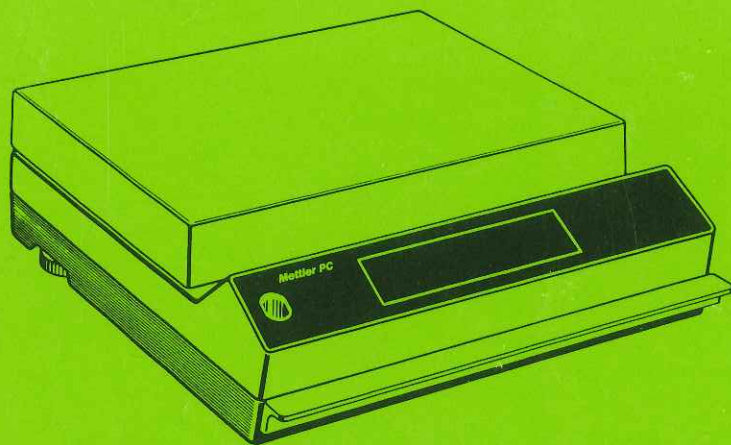


**Operating Instructions**  
**Bedienungsanleitung**  
**Mode d'emploi**  
**Instrucciones de manejo**

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**PC16**  
**PC24**



**Mettler**



OPERATING INSTRUCTIONS  
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Français

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Español

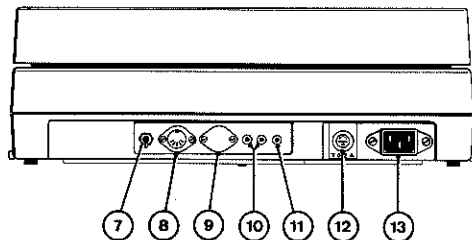
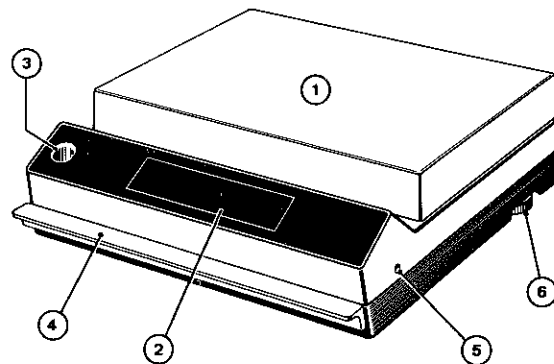
## PC16/PC24

### ELECTRONIC PRECISION BALANCES

The appearance and operation of these two balance models are identical. However, their weighing range and readability are different.

PC16 Weighing range 16500 g  
Readability 0.1 g

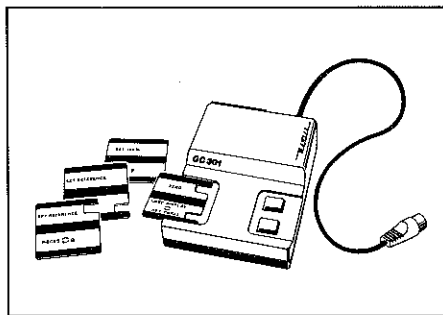
PC24 Weighing range 24000 g  
Readability 1 g



#### Operating components and connections

- 1 Weighing platform (pan)
- 2 Balance display
- 3 Level indicator
- 4 Control bar
- 5 Calibration screw
- 6 Leveling feet
- 7 On/off switch for DeltaDisplay and Stability Control
- 8 Connector socket for GC301
- 9 03 Data Output (optional)
- 10 Connector sockets for external tare switch
- 11 Grounding socket
- 12 Fuse holder
- 13 Receptacle for power cable

Pages 8 through 12 contain illustrations showing display (2) with one place after the decimal point, as is the case with the PC16. The same illustrations apply to the PC24, except that there are no decimal places after the decimal point.



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### Further capabilities

13

### Peripheral instruments for the 03 Data Output

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### Accessories

15

A very useful accessory for PC balances is the GC301 Application Input Device. It provides the opportunity to simply and conveniently perform various types of special weighing operations such as:

- Parts/piece counting
- Percent weighings
- Net total weighings
- Serial weighings to zero

### Care and Maintenance

16

### What if... ?

17

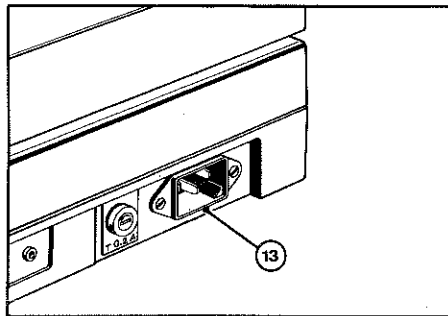
### Technical Specifications

18

**PREPARATION: How to check or correct the voltage setting**

The balance must be set for the power supply voltage to which it is to be connected.

Before putting the balance into operation, the setting must be checked and, if needed, corrected. Proceed as follows:

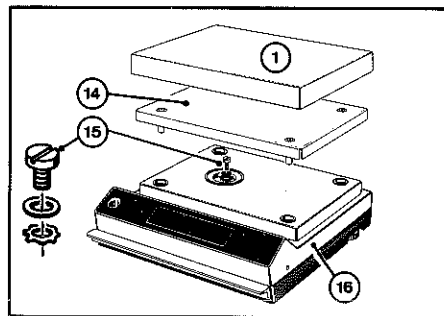


**Checking the voltage setting**

A strip of paper indicating the operating voltage is attached at power cable receptacle (13).

If the indicated voltage does not correspond to the local power line voltage, or if the strip is missing, the balance housing must be opened.

Check and, if necessary, adjust voltage setting at voltage selector (17) (on transformer).

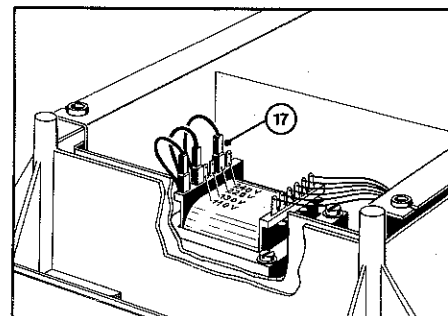


**Opening the balance housing**

Make sure power cable is disconnected before opening the balance housing.

If they are already installed, remove weighing platform (1) and support (14). Then ...

- screw out screw (15) together with its washers.
- carefully lift off housing cover (16).



**Adjusting the voltage setting**

Pull off voltage selector (17) and place it on pin which is designated with the number that corresponds to your local power line voltage.

Close up balance by ...

- carefully positioning housing cover (16).
- First position toothed ring, then regular washer.
- Screw in and tighten screw (15).

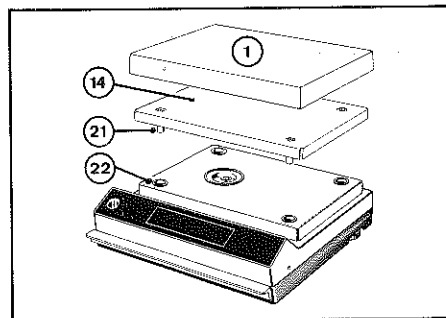
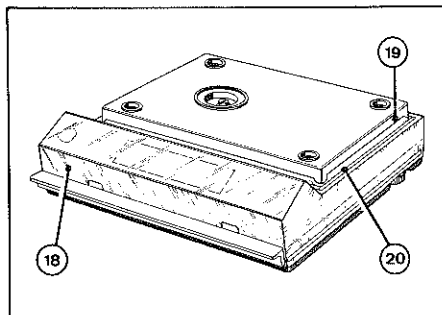
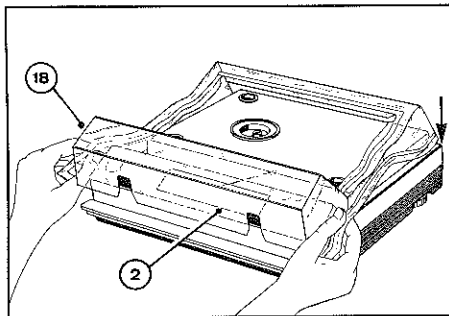
### REPARATION: How to install the in-use cover and position the weighing platform

To protect the balance housing from dirt, damage and the effects of caustic samples, the in-use cover can be installed over it.

Operation of the balance is in no way affected by it.

Please make sure you carefully follow the instructions which apply to your balance model.

The platform support of your balance is shaped in such a manner that the measuring cell is protected against overloading.



#### Installing the in-use cover

If they are already installed, remove weighing platform (1) and platform support (14). Then ...

- grasp in-use cover (18) on both sides of clear window and slip it over balance display (2).

- grasp in-use cover (18) at rear corners and pull over rear of housing.
- push rigid plastic frame (19) of in-use cover (18) over housing step (20).
- pull tight and smoothen in-use cover (18) on all sides.

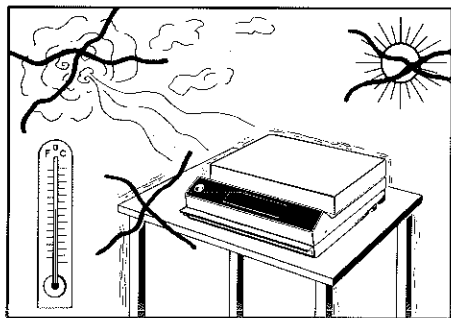
#### Positioning the weighing platform

- Position platform support (14) on housing in such a manner that its four bolts (21) rest in the corresponding holes (22) of the housing.
- With skirt pointing down, place weighing platform (1) over support (14).

### PREPARATION: How to set up the balance

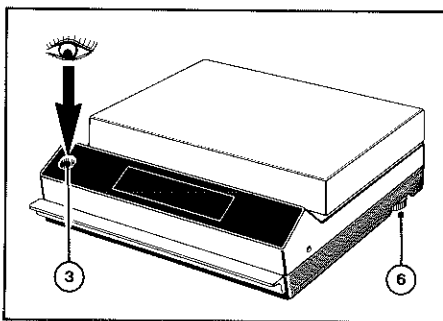
Select a suitable location for your balance. This will increase its performance. If you can't provide the balance with a favorable location, the chapter "Further capabilities; extending the integration time" will inform you how to reach excellent results.

After that, level and calibrate the balance to make it ready for operation (see the next two pages).



#### Location

- Stable support.
- Moderate temperature fluctuations.
- To the extent possible, avoid direct exposure to sunlight and drafts.
- Plug in power cable at selected location.



#### Leveling

- Adjust the two leveling feet (6) in such a manner that the air bubble of level indicator (3) is in center of circular marking.

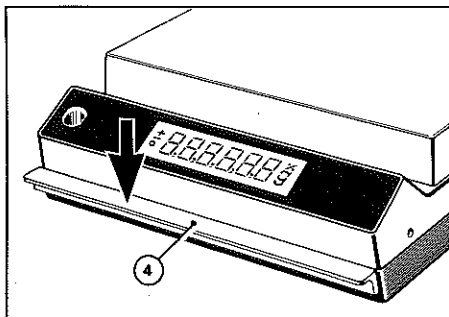


OPERATION: How to switch the balance on and off

If you plan to use your balance several times in the course of the day, it is advisable to leave it switched on for the entire day.

This way, your balance can reach a constant operating temperature and its accuracy will be improved.

It is also recommended to switch on the balance some time before it is being used (warm-up time).



Switching the balance on

- Briefly press control bar (4).

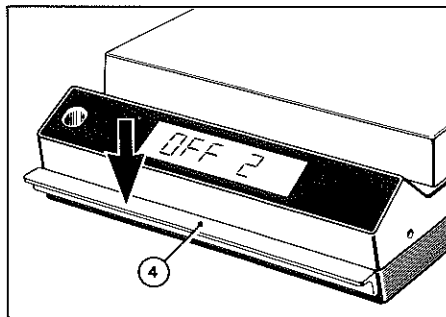
The display will light up for several seconds and indicate:

8 8 8 8 8 8 8 8

This will give you a chance to check the proper functioning of the balance display.

After that, the display indicates:

PC16 0.0 g  
PC24 0 g.

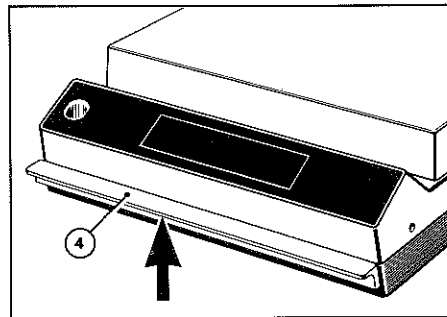


OFF-display

If a power failure occurs during operation, the indication "OFF 2" will appear on the display as soon as power is restored.

In that case, the balance has to be switched on again.

- Briefly press control bar (4).



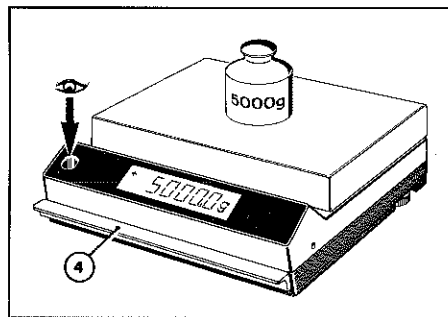
Switching the balance off

- Briefly lift control bar (4).

## OPERATION: How to calibrate the balance

The balance must be calibrated (that is, adjusted to the correct weight display) when it is placed in a new location; only then will the weighings be accurate. Before calibrating the balance, it must be left switched on for at least 30 minutes (warm-up time).

To calibrate, you need a test weight of 5000 g.  
Order No. ME-42066 (optional equipment).

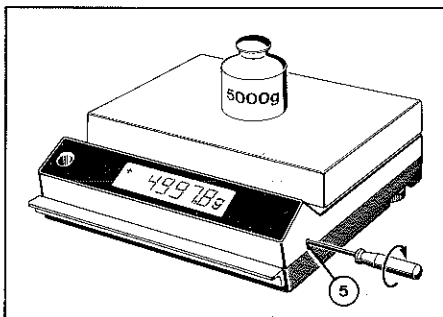


### Checking the calibration

The balance must have been switched on for at least 30 minutes. Also, balance must be leveled.

- Press control bar (4):  
Display must indicate exactly zero (if not, press control bar again).
- Place 5000 g test weight on platform.

If the balance indicates exactly 5000.0 g (PC16) or 5000 g (PC24), it is correctly calibrated. If not, it must be recalibrated.

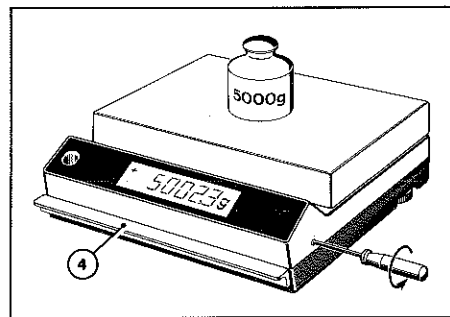


### Adjusting the calibration

- If the indicated weight value is smaller than the test weight on the platform, turn calibration screw (5) clockwise; if it is larger (picture top right), turn it counterclockwise.

If the indication is correct, repeat the procedure to make sure, the balance is correctly calibrated (column at right).

If the balance cannot be set to the proper weight value, inform Mettler Customer Service.



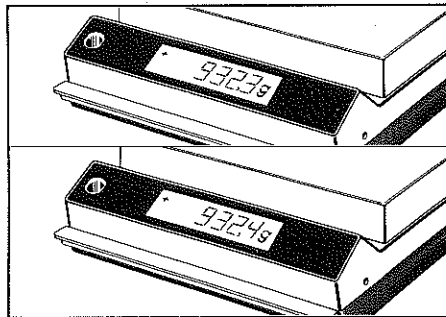
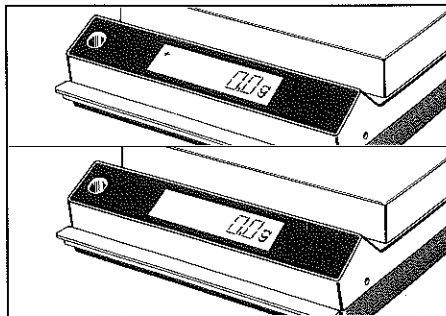
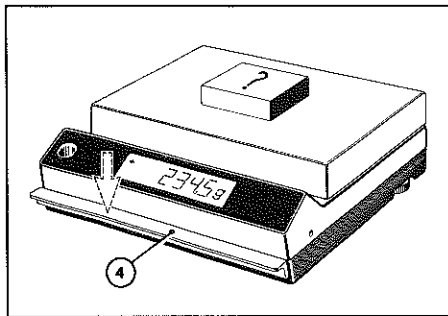
### Rechecking the calibration

- Remove test weight.
- Press control bar (4): zero.  
Place test weight on platform.

If the indicated value corresponds to the weight on the platform, the calibration procedure is completed. If not, the entire process (adjusting and rechecking) must be repeated as often as necessary until the balance is correctly calibrated.

## OPERATION: How to make a weight determination

The digital display of the balance indicates the weight of an object in just seconds.  
To increase the accuracy, the balance automatically rounds off the result before it is displayed.  
But always make sure that the balance indicates zero before you place an object on the platform.  
If needed, you always can check the exactness of this zero position by means of the polarity sign.



### Weighing

- If there is no load on the pan and the balance does not indicate exactly zero:  
Briefly press control bar (4).  
This always sets the display to zero.
- Place weighing object on platform.  
After a few seconds...
- Read the result.

### Checking the zero position

With every weight indication, the corresponding polarity sign (+/-) appears in the left section of the display field.

If the display is set to zero and if the polarity sign goes out, this means that the zero position of the balance is at least four times as accurate as its readability.  
For example: With a zero indication of 0.0 g (PC16), the zero position is accurate to at least 0.025 g.  
With a PC24 balance, the indication 0 g is accurate

### Rounding off the result

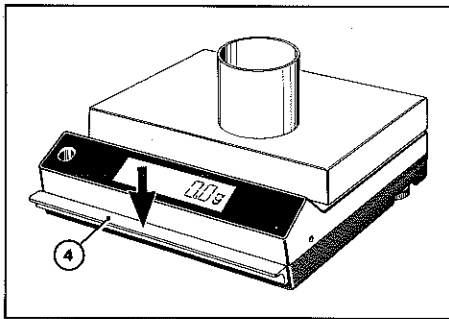
A PC balance always measures one more decade than it displays. This last decade is then rounded off according to the 5/4 principle.

Example PC16:  
The balance measures 932.34 g  
The balance indicates 932.3 g,  
or  
The balance measures 932.35 g  
The balance indicates 932.4 g.

## OPERATION: How to tare

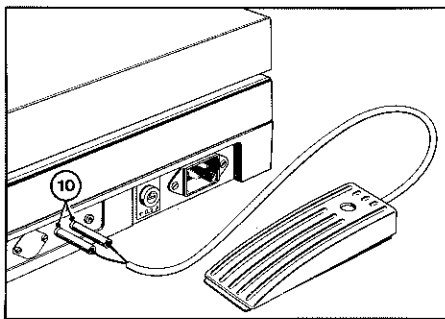
Taring means to reset the display to zero while a weight (e.g., a container) is on the platform. This way, the balance will not take into account the weight of the container when the weighing object is weighed in. Of course, the combined weight of the container and the weighing object must not exceed the weighing range of the balance.

If the DeltaDisplay feature (see next page) is switched on, and if the balance is tared while stability has not yet been achieved, that is to say while the weight indication is still changing, the entire display is blanked out until stability is achieved - only then will zero appear.



### Taring with the control bar

- Place container on weighing platform, balance indicates weight.
- Press control bar (4), i.e., tare:  
The display now indicates zero gram.

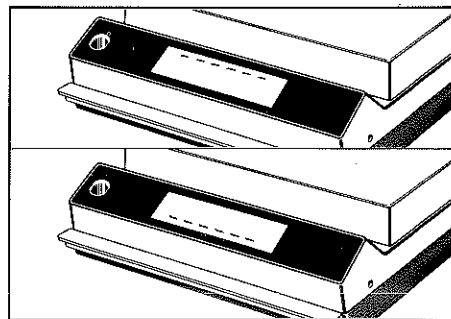


### Taring by remote control

The balance can be tared with control bar (4) or with an external switch (manual control button or foot pedal selected from the available accessories).

- Connect manual control button or foot pedal to TARE sockets (10) located at rear of balance.

Pressing either of these control devices resets the display to zero.



### Overload/underload indication

If the weighing range is exceeded, the display is blanked out except for the upper horizontal bars (segments) of the display. This is how the balance indicates "Overload".

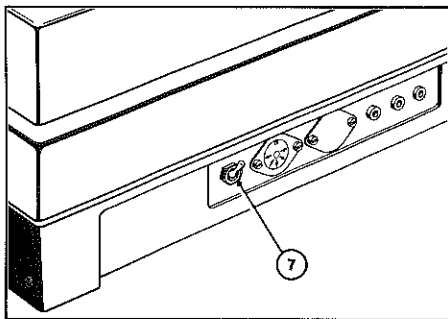
If the balance is loaded to the full extent of its weighing range, it may happen that - after unloading - only the lower horizontal bars of the display light up (Underload indication).

Zero appears again, as soon as the unloaded balance is tared.

## OPERATION: How to weigh in with DeltaDisplay

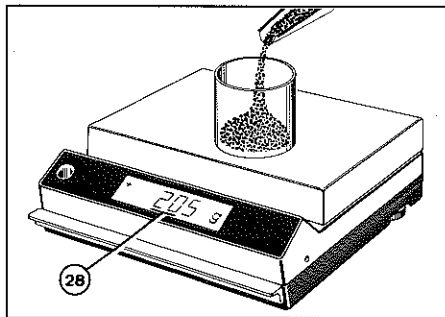
Weighing-in means to fill loose or liquid substances into a container until a desired weight is reached. PC balances are equipped with DeltaDisplay. This display mode (which can be switched on or off) is especially useful for weighing-in. In this mode, the momentary weight is displayed without any delay and, in addition, the change of numbers is accelerated. During rapid weight changes, the decimal place of the PC16 is temporarily blanked out.

Along with the DeltaDisplay, an automatic stability detector is switched on. This feature blocks the Data Output when a weight change occurs.



### Preparing the balance

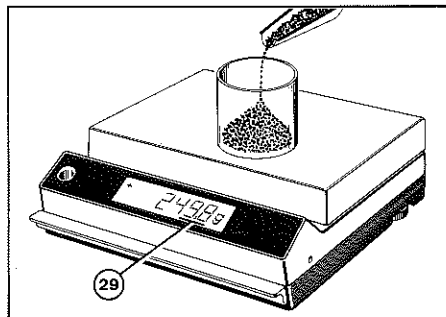
- Set switch (7) on rear of balance to the top (ON). This will switch on the DeltaDisplay and the automatic stability detector.
- Place container on balance, tare, i.e., press control bar: display is set to zero.



### Weighing-in

- During fast, uninterrupted filling up to the vicinity of the target weight, watch mostly the two digits at left (28).

During the rapid weight increase, the display speed is automatically increased and the last decimal place of the PC16 is temporarily blanked out.

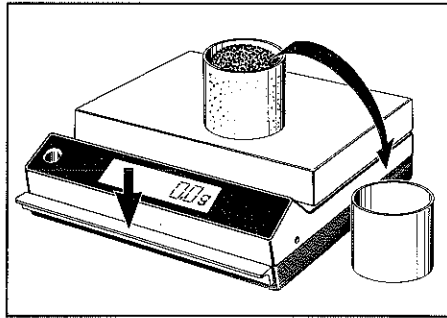


- During fine dispensing towards the target weight, watch mostly the digits at right (29).  
(The last decimal place of the PC16 now reappears automatically.)

If different substances are to be weighed in, one after the other, it is advisable to tare after each completed weighing. That means that each subsequent substance will be weighed in from zero. This can be continued until container and substances together reach the end of the weighing range.

OPERATION: How to make subtractive weighings or carry out weight comparison

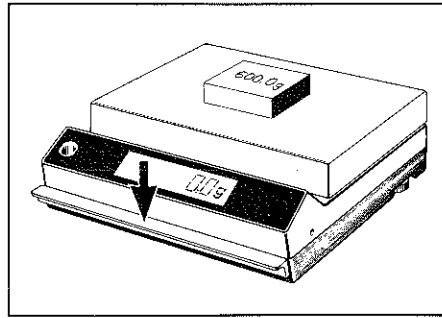
A container filled with the objects to be weighed, or a reference weight (pattern weight) can also be tared out. Because of this, it is possible on the one hand to make subtractive weighings from the container, and on the other hand it is possible to directly read deviations from a reference weight.



Subtractive weighing

- Place container with weighing objects on balance.
- Tare: display indicates zero.
- Remove weighing objects.

The balance now indicates the weight of the removed objects with the minus sign in front.



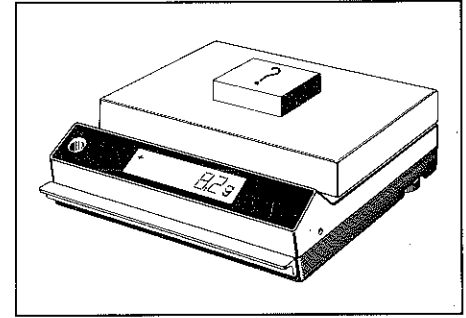
Entering a target weight for comparisons

- Place reference weight (sample or weights) on balance.
- Tare: display indicates zero.
- Remove reference weight.

The balance now indicates the value of the reference weight with the minus sign in front,

e.g.: - 600.0 g.

Now you can directly read deviations from this reference weight:



Plus/minus deviation

- Place object to be compared with reference on platform.

If the object is heavier than the reference value, the deviation is indicated on the display with the plus sign in front because, for example:

$$- 600.0 \text{ g} + 608.2 \text{ g} = + 8.2 \text{ g}$$

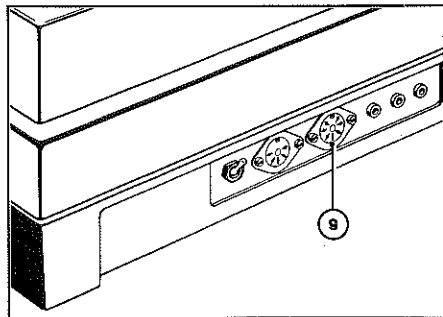
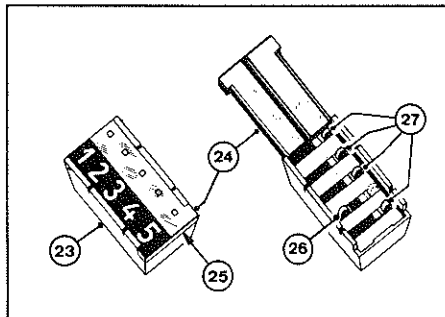
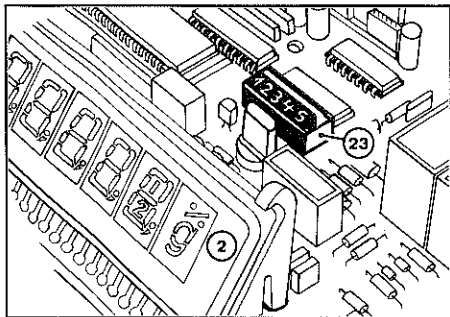
If the object is lighter, the deviation is indicated on the display with the minus sign in front because, for example:

$$- 600.0 \text{ g} + 594.2 \text{ g} = - 5.8 \text{ g}.$$

## URTHER CAPABILITIES OF PC BALANCES

PC balances can also be used under demanding circumstances (with scarcely noticeable diminishment of accuracy) by extending the normal integration time set at the factory. In this way, an unstable weight display resulting from external disturbances is stabilized to the correct value. The display change is then made half as quickly. To reset the integration time, you can also call on Mettler Service.

For special weighing jobs, Mettler has available a variety of peripheral instruments and accessories for PC balances. A selection of them is described on the next two pages.



### Extending the integration time

- Disconnect power cable. Open balance housing as described under 'Checking the voltage'. Five-switch DIP\* (23) is located on the P/C board behind display (2).
- Open switch cover (24), (prop up at (25)).
- To extend the measuring time, push second switch from right (26) all the way to the rear in direction of arrow.
  - Warning: Under no circumstances should the other four switches (27) be touched.
- Close switch cover (24), then reassemble balance according to operating instructions.

Please note that the built-in five-switch DIP\* (23) could be different than the one shown above (e.g., a rocker switch).

In any case, the integration time is extended by moving the second switch from the right (26) to the same position as the other four switches (27).

\*DIP = Dual In-line Package

### 03 Data Output

All PC balances can be ordered with a factory-installed Data Output (9) or can be equipped with such an output at a later date.

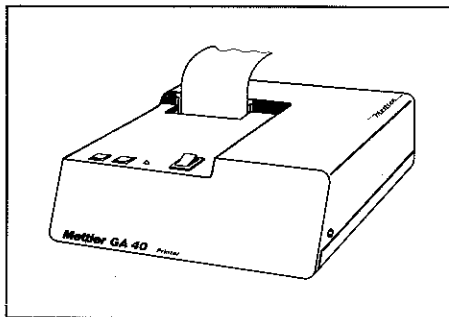
This output makes it possible to connect the peripheral instruments described on the following page.

The order no. for the 03 Data Output Field Installation Kit including Installation Instructions is: ME-41648.

## PERIPHERAL INSTRUMENTS for the O3 data output

These three peripheral instruments can be connected to any PC balance equipped with an O3 Data Output (see preceding page).

The instruments can be switched in series.



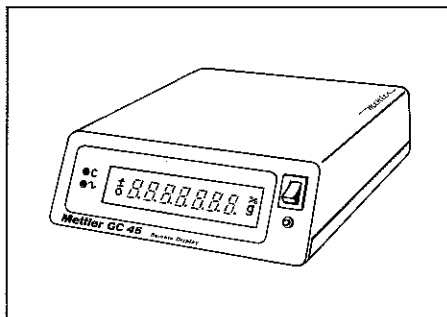
### GA40 Thermal Printer

For the printed recording of weighing data.

Maintenance-free thermal printer (dot printer, no printing ribbon); low noise, fast, small, attractive.

Nonfading paper, not sensitive to mechanical imprinting, rolls 30 meters long, will accommodate about 5000 lines of print. Width of tape 57 mm (2 1/4").

Own power supply 110/130/220/240 V.  
Width x Depth x Height:  
185 x 200 x 60 mm

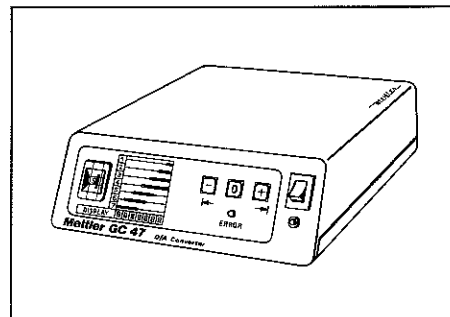


### GC45 Remote Display

For the visual monitoring of weighing results away from the weighing station.

Display is completely identical with that of the balance itself.

Own power supply 110/130/220/240 V.  
Width x Depth x Height:  
185 x 200 x 60 mm



### GC47 Digital/Analog Converter

For the conditioning of (digital) weighing data generated by the balance for entry into analog instruments such as line-recording instruments.


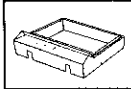
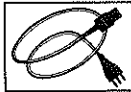

Two outputs:  $\pm 10$  V;  $\pm 1$  V.  
Multiswitch for decade selection (in groups of three).

Own power supply: 110/130/220/240 V.  
Width x Depth x Height:  
185 x 200 x 60 mm



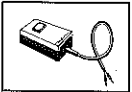
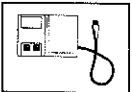


## ACCESSORIES

### Standard equipment

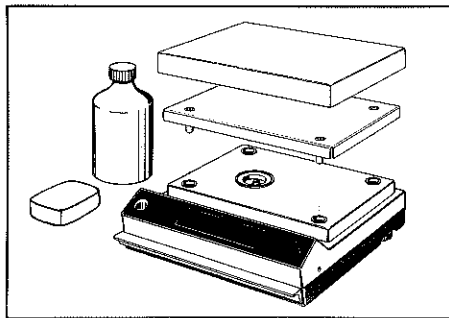
		<u>Order No.</u>	
	Screwdriver	50279	
	In-use cover	41615	
	Power cable	Neutral Switzerland Germany USA	87576 87920 87925 88668
	Microfuses (set of 3, T200mA)	20181	

### Optional equipment

		<u>Order No.</u>
	Calibration weight 5000 g	42066
	Foot pedal	46278
	Manual control button	42500
	Application Input Device (see page 3)	GC301
	GD hanger (for weighings below the balance)	41622
	Field installation kit for Data Output (Option 03)	41648
	Thermal Printer	(see page 14) GA40
	Remote Display	" GC45
	Digital/Analog Converter	" GC47

## CARE AND MAINTENANCE

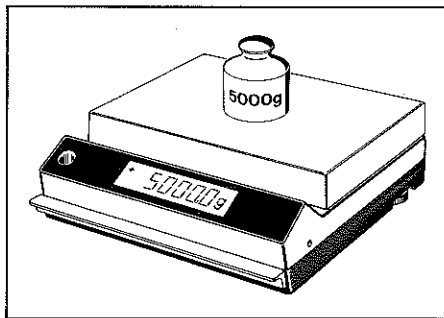
Your Mettler balance requires very little care and maintenance. It should be cleaned and calibrated at regular intervals. If it should happen that the balance cannot be switched on, the microfuse may have to be replaced.



### Cleaning

Clean weighing platform, in-use cover and balance housing whenever necessary.

Avoid using strong solvents.

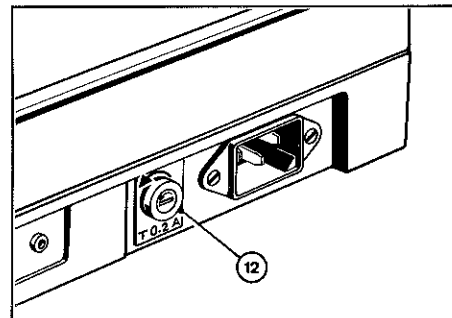


### Calibration

If your balance is to deliver accurate weighing results, it must be properly calibrated.

Check calibration at regular intervals. In case of constant operation, at least once a month.

To do this, see page 8.



### Replacing the microfuse

- Disconnect power cable.
- Turn fuse holder (12) counter-clockwise and remove.
- Remove defective fuse and insert new fuse (T200mA).
- Insert fuse holder (12), press in gently and turn clockwise.
- Plug in power cable.
- Switch on balance.

HAT IF ...

THEN ...

the entire display is blanked out?

- Balance is not switched on.
- Power cable is not plugged in.
- No power.
- Microfuse is defective.
- Voltage selector is set to the wrong voltage.

only the upper segments  
of the display light up?

- Weight on pan is too heavy (weighing range is exceeded).
- Balance is defective (inform Customer Service).

only the lower segments  
of the display light up?

- Pan support is not installed.
- Weighing pan is not installed.
- Weighing range (tare + weighing object) was exceeded before balance was unloaded. Correct by taring the balance after it is unloaded.

"OFF 2" is displayed?

- Power was temporarily off (press control bar).
- Control bar was not pressed down all the way when power was switched on.

the weighing result is unstable?

- Draft at the weighing station.
- Balance table is unstable.
- Voltage selector is set to an incorrect voltage.
- Integration time is too short.

the weighing result is obviously wrong?

- Balance is not leveled.
- Balance is not properly calibrated.
- In-use cover touches pan support.
- Balance was not tared before weighing was made (display had not been reset to zero).

TECHNICAL SPECIFICATIONSPC16PC24

Weighing range	16500 g	24000 g
Readability	0.1 g	1 g
Taring range	16500 g	24000 g

---

Admissible ambient temperature (during operation)	0...40°C	0...40°C
Sensitivity drift (10...30°C)	$\pm 4 \times 10^{-6}/^{\circ}\text{C}$	$\pm 1 \times 10^{-5}/^{\circ}\text{C}$
Result deviation (with balance inclined by 1 : 1000)	$\pm 0.2 \text{ g}$	$\pm 1 \text{ g}$

---

Reproducibility (standard dev.)	$\pm 0.1 \text{ g}$	$\pm 0.5 \text{ g}$
Linearity	$\pm 0.2 \text{ g}$	$\pm 1 \text{ g}$
Stabilization time	2 s	2 s
Integration time	1.5 s    3.0 s *	1.0 s    2.0 s *
Display sequence with DeltaDisplay off	0.75 s    1.5 s *	0.5 s    1.0 s *
with DeltaDisplay on	0.2 s    0.4 s *	0.12 s    0.25 s *
Stability control (sensibility invariable)	on/off	on/off

\* With extended  
integration time  
(see page 13)

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Adjustable voltage settings	110, 130, 220, 240 V	110, 130, 220, 240 V
Frequency	50...60 Hz	50...60 Hz
Admissible voltage fluctuations	+ 10 %, - 15 %	+ 10 %, - 15 %
Power consumption	about 16 VA	about 16 VA

---

Dimensions of weighing platform (chrome-nickel steel)	350 x 230 mm	350 x 230 mm
Dimensions of housing (W x D x H)	360 x 343 x 124 mm	360 x 343 x 124 mm
Weight	13.9 kg	13.9 kg

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03 Data Output for peripheral instruments		
- factory-installed, balance designation	PC16-03	PC24-03
- field installation kit (Option 03): page 13		

2-wire data interface, unidirectional, galvanically separated. Characters alphanumeric, character code ASCII/ISO:  
7-bit, even parity. Transfer speed: 2400 baud. Loop current: 20 mA, passive.  
Connector socket: 7-pole, type Hirschmann Mab 7 S.



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