LW MEASUREMENTS, LLC

Professional Weighing Equipment

LBS SERIES Bench Scales

LARGE BENCH SCALE

Operating Manual

Declaration of Conformity

Declaration of conformity for apparatus with CE mark:

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

Electronic scale: LBS Large Bench Scale

Imperial version	Metric version
500 lb	227 kg

Mark applied	EU Directive	Standards
CE	2004/108/EC	EN 61326-1: 2006

Date: 14. 11. 2012

Signature:

Boon

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Identification

Customer Service

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Please refer to our website for information about local customer service centers and details of their addresses.

Introduction

What you should know about these Operating Instructions:

Tree® Professional Weighing Equipment products are simple to operate.

Nevertheless, you should read through these operating instructions in their entirety, so that you can make optimum use of the full potential and the diverse possibilities of the weighing machine in your daily work.

These operating instructions contain guidance in the form of pictograms and keyboard diagrams, which should help you in finding the required information:

For the labeling of potential hazards and advice, please see Safety below.

Contents

1 Safety

1.1 Representations and symbols

Important instructions, which involve safety, are highlighted with the appropriate mark:

⚠ DANGER

1.2 Safety recommendations

When using the weighing equipment in surroundings with increased safety requirements, the corresponding regulations must be observed:

The weighing machine may only be used with the power adapter supplied exclusively for use with this weighing machine.

Before inserting the power adapter, the user must ensure that the operating voltage stated on the power adapter agrees with the mains voltage.

If not, please contact Customer Service at the address above.

If the power adapter or its cable is damaged, the weighing machine must immediately be disconnected from the electricity supply (pull out the power adapter).

The weighing machine may only be operated from mains electricity supply with a power adapter which is in perfect condition.

If there should be any reason to believe that it is no longer possible to operate the weighing machine without danger, the weighing machine is to be immediately unplugged from the electricity supply (pull out power adapter) and secured against inadvertent operation.

In carrying out maintenance work, it is essential to follow the recommendations in Chapter 6 Maintenance and service.

The weighing machine must not be operated in an area subject to explosion risks.

Care must be taken when weighing liquids to ensure that no liquid is spilled into the inside of the weighing machine or into connections on the rear of the equipment or the power adapter. If liquid is spilled on the weighing machine, it must immediately be unplugged from the mains electricity supply (pull out power adapter).

The weighing machine may only be operated again after it has first been re-checked by a service technician.

These operating instructions must be read by each operator of the equipment and must be available at the workplace at all times.

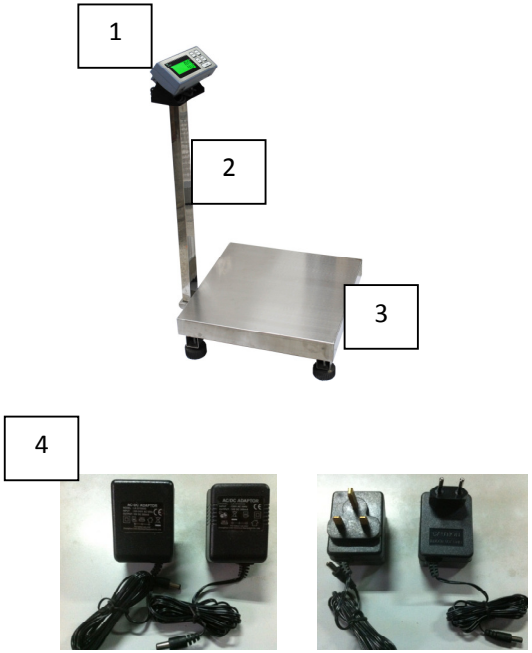
2 Your weighing machine

2.1 Construction and functions

2.1.1 Construction of the weighing machine

The weighing machine consists of (1) the indicator, (2), the rectangular metal support tube, (3) the platform and base unit, (4) the adapter and this operating manual.

Figure 2.1 Your weighing machine



2.1.2 Functions of the weighing machine

The LBS Series are high-quality electronic precision weighing machines with the following specifications:

1. **Imperial weight unit version**

Model number	Capacity	Division	Weighing pan Size
LBS M-1-0613	500 lbs	0.1 lb	18 x 24 in
Package Standard carton	33 x 28 x 7 in^3		
Package Master carton	1 unit / carton		
Shipping weight	45 lbs		
Operating Temperature	41 - 95 ºF		
Power Source	Rechargeable batteries or AC/DC Adapter 120V/500mA		

2. **Metric weight unit version**

Model number	Capacity	Division	Weighing pan Size
LBS M-1-0613	227 kg	0.05 kg	45.72 x 60.96 cm
Package Standard carton	83.82 x 71.12 x 17.78 cm^3		
Package Master carton	1 unit / carton		
Shipping weight	20.41 kg		
Operating Temperature	5 - 35 ºC		
Power Source	Rechargeable batteries or AC/DC Adapter 12V/500mA		

Features

- Auto back light (selectable)
- Auto shut-off (selectable)
- Hold function
- Animal weighing mode
- Peak hold function
- AnyCal calibration software
- Selectable calibration unit: kg or lb
- RS232 function
- Can work as either an indicator or a display
- Three modes: Normal mode / Setting mode / Internal Auto calibration mode
- Zero range: 0 to 10% of full capacity
- Tare range (10% to full capacity)
- 4.5 Ah rechargeable battery
- Display options: 5 digital LCD
- Power: AC adapter 10V 500mA
- Operating humidity: 25% - 95% of RH
- Error message indication:

Err-0	Overload
Err-5	Unstable when power is on
Err-c	Calibration code insufficient
[+−]	Low battery indication

2.2 Application and Conformity

2.2.1 Correct use of the weighing machine

The weighing machine may only be used for the weighing of solid-materials and of liquids in secure containers.

The maximum allowable load of the weighing machine must never be exceeded; otherwise the weighing machine may be damaged.

When using the weighing machine in combination with other appliances as well as with appliances produced by other manufacturers, the appropriate regulations for the safe use of the relevant attachments and their application in accordance with instructions must be observed.

2.2.2 Conformity

The weighing machine has been manufactured and tested in accordance with the standards and recommendations set out in the declaration of conformity.

The power adapter produced for the operation of the weighing machine and intended exclusively for this application complies with the appropriate electrical protection class.

2.3 Data and parameters

2.3.1 Technical data

The following applies to all LBS series weighing machines

Power supply:

. Input: 120 V AC (+/-15-20%); 50 to 60Hz
. Output: 10v DC 500mA

Allowable ambient conditions

Temperature: 41 - 95ºF 5℃ - 35℃
Relative humidity: 25% - 85%, non-condensing

If you have any questions on the technical data or require detailed technical information on your weighing machine, please contact your technical representative.

2.3.2 RS232 Data interface

interface:

1：signal interface：（microphone socket）

Red-→E+（pos source）/ Yellow or Blue-→S+（pos signal）
Black-→E-（neg source）/ White or Green→S-（neg signal）

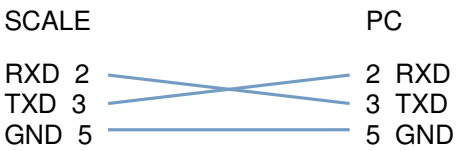
No sign -------→GND

2：recharge battery socket：
AC/DC 10V————————external positive, inner negative

3：RS232 interface：DB9

RS232 TRANSMIT FUNCTION

1. RS232 interface：DB9



2. RS232 Transmission Agreement：

- Mode：Simplex Asynchronous Serial
- Baud rate：9600
- Data Bit：8
- Parity Bit：NONE
- Stop Bit：1
- Data Format：ASCII

3. Transmission Information Format：20 Byte， blank=20H

M= overload mode
W= normal weighing mode

: = weight information

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
W/M	:	±																CR	LF

Weight information Unit formation

Exampla: 50kg

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
W	:	+							5	0	.	0	k	g				CR	LF

;

3 Getting started with your weighing machine

3.1 Unpacking the equipment

The machine is delivered in an environmentally-friendly carton, specifically developed for this precision instrument, which provides optimum protection for the machine during transportation.

We suggest that you retain the original packaging in order to avoid transportation damage if re-shipping or transporting the weighing machine, and to allow the machine to be stored in the best conditions if it is out of operation for an extended period of time.

In order to avoid damage, attention must be given to the following points when unpacking the machine:

- Unpack the weighing machine carefully. It is a precision instrument.
- When outside temperatures are very low, the weighing machine should first be stored for some hours in the unopened transport package in a dry room at normal temperature, so that no condensation settles on the machine when unpacking.
- Check the weighing machine immediately after unpacking for externally visible damage. If you should find transport damage, please inform your service representative immediately.
- If the machine is not to be used immediately after purchase but rather at a later time, it should be stored in a dry place where fluctuations in temperature are as small as possible (see Chapter 7 Transport, storage.).

– Read through these operating instructions even if you already have prior experience with weighing equipment, before you work with the weighing machine and pay attention to the Safety recommendations (see Chapter 1 Safety).

3.2 Scope of delivery

Inspect delivery for completeness immediately upon unpacking all components.

Checklist for complete delivery

	Component delivered present yes / no
Weighing unit with platter	
Indicator	
Stainless steel column	
Six screws	
2 washers, 2 nuts	
Power adapter	
Operating manual	

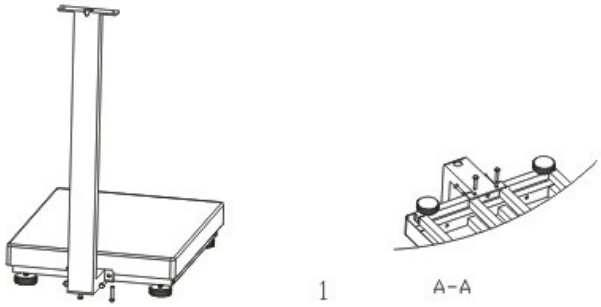
3.3 Assembling your weighing machine

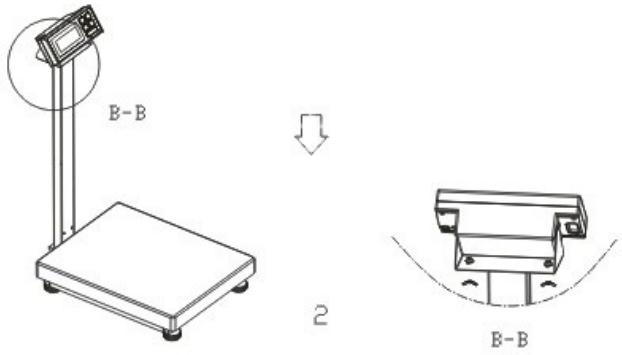
The weighing machine is delivered in a partly dismantled condition. Assemble the individual components in the following sequence:

– Place the unit base on a flat and level surface away from water, condensation, direct heat and direct sunlight.

– Fix the stainless steel column onto the base with the four screws provided as shown in ***figure A-A***.

– Next, fix the indicator on top of the stainless steel column with the two screws, two washers and two butterfly nuts provided as shown in ***figure B-B.***





3.4 Choice of a suitable location

The environment in which your weighing machine is used is very important. Air movement, temperature changes, vibrations, direct sunlight, etc. all influence the performance of high precision weighing machines. Therefore, place your weighing machine on a solid, sturdy surface that is free of air currents, vibration and not in direct sunlight. The surface should not be magnetic and should be located away from doors, windows, heaters, air conditioners and fans.

To summarize:

- Put the weighing machine on a solid, firm and preferably vibration-proof, horizontal base.
- Make sure that the weighing machine cannot be shaken, bumped or knocked over.
- Protect from direct solar radiation at all times.
- Avoid drafts and excessive temperature fluctuations.

3.5 Checking the mains voltage

The following Safety recommendations must be observed when connecting the weighing machine to the mains:

⚠ DANGER

The weighing machine may only be operated with the power adapter supplied.

Check before connecting the power adapter to the mains supply, that the operating voltage stated on the power adapter agrees with the local mains voltage.

If the operating voltage is not the same as the mains voltage, the power adapter must, on no account, be connected to the mains supply. Contact your customer service representative.

3.6 Calibrating the weighing machine

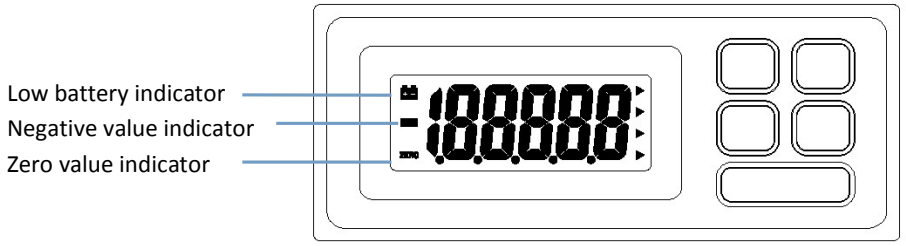
Since the Earth's gravity is not the same everywhere, each weighing machine must be adjusted to compensate for the gravity differences at each location in accordance with the underlying physical weighing principles. The adjustment process, known as calibration, may need to be carried out on initial installation and after each subsequent relocation.

In order to ensure exact measurements, it is recommended that the balance should be calibrated regularly using a known external calibration weight (see Section 5 below).

4 Working with the application menu

4.1 Display messages and key functions

4.1.1 Display messages



***NOTE*:** *When the low battery indicator is orange, you should recharge the battery for 8-10 hours. Once charged, the orange light will turn green. Over-charging may cause permanent damage.*

4.1.2 Key functions

- ON-OFF key turns the weighing machine on/off.

- HOLD key stores the weight value.

- ZERO (for TARE) is a ZERO feature if the load is below 10% of full capacity or is a negative value. It is a TARE feature if the load is between 10% and full capacity. It has a multiple tare function, but the total weight before and after TARE must be less than full capacity.

- The PRINT key is used to send data to an external device though the RS232 connector.

4. 2 Program options

Please see our website at http://lwmeasurements.com for practical demonstrations of application usage.

4.2.1 Interface Settings

- Press and hold the HOLD key, and then press the ON/OFF key to turn on the weighing machine; display will show A-ON or A-OFF.

- Press the UNIT key, the display will show “L-ON” or “L-OFF

- Press the UNIT key again, display will show “P-XX”

- Press ZERO key to select CON, OFF, KEY, STB

a) OFF means the serial data output is disabled
b) KEY means manual mode , press the [PRINT] key to print
c) STB means data will automatically print when the weighing machine is stable
d) CON means data will continuously print

e) Press the ON/OFF key to turn of the machine

4.2.2 Function settings

4.2.2.1 Setting auto Shut-off

Press and hold HOLD key, then press ON/OFF key to turn on the weighing machine, display will show “A ON” or “A OFF”, Press ZERO key to select Auto shut off mode “ON” or “OFF”.

4.2.2.2 Setting backlight

Press and hold HOLD key, then press ON/OFF key to turn on the weighing machine, display will show “A ON” or “A OFF”, Press UNIT key, display will show “L ON”, “L OFF” or “L AU”, press ZERO key to select back light On, Off or Au (auto).

4.2.2.3 Setting Power-on mode

Press and hold HOLD key, then press ON/OFF key to turn on the weighing machine, display will show “A ON” or “A OFF”, Press UNIT key three times, display will show “J ON” or “J OFF”, press ZERO key to select “J ON” (means showing zero when machine is turned on) or “J OFF” (means showing the weight placed when the machine is turned on).

4.2.3 Working mode setting

- Press the UNIT key, display will show F-Nor or F-PEA or F-Ani. Press the ZERO key to select Nor, PEA or Ani.

a) NOR means the normal weighing function is activated.
b) PEA means the peak hold weighing function is activated.
c) ANI means the animal weighing function is activated.

– Press the UNIT key, the display will show N-dsp or N-Ind. Press the ZERO key to select dsp or Ind. (dsp means it can display synchronously as a displayer for another indicator through the RS232 socket. Ind means it is only an indicator for the weighing machine).

– Press the UNIT key, the display will show Kd 50 or Kd 100 or Kd 200 or Kd 400. Press the ZERO key to select the animal scale anti-shock range among 50, 100, 200 or 400.

– Press the UNIT key, the display will dhow Fd 0.5 or Fd 3 or Fd 5 or Fd 10. Press the ZERO key to select the animal scale filter range among 0.5, 3, 5, 10.

– Press the UNIT key, the display will show Ft 1 or Ft 2 or Ft 3 or Ft 4. Press the ZERO key to select the animal scale filter time among 1s ,2s, 3s, 4s.

– Press the UNIT key, the display will show U-on or U-off. Press the ZERO key to select. U-on means you can switch units between kg and lb. U-off means that the lb unit will be disabled.

NOTE: *Kd, Fd, Ft work only in the F-Ani mode.*

4.2.4 Hold function

- Press ON/OFF key to turn on the weighing machine, then place the item on the platform.

- Wait for the readings to become stable, press HOLD key, the " **.** " indicator will show.

- Remove the item from the platform, the readings will still remain on the display. Now you can select Unit (pounds or kilograms) by pressing the UNIT key.

NOTE: *lb cannot be selected if lb was disabled in the Function setting – Working mode Sec 4.2.3).*

- Press HOLD key to quit hold function mode and return the machine to weighing mode.

4.2.5 Peak Hold mode

- In Working mode settings (Section 4.2.3) choose F-PEA. PEA means that the peak hold weighing function is activated.

- Before weighing, press the HOLD key.

5 Calibration using an external calibration weight

Note: Calibration may be required when the weighing machine is initially installed or if it has been moved a substantial distance. The weighing machine should be allowed to warm up for 30 minutes before calibration.

A reminder when operating our larger capacity weighing machines:

The weighing machines of the LBS series are calibrated at the factory. Usually no recalibration is necessary unless major inaccuracies are observed. If calibration is deemed necessary, an appropriate test weight of at least 2/3 of the full capacity of the scale should be used to obtain accurate weighing.

– Press and hold the ZERO key, and then press the ON/OFF key to turn the weighing machine on. The display will show CAPU=. Press the UNIT key to select full capacity unit kg or lb (*lb cannot be selected if lb was disabled in the Function setting – Working mode Sec 4.2.3).*). Press the HOLD key to confirm your selection.

- Press the HOLD key again to enter the next menu, the display will show CAP. Press the UNIT key to select full capacity. Press the UNIT key to move the flashing digit to the right, press the ZERO key to increase the flashing digit, and press the HOLD key to confirm the selection.

- Press the HOLD key again to enter the next menu, the display will show CALU=. Press the UNIT key to select calibration unit kg or lb (*lb cannot be selected if lb was disabled in the Function setting – Working mode Sec 4.2.3)*. Press the HOLD key to confirm the selection.

- Press the HOLD key again to enter the next menu, the display will show CAL. Press the UNIT key to set the calibration weight. Press the UNIT key to move the flashing digit to the right, press the ZERO key to increase the flashing digit. Press the HOLD key to confirm the selection. ***NOTE:*** *The calibration weight should be more than 2/3 of the full capacity*.

- Press the HOLD key again to enter the next menu, the display will show DIV. Press the UNIT key to select division. Press the HOLD key to confirm the selection.

- Press the HOLD key again to enter the next menu, the display will show Adb. Press the UNIT key to select (19.20). Press the HOLD key to confirm the selection.

- Now start the calibration following the next steps:

- Press the PRINT key, the display will show CAL and then the AD value. Press the UNIT key when the stable indicator light is displayed, it will show the flashing calibration weight.

- Place the known test weight on the platform, press the UNIT key after the stable indicator light is displayed, it will show ------, and then the AD value.

- Turn off the weighing machine, remove the test weight from the platform.

- Press ON/OFF key to turn the machine on to test if the weighing is accurate, if not, repeat above steps.

6 Maintenance and service

The weighing machine must be treated carefully and cleaned regularly. It is a precision instrument.

⚠ DANGER

For maintenance-work, the weighing machine must be separated from the power supply (remove power adapter plug from the socket). Also ensure that the machine cannot be reconnected to the power supply during the work by a third party.

Take care during cleaning that no liquid penetrates into the weighing machine. If liquid is spilled on the machine, the latter must immediately be disconnected from the electricity supply. The machine may only be used again after it has first been checked by a service engineer.

The connections on the rear of the appliance and the power adapter must not come into contact with liquids.

Regularly remove the weighing platter and remove any dirt or dust from under the platter and on the weighing machine housing with a soft brush or a soft, lint-free cloth, moistened with a mild soap solution. The platter can be cleaned under running water.

Take care that the platter is completely dry before it is re-installed on the weighing machine.

⚠ CAUTION

Never use solvents, acids, alkalis, paint thinners, scouring powders or other aggressive or corrosive chemicals for cleaning, since these substances attack the surfaces of the scale housing and may cause damage.

7 Transport, storage

7.1 Transportation and shipping

Your weighing machine is a precision instrument. Treat it carefully. Avoid shaking, severe impacts and vibration during the transportation.

Take care that there are no marked temperature fluctuations during the transportation and that the weighing machine does not become damp (condensation).

7.2 Storage

If you would like to take the weighing machine out of service for an extended period, disconnect it from the electricity supply, clean it thoroughly (see Section 6.Maintenance and servicing.) and store it in a place which meets the following conditions:

- No violent shaking, no vibrations
- Minimum temperature fluctuations
- No direct solar radiation
- Minimum moisture

The weighing machine should preferably be dispatched, transported and stored in the original packaging to avoid any damage. This provides optimal protection for the weighing machine.