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Operating instructions
Pallet truck scales

KERN VHM_M

Version 1.2
07/2010
GB

GB

KERN VHM_M

Version 1.2 07/2010

Operating instructions Pallet truck scale

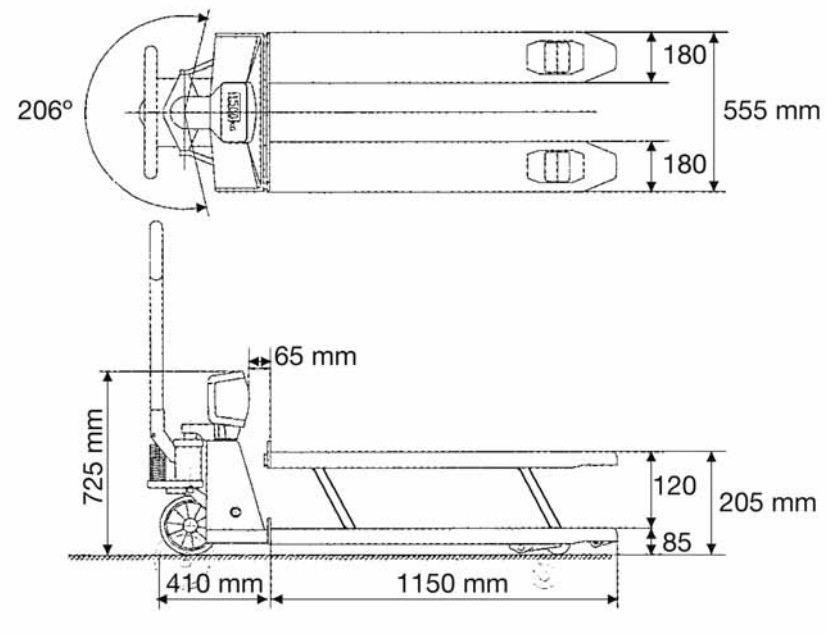
English

Table of Contents

1 Technical Data

KERN	VHM 2T2M
Readability (d)	2 kg
Weighing range (max)	2000 kg
Minimum load (Min)	40 kg
Verification value (e)	2 kg
Verification class	III
Reproducibility	2 kg
Linearity	± 2 kg
Recommended adjustment weight, not added (class)	2 t (M1)
Warm-up time	10 min
Allowable ambient temperature	-10° C .... + 40° C
Humidity of air	max. 95 % (not condensing)
Rechargeable battery	12 V
	Service life 35 h
	Loading time 6 h
Auto Off	30 min
Net weight	125 kg

Dimensions:



English

2 Declaration of conformity

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Declaration of conformity

Declaration of conformity for apparatus with CE mark
Konformitätserklärung für Geräte mit CE-Zeichen
Déclaration de conformité pour appareils portant la marque CE
Declaración de conformidad para aparatos con marca CE
Dichiarazione di conformità per apparecchi contrassegnati con la marcatura CE

English

English We hereby declare that the product to which this declaration refers conforms to the following standards.

German Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.

Français Nous déclarons avec cela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.

Español Manifestamos en la presente que el producto al que se refiere esta declaración está de acuerdo con las normas siguientes

Italiano Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.

Electronic Scale: KERN VHB, VHE, VHS, VHT, VHM_M

Mark applied	EU Directive	Standards
CE	2004/108/EC	EN 55022 :1994 /A1 : 1995/A2 : 1997 Class A EN 50082-1 : 1992 EN 61000-3-2 : 1995/A1: 1998 / A2:1998 EN 61000-3-3 : 1995
	2006/95/EC	EN 60950 : 1992/A1: 1993 / A3: 1995 / A4: 1997 / A11: 1997

Date: 14. Jan. 2010 **Signature:**

Gottl. KERN & Sohn GmbH
Management

3 Basic instructions for scales

3.1 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 manually and carefully placed in the centre of the weighing plate. As soon as a stable weighing value is reached the weighing value can be read.

3.2 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 on the balance.)
Do not leave permanent load on the weighing plate. This may damage the measuring system.
Impacts and overloading exceeding the stated maximum load (max) of the balance, minus a possibly existing tare load, must be strictly avoided. Balance may be damage by this.
Never operate balance in explosive environment. The serial version is not explosion protected.
The structure of the balance may not be modified. This may lead to incorrect weighing results, safety-related faults and destruction of the balance.
The balance may only be used according to the described conditions. Other areas of use must be released by KERN in writing.

3.3 Warranty

Warranty claims shall be voided in case

- Our conditions in the operation manual are ignored
- The appliance is used outside the described uses
- The appliance is modified or opened
- Mechanical damage and damage caused by media, liquids
- Natural wear and tear
- The appliance is improperly set up or incorrectly electrically connected
- The measuring system is overloaded

3.4 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.

4 Basic safety instructions for scales

4.1 Pay attention to the instructions in the Operation Manual

Carefully read this operation manual before setup and commissioning, even if you are already familiar with KERN balances.

4.2 Personnel training

The appliance may only be operated and maintained by trained personnel.

5 Transportation & Storage

5.1 Testing upon acceptance

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

5.2 Packaging / return transport

⇨ Keep all parts of the original packaging for a possibly required return.

⇨ Only use original packaging for returning.

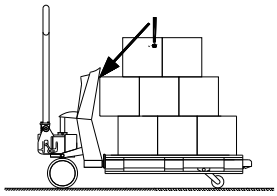
6 Unpacking, Setup and Commissioning

6.1 Site of installation, place of operation for scales

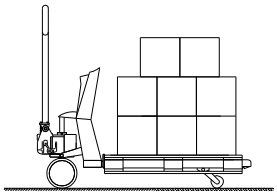
The balances are designed in a way that reliable weighing results are achieved in common conditions of use.
You will work accurately and fast, if you select the right location for your balance.

On the installation site observe the following:

- The load must be lifted clear of the display unit's case and other pallets.

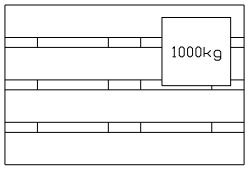


Incorrect lifting of a load

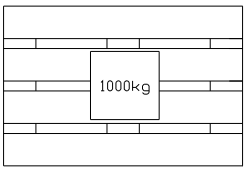


Correct lifting of a load

- The accuracy of the weighing system is falling by approximately 0.1 % per degree if there is a slant of more than 2°. Holes and unevenness, too, have this effect. A smooth floor is ideal.
- Optimum accuracy in weighing results is achieved if the load centre is between the forks. The forks are easily bent and twisted when the load is off-center. This may result in diminished accuracy.
  In verifiable models off-centre loads, or slants affecting accuracy, activate the inclination switch which in turn disconnects the display.



Non-optimal positioning of load



Optimal positioning of load

- Temperature range: The maximum deviation for 0.1% of the weighed load is between -10 and +40°C. Outside this temperature range deviations of up to 0.3% may occur.
- Avoid jarring during weighing
- Protect the balance against high humidity, vapours and dust
- Do not expose the device to extreme dampness for longer periods of time. Non-permitted condensation (condensation of air humidity on the appliance) may occur if a cold appliance is taken to a considerably warmer environment. In this case, acclimatize the disconnected appliance for ca. 2 hours at room temperature.
- Because condensed water may arise in the electronic system, fast temperature changes should be avoided. For acclimatization the balance should be switched off in case of larger temperature differences.
- 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.

6.2 Scope of supply

Serial accessories:

- Pallet truck scales
- Rechargeable battery
- Battery recharging device
- Operating instructions

6.3 Rechargeable battery operation

Rechargeable battery

The voltage supply takes place via an interchangeable battery module. With a full-loaded rechargeable battery you can weigh approx. 35 hours without interruption.

If the loading status of the rechargeable battery is too low, the display shows: “LO-BA”. If the battery is completely exhausted, the system switches off automatically.

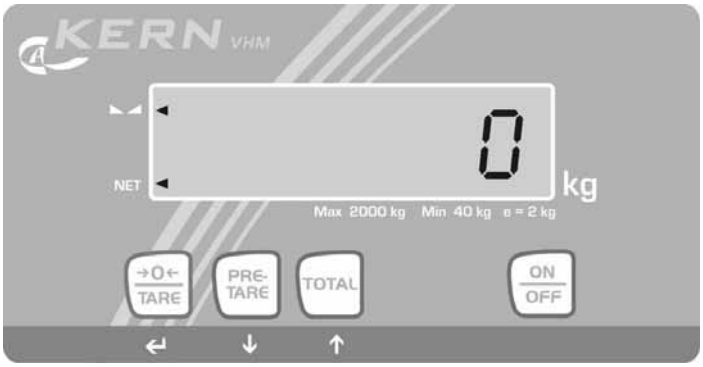
It is recommended to reload the battery at least 6 hours. In that manner a loss of rechargeable battery capacity is avoided.
When the system is used in shift work, it is recommended to purchase a supplementary battery module.
The rechargeable battery is loaded using the delivered loading device. When loading, the LED of the loading device is lighting. If the LED goes out, the rechargeable battery is reloaded. An overloading of the rechargeable battery is not possible as the loading device switches off automatically.

6.4 Commissioning

To activate the weighing system, press the ON/OFF button.
The operating temperature for the electronic system and the weighing cells will have been reached after three to five minutes. . Prior to this, deviations of c. 0.3% are possible.
Loads should not be lifted before this zero adjust is complete, see chap. 10.1.

7 Display unit

7.1 Overview of displays



The three indicators provide the following information on the display unit:

◄ The weighing system (incl. load) is stable

— The indicated weight has a negative value

NET ◄ The indicated value is a net weight

The following messages may appear on the display:

HELP 1 Weighing system overloaded

HELP 2 Taring impossible due to negative gross weight

HELP 3 Negative signal of load cells to A-D converter / slant

HELP 4 Entered tare weight too high. To cancel the HELP display press PRE-TARE and enter a new, reduced tare weight.

HELP 7 The signal of the load cells on the A-D converter is too high.

LO-BA The rechargeable battery load status is too low; charge the rechargeable battery.

7.2 Keyboard overview

Each key provides an operating as well as an input function.

	Operating function	Input function
→0← TARE	Zero setting and automatic tare	
↵		Confirm and segment to the left
PRE-TARE	Input of tare	
↓		Lower value in the flashing segment
TOTAL	Adding	
↑		Increase value in the flashing segment
ON OFF	On / Off	Delete

IMPORTANT

The actuation of a key will only be accepted if the load is stable (message “load stable” lit up). The display unit only carries out functions as long as the load is stable.

WARNING

If the weighed weight exceeds the set maximum, the display will show: “ERRO2”. To prevent damage to the display unit or at the weighing cells, please lighten the load of the weighing system instantly.

English

8 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 during the initial start-up, after change in location and variation of surrounding temperature. To receive accurate measuring values it is also recommended to adjust the balance periodically in weighing operation.

Observe stable environmental conditions. A warming up time (see chapter 1) is required for stabilization. Ensure that the system is unloaded. The system should be lifted by approx. 2 lifting index marks and stand absolutely clear.

In verified weighing systems observe the check number.
After switching on the display unit the check number is displayed. This number will be automatically adjusted after every interference. In verified systems this number is an integral part for conformity evaluation. With that it is always possible to check whether a new adjustment has been carried out. In order to display the check number, switch off and switch on the system by ON/OFF. The display unit shows subsequently e.g.:

- ⇨ 8888.8 (check of LCD segments)
- ⇨ P 7.3 (software no.)
- ⇨ 14325 (check number)
- ⇨ 0 (weighing mode)

The verification is not valid, when the check number of the system does not match with the check number on the type plate.

8.1 Zeroing

- Unload weighing system and switch on with ON/OFF.
- Press →0← TARE approx. 8 sec until the display counts reverse from AF08 to AF00, followed by a determined percentage, e.g. AP 6.4. This percentage must not be more than 20.
- After zeroing the system will automatically return into the standard weighing mode.

8.2 Performance of adjustment

The weighing system off the possibility to enter one or maximally three adjustment points (multi-point adjustment). This has the advantage that even weighing systems showing a non-linear weighing curve may be easily adjusted within the required limits.

1. Adjustment with one adjusting point

After zeroing (see chap. 8.1) the old adjustment points must be set to „zero“ as follows.

- Start weighing system by pressing [ON/OFF].
- Press [PRE-TARE] approx. 18 seconds. The display will disappear. Keep pressed until the value of the first adjustment point appears.
  The lower indicator ◀ at the left edge of the display flashes

- Call up the three old adjustment points using [PRE-TARE] (🡻) or [TOTAL] (🡹), whereby the indicator at the left edge of the display moves upwards from the bottom.
  When adjusting with only one adjustment point, the second and the highest value must be set to „zero“ as follows.
- Press [PRE-TARE] (🡻) or [TOTAL] (🡹) until the second adjustment point appears. The central indicator bar flashes.

- Press [→0←/TARE], first digit is flashing.

- Use (🡻) or (🡹) to set the flashing digit to zero.
- Press [→0←/TARE], the display changes to the following digit.

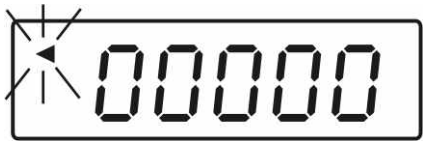
English

- Use PRE-TARE (🡻) or TOTAL (🡹) to set the flashing digit to zero.
- Repeat this process for every digit.
- After zeroing the last digit press →0← TARE, the indicator bar flashes.

- Press PRE-TARE (🡻) or TOTAL (🡹) until the highest adjustment point appears. The upper indicator ◀ flashes.

- Press →0← TARE, first digit is flashing.

- Use PRE-TARE (🡻) or TOTAL (🡹) to set the flashing digit to zero.
- Repeat this process for every digit.
- After zeroing the last digit press →0← TARE, the upper indicator ◀ flashes.



- To adjust with **one** adjustment point press PRE-TARE (↓) or TOTAL (↑) until the first adjustment point will be displayed. The lower indicator ◀ flashes.

- System loaded with the adjustment weight. To enter the adjustment weight press →0← TARE, the first digit flashes.

- To change the flashing digit, press PRE-TARE (↓) or TOTAL (↑) so many times until the desired value will appear.
- Confirm input by →0← TARE.
- Change to the following digit using →0← TARE and if necessary, change and acknowledge as described before.
- Repeat this process for every digit.
- After changing and confirming the last digit, the lower indicator ◀ will flash.

- For acknowledgement press →0← TARE 3 seconds. The display counts reverse from AF08 to AF00, the first adjustment point is set.
- To exit the adjustment mode press TOTAL or PRE-TARE until AP XX appears.
- Keep →0← TARE pressed until the display vanishes.

English

2. Multi-point adjustment

The balance must be turned on and reset to zero (see chap. 8.1).

- Press PRE-TARE approx. 18 seconds. The display will disappear. Keep pressed until the value of the first adjustment point appears.
  The lower indicator ◀ at the left edge of the display flashes

- System loaded with the first adjustment weight. To enter the adjustment weight press →0← TARE, the first digit flashes.

- To change the flashing digit, press PRE-TARE (🡻) or TOTAL (🡹) so many times until the desired value will appear.
- Confirm input by →0← TARE.
- Change to the following digit using →0← TARE and if necessary, change and acknowledge as described before.
- Repeat this process for every digit.
- After changing and confirming the last digit, the lower indicator ◀ will flash.

- For acknowledgement press →0← TARE 3 seconds. The display counts reverse from AF08 to AF00, the first adjustment point is set.
- Press TOTAL (🡹), the second adjustment point is displayed. The central indicator bar flashes.

- System loaded with the second adjustment weight. To enter the adjustment weight press →0← TARE, the first digit flashes.

- To change the flashing digit, press PRE-TARE (↓) or TOTAL (↑) so many times until the desired value will appear.
- Confirm input by →0← TARE.
- Repeat this process for every digit.
- After changing and confirming the last digit, the central indicator ▬ will flash.

- For acknowledgement press →0← TARE 3 seconds. The display counts reverse from AF08 to AF00, the second adjustment point is set.
- Press TOTAL (↑), the third adjustment point is displayed. The upper indicator ◀ flashes.

- System loaded with the third adjustment weight. To enter the adjustment weight press →0← TARE, the first digit flashes.

- To change the flashing digit, press PRE-TARE (↓) or TOTAL (↑) so many times until the desired value will appear.
- Confirm input by →0← TARE.

- Repeat this process for every digit.
- After changing and confirming the last digit, the upper indicator ◀ will flash.

- For acknowledgement press →0← TARE 3 seconds. The display counts reverse from AF08 to AF00, the second adjustment point is set.
- To exit the adjustment mode press TOTAL or PRE-TARE until AP XX appears.
- Keep →0← TARE pressed until the display vanishes.

- ⇨ After adjustment the display device remains automatically in the higher resolution. After switching off and on the factory-side resolution will be displayed again.
- ⇨ If you readjust adjusted scales with the help of multi-point adjustment, you should use the smallest weight first, followed by the medium weight and finally the greatest weight.
- ⇨ If an incorrect value that cannot be reset was entered during the adjustment, switch the scales off and start right from the beginning.

9 Verification

General hints:

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 purposes.
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 notes:

An EU type approval exists for the weighing system described in its technical data as verifiable. If the weighing system is used where obligation to verify exists as described above, it must verified and re-verified in regular intervals.
Re-verification of a weighing system is carried out according to the respective national regulations. The validity for verification of weighing systems in Germany is e.g. 2 years.
The legal regulation of the country where the balance is used must be observed!

Check number:
After switching on the display unit the check number is displayed. This number will be automatically adjusted after every interference. In verified systems this number will be recorded by the weights and measures inspector. With that it is always possible to check whether a new adjustment has been carried out.
In order to display the check number, switch off and switch on the system by ⏻. The display unit shows subsequently e.g.:

⇨ 8888.8 (check of LCD segments)
⇨ P 7.3 (software no.)
⇨ 14325 (check number)
⇨ 0 (weighing mode)

- The verification is not valid when the check number of the system does not match with the check number on the type plate.
- Verification of the weighing system is invalid without the "seal".
- 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.
- The verifiable model of the weighing system will display stripes only if a slant exceeds 2°. If this is the case, place the weighing system on an even base.

Position of the official seals:

Inclination switch:
In verifiable models off-centre loads, or slants affecting accuracy, activate the inclination switch which in turn disconnects the display.

10 Operation

10.1 Prior to weighing: ZERO-POINT CHECK

Prior to each weighing process ensure that the system is unloaded and clear of obstructions. The display unit provides automatic zero adjustment. This means, that small deviations from the zero-point are corrected automatically. If the display unit does not correct the zero-point automatically you will have to carry out a manual correction with the help of the →0← TARE key.

- ⇨ Press →0← TARE button for approx. 8 seconds
- ⇨ The displayed value changes from „AF 08“ to „AF 00“
- ⇨ The system displays the percent value of the weighing range, e.g. „AP 6.4“. This percent value must not be more than 20.
- ⇨ The zero resetting is herewith concluded, the system returns automatically into the standard weighing mode. „0“ appears.

English

10.2 Gross weighing

After the load was lifted, the display shows the gross value of the weighed weight.

10.3 Net weighing

10.3.1 Taring by pressing a button

The display unit offers an option that allows tare weights to be reset to zero by pressing a button. In this way net weight changes can be traced. After taring, the display unit will once again start at the smallest display step.

- ➢ Lift tare load.
- ➢ Press →0← TARE button.
  The zero display appears.
  The indicator ◀ next to “NET“ indicates that a tare weight is active.
- ➢ Loading and unloading the net load.
  The net value of the weighed weight is displayed.
  For unloading this will be a negative value.
- ➢ To delete the tare value, remove load from weighing system and press →0← TARE.

10.3.2 Numerical input of tare (PRE-TARE)

You may enter the tare weight at any time, that is, regardless whether the scales are in a loaded or unloaded state. To achieve a higher accuracy, a tare weight with a higher resolution may be entered, regardless of the size of the weight and the display steps of the appliance.
A tare weight larger than the so-called Max 1 of the weighing system is or will not be accepted. „HELP 4“ appears. MAX1 is the maximum weight value in the first interval of the multiple range display (in the standard version this are 200 kg, see chap. 10.1).

To cancel the HELP display press PRE-TARE and enter a new, reduced tare weight.

- Press PRE-TARE button, the most recently used tare value appears.
  The segment on the right is flashing.
- If the displayed tare value shall be used an other time, press →0← TARE for 3 seconds.

or

- Press PRE-TARE button, the most recently used tare value appears.
  The segment on the right is flashing.
- To change the flashing digit, press TOTAL (upwards) or PRE-TARE (downwards) so many times until the desired value will appear.
- Press →0← TARE, the display changes to the following digit.
- Press PRE-TARE (🡻) or TOTAL (🡹) so many times until the desired value will be displayed.
- Repeat this process for every digit.

Activate / save tare weight:

- Press →0← TARE for three seconds.

  The indicator ◀ next to „NET“ will be displayed.
  If the system is unloaded, the entered tare value is shown negative.
  If the system is loaded, the net value of the weighed weight will appear on the display.
  The entered value remains active until a new tare weight is entered or a new load is tared, (see chapter 10.4.1) or a reset to zero is carried out.

Return to weighing mode:

- If the system is loaded, press PRE-TARE for 2 seconds. The tare value will be reset to zero and the system reverts to standard weighing mode.

or

- If the system is unloaded, press the →0← TARE button. A reset to zero is carried out and the system reverts to standard weighing mode.

10.4 Addition of individual weighings

The display unit offers an option that allows the addition of weighing values and the display of the total weight. When the tare weight is active, the net weight is automatically added up.

Add up:

- Loading the system with the load to be added
- Wait for the stability display, then press TOTAL, the weight value will be added into the summation memory.

  In the display alternately appear consecutive numbers (number of weighings) and the total weight (summation memory).
  After a few seconds the system automatically reverts to standard weighing mode.
- Add more weighed goods as described before. Please note that the system must be unloaded between the individual weighing procedures.

Display the saved weighing data:

- Press the TOTAL button for three seconds. The total weight (summation memory) and the number of weighings will de displayed alternately.

  After a few seconds the system automatically reverts to standard weighing mode.

Delete weighing data:

- Press the TOTAL button for three seconds. The total weight (summation memory) and the number of weighings will de displayed alternately. During this display press TOTAL. The data in the summation memory are deleted. In the display appears the following number „00“ and the starting value 0 kg.
- The system automatically reverts to standard weighing mode.

- Please note that the system must be unloaded between the individual weighing procedures.
- Additional summation is also possible after the scales were turned on or off. The stored values are kept after the scales were turned off.
- The weighing value to be totalized must exceed the minimum load of the system (see chap. 1).

English

11 Service, maintenance, disposal

11.1 Cleaning

Please do not use aggressive cleaning agents (solvents or similar agents), but a cloth dampened with mild soap suds. Take care that the device is not penetrated by fluids and polish it with a dry soft cloth.

11.2 Service, maintenance

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

The same maintenance guidelines apply to the chassis of the mobile weighing system as those for simple manual pallet trucks. Experience has proved that the integrated weighing system continues to function even if the chassis was damaged by overloading.

General rules:

As the steering wheels are mounted at the front, it is better to pull rather than push the manual pallet truck.

- If the lifting device is not used, the manual lever should be left in central position. This prolongs the life span of the seals.
- The weighing system complies with the protection standard IP65. That means that dust and humidity, such as rain or a water jet from any direction do not influence the function of the electronic system. High-pressure water jets, especially of warm water or mingled with cleaning agents, however, may cause moisture penetration. This may have negative effect on the function of the system.
- To prevent damages to the electronic system and weighing cells it is necessary that welding work on the entire weighing system is carried out exclusively by technical specialists.
- The bearings of the wheels (with the exception of polyurethane) as well as the joints in the load roller section should be regularly cleaned and greased.

11.3 Disposal

Disposal of packaging, appliance and rechargeable battery must be carried out by operator according to valid national or regional law of the location where the appliance is used.