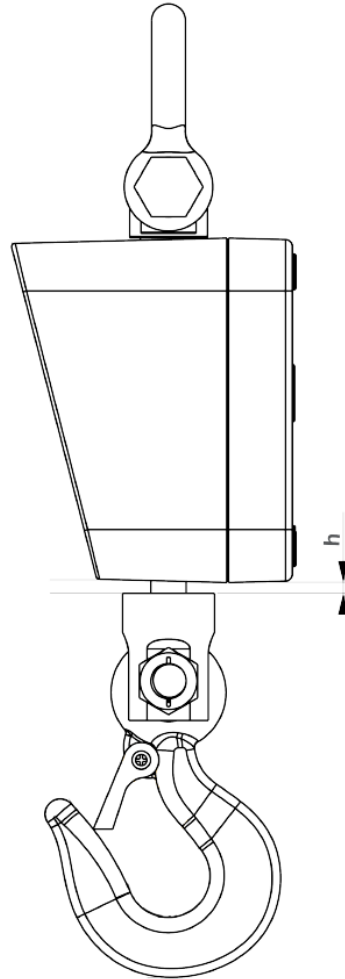
9.5 Drawings of a hook, shackle and crane scale



9.6 Inspection cycles

Inspection	Every day	Every 7 days	Every 3 months	Every 12 months
Presence of all crane scale parts	☒			
Visual inspection for damage	☒			
Visual inspection and operation inspection of the hook detent	☒			
Visual inspection and checking the function of the articulated joint	☒			
Inspection of the shackle cotter pin and nut	☒			
Impurities		☒		
Marking inspection (legible nameplate)		☒		
Inspection of all dimensions as per the checklist 9.3			☒	
Enhanced maintenance (see chap. 10.1) by trained specialists				☒

9.7 Drawing with “h” dimension



10. Enclosure

10.1 Checklist „Enhanced maintenance“ (General revision)

The enhanced maintenance must be carried out by trained specialists.

Crane scales		Model Serial no.				
Interval	Hooks	Shackle	Screwed connections	Date	Name	Signature
12 months						

10.2 List „spare parts and repair “

Repairs must be carried out and documented by trained specialists.

Crane scales	Model Serial no.			
Part	Action	Date	Name	Signature

Crane scales		Model Serial no.		
Part	Action	Date	Name	Signature

11. Instant help

Possible causes of errors:

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.

Fault	Possible cause
The displayed weight does not glow.	• The balance is not switched on.
The balance cannot be switched on	• Load/replace the rechargeable battery • On/Off button defective • On/Off button not correctly actuated
The display does not react to load change	• Load cell defective • Load cell cable defective
Loading display does not glow during loading	• Power supply unit defective • Power supply unit not correctly connected
The displayed weight is permanently changing	• Vibrations on the hook • Suspended load does not stand still • Load cell defective
The weighing result is obviously incorrect	• The balance has not been reset to zero before weighing • The adjustment does not match with the installation place or has been misadjusted. • Wrong weighing unit selected
The desired weighing unit cannot be called by UNIT key.	• Unit was not activated beforehand.
Error message „-ol-“	• Maximum load of the balance exceeded
The menu settings cannot be changed.	• The menu is locked Remove the menu lock.
The remote control does not work	• Batteries empty, insert new batteries • Too much distance between balance and remote control • Obstacles block the reception