

Operating instructions

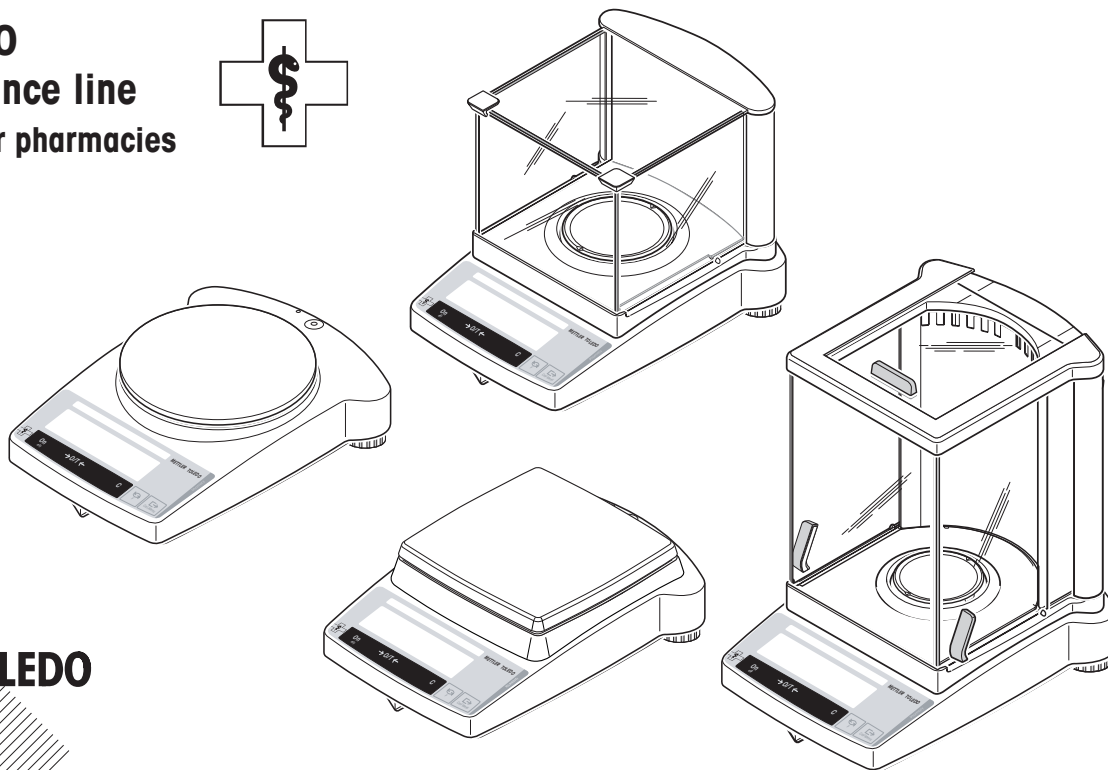
METTLER TOLEDO PHARMACY balance line

Special balances for pharmacies

- AB-S/PH
- PB-S/PH
- PB-L/PH



To be used only in pharmacies!



METTLER TOLEDO

www.mt.com/pharmacy

Operating instructions in a nutshell



Press key **briefly**




Press and **hold key down** until the desired display appears



automatic sequence

Switching on

On




00000000

0.00 g


Switching off

Off



OFF

Simple weighing



0.00 g


1182.03 g

1250.00 g

Adjustment options


(only available on B-S/PH models)

Cal/Menu




MENU


→0/T←




CAL int Cal




CAL E Cal




→0/T←




FACt oA AutoCal



FACt oFF




Taring




0.00 g

1210.1 g

→0/T←




95.97 g




- 1210.1 g

Piece counting *




→0/T←




0.00 g

1207 g


F




SEt 10 PCS




SEt 20 PCS




20 PCS



244 PCS




147.25 g



Unit switching*

↻




22.00 g

22000 mg


Formula weighing *

(only available on B-S/PH models)


Start formula weighing




ForMu IR




0.00 g




2048 g




Net 0.00 g




Weigh components




Net 10.22 g




- 1 -




0.00 g



Net 50.9 g



- 2 -



Net 0.00 g

*These functions must be activated in the menu (section 4.3.5)

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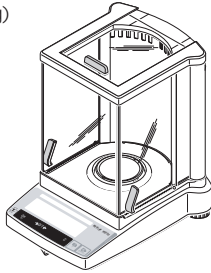
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1 Meet the PHARMACY B-S/PH and B-L/PH line of balances

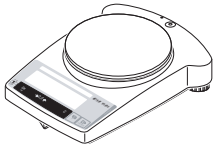
1.1 Introducing the PHARMACY line of balances (special balances for pharmacies)

The Pharmacy line of balances has been developed specifically for pharmacies and is solely for use in such environments.

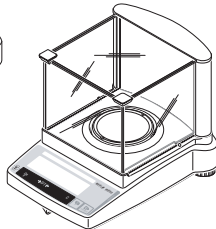
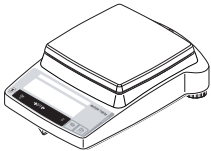
AB-S/PH (0.1 mg)



PB-S/PH (0.01 g)



PB-S/PH (0.1 g)



PB-S/PH (1 mg)

PB-L/PH (1 mg)

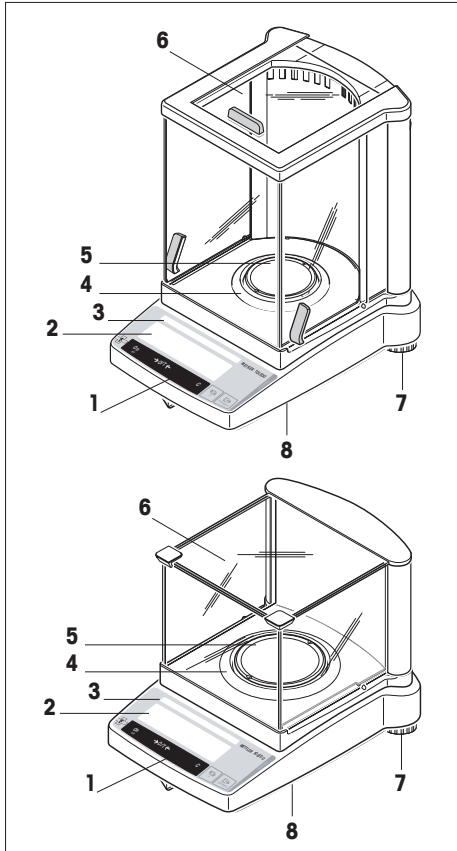
Balance features

- The B-S/PH and B-L/PH balance line ranges from high-resolution balances (AB-S/PH) with a readability of 0.1 mg through to precision balances (PB-S/PH and PB-L/PH) with a readability of 0.001g to 0.1g. The weighing ranges extend from 110 g to 6.1kg.
- In addition to basic weighing operations such as **weighing**, **taring** and **adjusting** (calibration) the functions "**Formula weighing**" (with B-S/PH models) or "**Piece counting**" can be activated.
- **FACT** (Fully Automatic Calibration Technology), fully automatic, motorized adjustment (calibration) with internal weight with B-S/H models.
- METTLER TOLEDO **DeltaRange** balances also have a movable fine range, with 10 times smaller display increments, over the the entire weighing range.
- All 0.1 mg and 1 mg balances are fitted with a glass draft shield in the factory; with other models a **draft shield** is available as an **optional extra**.
- All balances are fitted with an **RS232C interface** as standard.
- B-S/PH models have an **internal adjustment weight**.

Notes

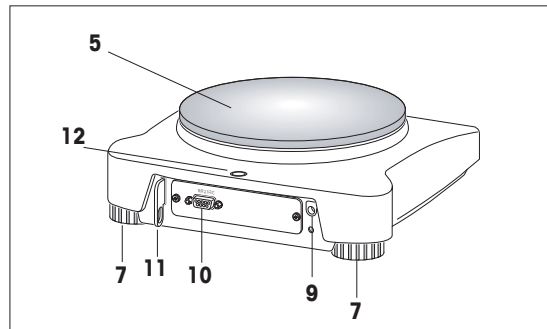
All B-S/PH balances are available as certified versions. Please ask your METTLER TOLEDO dealer for details.

1.2 Layout of PHARMACY balances

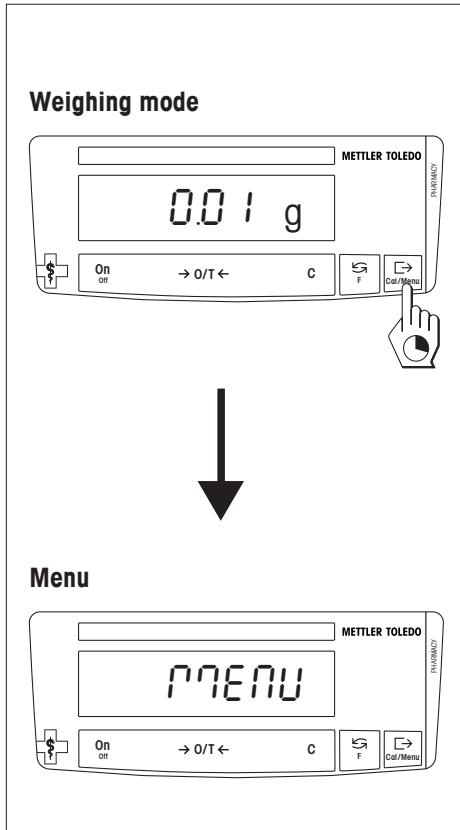


- 1 Keys
- 2 Display with backlight
- 3 Model plate with the following data:
 - "Max": maximum capacity
 - "d": readability
 - "Min": minimum capacity (recommended minimum load; **only relevant for certified balances**)
 - "e": verification scale interval (smallest display increment tested during certification; **only relevant for certified balances**)
- 4 Draft shield element
- 5 Weighing pan
- 6 Draft shield (standard supply with models AB-S/PH, PBxx3-S/PH and PBxx3-L/PH)
- 7 Leveling feet
- 8 Hanger opening for weighing below the balance (underside of balance)
- 9 AC adapter socket
- 10 RS232C interface
- 11 Lug for optional antitheft device
- 12 Leveling control





Housing, keys and display are identical for all B-S/PH and B-L/PH balances.







1.3 Overview of key functions



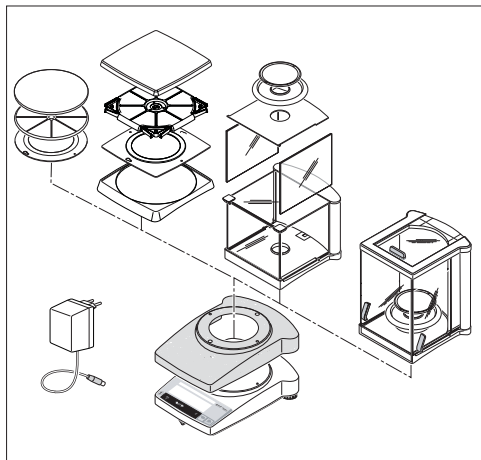
The balances have two operator control levels: the **weighing mode** and the **menu**. The function of each individual key depends on the operator control level and how long the key is pressed.

| Key functions in weighing mode | | |
|---|--|---|
| Press briefly  | | Press and hold down  |
| On | • Switch on | Off |
| → 0/T ← | • Zero/tare | |
| C | • Cancel function | F |
|  | • Switch • Change settings | |
|  | • Transfer weighing data via interface • Confirm settings | Cal/Menu |
| | | • Adjust (calibrate) • Show menu (hold key down until MENU appears) |

| Key functions in menu mode | | |
|---|---------------------------------------|---|
| Press briefly  | | Press and hold down  |
| C | • Close menu (without saving changes) | ----- |
|  | • Change settings | ----- |
|  | • Select menu options | Cal/Menu |
| | | • Save changes and close menu |

2 Startup

2.1 Unpacking / standard equipment



All B-S/PH and B-L/PH balances are supplied in environmentally compatible packaging.

The standard equipment for every balance comprises:

- **AC adapter**, to national codes
- **Transparent plastic protective cover**, fitted, to keep your balance clean at all times
- **Operating instructions**, to ensure optimum utilization of your balance's capabilities
- **CE declaration of conformity** (in separate brochure 11780294)

AB-S/PH with readability of 0.1 mg:

- Weighing pan \varnothing 80 mm with draft shield element
- Draft shield "0.1 mg" (237 mm)

PB-S/PH with readability of 0.001 g:

- Weighing pan \varnothing 100 mm with draft shield element
- Draft shield "1 mg" (141 mm)

PB-L/PH with readability of 0.001 g:

- Weighing pan \varnothing 100 mm with pan support
- Draft shield "1 mg" (141 mm)

PB-S/PH with readability of 0.01 g:

- Weighing pan \varnothing 180 mm with pan support
- Base plate for protective cover, fitted

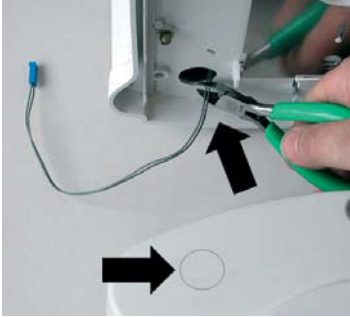
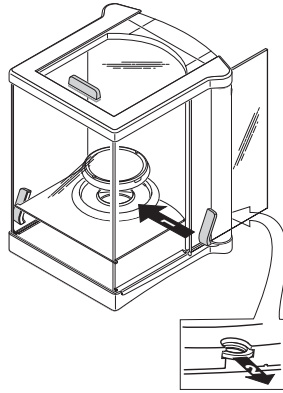
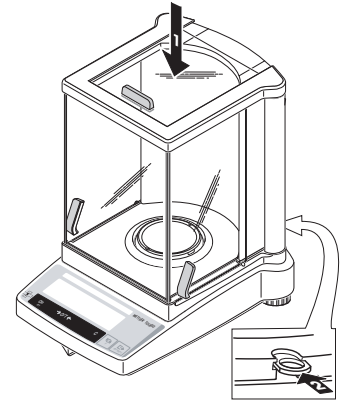
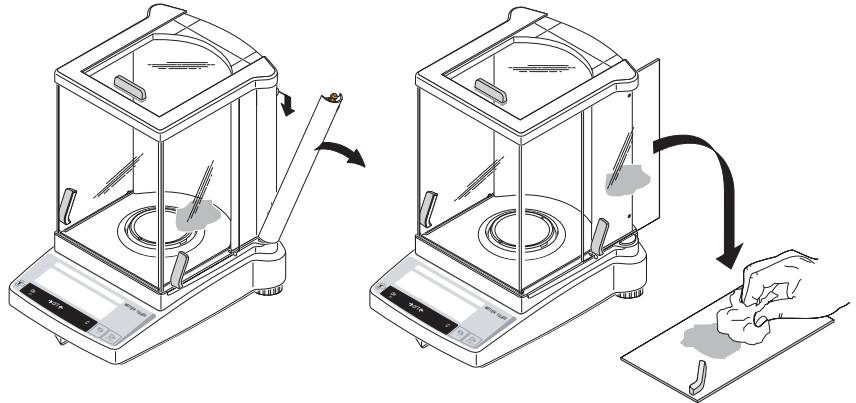
PB-S/PH with readability of 0.1 g:

- Weighing pan 180 x 180 mm with pan support
- Base plate and intermediate plate for protective cover, fitted

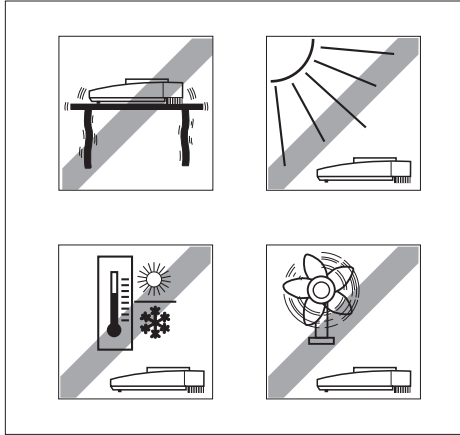
2.2 Cautionary notes



- B-S/PH and B-L/PH balances must **not** be operated in **hazardous areas** with the standard-supply AC adapter.
- Before connecting the AC adapter, verify that the voltage printed on it corresponds to the local mains voltage. If this is not the case, please contact your local METTLER TOLEDO dealer.
- B-S/PH and B-L/PH balances may only be used indoors in a dry environment.
- For use with an certified (CSA or equivalent) power supply, which must have a limited and SELV circuit output.

2.3 Installing the draft shield "0.1 mg" (237 mm)**i****1****2****i**

2.4 Setting up, leveling, preparations for weighing below the balance, connecting to power supply



The optimum location

The correct location makes an important contribution to the accuracy of the weighing results of high-resolution analytical and precision balances.

Hence, ensure a

- stable, vibration-free position as horizontal as possible

Avoid

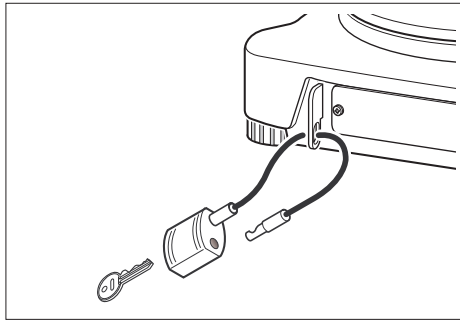
- direct sunlight
- excessive temperature fluctuations
- drafts

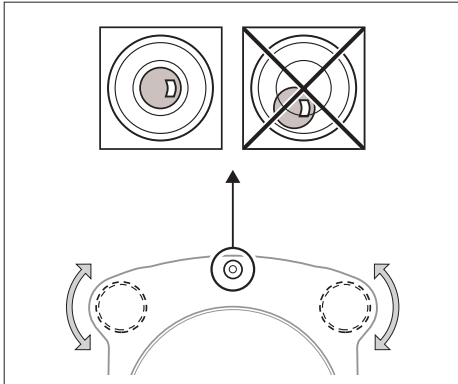
The best location is on a stable bench in a corner protected against drafts, as far away as possible from doors, windows, radiators or the louvers of air conditioners.

Antitheft device

B-S/PH and B-L/PH balances are equipped with a lug for the optional antitheft device.

The antitheft device (cable with lock) is suitable for all models. It is available from METTLER TOLEDO under the order number 590101.





Leveling

B-S/PH and B-L/PH balances have a spirit level and two adjustable leveling feet to compensate for slight irregularities in the surface of the weighing bench. The balance is exactly horizontal when the air bubble is in the middle of the level glass.

Procedure

Adjust the two leveling feet appropriately until the air bubble comes to rest exactly in the middle of the glass:

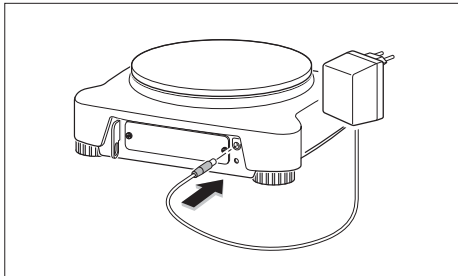
- | | |
|----------------------------|---|
| Air bubble at "12 o'clock" | turn both feet counterclockwise |
| Air bubble at "3 o'clock" | turn left foot clockwise, right foot counterclockwise |
| Air bubble at "6 o'clock" | turn both feet clockwise |
| Air bubble at "9 o'clock" | turn left foot counterclockwise, right foot clockwise |

Note

The balance should be leveled and adjusted (Section 2.5) each time it is moved to a new location.

Preparations for weighing below the balance

To carry out weighing operations below the balance, the special cover on the underside of the balance must be slackened (care: when doing this the balance may only be laid on its side, not turned upside down!), turned through 180° and retightened. This exposes the opening for the hanger, making weighing below the balance possible.



Connecting the power supply

- Before connecting the AC adapter, check that the voltage printed on it corresponds to the local mains voltage. If this is not the case, please contact your local METTLER TOLEDO dealer.
- Plug the AC adapter into the AC adapter socket on the balance, and connect to the power supply.
- The balance performs a self-test. This test is finished when "OFF" appears.
- Press the «On» key briefly: the balance is in operational readiness. Before any work is performed with the balance, it must be adjusted (Section 2.5).

Notes

To achieve accurate results with analytical balances (AB-S/PH), these must be connected to the power supply for at least 60 minutes to warm up to operating temperature before the first weighing operation is carried out.

An optional AccuPac B-S (rechargeable external battery) can be used to operate all B-S/PH and B-L/PH balances independently of the mains power supply

2.5 Adjusting (calibration)



To obtain accurate weighing results, the balance must be adjusted to match the gravitational acceleration at its location. Adjusting is necessary:

- before the balance is used for the first time
- at regular intervals during weighing service
- after a change of location

2.5.1 Fully automatic adjustment (calibration) FACT (only available on B-S/PH models)

The **factory setting** is **fully automatic adjustment FACT** (Fully Automatic Calibration Technology) with the internal weight (see also Section 4.3.3). In this setting, you have no need worry about adjusting your balance. The balance adjusts itself automatically

- after the warm-up phase on connection to the power supply,
- when a change in the ambient conditions, e.g. the temperature could lead to a noticeable deviation in the measurement.

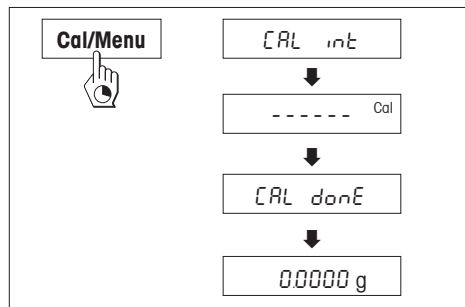
2.5.2 Manual adjustment (calibration)

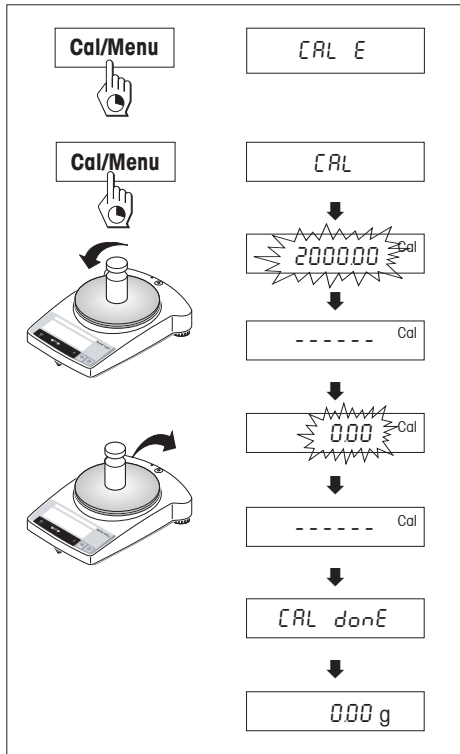
To obtain accurate results, the balance must be connected to the power supply for 30 minutes (AB-S/PH analytical balances 60 minutes) in order to reach operating temperature before adjusting.

Adjusting with internal weight (only available on B-S/PH models)

- To carry out this operation, in the second menu option (Adjustment) select "CAL int" (Section 4.1).
- Unload weighing pan
- Press and hold the «**Cal/Menu**» key down until "CAL" appears in the display, then release key.
- The balance adjusts itself automatically.

The adjusting is finished when the message "CAL done" appears briefly in the display, followed by "0.0000 g". The balance is again in weighing mode and ready for operation.





Adjusting with external weight

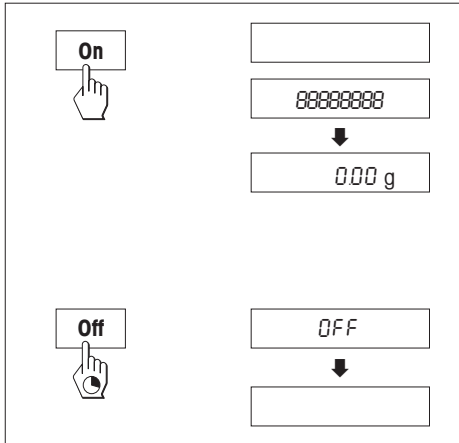
- To carry out this operation, in the second menu option (Adjustment) select "CAL E" (only with B-S/PH models)
- Have required adjustment weight ready
- Unload weighing pan
- Press and hold the «Cal/Menu» key down until "CAL" appears in the display, then release key. The required adjustment weight value flashes in the display.
- Place adjustment weight in center of pan. The balance adjusts itself automatically.
- When "0.00 g" flashes, remove adjustment weight. The adjusting is finished when the message "CAL done" appears briefly in the display, followed by "0.00 g". The balance is again in weighing mode and ready for operation.

Notes

- Because of certification legislation, the **certified models** cannot be adjusted with an external weight.
- The adjustment procedure can be terminated at any time with the «C» key. The message "Abort" appears briefly to confirm that adjustment has been canceled, and the balance reverts to weighing mode.

3 Weighing

3.1 On/off switching



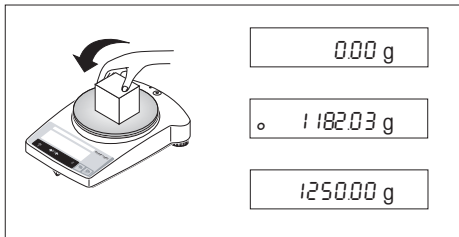
Switching on

- Remove any load from weighing pan and press «**On**» key briefly. The balance performs a display test (all segments in the display light up briefly). When zero is displayed, the balance is ready for operation.

Switching off

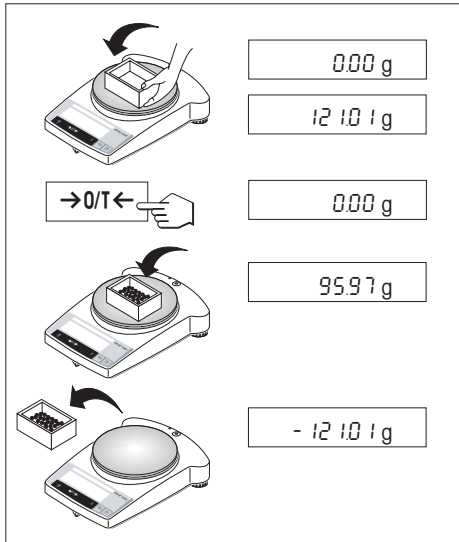
- Press and hold the «**Off**» key down until "OFF" appears in the display. Release the key.

3.2 Simple weighing



- Place weighing sample on the weighing pan.
- Wait until the stability detector "o" disappears.
- Read the result.

3.3 Taring



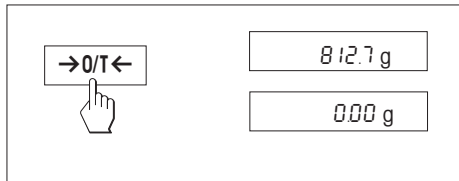
- Place empty container on the balance.
- The weight is displayed.
- Tare: press the «→0/T←» key briefly.
- Add weighing sample to container. The net weight is now displayed.

If the container is removed from the balance, the tare weight will be shown as a negative value. The tare weight remains stored until the «→0/T←» key is pressed again or the balance is switched off.

Note

With METTLER TOLEDO DeltaRange balances (next Section), the fine range with its 10 times smaller display increments is available again after every taring operation.

3.4 METTLER TOLEDO DeltaRange balances



METTLER TOLEDO **DeltaRange balances** have a movable fine range with 10 times smaller display increments over their entire weighing range. In this fine range an additional decimal place always appears in the display.

The balance operates in the fine range

- after switching on
- after every taring operation

If the fine range is exceeded, the balance display automatically switches to coarser display increments.

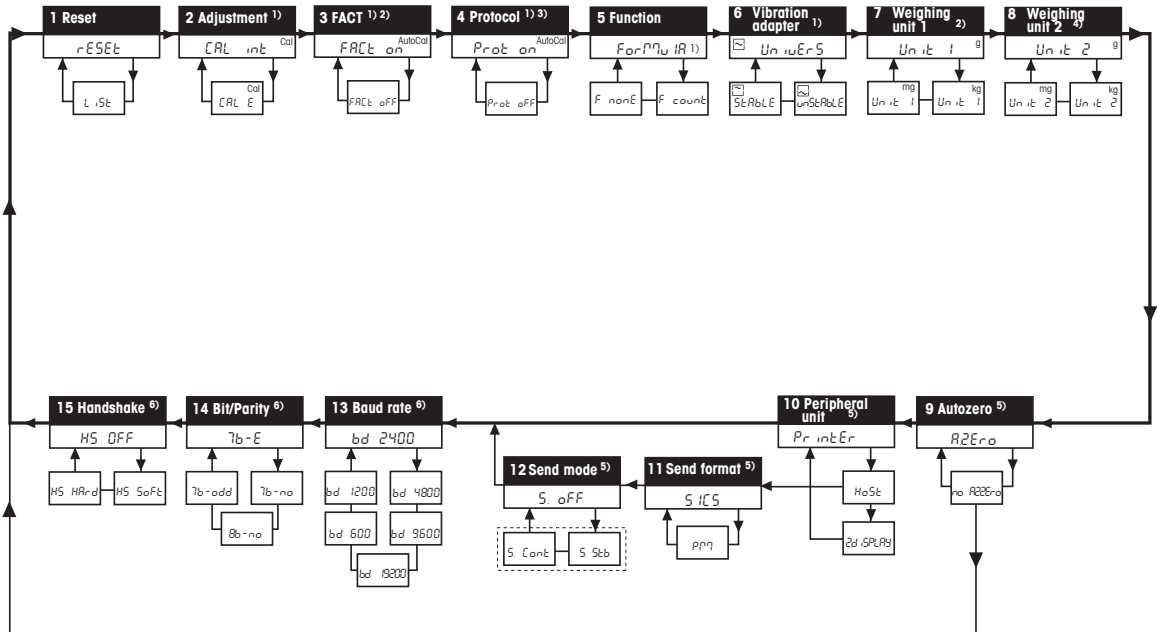
4 Menu

4.1 Overview

In the menu you can change the weighing unit (for certified balances, only if the national certification law allows), select additional functions and carry out various settings. A description of the individual menu options is given in Section 4.3.

Notes

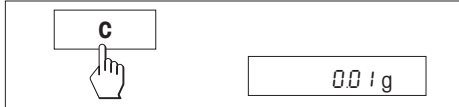
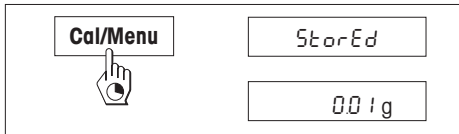
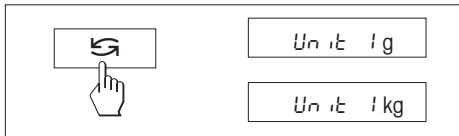
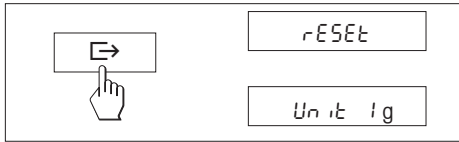
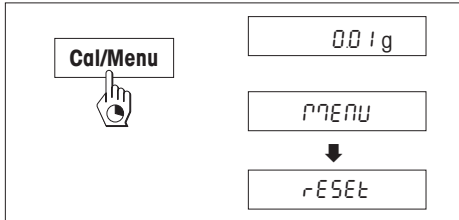
- 1) This menu option is only available on B-S/PH models.
- 2) With certified balances, this menu option has a fixed setting and cannot be changed.
- 3) These menu option is only shown if "FACT on" (Factory setting) has been selected in menu option 3 (FACT).
- 4) With certified balances, only those weighing units allowed by the appropriate national weights and measures legislation may be selected.
- 5) This menu option is only shown if "Host" has been selected in menu option 10 (Peripheral unit).
- 6) These menu options are only shown if "Host" or "Printer" has been selected in menu option 10 (Peripheral unit).



Menu option

Factory setting

4.2 Menu operation



Opening the menu

In weighing mode, press and hold down the **«Cal/Menu»** key until "MENU" appears in the display. Release the key: the 1st menu option is displayed.

Select menu options

The **«→»** key is used to select individual menu options with their current settings one after the other.

Change settings

The **«↻»** key is used to change the setting at the selected menu option. Every time the key is pressed, the next setting is displayed. Once the desired setting appears in the display, the next menu option can be selected (see above) or you can close the menu (see following sections).

Saving settings and closing the menu

Hold the **«Cal/Menu»** key down until "StorEd" appears in the display. Release the key and the balance reverts to weighing mode. All changes are saved.

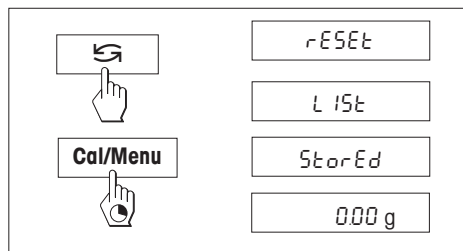
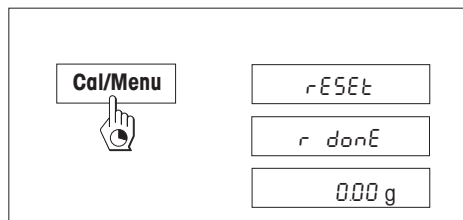
Abort

Press the **«C»** key briefly. The balance reverts to weighing mode. Changes are not saved.

Note

If no entry is made within 45 seconds, the balance reverts to weighing mode. Changes are not saved.

4.3 Description of menu options



4.3.1 Reset or recording of balance settings (1st menu option "RESET")

Reset balance settings

- Select "Reset", press and hold down the «**Cal/Menu**» key until the message "r donE" confirms that all menu settings have been reset. The balance then reverts to weighing mode and works with the **factory settings** (Section 4.1).

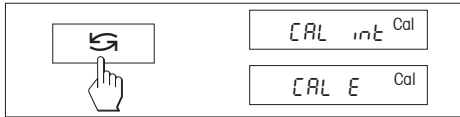
Recording balance settings

- Select "List" and hold down the «**Cal/Menu**» key until the message "StorEd" is displayed.

The current balance settings are transmitted to the peripheral device connected to the interface. To do this the setting "Printer" must always be selected at the 10th menu option (Peripheral unit). The current balance settings are saved at the same time.

4.3.2 Adjustment (2nd menu option) (only available on B-S/PH models)

In this menu option you can select whether you wish to adjust the balance using the internal or the external adjustment weight. Because of certification legislation, the **certified models** cannot be adjusted with an external weight.

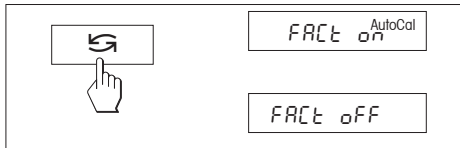


Adjusting with internal adjustment weight

Adjusting with external adjustment weight

4.3.3 FACT (3rd menu option) (only available on B-S/PH models)

In this menu option you can switch the fully automatic internal adjustment (calibration) FACT on or off.



FACT switched on

This is the **factory setting**. The balance adjusts (calibrates) itself fully automatically.

FACT switched off

Note: With the certified versions of balances, this option can not be selected, i.e. FACT is always active

4.3.4 Protocol (4th menu option) (only available on B-S/PH models)

This menu item can be used to switch the printing of the FACT fully automatic adjustment (calibration) on or off.

Note: This menu item can only be selected if FACT is switched on and does not affect the printing of adjustments with an internal or external adjustment weight (Section 4.3.3).

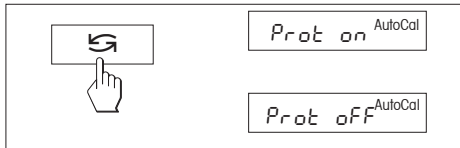
Protocol switched on

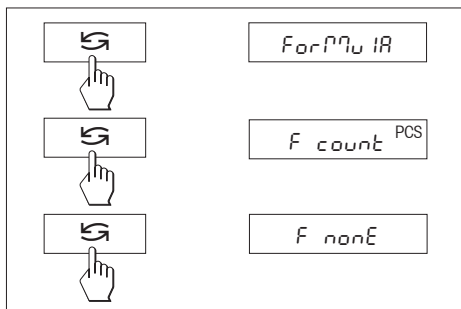
A record is printed out after every automatic adjustment of the balance (FACT).

Note: The protocol is printed out without a line for signatures.

Protocol switched off

This is the factory setting. If the balance adjusts automatically (FACT), a protocol is not printed out.

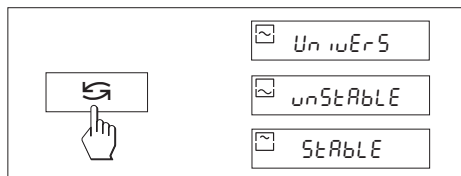




4.3.5 Functions (5th menu option / Operating Section 5)

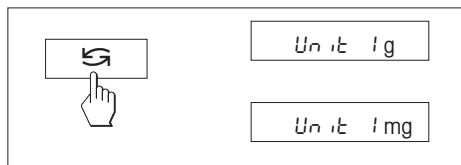
In addition to simple weighing, the following functions can be selected:

| | |
|---------|--|
| Formula | Formula weighing |
| F count | Piece counting |
| F nonE | No function, simple weighing (factory setting) |



4.3.6 Vibration adapter (6th menu option)

The vibration adapter can be used to match your balance to the ambient conditions (vibrations, drafts at location). If you work in surroundings which are practically free from temperature fluctuations, drafts, and vibrations, select "StAbLE". On the other hand, if you work in surroundings where the conditions are constantly changing, select "unStAbLE". For normal ambient conditions, select "UnivErS" (Standard). This is the factory setting.




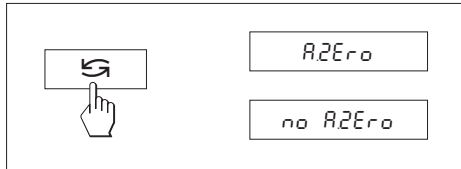
4.3.7 Weighing unit 1 (7th menu option "UNIT 1")

Depending on requirements, the balance can operate with the following units (possible with certified balances only if permitted by national weights and measures legislation):

| Unit | Conversion factor | Comments |
|------|-------------------|-----------------------------------|
| g | gram | factory setting |
| kg | kilogram | not with 0.1 mg and 1 mg balances |
| mg | milligram | with 0.1 mg and 1 mg balances |

4.3.8 Weighing unit 2 (8th menu option "UNIT 2")

If it is required to show the weighing results in weighing mode in an additional unit by pressing the «» key, the desired second weighing unit can be selected in this menu option. The same weighing units are available as under "UNIT 1".



4.3.9 Autozero (9th menu option)

This menu option allows you to switch the automatic zero correction on or off. When it is switched on, the zero point is automatically corrected for drift or contamination of the weighing pan.

The following settings are available:

Autozero switched on

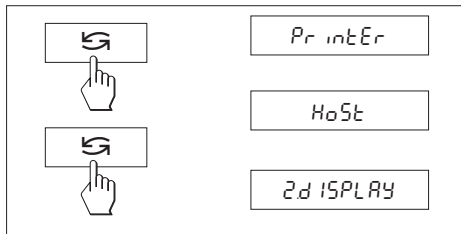
The zero point is automatically corrected.

Autozero switched off

The zero point is not automatically corrected. This setting is advantageous for special applications (e.g. evaporation measurements).

Note

With certified balances, this setting is possible only with a resolution of $e = 10d$.



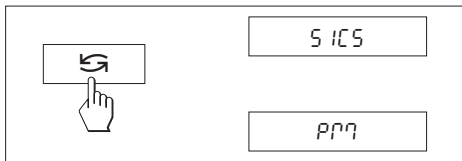
4.3.10 Peripheral unit (10th menu option)

At this menu option you can select the peripheral device connected to the optional RS232C interface. The balance automatically saves the appropriate settings (Section 4.3.11 – 4.3.15) for every peripheral device.

Printer Connected to a printer.

Host Connection to any desired peripheral device.

Aux. display Connection of an optional auxiliary display unit (communications parameters cannot be selected).



4.3.11 Send format (11th menu option)

Note: This menu option is only available if you have selected the setting "Host" in the 10th menu option (Peripheral unit)!

At this menu option you specify the data transfer format.

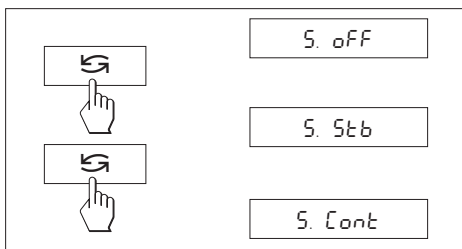
"SICS": The MT-SICS data transfer formats are used. Please refer to the "MT-SICS Reference Manual Basic-S balances 11780447" available from your METTLER TOLEDO dealer or download from the Internet (www.mt.com/sics-classic). More Information please find in the Section 6.3.

"PM"*: The following PM balance data transfer formats are used:

S. Stb: `UUUUU1.67890Ug` S. Cont: `SUUUU1.67890Ug`
`SDUUU1.39110Ug`

Additional information can be found on the Internet at www.mt.com/classic.

* unidirectional, no MT-SICS commands are accepted.



4.3.12 Send mode (12th menu option)

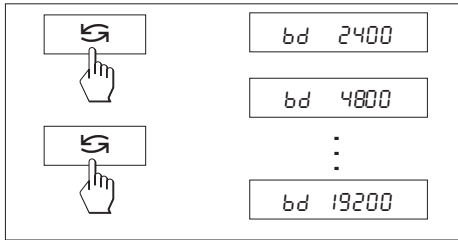
Note: This menu option is only available if you have selected the setting "Host" in the 10th menu option (Peripheral unit)!

At this menu option you specify how data is transmitted to a peripheral device.

S. OFF Send mode switched off

S. Stb The next possible stable value will be transferred after the « \square » key has been triggered.

S. Cont All values are transferred automatically.



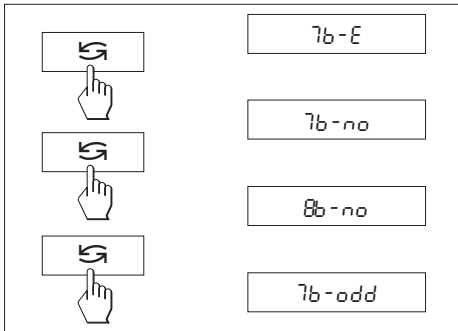
4.3.13 Baud rate (13th menu option)

Note: This menu option is only available if you have selected the setting "Host" in the 10th menu option (Peripheral unit)!

The baud rate (data transfer rate) determines the speed of transmission via the serial interface. The unit is the baud (bd) = 1 bit/second.

The following settings are available: 600 bd, 1200 bd, 2400 bd, 4800 bd, 9600 bd and 19200 bd.

For problem-free data transmission the sending and receiving devices must be set at the same value.

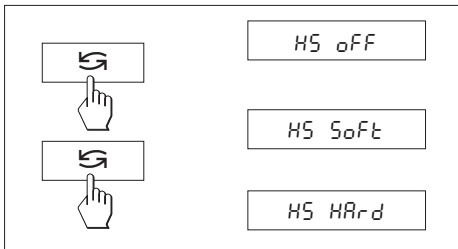


4.3.14 Bit/Parity (14th menu option)

Note: This menu option is only available if you have selected the setting "Host" in the 10th menu option (Peripheral unit)!

At this menu option you can set the character format for the attached peripheral device.

| | |
|--------|-------------------------|
| 7b-E | 7 data bits/even parity |
| 7b-no | 7 data bits/no parity |
| 8b-no | 8 data bits/no parity |
| 7b-odd | 7 data bits/odd parity |



4.3.15 Handshake (15th menu option)

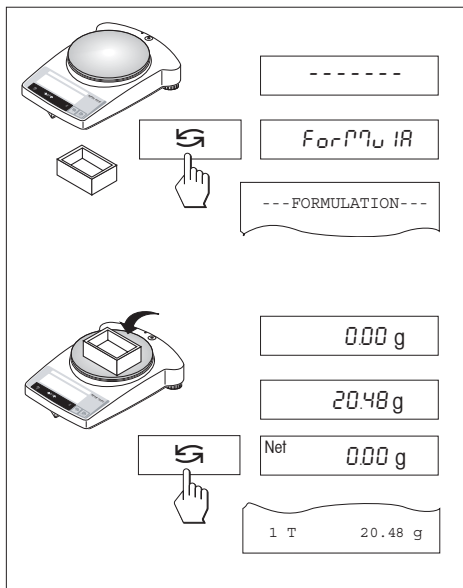
Note: This menu option is only available if you have selected the setting "Host" in the 10th menu option (Peripheral unit)!

This menu option allows you to match the data transmission to different serial receivers.

| | |
|----------|-------------------------------|
| HS oFF | No handshake |
| HS SoFt | Software handshake (XON/XOFF) |
| HS HAr-d | Hardware handshake (RTS/CTS) |

5 Functions

5.1 Formula weighing (only available on B-S/PH models)



Formula weighing offers the following possibilities

1. Saving and totaling individual weights of one or more (max. 255) components.
If a printer is connected, the component weights are printed out individually and as a total.
2. Taring of one or more (max. 99) working container weights.
If a printer is connected, the total tare weight is saved and printed out.

1. Start formula weighing

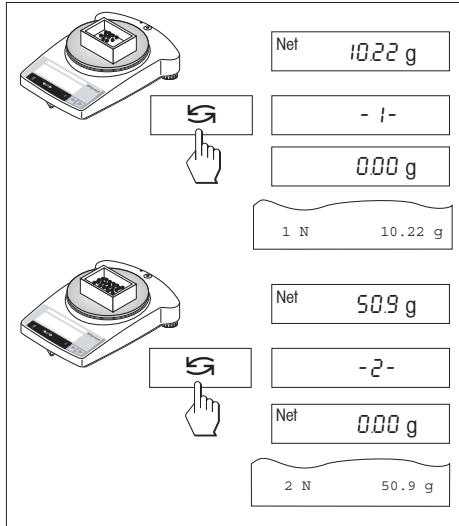
- Switch on the balance and printer (if present).
- Unload the weighing pan.
- Press the S key briefly. The display shows "Formula" for 2 seconds. Formula weighing is activated.

2. Tare the container

- Place the empty container on the weighing pan.
- Press the $\rightarrow 0/T \leftarrow$ key briefly. The container is tared and the tare weight is printed out.

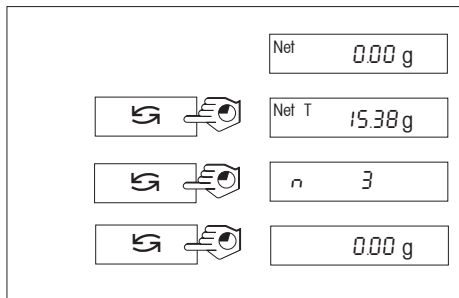
Note

If no container is tared, the individual components are totaled after they have been weighed.



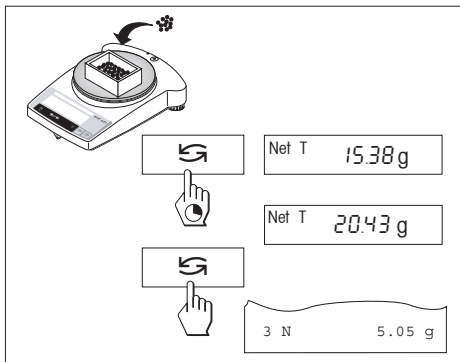
3. Weigh components

- Fill component 1 into the container. Wait until the display is stable.
- Press the \curvearrowright key briefly. The display briefly shows -1-. The addition of component 1 is confirmed and the weight of component 1 is printed out.
- Fill component 2 into the container. Wait until the display is stable.
- Press the \curvearrowright key briefly. The display briefly shows -2-. The addition of component 2 is confirmed and the weight of component 2 is printed out.
- Weigh further components.



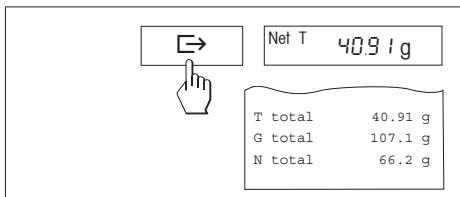
4. Display the net total weight and number of components

- Press the \curvearrowright key and hold it down. The net total weight is displayed.
- Press the \curvearrowright key and hold it down again. The number of components n is displayed.
- Press the \curvearrowright key and hold it down again. The display changes back to displaying weights. Further components can be added to the total.



5. Increase the net total weight to the desired value

- Press the **↶** key and hold it down. The net total weight is displayed.
- Fill components into the container until the desired net total weight is reached.
- Press the **↶** key briefly. The desired weight is confirmed as a further component and printed out.



6. Print out the net total weighing results and terminate formula weighing

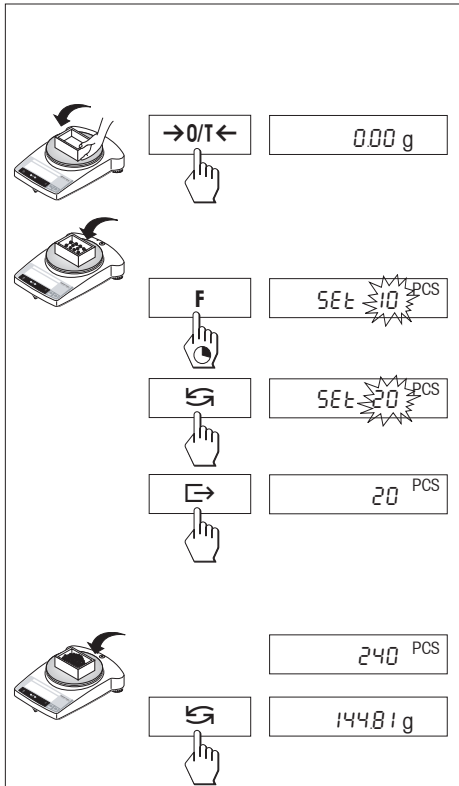
Formula weighing can be terminated after any operating step.

- Press the **⇨** key briefly.

Net total weight "N...", tare weight "T..." and gross weight "G..." are printed out.

Note: If at least 1 tare weight was placed on the balance, **NET** stays in the display until the new formula weighing is started.

5.2 Piece counting



Requirement

The function "F count" must be activated in the menu (Section 4).

→ Place empty container on the balance and tare by briefly pressing the «→0/T←» key.

Setting the reference: a reference weight must first be entered for piece counting:

→ Add a number of reference pieces to container. Possible numbers* are 5, 10, 20, 50, 100 and "no" (this setting deactivates the piece counting function). ***approved balances** min 10

Caution: Take into account minimum values: min. reference weight = 10d (10 digits), min. piece weight* = 1d (1 digit)! ***approved balances** min 3e

Note: 1 digit corresponds to 1 display increment.

→ Hold the «F» key down until "SEt ... PCS" is displayed.

→ Repeatedly press the «↺» key until the display equals the number of reference pieces entered.

→ Confirm the number of reference pieces with the «→» key (or wait 7 seconds, in which case the number is adopted automatically). The current number of pieces (PCS = pieces) is displayed.

Note: The current reference weight remains stored until the reference setting is changed or the power supply is interrupted.

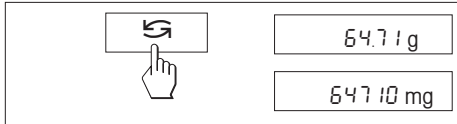
Switching between piece count and weight display

→ Add weighing sample to the container and read off number of pieces.

→ Press the «↺» key. The weight is displayed.

→ Return to the piece count display by pressing the «↺» key again.

5.3 Switching weight units



Requirement

Different weight units must be activated in the menu for unit 1 and unit 2 (Section 4).

→ The «↔» key can be used at any time to toggle between the two weighing units selected in the menu ("UNIT 1" and "UNIT 2").

Note:

Switching between weight units may be blocked with **certified balances**, depending on national weights and measures legislation.

6 Technical data, optional equipment

6.1 Technical data

Standard equipment of B-S/PH and B-L/PH balances

- Protective cover, transparent, made from Borex
- AC adapter to national codes
100–240 VAC/50–60 Hz, 0.3 A, 12 VDC, 0.84 A
Balance power input: 8–14.5 VAC, 50/60Hz, 6 VA or 9.5–20 VDC, 6 W
- FACT, fully automatic adjustment with internal weight with B-S/PH models
- Built-in RS232C interface
- Draft shield with AB-S/PH and PBxx3-S/PH and PBxx3-L/PH models
- All models can weigh below balance
- Display with backlight

Materials

- Housing: die-cast aluminum, painted
- Weighing pan: Chromium-nickel steel, X2CrNiMo 17 13 2 (1.4404)

Protection

- Protected against dust and water
- Pollution degree: 2
- Overvoltage category: class II
- EMC: see declaration of conformity (separate brochure 11780294)

Ambient conditions

The technical data are valid under the following ambient conditions:

- Ambient temperature 10 °C ... 30 °C
- Relative humidity 15 % ... 80 % at 31 °C, linear decreasing to 50% at 40 °C noncondensing

Operability is assured at ambient temperatures between 5 and 40 °C.

| Technical data | AB104-S/PH | AB204-S/PH | PB303-S/PH | PB303-L/PH |
|---|---|---|---|-------------------------------|
| Readability | 0.1 mg | 0.1 mg | 0.001 g | 0.001 g |
| Max. capacity | 110 g | 220 g | 310 g | 310 g |
| Repeatability (sd) | 0.1 mg | 0.1 mg | 0.001 g | 0.001 g |
| Linearity | 0.2 mg | 0.2 mg | 0.002 g | 0.002 g |
| Sensitivity temperature drift (10 °C ... 30 °C) | 2.5 ppm/ °C | 2.5 ppm/ °C | 6 ppm/ °C | 6 ppm/ °C |
| Settling time, typical | 3.5 s | 4 s | 2 s | 2 s |
| Adjustment weight | built-in | built-in | built-in | external, 200 g ¹⁾ |
| Backlight | yes | yes | yes | yes |
| FACT | yes | yes | yes | no |
| External dimensions of balance (W/D/H) | 245/321/344 mm | 245/321/344 mm | 245/321/236 mm | |
| External dimensions of packaging (W/D/H) | 381/436/495 mm (0.082 m ³) | 419/494/521 mm (0.108 m ³) | 381/436/495 mm (0.082 m ³) | |
| Weighing pan | ∅ 80 mm | ∅ 80 mm | ∅ 100 mm | |
| Usable height of draft shield | 237 mm | 237 mm | 141 mm | |
| Net weight (with packaging) | 5.8 kg (7.8 kg) | 6.4 kg (9.1 kg) | 4.9 kg (6.5 kg) | |

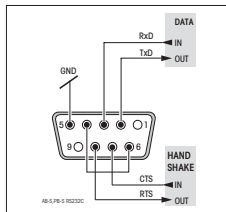
¹⁾ optional equipment

| Technical data | PB503-S/PH | PB503-SDR/PH (DeltaRange) | PB603-S/PH | PB602-S/MPH ³⁾ | PB3002-S/PH | PB3002-SDR/PH (DeltaRange) | PB6001-S/PH |
|--|---|-------------------------------|------------|---|-------------|-------------------------------|---|
| Readability | 0.001 g | 0.001 g ^{2)/0.01 g} | 0.001 g | 0.01 g | 0.01 g | 0.01 g ^{2)/0.1 g} | 0.1 g |
| Max. capacity | 510 g | 100 g ^{2)/510 g} | 610 g | 610 g | 3100 g | 600 g ^{2)/3100 g} | 6100 g |
| Repeatability (sd) | 0.001 g | 0.001 g ^{2)/0.008 g} | 0.001 g | 0.01 g | 0.01 g | 0.01 g ^{2)/0.08 g} | 0.08 g |
| Linearity | 0.002 g | 0,01 g | 0.002 g | 0.02 g | 0.02 g | 0.1 g | 0.1 g |
| Sensitivity temperature drift (10 °C ... 30 °C) | 6 ppm/ °C | 6 ppm/ °C | 6 ppm/°C | 6 ppm/°C | 6 ppm/°C | 6 ppm/ °C | 10 ppm/ °C |
| Typical settling time | 3 s | 2 s | 3 s | 2 s | 2 s | 2 s | 2 s |
| Adjustment weight | built-in | built-in | built-in | built-in | built-in | built-in | built-in |
| Backlight | yes | yes | yes | yes | yes | yes | yes |
| FACT | yes | yes | yes | yes | yes | yes | yes |
| External dimensions of balance (W/D/H) | 245/321/236 mm | | | 245/321/89 mm | | | 245/321/89 mm |
| External dimensions of packaging (W/D/H) | 381/436/495 mm (0.082 m ³) | | | 381/436/273 mm (0.045 m ³) | | | 381/436/273 mm (0.045 m ³) |
| Weighing pan | ø 100 mm | | | ø 180 mm | | | 180 mm x 180 mm |
| Usable heigh of draft shield | 141 mm | | | — | | | — |
| Net weight (with packaging) | 4.9 kg (6.5 kg) | | | 3.6 kg (4.7 kg) | | | 3.6 kg (4.7 kg) |

²⁾ fine range (DeltaRange)

³⁾ available as certified version only

6.2 Interface



RS232C interface and interface accessories

Every B-S/PH and B-L/PH balance is fitted with an RS232C interface for attachment to a peripheral device (e.g. printer or PC with a 9-pin male connector). Matching to a different device can be carried out in the menu (Sections 4.3.10 – 4.3.15).

You will find a detailed description of the available interface commands in the brochure "Reference Manual MT-SICS

Basic-S balances 11780447* available from your METTLER TOLEDO dealer or download from the Internet (www.mt.com/sics-classic).

The wide range of features of the B-S/PH and B-L/PH balances regarding documentation of the results can not be exploited to the full until a printer, e.g. the RS-P26 or LC-P45 from METTLER TOLEDO is attached. The printed results make a decisive contribution to a simple way of working in compliance with GLP/GMP.

6.3 MT-SICS Interface commands and functions

Many of the balances and scales used have to be capable of integration in a complex computer or data acquisition system.

To enable you to integrate balances in your system in a simple manner and utilize their capabilities to the full, most balance functions are also available as appropriate commands via the data interface.

All new METTLER TOLEDO balances launched on the market support the standardized command set "METTLER TOLEDO Standard Interface Command Set" (MT-SICS). The commands available depend on the functionality of the balance.

Basic information on data interchange with the balance

The balance receives commands from the system and acknowledges the command with an appropriate response.

Command formats

Commands sent to the balance comprise one or more characters of the ASCII character set. Here, the following must be noted:

- Enter commands only in uppercase.
- The possible parameters of the command must be separated from one another and from the command name by a space (ASCII 32 dec., in this description represented as `␣`).
- The possible input for "text" is a sequence of characters of the 8-bit ASCII character set from 32 dec to 255 dec.
- Each command must be closed by `CRLF` (ASCII 13 dec., 10 dec.).

The characters `CRLF`, which can be inputted using the Enter or Return key of most entry keypads, are not listed in this description, but it is essential they be included for communication with the balance.

Example

S – Send stable weight value

| | | |
|----------|--|--|
| Command | S | Send the current stable net weight value. |
| Response | S_SS_UWeightValue_UUnit | Current stable weight value in unit actually set under unit 1. |
| | S_UI | Command not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached). |
| | S_U+ | Balance in overload range. |
| | S_U- | Balance in underload range. |

Example

| | | |
|----------|--|---|
| Command | S | Send a stable weight value. |
| Response | S_SS_UUUUUUU100.00_Ug | The current, stable weight value is 100.00 g. |

The MT-SICS commands listed below is a selected list of available commands. For additional commands and further information please refer to the Reference Manual "MT-SICS Basic-S balances 11780447" downloadable from the Internet under www.mt.com/sics-classic.

S – Send stable weight value

Command **S** Send the current stable net weight value.

SI – Send value immediately

Command **SI** Send the current net weight value, irrespective of balance stability.

SIR – Send weight value immediately and repeat

Command **SIR** Send the net weight values repeatedly, irrespective of balance stability.

Z – Zero

Command **Z** Zero the balance.

@ – Reset

Command **@** Resets the balance to the condition found after switching on, but without a zero setting being performed.

SR – Send weight value on weight change (Send and Repeat)

Command **SR** Send the current stable weight value and then send continuously the stable weight value after every weight change.
The weight change must be at least 12.5 % of the last stable weight value, minimum = 30d.

ST – Send stable weight after pressing \square (transfer) key

Command **ST** Inquiry of actual status of the ST function.

SU – Send stable weight value with currently displayed unit

Command **SU** As the "S" command, but with the currently displayed unit.

6.4 Optional equipment

AC adapter

AC adapter universal (EU, USA, AU, UK) 11120270
100–240 VAC/50–60 Hz, 0.3 A
12 VDC, 0.84 A

AccuPac B-S

Rechargeable external power source for 15 hours
weighing operation with no mains
connection 21254691

Adjustment weights

Available as OIML weights (E1, E2, F1,
with calibration certificate) For further
details see METTLER TOLEDO Weights
brochure 111795461
or see www.mt.com/weights

Antitheft device

Cable with lock (for all models) 00590101

Auxiliary display (RS/LC-BLD)

Auxiliary display including RS cable
for connection to the RS232C interface
and separate AC adapter 00224200

Auxiliary display (RS232)

Auxiliary display for connection
to the RS232C interface 12120057

Density kits (for AB-S/PH only)

- For determination of solids 00033360
- For determination of liquids
with displacement body 00033360 + 00210260

Draft shields

- Glass cylinder draft shield
(for 0.1 mg / 0.001 g balances) 11137305
- Draft shield with sliding doors
"mg" (165 mm) * 11137468
- Draft shield with sliding doors
"0.1 mg" (237 mm) * 11103682
- Draft shield "mg" (141 mm) * 11103683

* Balances with a weighing
pan Ø 180 mm require the weighing
pan Ø 175 mm 11103680

Interface cable

- RS9–RS25: (m/f), length 2 m 11101052
- RS9–RS9: (m/f), length 1 m 11101051
- RS9–RS9: (m/m), length 1 m 21250066
- RS232–USB converter cable 11103691

Printer, Application printer (LC-P45)

Plain-paper printer, 24 characters, with
additional functions (time, date, statistic,
multiplier etc.) 00229119

Printer, Report printer (RS-P26)

Plain-paper printer, 24 characters
with additional functions (time, date) 12120788

Protective cover

- For PB-S/PH and PB-L/PH models
(1 piece) 11103681
- For AB-S/PH models (1 piece) 11135408

Software

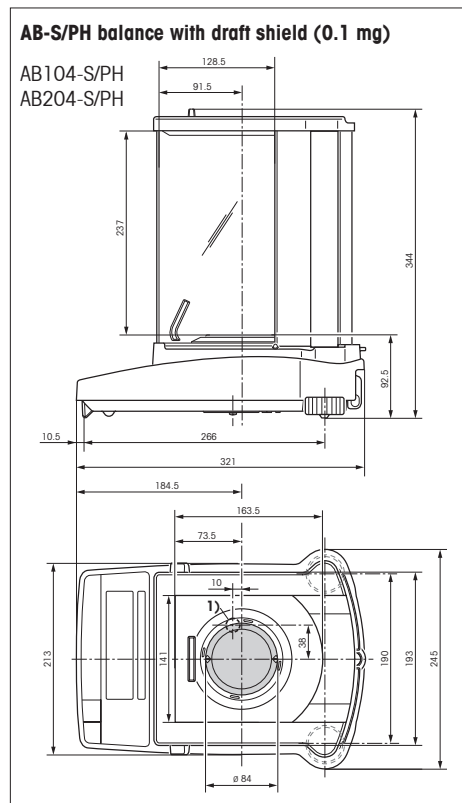
LabX direct balance 11120340
(software for easy transfer to PC)

Transport case

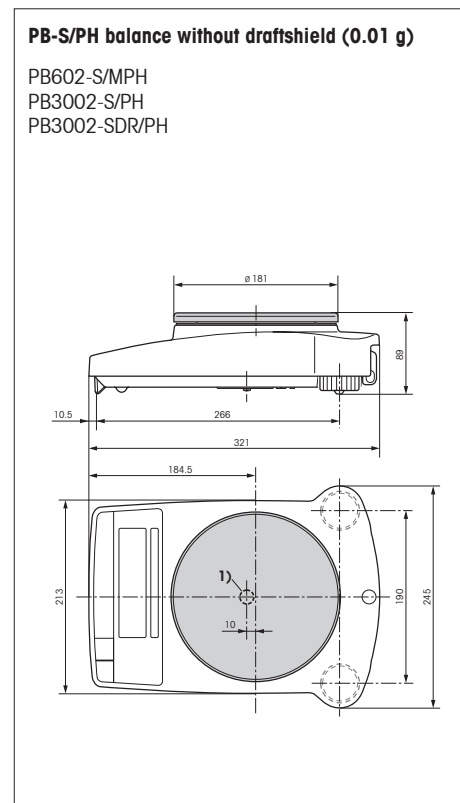
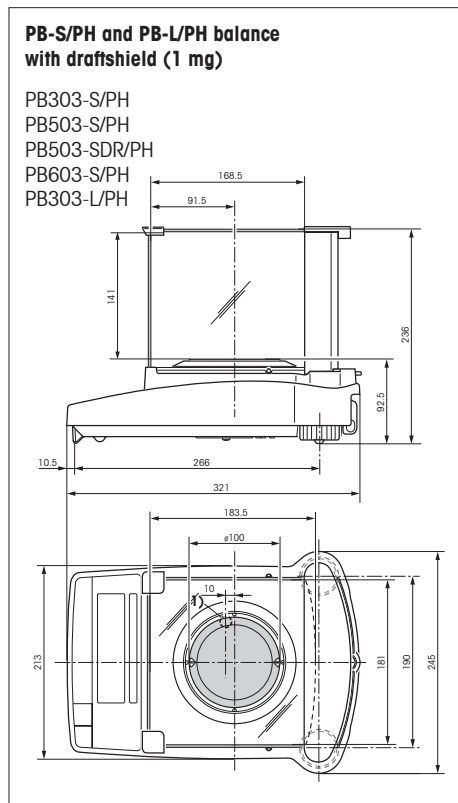
- For all PB-S/PH and PB-L/PH models,
with room for balance,
draft shield 165 mm / 141 mm
and weight 11101050
- For all AB-S/PH models, has space for
balance and draft shield 237 mm 11103834

6.5 Dimensional drawings

All dimensions in millimeters (mm)

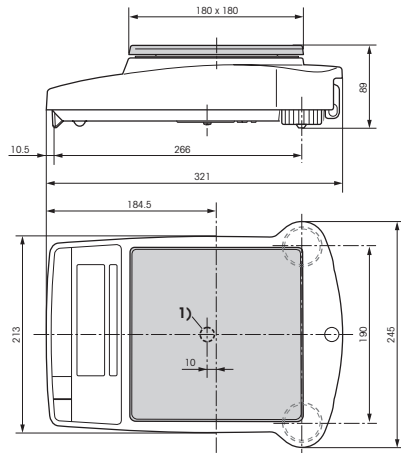


1) Opening for hanger



PB-S/PH balance without draftshield (0,1 g)

PB6001-S/PH

**1) Opening for hanger**

7 Appendix

7.1 Typical printouts from METTLER TOLEDO RS-P26 and LC-P45 printers

Function: **Adjusting (FACT)**

```
- BALANCE CALIBRATION -
12.02.2007      09:55:10

METTLER TOLEDO
Type:          PB3002-S/PH
SNR:           1118015657
SW:            1.20

Internal Cal. done

----- END -----
```

Function: **Adjusting (external)**

```
- BALANCE CALIBRATION -
12.02.2007      09:48:18

METTLER TOLEDO
Type:          PB3002-S/PH
SNR:           1118015657
SW:            1.20

Weight ID: .....
Weight:        2000.00 g

External Cal. done

Signature:

.....
----- END -----
```

Function: **List**

Printout of the current balance settings

```
--- LIST OF SETTINGS ---
12.02.2007      09:50:18

METTLER TOLEDO
Type:          PB3002-S/PH
SNR:           1118015657
SW:            1.20

-----
Application:
  Dynamic A
-----
Weighing Parameters:
Weighing Mode Standard
Unit 1          g
Unit 2          g
A.Zero         On
-----
Peripheral Devices:
P.Device       Printer
Baud           2400
Bit/Parity     7b-even
Handshake      Off

P.Device       Host
Sendmode       Off
Baud           9600
Bit/Parity     8b-no
Handshake      Soft
-----
----- END -----
```

Function: **Piece counting**

Printout with reference weight

```
---- PIECE COUNTING ----
APW:           0.99460 g
Out of:        10 PCS

                27.000 g
                27 PCS
```

Function: **Verification of the calibration (adjustment) with external weight.**

Function is triggered via the printer. ¹⁾

```
---- BALANCE TEST ----
12.02.2007      09:52:12

METTLER TOLEDO
Type:          PB3002-S/PH
SNR:           1118015657
SW:            1.20

Weight ID: .....

Target : .....
Actual : .....199.98 g
Diff   : .....
```

External test done

Signature:

```
.....
----- END -----
```

Function: **Statistics**

Function is triggered via the printer. ¹⁾

```
12.02.2007      10:44:07
ID              666
SNR:           1118015657
1              1100.15 g
2              1600.10 g
3              1699.95 g
n              3
x              1466.733 g
s              321.372 g
srel           21.91 %
min.           1100.15 g
max.           1699.95 g
dif.           599.80 g
----- END -----
```

Function: **Multiplier**

Function is triggered via the printer. ¹⁾

```
12.02.2007      08:23:22
ID              242
SNR:           1118015657

Factor         1.65
               588.43 g
*              970.9095
```

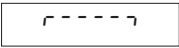

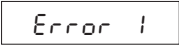

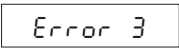

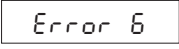

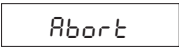
Notes

The operating instructions for the LC-P45 include a description of the functions that are triggered via that printer.

The **RS-P26** prints all reports in **English**. This applies also to the **LC-P45** reports that originate in the balance. In the case of reports triggered by the **LC-P45**, the following languages may be selected: **German, English, French, Spanish** or **Italian**.

¹⁾ Only possible with LC-P45.

7.2 What if ...?

| Error/Error message | Cause | Rectification |
|---|--|---|
|  | Overload | → Remove sample from weighing pan, zero again (tare). |
|  | Underload | → Check whether weighing pan is positioned properly. |
|  | No stability <ul style="list-style-type: none"> • in taring or adjusting (calibration) • when reference weight for piece counting is placed on pan | → Wait for stability before pressing key. → Ensure more stable ambient conditions. → Remove weighing pan and clean if necessary |
|  | Wrong adjustment weight on pan or none at all | → Place required adjustment weight in center of pan. |
|  | Reference number for piece counting too small | → Increase number of reference pieces. |
|  | Internal fault | → Contact METTLER TOLEDO customer service. |
|  | No standard calibration | → Contact METTLER TOLEDO customer service. |
|  | Wrong weighing pan or pan missing | → Mount correct weighing pan. |
|  | Adjustment aborted with the «C» key | |

7.3 Maintenance and cleaning

Service

Regular servicing of your balance by a service technician prolongs its working life. Ask your METTLER TOLEDO dealer for details of servicing options.

Cleaning

Every now and then, clean the weighing pan, draftshield element, draftshield (depending on the model) and housing of your balance using a damp cloth. Your balance is made of high-quality, durable materials and can therefore be cleaned with a standard, mild cleaning agent.



Please observe the following notes

- On no account use cleaning agents, which contain solvents or abrasive ingredients, as this can result in damage to the terminal overlay.
- After working with chemicals, it is advisable to wash or clean the weighing pan and the bottom plate (if draft shield fitted).
- Although all materials are of high quality, corrosion may occur if corrosive substances are deposited on chrome steel for an extended period of time (and if air is excluded, for example by a coating of grease).
- Ensure that no liquid comes into contact with the balance or the AC adapter!
- Never open the balance or AC adapter – they contain no components, which can be cleaned, repaired or replaced by the user.
- Soiled protective covers can be replaced on all balance types (see Optional equipment).



Disposal

In conformance with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste.

This also applies to countries outside the EU, per their specific requirements.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

**To protect your METTLER TOLEDO product's future:
METTLER TOLEDO Service assures the quality, measuring accuracy and preservation
of value of all METTLER TOLEDO products for years to come.
Please send for full details about our attractive terms of service.
Thank you.**



* 1 1 7 8 0 8 0 1

Subject to technical changes and to the availability
of the accessories supplied with the instruments.

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