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Operating manual
Electronic Crane Scales

Logbook
Regular maintenance and care

KERN HFT

Version 1.1
11/2016
GB



HFT-BA-e-1611

GB

KERN HFT

Version 1.1 11/2016

Operating instructions / logbook

Electronic Crane Scales

English

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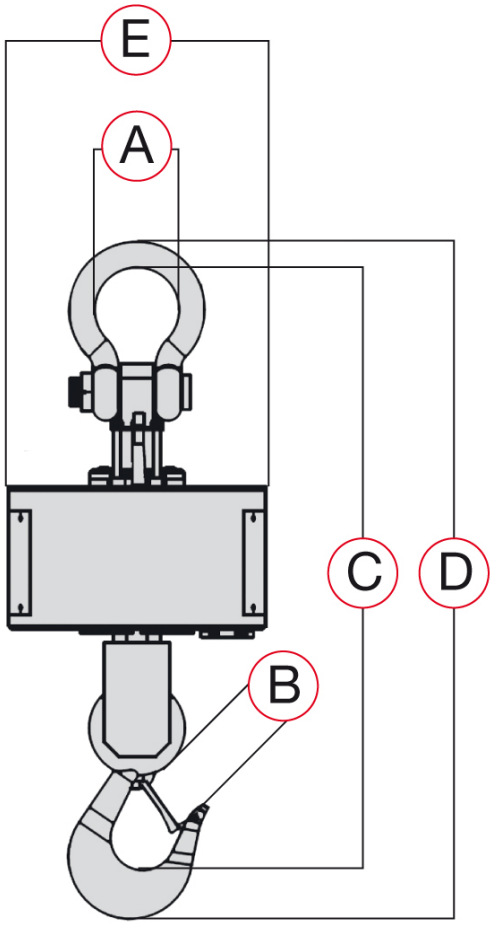
English

1 Technical data

KERN	HFT 3T0.5	HFT 5T1	HFT 10T2	HFT 15T5
Readability (d)	0.5 kg	1 kg	2 kg	5 kg
Weighing range (max)	3 000 kg	5 000 kg	10 000 kg	15 000 kg
Taring range (subtractive)	3 000 kg	5 000 kg	10 000 kg	15 000 kg
Reproducibility	500 g	1 kg	2 kg	5 kg
Linearity	± 1 kg	± 2 kg	± 4 kg	± 10 kg
Recommended adjustment weight, not added (class)	3 t (M3)	5 t (M3)	10 t (M3)	15 t (M3)
Stabilization time	2 s			
Precision	0.2 % of max.			
Warm-up time	30 min	10 min	10 min	10 min
Unit	kg, lb			
Allowable ambient temperature	0…+40 °C			
Relative humidity	0 to 80 %, non-condensing			
Input Voltage	220V - 240V AC 50 Hz			
Secondary voltage powerpack	12V, 500 mA			
Rechargeable battery (standard equipment)	6 V, 4 Ah Service life (background illumination OFF) 35 h Loading time 12 h			
Display	Digit height 22 mm			
Dimensions display unit W x D x H, (mm)	175 x 84 x 39			
Dimensions, completely assembled W x D x H, (mm)	130x650x130	160x760x160	180x870x180	180x870x180
Housing material	Chromatized steel			
Material of display unit	Plastic			
Net weight (kg)	87			

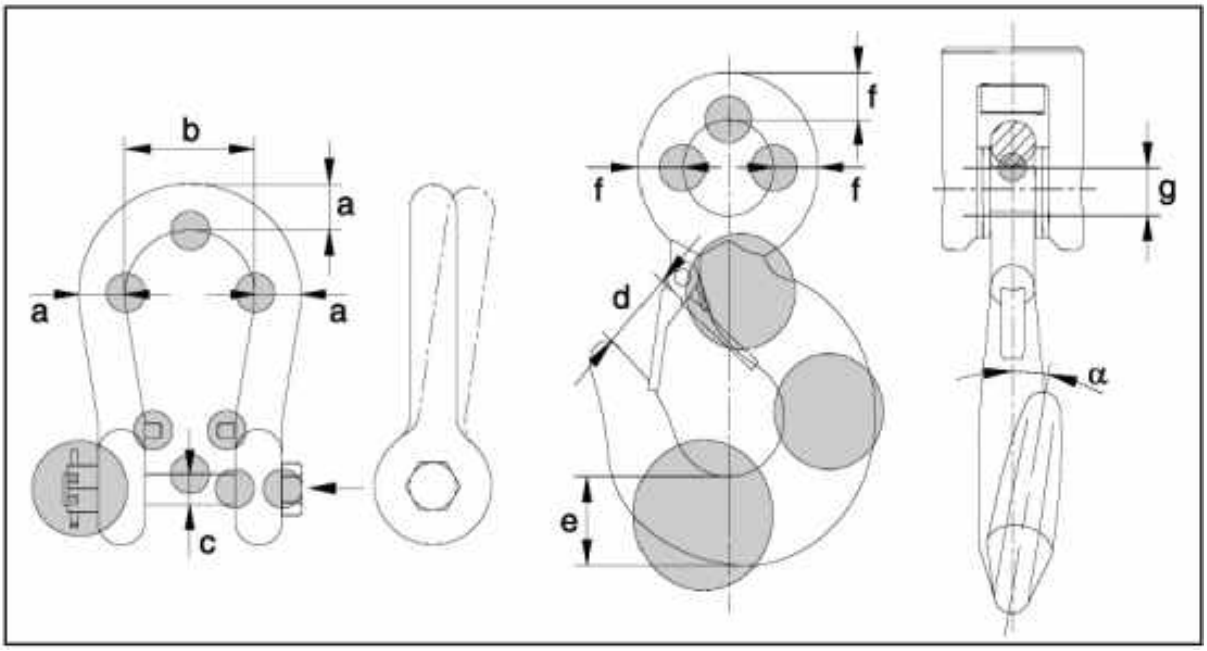
English

1.1 Dimensions balance (mm)



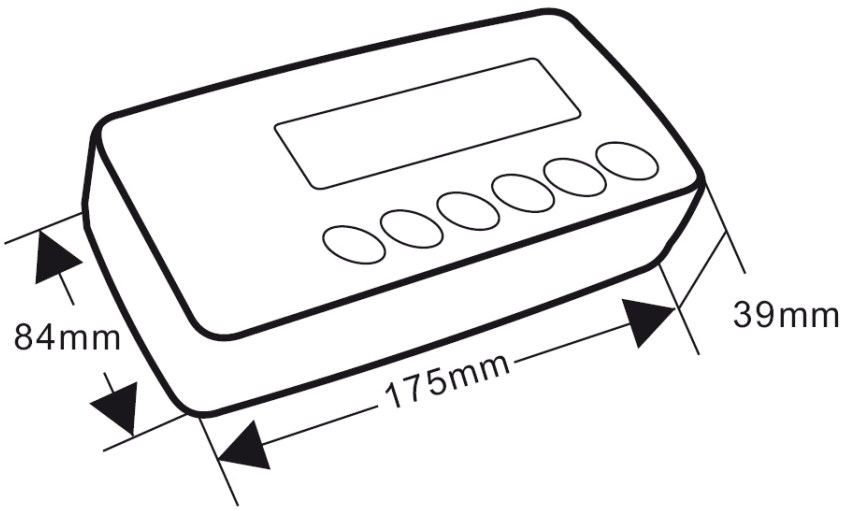
Model	A	B	C	D	E
HFT 3T0.5	43	28	606	650	130
HFT 5T1	58	40	693	760	160
HFT 10T2	83	51	781	870	180
HFT 15T5	99	57	842	950	180

English



Model	a	b	c	d	e	f	g
HFT 3T0.5	16	42.9	19.1	27.5	28	16	31
HFT 5T1	22.4	57.9	25.4	40	45	31	51
HFT 10T2	31.8	82.6	35.1	51	57	30	62
HFT 15T5	38.1	98.6	41.4	57	70	30	73

1.2 Dimensions display unit (mm)



1.3 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

English

1.4 EC-Declaration of -Conformity

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Déclaration de conformité UE | EU Declaration of Conformity | EU-Konformitätserklärung

FR Nous déclarons par la présente sous notre entière responsabilité que le produit concerné par cette déclaration respecte les exigences des directives mentionnées ci-après.

EN We hereby declare and assume sole responsibility for the declaration that the product complies with the directives hereinafter.

DE Wir erklären hiermit unter alleiniger Verantwortung, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Richtlinien übereinstimmt.

Type | Type | Typ	Nº de série | Serial no. | Seriennr.
HFT 3T0.5 HFT 5T1 HFT 10T2 HFT 15T5	**XXXXXXXXXX**

Marquage CE Mark applied CE Kennzeichnung	Directive UE EU directive EU-Richtlinie	Normes Standards Normen
CE	2006/42/EC *(MD)*	EN 13155:2003/A2:2009
CE	2014/30/EU *(EMC)*	EN 50581:2012
CE	2014/35/EU *(LVD)*	EN 55022:2010 EN 55024:2010 EN 61000-3-3:2013

Date | Date | Datum: 29.08.2016

Lieu de délivrance: 72336 Balingen,
Place of issue: Germany
Ort der Ausstellung:

Albert Sauter
KERN & Sohn GmbH

Signature: Directeur Exécutif
Signature: Managing director
Signatur: Geschäftsführer

Further language versions you will find online under:

www.kern-sohn.com/ce

2 General Safety Instructions

2.1 Duties of the owner-operator

Follow national accident prevention regulations and all operator health and safety at work and operating regulations.

- 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.
- Inspect and service crane balance, crane and load suspension devices regularly (see chap. 10.3).
- Log the test result and keep it in the logbook.

2.2 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.
- Repair of safety-relevant pieces may only be carried out by KERN or by service partners authorized by Messrs. KERN. (competence certificate or training).
- Use original spare parts only.
- All repairs and spare parts must be documented by the service partner (see list, chap. 11.2).
- All maintenance must be documented (see checklist chap. 11.1).
- Load suspending components may only be exchanged as a complete spare parts set. The dimensions of the new components must be noted (see checklist chapter 11.1).

2.3 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.

⇨ All language versions contain a non-binding translation.
The original German is binding.

2.4 Environmental 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.
- 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.

2.5 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.

2.6 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“. (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.

2.7 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

2.8 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.).

2.9 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.

2.10 Testing upon acceptance

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

2.11 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.
For checking original dimensions, s. chap. 4.2

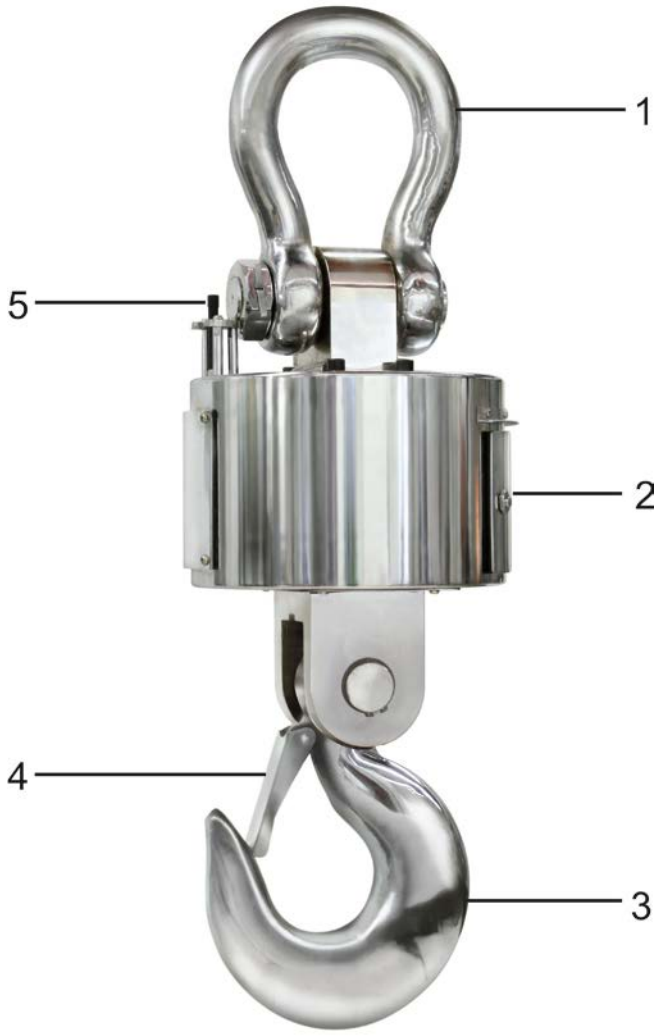
2.12 Shutdown and storage

- 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.

3.1 Appliance overview crane scale



1 Shackle
2 Housing cover
3 Hooks
4 Safety bracket
5 Antenna

3.2 Appliance overview display unit

Front view display unit (receiver):



1. Antenna
2. Battery charge status
3. Weight display
4. Keyboard

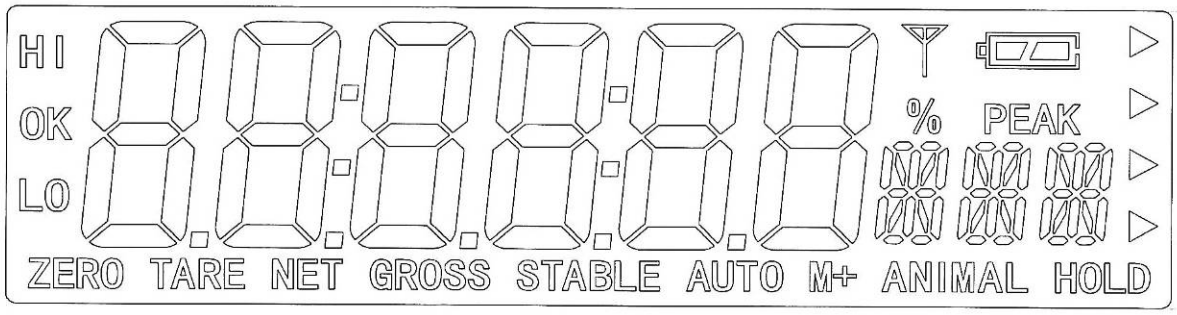
Back view display unit (receiver):



5. RS-232
6. Mains adapter connection
7. Table leg

English

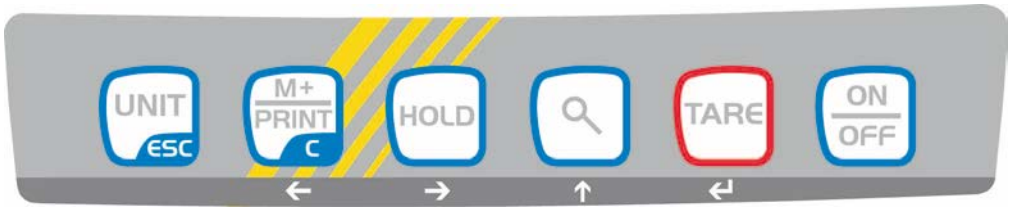
3.3 Overview of display



Display	Significance
	Charging status of rechargeable battery
	Radio communication between display unit and crane scale
STABLE	Stability display
ZERO	Zero indicator
M+	Totalization
HOLD	HOLD function

English

3.4 Keyboard overview



Button	Function
ON OFF	• Turn on/off
TARE	• With a weight value >10% Max. the button function is Taring • With a weight value <10% Max. the button function is Zero setting
Navigation ↵	• Confirm entry
🔍	• Short-time increase of the resolution
Navigation ↑	• At numeric input increase flashing digit • Scroll forward in menu
HOLD	• Hold function / determination of a mean value • In adjustment process: Change decimal digit
Navigation →	• Digit selection to the right
M+ PRINT C	• Add weighing value to summation memory • Display sum total • Calculate weighing data via interface • Delete
Navigation button ←	• Digit selection to the left
UNIT ESC	• Switch-over weighing unit • Back to menu/weighing mode

English

3.5 Numerical input via the navigation buttons

Button	Navigation	Function
	↑	Increase flashing digit
	←	Digit selection to the left Delete
	→	Digit selection to the right
	↵	Confirm

3.6 Label



⇨ Do not stand or go under suspended loads.

⇨ Do not use on building site.

⇨ Keep an eye on suspended loads.



(example)

⇨ Do not exceed nominal load of crane scales.



⇨ The product conforms to 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.**
	Thanks for your comprehension. Your KERN Quality assurance team
 **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.

Only use original packaging for returning.

⇨ Make sure that all parts are completely present:
- Crane scales
- Display Unit
- Cable screwing „Interface cable“
- 2 x mains adapter
- Operating instructions (logbook)

4.2 Checking the original dimensions

⇨ Enter the original dimensions shown on the production data sheet in the grey boxes of checklist chap. 10.4.

⇨ Check original dimension of crane scales; for implementation see chap. 10.3 „Regular Maintenance“

⇨ Enter all data (date, tester, results) in the first line under „Inspection before first use“ in the checklist (see chapter 10.4)

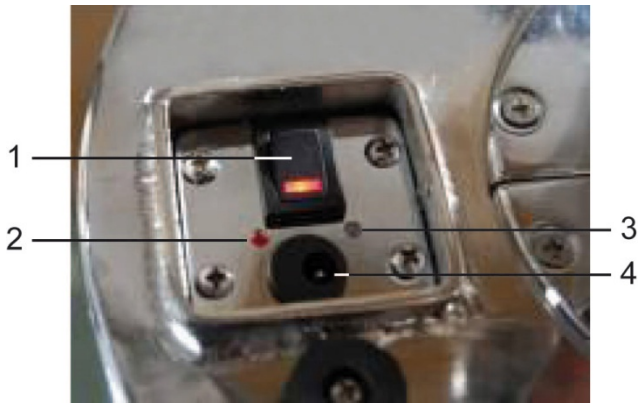
 **CAUTION**	If the dimensions of your first safety inspection do not match those of KERN, the balance must not be put into operation. In this case please contact a service partner authorised by Messrs. KERN.

English

4.3 Rechargeable battery operation

Crane scales:

CAUTION	**Material damage on crane scales** ⇨ Only use the delivered mains adapter. ⇨ Make sure that the mains adapter, the cable and the mains plug are in a perfect condition. ⇨ Do not use the crane scales during the loading process.



1 ON/OFF switch

2 LED „Battery charging status“

3 LED „rechargeable battery is charged“

4 Mains connection

Before the first use, the rechargeable battery should be charged by connecting it to the mains power cable for at least 12 hours. For loading the rechargeable battery please only use the delivered mains adapter. The operating time of the rechargeable battery is approx. 35 hours.

- If the LED display (2) next to the mains connection (4) is illuminated, the battery should be recharged.
- LED (3) is illuminated during the battery loading.

Display Unit

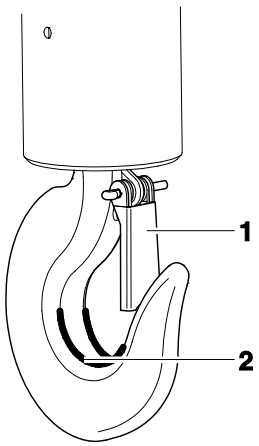
Before the first use, the battery should be charged by connecting it to the mains power supply for at least 12 hours. The appearance of the rechargeable battery symbol in the weight display indicates that the battery is almost exhausted. The unit will be ready for operation for approx. another 10 hours before switching off automatically. Charge the battery with the help of the supplied power pack.
The rechargeable battery symbol shows the charge status of the rechargeable battery:

 Voltage has dropped below prescribed minimum.

 Rechargeable battery very low.

 Rechargeable battery completely reloaded

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.

⇨ 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

<table>
<tr><td></td><td>
Danger

Risk of injury due to falling loads!</td></tr>
<tr><td></td><td>⇨ Take great care when operating the crane and follow 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 transporting loads.</td></tr>
<tr><td></td><td>⇨ Do not stand or go under suspended loads.</td></tr>
<tr><td></td><td>⇨ Do not use on building site.</td></tr>
<tr><td></td><td>⇨ Keep an eye on suspended loads.</td></tr>
<tr><td>
(example)</td><td>⇨ 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!</td></tr>
</table>

English

5.2 Loading the crane scales

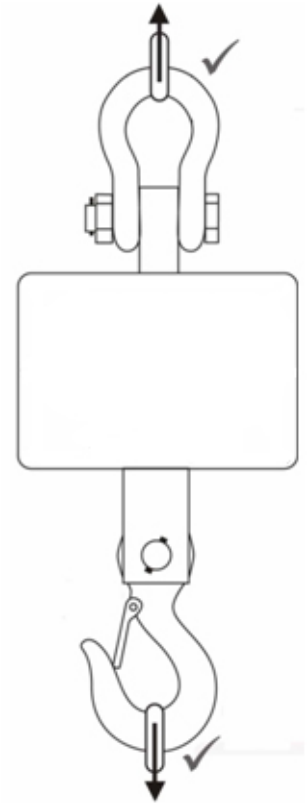
For good weighing results observe the following, illustrations see next page:

- ⇨ 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.

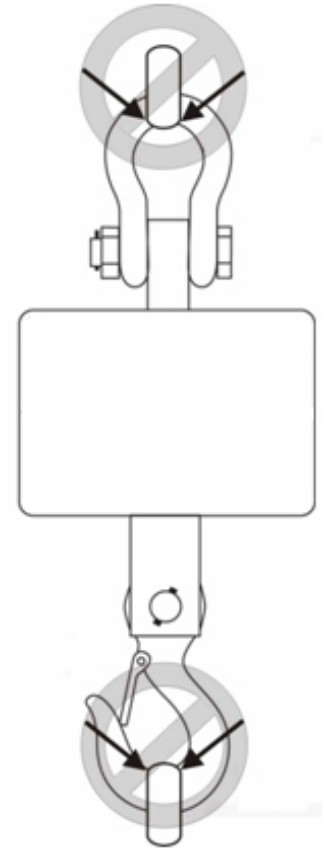
Loading the balance

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.

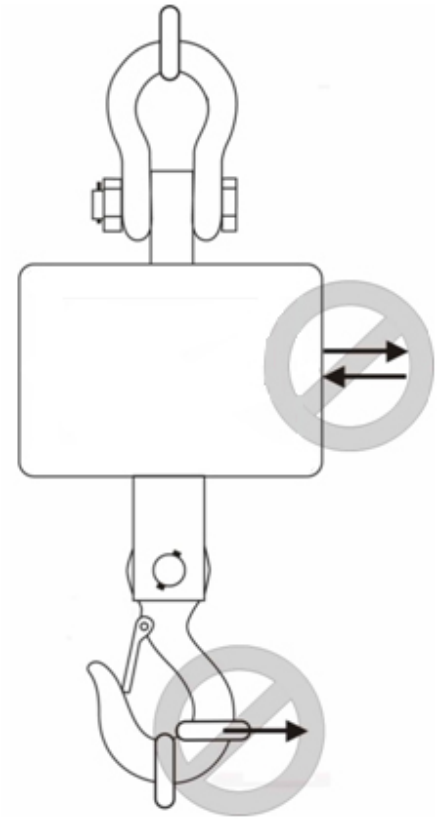
   When the load is fixed by slings, ensure that the load is well balanced on both sides and that the slings are correctly positioned



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

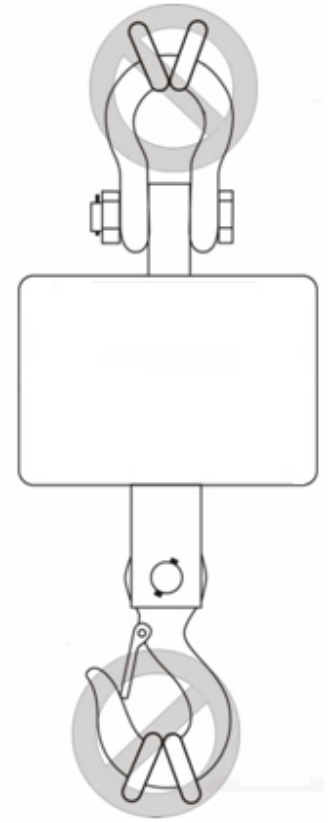


Do not use too large load attachment devices which cannot guarantee a one-point suspension.



Do not push or pull

Do not pull the hook horizontally



Do not use multiple suspensions

English

5.3 Turn on/off

Start-up

⇨ Press ON/OFF on the display unit; the unit will carry out a self-test. As soon as the weight display appears, the instrument will be ready to weigh.
⇨ At the crane scales put the ON/OFF switch to „ON“



⇨ If „Err 10“ appears in the weight display no radio communication with the balance could be established. Either the crane scale is not yet switched on or the rechargeable battery has not been sufficiently loaded.

⇨ Switch on the crane scale with the ON/OFF switch or reload the battery.

⇨ „Err 10“ disappears and the zero display will appear. The balance is now in weighing mode and ready for operation.

Switching Off

Press ON/OFF at the display unit, the display disappears.
At the crane scales put the ON/OFF switch to „OFF“

5.4 Set balance to zero

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

Manual

⇨ Unload the balance

⇨ Press TARE, zero display as well as indicator **ZERO** will appear.



Automatic

In the menu the amount of the automatic zero point correction can be changed, see chapter 6 / Function „F1 A20“.

5.5 Taring

⇨ Suspend preload.

Press the TARE-button and wait until the zero display appears. The weight of the container is now internally saved.



⇨ Weigh the material, the net weight will be indicated.

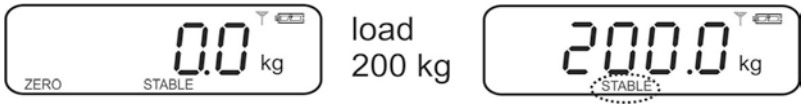
⇨ After removing the preload weight appears as negative display.

⇨ To delete the tare value, remove load from crane scales and press the TARE button.

5.6 Weighing

⇨ Loading the crane scales.

⇨ Wait for stability display **STABLE**.



⇨ Read weighing result.

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.

English

5.7 Fix the weight value (Data-HOLD function)

⇨ Suspend the material to be weighed

⇨ Press the HOLD button, the fixed weighing value will be displayed.
The indicator **HOLD** appears.

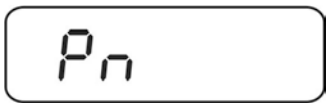


⇨ The weighing value will be held in the display until it is deleted by HOLD.

5.8 Weighing Units

1. How to enable weighing units

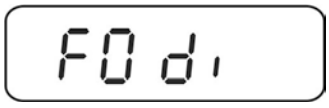
⇨ Switch on the balance and during selftest press UNIT ESC, „**Pn**“ will be displayed.



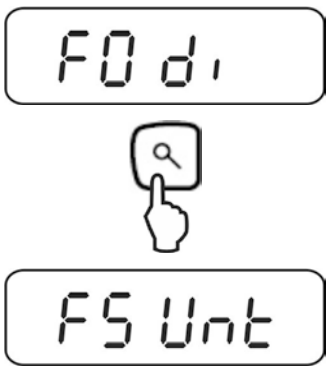
⇨ Press HOLD, UNIT ESC, TARE subsequently.



⇨ Acknowledge with TARE. The first function „F0 di“ is displayed.

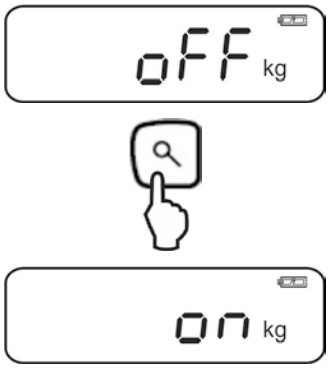


⇨ Press repeatedly until „**F5 Unt**“ will be displayed



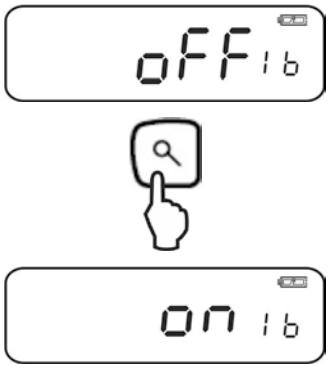
English

⇨ Press TARE, the current setting will be displayed.



⇨ To enable [on] / disable [off] the displayed weighing unit, press

⇨ Acknowledge with TARE, the active setting of the next weighing unit will be displayed.



⇨ To enable [off] / disable [on] the displayed weighing unit, press .

⇨ Press TARE, balance returns to menu

⇨ Return to weighing mode using UNIT esc

2. How to change weighing units

⇨ To return to the previously enabled weighing units go to weighing mode by UNIT esc.



English

5.9 Totalization

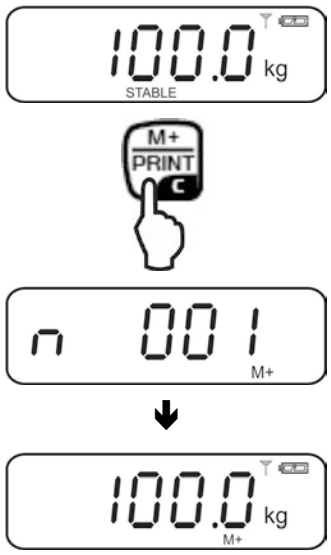
With this function the individual weighing values are added into the summation memory by pressing M+ PRINT C and edited, when an optional printer is connected.

Prerequisite: Totalizing function „F11 ACC“ on setting „on“, see chap. 6.2.

- With active totalizing function the indicator „M+“ is displayed
- The totalizing function is not active when the weight is under 20d.
- Totalizing is only possible in weighing mode.
- The data output depends on the menu setting „F7 Prt“.
- When switching-over to another weighing unit the summation memory will be deleted.

⇨ Hook-on the item to be weighed **A**.

Wait until the stability display “**STABLE**” appears, then press M+ PRINT C.
„**n001**“ followed by the weight value will be displayed. The weight is added to the summation memory and printed if an optional printer is connected, depending on the menu setting „F7 Prt“.



Printout example YKB-01N (menu setting „F7 Prt→Prt 5“):

No.	1
N :	100.0KG
C	100.0KG

⇨ Remove the weighed good. More weighed goods can only be added when the display ≤ zero.



⇨ Suspend the item to be weighed **B**.

Wait until the stability display appears, then press M+ PRINT C. Weighing value will be added to summation memory and possibly printed.
The number of weighing actions „n002“, followed by the total weight will be displayed for 2 sec. After that the current weighing value is displayed.



Printout example YKB-01N (menu setting „F7 Prt→Prt 5“):

No.	2
N :	100.0KG
C	200.0KG

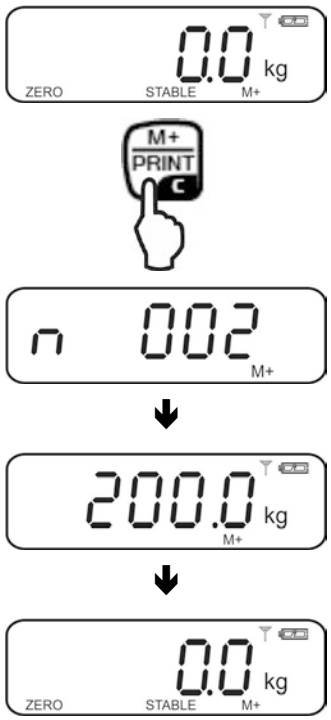
Add more weighed goods as described before.
Please note that the crane scales must be unloaded between the individual weighing procedures.
You can repeat this process until the capacity of the crane scales is exhausted.

English

Display the summation memory:

If you see a display of zero 

, press and the number of weighings, followed by the total weight will be shown for 2 sec and printed if an optional printer is connected.

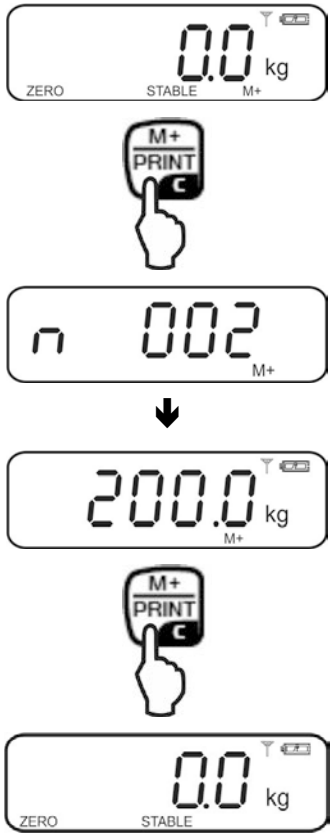


Printout example YKB-01N (menu setting „F7 Prt→Prt 5“):

NO.	2
C	200.0KG

Delete total added memory:

When zero is displayed press M+ PRINT C, the number of weighings followed by the total weight will be displayed for 2 sec. During this display press M+ PRINT C again.
The data in the summation memory are deleted, the indicator „M+“ extinguishes.



5.10 Automatische Nullpunktkorrektur

Under this menu item the automatic zero point correction can be switched on or off. In enabled status the zero point will be corrected automatically, selectable 0.5d – 4 d (see chap.6.2, Menu item “**F1 A20**“)

⇨ Invoke menu item „**F1 A20**“, see chap. 6.1

⇨ Press TARE, the current setting will be displayed.

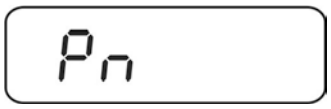
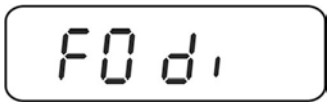
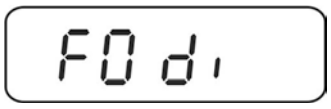
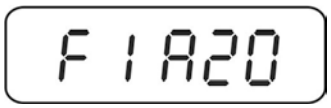
⇨ Select the desired setting by pressing 🔍

⇨ Acknowledge with TARE.

⇨ Return to weighing mode using UNIT ESC

6 Menu

6.1 Navigation in the menu:

Call function	⇨ Switch on the balance and during selftest press UNIT ESC, „**Pn**“ will be displayed.  ⇨ Press HOLD, UNIT ESC, TARE subsequently.  ⇨ Acknowledge with TARE. The first function „F0 di“ is displayed. 
Select function	⇨ With help of , the individual functions can be selected one after the other.   
Select setting	⇨ Confirm selected function by TARE. The current setting will be displayed.
Change settings	⇨ Switch into the available settings using .
Confirm setting	⇨ Acknowledge with TARE or reject with UNIT ESC
Exit menu / Return to weighing mode	⇨ Press UNIT ESC button

English

6.2 Menu overview

<table>
<tr><th>Function</th><th>Available settings</th><th colspan="7">Description</th></tr>
<tr><td rowspan="6">F0 di
How to change readability</td><td>High *
Low</td><td colspan="7"></td></tr>
<tr><td>cap</td><td colspan="2">d (low)</td><td colspan="2"></td><td colspan="2">d (high)</td></tr>
<tr><td>3 t</td><td>10kg</td><td>5kg</td><td>2kg</td><td>2kg</td><td>1kg</td><td>500g</td></tr>
<tr><td>5 t</td><td>10kg</td><td>5kg</td><td>2kg</td><td>2kg</td><td>1kg</td><td>500g</td></tr>
<tr><td>10 t</td><td>20kg</td><td>10kg</td><td>5kg</td><td>5kg</td><td>2kg</td><td>1kg</td></tr>
<tr><td>15 t</td><td>50kg</td><td>20kg</td><td>10kg</td><td>10kg</td><td>5kg</td><td>2kg</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td>F1 AZ0
Automatic zero point correction
(zero tracking)</td><td>AZ 0.5d
AZ 1d*
AZ 2d
AZ 4d</td><td colspan="7">0.5 d
1 d
2 d
4 d</td></tr>
<tr><td>F2 CAP
Capacity</td><td>3 000 kg
15 000 kg</td><td colspan="7">10 000 kg
20 000 kg</td></tr>
<tr><td rowspan="3">F3 bt
Background lighting</td><td>bK on*</td><td colspan="7">Background lighting of display is switched on permanently</td></tr>
<tr><td>bK oFF</td><td colspan="7">Display background illumination off</td></tr>
<tr><td>bK AU</td><td colspan="7">Automatic background illumination on when weighing pate is loaded or key pressed.</td></tr>
<tr><td>F4 inP</td><td colspan="8">Internal A/D converter value</td></tr>
<tr><td rowspan="2">F5 Unt
Select weighing unit</td><td>kg</td><td colspan="7">on/off</td></tr>
<tr><td>lb</td><td colspan="7">on/off</td></tr>
<tr><td rowspan="5">F6 oFF
Automatic shutdown function</td><td>oFF 5 min*</td><td colspan="7">Autom. shutdown after 5 minutes</td></tr>
<tr><td>oFF 10 min</td><td colspan="7">Autom. shutdown after 10 minutes</td></tr>
<tr><td>oFF 15 min</td><td colspan="7">Autom. shutdown after 15 minutes</td></tr>
<tr><td>oFF 30 min</td><td colspan="7">Autom. shutdown after 30 minutes</td></tr>
<tr><td>oFF 0 min</td><td colspan="7">Autom. shutdown disabled</td></tr>
</table>

Modifications may only be carried out by a specialist with competent knowledge.

English

F7PrE Interface parameters	Cont*	Continuous data output printout examples see chap. 8.4
	Prt 1	Not documented
	Prt 2	Not documented
	Prt 3	Not documented
	Prt 4	Data output format 4, Printout example see chap. 8.4
	Prt 5	Data output format 5, Printout example see chap. 8.4
F8CAL	Adjustment see chap. 7	
F9bd Baud rate	Selectable 1200, 2400, 4800, 9600*	
F10GrA	Not documented	
F11ACC Adding function	on	Totalizing function switched on
	off	Totalizing function switched off

* default setting

7 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.

- The weight to be used depends on the capacity of the scale. Carry out adjustment as near as possible to the scale's maximum weight. Info about test weights can be found on the Internet at: http://www.kern-sohn.com.
- Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization.

Procedure:

⇨ Switch-on balance and during the selftest press UNIT/ESC.
„**Pn**„ will be displayed.

⇨ Use the numeric keys to enter password:
Press HOLD, UNIT/ESC, TARE subsequently.

⇨ Acknowledge with button TARE.
„**F0 di**“ will be displayed

⇨ Press the button repeatedly until „**F8 CAL**” will be displayed.

⇨ Press TARE button, „**ULoAd**“ will be displayed.

⇨ Unload the balance and wait until the symbol „STABLE“ lights up.

⇨ Press the TARE button, the currently set adjustment weight is displayed after some seconds.

⇨ In order to change, select the numbers to be changed using the HOLD button and set the desired value using the button, the respective active digit flashes.

English

⇨ Confirm by 

, „**LoAd**“ will be shown.

⇨ Attach the adjustment weight and wait until the symbol „STABLE“ lights up.

⇨ Press 

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 Data output RS 232

You can print weighing data via the RS 232C interface by pressing M+ PRINT C via the interface according to the setting in the menu.
This data exchange is asynchronous using ASCII - Code.
The following conditions must be met to provide successful communication between the weighing balance and the printer.
Use a suitable cable to connect the display unit to the interface of the printer.
Faultless operation requires an adequate KERN interface cable.
Communication parameters of display unit and printer must match (baud rate see chap. 6.2, Menu item F9 bd,)

8.1 Technical data

8.2 Technical data

Connection: Pin allocation plug



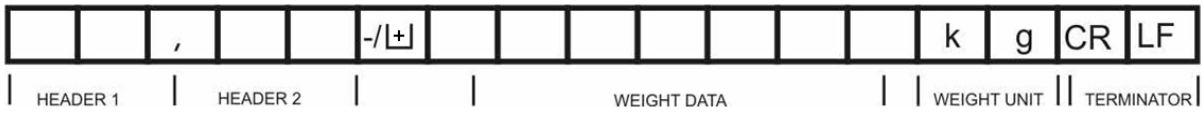
Pin 2 input
Pin 3 output
Pin 5 signal earth

Baud-Rate: 600, 1200, 2400, 4800, 9600 selectable

Parity 8 bits, no parity

8.3 Continuous data output

Con1: Weighing mode



HEADER1: ST=STABLE , US=UNSTABLE

HEADER2: N=NET , GS=GROSS

English

8.4 Printer mode

Printout examples printer KERN YKB-01N:

Menu setting „F7 Prt→Cont“:

St, GS, + 100 kg

Menu setting „F7 Prt→Prt 4“:

1.weighing	
N :	100

2.weighing	
N :	100

Total	
No.	2
C	200KG

Menu setting „F7 Prt→Prt 5“:

1.weighing	
No.	1
G	100KG
C	100KG

2.weighing	
No.	2
G	100KG
C	200KG

Total	
No.	2
C	200KG

GS	Gross weight
N	Net weight
No.	Number weighing processes
C	Total of all individual weighings
ST	Stable weighing values

9 Error messages

Error message	Description	Possible causes
--ol-	Maximum load exceeded	⇨ Reduce load ⇨ Check whether the balance has been damaged
Err 4	Zeroing range exceeded due to switching-on balance or pressing TARE (normally 4% max)	⇨ Load attached ⇨ Overload during setting to zero
Err 5	Keyboard error	⇨ Improper operation of the balance
Err 6	Value outside the A/D changer range	⇨ Damaged weighing cell ⇨ Damaged electronics
Err 10	No signal	⇨ Distance emitter / receiver too long ⇨ Emitter (connecting box) not switched on
Lo bA	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.

English

10 Cleaning, Repair, Maintenance and Disposal

 **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:** ⇨ Have carried out a regular maintenance by trained specialized staff ⇨ Carry out regular maintenance and care, see chapter 10.2 and 10.3 ⇨ Have the parts exchanged only by trained specialized staff. ⇨ If there arose discrepancies with the safety checklist, the balance must not more be put into operation. ⇨ Do not repair the crane scales by yourself. Repair may only be carried out by service partners authorized by Messrs. KERN.

English

10.1 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.

10.2 Regular maintenance and care

- The regular 3-month maintenance may only be carried out by an expert with competent knowledge of working with crane scales. Thereby the national regulations for prevention of accidents as well as the working, operation and safety regulations of the owner-operator.
- To check the dimensions only use suitable test devices.
- The regular 12-month maintenance must only be carried out by trained specialized staff (KERN customer service).
- The results of the maintenance must be written down in the checklist (chap. 10.4).
- The additional results of the extended maintenance have to be entered in the checklist (chapter 11.1).
- The replaced spare parts also must be entered, (chapter 11.2)

10.3 Regular maintenance

Initial start-up, every **3 months** or definitely after **12 500 weighing processes**	• Check all dimensions, see checklist chap. 10.4 • Check the shackle or the eyelet for wear and tear, such as e.g. plastic deformation, mechanical damage (unevenness), notches, striation, cracks, corrosion, thread damage and torsions. • 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 (see checklist, chap. 10.4) or if other discrepancies have been found, the balance must be repaired at once by trained specialized staff (KERN customer service). Never do repair it by yourself! Take balance out of operation immediately! All repairs and spare parts must be documented by the service partner (see list, chap. 11.2).
Every **12 months** or in any case after **50 000 weighings**	• If the enhanced maintenance has to be carried out by trained staff (KERN customer service). At this general revision all load carrying parts must be checked for gaps with magnetic powder
Every **5 years** or anyway after **250 000 weighings**	• All load carrying parts have to be exchanged by trained specialized staff (KERN customer service).
Every **10 years** or anyway after **500 000 weighings**	• Replace the crane balance entirely

Note
During the revision for wear and tear please refer to the following drawings.

10.4 Checklist „Regular maintenance“, (see chapter 10.3)

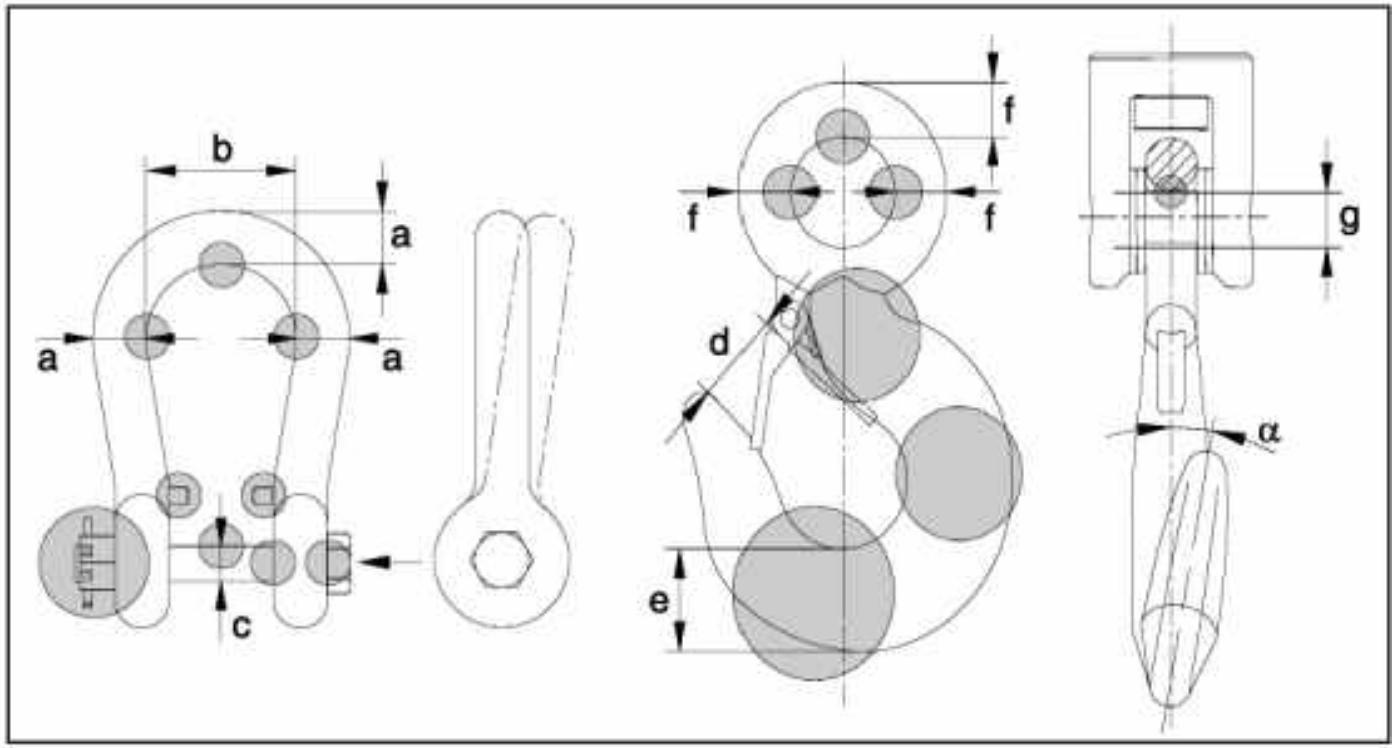
Original dimensions crane scales, serial no.: …… Capacity ……											
Shackle					**Hooks**						
a (mm)	b (mm)	c (mm)	Wear and tear	Split pin&Nut	d (mm)	e (mm)	f (mm)	g (mm)	Angle α (°)	Wear and tear	Safety bracket
Date …… **Tester ……**											

***These data can be found in the document attached to the balance. Please keep this document always available.**

	Shackle					**Hooks**								
	a	**b**	**c**	**Wear and tear (see grey fields)**	Split pin& Nut	**d**	**e**	**f**	**g**	Angle α	**Wear and tear (see grey fields)**	**Safety bracket**	**Datum**	**Tester**
Max. admitted variation	5 %	0 %	5 %	**No deformation or cracks**	tight	**10 %**	**5 %**	**5 %**	**5 %**	**10 °**	**No deformation or cracks**	**Perfect working order**		
Revision prior to first use														
3 months/12,500 x														
6 months/25,000 x														
9 months/37,500 x														
12 months/50,000 x														
15 months/62,500 x														
18 months/75,000 x														
21 months/87,500 x														

	Shackle					**Hooks**								
	a	**b**	**c**	**Wear and tear (see grey fields)**	Split pin& Nut	**d**	**e**	**f**	**g**	Angle α	**Wear and tear (see grey fields)**	**Safety bracket**	**Datum**	**Tester**
Max. admitted variation	5 %	0 %	5 %	**No deformation or cracks**	tight	**10 %**	**5 %**	**5 %**	**5 %**	**10 °**	**No deformation or cracks**	**Perfect working order**		
24 months/100,000 x														
27 months/112,500 x														
30 months/125,000 x														
33 months/137,500 x														
36 months/150,000 x														
39 months/162,500 x														
42 months/175,000 x														
45 months/187,500 x														
48 months/200 000														
51 months/212,500 x														
54 months/225,000 x														
57 months/237,500 x														
60 months/250 000x	➔ All load carrying parts have to be exchanged by a service partner authorised by KERN.													

bold letters = this maintenance work has to be carried out by a service partner authorized by KERN.


b
a
a
a
c
f
f
f
d
e
g
α

11 Enclosure

11.1 Checklist „Enhanced maintenance“ (General revision)

The enhanced maintenance has to be carried out by a service partner authorized by KERN.

Crane scales	Model …….. Serial no. ……..

Interval	Magnetic powder test for cracks	Hooks	Shackle	Screwed connections	Datum	Name	Signature
12 months/50,000 x							
24 months/100,000 x							
36 months/150,000 x							
48 months/200,000 x							
60 months/250,000 x							
72 months/300,000 x							
84 months/350,000 x							
96 months/400,000 x							
108 months/450 000 x							
120 months/500 000x	➔ Replace crane scales entirely						

11.2 List „spare parts and repair of safety-relevant parts“

Repair has to be carried out by a service partner authorized by KERN.

Crane scales	Model …….. Serial no. ……..			
Part	**Action**	**Datum**	**Name**	**Signature**

Crane scales	Model …….. Serial no. ……..			
Part	**Action**	**Datum**	**Name**	**Signature**