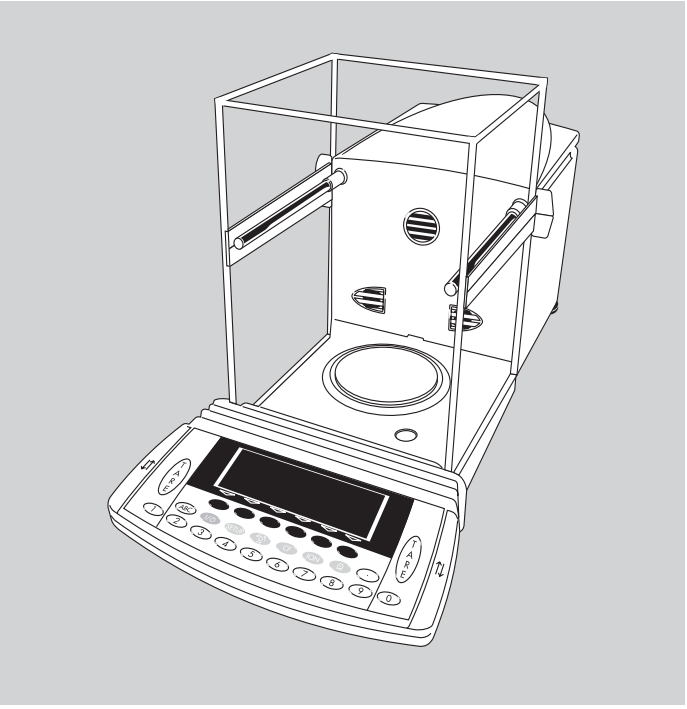
Service Manual

Sartorius Genius Series

ME-Models
for Electronic Semimicro- and Analytical Balances

Including Spare Parts Lists and
Service Specifications



WME5004-e04112

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General Information

Important Note

For repair work on Sartorius devices it is advisable to participate in a Sartorius service training . Please do not attempt any unauthorized repair work!

Please send all defective Genius balances back to the factory in Göttingen during the warranty period. Do not perform repair work on this balances. Exception: defective glass parts such as the top deck slider (1); the side sliding doors, (2) and the front panel (3) can be replaced on site.

Prerequisites for working on Sartorius Genius balances include considerable experience in working with electronic semi-micro balances and analytical balances.

Service concept for the ME models

Valid until recalled:

- All adjustments for the initial operation and for checking have to be carried out according to the service manual
- Quality defects

o Inform the quality department (WQM) about all arising quality defects.

- Defective balances
  - o Warranty
    - In the first 6 months after the installation the defective balance should be replaced.
  - o Warranty seal
    - If you have to remove the warranty seal, please affix your company sticker on the device!
  - o In other cases proceed according to the OAW135 (Organization instructions about repair requirements)
    - Defects at the load cells
      Proceed according to the description in the service concept for load cells. (see service information 6.2001 / OAW135-2/3).
    - Defects at the electronics.
      These scales have to be send to the repair center in Göttingen with an error protocol. (OAW135-2).
    - Further service cases can be dealed with on site, such as: broken glass panel of the draft shield, weighing pan not usable anymore, PCBs, small parts, etc.

General instructions

Transport:

- Always press (I/⏻) to turn off the balance, then disconnect the AC adapter. Do not turn off the balance while the calibration function is in progress, as the internal calibration weights will not be locked in position and may damage the weighing system during transport or handling.
- Do not connect or disconnect live power cables to or from the balance, as this could result in damage to electronic assemblies within the balance.

Caution!

During transport the scale is only to be carried in the original packaging (inner packages, cushions and covering box). In case of non-observance there is a high risk of damage (e.g. glass parts could break).

Model description

The Genius series includes semi-micro and analytical balances.
The newly developed monolithic weighing systems allow sizes up to a capacity of 610g, with a display resolution of 0.1mg and a capacity of up to 410g and 0.01 readability.

Model overview with special monolithic weighing system

Type of construction-System

Genius-07.tif

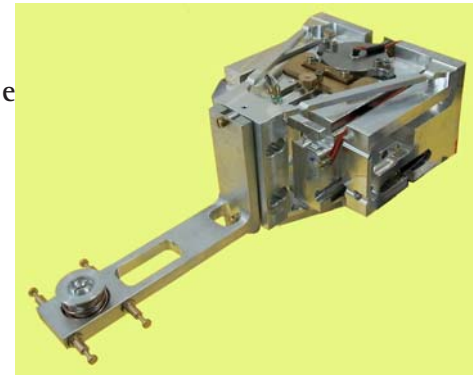
Monolithic weighing system (see right)

Overview of the models of the Genius serie
Semi-micro balances:

ME235S, ME235P,

Analytical balances:

ME614S, ME414S, ME254S, ME235P-SD



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Auxiliary tools

In addition to standard tools, you will need the following special tools to work on Sartorius Genius balances:

Pcs.	Designation		Order No.
1	Allen-tipped screwdriver	3 mm	6708-81
1	SARTOCAS-Service-Software	Vers. 1.46 or later	6740-33

Weights

Only use weights of the service box that are of the accuracy class E2 and have a certificate.

Note:

The test weights have to be acclimatized before the metrological checking in the weighing room.

Accompanying literature

Operation instructions Sartorius Genius Series	Publication No. 98648-008-83
Metrological device specifications	Publication No. 34601-000-50

ISSS

Service manuals and spare parts can be found under ISSS (International Service Support System).
On the Internet under >http://iss.sartoserver.de<.
For this a password and a username are necessary.
Requests to: malte.pramann@sartorius.com

Service routine – in brief:

Check the balance

Procedure

1. Reproducibility (see pages 16/17)
2. Check off-center load and adjust if necessary (see pages 18/20)
3. Adjust the span with the internal calibration weight (see pages 16/17)
4. Adjust the span with the external calibration weight; determine internal calibration weight if necessary (see pages 16/17)
5. Preferably, the compound method should be used to check the linearity; otherwise use calibrated weights. (see pages 16/17)

Activating the service mode

Enter the password »202 122« and press SETUP to access the service menu: Adjustment and linearity functions as well as the determination of internal and external weights can be carried out without using the SartoCas software (see page 16/17).

Activating the BPI mode / releasing write-protection

This is only necessary when working with the SartoCas program in order to program a data record after replacing a PCB (see pages 14/15 or see below „Replacing PCBs“). If tolerance values exceed ± 2% the service software has to be used!

Enabling XBPI communication

Select XBPI from the menu path: Setup/device parameters/interface/serial communication (PERIPHERALS), to use the SARTOCAS-program for adjustment. This overrides the BPI access (see pages 14/15).

Enabling SBI communication

Select „SBI" from the menu and confirm with the **««** soft key. This reactivates the standard data output protocol (SBI mode).The balance must be in the SBI mode to transfer data to peripheral devices. If you press the ⊙ key »ERR 30« is displayed– only active with software version APC 01-41-02 or later (see pages 14/15).
Caution:
If »ERR 30« is not displayed after pressing ⊙, the second interface is active.

Activating write-protection

After working with the SartoCas program, always reactivate the write-protection by selecting „close"; this returns the balance from the BPI mode to the SPI mode. (see pages 14/15).

Replacing PCBs

New data has only to be written in, if the serial number was not indicated with the order. Otherwise the new PCBs will be delivered with data.

Entering user weights

Enter definitions under „user-defined weights" in the S-CAL menu. **This function allows you to define weights for adjustment** / calibration purposes.

Reprotest

Is used for checking the reproducibility. The internal calibration weight is applied 6 times during this routine.

Off-center load

The adjustment of the off-center load is only done if the tolerances of the balance do not correspond to those on the service specification sheet. You must access the balance from the underside to perform this adjustment (see pages 18/20).

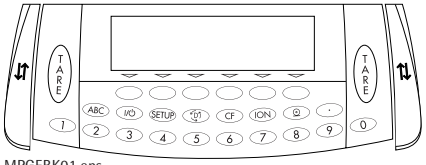
Span	The external span adjustment can be done with standard or selectable weights.
Linearity	You can adjust the linearity externally with standard or selectable weights.
Entering maintenance intervals	**The maintenance intervals can be entered by the service in the SETUP**: device parameters / maintenance in order to fix a date for the next maintenance.
Setting the preload	You can shift the zero point by up to 15% of the weighing capacity, if you want to use another weighing pan or a different equipment without distorting the iso-Cal function.
Menu access switch	The menu access switch is only necessary for balances verified for the use in legal metrology.

Maintenance

Note: Maintenance and care procedure (see operation instructions).

Key functions

ME-Models:



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(ABC) Letters
Activates the manual input-mode for letters and special characters (incl. space,*:/ etc..)

(I/⏻) ON/OFF key
Turns the display off (standby-mode) or on. When switched on, a hardware test is performed.

(SETUP) Pre-settings
Access to the SETUP program
If the SETUP program is closed by pressing (SETUP) or the << soft key (F6), the new settings are saved.

(↶D↷) Toggle to next application program

(CF) **Clear Function**
Clears the entry
Cancels started calibration / adjustment procedures

(ION) Turn the ionizer on / off

(Info) Display device specific information

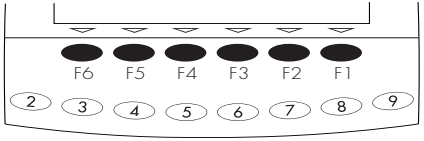
(⊙) Print
Protocols are read out via the data interface (e.g. to the printer).

(·) Decimal key
For manual inputs of number and decimal points

(0) .... (9) Numeric keys

⇵ Open / close draft shield

(TARE) Tares the balance



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Functional keys

The functional keys are counted from the right (F1) to the left (F6).

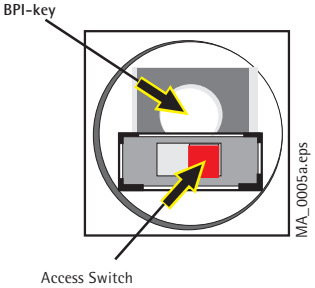
Service key and switch functions

Menu access switch

Caution!

The menu access switch should remain set to the right because this setting needs only to be changed on models that are verified for legal metrology!!!

If the position of the menu access switch is changed, the balance can not be adjusted / calibrated



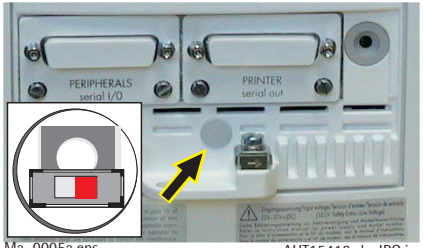
- If you work on the balance with an external service software when the menu access switch is closed, „ACCESS SWITCH LOCKED" will be displayed when you select a calibration / adjustment function of the software.

- Data can be read, however, when the switch (on the right) is closed.

Activating the BPI mode

Note:

Is only necessary when using an external service software.



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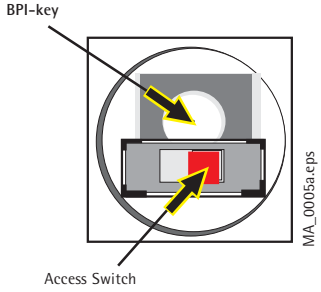
- Turn on the balance with the (I/⏻) key.
- Wait for the completion of the startup routine (delayed power-on, test functions), until 0.00000g is displayed.

- remove the cover plate under the data output port on the back of the balance.

- The BPI key can be accessed through this opening. Keep the key pressed; e.g. with a pen.
- 12 V are supplied to the MODE port of the balance processor to cancel the write-protection of the internal EEPROM and place the weighing system into BPI communication mode.

- The weight readout disappears on the display.

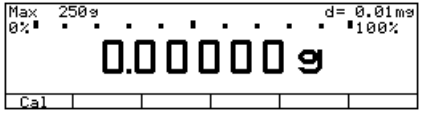


- After approximately 3 seconds, the interface is in BPI mode.
- Test: While pressing key (⊙) »Err 30« should be displayed

- Release the BPI key; the balance returns automatically to the normal weight display.

- Close the opening on the back of the balance with the cover plate.

– **Turn the balance with the (I/⏻) key off and on again.**



Anz20s-d.bmp

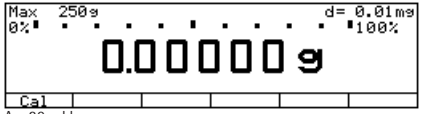
– Wait for the completion of the startup routine (delayed power-on, test functions), until *0.00000*g appears on the display (e.g. ME235S) (see on the left).
– The device is now ready for working in the BPI mode with the SARTOCAS program (vers.1.46 or later) for PCs.

Caution!

Make sure that you perform the close function after working in the BPI mode, so that the balance returns to the standard data transfer protocol (SBI mode) and that the write-protection is set again. Otherwise you will not be able to operate peripheral devices with the balance.

Activating the service mode

The service mode „**S**“ make extensive adjustments possible



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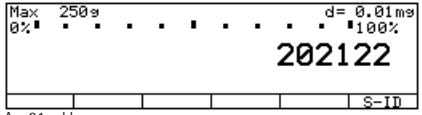
- In the weighing mode (display 0.00000 g – depends on the model)



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- Enter the service code: »202 122«
- Press (SETUP) key
- **SETUP** menu is displayed. In addition to that „**S**“ is displayed in the upper right corner of the display.

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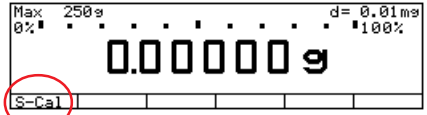
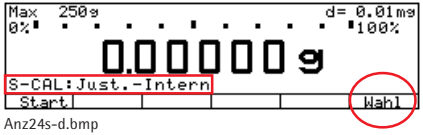
- Now, press soft key **<<** (F6)



Anz23s-d.bmp

- »**S-CAL**« appears on the display
- The service mode is active now.



Anz24s-d.bmp

- Press the SELECT soft key (F1); the menu items are displayed.
- Press (CF) to close the service menu

Adjustment in the service mode

Adjustments that are available in the service mode:

- **S-CAL**
  - Internal adjustment* — Press the soft key Start (F6)
  - Internal linearization*
  - Ext. linear.; factory-def. wt.
  - Ext. linear.; user-def. wt.
  - Set preload
  - Clear preload
  - reproTEST
  - Determine internal weight
  - Determine int. lin. wt.
  - Determine user-def. wt.
  - Display *10
  - Extern. adj. factory-def. wt.*
  - Ext. adj. auto. detect. — (automatic detection of applied weights)
  - Ext. adj. user-def. wt. *

Note:

In most of the cases it is not necessary to use the SartoCas software to adjust ME balances; most adjustments can be performed with the balance in the service mode.
The service software is only required if the adjustment exceeds the permissible tolerance limits by more than ±2%, if an „unknown weight" is to be used for the adjustment, or if multiple span adjustments are necessary because of unfavorable conditions at the place of installation

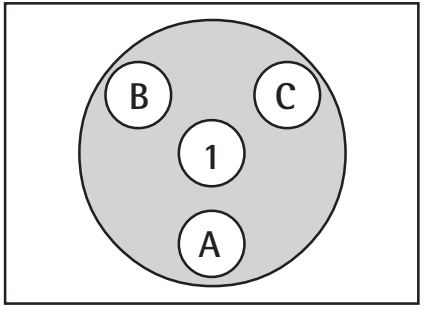
* Adjustment can also be performed without activated service mode

Adjusting the off-center load

Checking the off-center load

Note:

The specifications for the test weight and the tolerances can be found in the service specifications sheet for ME balances (see page 43).



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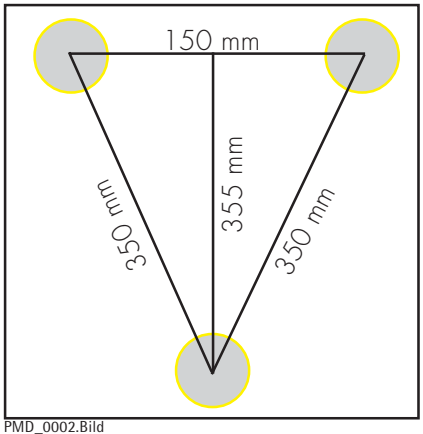
- Open the draft shield
- Place the test weight on position 1 on the weighing pan and tare the balance with the tare key.
- Place the test weight successively on the positions A, B, and C and write down the values displayed at stability, with plus or minus sign.
- Compare the values with the tolerance limits listed in the service specifications sheet for ME balances (see page 43).
- If the values exceed the tolerances, the off-center load has to be adjusted.

Adjusting the off-center load



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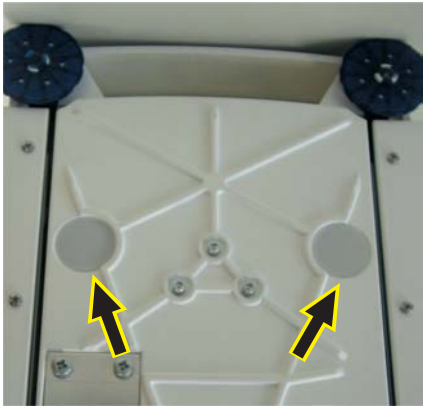
The adjustment of the off-center load requires excellent knowledge about the special monolithic weighing system, which is not described in this manual. It is, however, part of the respective service training courses.

3-Point adjustment

- The ME balance has to be placed on 3 firm supports (e. g. cubes, columns or weights). The balance has to be accessed from the bottom.
- The adjustment screws are accessible through two openings in the bottom of the balance housing.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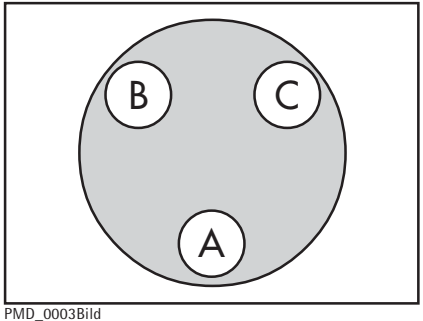
- For this you have to remove the caps from the bottom of the housing.
- To adjust the off-center load, adjust these two screws as described below (see example page 20).



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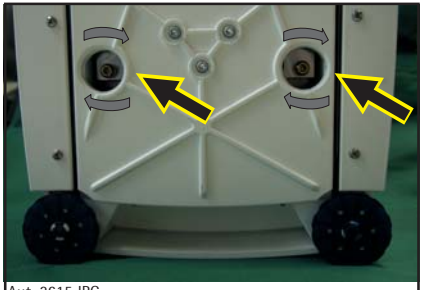
Example:

- Place the test weight on the position A on the weighing pan and tare the balance with the tare key.
- Place the test weight successively on the positions B and C and write down the values displayed at stability with the plus or minus sign.

Pos.A	TARE key	0.00000 g
Pos.B		+ 0.00050 g
Pos.C		– 0.00014 g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- Only adjust the side with the greatest error as follows:
  negative errors values
  unscrew the adjustment screws counter-clockwise
  positive error values
  screw the adjustment screws clockwise
- Change the screw positions in small increments and re-measure the off-center load in the positions A-C.
- Repeat this procedure until the off-center load is within the tolerance at all 3 points.

Note:

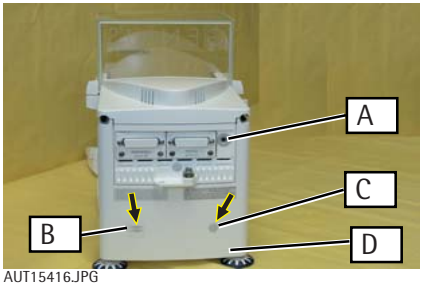
After adjusting the off-center load, check linearity and span and adjust them if necessary.

Attention!

After major adjustments or other extensive work let the balance acclimatize before you check linearity and span.

Open the balance

Take off the case (D)



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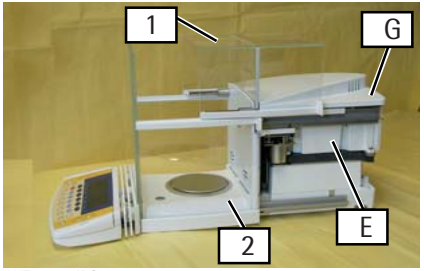
- Disconnect the main plug (A) from the power supply.
- Remove security sealing (B).
- Take out the cap (C).
- Unscrew 2 screws and take off the case (D).

View without case (D)
Case (D) is taken off:



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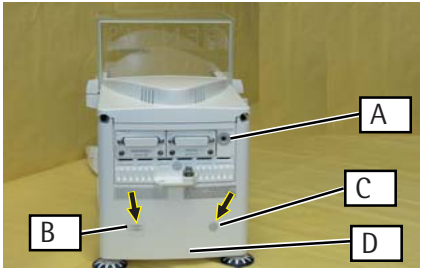
- if the top deck slider (1) or the side sliding door (2) have to be replaced.
- if changes in the E-Box (E) have to be carried out.

Mount the case (D) again



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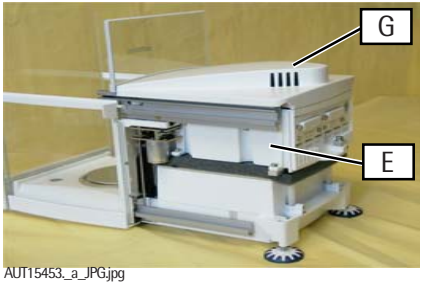
- Put on the case (D) again, make sure that it catches completely at the front and fix it slightly with 2 screws.
- Check the open / close functions of the glass panels and adjust them if necessary (if the glass panels are grinding adjust the case laterally)
- if it is ok fix the 2 screws.
- Insert the cap (C) again.
- Affix the security sealing (B) again.
- Re-connect the main plug (A) to the power supply.

Open the E-Box (G)



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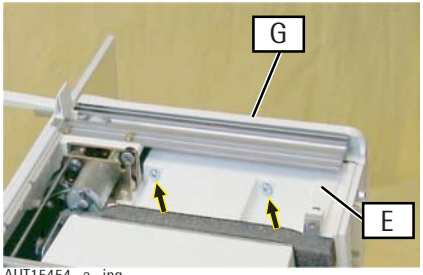
View without case (D) (taking off see page 21).

View with top part of E-Box (G) and bottom part of the E-Box (E).



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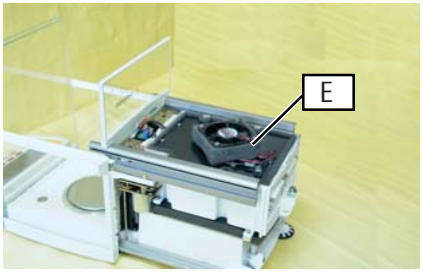
- Remove 2 screws on the right and 2 screws on the left side.

- Take off the top part of the E-Box (G) from the bottom part of the E-Box (E).



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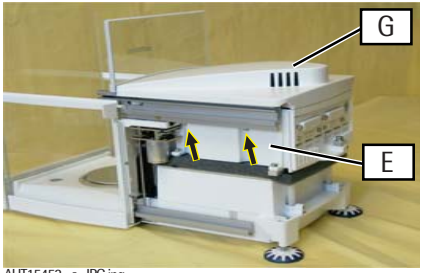
The interior of the E-Box (E) is now accessible.
The interior of the E-Box (E) is needed for changes / replacements at the ventilation unit, at the printed circuit boards and at the E-prom.

Close the E-Box (E) again.



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Close the E-Box (E) after the changes again.

- Tighten the top part of the E-Box (G) with the 2 screws on the right and left side at the bottom part of the E-Box (E).

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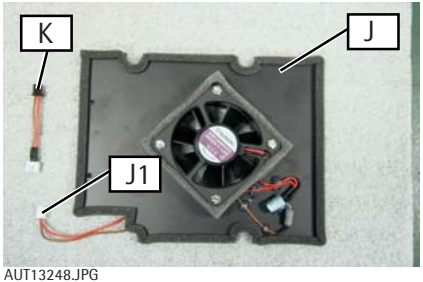
- Mount the case (D) again. (see page 22).

Replace the ventilation kit (J)

Note



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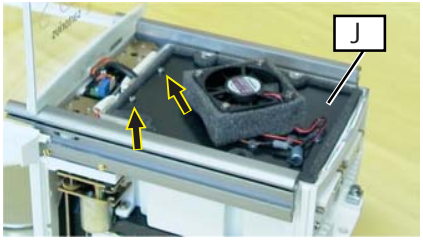
The **Plug (1.1)** on the PCB (1)can be **white (IST)** or **black (Burndy)**.
If the plug (1.1) is black (Burndy) the enclosed adapter cable (K) has to be used additionally at the plug connection between the ventilation kit (J) and the PCB (1).

Remove the case (D) (see page 22)
Open the E-Box (E) (see page 23/24)

Dismount the ventilation kit (J).

- After removing the 2 screws, take the ventilation kit (J) carefully out of the E-Box (E).



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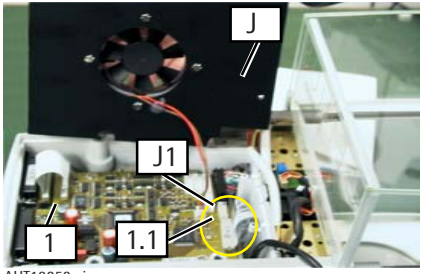
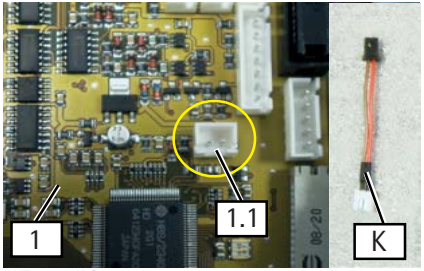
- Release the plug connection (J1) from the ventilation kit (J) to the plug (1.1) on the PCB(1).



AUT13253a.jpg

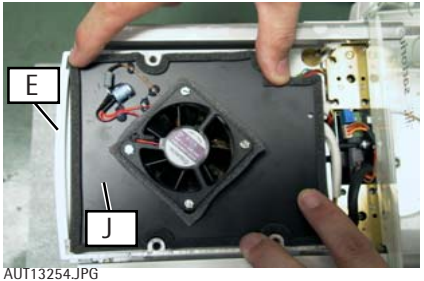
Mounting a new ventilation kit (J).



AUT13255.JPG Aut13249b.jpg

- Attach the plug connection (J.1) from the ventilation kit (J) with a **JST plug (white)** (1.1) **directly** onto the PCB.

- If you attach the plug connection (J.1) from the ventilation kit (J) onto the PCB with a **Burndy plug (black)**, the adapter cable (K) has to be used additionally for the attachment.



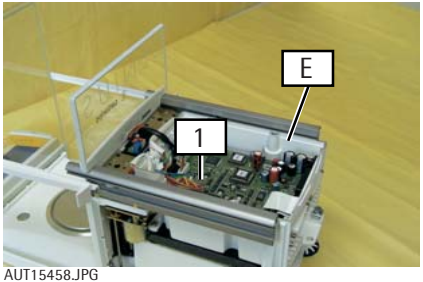
AUT13254.JPG

- Insert the ventilation kit (J) into the E-Box (E) again and tighten it with the 2 screws.


AUT15416.JPG

Close the E-Box (E) again. (see page 23).

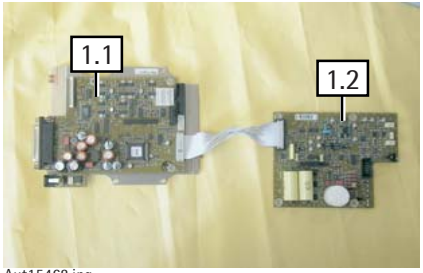
Replacing PCBs (1) in the E-Box (E)



AUT15458.JPG

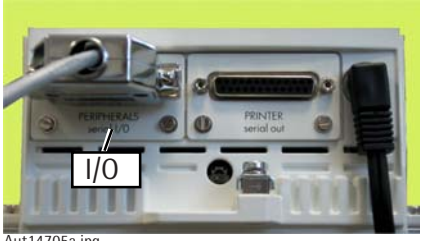
- Take off the case (see page 21).
- Open the E-Box (E) (see pages 22/23).
- Dismantle the ventilation kit (see page 24).

Access to the digital and the analogue PCB.



Aut15468.jpg

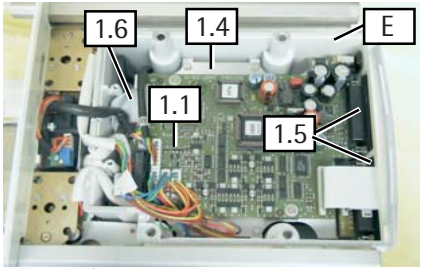
Caution!
Digital PCB (1.1) and analogue PCB (1.2) are delivered as a complete spare part.
If an error occurs the digital PCB (1.1) and the analogue PCB (1.2) can be replaced separately.



Aut14705a.jpg

Caution!
Read out and save data from the weighing processor via the left interface (I/O) with the SartoCas service software.
Procedure:
- Activate the BPI mode („Activating the BPI mode", see pages 14/15).
- Save the scale data with the SartoCas service software.

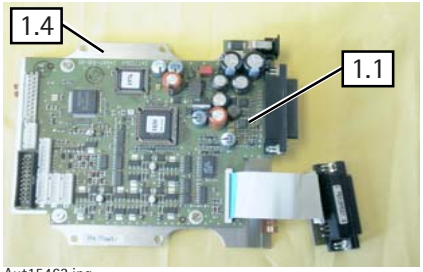
Replacing the digital PCB (1.1).



AUT15459.JPG

- Release the plug connections on the digital PCB (1.1).
- Release the metal plate (1.4) together with the digital PCB (1.1) from the E-Box (E) by removing the 4 screws.
- Remove the plug (1.5) on the digital PCB (1.1) from the outer wall of the E-Box (E).

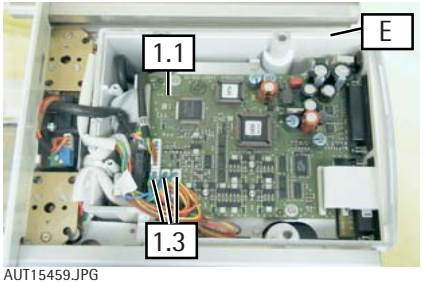
- Unplug the plug connection (1.6) from the digital to the analogue PCB.



Aut15463.jpg

Digital PCB (1.1):
- Take the digital PCB together with the metal plate out of the E-Box (E).
- Remove the digital PCB from the metal plate, (1.4) by removing the 4 screws
- can be replaced in case of an error.

- Re-assemble the digital PCB into the E-Box (E) in reverse order.

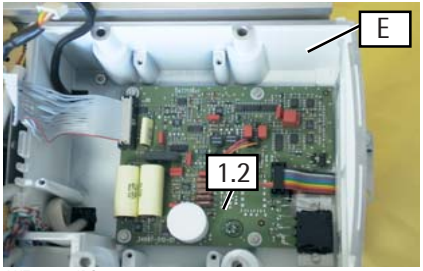


AUT15459.JPG

Caution!
While attaching the plug connections, pay attention to the right sequence of the plugs (1.3) of the draft shield!

Replacing the analogue PCB (1.2).

- Dismantle the digital PCB (1.1) (see page 27)



AUT15464.JPG

- Unplug the plug connections.

- Loosen the solder connections.

Analogue PCB (1.2):

- Take the analogue PCB out of the E-Box (E) after removing the 4 screws.

AUT15465.JPG

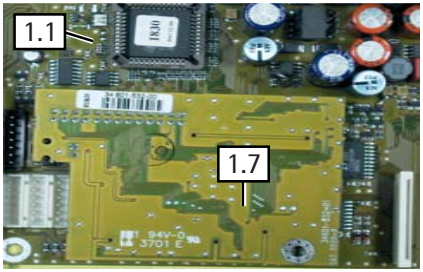
- Analogue PCB can be replaced in case of an error.

- Re-assemble the analogue PCB into the E-Box (E) in reverse order.

Caution! **Make sure that you perform the close function after working in the BPI mode, so that the balance returns to the standard data transfer protocol (SBI mode) and that the write-protection is again set. Otherwise you will not be able to operate peripheral devices with the balance.**

Replacing EPROM for the draft shield control software

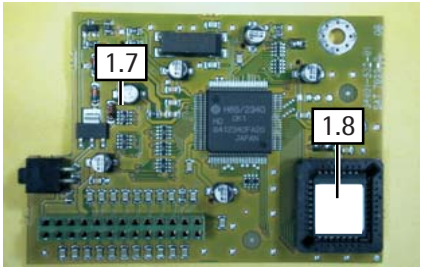
Version A



AUT13417a.jpg

EPROM (1.8) can be found on the draft shield PCB (1.7.), which is connected on the digital PCB in the E-Box (E).

- Remove the draft shield PCB (1.7) from the plug connection on the digital PCB (1.1).



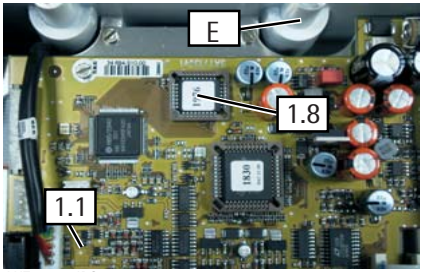
Aut13419.jpg

Draft shield PCB (1.7) in dismantled state.

- EPROM (1.8) can now be replaced in case of an error.

- Connect the draft shield PCB (1.7) to the digital PCB (1.1) again.

Version B



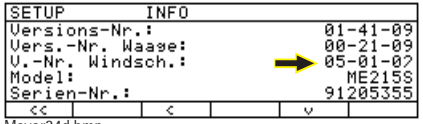
AUT13409.JPG

EPROM (1.8) is connected directly onto the digital PCB (1.1) in the E-Box (E).

- EPROM (1.8) can now be replaced in case of an error.

MEVOR07D.BMP

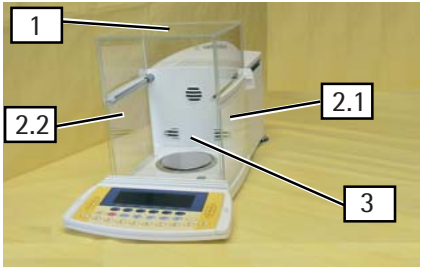
- Now the new version number can be called up with the weighing parameter menu.



Mevor24d.bmp

- In the display the new version number such as e.g. » 05-01-07 « for the draft shield control is displayed.

Replacing the glass panes



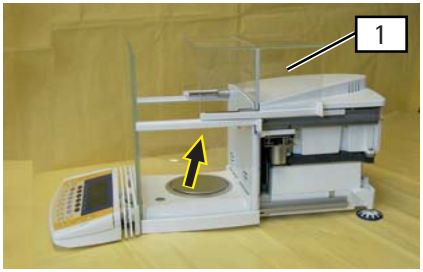
AUT15412.JPG

1. Top deck slider
2. Side sliding door
3. Front panel

Replacing the top deck slider (1)

AUT15416.JPG

- Remove the case (D) (see page 21).



AUT15418.JPG

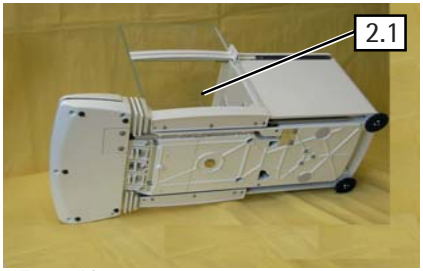
- Pull the top deck slider (1) out of the guide; to the back.

- Insert the new top deck slider (1) into the guide, adjust it and push it to the front.

AUT15416.JPG

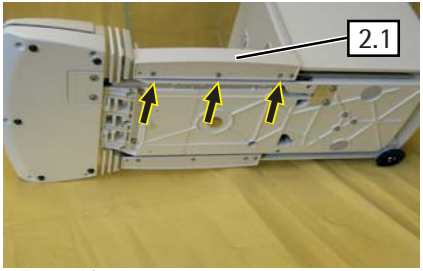
- Mount the case (D) again (see page 22).

Replacing side sliding door (2) on the right (2.1) or on the left (2.2)



AUT15419.JPG

- Lay the device to the right or left side onto a cushion.



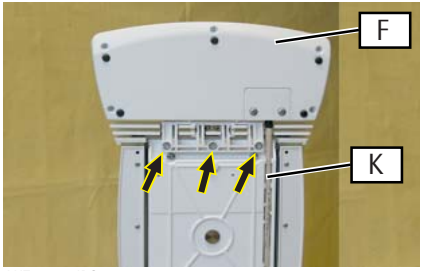
AUT15421.JPG

- Unscrew the 3 screws to loosen the side sliding door (2.1) and take it out of the guide rail.
- Insert the new side sliding door (2.1), adjust it and push it to the front..
- Screw the new side sliding door (2.1) with the 3 screws.
- Side sliding door (2.2) – the same procedure.
- Check the Open / Close function and adjust it if necessary.

Replacing the front panel (3)

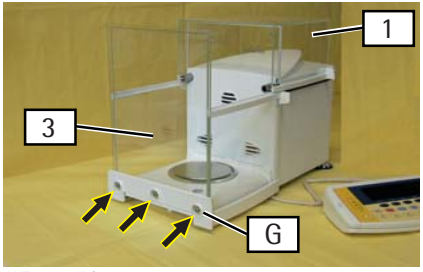
AUT15422_a_.JPG

- Take off 2 plates (E1; E2).
- Push the top deck slider (1) to the back.



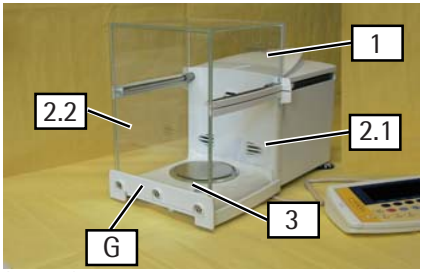
AUT15424.JPG

- Put the device onto the rear panel.
- Loosen the display head (F) with the 3 screws, take it off and put it aside. (Cable connection (K) remains).



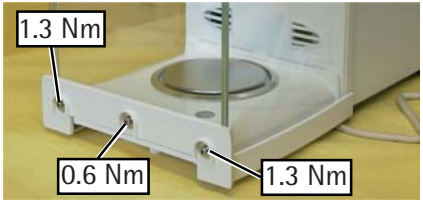
AUT15428.JPG

- Bring the device into the upright position again.
- Loosen the front panel (3) and the holder (G) with the 3 screws from the device.



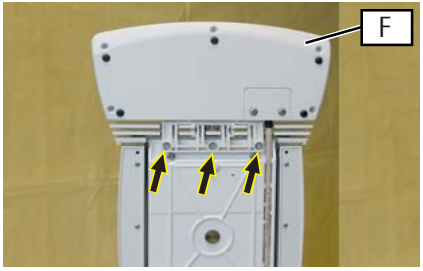
Aut15427.jpg

- Tighten the new front panel (3) with the holder (G) slightly at the device with 3 screws, which are covered with a shrink hose to protect the front panel (3).
- Push the top deck slider (1) to the front again.
- Adjust the new front panel (3) to the top deck slider (1) and the side sliding door (2).



AUT15427_a_.JPG

- Tighten the 2 outer screws with a **torque of 1.3. Nm**.
- Then, tighten the screw in the middle with **a torque of 0.6 Nm**.



AUT15424.JPG

- Screw the display head (F) onto the device again.

AUT15422_a_.JPG

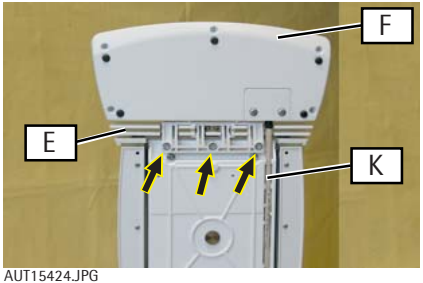
- Attach the 2 plates (H1 / H2) on the device again.

The device is now complete again and ready for operation.

In the display head (F)

Replacing foil (F3), display PCB (2) and display module (3).

- Put the device onto the rear panel.
- Take off 2 plates (E).
- Loosen the display head (F) with the 3 screws.
- Loosen the cable connection (K) at the display head (F)
- The display head (F) can now be taken off.

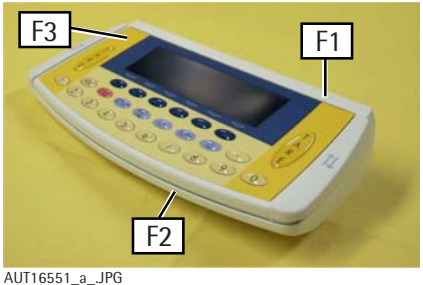


AUT15424.JPG

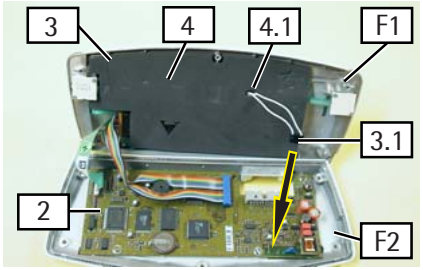
Replacing the foil (F3) together with the upper part (F1) .

- In case of repair, the foil (F3) is only replaced together with the upper part (F1)

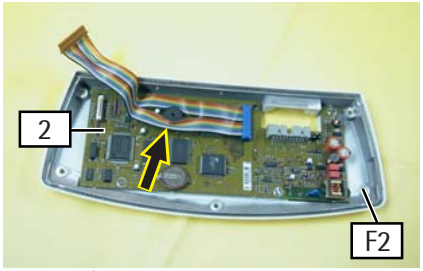
- The display module (3) has to be removed from the old upper part (F1) and has to be inserted in the new upper part (F1) again. (see pages 37/38).



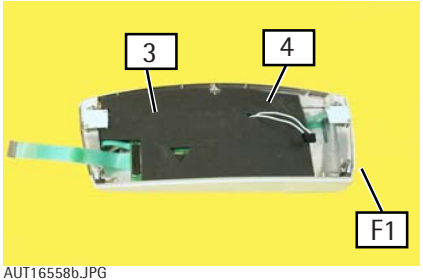
AUT16551_a_.JPG



AUT16554.JPG



AUT16556.JPG



AUT16558b.JPG

Opened display head (F).

Illustration of the cable connections / plug connections.

Replacing the display PCB (2) in the bottom part (F2).

- Loosen the cable connections / plug connections to the display module (3).
- Dismantle the display PCB (2) in the bottom part.(F2).

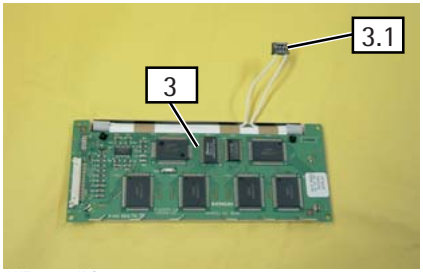
- Re-assemble the display PCB (2) into the bottom part (F2).
- Lay the cable connections / plug connections (see pictures on the left) and reconnect them.

Replacing the display module (3) in the upper part.

- Loosen the cable connections / plug connections to the display PCB (2).

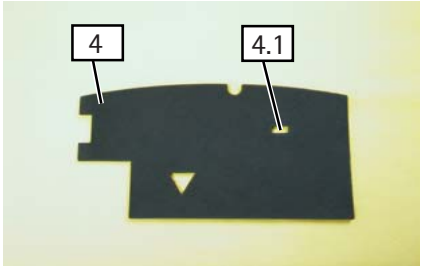
- Remove the plate (4) carefully from the display module (3)

- Dismantle the display module (3) in the upper part (F1).



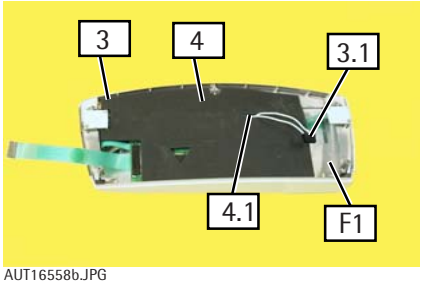
AUT16561.JPG

New display module (3) in dismantled state.



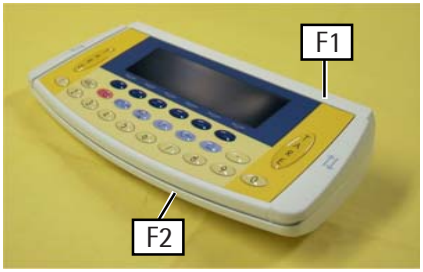
AUT16652.JPG

New plate (4) in dismantled state.



AUT16558b.JPG

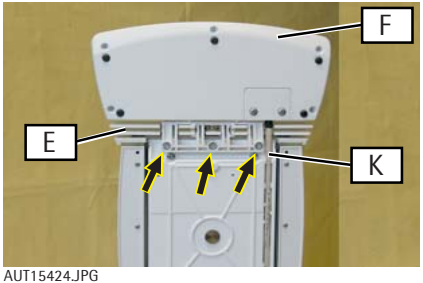
- Re-assemble the display module (3) in the upper part (F1) again.
- Pull the plug connection (3.1) through the opening (4.1) of the plate (4).
- Adjust the plate (4) after the display module (3) and affix it carefully.
- Re-establish cable connections / plug connections.



AUT16551_a_.JPG

After repair / replacement in the display head (F)

- Re-assemble the display head (F) in reverse order.



AUT15424.JPG

- Mount the display head (F) in reverse order to the device. (see page 36).

The device is now ready for operation again.

Main Error Codes

Depending on the type of error, error codes are displayed either temporarily or long-term in the main display or in the text line.

Display	Type of Error	Explanation	Remedial measures
No segments appear on the display		No AC power is available. The power cord is not plugged in. Fuses are defective.	Check the AC power supply. Plug in the power cord. Replace the fuses.
H	D	The load exceeds the weighing capacity; Weight on the pan is too heavy; Weighing system improperly calibrated Preload adjusted incorrectly	Ensure that an operator error is not the cause. If the error continues, perform external calibration/adjustment or adjust the preload.
L	D	The load is too light; Weighing pan is not in placed, Weighing system improperly calibrated or preload adjusted incorrectly.	Ensure that an operator error is not the cause. If the error continues, perform external calibration/adjustment or adjust the preload.
Err 01 Display range	D	Data output not compatible with output format	Adjust the settings in the Setup menu
Err 02 Cal. n. possible	T	Conditions for calibration/adjustment not met; e.g.: – balance not tared – load on weighing pan	Calibration only when zero is displayed Press (TARE) to tare Unload the balance

D.: dynamic error, remains in display as long as error exists
T.: temporary error (e.g., operator error) displayed approx. 2 seconds

Display	Type of Error	Explanation	Remedial measures
Err 03 Cal./adj. interrupt	T	Calibration/adjustment could not be completed within a certain time	Allow balance to warm up and then repeat the adjustment process
Err 06 Int. wt. defective	T	Internal calibration weight is defective or does not exist	Check the motorized internal calibration system, send it back to the factory, if necessary
Err 07 function blocked	T	Function or command not allowed on models certified for legal metrology	Incorrect operating procedure
Err 08 <>zero range	T	Error when display is zeroed (value outside of 2%)	Incorrect operating procedure
Err 09 < 0 not allowed	T	Tare error (tare value <= 0)	Incorrect operating procedure
Err 10 Tare function blocked	T	Tare key and 2nd tare memory are blocked when there is data in the tare memory for the ' formulation' application Differential weighing: Tare key is blocked when there is data in the sample tare memory	Press (CF) to clear formulation data and exit the application Differential weighing: Unload the balance or change the sample
Err 11 Tare2 blocked	T	Tare memory not allowed (tare value exceeds the weighing range)	The weight displayed was e.g., negative, check the sample.
Err 12 Tare2 > MAX	T	Tare value 2 exceeds allowable range Tare value 2 must be corrected.	Entry for tare value 2 too large. Unload the balance
Err 17 Cal./Adj. wt. > MAX	T	With preload in place: requested calibration weight is heavier than overflow value	Use a different calibration weight

T.: temporary error (e.g., operator error) displayed approx. 2 seconds
F.: fatal error, displayed until (I/⏻) key is pressed.

Display	Type of Error	Explanation	Remedial measures
Err 19 Preload too heavy	T	The preload to be stored is too heavy	Preload value is positive
Err 30 Print fct blocked	T	Interface port for printer output is mode blocked; XBPI comm. mode is activated	Switch to the SBI communication or built-in printer is defective
Err 31 Print fct blocked	T	External device not ready to send (interface handshake interrupted) XOFF, CTS	Transmit XON, then CTS Turn on equipment
Err 50 No weight displayed	D	Converter error (temp. comp. range) or the temperature converter for IC;	Check the ICs for the TK sensor and TK converter Replace both PCBs or return the balance to the factory
Err 54 weight displayed	D	Weight converter output under the minimal limit system	Load too light, place the weighing No pan, on the unit; check the weighing
Err 55 No weight displayed	D	Weight converter output over the maximum limit may be defective	Load exceeds capacity; check the weighing system electronic subassembly
Err 101,102,103,104 or **105** "Checkerboard" pattern displayed continuously	D	Key is stuck Key pressed when switching on the Moisture Analyzer the K key is defective (SETUP) key was pressed when turning on the Genius or is stuck	Release key or Replace the keypad overlay; Short circuit in the application PCB Replace ↓↑ key

D.: dynamic error, remains in display as long as error exists
T.: temporary error (e.g., operator error) displayed approx. 2 seconds

Display	Type of Error	Explanation	Remedial measures
Err 220	F	ROM checksum error; data in internal ROM of the weighing system processor (AOC) are erroneous.	Replace both PCBs
Err 225	F	Contents of internal EEPROM not compatible with software version	Save the appropriate data set on the weighing system
Err 230	F	RAM read/write error; access to the internal RAM of the weighing system processor (AOC) is corrupt or impossible.	Replace both PCBs
Err 231	F	IIC BUS error ext. EEPROM or Replace both PCBs	Check the IIC bus; replace the
Err 236/237 *	F	EEPROM checksum error in linearity area; linearity of the weighing system has not yet been adjusted or the data in the internal EEPROM of the weighing system processor (AOC) are erroneous	This error can be corrected by the balance itself when you activate the linearization procedure Make sure the menu access switch is open
Err 238/239 *	F	EEPROM checksum error in linearity weight area; the factor stored for the internal weight for linearity adjustment is not within the allowable tolerance or is defective.	This error can be corrected by the balance itself when you activate the linearization procedure Make sure the menu access switch is open

* When the menu access switch is activated, the balance display flashes; when it stops flashing, you can overwrite the calibration/linearization weight

F.: fatal error, displayed until (I/⏻) key is pressed.

Display	Type of Error	Explanation	Remedial measures
Err 240/241 .	F	EEPROM checksum error in fixed area; data for the weighing system operating menu in the internal EEPROM of the weighing system processor (AOC) are erroneous.	Overwrite the erroneous data set with SARTOCAS vers. 1.40 or later. If the error still exists, replace the AOC or the main PCB.
Err 242/243	F	EEPROM checksum error in menu area; non-changeable data in the internal EEPROM of the weighing system processor (AOC) are erroneous.	With the menu access switch in the "open" position, access the menu. Exit the menu and store by pressing the << key: This corrects the checksums.
Err 245 *	F	EEPROM checksum error in calibration area (zero point). The weighing system has not yet been calibrated/adjusted, or data in the internal EEPROM of the weighing system processor are erroneous.	Calibrate/adjust the balance
Err 246/247 *	F	EEPROM checksum error in calibration area (sensitivity). The weighing system has not yet been calibrated/adjusted, or data in the internal EEPROM of the weighing system processor are erroneous.	Calibrate/adjust the balance
Err 248/249 *	F	EEPROM checksum error in calibration weight area; the factor stored for the internal calibration weight is erroneous.	Access the function to overwrite the internal calibration weight.

* When the menu access switch is activated, the balance display flashes; when it stops flashing, you can overwrite the calibration/linearization weight

F.: fatal error, displayed until (I/⏻) key is pressed.

Display	Type of Error	Explanation	Remedial measures
Err 254/255	F	Checksum error at preload	Delete and reset the preload
Err 261	F	Checksum error in ext. EEPROM	Check the EEPROM It may be necessary to replace both PCBs
Err 262	F	Version error in ext. EEPROM	Check the version number It may be necessary to replace both PCBs
Err 320	F	Operating program memory is defective	Reload the operating program.
Err 340	F	EEPROM and built-in battery RAM were initialized: all system and weighing program parameters have been reset to the factory settings.	New EEPROM version (device and adjustment parameters) after changing the operating program or IIC bus or IIC EEPROM error; perform 2-point adjustment of heating unit and the temperature difference compensation.
Err 341	F	Built-in battery RAM was initialized: weighing program parameters have been reset to factory settings	New version of built-in battery RAM after changing operating program; data due to drained battery or RAM is defective.
Err 342	F	Same as Err 340, except that adjustment parameters remain stored	New EEPROM version (device parameters) after changing operating program
FE x xxx	F	Operating system error	Contact Sartorius Service Support in Goettingen, Germany

* When the menu access switch is activated, the balance display flashes; when it stops flashing, you can overwrite the calibration/linearization weight

F.: fatal error, displayed until (I/⏻) key is pressed.

Service Specifications

					Reproducibility				Off-center load Eccentricity				Span					Linearity				TCS	iso CAL
Model	Weighing capacity		Readability		Test weight		Permissible tolerance s		Test weight		Permissible tolerance (±)		Class	Adjustm. weight	Test weight		Permissible tolerance (±)		Tareweight		Testweight		Permissible tolerance (±)		ppm /K	K
ME235S	230	g	0,01	mg	200	g	0,03	mg	200	g	0,15	mg	E2*	intern	200	g	0,2	mg	50/100/150	g	50	g	0,1	mg	1	1
ME235P	60 110 230	g	0,01 0,02 0,05	mg	50	g	0,02	mg	200	g	0,2	mg	E2*	intern	200	g	0,2	mg	50/100/150	g	50	g	0,15	mg	1	1
ME614S	610	g	0,1	mg	500	g	0,1	mg	500	g	0,7	mg	E2*	intern	500	g	0,8	mg	150/300/450	g	150	g	0,5	mg	1	1
ME414S	410	g	0,1	mg	200	g	0,1	mg	200	g	0,3	mg	E2*	intern	2 x 200	g	0,4	mg	100 / 200 / 300	g	100	g	0,3	mg	1	1
ME254S	250	g	0,1	mg	200	g	0,1	mg	200	g	0,4	mg	E2*	intern	250	g	0,3	mg	60/120/200	g	50	g	0,15	mg	1	1

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