

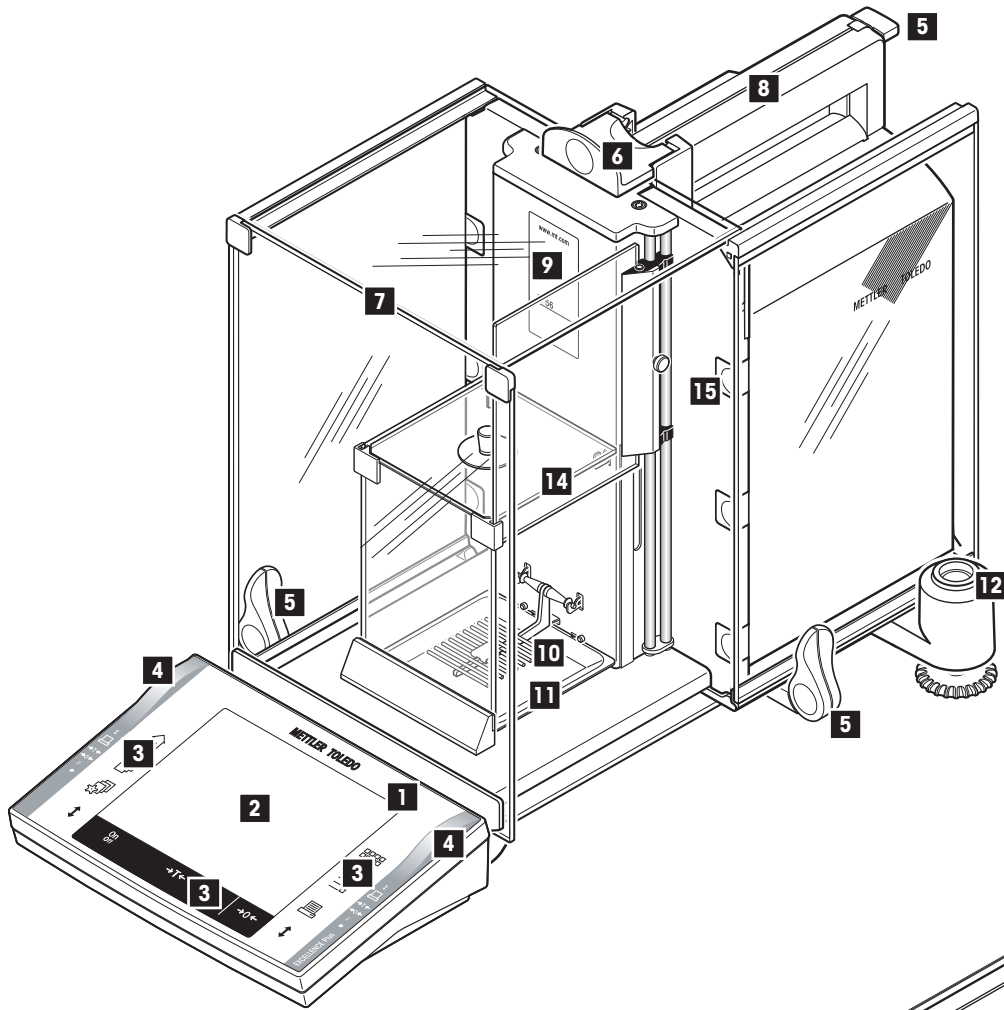
Excellence Plus Micro Balances

XP56/XP26 Models – Part 1

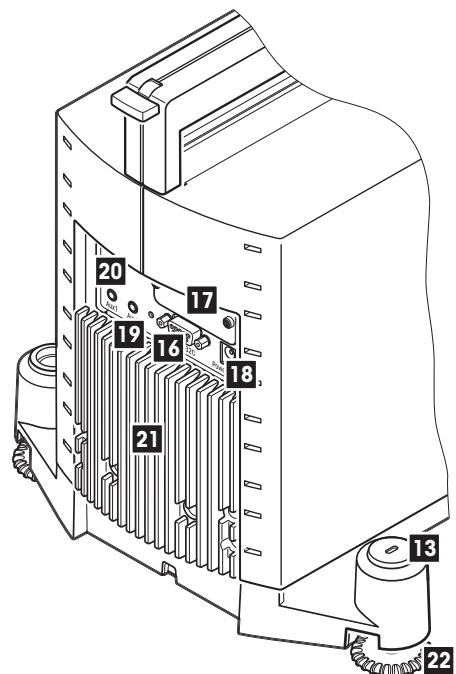


METTLER TOLEDO

Overview of XP56/XP26 micro balances



- 1 Terminal (for details see Operating Instructions – Part 2)
- 2 Display (Touch-sensitive "Touch Screen")
- 3 Operating keys
- 4 SmartSens sensors
- 5 Handle/Coupling element for the operation of the outer draft-shield doors
- 6 Handle for operation of the outer draft-shield top door
- 7 Outer glass draft shield
- 8 Guide for top door of draft shield and handle for transport
- 9 Type name
- 10 Grid weighing pan
- 11 Drip tray
- 12 Level indicator / Level sensor
- 13 Fastening point for anti-theft device
- 14 Inner glass draft shield
- 15 Removable clips for feeding cables or hoses
- 16 RS232C serial interface
- 17 Slot for second interface (optional)
- 18 Socket for AC adapter
- 19 Aux 1 (connection for "ErgoSens", hand- or foot-switch)
- 20 Aux 2 (connection for "ErgoSens", hand- or foot-switch)
- 21 Cooling element (based on model)
- 22 Leveling screw



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1 Getting to know your balance

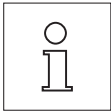
In this section you will be given basic information about your balance. Please read right through this section carefully even if you already have experience with METTLER TOLEDO balances; **please pay special attention to the safety warnings!**

1.1 Introduction

Thank you for choosing a METTLER TOLEDO balance.

The XP balances combine a large number of weighing and adjustment possibilities with exceptionally convenient operation.

The different models have different characteristics regarding equipment and performance. Special notes in the text indicate where this makes a difference to operation.



The Operating Instructions for the XP balances consist of 3 separate documents, whose contents are listed in the following subsections.

1.1.1 Operating Instructions Part 1, this document

Content: XP56/XP26 micro balances

- Introduction
- Safety notes
- Putting the balance into operation
- Leveling the balance
- Cleaning and service
- Technical data
- Interface commands and MT-SICS functions
- Accessories
- Spare parts

1.1.2 Operating Instructions Part 2, separate document

Content: XP terminal, system and applications

- Basic principles for using the terminal and the firmware
- System settings
- User-specific settings
- Applications
- Firmware (Software) updates
- Error and status messages
- Conversion table for weight units
- SOP - Standard Operating Procedure
- Recommended printer settings

1.1.3 Operating Instructions Part 3, separate document

Content: XP adjustments and tests

- Adjustments
- Tests

1.2 Introducing the XP56/XP26 micro balances

The XP56/XP26 family of micro balances comprises a range of balances which differ from each other in relation to their weighing range and resolution.

The following features are common to all models of the XP56/XP26 micro balances:

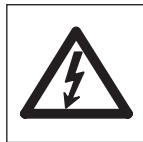
- Glass draft shield with motorized drive and inner glass draft shield for precise weighing even in unstable environments.
- Fully automatic adjustment using internal weights ("ProFACT").
- Built-in level sensor, illuminated level indicator and Leveling Assistant for fast and easy leveling.
- Built-in applications for normal weighing, statistics, formulation, piece counting, percent weighing, density, differential weighing and LabX Client.
- Integral RS232C interface.
- Slot for second interface (optional).
- Touch-sensitive graphics terminal ("Touch Screen") with color display.
- Two programmable sensors for hands-off operation ("SmartSens") to speed up frequently recurring tasks.

A brief word about standards, guidelines, and methods of quality assurance: The XP balances comply with usual standards and guidelines. They support standard procedures, specifications, working methods, and reports according to **GLP (Good Laboratory Practice)**, and allow the creation of **SOPs (Standard Operating Procedure)**. In this connection, records of working procedures and adjustments become very important; for this purpose we recommend you to use a printer from the METTLER TOLEDO range, since these are optimally adapted to your balance. The XP balances conform to the applicable standards and guidelines and possess a CE declaration of conformity. METTLER TOLEDO is certified as manufacturer according to ISO 9001 and ISO 14001.

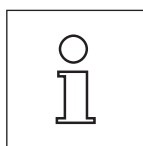
1.3 What you should know about these instructions

The following conventions apply to the operating instructions: Part 1, Part 2 and Part 3:

- Key designations are indicated by double angular parentheses (e.g. «**On/Off**» or «»)



These symbols indicate safety notes and hazard warnings which, if ignored, can cause personal danger to the user, damage to the balance or other equipment, or malfunctioning of the balance.



This symbol indicates additional information and notes. These make working with your balance easier, as well as ensuring that you use it correctly and economically.

1.4 Safety has priority

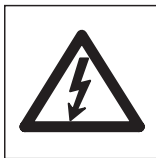
Always operate and use your balance only in accordance with the Operating Instructions Part 1, Part 2 and Part 3.

The instructions for setting up your new balance must be strictly observed.

If the instrument is not used according to the manufacturer's Operating Instructions (Part 1, Part 2 and Part 3), protection of the instrument may be impaired.



It is not permitted to use the balance in hazardous environments.



Use only the AC adapter delivered with your balance, and check that the voltage printed on it is the same as your local power supply voltage. Only plug the adapter into a socket which is grounded.



Do not use sharply pointed objects to operate the keyboard of your balance!

Although your balance is very ruggedly constructed, it is nevertheless a precision instrument. Treat it with corresponding care.

Do not open the balance: It does not contain any parts which can be maintained, repaired, or replaced by the user. If you ever have problems with your balance, contact your METTLER TOLEDO dealer.

Use only balance accessories and peripheral devices from METTLER TOLEDO; they are optimally adapted to your balance.



Disposal

In conformance with the European Directive 2002/96/CE 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.

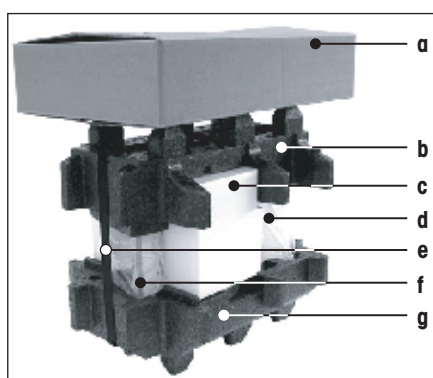
2 Setting up the balance

This section explains how to unpack your new balance, and how to set it up and prepare it for operation. When you have carried out the steps described in this section, your balance is ready for operation.

2.1 Unpacking and checking the delivered items

2.1.1 Unpacking the balance

- Follow the instructions for unpacking and repacking printed on the packaging.
- Lift the cardboard box (a) out of the packaging and take out the Operating Instructions that explain the further procedure for unpacking and assembling your balance.



Overview:

- a Cardboard box with 2 sets (see next 2 pictures)
- b Top packing cushion
- c Set with inner draft shield, drip tray, and grid weighing pan micro
- d Balance
- e Lifting strap
- f Terminal
- Note:** The terminal is connected to the balance by a cable!
- g Bottom packing cushion

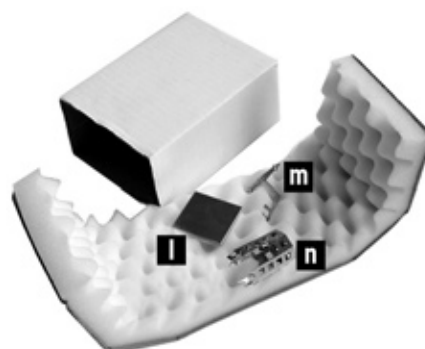


- Take the Operating Instructions and other documents (h) out of the cardboard box.



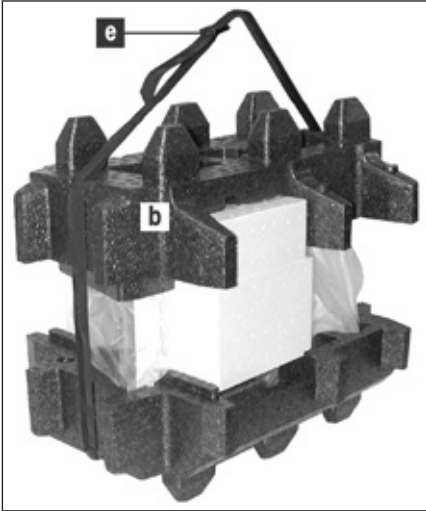
Pull out set (i) with AC adapter, power supply cable, tweezers, and the set containing ErgoClip basket micro and grid weighing pan cover micro.

Pull out set (k) with outer draft-shield doors and terminal support.



Set with:

- ErgoClip basket micro
 - Support (m)
 - Basket (n)
- Grid weighing pan cover micro (l).



Use the lifting strap (e) to lift the balance out of the packaging carton.

Unfasten lifting strap (e)

Remove top packing cushion (b)



Pull out set (c) with inner draft shield etc.



The terminal is connected to the balance by a cable, so only pull the terminal just far enough out of the packing cushion to remove the protective cover.

Carefully pull the terminal out of the bottom packing cushion and remove the protective cover.



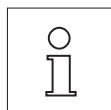
Place the terminal on the front of the balance.

Hold the balance by the guide or handle, hold the terminal firmly with your other hand, and pull the balance and terminal together out of the bottom packing cushion.



Place the balance with the terminal in the place where the balance will be used for weighing.

Remove the cover from the balance.



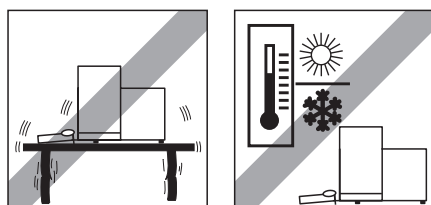
Please keep all parts of the packaging. This packaging guarantees best possible protection of your balance for transportation (section 2.8).

2.1.2 Checking the delivered items

The standard scope of delivery contains the following items:

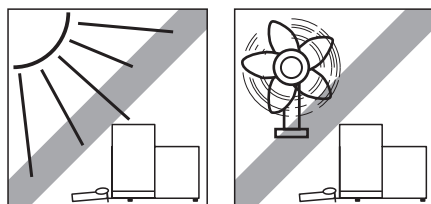
- XP56/XP26 microbalance with terminal
- Set with outer draft shield and terminal support
- Set with inner draft shield, drip tray and grid weighing pan micro
- Set with:
 - Ergo Clip basket micro with support
 - Grid weighing pan cover micro (attachment for grid weighing pan)
- AC adapter with country-specific power cable
- RS232C interface
- Slot for second interface (optional)
- Feedthroughs for below-the-balance weighing and for antitheft device
- Tweezers
- Cleaning brush
- Protective cover for the terminal
- Production certificate
- CE declaration of conformity
- Instructions for unpacking, re-packing, and setting up
- Operating Instructions Part 1 (this document), Part 2 and Part 3

2.2 Selecting a location



Choose a position which is stable, free from vibration, and as nearly horizontal as possible. The supporting surface must be able to bear the weight of the fully loaded balance safely.

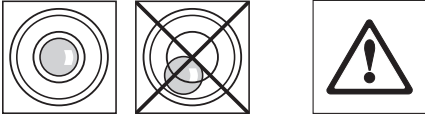
Pay attention to the environmental conditions (section 5.1).



Avoid:

- Direct sunlight
- Draft (e.g. from fans or air conditioning)
- Excessive fluctuations in temperature.

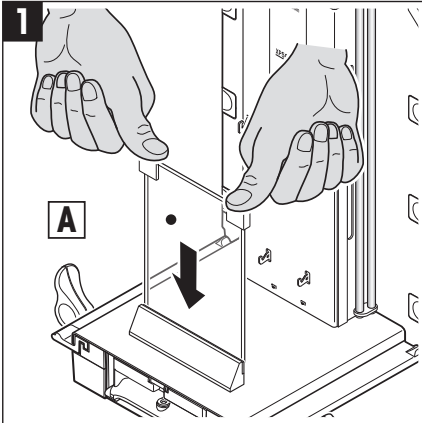
Further information can be found in Weighing the Right Way.



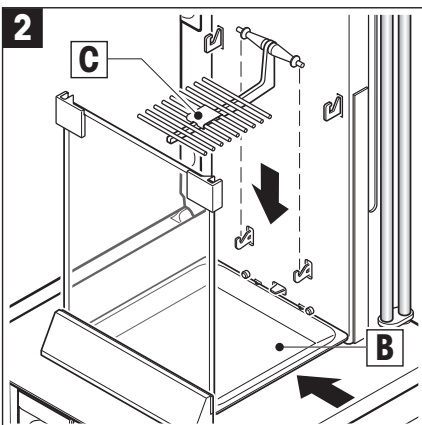
If the balance is not horizontal from the beginning, it will have to be leveled during initial operation (see section 3.2).

2.3 Assembling the balance

2.3.1 Inner draft shield

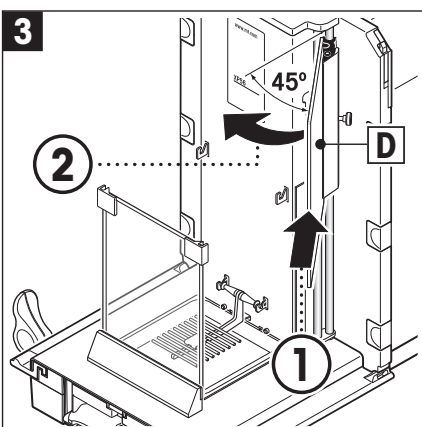


Insert the front glass (A) of the inner draft shield.
Ensure the glass is centered and pushed in as far as the stop.



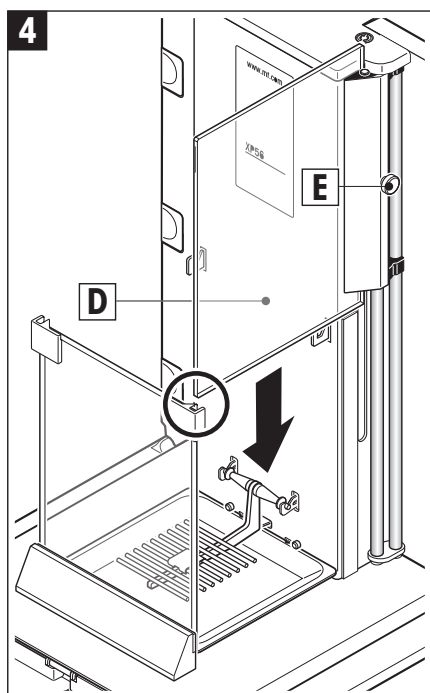
Insert the drip tray (B).
Insert the drip tray from the side under the upper 2 pins. The notches must be positioned by the springs.

Insert the grid weighing pan (C) from above.
Check that the grid weighing pan is correctly hooked in on both sides.



Insert the side window (D) of the inner draft shield.

1. At an angle of approximately 45 degrees to the final position, place the 2 black clips on the back guide shaft.
2. Push the window up until you can swivel it in over the front glass.

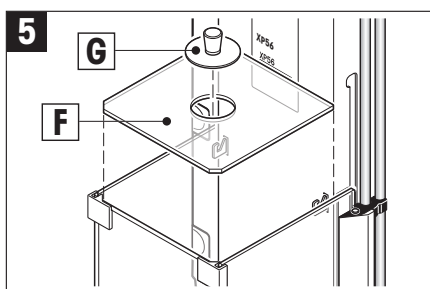


Insert the window (D) of the inner draft shield into the guide of the front glass and lower it to the floor.

- The window must run easily.
- Press the coupling pins (E) toward the inside.

Now insert the window on the other side of the inner draft shield.

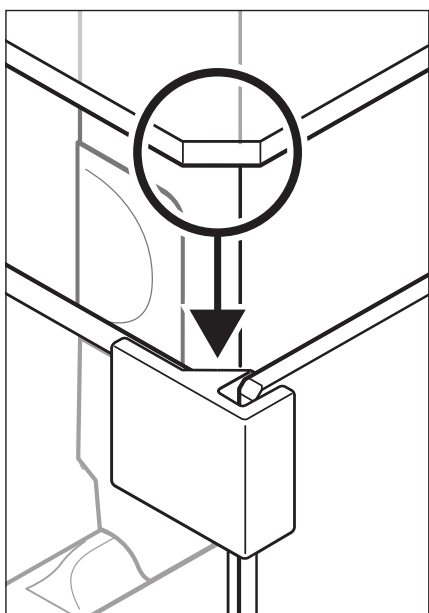
- The procedure is the same as shown in pictures 3 and 4.

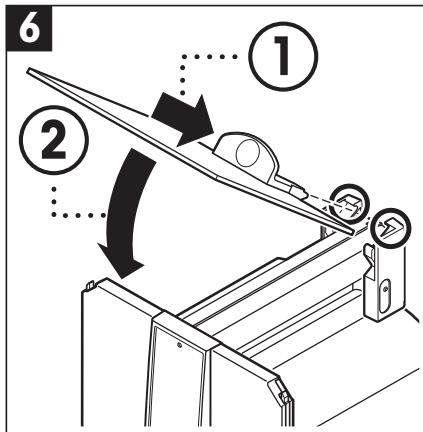


Put the top glass (F) on.

Insert the sealing cover (G).

Note: The sealing cover closes the opening in the top glass through which you can pipette into a high container. Do not use the sealing cover to lift the top glass of the draft shield!



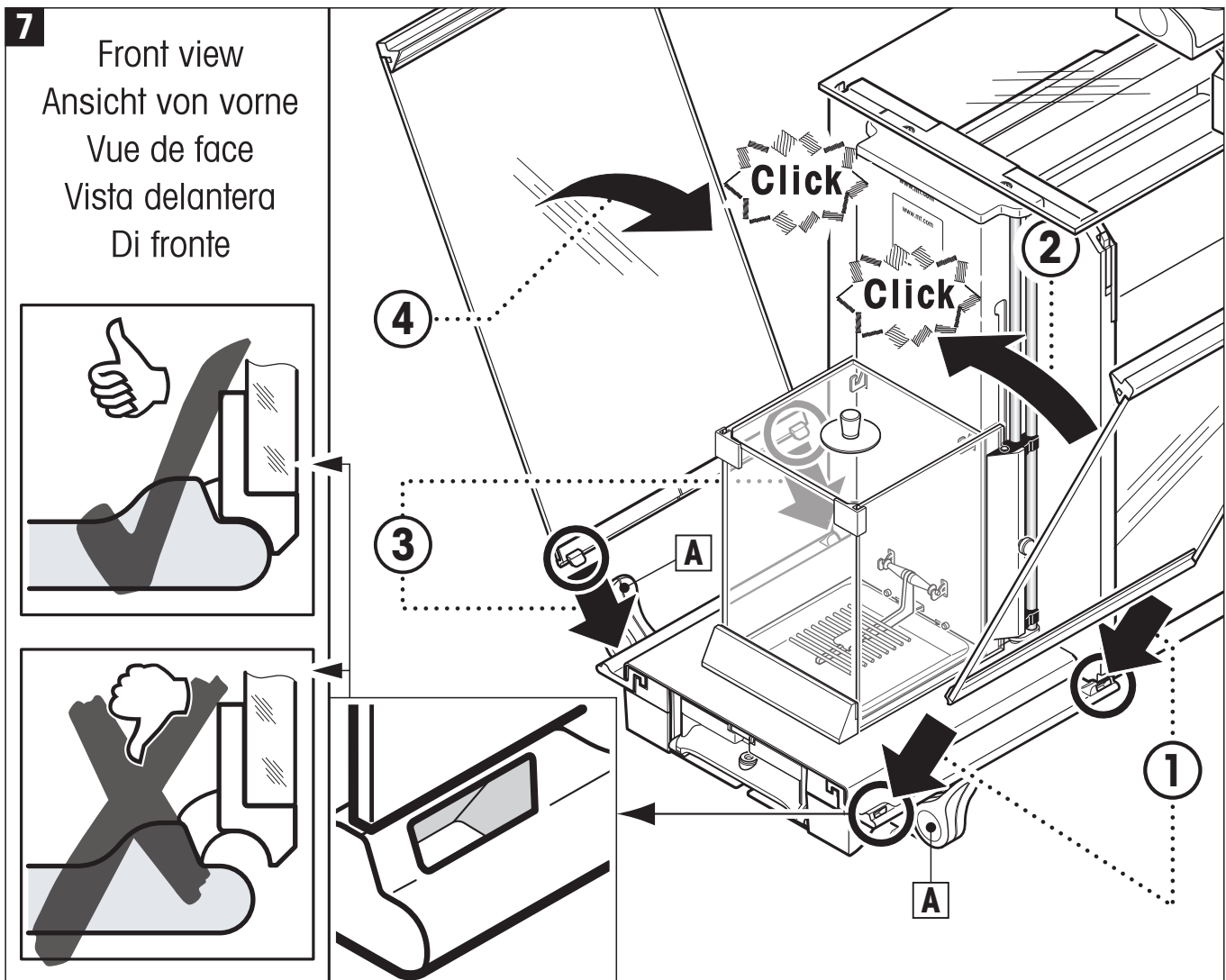


2.3.2 Outer draft shield

Insert the outer top door of the draft shield at an angle (slightly less than 30 degrees) into the guide positioned **at the back**, and swivel the draft-shield door carefully down (see Fig. 6).



The handles (A) must be turned toward the outside to allow installation of the side draft shield doors!



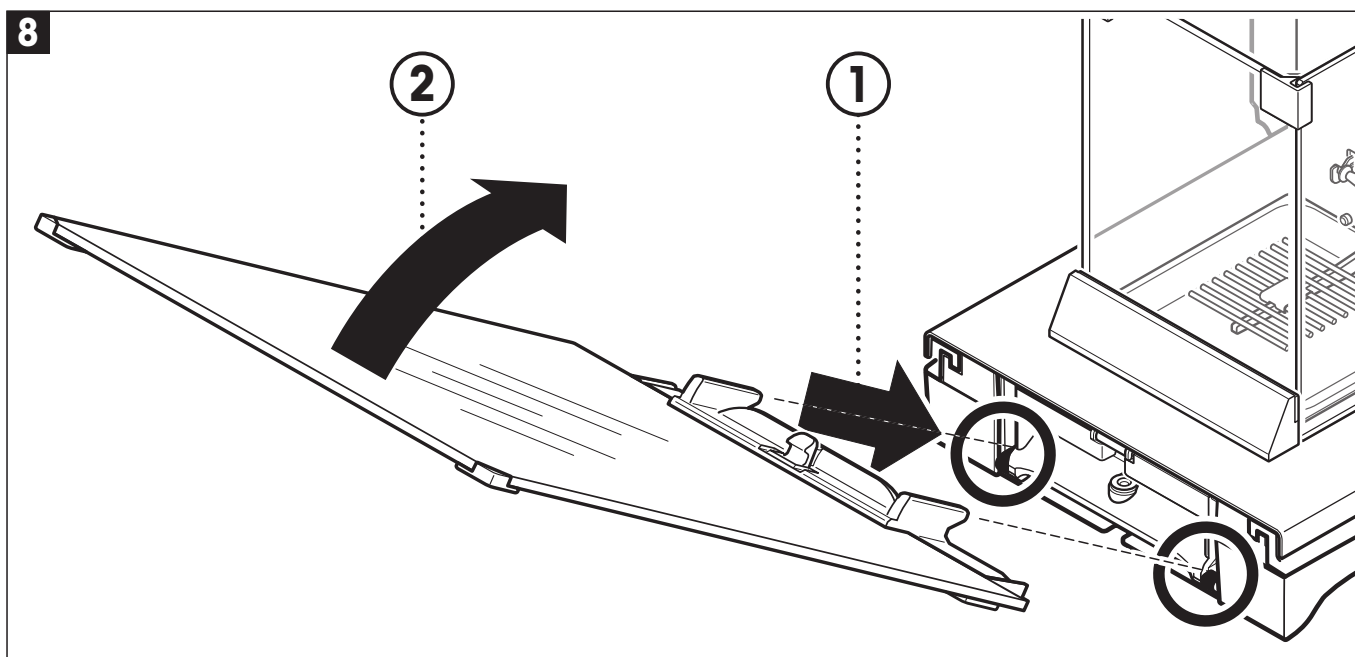
Insert the outer side doors of the draft shield according to the following instructions (see Fig. 7):



- Insert the side door at an angle of approx. 30° into the 2 openings (see figure for details). Check that the side door is correctly inserted as shown in the "Front view"!
- Swivel the side door up against the balance until it engages with a click.
- The side door must run **easily**, otherwise it is not correctly inserted.

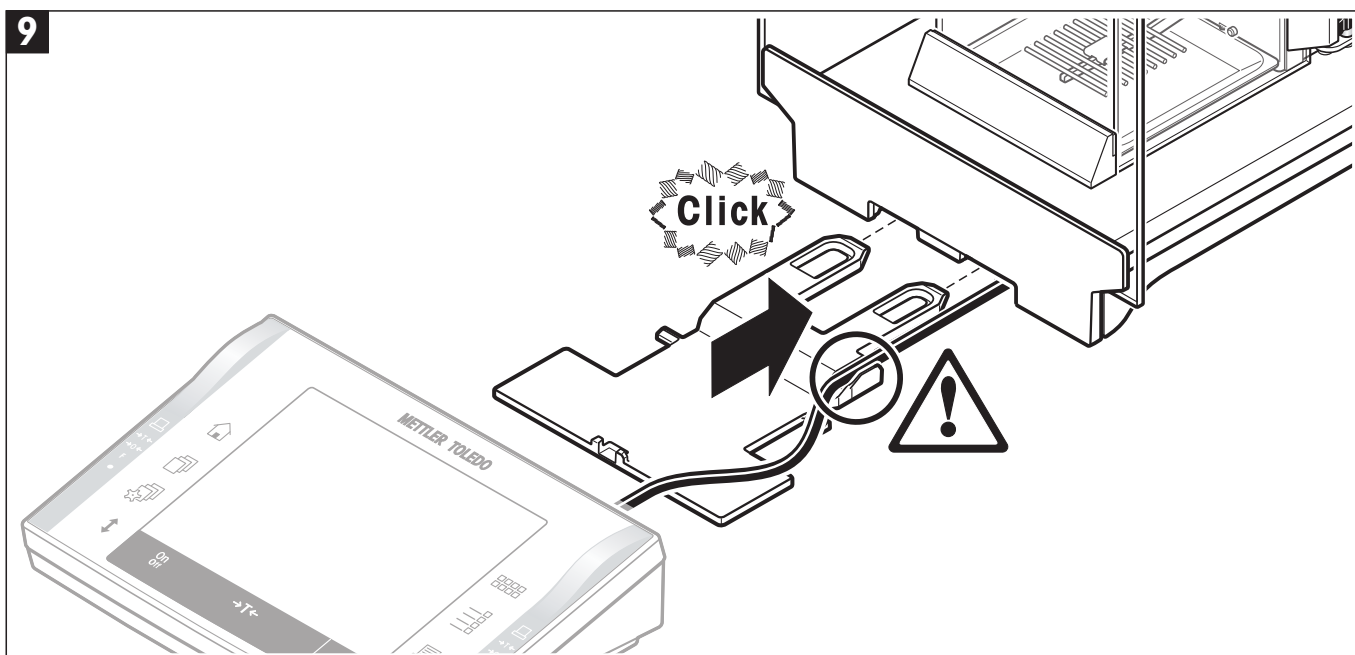
Insert the second outer side door of the draft shield. The procedure is identical.

Push the outer side doors completely to the back.



Insert the front glass of the outer draft shield:

- In the bottom part of the balance at the front, move at an angle from the top toward the bottom until the two hooks of the front glass of the draft shield lie on the rollers.
- Swivel the front glass of the draft shield up until it engages.

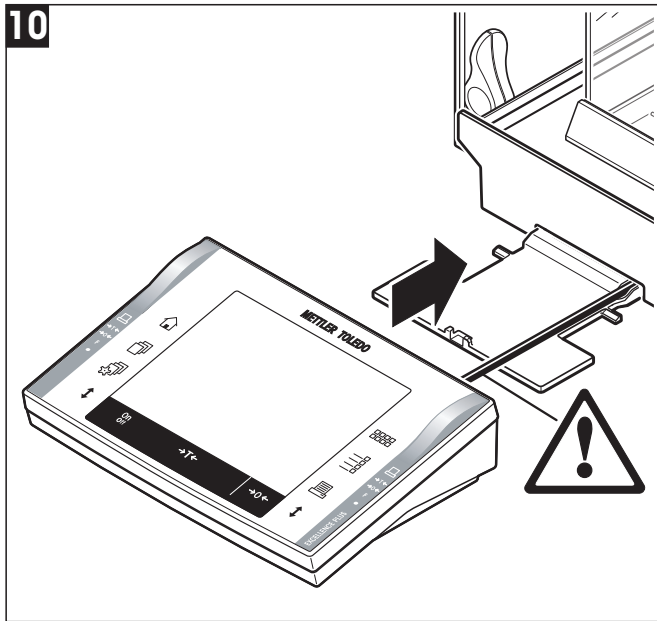


Insert the terminal support:

- First lay the cable in the guide by the terminal support.
- Insert the terminal support into the opening of the front glass of the draft shield.



The terminal support must engage with a click.



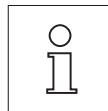
Mount the terminal:

- Place the terminal in the center of the support and push it against the balance until it swivels slightly down at the front by the terminal support.

Note: You can push the cable into the balance.



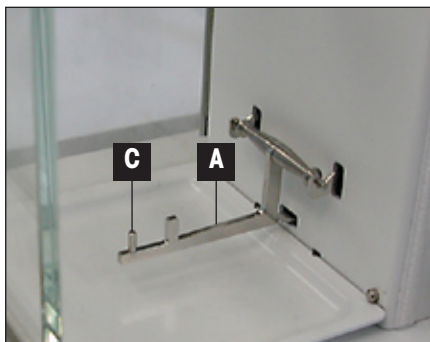
The balance and the terminal are not fastened together by the terminal support! When transporting by hand, always hold the balance and the terminal firmly (see section 2.8).



Note: You can also place the terminal free of the terminal support anywhere around the balance where the length of the cable allows.

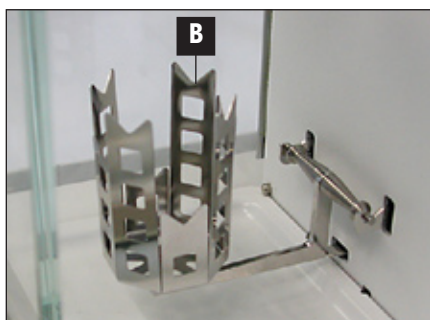
2.3.3 Installing the ErgoClips

To install the ErgoClip included in the delivery, or an optional ErgoClip (see section 6.1), please proceed as follows:



Before you install an ErgoClip you must switch off the balance («On/Off» key).

- Remove the grid weighing pan (SmartGrid) from the balance.
- Insert the support (A) for the “ErgoClip Basket micro”.
- Place the basket (B) on the guide (C) of the support.
- Switch the balance on again («On/Off» key).



Important to know!

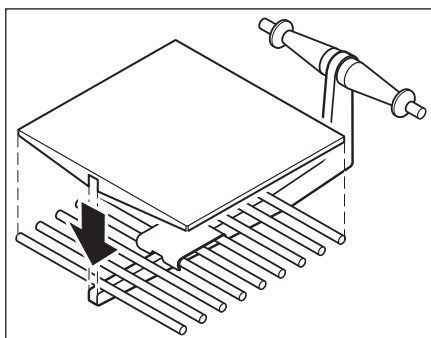
If you do not switch the balance off before you do the installation, the ProFACT function is not activated.

Reason: Addition of the ErgoClip causes the dead-load tolerance range of the balance to be exceeded. The balance therefore does not activate ProFACT, so as not to interrupt the **assumed** weighing operation.



When this status icon appears in the display, it means: “The balance wants to execute ProFACT” but cannot.

2.3.4 Installing the grid weighing pan cover



For the installation, remove the grid weighing pan from the weighing chamber.

Gently press the cover onto the grid weighing pan.

Replace the grid weighing pan with the installed grid weighing pan cover.



After installation the balance must be switched off and then back on again («On/Off» key).

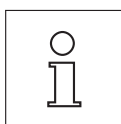
The reason is the same as explained in section 2.3.3 ("Important to know!").



Attention: With installed grid weighing pan cover, the balance does **not** switch to "Standby" mode!

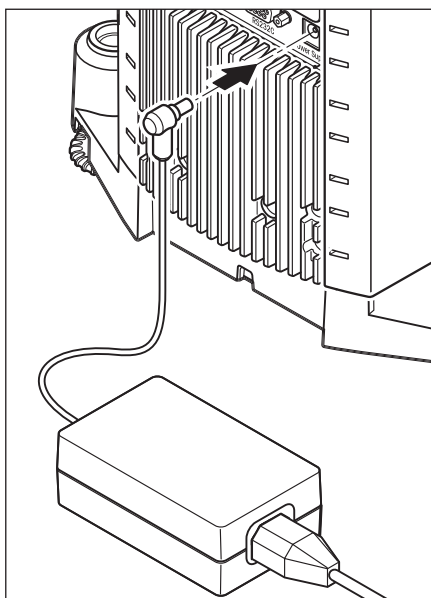


Take care when handling the weighing pan, the corners and edges are extremely sharp!



For standard operation with conventional tare containers, we do **not** recommend using this weighing pan. Its use may affect the stabilization time and degree of accuracy. The listed specifications are reached without a weighing pan.

2.4 Power supply



Your balance is delivered complete with an AC adapter and a country-specific power supply cable. The AC adapter is suitable for all power supply voltages in the range of: 100 – 240 VAC, 50/60 Hz

Check that the local power supply voltage is in this range. **If it is not, DO NOT connect the balance or the AC adapter to the power supply**, and contact your METTLER TOLEDO dealer.

Do not connect the balance to outlets that are not grounded! Do not use extension cords without PE conductors!

Plug the AC adapter into the socket in the back of your balance (see illustration) and into the power supply.



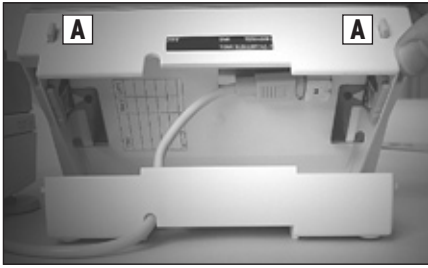
Important: Guide the cables so that they cannot become damaged and will not be in your way during your daily work! Take care that the AC adapter cannot come into contact with liquids!



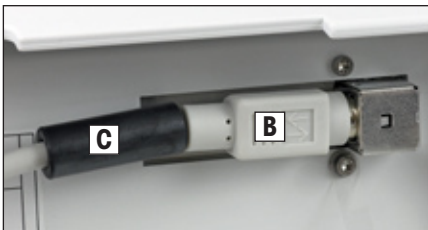
Ensure that the AC power pack for the balance is only used in accordance with the specifications listed in section 6.1.

After the balance has been connected to the power supply, it carries out a self test and is then ready for operation.

Note: If the display field remains dark, even though the power supply connection functions, first disconnect the balance from the power supply. Open the terminal:



Press both buttons (A) on the back of the terminal and open the upper part of the terminal.



Check that the plug (B) of the terminal cable is connected correctly inside the terminal. Ensure that the ferrite core (C) makes full contact on the plug.

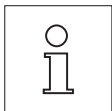
2.5 Operating of the outer draft shield and the inner draft shield

2.5.1 Outer draft shield

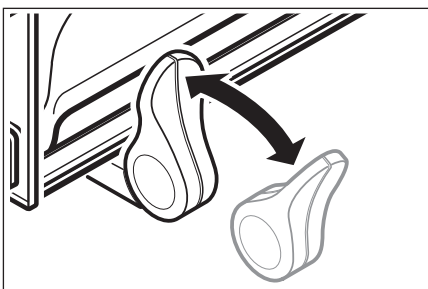
The outer draft shield of your balance can be adapted to the environmental conditions and your weighing style, as well as to the type of weighing and loading.

The doors of the outer draft shield and inner draft shield can be opened and closed either by means of the « \updownarrow » key or with the "SmartSens" sensors (see also Operating Instructions – Part 2).

Try various different combinations by moving the 3 external handles up/inside and down/outside. We recommend you to set up the outer draft shield so that it only opens on the side where the balance is loaded. Your balance then works faster, because there are fewer troublesome currents of air than when both doors of the outer draft shield are opened together.



Note: It is best to make connections when the draft shield is closed.

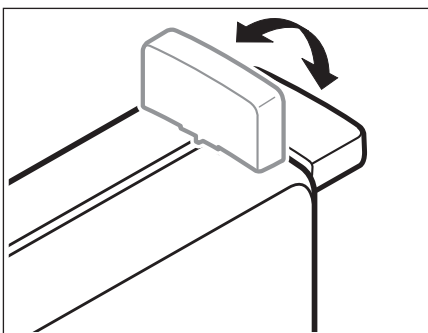


For **motorized door operation**, the handles of the door to be opened must be engaged.

- Side doors: Handles turned toward the inside
- Top door: Handle down in horizontal position

Note: "Manual" setting (User-specific settings)

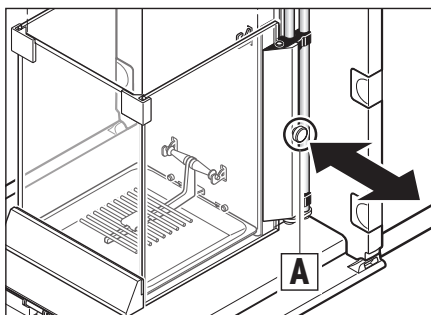
Operating the door with the « \updownarrow » key or "SmartSens" (see also Operating Instructions – Part 2).



"Automatic" setting (User-specific settings)

The automatic door function opens and closes the doors automatically whenever necessary (see also Operating Instructions – Part 2).

2.5.2 Inner draft shield

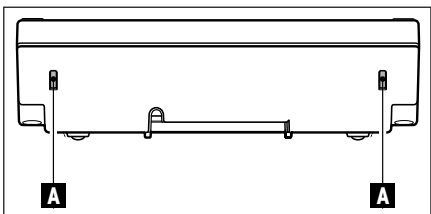


For motorized operation of the inner draft shield the coupling bolts (A) must be pressed **inward**. The two side doors can be controlled separately.

You can also open the side doors of the inner draft shield only partway, with a choice of 25 %, 50 % or 75 % (see Operating Instructions – Part 2).

2.6 Setting the reading angle and location of the terminal

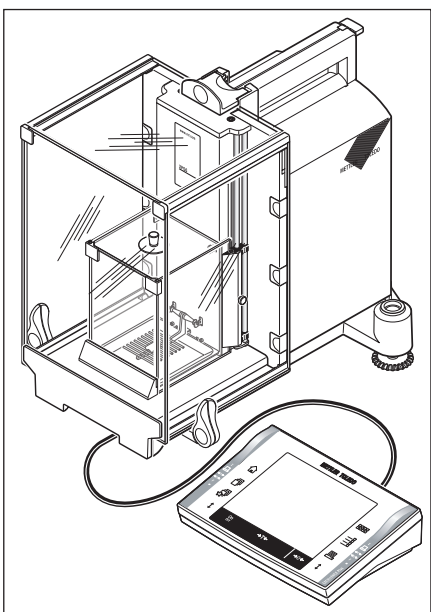
2.6.1 Setting the reading angle



To change the reading angle, press in the two buttons (A) on the back of the terminal. The top of the terminal can then be pulled up or pushed down until it engages in the desired position. A total of 3 setting positions are available.

2.6.2 Remove terminal and place close to the balance

The terminal is connected to the balance by a cable. So you can arrange your workplace optimally, the terminal can be removed from the balance and placed separately.



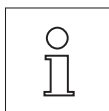
You can also place the terminal separately (see illustration):

Switch the balance off.

Carefully lift the terminal off the terminal support. You can leave the terminal support on the balance or remove it.

Pull the cable carefully out from the balance as far as possible.

Place the terminal where you want it to be.



The cable can also be led out of the back of the balance. If working this way would be convenient for you, call your METTLER TOLEDO dealer who will adapt the balance for you.

2.7 Below-the-balance weighing

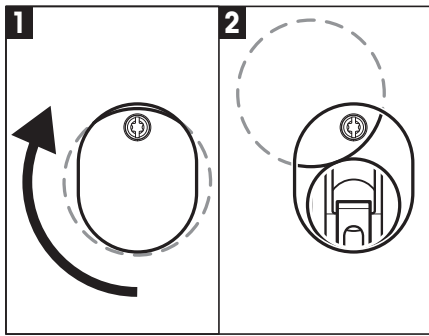
So that weighings can be carried out below the working surface (below-the-balance weighing), your balance is provided with a special hanger.

Switch off the balance and unplug the cable of the AC adapter from the back of the balance.

Also remove any interface cables.

Push all the doors of the glass draft shield completely to the back.

Lift the terminal off the terminal support. Open the terminal (see section 2.4) and carefully pull the connecting cable out. Put the terminal down at the side of the balance.



Pull the balance over the table edge just far enough that you see the opening (see Fig. 1) from below.

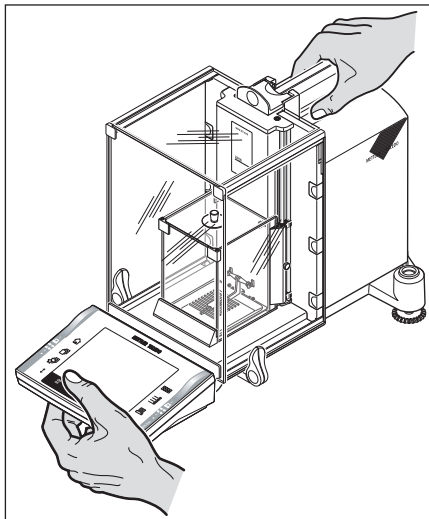
Slacken the screw until the cover plate can be turned to the side and the hanger for weighing below the balance is easily accessible. You must now fasten the cover plate in the new position (see Fig. 2) by tightening the screw.

Then return the balance to its normal position and re-install all the components (see section 2.3), including the terminal cable.

2.8 Transporting the balance

Switch off the balance and unplug the cable of the AC adapter, as well as any interface cables, from the balance

2.8.1 Transporting over short distances



If you wish to move your balance over a short distance to a new location, proceed as follows:

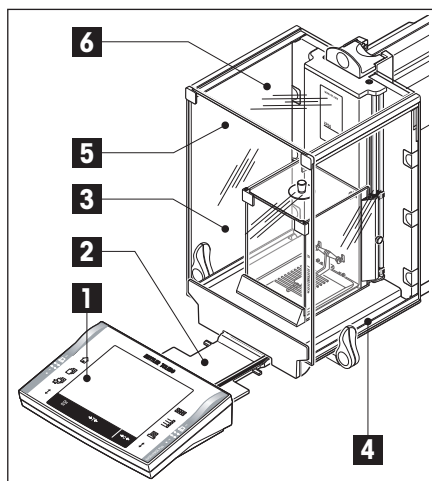
With one hand, hold the balance by the guide for the top door of the draft shield. With your other hand, hold the terminal. Carefully lift the balance and carry it to its new location. (Observe the notes in section 2.2 regarding the choice of an optimal location).



The terminal is not rigidly fastened to the balance, so you must always hold the balance with one hand and the terminal with the other.

Never lift the balance by the outer draft shield or the cooling element, as this can cause damage!

2.8.2 Transporting over long distances



If you want to transport or ship your balance over long distances, or if it is not certain that the balance will be transported upright, use the **complete original packaging**.

Disassemble the following parts:

Lift the terminal (1) out of the terminal support and place it next to the support.

Pull the terminal support (2) off the balance.

Swivel the front glass (3) of the outer draft shield away from the balance.

Carefully fold the side doors (4+5) against the respective handles and pull the side doors out of the guide.

Swivel the front of the top door (6) of the outer draft shield up and pull the door out of the guide.

Remove the sealing cover (7).

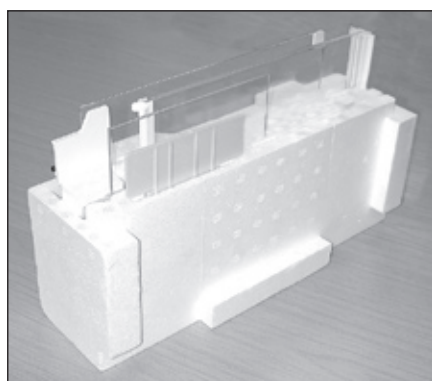
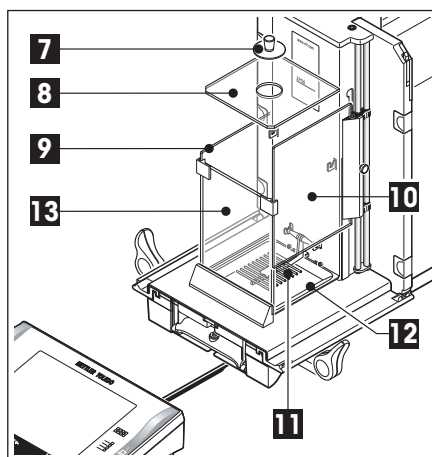
Lift the top glass (8) of the inner draft shield off.

Pull both side doors (9 + 10) off (pull up, turn to the side, and pull away).

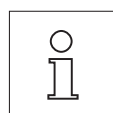
Lift the grid weighing pan (11) and lift it out of the guides.

Pull the drip tray (12) out at the side.

Pull the front glass (13) up and away.

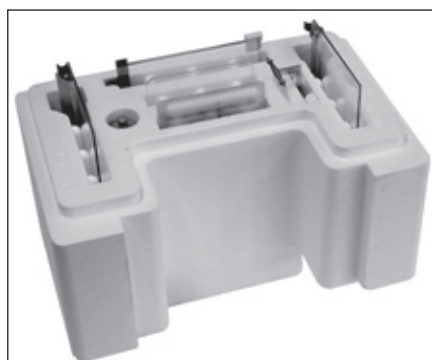


Pack the outer draft shield and the terminal support (Items 3-6 and 2)



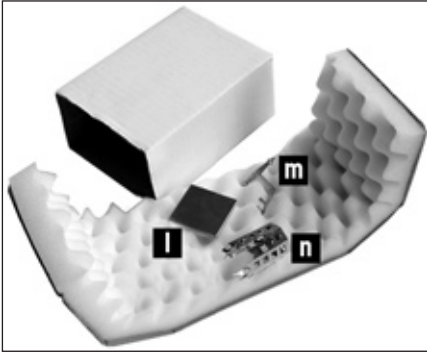
Place these parts in the compartments provided in the original packaging.

Note: We advise you to place a sheet of paper between the sides glasses of the draft shield.



Pack the inner draft shield, the drip tray, and the grid weighing pan (Items 7-13)

Place these parts in the special compartments provided in the original packaging.



Pack the set with:

- ErgoClipBasket micro
 - Support (m)
 - Basket (n)
- Grid weighing pan cover micro (l)



Pack the 2 sets (i + k):

- Set (i) with AC adapter, power cable, tweezers, and the set with the ErgoClip Basket micro and grid weighing pan cover micro.
- Set (k) with the outer draft shield and terminal support.
- The Operating Instructions and other documents



- Push the guide of the upper draft shield door right to the front.
- Push the guide of the draft shield side doors right to the front.
- Fold the handles of the guides up/in.



These instructions must be followed exactly, otherwise the balance may be damaged when inserting it into the packing cushions.

Note: For packing both the balance and the terminal, you have a protective cover in which they were delivered. These are deliberately not shown in the illustrations so you can see better how the individual items must be positioned. However, we recommend you to use these protective covers.



Place the terminal on the balance (see illustration) and carefully insert the balance into the bottom packing cushion.

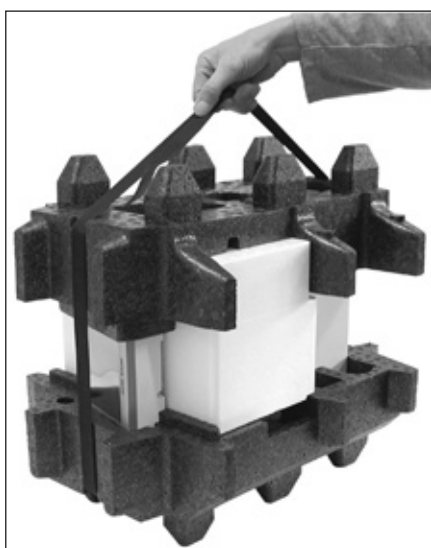
Take the terminal and place it in front of the packing cushion on the table.



Place the set in the packing cushion along with the inner draft shield (see picture).



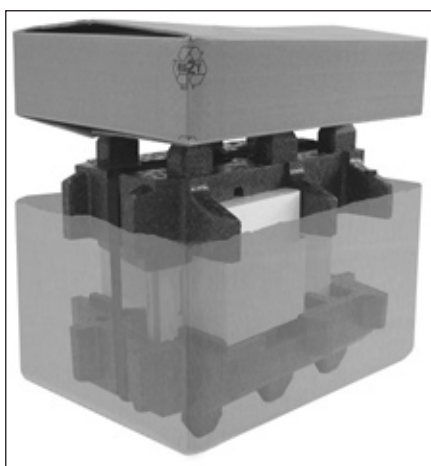
Insert the terminal into the packing cushion as shown in the illustration.



Now put the top packing cushion in place, taking care to position it correctly.

Pass the **lifting strap** around both packing cushions (see illustration) and tighten it until it lies close against the packaging.

You can now lift the packed balance by the lifting strap and insert it into the transport carton.



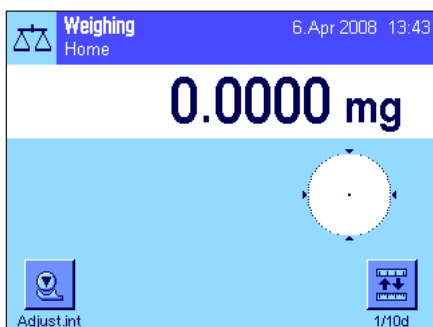
Place the packaging with the outer draft shield and AC adapter sets on the balance in the transportation carton.

3 Leveling the balance

3.1 Switching the balance on and off



Switching on the balance: Press the «On/Off» key briefly. The balance carries out a test and is then ready to weigh.



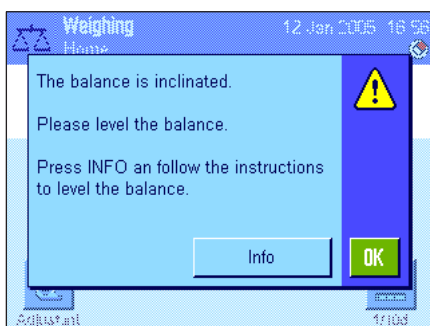
The display opposite appears when the balance is switched on **for the first time**.



Switching off the balance: Press and hold the «On/Off» key until the message "OFF" appears in the display. The display then fades and the balance is switched off.

3.2 Leveling the balance

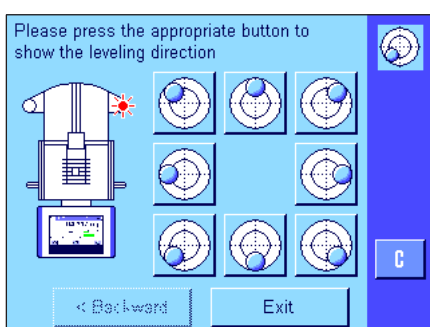
Your balance has a built-in level sensor, that constantly checks the correct horizontal alignment and prompts you to make an adjustment, if necessary.



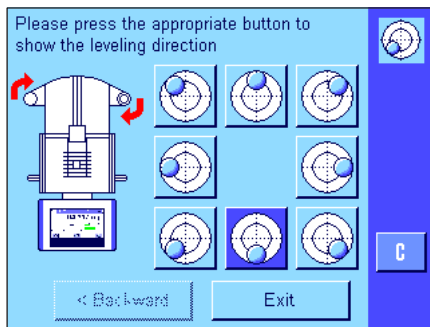
When the level sensor detects that the level is incorrect, the warning text at left will appear and a warning beep will sound. A status icon will also appear in the upper right-hand corner of the display (below the time).

To level the balance, press the "Info" button. This will start the Leveling Assistant. The Leveling Assistant will guide you step by step through the leveling process.

If you press "OK" instead, the balance will return to the weighing operation. The status icon, however, will continue to be displayed, and the warning text will reappear after 15 minutes.

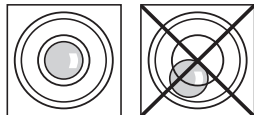


Watch the level indicator on your balance (this will light up when the level sensor is switched on) and press the button that matches the current position of the air bubble in the level indicator.



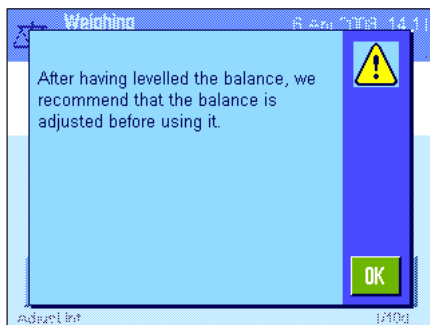
The Leveling Assistant will show you with red arrows which direction you need to turn the two footscrews on the back of the balance.

Turn the footscrew(s) in the direction indicated until the air bubble is in the inner circle of the level indicator. If you are unable to do this on your first attempt, you can press the button again that matches the current position of the air bubble at any time.



As soon as the air bubble is in the inner circle of the level indicator, the balance has been leveled correctly (left figure = leveled correctly, right figure = leveled incorrectly).

Press the **"Exit"** button to exit the Leveling Assistant.



Before the balance returns to Weighing Mode, a message appears that advises you to adjust the balance after you have leveled it. Confirm the message with **"OK"**.

If the balance was leveled correctly, the status icon will no longer appear in the upper right-hand corner of the display.

Note: You can also level the balance at any time without using the Leveling Assistant. As soon as the warning message appears, press the **"OK"** button to cancel the dialogue. Level the balance by turning the footscrews as described above. As soon as the level is correct, the status icon in the upper right-hand corner of the display will disappear.

4 Cleaning and service

Periodically clean the weighing chamber, the housing, and the terminal of your balance using the brush supplied with it.

To clean the weighing chamber thoroughly, swivel the glasses of the draft shields (inner and outer draft shield) away from the balance and pull them out of their fastenings (see section 2.3). Carefully raise the front of the weighing pan and lift it out of the guide. Pull the drip tray away from the balance.

When you replace these parts, make sure they are in the correct position (see section 2.3).

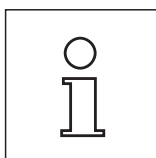
Your balance is made from high quality, resistant materials and can therefore be cleaned with a commercially available, mild cleaning agent.

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.
- Ensure that no liquid comes into contact with the balance, the terminal or the AC adapter.
- Never open the balance, terminal or AC adapter - they contain no components, which can be cleaned, repaired or replaced by the user.

Note: This also applies to the built-in clock battery in the balance.



Please contact your METTLER TOLEDO dealer for details of the available service options. Regular servicing by an authorized service engineer ensures constant accuracy for years to come and prolongs the service life of your balance.

5 Technical data

In this section you will find the most important technical data for your balance.

5.1 General data

Power supply

- Power supply connector with AC/DC adapter: 11107909
Primary: 100-240 VAC, -15%/+10%, 50/60 Hz
Secondary: 12 VDC \pm /-3%, 2.0 A (with electronic overload protection)
- Cable to AC adapter: 3-core, with country-specific plug
- Power supply to the balance: 12 VDC \pm /-3%, 2.0 A, maximum ripple: 80 mVDCpp



Use only with a tested AC adapter with SELV output current.

Ensure correct polarity 

Protection and standards

- Overvoltage category: Class II
- Degree of pollution: 2
- Protection: Protected against dust and water
- Standards for safety and EMC: See Declaration of Conformity
- Range of application: For use only in closed interior rooms

Environmental conditions

- Height above mean sea level: Up to 4000 m
- Ambient temperature: 5-40 °C
- Relative air humidity: Max. 80% at 31 °C, linearly decreasing to 50% at 40 °C, noncondensing
- Warm-up time: At least **120** minutes after connecting the balance to the power supply; when switched on from standby-mode, the balance is ready for operation immediately.

Materials

- Housing: Die-cast aluminum, plastic, chrome steel and glass
- Terminal: Die-cast zinc, chromed and plastics
- Grid weighing pan: Chrome-nickel steel X5CrNi18-10

5.1.1 Explanatory notes for the METTLER TOLEDO AC adapter

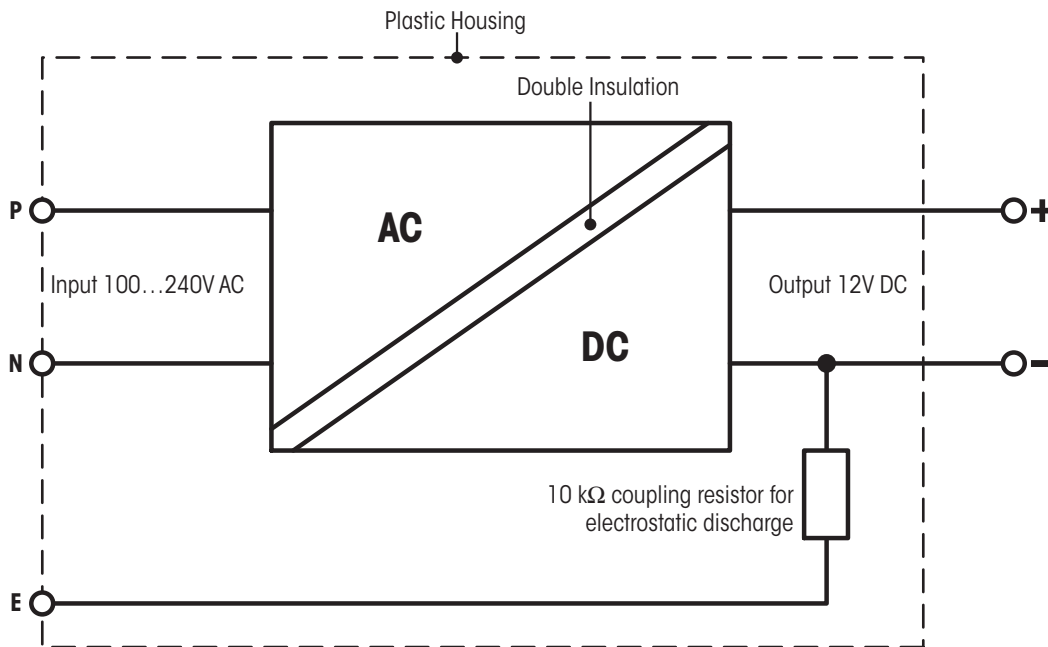
The certified external power supply which conforms to the requirements for Class II double insulated equipment is not provided with a protective earth connection but with a functional earth connection for EMC purposes. This earth connection IS NOT a safety feature. Further information about conformance of our products can be found in the brochure "Declaration of Conformity" which is coming with each product or can be downloaded from www.mt.com.

In case of testing with regard to the directive 2001/95/CE the power supply and the balance have to be handled as Class II double insulated equipment.

Consequently an earth bonding test is not required. Similarly it is not necessary to carry out an earth bonding test between the supply earth conductor and any exposed metalwork on the balance.

Because the balances are sensitive to static charges a leakage resistor, typically 10 kΩ, is connected between the earth connector and the power supply output terminals. The arrangement is shown in the figure below. This resistor is not part of the electrical safety arrangement and does not require testing at regular intervals.

Equivalent circuit diagram:



5.2 Model-specific data

Parameter Limit values	XP26	XP26DR	XP56	XP56DR
Maximum capacity	22 g	22 g	52 g	52 g
Maximum capacity, fine range	—	5.1 g	—	11 g
Readability	0.001 mg	0.01 mg	0.001 mg	0.01 mg
Readability, fine range	—	0.002 mg	—	0.002 mg
Repeatability (at nominal load)	sd 0.0025 mg (20 g)	0.008 mg (20 g)	0.006 mg (50 g)	0.014 mg (50 g)
Repeatability (at low load)	sd 0.0015 mg (1 g)	0.005 mg (1 g)	0.0015 mg (1 g)	0.006 mg (1 g)
Repeatability, fine range (at low load)	sd —	0.002 mg (1 g)	—	0.002 mg (1 g)
Linearity deviation	0.006 mg	0.01 mg	0.02 mg	0.03 mg
Eccentricity deviation (test load)	0.02 mg (10 g)	0.025 mg (10 g)	0.03 mg (20 g)	0.035 mg (20 g)
Sensitivity offset (test load) ²⁾	0.08 mg (20 g)	0.1 mg (20 g)	0.125 mg (50 g)	0.15 mg (50 g)
Sensitivity temperature drift	0.0001%/°C	0.0001%/°C	0.0001%/°C	0.0001%/°C
Sensitivity stability	0.0001%/a	0.0001%/a	0.0001%/a	0.0001%/a
Dimensions and other data				
Balance dimensions (WxDxH) [mm]	263 x 487 x 322	263 x 487 x 322	263 x 487 x 322	263 x 487 x 322
Weighing pan dimensions (WxD) [mm]	40 x 40	40 x 40	40 x 40	40 x 40
Weight of balance	11.5 kg	11.5 kg	11.5 kg	11.5 kg
Taring range	0...22 g	0...22 g	0...52 g	0...52 g
Settling time	3.5 s	2.5 s	3.5 s	2.5 s
Settling time, fine range	—	3.5 s	—	3.5 s
Interface update rate	23 /s	23 /s	23 /s	23 /s
Internal adjustment weights	2	2	2	2
Typical uncertainties				
Repeatability ¹⁾	sd 0.0007mg+0.000004%·R _{gr}	0.004mg+0.000005%·R _{gr}	0.0007mg+0.000006%·R _{gr}	0.004mg+0.000006%·R _{gr}
Repeatability, fine range ^{1) 3)}	sd —	0.0012mg+0.00001%·R _{gr}	—	0.0012mg+0.00001%·R _{gr}
Differential linearity deviation	sd $\sqrt{(1.2 \times 10^{-10} \text{mg} \cdot R_{nt})}$	$\sqrt{(3 \times 10^{-10} \text{mg} \cdot R_{nt})}$	$\sqrt{(5 \times 10^{-10} \text{mg} \cdot R_{nt})}$	$\sqrt{(1.2 \times 10^{-9} \text{mg} \cdot R_{nt})}$
Differential eccentric load deviation	sd 0.00003%·R _{nt}	0.00004%·R _{nt}	0.00003%·R _{nt}	0.00004%·R _{nt}
Sensitivity offset ²⁾	sd 0.0001%·R _{nt}	0.00012%·R _{nt}	0.00006%·R _{nt}	0.00008%·R _{nt}
Minimum weight (according to USP) ^{1) 4)}	2.1mg+0.012%·R _{gr}	12mg+0.015%·R _{gr}	2.1mg+0.018%·R _{gr}	12mg+0.018%·R _{gr}
Minimum weight (according to USP), fine range ^{1) 3) 4)}	—	0.36mg+0.03%·R _{gr}	—	3.6mg+0.03%·R _{gr}
Minimum weight (@ U=1%, 2 sd) ^{1) 4)}	0.14mg+0.0008%·R _{gr}	0.8mg+0.001%·R _{gr}	0.14mg+0.0012%·R _{gr}	0.8mg+0.0012%·R _{gr}
Minimum weight (@ U=1%, 2 sd), fine range ^{1) 3) 4)}	—	0.24mg+0.002%·R _{gr}	—	0.24mg+0.002%·R _{gr}

¹⁾ Valid for compact objects

²⁾ After adjustment with built-in reference weight

³⁾ On DeltaRange models: fine range starts at zero gross load

⁴⁾ The minimum weight can be improved by the following measures:

- Selecting suitable weighing parameters
- Choosing a better location
- Using smaller taring containers

sd = Standard deviation

R_{gr} = Gross weight

R_{nt} = Net weight (sample weight)

a = Year (annum)

Data shown as typical are reference values for calculation of the expected measurement uncertainty. The actual measurement performance may be affected negatively or positively by the place of use and/or the settings.

5.2.1 Procedure for certified balances

Preface

Certified balances are subject to the national, legal requirements of "non-automatic balances".

Switching on the balance

- **Switching on**
 - Immediately after being switched on, the balance displays 0.000..g on.
 - The balance is always started up with the "Factory setting" unit.
- **Switch-on range**
 - A maximum 20 % of the type load, otherwise overload is displayed (OIML R76 4.5.1).
- **Stored value as switch-on zero point**
 - It is not permissible to use a stored value as a switch-on zero point; the MT-SICS M35 command is not available (OIML R76 T.5.2).

Display

- **Display of the weight value**
 - The "e" certification value is always shown in the display and is specified at the model designation plate (OIML R76 T.3.2.3 and 7.1.4).
 - If the display increment is lower than the "e" certification value, this is variably displayed for the net, gross and weighed tare. (Graying of the digits or certification brackets) (OIML R76 T.2.5.4 and 3.4.1).
 - In accordance with guidelines, the tested display increment (certification value) is never lower than 1 mg (OIML R76 T.3.4.2).
 - At balances with $d = 0.1$ mg, the digits below 1 mg are displayed in gray. These digits in brackets are printed. In accordance with legal metrology requirements, this illustration does not affect the accuracy of the weighing results.
- **Units of measurement**
 - The display and info unit are firmly set to g or mg (depending on the model).
 - The following applies for the "Custom unit":
 - no certification brackets.
 - The following names are blocked, this applies to upper and lower case letters.
 - all official units (g, kg, ct etc.).
 - c, ca, car, cm, crt, cart, kt, gr, gra, gram, grm, k, kilo, to, ton.
 - all names with "o" which can be replaced by a zero (Oz, Ozt etc.).
- **Identification of the weight display**
 - Gross, net, tare and other weight values are accordingly marked (OIML R76 4.6.5).
 - Net for net when a tare value has been used.
 - B or G for gross.
 - T for the weighed tare.
 - PT for the specified tare.
 - * or diff for the difference between the net or gross.
- **Info field**
 - The info weight value is handled metrologically in the same way as the weight value in the main display.

Printout (OIML R76 4.6.11)

- If a tare value is entered manually (PreTare), the PreTare value is always printed along with the net value (PT 123.45 g).
- The printed weight values are identified in the same way as the weight value on the display. I.e. N, B or G, T, PT, diff or *, with differentiation.

Example:

Single-range balance.

N 123.4[5] g
PT 10.00 g → for PreTare
G 133.4[5] g

DR balance with 100.00 g fine range.

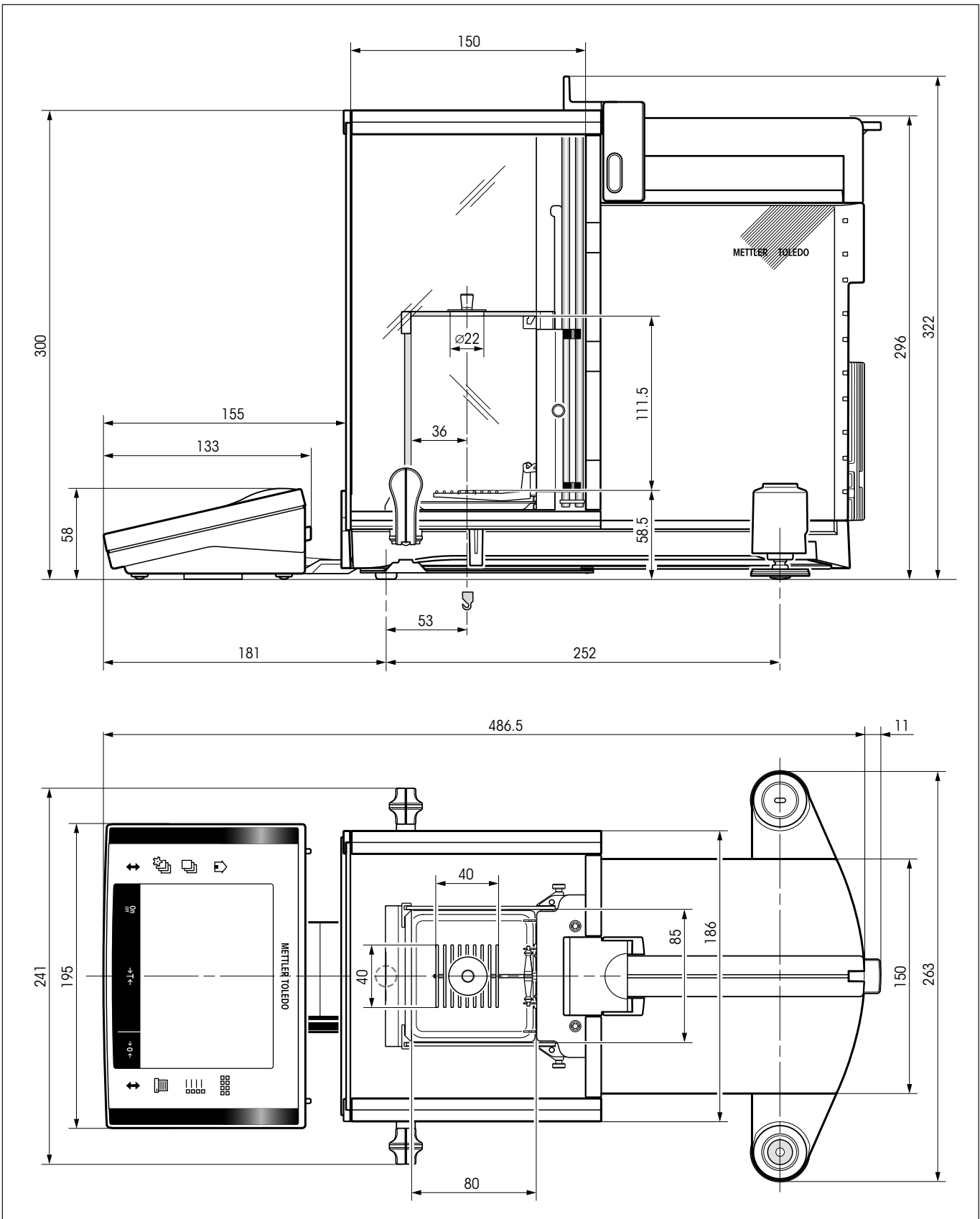
N 80.4[0] g
T 22.5[6] g → for weighed tare
G 102.9[] g

Balance functions

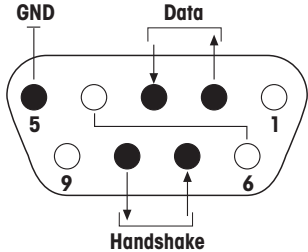
- **Reset to zero**
 - The zero range is limited to a maximum of $\pm 2\%$ of the full load (OIML R76 4.5.1).
- **Tare**
 - No negative tare values are permitted.
 - Tare immediate (TI) is not permitted, the MT-SICS TI command is not available (OIML R76 4.6.4).
- **1/xd**
 - **e = d**
The 1/xd switchover is not permitted (OIML R76 3.1.2).
 - **e = 10d**
This is only permitted in the case of the 1/10d switchover.
 - **e = 100d**
Only the 1/10d and 1/100d switchover are permitted.

5.3 Dimensions of the XP56/XP26 microbalances

Dimensions in millimeters.



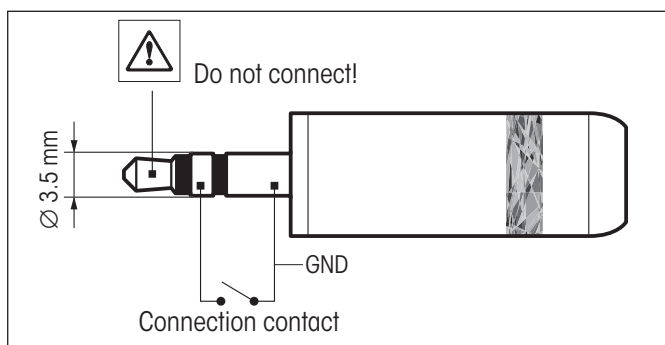
5.4 Specifications of the RS232C interface

Interface type:	Voltage interface according to EIA RS-232C/DIN 66020 (CCITT V24/V.28)	
Max. cable length:	15 m	
Signal level:	Outputs: +5 V ... +15 V (RL = 3 – 7 kΩ) –5 V ... –15 V (RL = 3 – 7 kΩ)	Inputs: +3 V ... 25 V –3 V ... 25 V
Connector:	Sub-D, 9-pole, female	
Operating mode:	Full duplex	
Transmission mode:	Bit-serial, asynchronous	
Transmission code:	ASCII	
Baud rates:	600, 1200, 2400, 4800, 9600, 19200, 38400 ¹⁾ (firmware selectable)	
Bits/parity:	7-bit/even, 7-bit/odd, 7-bit/none, 8-bit/none (firmware selectable)	
Stop bits:	1 stop bit	
Handshake:	None, XON/XOFF, RTS/CTS (firmware selectable)	
End-of-line:	<CR><LF>, <CR>, <LF> (firmware selectable)	
 <p>Pin 2: Balance transmit line (TxD) Pin 3: Balance receive line (RxD)) Pin 5: Ground signal (GND) Pin 7: Clear to send (hardware handshake) (CTS) Pin 8: Request to send (hardware handshake) (RTS)</p>		

- ¹⁾ 38400 baud is only possible in special cases, such as:
- Weighing platform without terminal, or
 - Weighing platform with terminal, only via the optional RS232C interface.

5.5 Specifications of the “Aux” connections

You can connect the METTLER TOLEDO “ErgoSens” or an external switch to sockets “Aux 1” and “Aux 2”. This allows you to start functions such as taring, zeroing, printing and others.



External connection:

Connector: 3.5 mm stereo jack connector
Electrical data: Max. voltage 12 V
Max. current 150 mA

5.6 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.
Note: For language-specific characters, please see Operating Instructions – Part 2, section 3.7.
- 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	<code>S</code>	Send the current stable net weight value.
Response	<code>S␣S␣WeightValue␣Unit</code>	Current stable weight value in unit actually set under unit 1.
	<code>S␣I</code>	Command not executable (balance is currently executing another command, e.g. taring, or timeout as stability was not reached).
	<code>S␣+</code>	Balance in overload range.
	<code>S␣-</code>	Balance in underload range.

Example

Command	<code>S</code>	Send a stable weight value.
Response	<code>S␣S␣␣␣␣␣␣␣␣100.00␣g</code>	The current, stable weight value is 100.00 g

The MT-SICS commands listed below are the commands used most often. For additional commands and further information please refer to the Reference Manual MT-SICS downloadable from the Internet under mt.com.

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 «» key

Command **ST** \downarrow **1** Send the current stable net weight value each time when «» is pressed.

Response **ST** \downarrow **0** Stop sending weight value when «» is pressed.

- **ST** function is not active:
 - after switching on the balance.
 - after the "Reset" command.






SU – Send stable weight value with currently displayed unit

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

6 Accessories and spare parts


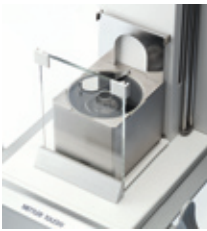



6.1 Accessories




You can increase the functionality of your balance with accessories from the METTLER TOLEDO range. The following options are available:

	Description	Part No.
	Printers BT-P42 printer with wireless Bluetooth connection to balance	11132540
	RS-P42 printer with RS232C connection to balance	00229265
	RS-P25 compact printer RS232C (for Japanese, Chinese and Russian language)	12122627
	Optional interfaces BT option: Interface Bluetooth, multipoint connection for up to 6 Bluetooth devices	11132530
	BTS option: Interface Bluetooth, single-point connection	11132535
	Ethernet option: Interface Ethernet for connection to Ethernet network	11132515
	PS/2 option: Interface for connecting commercial keyboards and barcode readers	11132520
	RS232C option: Interface for connection of a printer (RS232C), computer or titrator	11132500
	LocalCAN option: Interface for connection of up to 5 LC (LocalCAN) instruments	11132505
	MiniMettler option: Interface MiniMettler, for connection to older (legacy) METTLER TOLEDO systems	11132510
	USB – RS232 converter cable	11103691
	e-Link IP65 EBO1: Ethernet connection to the e-link network with IP65 protection	11120003
	Cables for RS232C interface RS9 – RS9 (m/f): Connection cable for PC or printer RS232C, length = 1 m	11101051
	RS9 – RS25 (m/f): Connection cable for PC (IBM XT or compatible), length = 2 m	11101052
	RS9 – RS9 (m/m): Connection cable for devices with DB9 socket (f), length = 1 m	21250066
	Cables for LocalCAN interface LC – RS9: Cable for connecting a PC with RS232C, 9-pin (f), length = 2 m	00229065
	LC – RS25: Cable for connecting a printer or PC with RS232C, 25-pin (m/f), length = 2 m	00229050
	LC – RS open: Cable for connecting to a MT ComBus system, length = 4 m	21900640
	LC – CL: Cable for connecting a device with METTLER TOLEDO CL interface (5-pin), length = 2 m	00229130
	LC – LC03: Extension cable for LocalCAN, length = 0.3 m	00239270
	LC – LC2: Extension cable for LocalCAN, length = 2 m	00229115
	LC – LC5: Extension cable for LocalCAN, length = 5 m	00229116
LC – LCT: Cable branch (T-connector) for LocalCAN	00229118	
	Cables for MiniMettler interface MM – RS9f: RS232C connection cable to MiniMettler interface, length = 1.5 m	00229029

Description	Part No.	
 <p>Terminal cable Terminal extension cable 4.5 m</p>	11600517	
 <p>Cable, one-sided open (2-pin) Cable between balance and AC adapter, length = 4 m</p>	11132037	
	<p>Auxiliary displays BT-BLD Bluetooth auxiliary display for table mounting, 168 mm, LCD display with backlighting</p>	11132555
	<p>RS/LC-BLDS auxiliary display for table or balance mounting, 480 mm, LCD display with backlighting</p>	11132630
	<p>RS/LC-BLD auxiliary display for table mounting, 168 mm, LCD display with backlighting</p>	00224200
 <p>Sensors ErgoSens, optical sensor for hands-free operation</p>	11132601	
 <p>LC-I/O box Relay interface for control of up to 8 external instruments from the balance</p>	21202217	
 <p>LC-switchbox For connection of up to three balances simultaneously to one printer</p>	00229220	
	<p>Footswitches Auxiliary footswitch with selectable function for balances (Aux 1, Aux 2)</p>	11106741
	<p>LC-FS foot switch with selectable function for balances with LocalCAN interface</p>	00229060
	<p>Anti-static kits (Integrable point-electrode) Integrable anti-static kit incl. 1 point-electrode and power supply</p>	11107761
	<p>Optional: Second point-electrode* for integrable anti-static kit</p>	11107762
	<p>Optional: U-electrode* for anti-static kit</p>	11107764
	<p>* Regulated power supply for optional, second point-electrode (11107762), or the optional U-electrode (11107764)</p>	11107763



	Description	Part No.
	Universal anti-static kit Universal anti-static kit complete (U-shaped), including electrode and power supply	11107767
	Optional: Second U-electrode* for universal anti-static kit	11107764
	Optional: Point-electrode* for universal anti-static kit (for discharging small samples)	11107765
	* Power supply for optional, second U-electrode (11107764), or for optional point-electrode (11107765)	11107766
	ErgoClip "Basket micro" (basket for small weighing objects)	11107889
	ErgoClip "Flask micro" (for volumetric flask)	11107879
	ErgoClip "Stand micro" (Holder to store up to 3 ErgoClips)	11140175
	ErgoClip "Solution Kit micro"	11140253
	Single-use weighing boats (500 units)	11106712
	MinWeigh Door micro (ideal for use with ErgoClip "Flask micro")	11107869

	Description	Part No.
	XP-SE-kit	11106743
	Separate electronics kit for XP micro balances	11106743
	Extension cable 0.6 m	00211535
	Extension cable 5.0 m	00210688
	Pipette Calibration	11140041
	Evaporation Trap for XP56/XP26 micro balances	11140041
	1-channel suction pump complete	11138268
	Hose 2 m for suction pump	11138132
	Water reservoir, 5 pcs.	11600616
	Barometer	11600086
	Precision thermometer with clip, not certified	00238767
	Software for the pipette calibration	
	Calibry Light; for single channel pipettes	11138423
	Calibry Single workstation; for calibration with one system MPC	11138419
	Calibry Network; Installation on several PC of the network accessing the same database.	11138420
Calibry Update	11123915	
Validation manual Calibry	11780959	
	Stands and wall mountings	
	Terminal and printer stand (mounting on balance)	11106730
	Terminal wall mounting	11132665
	Anti-theft device	
Steel cord	11600361	
	IP54 AC adapter protection	
IP54 AC adapter protection	11132550	

Description	Part No.
 <p>Barcode readers RS232C barcode reader (without power supply and cables) RS232C barcode reader – cordless (without power supply and cables)</p>	21901297
	21901299
	21901311
	21901312
	21901305
	21900924
	21901313
	21901314
	21901315
	21901316
<p>* according to region of use</p> <p>Bluetooth barcode reader</p>	21901298
<p>One of the following needs for operation:</p>	21901313
<p></p>	21901314
<p></p>	21901315
<p>* according to region of use</p>	21901316
<p>PS/2 barcode reader</p>	21901297
<p>The following item needs for operation:</p>	21901307
<p>PS/2Y barcode reader</p>	21901297
<p>The following item needs for operation:</p>	21901308
<p>Transport cases Transport case for XP micro balances</p>	11106729
<p>Protective covers Protective cover for XP terminal</p>	11132570
 <p>Software LabX Software for One Click™ Weighing Solutions Enables you to perform One Click™ Standard Preparation, One Click™ Loss on Drying, One Click™ Sieve Analysis and many other applications. Simply start the method with the One Click™ shortcut on the balance touchscreen. LabX guides you step-by-step through the SOP on the balance, performs your calculations automatically, and takes care of saving all your data. The complete solution can be tailored to match your process requirements. Visit www.mt.com/one-click-weighing for more information</p>	11153120
<p>Freeweigh.Net</p>	21900895
<p>Levelmirror</p>	11140150
 <p>Weighing tables Weighing table XP Micro (also valid for analytical balances)</p>	11138042

6.2 Spare parts

Spare parts balance		Item	Designation	Part No.
	1	Side draft shield door	11106841	
	2	Top draft shield door	11106842	
	3	Front glass (IR protection)	11107994	
	4	Intermediate shelf	11106803	
	5	Clip (set of 6 pcs.)	11106511	
	6	Side glass inner draft shield	11107995	
	7	Front glass inner draft shield	11107996	
	8	Glass cover inner draft shield	11106689	
	9	Sealing cover inner draft shield	11106690	
	10	Terminal support	11106540	
	11	Drip tray	11106687	
	12	Grid weighing pan cover	11106262	
	13	Grid weighing pan	11106403	
	14	Leveling screw	11106323	
	15	AC adapter	11107909	
	16	Power cable		
		DK	00087452	
	GB	00089405		
	USA	00088668		
	AUS	00088751		
	SA	00089728		
	EU (Schuko)	00087925		
	CH	00087920		
	IT	00087457		
	17	Terminal complete with firmware	11130692	

Transport	Item	Designation	Part No.
	1	Packaging complete	11107998
	2	Outer cardboard packing	11106657

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- comply with the most common regulatory requirements

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