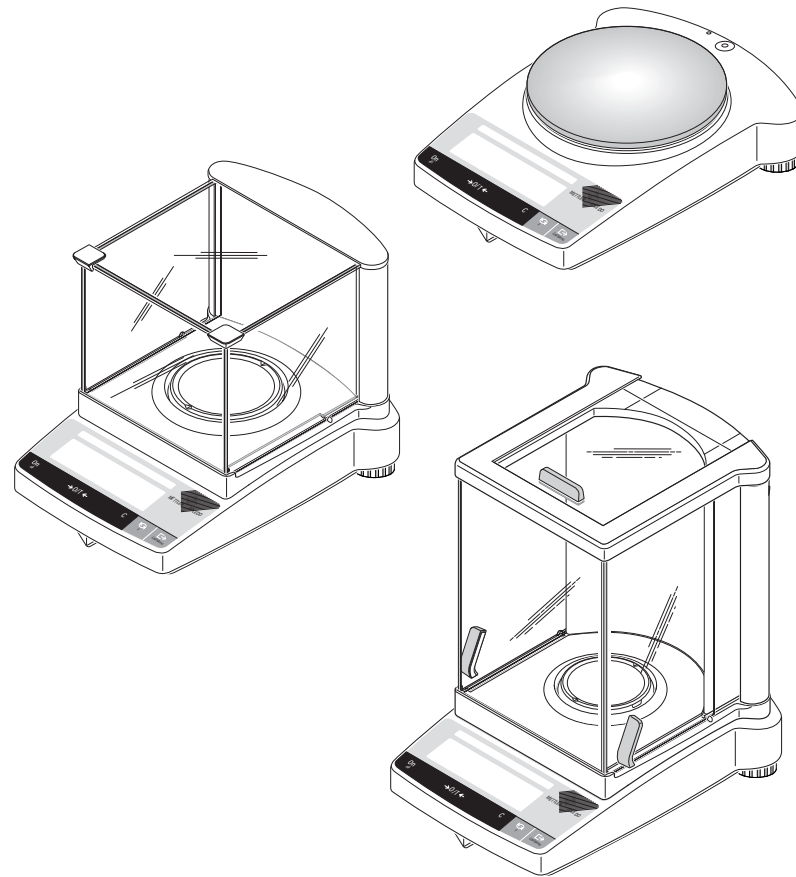


## Operating instructions

### METTLER TOLEDO B-S line of balances




- AB-S
- PB-S






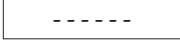

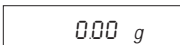
**METTLER TOLEDO**



Operating instructions in a nutshell

 Press key **briefly**  
 Press and **hold key down** until the desired display appears  
 automatic sequence



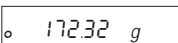
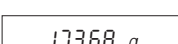
Switching on

 On  
  
  
  
  
 0.00 g



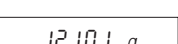





Switching off

 Off  
 OFF  
  



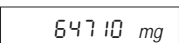

Simple weighing

  
 0.00 g  
 172.32 g  
 173.68 g













Taring

  
 0.00 g  
 12.101 g  
  
 0.00 g  
 95.97 g  
  
 - 12.101 g




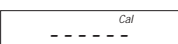

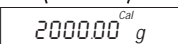



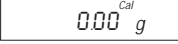

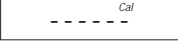

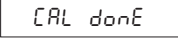

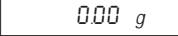
Changing weighing units

  
 64.71 g  
 64710 mg  

Piece counting

  
 0.00 g  
  
 5Et 10 PCS  
  
 5Et 20 PCS  
  
 20 PCS  
  
 249 PCS  
  
 144.82 g

Adjusting (calibration)

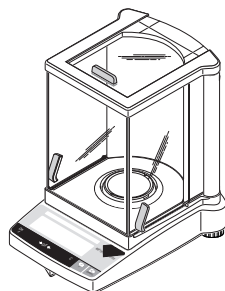
  
 CAL  
  
 Cal  
  
 200000 g  
  
 Cal  
  
 0.00 g  
  
 Cal  
  
 CAL done  
  
 0.00 g

## Contents

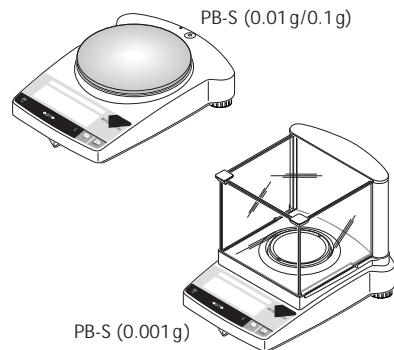
<b>1</b>	<b>Getting to know B-S balances</b> .....	<b>4</b>	<b>5</b>	<b>Functions</b> .....	<b>19</b>
1.1	Introducing the B-S line of balances .....	4	5.1	Piece counting .....	19
1.2	Layout of B-S balances .....	5	5.2	Switching between weighing units .....	19
1.3	Overview of key functions .....	6	<b>6</b>	<b>Technical data, interface, optional equipment</b> .....	<b>20</b>
<b>2</b>	<b>Startup</b> .....	<b>7</b>	6.1	Technical data .....	20
2.1	Unpacking / standard equipment .....	7	6.2	Optional equipment .....	22
2.2	Cautionary notes .....	7	6.3	Dimensional drawings .....	23
2.3	Setting up, leveling, preparations for weighing below the balance, connecting to power supply .....	8	<b>7</b>	<b>Appendix</b> .....	<b>24</b>
2.4	Adjusting (calibration) .....	10	7.1	Typical printouts from METTLER TOLEDO GA42 and LC-P45 printers .....	24
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4.2	Description of menu options .....	15			

## 1 Getting to know B-S balances

AB-S (0.1 mg)



PB-S



### 1.1 Introducing the B-S line of balances

#### Several types of construction – uniform operation

- The B-S balance line ranges from high-resolution analytical balances (AB-S) with a readability of 0.1 mg through to precision balances (PB-S) with a readability of 0.001 g to 0.1 g. The weighing ranges extend from 51 g to 8.1 kg.
- The operation of all these balances is identical.

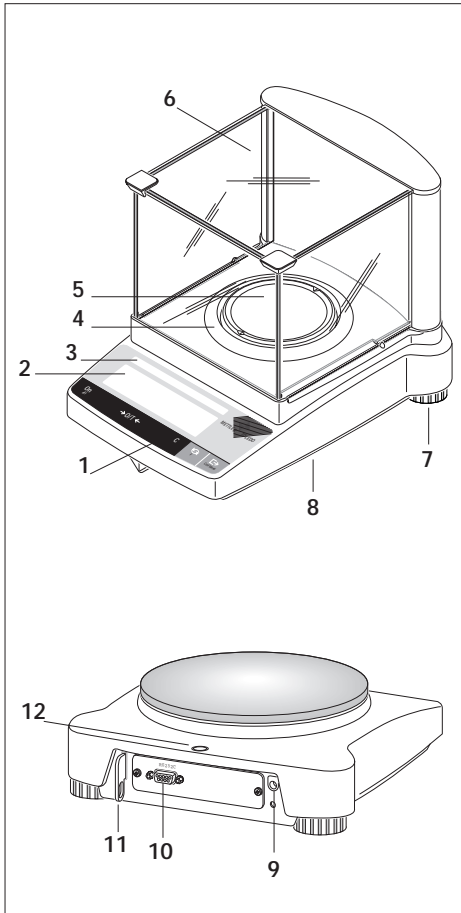
#### Balance features

- In addition to basic weighing operations such as **weighing**, **taring** and **adjusting** (calibration), a **piece counting** function can also be activated.
- METTLER TOLEDO **DeltaRange** balances also have a movable fine range, with 10 times smaller display increments, over the entire weighing range.
- Several B-S balances are fitted with a glass draft shield in the factory; with other models a **draft shield** is available as an **optional extra**.
- All B-S balances can be equipped with an **optional RS232C interface**.

#### Notes

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

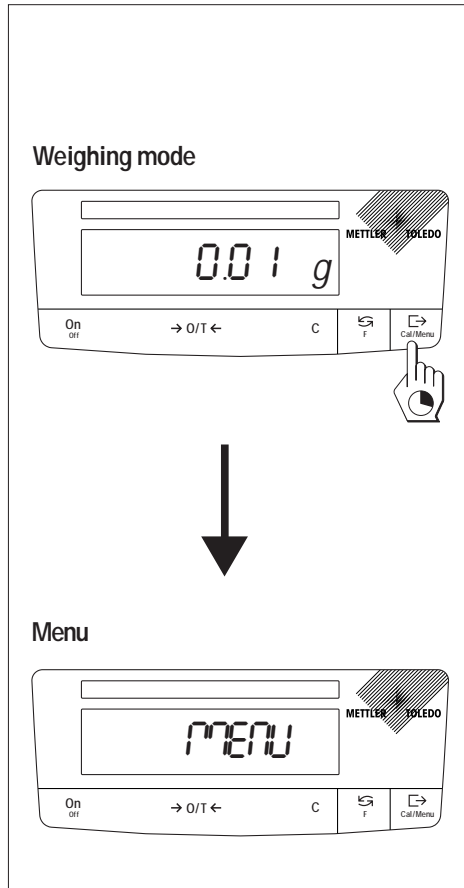
If you wish to build on what you have learned about weighing in these operating instructions, you will find valuable tips in booklet 720906 "Weighing the right way".



## 1.2 Layout of B-S balances





- 1 Keys
- 2 Display
- 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 and PBxx3-S)
- 7 Leveling feet
- 8 Hanger opening for weighing below the balance (underside of balance)
- 9 AC adapter socket
- 10 RS232C interface (optional extra)
- 11 Lug for optional antitheft device
- 12 Leveling control





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



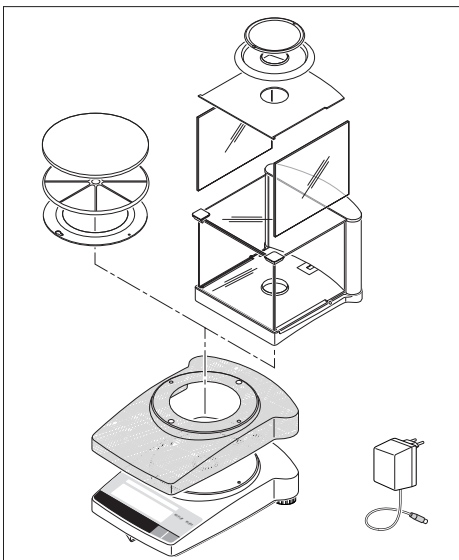
### 1.3 Overview of key functions

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 
<b>On</b> • Switch on <b>→0/T←</b> • Zero/tare <b>C</b> • Cancel function	<b>Off</b> • Switch off balance (standby mode)
 • Change weighing units	<b>F</b> • Activate piece counting function
 • Transfer weighing data via interface (if fitted)	<b>Cal/Menu</b> • Adjust (calibrate) • Show menu (hold key down until MENU appears)

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

## 2 Startup



### 2.1 Unpacking / standard equipment

All B-S balances are supplied in environmentally compatible packaging. The standard equipment for every balance comprises:

- **AC adapter**, to national codes
- **Weighing pan with pan support or draft shield element**
- Transparent plastic protective cover, fitted, to keep your balance clean at all times
- **Retaining ring for protective cover**, fitted, only on balances without draft shield
- **Draft shield with fitting instructions**, standard supply for models AB-S and PBxx3-S (for other models a draft shield is available as an optional extra)
- **Calibration weight**, for AB-S\* models (for all other models calibration weights are available as optional extras)
- **Operating instructions**, to ensure optimum utilization of your balance's capabilities
- **CE declaration of conformity** (in separate brochure)

\* except with certified balances

### 2.2 Cautionary notes

- B-S 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 balances may only be used indoors in a dry environment.

### 2.3 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.

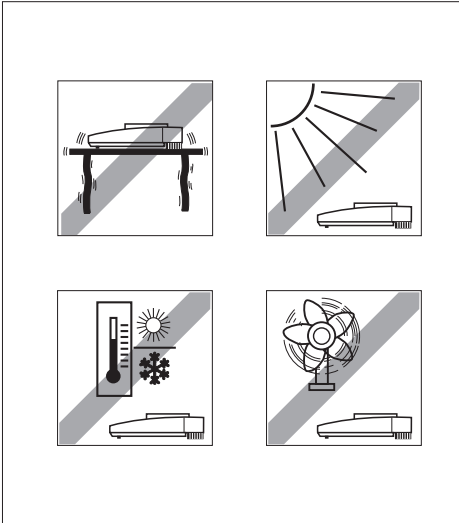
Hence, ensure a

- stable, vibration-free position as horizontal as possible.

Avoid

- direct sunlight
- excessive temperature fluctuations
- drafts.

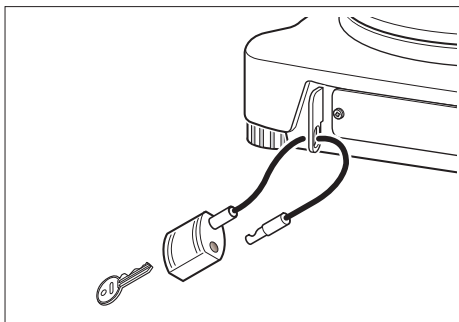
The best location is on a stable bench in a corner protected against drafts, as far away as possible from doors, windows, radiators or the louvers of air conditioners.



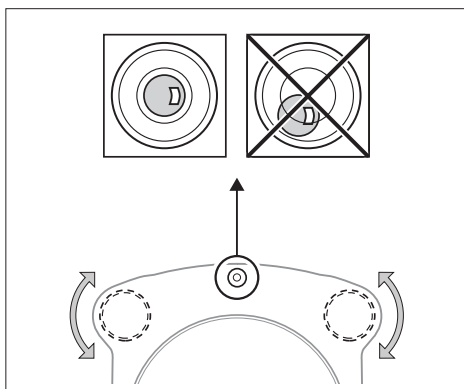
#### Antitheft device

B-S 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 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:

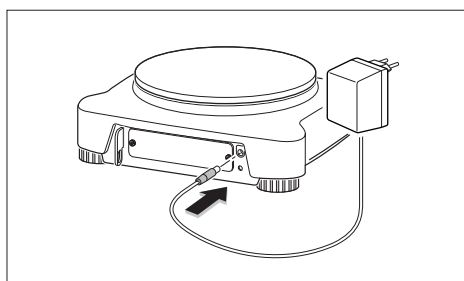
- |                            |   |
|----------------------------|---|
| Air bubble at "12 o'clock" | turn both feet counterclockwise                       |
| Air bubble at "3 o'clock"  | turn left foot clockwise, right foot counterclockwise |
| Air bubble at "6 o'clock"  | turn both feet clockwise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

### Note

The balance should be leveled and adjusted (see section 2.4) 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.



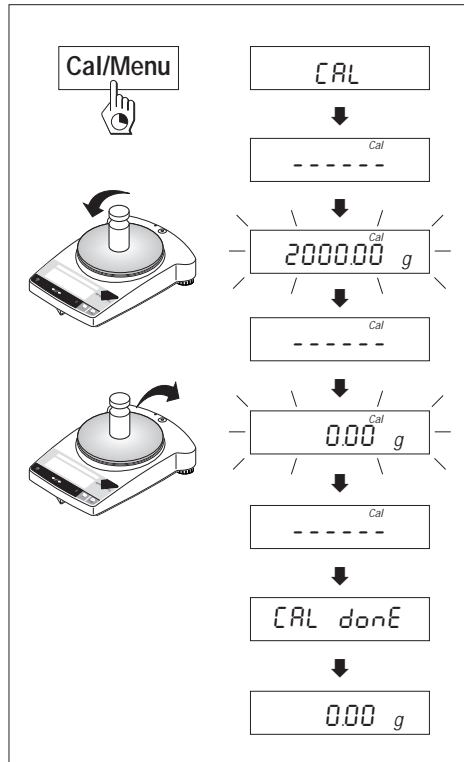
### Connecting the power supply

- 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 2.4).

### Notes

To achieve accurate results with analytical balances (AB-S), these must be connected to the power supply for at least 30 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 balances independently of the mains power supply.



## 2.4 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.

### Procedure

To obtain accurate results, the balance must be connected to the power supply for 20-30 minutes in order to reach operating temperature before adjusting.

- Have required adjusting weight ready (for certified models please refer to the notes below).
- Unload weighing pan
- Press and hold the «Cal/Menu» key down until "CAL" appears in the display, then release key. The required adjusting weight value flashes in the display.
- Place adjusting weight in center of pan (for certified models please refer to the notes below). The balance adjusts itself automatically.
- When "0.00 g" flashes, remove adjusting weight. The adjusting is finished when the message "CAL done" appears briefly in the display, followed by "0.00g". The balance is again in weighing mode and ready for operation.

### Notes

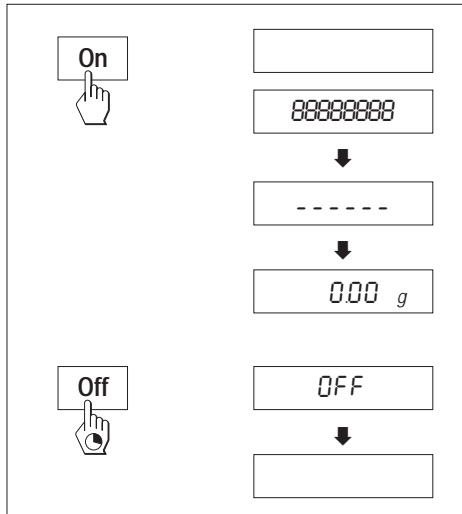
All **certified AB-S and PB-S models** have an internal adjusting weight and adjust themselves automatically (when switched on, after about 30 minutes warm-up time, thereafter periodically). The balance is therefore always within the required calibration tolerances.

For **certified PB-S models**, manual adjustment with the internal weight is not foreseen, since it is not necessary.

For **certified AB-S models**, manual adjustment with the internal weight is possible. It is recommended that these balances are adjusted regularly, in order to achieve the best results possible.

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



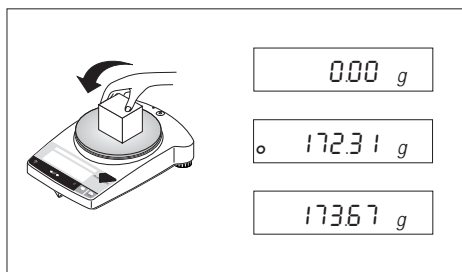
#### 3.1 On/off switching

##### 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.

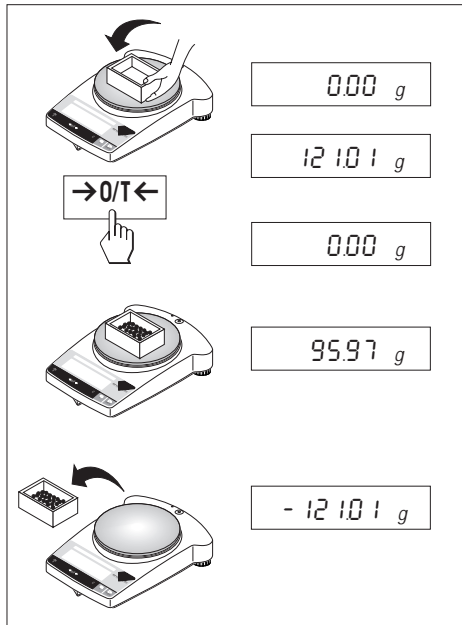
##### Switching off

- 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

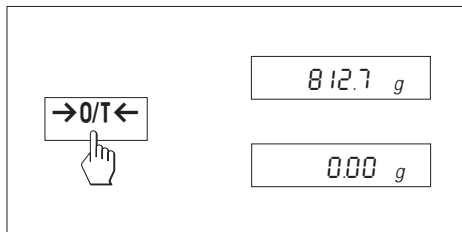
- Place empty container on the balance.
- The weight is displayed.
- Tare: press the «→0/T←» key briefly.
- Add weighing sample to container. The net weight is now displayed.

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 (see 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

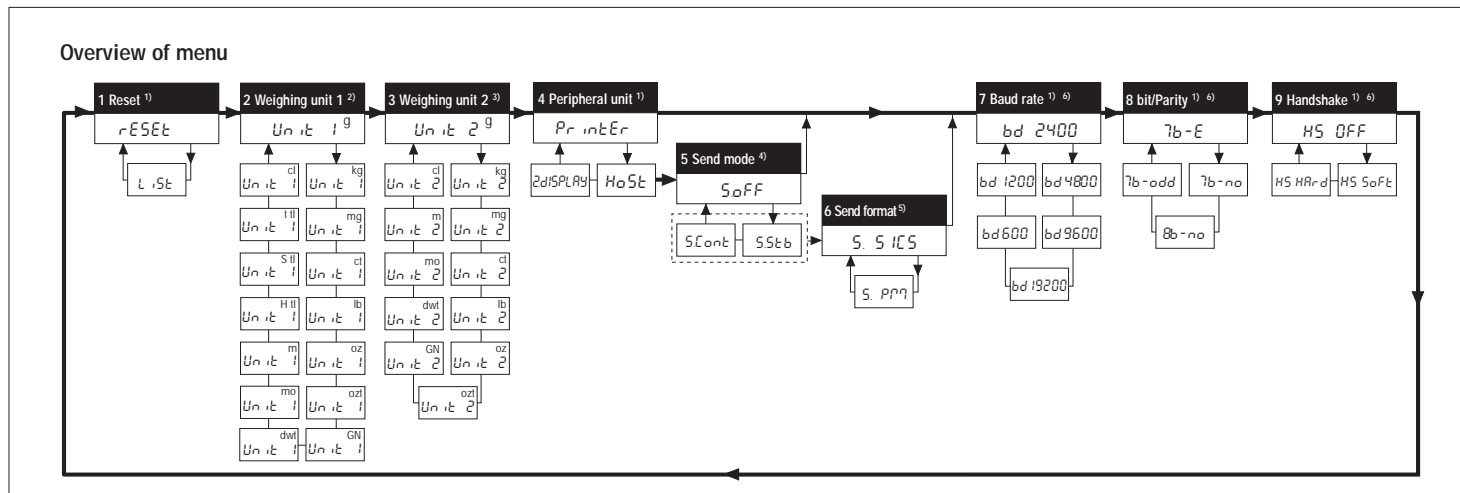
- after switching on,
- after every taring operation.

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

## 4 Menu

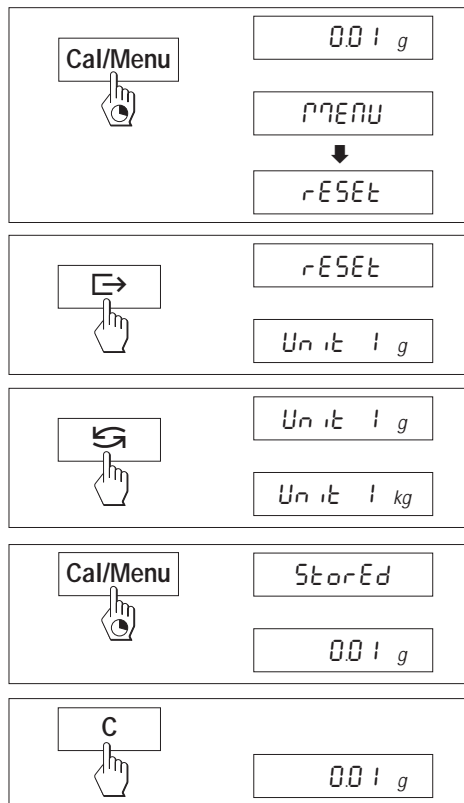
### 4.1 Overview and operation

In the menu you can change weighing units (only possible with certified balances if permitted by national weights and measures legislation) and, if the balance is fitted with the optional RS232C interface, carry out the settings for this interface. A description of the individual menu options is given in section 4.2.



#### Notes

- 1) These menu options are only shown if the balance is equipped with an RS232C interface.
- 2) With certified balances, this menu option has a fixed setting and cannot be changed.
- 3) With certified balances, only those weighing units allowed by the appropriate national weights and measures legislation may be selected.
- 4) This menu option is only shown if "Host" has been selected in menu option 4 (Peripheral unit).
- 5) This menu option is only shown if "S.Stb" or "S.Cont" has been selected in menu option 5 (Send mode).
- 6) These menu options are only shown if "Host" or "Printer" has been selected in menu option 4 (Peripheral unit).



## Using the menu

### 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.

**Notes:** The menu option "Reset" is only displayed if the balance is equipped with the optional RS232C interface, otherwise "Unit 1" appears as first menu option.

### 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.

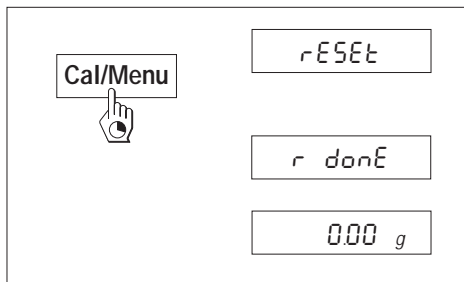
### Note

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

## 4.2 Description of menu options

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

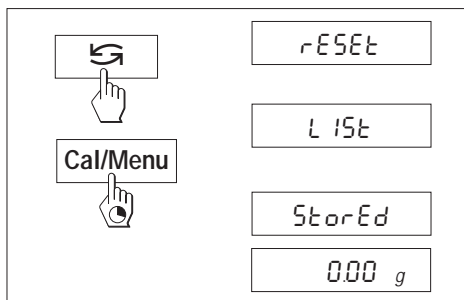
**Note:** This menu option is only available if the balance is equipped with the optional RS232C interface!



#### 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 following factory settings:

Weighing unit 1:	gram (g)
Weighing unit 2:	gram (g)
Peripheral unit:	Printer
Transmission speed:	2400 bauds (bd 2400)
Parity/bits:	7 data bits, even parity (7b-E)
Handshake:	no handshake (HS off)



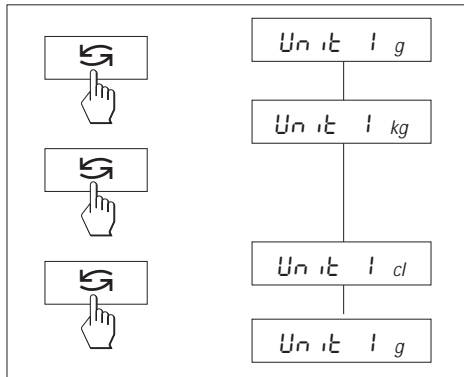
#### Recording balance settings

→ 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 optional interface. To do this the setting "Printer" must always be selected at the 4th menu option (Peripheral unit). The current balance settings are saved at the same time.


#### 4.2.2 Weighing unit 1 (2nd menu option "UNIT 1")

Depending on requirements, the balance can operate with the following units:



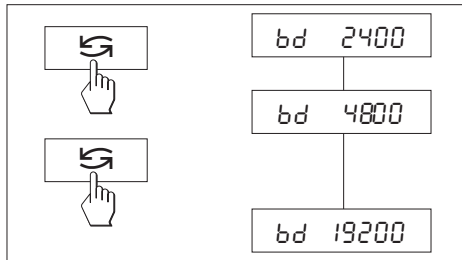
Unit		Conversion factor	Comments
g	gram		factory setting
kg	kilogram	1 kg = 1000 g	not with 1 mg balances
mg	milligram	1 mg = 0.001 g	with 0.1 mg and 1 mg balances
ct	carat	1 ct = 0.2 g	
lb	pound	1 lb ≈ 453.59237 g	not with 0.1 mg balances
oz	ounce	1 oz ≈ 28.349523125 g	
ozt	troy ounce	1 ozt ≈ 31.1034768 g	
GN	grain	1 GN ≈ 0.06479891 g	not with 1 g balances
dwt	pennyweight	1 dwt ≈ 1.555173843 g	
mo	momme	1 mo ≈ 3.749999953 g	
m	Mesghal	1 m ≈ 4.6083162 g	
H tl	Hong Kong taels	1 H tl ≈ 37.42900 g	
S tl	Singapore taels	1 S tl ≈ 37.799366256 g	
t tl	Taiwan taels	1 t tl ≈ 37.499995313 g	
cl	tical	1 cl ≈ 16.3293 g	

#### 4.2.3 Weighing unit 2 (3rd 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", with the exception of the tael units ("H tl", "S tl" and "t tl"). The factory setting is the gram.







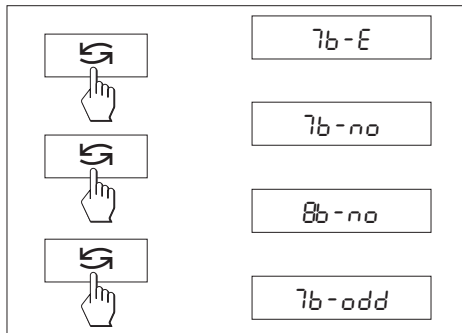
#### 4.2.7 Baud rate (7th menu option)

**Note:** This menu option is only available if the balance is equipped with the optional interface and you have selected the setting "Printer" or "Host" at the 4th 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.



#### 4.2.8 bits/Parity (8th menu option)

**Note:** This menu option is only available if the balance is equipped with the optional interface and you have selected the setting "Printer" or "Host" at the 4th menu option (Peripheral unit)!

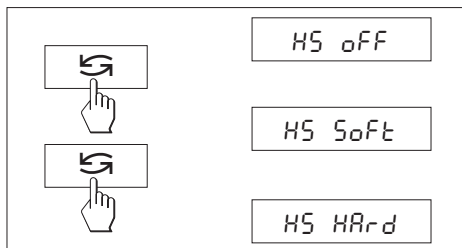
At this menu option you can set the character format for the attached peripheral device.

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



#### 4.2.9 Handshake (9th menu option)

**Note:** This menu option is only available if the balance is equipped with the optional interface and you have selected the setting "Printer" or "Host" at the 4th menu option (Peripheral unit)!

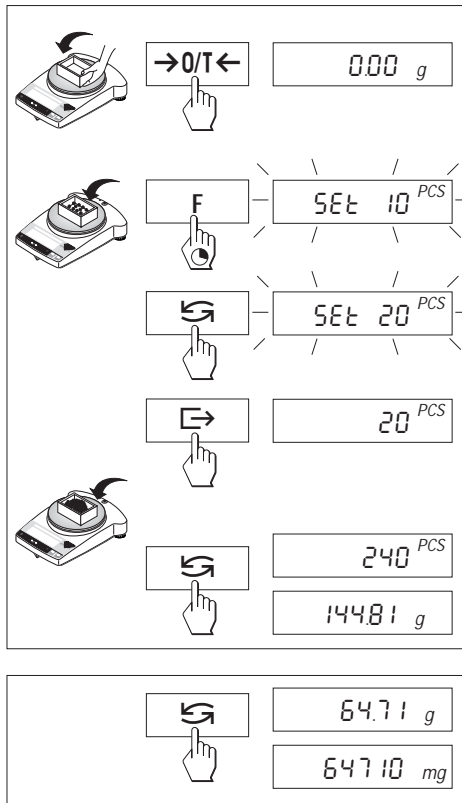
This menu option allows you to match the data transmission to different serial receivers.

HS off No handshake

HS SoFt Software handshake (XON/XOFF)

HS HAr-d Hardware handshake (DTR/CTS)

## 5 Functions



### 5.1 Piece counting

→ Place empty container on the balance and tare by briefly pressing the « $\rightarrow 0/T \leftarrow$ » 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).

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

**Note:** 1 digit corresponds to 1 display increment.

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

→ Repeatedly press the « $\leftarrow \rightleftharpoons \rightarrow$ » key until the display equals the number of reference pieces entered.

→ Confirm the number of reference pieces with the « $\rightarrow$ » key (or wait 5 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 « $\leftarrow \rightleftharpoons \rightarrow$ » key. The weight is displayed.

→ Return to the piece count display by pressing the « $\leftarrow \rightleftharpoons \rightarrow$ » key again.

### 5.2 Switching between weighing units

→ The « $\leftarrow \rightleftharpoons \rightarrow$ » 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, interface, optional equipment

### 6.1 Technical data

#### Standard equipment of B-S balances

- Protective cover, transparent, made from Borex
- AC adapter to national codes according list on page 22.  
Balance power input: 8-14.5V, 50/60Hz, 6VA or 9.5-20V DC 6W
- Adjusting weight with AB-S\* models
- Internal adjusting weight with certified models
- Draft shield with AB-S and PBxx3-S models
- All models can weigh below balance.

\* except with certified balances

#### Materials

- Housing: die-cast aluminum, painted
- Weighing pan: 18/10 chromium-nickel steel

#### Protection

- Protected against dust and water
- Pollution degree: 2
- Installation 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 %, noncondensing
- Height above sea level up to 4000 m

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

	AB54-S	AB104-S	AB204-S	PB153-S	PB303-S	PB303-S DeltaRange	PB602-S
Readability	0.1 mg	0.1 mg	0.1 mg	0.001 g	0.001 g	0.001 g*/0.01 g	0.01 g
Max. capacity	51 g	101 g	210 g	151 g	310 g	60 g*/310 g	610 g
Repeatability (s)	0.1 mg	0.1 mg	0.1 mg	0.001 g	0.001 g	0.001 g*/0.005 g	0.01 g
Linearity -/+	0.2 mg	0.2 mg	0.2 mg	0.002 g	0.002 g	0.002 g*/0.01 g	0.02 g
Sensitivity drift ppm/ °C	$2.5 \times 10^{-6}$	$2.5 \times 10^{-6}$	$2.5 \times 10^{-6}$	$6 \times 10^{-6}$	$6 \times 10^{-6}$	$6 \times 10^{-6}$	$6 \times 10^{-6}$
Typical stabilization time in s	3.5	3.5	3.5	2.0	2.0	2.0	2.0
Adjusting weight	50 g	100 g	200 g	100 g <sup>1)</sup>	200 g <sup>1)</sup>	200 g <sup>1)</sup>	500 g <sup>1)</sup>
Adjusting weight for certified balances	internal	internal	internal	internal	internal	internal	internal
Overall dimensions (WxDxH) in mm	245 x 321 x 344			245 x 321 x 236			245 x 321 x 89
Weighing pan in mm	ø 80			ø 100			ø 180
Max. height above weighing pan in mm	237			141			
Net weight (with packaging)	5.8 kg (7.5 kg)			4.9 kg (6.5 kg)			3.8 kg (4.9 kg)

\* Fine range values (DeltaRange)

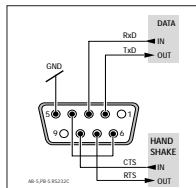
<sup>1)</sup> Optional equipment

	PB1502-S	PB3002-S	PB3002-S DeltaRange	PB1501-S	PB3001-S	PB5001-S	PB8001-S
<b>Technical Data</b>							
Readability	0.01 g	0.01 g	0.01 g*/0.1 g	0.1 g	0.1 g	0.1 g	0.1 g
Max. capacity	1510 g	3100 g	600 g*/3100 g	1510 g	3100 g	5100 g	8100 g
Repeatability (s)	0.01 g	0.01 g	0.01 g*/0.05 g	0.05 g	0.05 g	0.05 g	0.05 g
Linearity -/+	0.02 g	0.02 g	0.02 g*/0.1 g	0.1 g	0.1 g	0.1 g	0.1 g
Sensitivity drift ppm/ °C	6 x 10 <sup>-6</sup>	6 x 10 <sup>-6</sup>	6 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>	10 x 10 <sup>-6</sup>
Typical stabilization time in s	2.0	2.0	2.0	1.5	1.5	1.5	1.5
Adjusting weight	1000 g <sup>1)</sup>	2000 g <sup>1)</sup>	2000 g <sup>1)</sup>	1000 g <sup>1)</sup>	2000 g <sup>1)</sup>	2000 g <sup>1)</sup>	4000 g <sup>1)</sup>
Adjusting weight for certified balances	internal	internal	internal	internal	internal	internal	internal
Overall dimensions (WxDxH) in mm	245 x 321 x 89			245 x 321 x 89			
Weighing pan in mm	ø 180			ø 180			
Net weight (with packaging )	3.8 kg (4.9 kg)			3.8 kg (4.9 kg)			
* Fine range values (DeltaRange)	<sup>1)</sup> Optional equipment						

## 6.2 Optional equipment

### RS232C interface

Every model in the B-S line of balances can be equipped with an RS232C interface for connecting it to a peripheral device (e.g. printer or PC). The system is configured for the peripheral device in the menu.



Detailed information on the available interface commands are given in the "MT-SICS Reference Manual" supplied with the RS interface

- RS232C interface 11103678

### 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

### Report printer

- Plain-paper printer, 24 characters, without time/date GA42

### Application printer

- Plain-paper printer, 24 characters, with additional functions (time, date, etc.) LC-P45

### Auxiliary display

- Auxiliary display for connecting to the optional RS232C interface RS/LC-BLD

### Adjusting weights

Available as **OIML** weights (E1) (E2, F2, with certificate); for further details see METTLER TOLEDO Weights brochure 721192 or as **adjusting** weights (not OIML)

### Draft shields

- 0.1 mg Draft shield with sliding doors for PBxx3-S models 11103682
- 1 mg draft shield for PBxx2-S/PBxx1-S models 11103683\*  
\* requires Ø 175 mm weighing pan 11103680

### Protective cover

- For all models (1 piece) 11103681

### AC adapters

- Output: 12V ~ 500mA
- Euro 230V/50Hz/80mA 11103740
  - Euro/(grd) 230V/50/Hz/80mA 11103744
  - UK 240V/50Hz/80mA 11103742
  - USA 120V/60Hz/10W 11103741
  - Japan 100V/50Hz/10W 11103743

### AC adapters (continued)

- Output: 12V ~ 1.0A
- Universal (bench version) 11103745\*  
220-240V/50Hz/100mA  
\* (appropriate cable for country also required)

### AccuPac B-S

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

### Density kits (for AB-S only)

- For determination of solids 33360
- For determination of liquids with displacement body 33360 + 210260

### Transport case

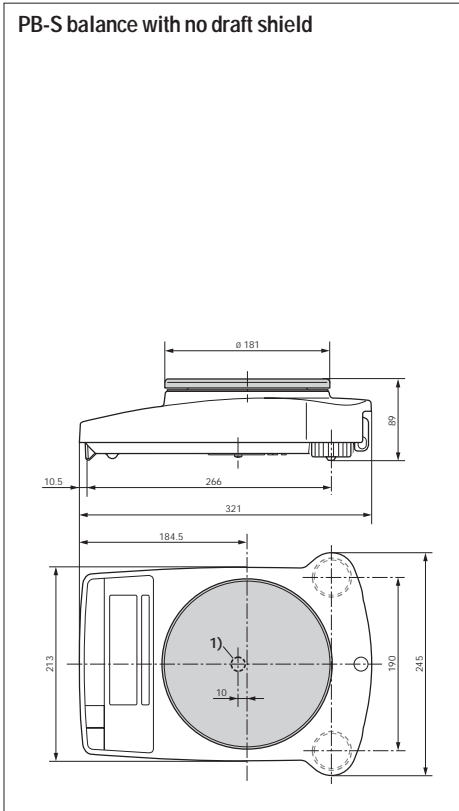
- For all PB-S models, with room for balance, AccuPac, "mg" draft shield and weight (identical with case for PG-S balances) 11101050

### Antitheft device

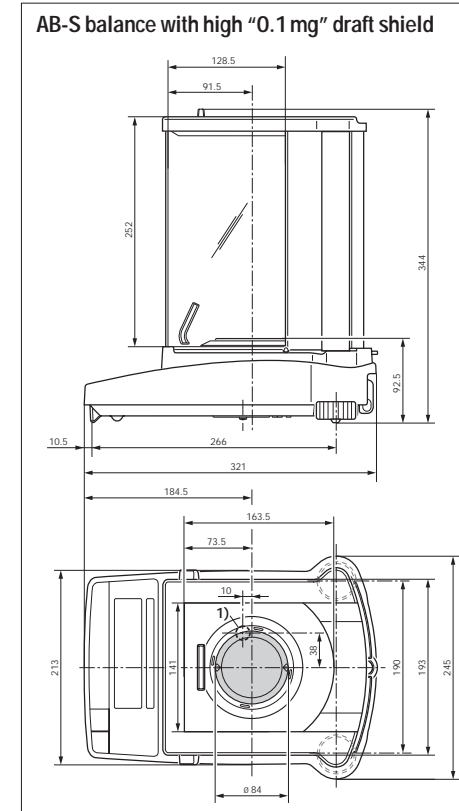
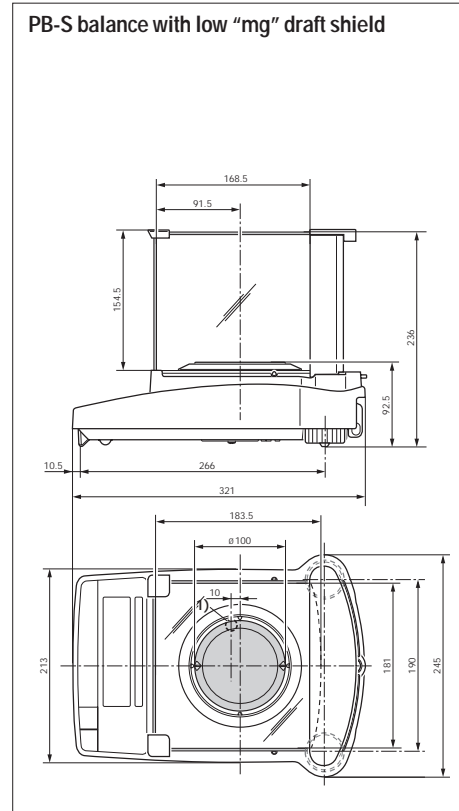
- Cable with lock (for all models) 590101

### 6.3 Dimensional drawings

All dimensions in millimeters (mm)



1) Opening for hanger



## 7 Appendix

### 7.1 Typical printouts from METTLER TOLEDO GA42 and LC-P45 printers

#### Function: Adjusting

```

- BALANCE CALIBRATION -
Date: .....
Time: .....

METTLER TOLEDO
Type:      PB3002-S
SNR:      1118015657
SW:       1.00

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

External Cal. done

Signature:

.....
----- END -----

```

#### Function: Piece counting

Printout with reference weight

```

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

          27.000 g
          27 PCS

```

#### Function: List

Printout of the current balance settings

```

--- LIST OF SETTINGS ---
Date: .....
Time: .....

METTLER TOLEDO
Type:      PB3002-S
SNR:      1118015657
SW:       1.00

-----
Weighing Parameters:
Unit 1          g
Unit 2          g
-----
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: Verification of the calibration (adjustment) with external weight.

Only possible with LC-P45. Function is triggered via the printer.

```

----- BALANCE TEST -----
08.05.1998   09:52:12

METTLER TOLEDO
Type:      PB3002-S
SNR:      1118015657
SW:       1.00

Weight ID: .....

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

External test done

Signature:

.....
----- END -----

```

#### Function: Statistics

Only possible with LC-P45. Function is triggered via the printer.

```

09.05.1998   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

Only possible with LC-P45. Function is triggered via the printer.

```

07.05.1998   08:23:22
ID           242
SNR:        1118015657

Factor       1.65
             588.43 g
*           970.9095

```

#### Notes

With the GA42 the date and time must be entered by hand at the top of the report (see specimen printout for the "Adjusting" function).

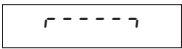


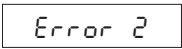
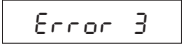

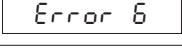
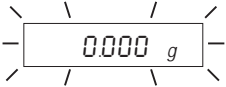

With the LC-P45 the date and time are recorded automatically (see specimen printout for the "Statistics" function).

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

The **GA42** 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**.



## 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"> <li>• in taring or adjusting (calibration)</li> <li>• when reference weight for piece counting is placed on pan</li> </ul>	<ul style="list-style-type: none"> <li>→ Wait for stability before pressing key.</li> <li>→ Ensure more stable ambient conditions.</li> <li>→ Remove weighing pan and clean if necessary</li> </ul>
	Wrong adjusting weight on pan or none at all	→ Place required adjusting 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 Connecting B-S balances to other METTLER TOLEDO devices

Device	Connecting cable	settings/ Remarks
Titrators:		
DL67, 70ES, 70 V.2, 77 DL12, 18, 20, 21, 25, DL35, 40GP, 40RC	not supported	
DL37 (KF, coulometer)	not supported	
DL50, 53, 55, 58	RS9-RS9 (m/f) 11101051	send continuous
RD10 (rheometer)	not supported	
Contalab	not supported	
MTCCom-Bus 310	RS9-RS25 (m/f) 11101052	
SQC 14 (statistical quality control)	RS9-RS25 (m/f) 11101052	
Spider (precision balance)	RS9-RS9(m/m) 21252588	
MMR, ID-Terminals	not supported	
M peripherals (GM bus)	not supported	

### 7.4 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

The balance housing and weighing pan are made of high-grade durable materials. All commonly used cleaning agents can therefore be used. Soiled protective covers can be replaced on all balance types (see Optional equipment).

#### Note

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).

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Thanks in advance.**



\*P11780288\*

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

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