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Servicemanual
Counting balance

KERN CPB-N / CPB-DM

Version 3.0

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GB



GB

KERN CPB-N / CPB-DM

Version 3.0 10/2016

Servicemanual

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1 Basic Information

The device must be repaired only by trained specialist staff or personnel with professional formation (such as a repair-specialist accredited by law concerning verification). The service manual is obligatory for repair work. After repair, original conditions of the device have to be restored. Only original spare parts should be used.

Instructions about conformity-evaluated scales:

Repair must be carried only at 100% compliance with the type approval. A violation of this specification will result in a loss of the type approval! After successful repair the balance will have to be reverified before it can be used again in a statutorily regulated field.

Detailed instructions about conformity-evaluated scales:

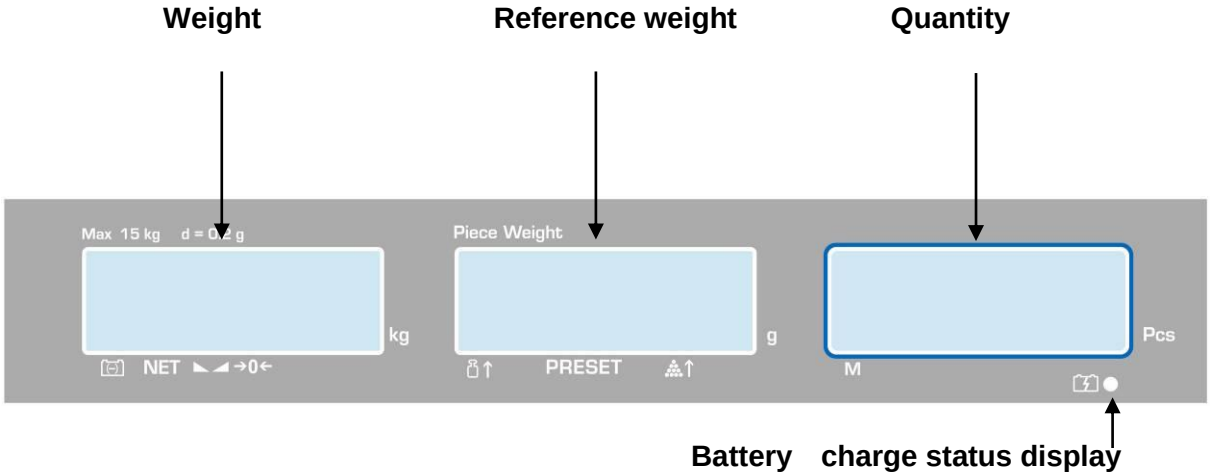
Repair must be carried only at 100% compliance with the type approval. A violation of this specification will result in a loss of the type approval!

After successful repair the balance will have to be reverified before it can be used again in a statutorily regulated field.

2 Introdution

This service manual covers the CPB-N / CPB-DM series and is edited for the authorized servicing personnel.
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3 Overview of display



3.1 Display weight

Here the weight of the load is displayed in [kg].

The arrows above the symbols show:

(-)	Battery very low
NET	Net weight
◣◢	Stability display
a	Zeroing display

3.2 Display reference weight

Here, the reference weight of a sample is displayed in [g].This value is either entered by user of calculated by balance.

The arrows above the symbols show:

↑	Reference weight placed on balance too small
PRESET	Stored target quantity / target weight
↑	Number of pieces placed on balance too small

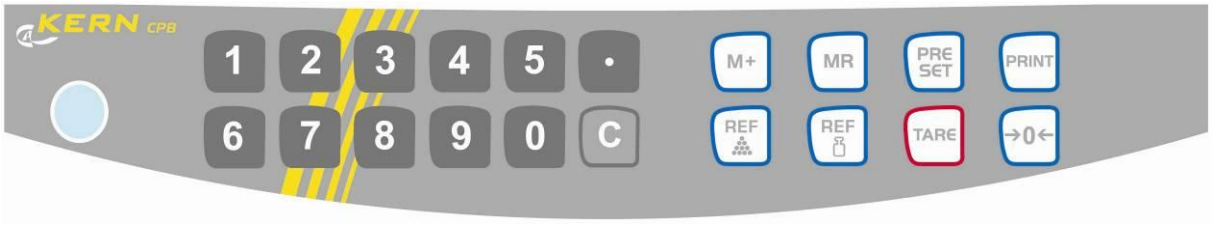
3.3 Display quantity

Here, all the pieces placed on balance are immediately displayed by number.

The arrows above the symbols show:

M	Data in the summation memory

3.4 **Keyboard overview**



Selection	Function
1	• Numeric keys
C	• Deleting key • Call up target quantity and target weight mode
M+	• Addition in sum memory
MR	• Call up total memory
PRE SET	• Enter/display limit value for tolerance check • Invoke display background illumination (press button long time)
PRINT	• Output to external device (printer) or PC
REF	• Enter reference weight through weighing
REF	• Numeric entry reference weight • Function /parameter selection
TARE	• Taring key • Save
→0←	• Zeroing key • Back to weighing mode

4 Adjustment

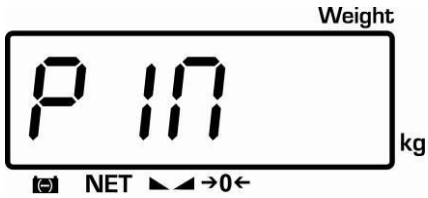
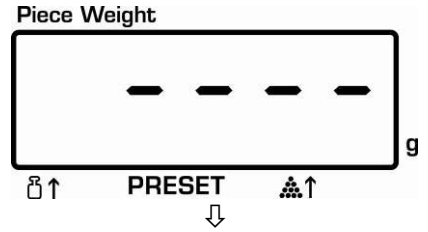
As the acceleration value due to gravity is not the same at every location on earth, each balance must be coordinated - in compliance with the underlying physical weighing principle - to the existing acceleration due to gravity at its place of location (only if the balance has not already been adjusted 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.

Procedure when adjusting:

Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization.Ensure that there are no objects on the weighing plate.

Provide calibration weight, for details, see chapter 1 "Technical Data. "

4.1 **Models CPB-N (non verified models)**

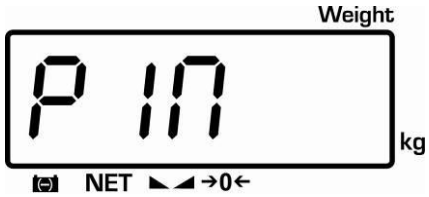
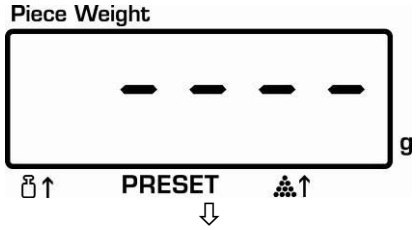
Operation	Display
⇨ Switch on balance and during self-check press the TARE key 	
⇨ Use the numeric keys to enter password: • Default password "0000" Should this password entry not be possible, enter a personal password; (entry using function[F6 PKn]see. chap.11.1). Also possible to continue the adjustment process with  button.	 

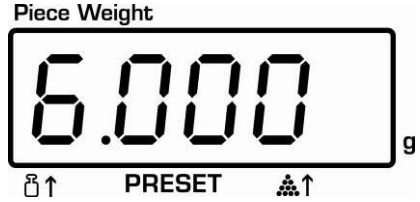
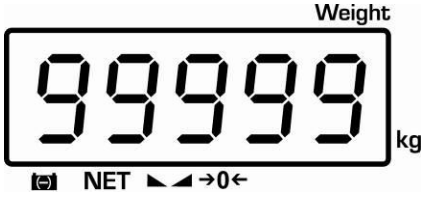
⇨ Press the TARE button, the acceleration value due to gravity is displayed. ⇨ Press the TARE key anew.  „UnLoAd“, followed by „LoAd“ is displayed	Piece Weight 9.8 1000 g PRESET Weight UNLOAd kg NET →0← ⇩ Weight LOAd kg NET →0←
⇨ Put the adjustment weight (see chap. 1) carefully in the center of the weighing plate, „PASS“ will be displayed. ⇨ While the balance carries out a self test, remove the adjustment weight. After successful adjustment the balance automatically returns to weighing mode. In case of an adjustment error or incorrect adjusting weight the display will show an error message; repeat adjustment process.	Piece Weight PASS g PRESET ⇩ Weight 99999 kg NET →0← ⇩ Weight 0.0 kg NET →0←

4.2 **Models CPB-DM (verified models)**

The adjustment is locked for verified balances.Carrying out adjustment requires that the seal is destroyed and the adjusting switch is pressed when turning on the scale.For position of adjusting switch, see chap. 6.9.1.

Attention:
After destruction of the seal the balance must be re-verified by an authorised agency and a new verification wire/seal mark fitted before it can be reused for applications subject to verification.

Operation	Indication
⇨ Switch-on balance and during the selftest actuate the adjustment switch and press the TARE button 	
⇨ Use the number keys to enter password: either • Default password "0000" or • Personal password, enter under function [F6 PKn]see chap.12 ⇨ Confirm with TARE button	 

⇨ TARE button, „UnLoAD“ appears ⇨ Press the TARE key anew  „LoAd“ as well as the currently set adjustment weight appear flashing either • Confirm with **TARE** **or** • In order to change, enter the desired weight value of the adjustment weight by the numeric keyboard and confirm on the TARE button. In order to achieve high-quality weighing results in the sense of the measuring technology, it is recommended to select the nominal value as high as possible. We recommend 80 % max.	 ⇩  +  (Example)
⇨ Carefully place adjusting weight in the centre of the weighing plate ⇨ Wait for stability display, then press the TARE button  ⇨ While the balance carries out a self test, remove the adjustment weight. After successful adjustment the balance automatically returns to weighing mode. In case of an adjustment error or incorrect adjusting weight the display will show an error message; repeat adjustment process.	 ⇩ 

4.3 **Linearization (non-verified models only)**

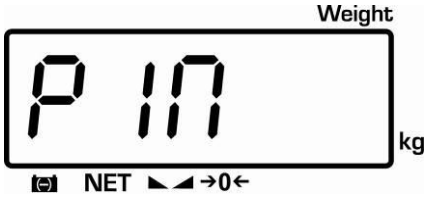
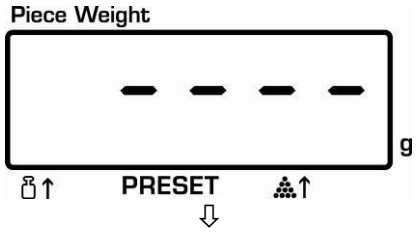
Linearity shows the greatest deviation of a weight display on the scale to the value of the respective test weight according to plus and minus over the entire weighing range.

If linearity deviation is discovered during a testing instrument control, you can improve this by means of linearization.

- Carrying out linearization is restricted to specialist staff possessing well acquainted with the workings of weighing scales.
- The test weights to be used must be adapted to the weighing scale's specifications; see chapter 3.4 "testing instruments control".
- Observe stable environmental conditions. Stabilisation requires a certain warm-up time.
- After successful linearization you will have to carry out calibration; see chapter 3.4 "Testing instruments control"

Tab. 1: Adjustment points

Adjustment weight	**CPB 6K0.1N**	**CPB 15K0.2N**	**CPB 30K0.5N**
1.	1 kg	2 kg	5 kg
2.	2 kg	5 kg	10 kg
3.	4 kg	10 kg	15 kg
4.	6 kg	15 kg	30 kg

Operation	Display
How to carry out linearization: ⇨ Switch on balance and during self-check press the TARE key  	
⇨ Use the numeric keys to enter password „9999“ ⇨ Confirm with TARE button  	 

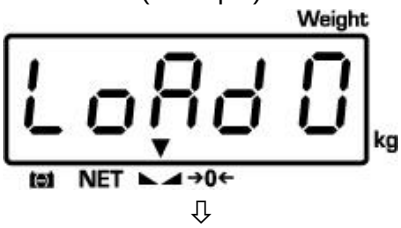
⇨ Press TARE button, the acceleration value due to gravity is displayed.

⇨ Press the TARE key anew





(Example)



⇩

„LoAd 0“ appears, after a short time a signal will sound and „LoAd 1“ appears



⇨ First adjustment weight (s. tab. 1) after a short time a signal will sound and „LoAd 2“ appears



⇨ Second adjustment weight after a short time again a signal will sound and „LoAd 3“ appears.



⇨ Third adjustment weight after a short time again a signal will sound and „LoAd 4“ appears.



⇨ Forth adjustment weight after a short time again a signal will sound and „LoAd 3“ appears.

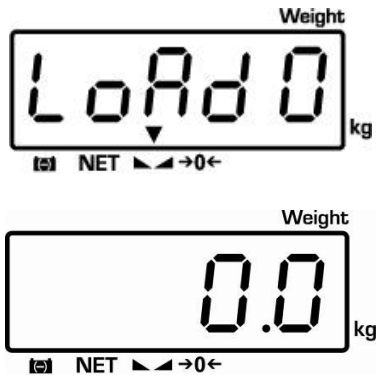


⇨ Forth adjustment weight after a short time a signal will sound and „LoAd 2“ appears.



⇨ Third adjustment weight after a short time a signal will sound and „LoAd 1“ appears



⇨ Second adjustment weight after a short time a signal will sound and „LoAd 0“ appears. ⇨ First adjustment weight ⇨ After successful linearization the balance automatically returns to weighing mode.	

In case of an adjustment error or incorrect adjusting weight the display will show an error message; repeat linearization process.

4.4 **Verification**

General introduction:

According to EU directive 90/384/EEC balances must be verified if they are used as follows (legally controlled area):

a) For commercial transactions if the price of goods is determined by weighing.
b) For the production of medicines in pharmacies as well as for analyses in the medical and pharmaceutical laboratory.
c) For official purpose.
d) For manufacturing final packages.

In cases of doubt, please contact your local trade in standard.

After verification the balance is sealed at the indicated positions.
Verification of the balance is invalid without the "seal".

Verification notes:

An EU type approval exists for balances described in their technical data as verifiable.If a balance is used where obligation to verify exists as described above, it must verified and re-verified in regular intervals.

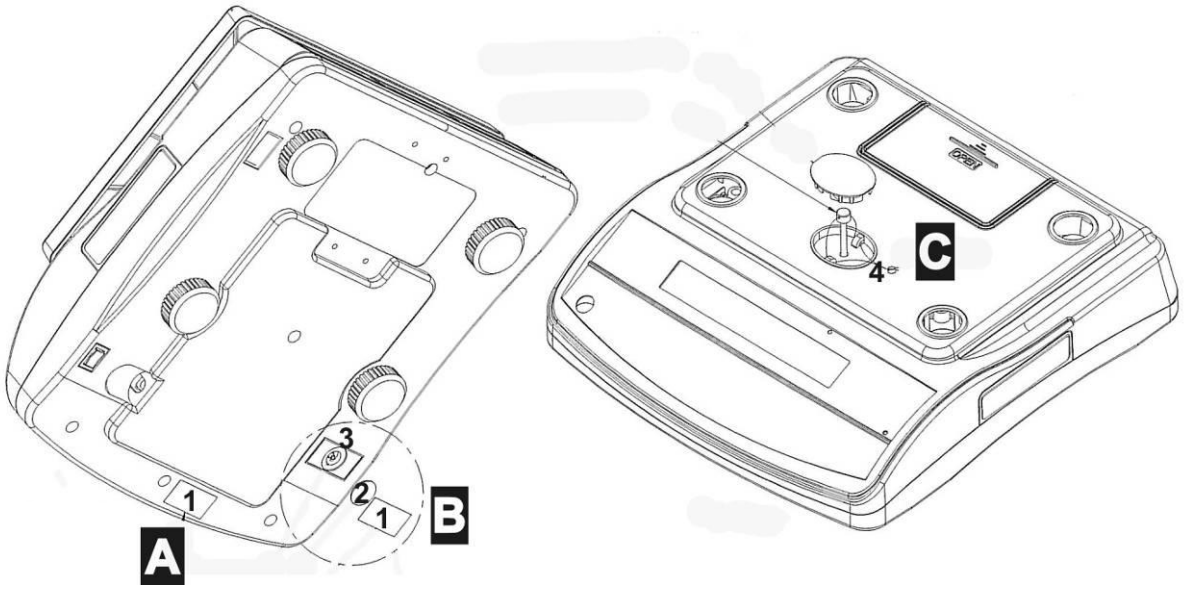
Re-verification of a balance is carried out according to the respective national regulations.The validity for verification of balances in Germany is e.g. 2 years.
The legal regulation of the country where the balance is used must be observed!

Balances with obligation to verify must be taken out of operation if:

- The **weighing result** of the balance is outside the **error limit.**Therefore, in regular intervals load balance with known test weight (ca. 1/3 of the max. load) and compare with displayed value.
- The **reverification deadline** has been exceeded**.**

4.5 **Adjustment switch and seals**

Possible seals: **B** enforced, and **A** or **C**



1. Seal mark 1
2. Cover
3. Verification switch
4. Verification wire

4.6 **Checking the balance verification settings**

For the adjustment, the balance must be switched over to service mode.

In the service mode the parameters of the balance can be modified.

The service parameters may not be modified, as this could damage the balance settings.

In calibrated scales the service mode is locked individually for each switch.To disable the access lock, destroy the seal and actuate the switch.For position of switch see chap. 6.9.1.

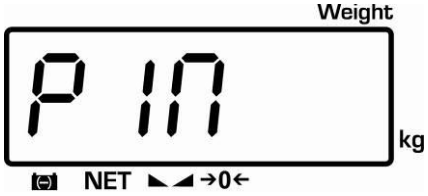
Attention:
After destruction of the seal the balance must be re-verified by an authorised agency and a new verification wire/seal mark fitted before it can be reused for applications subject to verification.

4.7 **Service mode (verified models)**

This overview of the service parameters is merely for checking the parameters set by the appropriate Bureau of Standards.No changes may be made.

Access to menu:

⇨ Switch-on balance and during the selftest press the TARE button



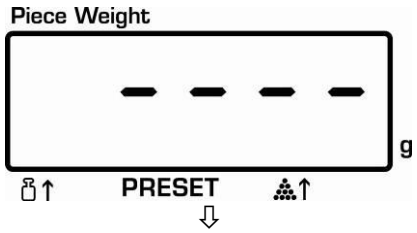
⇨ Use the number keys to enter password:

either

- Default password "0000"

or

- Personal password, enter under function [F6 PKn]see chap.12



⇨ Confirm with TARE button



Select function:

⇨ Press REF to select the individual functions showing the current settings one by one.

Change / save settings:

⇨ Confirm selected function by pressing TARE.Select desired setting by pressing REF and confirm by pressing TARE or cancel by pressing →0←.

Exit menu:

⇨ Using →0← the balance returns into the weighing mode.

5 Overview for service parameter:

***** = Factory settings

□ = The menu item is blocked; to modify press the justification button.

Menu block Main menu	**Menu item Submenu**	**Available settings / explanation**				
F1 CAL□		Adjustment				
F2 rES□	6000d *	Resolution				
	duAL	**Always use this setting**				
	30000 d					
	3000 d					
F3 Cnt		A/D - value				
F4 AU **Add-up mode** **and data output**	AU on* Automaticsummation mode	b9600*, b600, b1200, b2400, b4800	LP 50	EnG	CHi	Not documented
			tP	Standard printer setting		
	P ASt	b9600*, b600, b1200, b2400, b4800	EnG	CHi		Remote control instructions
	P Cont	b9600*, b600, b1200, b2400, b4800	Sd0 on	Send zero on		Continuous data output
			Sd0 off	Send zero off		
	AU off Manual summation mode	b9600*, b600, b1200, b2400, b4800	LP 50	EnG	CHi	Not documented
			tP	Standard printer setting		
F5 tAr □	Pt oFF*	Pretaring value off:**Always use this setting**				

Pre-Tare	Pt on	Pretaring value on
F6 Pin **Password**	Pin 1*	Enter the new password
	Pin 2	Confirm the new password
F7 SPd **Display speed**	SPd 7.5*	not documented
	SPd 15	
	SPd 30	
	SPd 60	
F8 oFF **Auto Off**	oF 0*	Automatic shutdown off
	oF 3	Automatic shutdown after 3 min
	oF 5	Automatic shutdown after 5 min
	oF 15	Automatic shutdown after 15 min
	oF 30	Automatic shutdown after 30 min

F9 Grv□ **Gravity**		not documented
F10 bEP **Audio signal**	ok*	Signal sound, when the load is within the set range
	Low	Signal sound, when the load is below the lower limit value
	nG	Signal sound, when the load is beyond the set range
	HiGH	Signal sound, when the load is above the upper limit value
F11 t n □	P-tArE	**Always use this setting**
	o-tArE	
F12 rSt	Reset to default setting	
F13 bEE	off	Acoustic signal when pressing button
	on	
F14 AUW	off	Automaticcorrection of reference weight
	on	

6 ERROR CODES

During the initial power-on testing or during operation it is possible the scale may show an error message. The meaning of the error messages is described below.

If an error message is shown repeat the procedure that caused the message, turning the balance on, calibration or other functions. If the error message still is shown then contact your dealer for further support.

ERROR CODE	DESCRIPTION	POSSIBLE CAUSES
Err 4	Initial Zero is greater than allowed (4% of maximum capacity) when power is turned on or when the **ZERO/ENTER** key is pressed,	Weight on the pan when turning the scale on. Excessive weight on the pan when zeroing the scale. Improper calibration of the scale. Damaged load cell. Damaged Electronics.
Err 5	Keyboard Error.	Improper operation of the scale.
Err 6	A/D count is not correct when turning the scale on.	Platform not installed. Load cell damaged. Electronics damaged.
Err 9	Unstable, can't return to zero	When turn on the power, if internal counts is not stable, display will have "Err 9", please check the platform and load cell. If the problem persist contact your dealer for assistance.