

Adresse **Mettler-Toledo GmbH, Laboratory & Weighing Technologies**
Marketing Support LabTec
Postfach LabTec
CH-8606 Greifensee, Schweiz
 Telefon **+41-1-944 36 36**
 Fax **+41-1-944 31 90**
 Internet **http://www.mt.com**

METTLER TOLEDO

Service Manual

METTLER TOLEDO

Balances

Version 09/03

How to navigate

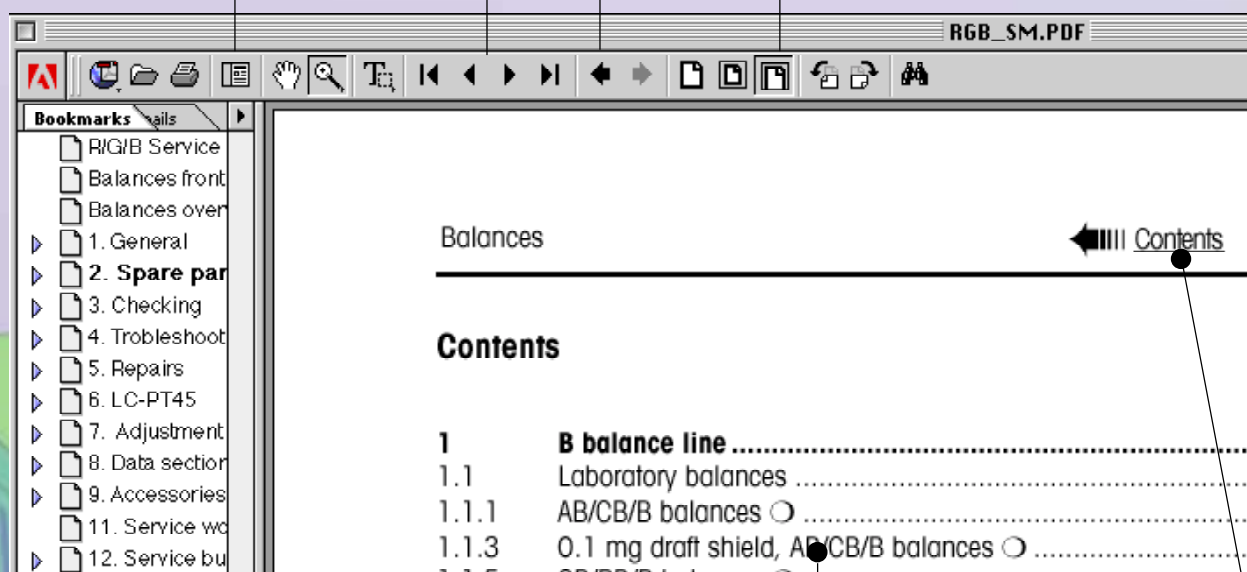
clicking underlined term:
jump to designated position

Select display with
bookmarks

1 page
forward/
backward

back (jump backward to
previously selected page)

show document width



clicking bookmarks:
jump to start of section

clicking contents-line:
jump to start of chapter

jump backward to start of
chapter/-contents

- clicking exploded view drawing/spare part list: change between the two

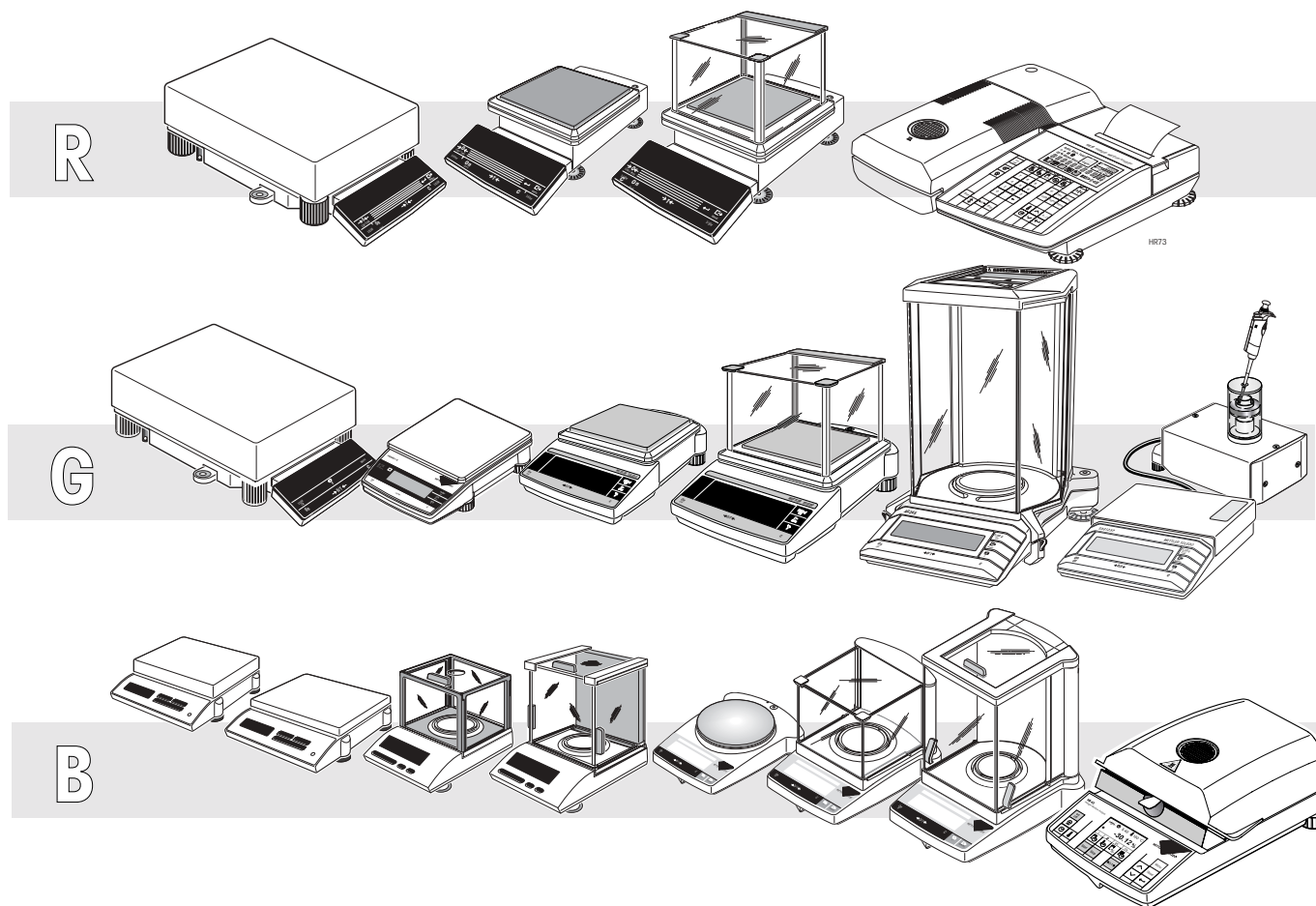
Address **Mettler-Toledo GmbH, Laboratory & Weighing Technologies**
Marketing Support LabTec
Postfach LabTec
CH-8606 Greifensee, Schweiz
Telephone **+41-1-944 36 36**
Fax **+41-1-944 31 90**
Internet **<http://www.mt.com>**

Service Manual

METTLER TOLEDO Balances

Continuous supplement of the service manual, see section 12

R, G, B balances, special types and moisture analyzers



P705116

General

Overview of balances, moisture analyzers, measuring cells and software; TDNR lists
Special types

1**Spare parts**

Exploded view drawings of balances
Spare parts lists
Packagings

2**Checking**

Check lists

3**Troubleshooting**

Troubleshooting

4**Repairs**

ESD-information
Balance repair

5**LARS
LC-PT45**

Installation LARS.
Operation LC-PT45,
Maintenance, Malfunctions

6**Adjustment**

List of adjustment functions
(Linearization, calibration,
temperature compensation, ...)
Error messages

7**Data section**

Technical data and adjustment tolerances
Information on certified balances

8**Accessories**

Views and spare parts lists
Accessories in frequent use

9**10****Service aids**

Working aids

11**Supplements**

Continuous supplements and
reference list

12

21.1.2002

Für die Print-on demand Druckmaschine Dokutech müssen alle Schriften im pdf eingebettet sein. Das Service Manual wurde bis anhin ab Papier-Reinvorlage gedruckt, deshalb wurden die Schriften nicht alle eingebettet. Um zu erreichen, dass alle in diesem Service Manual verwendeten Schriften eingebettet werden, ohne die pdf aller Dateien neu zu erstellen, werden auf dieser Seite alle Schriften verwendet, und danach nur das pdf dieser einen Seite neu erstellt.

AvantGarde Cond Book

AvantGarde Cond Book **fett gewählt**

AvantGarde Cond Bold

AvantGarde Cond Demi

AvantGarde Cond Medium

Futura Book

DISPLAY

Helvetica

Arial

Arial Black

Courier

Monaco

Σψμβολ

Brush Script

Times Roman

Zapf Chancery

Contents

Page

1.	How should I use this service manual?	3
1.1	General information	3
1.2	Layout of this service manual	3
1.3	Format of the service manual	3
1.4	Information on symbols	3
2.	Overview of balances/moisture analyzers and measuring cells	4
2.1	Laboratory balances and moisture analyzers	4
2.2	Industrial balances	13
3.	Software version overview	23
3.1	How do I determine the current software version?	23
3.2	Software of the PR balances	25
4.	Allocation of the type definition numbers TDNR to the balance types	35
4.1	Explanation of the type designations of the TDNR list (following pages)	35
4.2	Contents of the LC-PT45 type EPROM (service software V 4.90)	39
	M balances, sorted by balance type. Explanation of the designations see corresponding service manual!	39
	M balances, sorted by TDNR. Explanation of the designations see corresponding service manual!	40
	B/G/R balances, sorted by balance type.	41
	B/G/R balances, sorted by TDNR.	48
4.3	LARS type data V.860	55
4.3.1	B/G/R balances with old TDNR structure	55
	TDNR in LARS, sorted by balance type.	55
	Balances in LARS, sorted by TDNR.	65
4.3.2	Balances with new TDNR structure	75
	TDNR in LARS, sorted by balance type.	75
	Balances in LARS, sorted by TDNR.	86
5	Special types	101
5.1	What are special types?	101
5.2	Allocation of special types to basic types	101

1. How should I use this service manual?

1.1 General information

This service manual contains instructions regarding repair and maintenance work for service engineers. Knowledge of operation of the balances is assumed.

Note on terminology

For the sake of convenience, all METTLER TOLEDO weighing devices described in this service manual are referred to as "balances" although the Carat and Gold types should strictly be termed "scales".

1.2 Layout of this service manual

The service documentation comprises two parts:

- This binder is the first and deals with servicing of the balance. The measuring cell is shown here as a unit, i.e. repairs of the measuring cell are not covered in this part.

Working aids, particularly the LC-PT45 service printer (Performance Tester) are also explained here.

- The second binder deals exclusively with measuring cells. Each measuring cell is assigned to the corresponding balance model in binder 1 (see allocation to the balances under point 2. overleaf).

This service manual is not a manual that deals specifically with particular models like its predecessors. It covers all new balance models of the B, G and R series. This has been made possible by a service plan covering all models.

The service manual contains the balance types of **lab and industry**. The industrial balances (or, strictly speaking, scales in M-T terminology) are described in their own subsections where appropriate.

The lab balances and industrial scales can be distinguished by their readability:

Readability less than/equal to 10 mg → lab balance; readability greater than 10 mg → industrial balance.

Examples: AB54 0.0001 g = 0.1 mg → lab balance; PB1501 0.1 g = 100 mg → industrial balance.

There are also exceptions, e.g. gold scales (GB1501 → lab balance) or the college balances (B3001) → lab balance).

1.3 Format of the service manual

The individual pages of the service manual have the general title, the section title and the section and page number in the header. The footer contains the document number with the last date of issue.

The page numbering of each section starts afresh with 1; the number in front of the page number corresponds to the section number.

The exploded view drawings serve as an assembly and orientation aid, as well as to determine the numbers of the spare parts. Individual parts of the balance are numbered only if they are spare parts.

Spare parts must be ordered using the details in the spare parts list. Numbers in the "Item" column refer to items in the exploded view drawings.

1.4 Information on symbols

○ → Model with round weighing pan

□ → Model with rectangular weighing pan

"see section 4.2" → Hyperlink for CD-ROM: clicking of the underlined item produces a jump, here e.g. to section 4.2.

2. Overview of balances/moisture analyzers and measuring cells

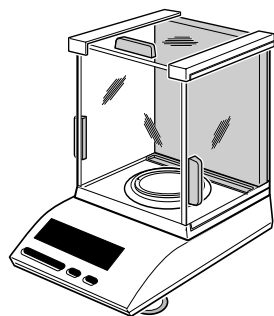
2.1 Laboratory balances and moisture analyzers

Laboratory balance

Type

Measuring cell

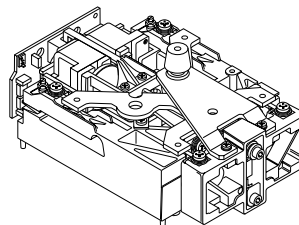
Order No.



B-Waage / O 1 mg MS

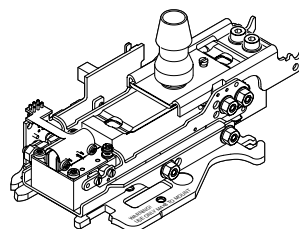
AB54
AB104
AB204
B154
GB204

600151
(conventional
cell,
TDNR: xxx**12**xxx)

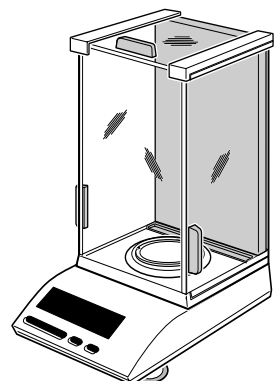


or

(monobloc cell
TDNR: xxx**77**xxx)



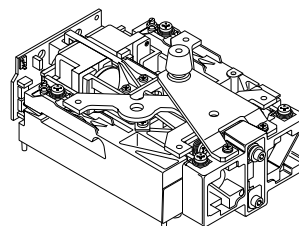
B Mono ET hoch



B-Waage / O 1 mg MS hoch

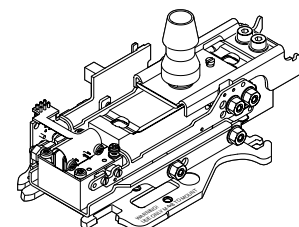
CB1503 DR

600185
(conventional
cell,
TDNR: xxx**22**xxx)

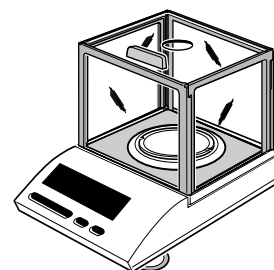


or

(monobloc cell,
TDNR: xxx**76**xxx)



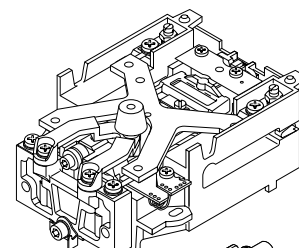
B Mono ET hoch



B-Waage / mg MS

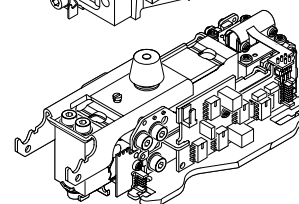
PB153
PB303
PB303 DR
B303

600153
(conventional
cell,
TDNR: xxx**19**xxx)



or

(monobloc cell
TDNR: xxx**76**xxx)



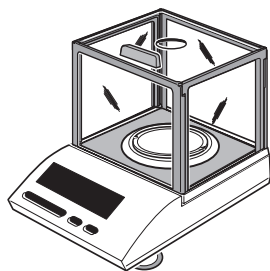
B Mono ET niedrig

Laboratory balance

(Exception: (Ind) = Industrial balance)

Type**Measuring cell**

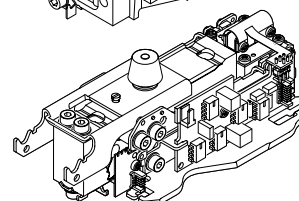
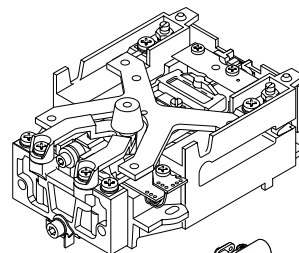
Order No.



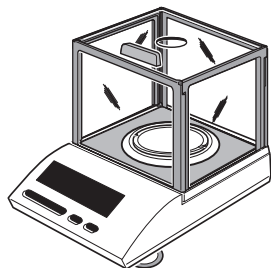
B-Metger / mg VS

CB203
CB603600152
(conventional
cell,
TDNR: xxx**14**xxx)

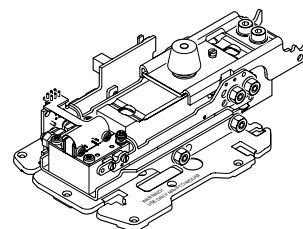
or

(monobloc cell,
TDNR: xxx**76**xxx)

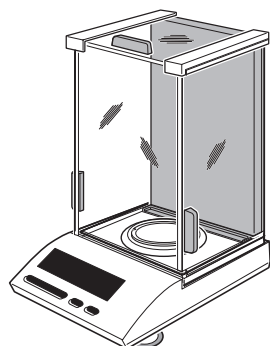
B-Mono ET-metg



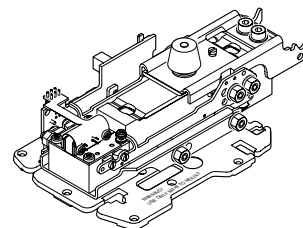
B-Metger / mg VS

PB153/303/303DR
B303
CB203/603217406
monobloc cell

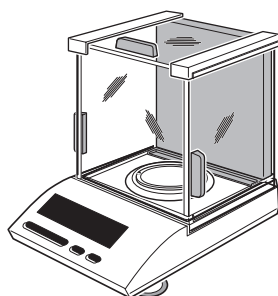
B-Mono



B-W-metg / 0.1 mg MS-trach

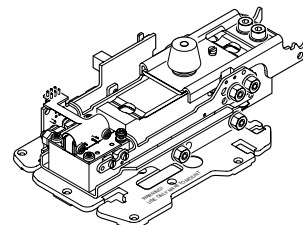
AB54/104/204
B154217406
monobloc cell

B-Mono



B-W-metg / 0.1 mg VS

CB1503DR

217406
monobloc cell

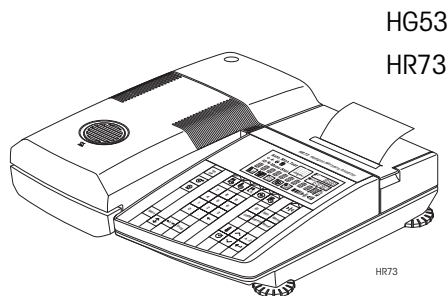
B-Mono

Laboratory balance**Type**

(Exception: (Ind) = Industry balance)

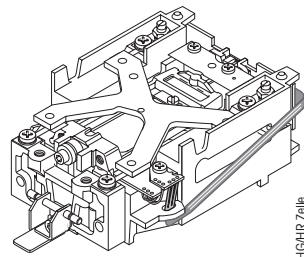
Measuring cell

Order No.

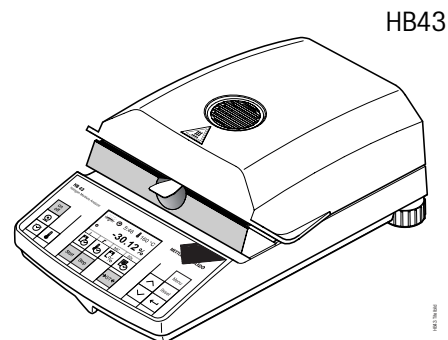


HG53
HR73

214670

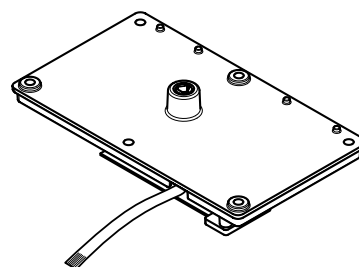


HGHR73-Zelle

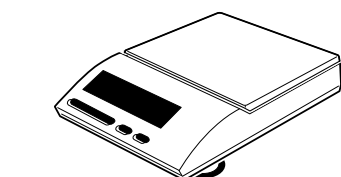


HB43

11113850



HB43-Zelle

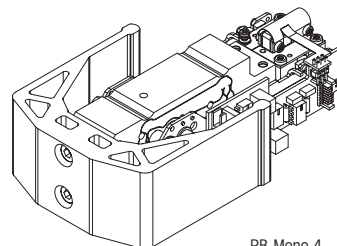
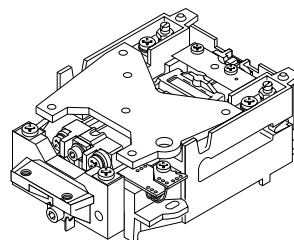


PB302
PB602
PB801 (Ind)
PB1501 (Ind)
PB1502
GB802,1302
GB1501
B502
B1302

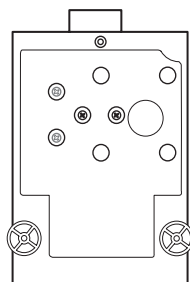
600154
(conventional
cell,
TDNR: xxx**23**xxx)

or

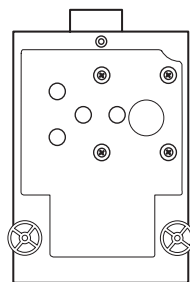
217403
(Monobloc cell,
TDNR: xxx**62**xxx)



PB-Mono 4



Balance with
conventional cell



Balance with
monobloc cell

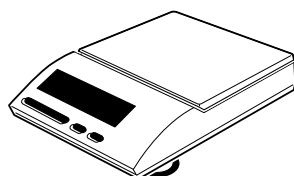
B-Waage v. unten

Laboratory balance

(Exception: (Ind) = Industry balance)

Type**Measuring cell**

Order No.

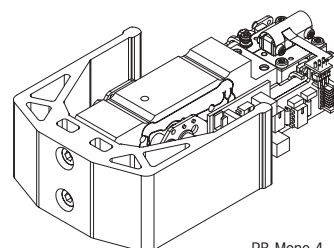
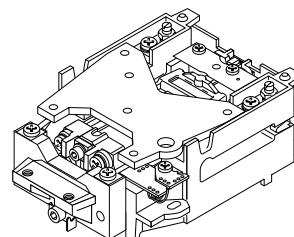


PB3001 (Ind)
PB3002
PB3002 DR
GB2002
GB3002
GB3002 DR
GB3001
B3001
B3002 DR

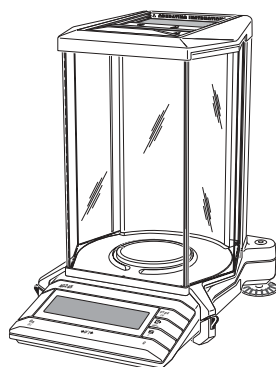
600155
(conventional
cell,
TDNR: xxx**24**xxx)

or

217404
(Monobloc cell,
TDNR: xxx**63**xxx)

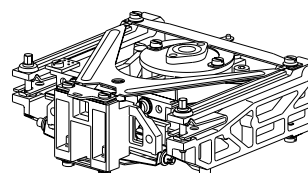
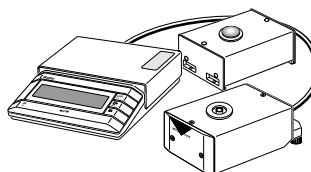


PB-Mono 4

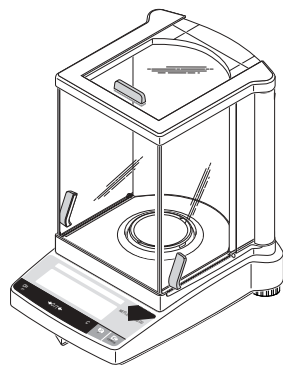


AG64
AG104, AG135
AG204
AG204DR
AG245
AG285

238292

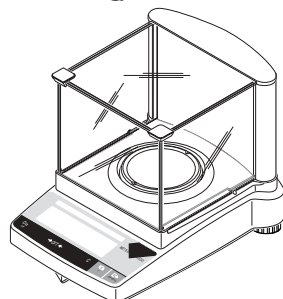
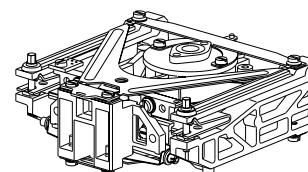


SAG204/245/285
SAG105/125P/245P



AB54-S
AB104-S
AB135-S
AB165-S
AB184-S
AB204-S
AB265-S
B154-S
B204-S

11135410



AB204-S, AB304-S

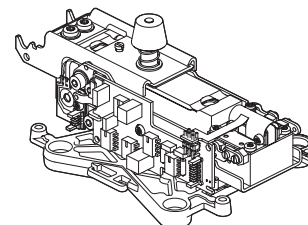
11103800

B203-S, B303-S
PB153-S
PB303-S
PB303-SDR

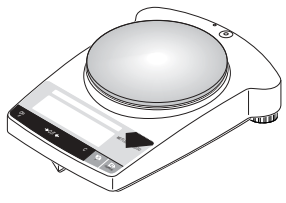
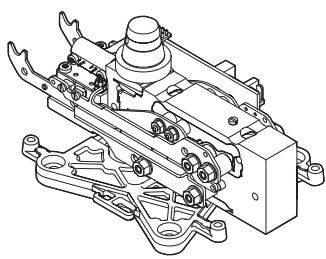
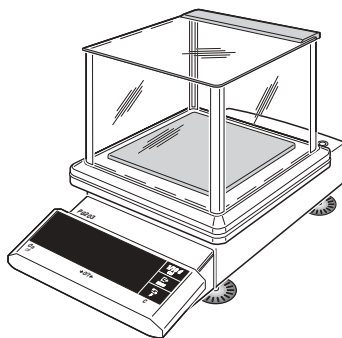
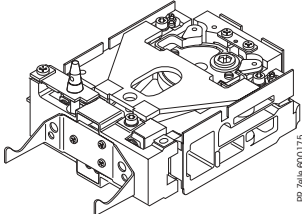
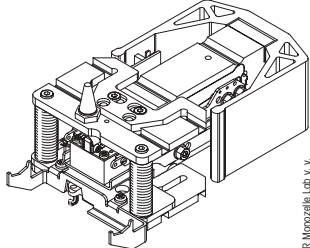
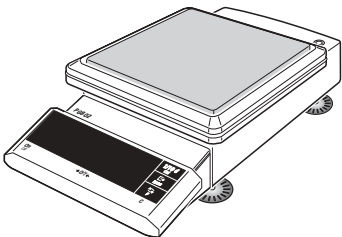
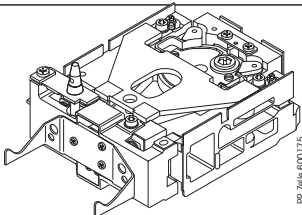
11103800

PB403-S

11103806



B-S 300 g Zelle

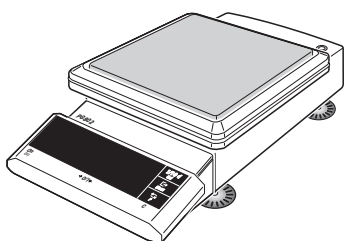
Laboratory balance	Type	Measuring cell Order No.	
	B502-S, B2002-S B3001-S PB602-S PB1501-S, PB1502-S PB3001-S PB3002-S PB3002-SDR PB3002-S-A-DR	11103801	 B.S. B kg Zelle
	PB4002-S	11103804	
	GB6001-S PB5001-S PB8000-S, PB8001-S	11103802	
	PG203 PG503 PG503DR	600175 (conventional cell, TDNR: xxx 20 xxx)	 PR Zelle 600175
	PG803	225634 (conventional cell, TDNR: xxx 65 xxx) or 1)	
	PG203 PG503 PG503DR	225660 (Monobloc cell, TDNR: xxx 71 xxx)	 PR Monozelle Lab v. v
	PG803	225767 (Monobloc cell, TDNR: xxx 73 xxx)	
	PG502 PG802 PG2002	600186 (conventional cell, TDNR: xxx 25 xxx) or 1)	 PR Zelle 600175
		225661 (Monobloc cell, TDNR: xxx 72 xxx)	

Laboratory balance

(Exception: (Ind) = Industry balance)

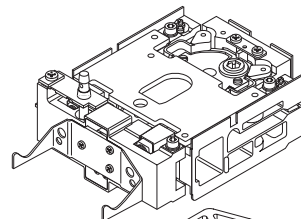
Type**Measuring cell**

Order No.



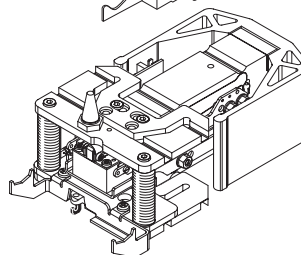
PG3001/E (Ind)
PG5002
PG5002DR

600180
(conventional
cell,
TDNR: xxx**26**xxx)



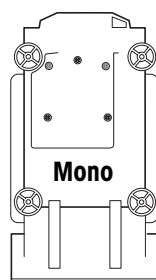
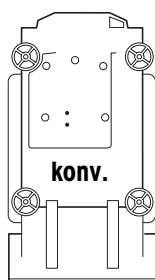
or 1)

225662
(Monobloc cell,
TDNR: xxx**68**xxx)

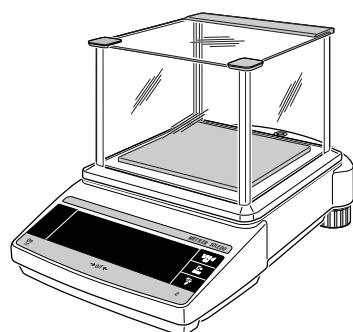


PR Monozelle Lab v. v.

1) Distinguishing balances
with conventional or
monobloc cell :



R-Waage v. unten

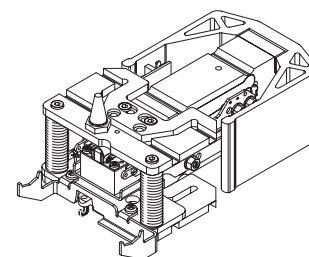


PG203-S
PG403-S
PG403-SDR
PG503-S
PG503-SDR

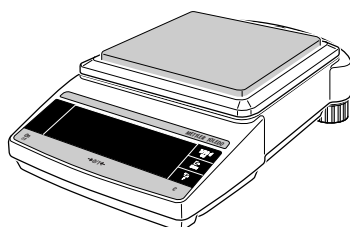
225660

PG603-S
PG603-S DR
PG1003-S

225767



PR Monozelle Lab v. v.



PG802-S
PG2002-S
PG2002-SDR

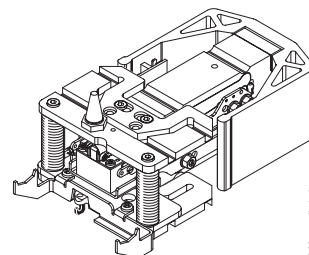
225661

PG3001-S/E (Ind)
PG4002-S
PG4002-SDR
PG5002-S
PG5002-SDR

225662

PG6002-S
PG6002-SDR

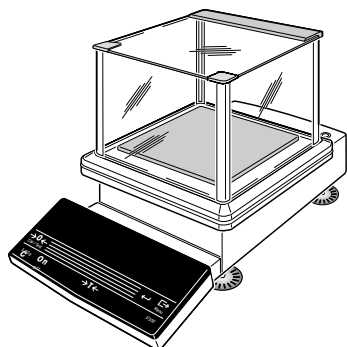
225631



PR Monozelle Lab v. v.

Laboratory balance

Type

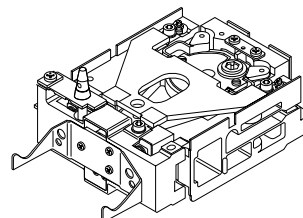
Measuring cell
Order No.

PR203
PR503
PR503DR

600175
(konv. Zelle,
TDNR: xxx**20**xxx)

PR803
PR1203

225634
(konv. Zelle,
TDNR: xxx**65**xxx)



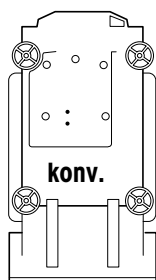
PR Zelle 600175

PR2003
PR2003DR

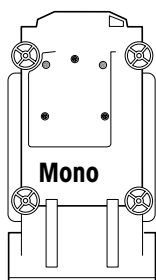
225633
(konv. Zelle,
TDNR: xxx**66**xxx)

oder

Distinguishing balances with
conventional or monobloc cell :



konv.



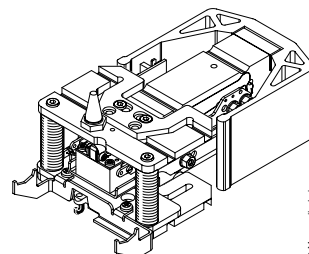
Mono

PR203
PR503
PR503DR, PR504DR

225660
(Monobloc-Zelle,
TDNR: xxx**71**xxx)

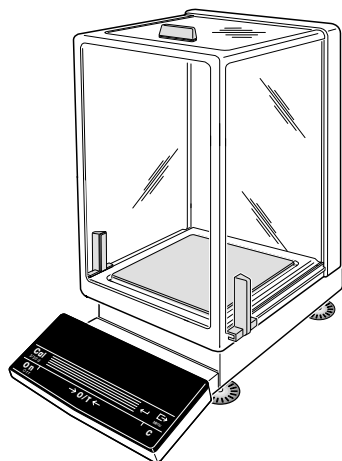
PR803
PR1203
PR2003
PR2003DR

225767
(Monobloc-Zelle,
TDNR: xxx**73**xxx)



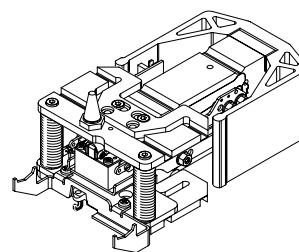
PR Monobloc-Zelle v. v.

R-Montage v. unten



PR5003
PR5003DU (DualRange)

225632
225766



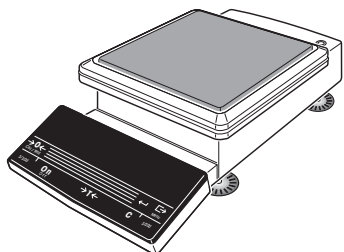
PR Monobloc-Zelle v. v.

Laboratory balance

Type

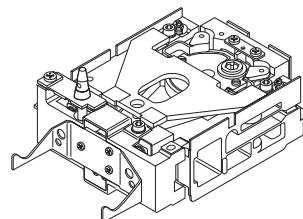
Measuring cell

Order No.



PR502
PR802
PR2002

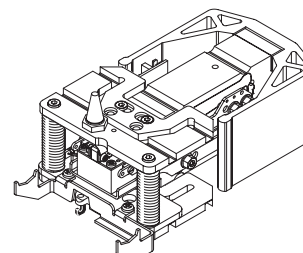
600186
(conventional
cell,
TDNR: xxx**25**xxx)



PR 2002 600175

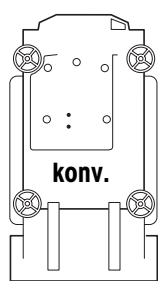
or

225661
(monobloc cell,
TDNR: xxx**72**xxx)

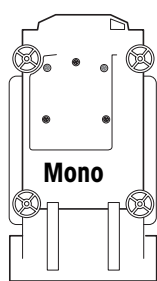


PR Monozelle Lab v. v.

Distinguishing balances with
conventional or monobloc cell :



konv.

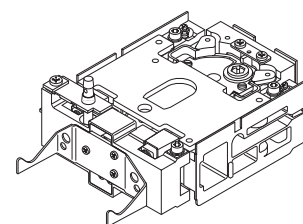


Mono

R-Wage v. unten

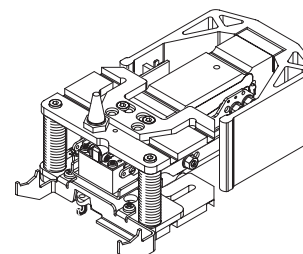
PR5002
PR5002DR
PR3001/E (Ind)
PR5001-C (Ind)

600180
(conventional
cell,
TDNR: xxx**26**xxx)

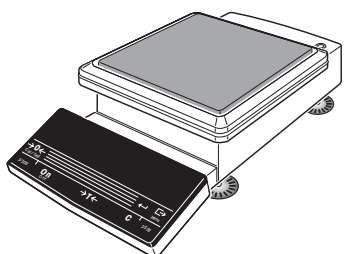


or

225662
(monobloc cell,
TDNR: xxx**68**xxx)

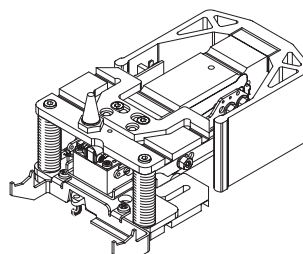


PR Monozelle Lab v. v.



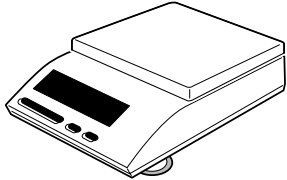
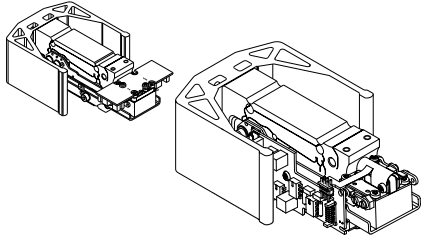
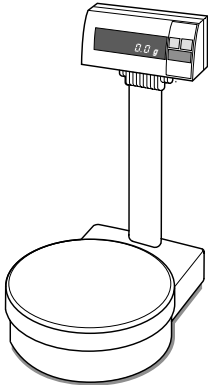
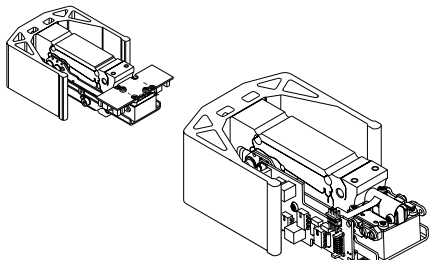
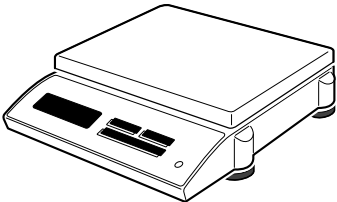
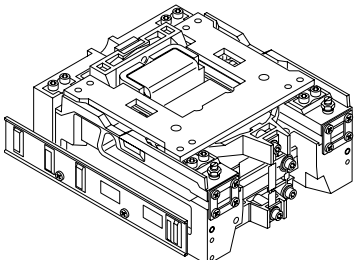
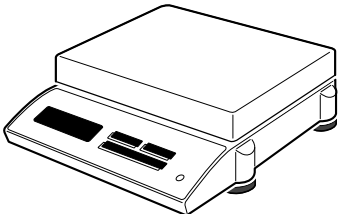
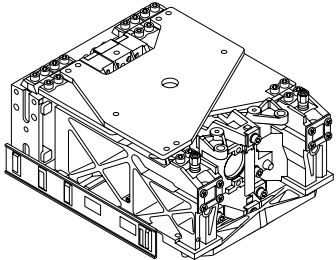
PR8002
PR8002DR

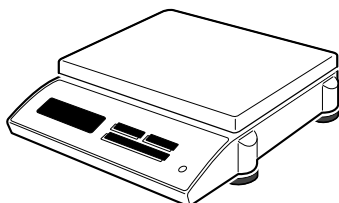
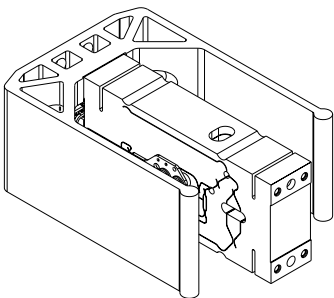
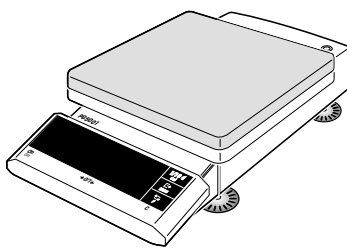
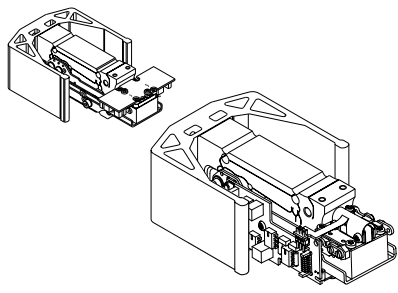
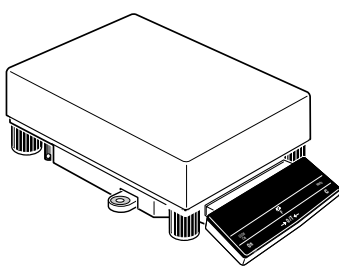
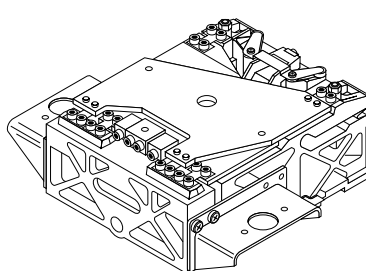
225631



PR Monozelle Lab v. v.

2.2 Industrial balances

Industrial balance (Exceptions: (Lab) = Laboratory balance)	Type	Measuring cell Order no.	
	PB5001	600156	
	PB8001		
	PB8000		
	GB6001 (Lab)		
	GL3DR		
	GL8		
	PZ7001-F	600156	
	GL8R		
 With conventional measuring cell	SB8001	625039	
	SB12001	TDNR:	
	SB16001	xxxxxxx0	
	SB16001 DR	up to SNR:	
	SB8000	201421xxxx	
	SB16000		
	GB16001 (Lab)		
	GL16DR		
 With conventional measuring cell	SB24001 DR	625037	
	SB32001 DR	TDNR:	
	SB32000	xxxxxxx0	
	GL32DR	up to SNR:	
		201421xxxx	

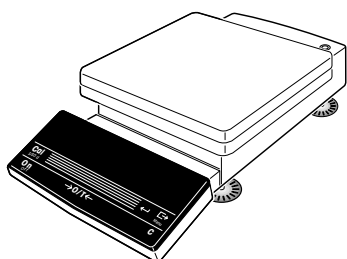
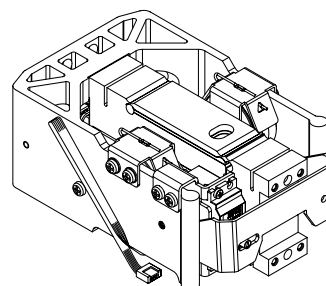
Industrial balance	Type	Measuring cell Order no.	
 With monobloc measuring cell	SB8001	21300933	
	SB12001	TDNR:	
	SB16001	xxxxxxx1	
	SB16001 DR	as of SNR:	
	SB8000	201421xxxx	
	SB16000		
	GB16001 (Lab)		
	GL16DR		
	SB240001 DR		
	SB32001 DR		
	SB32000		
	GL32DR		
	PG3001 (Noncertified)	600156	
	PG5001		
	PG8000		
	PG8001		
		up to SNR: 201617xxxx	
	SG8001	21200131	
	SG16000		
	SG16001		
	SG16001DR		
	SG32000	21200132	
	SG32001DR		
	SG32001	21200138	

Industrial balance

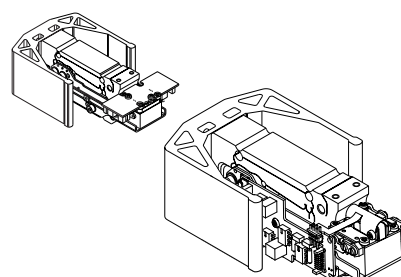
Type

Measuring cell
Order no.

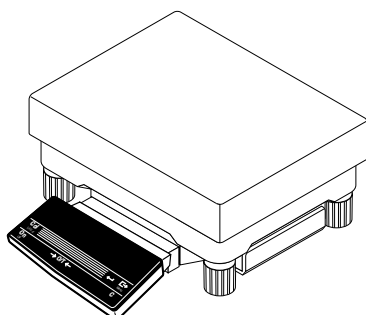
SG8001 21202541
 SG16000 (Monobloc cell
 SG16001 TDNR: xxx xxx)
 SG16001DR as of SNR:
 SG32000 201617xxxx
 SG32001
 SG32001DR



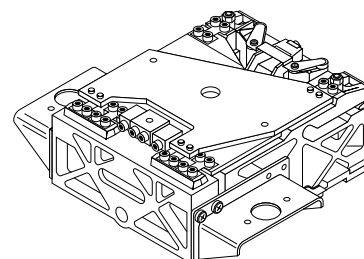
PR3001 (Noncertified) 600156
 PR5001 (Monobloc cell
 PR8000 TDNR: xxx xxx)
 PR8001



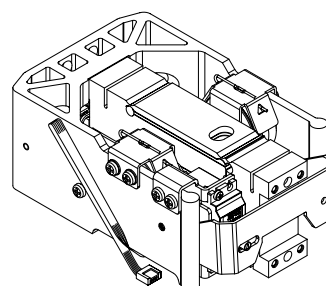
Mono II, Flex

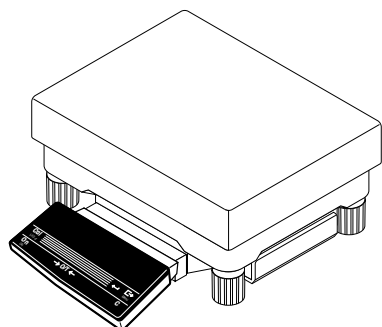
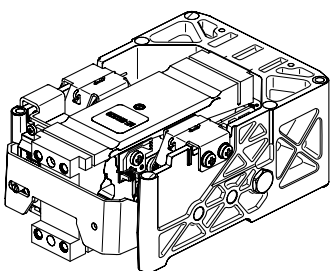
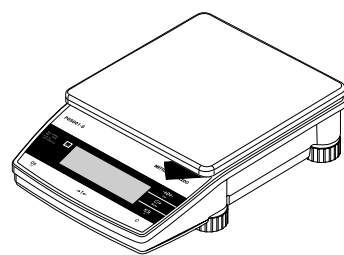
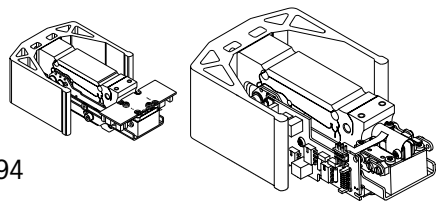


up to SNR: 201617xxxx
 S/SR8001 21200131
 S/SR16000
 S/SR16001
 S/SR16001DR
 S/SR32000 21200132
 S/SR32001DR
 S/SR32001 21200138



S/SR8001 21202541
 S/SR16000 (Monobloc cell
 S/SR16001 TDNR: xxx xxx)
 S/SR16001DR as of SNR:
 S/SR32000 201617xxxxx
 S/SR32001
 S/SR32001DR

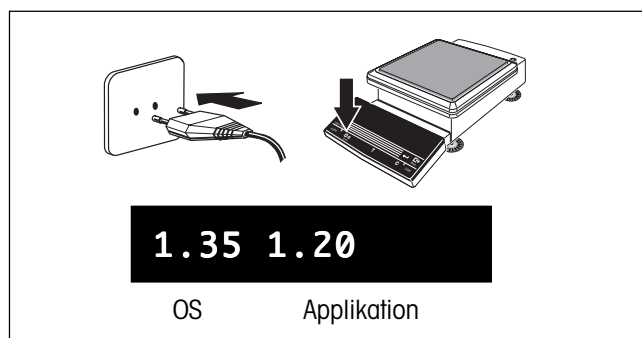


Industrial balance	Type	Measuring cell Order no.
	S/SR64000	11102159
	S/SR64001	
	S/SR64001DR	
		 SR64001 Zelle
	PG3001-S*	600156
	PG5001-S	
	PG8001-S	
	PG8000-S	
	PG12001-S	21202694
	PG12001-S DR	
		 Mono M. Fix
	* Noncertifiable model (certifiable PG3001-S, see Lab balances)	

3. Software version overview

3.1 How do I determine the current software version?

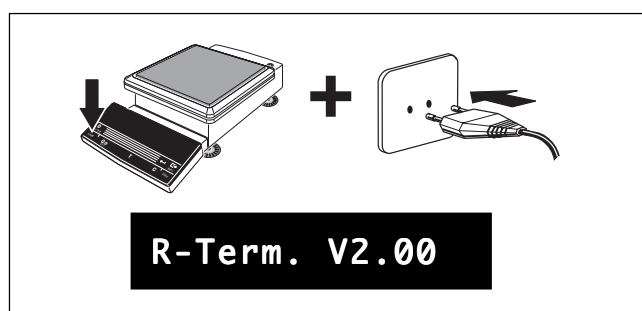
3.1.1. Balance software



- Plug in balance.
- Wait until the balance shows "OFF".
- Press "On".

The balance displays the versions of the balance operating system (OS) and balance program (application).

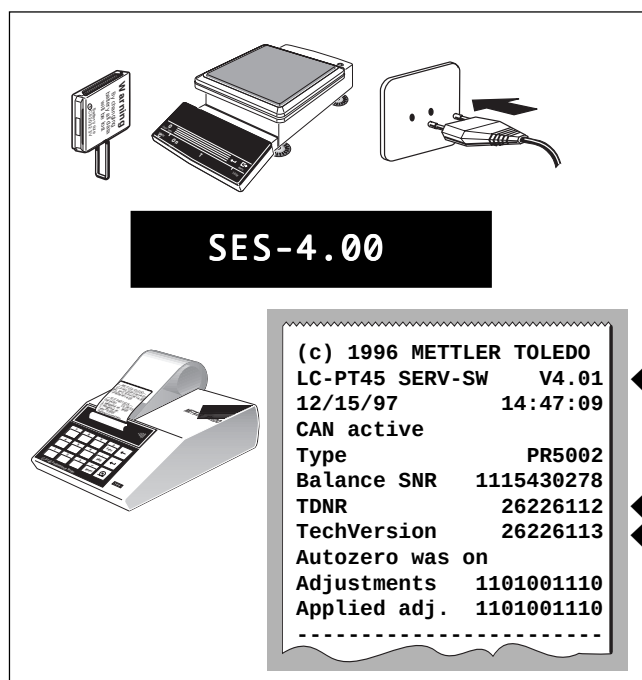
3.1.2 PR terminal software



- Press and hold "1/10d".
- Connect balance to power supply.

The balance displays the version of the terminal software.

3.1.3 Software for servicing the balance and TDNR



- Insert service cassette in the balance.
- Connect balance to power supply.

The balance displays the version of the balance service software.

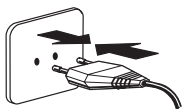
- Switch on the LC-PT45 connected to the balance.
With B/G/R balances it prints the
– version of the LC-PT45 service software

- the original TDNR of the balance
- the current TDNR (TechVersion) of the balance



(Details → [page 6-5](#))

3.1.4 HG/HR Moisture Analyzer software



Disconnect the Moisture Analyzer from the power supply and connect it again

OFF

Wait until „OFF“ appears

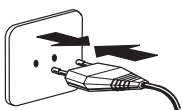
on
off

Press on/off again

1.000

The Moisture Analyzer shows the version of its program (OS/Application/Service)

3.1.5 HB Moisture Analyzer-Software



Disconnect the Moisture Analyzer from the power supply and connect it again

8888888
0.55

The Moisture Analyzer shows the version of its program (OS/Application/Service)

3.2 Software of the PR balances

Suitable software combinations on update

Various software modifications have been made to the PR balance family since the market launch. As the backward compatibility is not always assured, certain rules must be followed in the combination. In the lists below, several update possibilities are recommended which allow faultless operation of the balances.

Software generation 1: Terminal with combined →O/T← key.

Initial configuration				→	Update			
Terminal	OS	Program cassette	TDNR		Terminal	OS	Program cassette	TDNR
1.97	1.12	1.00	...0		1.98	1.50	1.11	...2/3 1)
1.98	1.12	1.00/1.10	...0		1.98	1.50	1.11	...2/3 1)
1.98	1.20	1.11	...0		1.98	1.50	1.11	...2/3 1)

Software generation 2: from here on, terminal with →O← and →T← key

Initial configuration				→	Update			
Terminal	OS	Program cassette	TDNR		Terminal	OS	Program cassette	TDNR
2.00	1.20	1.20	...0/1		2.00	1.50	1.20 2)	...2/3
2.00	1.35	1.20	...1		2.00	1.50	1.20 2)	...2/3

Software generation 3: Terminal for Japanese, Russian and é, à, â, ñ ...

Initial configuration				→	Update			
Terminal	OS	Program cassette	TDNR		Terminal	OS 3)	Program cassette	TDNR
2.10	1.50	1.20	...2		2.10	1.61	≥ 1.41	...2/3 4)
2.10	≥ 2.50	1.20/30	...2/3		2.10	2.61	≥ 1.41	 0 5)

Notes

Terminal: The terminal software is soldered in. On update, the display board (and with software generation 1 also the membrane keypad) must be changed.

OS EPROM and program cassette: they are plugged into the balance board and can be changed.

TDNR: last digit of the TDNR. Update of the type data using LC-PT45 → [page 7-5](#).

Necessity of an update, variations

A software update is necessary only when an old balance is equipped with new spare parts and there is no backward compatibility. The balances of generation 1 and 2 can be brought fully up to date by modifying them in the manner described for generation 3. For generations 1... 3 all the technical versions of the balance board 225490 can be used (backward compatibility).

1) Enter serial number if necessary.

2) A program cassette version ≥ 1.30 can also be used. However, terminal software 2.00 offers no

- selection of Japanese and Russian languages
- lowercase letters such as é, à, â, ñ ...
- string entry with external keyboard with RS output (only a character can be entered)
- combined entry of special characters together with numbers, on alphanumeric entry.

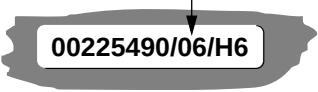
3) - OS 2.50: for balances with more than 500 000 points resolution (e.g. PR803, PR1203).

- For OS ≥ 1.50/2.50, the highest TDNR ...2/3/x is recommended.

4) - For balances with conventional cell. 5) For balances with monobloc cell.

Software generation 4:

New software (OS) with new signal processing and additional compensation functions. Plus new application software with up to 20 updates / second at the interface. A software update is only possible, if the balance board has a **technical level** of ≥ 06 (see yellow sticker).



00225490/06/H6

Initial configuration				→	Update			
Terminal	OS	Program cassette	TDNR		Terminal	OS	Program cassette	TDNR 6)
2.10	≥ 1.60	≥ 1.50	alt		2.10	≥ 1.70	≥ 1.60	new

Balances with monobloc measuring cell: suitable configuration of hard and software 7)

Tech. level (TS) balance board	OS	Program cassette	TDNR 6)	Remarks
< 6	$\leq 1.61 / 2.61$	≤ 1.54	old	✓ recommended
< 6	$\leq 1.61 / 2.61$	≤ 1.54	new	OK, but not optimum TDNR
< 6	$\leq 1.61 / 2.61$	≥ 1.60	old	recommended, but no 20 updates (wrong TS)
< 6	$\leq 1.61 / 2.61$	≥ 1.60	new	OK, but no 20 updates and no optimum TDNR (wrong TS)
< 6	≥ 1.70	≤ 1.54	old or new	not recommended (wrong TS)
< 6	≥ 1.70	≥ 1.60	old or new	not recommended (wrong TS)
≥ 6	$\leq 1.61 / 2.61$	≤ 1.54	old	✓ recommended
≥ 6	$\leq 1.61 / 2.61$	≤ 1.54	new	o.k., but not optimum TDNR
≥ 6	$\leq 1.61 / 2.61$	≥ 1.60	old	✓ recommended
≥ 6	$\leq 1.61 / 2.61$	≥ 1.60	new	o.k., but not optimum TDNR
≥ 6	≥ 1.70	≤ 1.54	old	o.k., but not optimum TDNR
≥ 6	≥ 1.70	≤ 1.54	new	✓ recommended
≥ 6	≥ 1.70	≥ 1.60	old	o.k., but not optimum TDNR
≥ 6	≥ 1.70	≥ 1.60	new	✓ recommended

Overview of TDNR versions

cell type (TDNR)	TDNR old	TDNR new
xxx67xxx	...2	...2
xxx68xxx	...0/1/2	...0/1/2 8)
xxx71xxx	...0/1	$\geq$...2
xxx72xxx	...0/1	...0/1 8)

6) see table at left (Overview of TDNR versions)

7) Balances with conventional cell have been delivered with a balance board with TS < 6 and can therefore not be equipped with the OS 1.70.

8) equivalent TDNR see list page 1-39

4. Allocation of the type definition numbers TDNR to the balance types

4.1 Explanation of the type designations of the TDNR list (following pages)

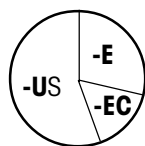
Examples

AB204DR = DeltaRange balance, AB204/E = certified balance without country allocation, AB204/E-US = certified balance USA, AB204-A/E-HK = Apothecary balance, certified, with weight units for Hong Kong, PG5002-S = PG with different construction.

Arrangement of the type designation

	Type	Range+Readability	Construction	DR	-Modification	/Certified balance	-Additional information
				DeltaRange			
Arrangement	AB	204		DR			
in above	AB	204				/E	
examples	AB	204				/E	-US
	AB	204			-A	/E	-HK
	PG	5002					-S

B/G/R certified balance versions, e.g. GB1302/E-US, CB 1503DR/E-E or AB104/E



-US = Certified balance USA

-E = Certified balance European Union

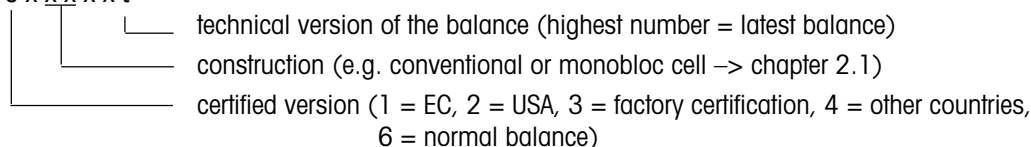
-EC or O = Certified balance of other countries (Switzerland, Canada, Australia, Chechnya, Slovakia, Hungary)

- = Certified balance without country allocation

Obscure type designations

The space for the type designation in the TDNR list is restricted to 12 or 10 characters. For this reason it was often not possible to include all required information in the type designation or to adhere exactly to arrangement shown in the above scheme. In such cases, the TDNR itself has to be enlisted.

TDNR: x e x x x x t



Examples

What are the differences between the 4 balances GB3002DR/E-E in the TDNR list?

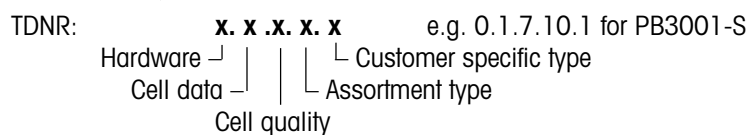
GB3002DR/E-E 21624710 -> certified balance EC

GB3002DR/E-E 21624711 -> certified balance EC, latest technical version of the balance

GB3002DR/E-E 24624710 -> certified balance, other countries

GB3002DR/E-E 246**6**3710 -> certified balance, other countries, monobloc cell

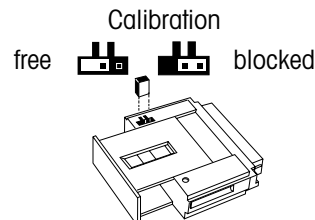
New structure of TDNR (since B-S balances, introduced for efficient software handling)



AM/BB/CB/CM/PM/SM/J certified balance versions, e.g. AJ100.10

The TDNRs of these older certified balances have an x at the 2nd and 3rd positions in the TDNR list. Here, the current national code must be inserted. Thanks to the harmonization of metrological legislation in the EU, it is necessary to distinguish only between two codes.

xx = **23** → Certified balance with free calibration possibility (class I)
 xx = **13** → Certified balance with blockable or internal calibration (class II)

**Example**

TDNR list: PM1200 1**xx**11010 → Certified balance
 derived: PM1200 1**235**1010 → CLASS I with free calibration
 PM4000 1**xx**05010 → Certified balance
 PM4000 11305010 → with blockable calibration

Key**Type, range + readability**

AB104 — 100 g range, readable to 4 decimal places

└── B = Basic Line, G = Standard Line, R = Professional Line

└── A = Analytical balance, C = Carat scale, G = Gold scale, P = Precision balance, S = Industrial scale

B College Line. e.g. B154

GL Gastro Line; special balance line for gastronomy, based on B/PZ and DigiTOL balances, e.g. GL8

S Balance "solo", i.e. without terminal, e.g. S16000

PZ Special B balances for automotive paint shop branch (Color Line), e.g. PZ7001-F.

Construction, e.g. PG5002-S

-S PG with new housing (in one piece, 2 instead of 4 leveling feet)

Modification, e.g. AB204-A

-A Apothecary balance, special balance types for pharmacy applications, derived from the B balances.

-C Countwaage (small reference weights)

-DYN for dynamic weighing (animal balance)

-F Paint scale; special scale types for the automotive paint shop branch (Color Line), derived from the B and PZ balances

-FI Paint scale for Italy, special type (Color Line)

-FM Paint scale for Brazil, special type (Color Line)

-FP Paint scale for PPG company, special type (Color Line)

-FPU Paint scale for PPG USA company, special type (Color Line)

-FS Paint scale solo (without display), special type (Color Line)

-FSC Paint scale solo, special type (Color Line) for Connex

-G Gold scale, e.g. PG5002-G (difference to basic type smaller as for GB)



-Q Quick S bridge

Additional information, e.g. AB204-A-HK

-HK Special type for Hong Kong

-KOR Special type for Korea

-MR MultiRange (Gastro line)

-S Special type for India (fine range)

-SING Special type for Singapore

-TW Special type for Taiwan

4.2 Contents of the LC-PT45 type EPROM (service software V 4.90)

M balances, sorted by balance type. Explanation of the designations see corresponding service manual!

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
AJ100.00	10051010	PJ400.10	1xx53040	PM34.10	1xx30030
AJ100.10	1xx51010	PJ4000.00	10054040	PM400.00	10003010
AJ150.00	10022010	PJ4000.10	1xx54040	PM400.10	1xx03010
AJ150.10	1xx22010	PJ6.00	10054060	PM4000.00	10005010
AM100.00	10021010	PJ6.10	1xx54060	PM4000.10	1xx05010
AM100.10	1xx21010	PJ600.00	10053050	PM460.00	10003030
AM260.00	10023010	PJ600.10	1xx53050	PM460.10	1xx03030
AM260.10	1xx23010	PJ6000.00	10054050	PM4600.00	10005030
AM50.00	10021020	PJ6000.10	1xx54050	PM4600.10	1xx05030
AM50.10	1xx21020	PM100.00	10002020	PM480.00	10003020
BB120.00	10072020	PM100.10	1xx02020	PM480.10	1xx03020
BB1200.00	10073040	PM11-K	10036030	PM4800.00	10005020
BB1300.00	10073030	PM11-K	1xx36030	PM4800.10	1xx05020
BB240.00	10071010	PM11-N	10031030	PM6.00	10006020
BB2400.00	10073010	PM11-N	1xx31030	PM6.10	1xx06020
BB244.00	10071020	PM11.10 4)	1xx31030	PM600.00	10004020
BB2440.00	10073020	PM11.00 3)	10030010	PM600.10	1xx04020
BB3.00	10074020	PM11.00 4)	10031030	PM6000.00	10006010
BB300.00	10072010	PM11.10 3)	1xx30010	PM6000.10	1xx06010
BB3000.00	10074010	PM1200.00	10011010	PM6100.00	10013010
BB600.00	10073050	PM1200.10	1xx11010	PM6100.10	1xx13010
CJ150.00	10052010	PM15-K	10036020	SM12	10043060
CJ150.10	1xx52010	PM15-K	1xx36020	SM12	1xx43060
CJ500.00	10052020	PM15.00	10031020	SM12	10043040
CJ500.10	1xx52020	PM15.10	1xx31020	SM12	1xx43040
CM1200.00	10014010	PM16-K	10036010	SM12.00 1)	10040010
CM1200.10	1xx14010	PM16-K	1xx36010	SM12.00 2)	10043040
CM200.00	10021030	PM16.00	10031010	SM12.10 1)	1xx40010
CM200.10	1xx21030	PM16.10	1xx31010	SM12.10 2)	1xx43040
CM2000.00	10007030	PM200.00	10002010	SM1220	10043050
CM2000.10	1xx07030	PM200.10	1xx02010	SM1220	1xx43050
CM400.00	10003050	PM2000.00	10004010	SM1220.00 1)	10040020
CM400.10	1xx03050	PM2000.10	1xx04010	SM1220.00 2)	10043050
PJ12.00 1)	10061010	PM2100.00	10007010	SM1220.10 1)	1xx40020
PJ12.00 2)	10062020	PM2100.10	1xx07010	SM1220.10 2)	1xx43050
PJ12.10 1)	1xx61010	PM2500.00	10007020	SM15.00	10043030
PJ12.10 2)	1xx62020	PM2500.10	1xx07020	SM15.10	1xx43030
PJ1220.00 1)	10061020	PM30-K	10034030	SM15000	10043010
PJ1220.00 2)	10062030	PM30-K	1xx34030	SM15000	1xx43010
PJ1220.10 1)	1xx61020	PM30-N	10035020	SM1520.00	10043020
PJ1220.10 2)	1xx62030	PM30-N	1xx35020	SM1520.10	1xx43020
PJ15.00	10062010	PM30.00	10030040	SM3000.00	10041020
PJ15.10	1xx62010	PM30.10	1xx30040	SM3000.10	1xx41020
PJ200.00	10053010	PM300.00	10003040	SM3600.00	10041030
PJ200.10	1xx53010	PM300.10	1xx03040	SM3600.10	1xx41030
PJ2000.00	10054010	PM3000.00	10012010	SM6000.00	10041010
PJ2000.10	1xx54010	PM3000.10	1xx12010	SM6000.10	1xx41010
PJ300.00	10053020	PM30000	10030020		
PJ300.10	1xx53020	PM30000-K	1xx30020		
PJ3000.00	10054020	PM30000-K	10032010		
PJ3000.10	1xx54020	PM34-K	1xx32010		
PJ360.00	10053030	PM34-K	10032020		
PJ360.10	1xx53030	PM34-K	1xx32020		
PJ3600.00	10054030	PM34-N	10035010		
PJ3600.10	1xx54030	PM34-N	1xx35010		
PJ400.00	10053040	PM34.00	10030030		

Notes

- 1) with 12 kg cell No. 34204/V
- 2) with 15 kg cell No. 34501/V or 626075
- 3) with cell No. 56580/V
- 4) 16 kg cell No. 625014

M balances, sorted by TDNR.

Explanation of the designations see corresponding service manual!

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
1xx02010	PM200.10	1xx53010	PJ200.10	10040010	SM12.00 1)
1xx02020	PM100.10	1xx53020	PJ300.10	10040020	SM1220.00 1)
1xx03010	PM400.10	1xx53030	PJ360.10	10041010	SM6000.00
1xx03020	PM480.10	1xx53040	PJ400.10	10041020	SM3000.00
1xx03030	PM460.10	1xx53050	PJ600.10	10041030	SM3600.00
1xx03040	PM300.10	1xx54010	PJ2000.10	10043010	SM15000
1xx03050	CM400.10	1xx54020	PJ3000.10	10043020	SM1520.00
1xx04010	PM2000.10	1xx54030	PJ3600.10	10043030	SM15.00
1xx04020	PM600.10	1xx54040	PJ4000.10	10043040	SM12.00 2)
1xx05010	PM4000.10	1xx54050	PJ6000.10	10043040	SM12
1xx05020	PM4800.10	1xx54060	PJ6.10	10043050	SM1220.00 2)
1xx05030	PM4600.10	1xx61010	PJ12.10 1)	10043050	SM1220
1xx06010	PM6000.10	1xx61020	PJ1220.10 1)	10043060	SM12
1xx06020	PM6.10	1xx62010	PJ15.10	10051010	AJ100.00
1xx07010	PM2100.10	1xx62020	PJ12.10 2)	10052010	CJ150.00
1xx07020	PM2500.10	1xx62030	PJ1220.10 2)	10052020	CJ500.00
1xx07030	CM2000.10	10002010	PM200.00	10053010	PJ200.00
1xx11010	PM1200.10	10002020	PM100.00	10053020	PJ300.00
1xx12010	PM3000.10	10003010	PM400.00	10053030	PJ360.00
1xx13010	PM6100.10	10003020	PM480.00	10053040	PJ400.00
1xx14010	CM1200.10	10003030	PM460.00	10053050	PJ600.00
1xx21010	AM100.10	10003040	PM300.00	10054010	PJ2000.00
1xx21020	AM50.10	10003050	CM400.00	10054020	PJ3000.00
1xx21030	CM200.10	10004010	PM2000.00	10054030	PJ3600.00
1xx22010	AJ150.10	10004020	PM600.00	10054040	PJ4000.00
1xx23010	AM260.10	10005010	PM4000.00	10054050	PJ6000.00
1xx30010	PM11.10 3)	10005020	PM4800.00	10054060	PJ6.00
1xx30020	PM30000	10005030	PM4600.00	10061010	PJ12.00 1)
1xx30030	PM34.10	10006010	PM6000.00	10061020	PJ1220.00 1)
1xx30040	PM30.10	10006020	PM6.00	10062010	PJ15.00
1xx31010	PM16.10	10007010	PM2100.00	10062020	PJ12.00 2)
1xx31020	PM15.10	10007020	PM2500.00	10062030	PJ1220.00 2)
1xx31030	PM11.10 4)	10007030	CM2000.00	10071010	BB240.00
1xx31030	PM11-N	10011010	PM1200.00	10071020	BB244.00
1xx32010	PM30000-K	10012010	PM3000.00	10072010	BB300.00
1xx32020	PM34-K	10013010	PM6100.00	10072020	BB120.00
1xx34030	PM30-K	10014010	CM1200.00	10073010	BB2400.00
1xx35010	PM34-N	10021010	AM100.00	10073020	BB2440.00
1xx35020	PM30-N	10021020	AM50.00	10073030	BB1300.00
1xx36010	PM16-K	10021030	CM200.00	10073040	BB1200.00
1xx36020	PM15-K	10022010	AJ150.00	10073050	BB600.00
1xx36030	PM11-K	10023010	AM260.00	10074010	BB3000.00
1xx40010	SM12.10 1)	10030010	PM11.00 3)	10074020	BB3.00
1xx40020	SM1220.10 1)	10030020	PM30000		
1xx41010	SM6000.10	10030030	PM34.00		
1xx41020	SM3000.10	10030040	PM30.00		
1xx41030	SM3600.10	10031010	PM16.00		
1xx43010	SM15000	10031020	PM15.00		
1xx43020	SM1520.10	10031030	PM11.00 4)		
1xx43030	SM15.10	10031030	PM11-N		
1xx43040	SM12.10 2)	10032010	PM30000-K		
1xx43040	SM12	10032020	PM34-K		
1xx43050	SM1220.10 2)	10034030	PM30-K		
1xx43050	SM1220	10035010	PM34-N		
1xx43060	SM12	10035020	PM30-N		
1xx51010	AJ100.10	10036010	PM16-K		
1xx52010	CJ150.10	10036020	PM15-K		
1xx52020	CJ500.10	10036030	PM11-K		

Notes

- 1) with 12 kg cell No. 34204/V
 2) with 15 kg cell No. 34501/V
 or 626075
 3) with cell No. 56580/V
 4) 16 kg cell No. 625014

B/G/R balances, sorted by balance type. Explanation of the designations see [page 1-35!](#)

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
AB104	26312120	AG204DR	26415131	BP3260DR	36431130
AB104	26312122	AG204DR	26415132	BP3260DR	36431131
AB104	26377120	AG204DRE	21415130	BP3260DR/E	32431130
AB104/E	21312120	AG204DRE	21415131	BP3260DR/E	32431131
AB104/E-EC	21312122	AG204DRE	21415132	BP5000	36328120
AB104/E-EC	21377120	AG204E	21215120	BP5000/E	32328120
AB104/E-EC	24312122	AG204E	21215121	BP8000	36228110
AB104/E-EC	24377120	AG204E	21215122	BP8000/E	32228110
AB104/E-US	22312122	AG245	26115110	CB103-EC	26914612
AB104/E-US	22377120	AG245	26115111	CB103-EC	26976610
AB184/E-A3	21312560	AG245	26115112	CB1503DR/E-E	21622613
AB184/E-A3	21377560	AG245E	21115110	CB1503DR/E-E	21622614
AB204	26212110	AG245E	21115111	CB1503DR/E-E	21676610
AB204	26212112	AG245E	21115112	CB1503DR/E-E	24622613
AB204	26277110	B1302	26523500	CB1503DR/E-E	24622614
AB204/E	21212110	B1302	26523501	CB1503DR/E-E	24676610
AB204/E-A	21212550	B1302	26562500	CB1503DR/E-U	22622604
AB204/E-A	21212552	B154	26512500	CB1503DR/E-U	22622605
AB204/E-A	21277550	B154	26512502	CB1503DR/E-U	22676600
AB204/E-EC	21212112	B154	26577500	CB1503DR-EC	26622613
AB204/E-EC	21277110	B3001	26824500	CB1503DR-EC	26622614
AB204/E-EC	24212112	B3001	26824501	CB1503DR-EC	26676610
AB204/E-EC	24277110	B3001	26863500	CB203/E-EC	21714610
AB204/E-US	22212112	B3002DR	26624500	CB203/E-EC	21714612
AB204/E-US	22277110	B3002DR	26624501	CB203/E-EC	21776610
AB54	26512132	B3002DR	26663500	CB203/E-EC	24714612
AB54	26513110	B303	26419500	CB203/E-EC	24776610
AB54	26513111	B303	26419501	CB203/E-US	22714603
AB54	26577130	B303	26476500	CB203/E-US	22776600
AB54/E	21513110	B32000-PNG	21634180	CB203-EC	26714612
AB54/E-EC	21512132	B502	26723500	CB203-EC	26776610
AB54/E-EC	21513111	B502	26723501	CB603/E-EC	21414612
AB54/E-EC	21577130	B502	26762500	CB603/E-EC	21476610
AB54/E-EC	24512132	BP12000	36330120	CB603/E-EC	24414612
AB54/E-EC	24577130	BP12000	36531120	CB603/E-EC	24476610
AB54/E-US	22512132	BP12000/E	32330120	CB603/E-US	22414603
AB54/E-US	22513111	BP12000/E	32531120	CB603/E-US	22476600
AB54/E-US	22577130	BP16000	36230110	CB603-EC	26414612
AG104	26210110	BP16000	36331110	CB603-EC	26476610
AG104	26210111	BP16000/E	32230110	CG1003	26315622
AG104	26210112	BP16000/E	32331110	CG1003E	24315622
AG104E	21210110	BP1630DR	36430140	CG1003E-US	22315622
AG104E	21210111	BP1630DR	36731140	CG13002-S	66217620
AG104E	21210112	BP1630DR/E	32430140	CG2502-S	66211620
AG14K	26210120	BP1630DR/E	32731140	CG2502-S/E	64211620
AG204	26215120	BP32	36631150	CG2502-S/E-US	62211620
AG204	26215121	BP32	36631151	CG503	26210610
AG204	26215122	BP32/E	32631150	GB1302/E-EC	21523710
AG204DR	26415130	BP32/E	32631151	GB1302/E-EC	21523711

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
GB1302/E-EC	21562710	GB16001-HK	26331720	GB3001-SING	26863730
GB1302/E-EC	24523711	GB16001-KOR	26330751	GB3001-TW	26824740
GB1302/E-EC	24562710	GB16001-KOR	26331750	GB3001-TW	26824741
GB1302/E-US	22523701	GB16001-SING	26330730	GB3001-TW	26863740
GB1302/E-US	22562700	GB16001-SING	26330731	GB3002/E-EC	21424710
GB1302-CN	66524710	GB16001-SING	26331730	GB3002/E-EC	21424711
GB1302-EC	26523710	GB16001-TW	26330740	GB3002/E-EC	21463710
GB1302-EC	26523711	GB16001-TW	26330741	GB3002/E-EC	24424711
GB1302-EC	26562710	GB16001-TW	26331740	GB3002/E-EC	24463710
GB1302-HK	26523720	GB2002/E-EC	21524710	GB3002/E-US	22424701
GB1302-HK	26523721	GB2002/E-EC	21524711	GB3002/E-US	22463700
GB1302-HK	26562720	GB2002/E-EC	21563710	GB3002-CN	66224710
GB1302-KOR	26523751	GB2002/E-EC	24524711	GB3002DR/E-E	21624710
GB1302-KOR	26562750	GB2002/E-EC	24563710	GB3002DR/E-E	21624711
GB1302-SING	26523730	GB2002/E-US	22524701	GB3002DR/E-E	21663710
GB1302-SING	26523731	GB2002/E-US	22563700	GB3002DR/E-E	24624711
GB1302-SING	26562730	GB2002-CN	66324710	GB3002DR/E-E	24663710
GB1302-TW	26523740	GB2002-EC	26524710	GB3002DR/E-U	22624701
GB1302-TW	26523741	GB2002-EC	26524711	GB3002DR/E-U	22663700
GB1302-TW	26562740	GB2002-EC	26563710	GB3002DR-EC	26624710
GB1501/E-EC	21823710	GB2002-HK	26524720	GB3002DR-EC	26624711
GB1501/E-EC	21823711	GB2002-HK	26524721	GB3002DR-EC	26663710
GB1501/E-EC	21862710	GB2002-HK	26563720	GB3002DR-HK	26624720
GB1501/E-EC	24823711	GB2002-KOR	26524751	GB3002DR-HK	26624721
GB1501/E-EC	24862710	GB2002-KOR	26563750	GB3002DR-HK	26663720
GB1501/E-US	22823701	GB2002-SING	26524730	GB3002DR-KOR	26624751
GB1501/E-US	22862700	GB2002-SING	26524731	GB3002DR-KOR	26663750
GB1501-EC	26823710	GB2002-SING	26563730	GB3002DR-SIN	26624730
GB1501-EC	26823711	GB2002-TW	26524740	GB3002DR-SIN	26624731
GB1501-EC	26862710	GB2002-TW	26524741	GB3002DR-SIN	26663730
GB1501-HK	26823720	GB2002-TW	26563740	GB3002DR-TW	26624740
GB1501-HK	26823721	GB204-EC	26412710	GB3002DR-TW	26624741
GB1501-HK	26862720	GB204-EC	26477710	GB3002DR-TW	26663740
GB1501-HK	26823751	GB204-KOR	26412752	GB3002-EC	26424710
GB1501-KOR	26862750	GB204-KOR	26477750	GB3002-EC	26424711
GB1501-SING	26823730	GB3001/E-EC	21824710	GB3002-EC	26463710
GB1501-SING	26823731	GB3001/E-EC	21824711	GB3002-HK	26424720
GB1501-SING	26862730	GB3001/E-EC	21863710	GB3002-HK	26424721
GB1501-TW	26823740	GB3001/E-EC	24824711	GB3002-HK	26463720
GB1501-TW	26823741	GB3001/E-EC	24863710	GB3002-KOR	26424751
GB1501-TW	26862740	GB3001/E-US	22824701	GB3002-KOR	26463750
GB16001/E-EC	21330710	GB3001/E-US	22863700	GB3002-SING	26424730
GB16001/E-EC	21330711	GB3001-CN	66624710	GB3002-SING	26424731
GB16001/E-EC	21331710	GB3001-EC	26824710	GB3002-SING	26463730
GB16001/E-EC	24330711	GB3001-EC	26824711	GB3002-TW	26424740
GB16001/E-EC	24331710	GB3001-EC	26863710	GB3002-TW	26424741
GB16001/E-US	22330701	GB3001-HK	26824720	GB3002-TW	26463740
GB16001/E-US	22331700	GB3001-HK	26824721	GB303-CN	66219710
GB16001-EC	26330710	GB3001-HK	26863720	GB303-EC	26419710
GB16001-EC	26330711	GB3001-KOR	26824751	GB303-EC	26476710
GB16001-EC	26331710	GB3001-KOR	26863750	GB303-KOR	26419751
GB16001-HK	26330720	GB3001-SING	26824730	GB303-KOR	26476750
GB16001-HK	26330721	GB3001-SING	26824731	GB6001/E-EC	21528710

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
GB6001/E-EC	21528711	GL8	26628550	PB1502/E-EC	24262110
GB6001/E-EC	24528711	GL8/E	21628550	PB1502/E-US	22223111
GB6001/E-US	22528701	GL8/E	22628550	PB1502/E-US	22262110
GB6001-EC	26528710	GL8/E	24628550	PB153	26319120
GB6001-EC	26528711	GL8MR/E	23428550	PB153	26319121
GB6001-HK	26528720	GL8R	26636550	PB153	26376120
GB6001-HK	26528721	GL8R/E	21636550	PB153/E	21319120
GB6001-KOR	26528751	GL8R/E	22636550	PB153/E-EC	21319121
GB6001-SING	26528730	GL8R/E	24636550	PB153/E-EC	21376120
GB6001-SING	26528731	HG53	26560800	PB153/E-EC	24319121
GB6001-TW	26528740	HG53/E	21560800	PB153/E-EC	24376120
GB6001-TW	26528741	HG53-HT	26560810	PB153/E-US	22319121
GB802/E-EC	21362710	HG53-HT/E	21560810	PB153/E-US	22376120
GB802/E-EC	24362710	HR73	26360800	PB3001	26624130
GB802/E-US	22362700	HR73/E	21360800	PB3001	26663130
GB802-CN	66724710	HR73-HT	26360810	PB3001/E	21624130
GB802-EC	26362710	HR73-HT/E	21360810	PB3001/E	21663130
GB802-HK	26362720	HR73-PPG	26360820	PB3001/E	22624130
GB802-KOR	26362750	Name	TDNR	PB3001/E	22663130
GB802-SING	26362730	OB12001	46235110	PB3001/E	24624130
GB802-TW	26362740	OB12001E	41235110	PB3001/E	24663130
GG4002-S	66515750	OB12001E	44235110	PB3002	26224110
GG4002-S/E	64515750	OB22001	46235120	PB3002	26224111
GG4002-S/E-US	62515750	OB32001	46235130	PB3002	26263110
GG4002-SDR	66415760	OB32001E	41235130	PB3002/E	21224110
GG4002-SDR/E	64415760	OB32001E	44235130	PB3002/E-EC	21224111
GG4002-SDR/E-U	62415760	OC12001	46237110	PB3002/E-EC	21263110
GL16DR	26430550	OC12001E	41237110	PB3002/E-EC	24224111
GL16DR	26731550	OC12001E	44237110	PB3002/E-EC	24263110
GL16DR/E	21430550	OC22001	46237120	PB3002/E-US	22224111
GL16DR/E	21731550	OC22001/E	41237120	PB3002/E-US	22263110
GL16DR/E	22430550	OC22001/E	44237120	PB3002DR	26424120
GL16DR/E	22731550	OC32001	46237130	PB3002DR	26424121
GL16DR/E	24430550	OC32001E	41237130	PB3002DR	26463120
GL16DR/E	24731550	OC32001E	44237130	PB3002DR/E	21424120
GL16MR/E	23331550	PB1501	26623160	PB3002DR/E-A	21424550
GL16MR/E	23430550	PB1501	26662160	PB3002DR/E-A	21424551
GL16MR/E	23731550	PB1501/E	21623160	PB3002DR/E-A	21463550
GL3/E	23728550	PB1501/E	21662160	PB3002DR/E-E	21424121
GL32DR	26431550	PB1501/E	22623160	PB3002DR/E-E	21463120
GL32DR	26431551	PB1501/E	22662160	PB3002DR/E-E	24424121
GL32DR/E	21431550	PB1501/E	24623160	PB3002DR/E-E	24463120
GL32DR/E	21431551	PB1501/E	24662160	PB3002DR/E-U	22424121
GL32DR/E	22431550	PB1501/E-A	21623550	PB3002DR/E-U	22463120
GL32DR/E	22431551	PB1501/E-A	21623551	PB3002DR-DYN	26424201
GL32DR/E	24431550	PB1501/E-A	21662550	PB3002DR-DYN	26463200
GL32DR/E	24431551	PB1502	26223110	PB302	26523150
GL32MR/E	23431550	PB1502	26223111	PB302	26523151
GL32MR/E	23431551	PB1502	26262110	PB302	26562150
GL3DR	26528550	PB1502/E	21223110	PB302-ZAG	26619150
GL3DR/E	21528550	PB1502/E-EC	21223111	PB302-ZAG	26676150
GL3DR/E	22528550	PB1502/E-EC	21262110	PB303	26219110
GL3DR/E	24528550	PB1502/E-EC	24223111	PB303	26219111

Balance type	TDNR
PB303	26276110
PB303/E	21219110
PB303/E-EC	21219111
PB303/E-EC	21276110
PB303/E-EC	24219111
PB303/E-EC	24276110
PB303/E-US	22219111
PB303/E-US	22276110
PB303DR	26419130
PB303DR	26419131
PB303DR	26476130
PB303DR/E	21419130
PB303DR/E-A	21419300
PB303DR/E-A	21419301
PB303DR/E-A	21476300
PB303DR/E-EC	21419131
PB303DR/E-EC	21476130
PB303DR/E-EC	24419131
PB303DR/E-EC	24476130
PB303DR/E-US	22419131
PB303DR/E-US	22476130
PB5000-PB	22628150
PB5001	26328120
PB5001/E	21328120
PB5001/E	22328120
PB5001/E	24328120
PB5001-F	26328300
PB5001-F/E	21328300
PB5001-F/E	22328300
PB5001-F/E	24328300
PB5001-IN	26328131
PB5001-S	26328130
PB602	26523130
PB602	26523131
PB602	26562130
PB602/E	21523130
PB602/E-EC	21523131
PB602/E-EC	21562130
PB602/E-EC	24523131
PB602/E-EC	24562130
PB602/E-US	22523131
PB602/E-US	22562130
PB7001-F	26328310
PB7001-F/E	21328310
PB7001-F/E	22328310
PB7001-F/E	24328310
PB8000	26628130
PB8000/E	21628130
PB8000/E	22628130
PB8000/E	24628130
PB8000-PPE	23628140
PB8001	26228110
PB8001/E	21228110

Balance type	TDNR
PB8001/E	22228110
PB8001/E	24228110
PB8001-C	26428180
PB8001-DYN	26228201
PB8001-IN	26228121
PB8001-S	26228120
PB8002DR-F	26428320
PB801	26723170
PB801	26762170
PB801/E	21723170
PB801/E	21762170
PB801/E	22723170
PB801/E	22762170
PB801/E	24723170
PB801/E	24762170
PG12001DR	66431110
PG12001DR/E-US ..	62431110
PG12001DRE	61431110
PG12001DRE	64431110
PG12001-S	66231110
PG12001-S/E-US ..	62231110
PG12001-SE	61231110
PG12001-SE	64231110
PG2002	66225110
PG2002	66272110
PG2002/E-EC	61225110
PG2002/E-EC	61272110
PG2002/E-O	64225110
PG2002/E-O	64272110
PG2002/E-US	62225110
PG2002/E-US	62272110
PG2002-S	66213110
PG2002-S/E-EC	61213110
PG2002-S/E-O	64213110
PG2002-S/E-US	62213110
PG203	66520130
PG203	66571131
PG203/E-EC	61520130
PG203/E-EC	61571131
PG203/E-O	64520130
PG203/E-O	64571131
PG203/E-US	62520130
PG203/E-US	62571131
PG203-S	66511131
PG203-S/E-EC	61511130
PG203-S/E-O	64511130
PG203-S/E-US	62511130
PG3000-S/E	61515210
PG3001	66529130
PG3001	66568130
PG3001/E	61526130
PG3001/E	61526131
PG3001/E	64526130

Balance type	TDNR
PG3001/E	64526131
PG3001/E-EC	61568131
PG3001/E-O	64568131
PG3001-S	66515200
PG3001-S	66530130
PG3001-S/E	61515200
PG3001-S/E	64515200
PG3001-S/E-US	62515200
PG3002-G	66326760
PG3002-G	66368760
PG3002-GDR	66726760
PG3002-GDR	66768760
PG3600DR	66726140
PG3600DR	66768140
PG5001	66329120
PG5001/E	61329120
PG5001/E	64329120
PG5001-S	66330120
PG5001-S/E	61330120
PG5001-S/E	64330120
PG5001-S/E-US	62330120
PG5002	66226110
PG5002	66268110
PG5002/E-EC	61226110
PG5002/E-EC	61268110
PG5002/E-O	64226110
PG5002/E-O	64268110
PG5002/E-US	62226110
PG5002/E-US	62268110
PG5002DR	66426120
PG5002DR	66468120
PG5002DR/E-E	61426120
PG5002DR/E-E	61468120
PG5002DR/E-O	64426120
PG5002DR/E-O	64468120
PG5002DR/E-U	62426120
PG5002DR/E-U	62468120
PG5002DR-A/E	61426590
PG5002DR-A/E	61468590
PG5002-G	66226760
PG5002-G	66268760
PG5002-GDR	66426760
PG5002-GDR	66468760
PG5002-S	66215110
PG5002-S/E-EC	61215110
PG5002-S/E-O	64215110
PG5002-S/E-US	62215110
PG5002-SADRE-E ..	61415570
PG5002-SDR	66415120
PG5002-SDR/E-E ..	61415120
PG5002-SDR/E-O ..	64415120
PG5002-SDR/E-U ..	62415120
PG502	66525131

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PG502	66572130	PG802-S	66513120	PR5001/E-EU	21329121
PG502/E-EC	61525131	PG802-S/E-EC	61513121	PR5001/E-O	24329121
PG502/E-EC	61572130	PG802-S/E-O	64513121	PR5001-C	26426161
PG502/E-O	64525131	PG802-S/E-US	62513121	PR5001-C	26468161
PG502/E-O	64572130	PG803	66565120	PR5001-C/E	21426161
PG502/E-US	62525131	PG803	66573140	PR5001-C/E	24426161
PG502/E-US	62572130	PG803/E-EC	61565120	PR5001-C/E-E	21468161
PG503	66220110	PG803/E-EC	61573140	PR5001-C/E-O	24468161
PG503	66271110	PG803/E-O	64565120	PR5001-Q	26829151
PG503/E-EC	61220110	PG803/E-O	64573140	PR5001-Q/E	24829151
PG503/E-EC	61271110	PG803/E-US	62565120	PR5001-Q/E-E	21829151
PG503/E-O	64220110	PG803/E-US	62573140	PR5001-Q/E-O	24829151
PG503/E-O	64271110	PR10003	26270112	PR5002	26226112
PG503/E-US	62220110	PR1203	26265112	PR5002	26268111
PG503/E-US	62271110	PR1203	26373131	PR5002/E-EC	21226112
PG503DR	66420120	PR1203/E-EC	21265112	PR5002/E-EC	21268111
PG503DR	66471120	PR1203/E-EC	21373131	PR5002/E-O	24226112
PG503DR/E-EC	61420120	PR1203/E-O	24265112	PR5002/E-O	24268111
PG503DR/E-EC	61471120	PR1203/E-O	24373131	PR5002DR	26426122
PG503DR/E-O	64420120	PR2002	26225112	PR5002DR	26468121
PG503DR/E-O	64471120	PR2002	26272110	PR5002DR/E-E	21426122
PG503DR/E-US	62420120	PR2002/E-EC	21225112	PR5002DR/E-E	21468121
PG503DR/E-US	62471120	PR2002/E-EC	21272110	PR5002DR/E-O	24426122
PG503-S	66211110	PR2002/E-O	24225112	PR5002DR/E-O	24468121
PG503-S/E-EC	61211110	PR2002/E-O	24272110	PR5003DU	26469122
PG503-S/E-O	64211110	PR2003	26266113	PR5003DU_RUS	26469132
PG503-S/E-US	62211110	PR2003	26273112	PR5003MC	26269113
PG503-SDR	66411120	PR2003DR	26466123	PR502	26525133
PG503-SDR/E-EC	61411120	PR2003DR	26473121	PR502	26572130
PG503-SDR/E-O	64411120	PR2003DR/E-E	21466123	PR502/E-EC	21525133
PG503-SDR/E-US	62411120	PR2003DR/E-E	21473121	PR502/E-EC	21572130
PG8000	66629130	PR2003DR/E-O	24466123	PR502/E-O	24525133
PG8000/E	61629130	PR2003DR/E-O	24473121	PR502/E-O	24572130
PG8000/E	64629130	PR2004	26274112	PR502-C	26471201
PG8000-S	66630110	PR203	26520132	PR502-C	26471202
PG8000-S/E	61630110	PR203	26571131	PR502-C/E	21471201
PG8000-S/E	64630110	PR203	26571132	PR502-C/E	24471201
PG8000-S/E-US	62630110	PR203/E-EC	21520132	PR502-C/E-EC	21471202
PG8001	66229110	PR203/E-EC	21571131	PR502-C/E-O	24471202
PG8001/E	61229110	PR203/E-EC	21571132	PR503	26220112
PG8001/E	64229110	PR203/E-O	24520132	PR503	26271110
PG8001-S	66230110	PR203/E-O	24571131	PR503	26271112
PG8001-S/E	61230110	PR203/E-O	24571132	PR503/E-EC	21220112
PG8001-S/E	64230110	PR3001	26529131	PR503/E-EC	21271111
PG8001-S/E-US	62230110	PR3001	26568130	PR503/E-EC	21271112
PG802	66525120	PR3001/E	21526131	PR503/E-O	24220112
PG802	66572120	PR3001/E	21526132	PR503/E-O	24271111
PG802/E-EC	61525120	PR3001/E	24526131	PR503/E-O	24271112
PG802/E-EC	61572120	PR3001/E	24526132	PR503DR	26420122
PG802/E-O	64525120	PR3001/E-E	21568132	PR503DR	26471120
PG802/E-O	64572120	PR3001/E-O	24568132	PR503DR	26471122
PG802/E-US	62525120	PR5001	26329120	PR503DR/E-EC	21420122
PG802/E-US	62572120	PR5001	26329121	PR503DR/E-EC	21471121

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PR503DR/E-EC	21471122	S16001/E	21232111	S32001DR-Q	21838110
PR503DR/E-O	24420122	S16001/E	21232112	S32001DR-Q	24838110
PR503DR/E-O	24471121	S16001/E	21338120	S32001DR-Q	26833112
PR503DR/E-O	24471122	S16001/E	24232112	S32001DR-Q	26833162
PR8000	26629130	S16001/E	24338120	S32001DR-Q	26838110
PR8000	26629131	S16001DR	26432130	S32001DR-Q/E	21833162
PR8000/E-EU	21629131	S16001DR	26432131	S32001DR-Q/E	24833162
PR8000/E-O	24629131	S16001DR	26432132	S8001	26332120
PR8001	26229110	S16001DR	26438130	S8001	26332121
PR8001	26229111	S16001DR/E	21432131	S8001	26332122
PR8001/E-EC	21229111	S16001DR/E	21432132	S8001	26538100
PR8001/E-O	24229111	S16001DR/E	21438130	S8001/E	21332121
PR8002	26267112	S16001DR/E	24432132	S8001/E	21332122
PR8002/E-EC	21267112	S16001DR/E	24438130	S8001/E	21538100
PR8002/E-O	24267112	S32000	26633130	S8001/E	24332122
PR8002DR	26467122	S32000	26633131	S8001/E	24538100
PR8002DR/E-E	21467122	S32000	26633132	SAG125P	26180802
PR8002DR/E-O	24467122	S32000	26638140	SAG125PE	21180802
PR802	26525122	S32000/E	21633131	SAG204	26281801
PR802	26572120	S32000/E	21633132	SAG204	26281802
PR802/E-EC	21525122	S32000/E	21638140	SAG245	26115802
PR802/E-EC	21572121	S32000/E	24633132	SAG245	26181802
PR802/E-O	24525122	S32000/E	24638140	SAG245/E	21115802
PR802/E-O	24572121	S32000-C	26433172	SB12001	26330120
PR803	26565122	S32000-C	26838120	SB12001	26531120
PR803	26573141	S32000-C/E	21433172	SB12001/E	21330120
PR803/E-EC	21565122	S32000-C/E	21838120	SB12001/E	21531120
PR803/E-EC	21573141	S32000-C/E	24433172	SB12001/E	22330120
PR803/E-O	24565122	S32000-C/E	24838120	SB12001/E	22531120
PR803/E-O	24573141	S32000-Q	26833152	SB12001/E	24330120
PZ7001-F	26236110	S32000-Q	26838100	SB12001/E	24531120
PZ7001-FAI	26236170	S32000-Q/E	21833152	SB12001DR	26731160
PZ7001-FI	26236140	S32000-Q/E	21838100	SB12001DRE	21731160
PZ7001-FM	26236120	S32000-Q/E	24833152	SB12001DRE	21731161
PZ7001-FPU	26236160	S32000-Q/E	24838100	SB12001DRE	24731160
PZ7001-FSC	26236130	S32001	26233110	SB12001-IN	26531111
PZ8001	26236150	S32001	26233111	SB12001-S	26330110
PZ8001DR-F	26436170	S32001	26233112	SB12001-S	26531110
PZ8001-F	26236100	S32001	26238150	SB16000	26630150
PZ8001-K	26236180	S32001/E	21233111	SB16000	26731120
S16000	26632140	S32001/E	21233112	SB16000/E	21630150
S16000	26632141	S32001/E	21238150	SB16000/E	21731120
S16000	26632142	S32001/E	24233112	SB16000/E	22630150
S16000	26738110	S32001/E	24238150	SB16000/E	22731120
S16000/E	21632141	S32001DR	26433120	SB16000/E	24630150
S16000/E	21632142	S32001DR	26433121	SB16000/E	24731120
S16000/E	21738110	S32001DR	26433122	SB16001	26230110
S16000/E	24632142	S32001DR	26438160	SB16001	26331110
S16000/E	24738110	S32001DR/E	21433121	SB16001/E	21230110
S16001	26232110	S32001DR/E	21433122	SB16001/E	21331110
S16001	26232111	S32001DR/E	21438160	SB16001/E	22230110
S16001	26232112	S32001DR/E	24433122	SB16001/E	22331110
S16001	26338120	S32001DR/E	24438160	SB16001/E	24230110

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
SB16001/E	24331110	SB32000-PE	21631102	SB8001-IN	26531101
SB16001DR	26430140	SB32000-PE	21634101	SB8001-S	26530110
SB16001DR	26731140	SB32000-PE	22631100	SB8001-S	26531100
SB16001DRE	21430140	SB32000-PE	22631101	SG16000	66632140
SB16001DRE	21731140	SB32000-PE	22634101	SG16000	66738110
SB16001DRE	22731140	SB32000-PE	24631101	SG16000/E	61632140
SB16001DRE	24430140	SB32000-PE	24634101	SG16000/E	61738110
SB16001DRE	24731140	SB32000PFE	23631320	SG16000/E	64632140
SB16001DRF	26430300	SB32000PHE	21634111	SG16000/E	64738110
SB16001DRF	26731300	SB32000PHE	23634111	SG16001	66232110
SB16001-FE	21331300	SB32000PHE	24631110	SG16001	66338120
SB16001-IN	26331121	SB32000PHE	24631111	SG16001/E	61232110
SB16001-S	26230120	SB32000PHE	24634111	SG16001/E	61338120
SB16001-S	26331120	SB32000PME	23631121	SG16001/E	64232110
SB24001DR	26531140	SB32000PME	23634121	SG16001/E	64338120
SB24001DR	26531141	SB32000PPE	23634131	SG16001DR	66432130
SB24001DRE	21531140	SB32001DR	26431130	SG16001DR	66438130
SB24001DRE	21531141	SB32001DR	26431131	SG16001DRE	61432130
SB24001DRE	22531140	SB32001DRE	21431130	SG16001DRE	61438130
SB24001DRE	22531141	SB32001DRE	21431131	SG16001DRE	64432130
SB24001DRE	24531140	SB32001DRE	22431130	SG16001DRE	64438130
SB24001DRE	24531141	SB32001DRE	22431131	SG32000	66633130
SB24001DRI	26531132	SB32001DRE	24431130	SG32000	66638140
SB24001DRS	26531130	SB32001DRE	24431131	SG32000/E	61633130
SB24001DRS	26531131	SB32001DRF	26431310	SG32000/E	61638140
SB30000P/E	21631160	SB32001DRF	26431311	SG32000/E	64633130
SB30000-PE	22731100	SB32x1DRFE	21431310	SG32000/E	64638140
SB30000-PE	22731101	SB32x1DRFE	21431311	SG32000P/E	61333150
SB32000	26631150	SB32x1DRFE	22431310	SG32000P/E	61338150
SB32000	26631151	SB32x1DRFE	22431311	SG32001	66233110
SB32000/E	21631150	SB32x1DRFE	24431310	SG32001	66238150
SB32000/E	21631151	SB32x1DRFE	24431311	SG32001/E	61233110
SB32000/E	22631150	SB32x1DRFE	24431311	SG32001/E	61238150
SB32000/E	22631151	SB35000-PE	22131160	SG32001/E	61238150
SB32000/E	24631150	SB35000-PE	22131161	SG32001/E	64233110
SB32000/E	24631151	SB8000	26730160	SG32001/E	64238150
SB32000/E-A	21631550	SB8000	26731110	SG32001DR	66433120
SB32000/E-A	21631551	SB8000/E	21730160	SG32001DR	66438160
SB32000/E-A	21631552	SB8000/E	21731110	SG32001DRE	61433120
SB32000-F	26631300	SB8000/E	22730160	SG32001DRE	61438160
SB32000-F	26631301	SB8000/E	22731110	SG32001DRE	64433120
SB32000-FE	21631300	SB8000/E	24730160	SG32001DRE	64438160
SB32000-FE	21631301	SB8000/E	24731110	SG8001	66332120
SB32000-FE	22631300	SB8001	26530130	SG8001	66538100
SB32000-FE	22631301	SB8001	26531150	SG8001/E	61332120
SB32000-FE	24631300	SB8001/E	21530130	SG8001/E	61538100
SB32000-FE	24631301	SB8001/E	21531150	SG8001/E	64332120
SB32000P/E	21631311	SB8001/E	22530130	SG8001/E	64538100
SB32000P/E	23631300	SB8001/E	22531150	SR64000	26639170
SB32000P/E	23631301	SB8001/E	24530130	SR64000/E	21639170
SB32000PAE	23634170	SB8001DR	26730150	SR64000/E	24639170
SB32000PDE	23634301	SB8001DR	26731150	SR64001	26239180
SB32000-PE	21631101	SB8001-IN	26530111	SR64001/E	21239180
				SR64001/E	24239180
				SR64001DR	26439190
				SR64001DRE	21439190
				SR64001DRE	24439190

B/G/R balances, sorted by TDNR.Explanation of the designations see [page 1-35!](#)

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
21115110	AG245E	21328310	PB7001-F/E	21463120	PB3002DR/E-E
21115111	AG245E	21329121	PR5001/E-EU	21463550	PB3002DR/E-A
21115112	AG245E	21330120	SB12001/E	21463710	GB3002/E-EC
21115802	SAG245/E	21330710	GB16001/E-EC	21466123	PR2003DR/E-E
21180802	SAG125PE	21330711	GB16001/E-EC	21467122	PR8002DR/E-E
21210110	AG104E	21331110	SB16001/E	21468121	PR5002DR/E-E
21210111	AG104E	21331300	SB16001-FE	21468161	PR5001-C/E-E
21210112	AG104E	21331710	GB16001/E-EC	21471121	PR503DR/E-EC
21212110	AB204/E	21332121	S8001/E	21471122	PR503DR/E-EC
21212112	AB204/E-EC	21332122	S8001/E	21471201	PR502-C/E
21212550	AB204/E-A	21338120	S16001/E	21471202	PR502-C/E-EC
21212552	AB204/E-A	21360800	HR73/E	21473121	PR2003DR/E-E
21215120	AG204E	21360810	HR73-HT/E	21476130	PB303DR/E-EC
21215121	AG204E	21362710	GB802/E-EC	21476300	PB303DR/E-A
21215122	AG204E	21373131	PR1203/E-EC	21476610	CB603/E-EC
21219110	PB303/E	21376120	PB153/E-EC	21512132	AB54/E-EC
21219111	PB303/E-EC	21377120	AB104/E-EC	21513110	AB54/E
21220112	PR503/E-EC	21377560	AB184/E-A3	21513111	AB54/E-EC
21223110	PB1502/E	21414612	CB603/E-EC	21520132	PR203/E-EC
21223111	PB1502/E-EC	21415130	AG204DRE	21523130	PB602/E
21224110	PB3002/E	21415131	AG204DRE	21523131	PB602/E-EC
21224111	PB3002/E-EC	21415132	AG204DRE	21523710	GB1302/E-EC
21225112	PR2002/E-EC	21419130	PB303DR/E	21523711	GB1302/E-EC
21226112	PR5002/E-EC	21419131	PB303DR/E-EC	21524710	GB2002/E-EC
21228110	PB8001/E	21419300	PB303DR/E-A	21524711	GB2002/E-EC
21229111	PR8001/E-EC	21419301	PB303DR/E-A	21525122	PR802/E-EC
21230110	SB16001/E	21420122	PR503DR/E-EC	21525133	PR502/E-EC
21232111	S16001/E	21424120	PB3002DR/E	21526131	PR3001/E
21232112	S16001/E	21424121	PB3002DR/E-E	21526132	PR3001/E
21233111	S32001/E	21424550	PB3002DR/E-A	21528550	GL3DR/E
21233112	S32001/E	21424551	PB3002DR/E-A	21528710	GB6001/E-EC
21238150	S32001/E	21424710	GB3002/E-EC	21528711	GB6001/E-EC
21239180	SR64001/E	21424711	GB3002/E-EC	21530130	SB8001/E
21262110	PB1502/E-EC	21426122	PR5002DR/E-E	21531120	SB12001/E
21263110	PB3002/E-EC	21426161	PR5001-C/E	21531140	SB24001DRE
21265112	PR1203/E-EC	21430140	SB16001DRE	21531141	SB24001DRE
21267112	PR8002/E-EC	21430550	GL16DR/E	21531150	SB8001/E
21268111	PR5002/E-EC	21431130	SB32001DRE	21538100	S8001/E
21271111	PR503/E-EC	21431131	SB32001DRE	21560800	HG53/E
21271112	PR503/E-EC	21431310	SB32x1DRFE	21560810	HG53-HT/E
21272110	PR2002/E-EC	21431311	SB32x1DRFE	21562130	PB602/E-EC
21276110	PB303/E-EC	21431550	GL32DR/E	21562710	GB1302/E-EC
21277110	AB204/E-EC	21431551	GL32DR/E	21563710	GB2002/E-EC
21277550	AB204/E-A	21432131	S16001DR/E	21565122	PR803/E-EC
21312120	AB104/E	21432132	S16001DR/E	21568132	PR3001/E-E
21312122	AB104/E-EC	21433121	S32001DR/E	21571131	PR203/E-EC
21312560	AB184/E-A3	21433122	S32001DR/E	21571132	PR203/E-EC
21319120	PB153/E	21433172	S32000-C/E	21572121	PR802/E-EC
21319121	PB153/E-EC	21438130	S16001DR/E	21572130	PR502/E-EC
21328120	PB5001/E	21438160	S32001DR/E	21573141	PR803/E-EC
21328300	PB5001-F/E	21439190	SR64001DRE	21577130	AB54/E-EC

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
21622613	 CB1503DR/E-E	21824710	 GB3001/E-EC	22523701	 GB1302/E-US
21622614	 CB1503DR/E-E	21824711	 GB3001/E-EC	22524701	 GB2002/E-US
21623160	 PB1501/E	21829151	 PR5001-Q/E-E	22528550	 GL3DR/E
21623550	 PB1501/E-A	21833152	 S32000-Q/E	22528701	 GB6001/E-US
21623551	 PB1501/E-A	21833162	 S32001DR-Q/E	22530130	 SB8001/E
21624130	 PB3001/E	21838100	 S32000-Q/E	22531120	 SB12001/E
21624710	 GB3002DR/E-E	21838110	 S32001DR-Q	22531140	 SB24001DRE
21624711	 GB3002DR/E-E	21838120	 S32000-C/E	22531141	 SB24001DRE
21628130	 PB8000/E	21862710	 GB1501/E-EC	22531150	 SB8001/E
21628550	 GL8/E	21863710	 GB3001/E-EC	22562130	 PB602/E-US
21629131	 PR8000/E-EU	22131160	 SB35000-PE	22562700	 GB1302/E-US
21630150	 SB16000/E	22131161	 SB35000-PE	22563700	 GB2002/E-US
21631101	 SB32000-PE	22212112	 AB204/E-US	22577130	 AB54/E-US
21631102	 SB32000-PE	22219111	 PB303/E-US	22622604	 CB1503DR/E-U
21631150	 SB32000/E	22223111	 PB1502/E-US	22622605	 CB1503DR/E-U
21631151	 SB32000/E	22224111	 PB3002/E-US	22623160	 PB1501/E
21631160	 SB30000P/E	22228110	 PB8001/E	22624130	 PB3001/E
21631300	 SB32000-FE	22230110	 SB16001/E	22624701	 GB3002DR/E-U
21631301	 SB32000-FE	22262110	 PB1502/E-US	22628130	 PB8000/E
21631311	 SB32000P/E	22263110	 PB3002/E-US	22628150	 PB5000-PB
21631550	 SB32000/E-A	22276110	 PB303/E-US	22628550	 GL8/E
21631551	 SB32000/E-A	22277110	 AB204/E-US	22630150	 SB16000/E
21631552	 SB32000/E-A	22312122	 AB104/E-US	22631100	 SB32000-PE
21632141	 S16000/E	22315622	 CG1003E-US	22631101	 SB32000-PE
21632142	 S16000/E	22319121	 PB153/E-US	22631150	 SB32000/E
21633131	 S32000/E	22328120	 PB5001/E	22631151	 SB32000/E
21633132	 S32000/E	22328300	 PB5001-F/E	22631300	 SB32000-FE
21634101	 SB32000-PE	22328310	 PB7001-F/E	22631301	 SB32000-FE
21634111	 SB32000PHE	22330120	 SB12001/E	22634101	 SB32000-PE
21634180	 B32000-PNG	22330701	 GB16001/E-US	22636550	 GL8R/E
21636550	 GL8R/E	22331110	 SB16001/E	22662160	 PB1501/E
21638140	 S32000/E	22331700	 GB16001/E-US	22663130	 PB3001/E
21639170	 SR64000/E	22362700	 GB802/E-US	22663700	 GB3002DR/E-U
21662160	 PB1501/E	22376120	 PB153/E-US	22676600	 CB1503DR/E-U
21662550	 PB1501/E-A	22377120	 AB104/E-US	22714603	 CB203/E-US
21663130	 PB3001/E	22414603	 CB603/E-US	22723170	 PB801/E
21663710	 GB3002DR/E-E	22419131	 PB303DR/E-US	22730160	 SB8000/E
21676610	 CB1503DR/E-E	22424121	 PB3002DR/E-U	22731100	 SB30000-PE
21714610	 CB203/E-EC	22424701	 GB3002/E-US	22731101	 SB30000-PE
21714612	 CB203/E-EC	22430550	 GL16DR/E	22731110	 SB8000/E
21723170	 PB801/E	22431130	 SB32001DRE	22731120	 SB16000/E
21730160	 SB8000/E	22431131	 SB32001DRE	22731140	 SB16001DRE
21731110	 SB8000/E	22431310	 SB32x1DRFE	22731550	 GL16DR/E
21731120	 SB16000/E	22431311	 SB32x1DRFE	22762170	 PB801/E
21731140	 SB16001DRE	22431550	 GL32DR/E	22776600	 CB203/E-US
21731160	 SB12001DRE	22431551	 GL32DR/E	22823701	 GB1501/E-US
21731161	 SB12001DRE	22463120	 PB3002DR/E-U	22824701	 GB3001/E-US
21731550	 GL16DR/E	22463700	 GB3002/E-US	22862700	 GB1501/E-US
21738110	 S16000/E	22476130	 PB303DR/E-US	22863700	 GB3001/E-US
21762170	 PB801/E	22476600	 CB603/E-US	23331550	 GL16MR/E
21776610	 CB203/E-EC	22512132	 AB54/E-US	23428550	 GL8MR/E
21823710	 GB1501/E-EC	22513111	 AB54/E-US	23430550	 GL16MR/E
21823711	 GB1501/E-EC	22523131	 PB602/E-US	23431550	 GL32MR/E

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
23431551	GL32MR/E	24377120	AB104/E-EC	24562710	GB1302/E-EC
23628140	PB8000-PPE	24414612	CB603/E-EC	24563710	GB2002/E-EC
23631121	SB32000PME	24419131	PB303DR/E-EC	24565122	PR803/E-O
23631300	SB32000P/E	24420122	PR503DR/E-O	24568132	PR3001/E-O
23631301	SB32000P/E	24424121	PB3002DR/E-E	24571131	PR203/E-O
23631320	SB32000PFE	24424711	GB3002/E-EC	24571132	PR203/E-O
23634111	SB32000PHE	24426122	PR5002DR/E-O	24572121	PR802/E-O
23634121	SB32000PME	24426161	PR5001-C/E	24572130	PR502/E-O
23634131	SB32000PPE	24430140	SB16001DRE	24573141	PR803/E-O
23634170	SB32000PAE	24430550	GL16DR/E	24577130	AB54/E-EC
23634301	SB32000PDE	24431130	SB32001DRE	24622613	CB1503DR/E-E
23728550	GL3/E	24431131	SB32001DRE	24622614	CB1503DR/E-E
23731550	GL16MR/E	24431310	SB32x1DRFE	24623160	PB1501/E
24212112	AB204/E-EC	24431311	SB32x1DRFE	24624130	PB3001/E
24219111	PB303/E-EC	24431550	GL32DR/E	24624711	GB3002DR/E-E
24220112	PR503/E-O	24431551	GL32DR/E	24628130	PB8000/E
24223111	PB1502/E-EC	24432132	S16001DR/E	24628550	GL8/E
24224111	PB3002/E-EC	24433122	S32001DR/E	24629131	PR8000/E-O
24225112	PR2002/E-O	24433172	S32000-C/E	24630150	SB16000/E
24226112	PR5002/E-O	24438130	S16001DR/E	24631101	SB32000-PE
24228110	PB8001/E	24438160	S32001DR/E	24631110	SB32000PHE
24229111	PR8001/E-O	24439190	SR64001DRE	24631111	SB32000PHE
24230110	SB16001/E	24463120	PB3002DR/E-E	24631150	SB32000/E
24232112	S16001/E	24463710	GB3002/E-EC	24631151	SB32000/E
24233112	S32001/E	24466123	PR2003DR/E-O	24631300	SB32000-FE
24238150	S32001/E	24467122	PR8002DR/E-O	24631301	SB32000-FE
24239180	SR64001/E	24468121	PR5002DR/E-O	24632142	S16000/E
24262110	PB1502/E-EC	24468161	PR5001-C/E-O	24633132	S32000/E
24263110	PB3002/E-EC	24471121	PR503DR/E-O	24634101	SB32000-PE
24265112	PR1203/E-O	24471122	PR503DR/E-O	24634111	SB32000PHE
24267112	PR8002/E-O	24471201	PR502-C/E	24636550	GL8R/E
24268111	PR5002/E-O	24471202	PR502-C/E-O	24638140	S32000/E
24271111	PR503/E-O	24473121	PR2003DR/E-O	24639170	SR64000/E
24271112	PR503/E-O	24476130	PB303DR/E-EC	24662160	PB1501/E
24272110	PR2002/E-O	24476610	CB603/E-EC	24663130	PB3001/E
24276110	PB303/E-EC	24512132	AB54/E-EC	24663710	GB3002DR/E-E
24277110	AB204/E-EC	24520132	PR203/E-O	24676610	CB1503DR/E-E
24312122	AB104/E-EC	24523131	PB602/E-EC	24714612	CB203/E-EC
24315622	CG1003E	24523711	GB1302/E-EC	24723170	PB801/E
24319121	PB153/E-EC	24524711	GB2002/E-EC	24730160	SB8000/E
24328120	PB5001/E	24525122	PR802/E-O	24731110	SB8000/E
24328300	PB5001-F/E	24525133	PR502/E-O	24731120	SB16000/E
24328310	PB7001-F/E	24526131	PR3001/E	24731140	SB16001DRE
24329121	PR5001/E-O	24526132	PR3001/E	24731160	SB12001DRE
24330120	SB12001/E	24528550	GL3DR/E	24731550	GL16DR/E
24330711	GB16001/E-EC	24528711	GB6001/E-EC	24738110	S16000/E
24331110	SB16001/E	24530130	SB8001/E	24762170	PB801/E
24331710	GB16001/E-EC	24531120	SB12001/E	24776610	CB203/E-EC
24332122	S8001/E	24531140	SB24001DRE	24823711	GB1501/E-EC
24338120	S16001/E	24531141	SB24001DRE	24824711	GB3001/E-EC
24362710	GB802/E-EC	24531150	SB8001/E	24829151	PR5001-Q/E
24373131	PR1203/E-O	24538100	S8001/E	24829151	PR5001-Q/E-O
24376120	PB153/E-EC	24562130	PB602/E-EC	24833152	S32000-Q/E

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
24833162	S32001DR-Q/E	26236180	PZ8001-K	26332122	S8001
24838100	S32000-Q/E	26238150	S32001	26338120	S16001
24838110	S32001DR-Q	26239180	SR64001	26360800	HR73
24838120	S32000-C/E	26262110	PB1502	26360810	HR73-HT
24862710	GB1501/E-EC	26263110	PB3002	26360820	HR73-PPG
24863710	GB3001/E-EC	26265112	PR1203	26362710	GB802-EC
26115110	AG245	26266113	PR2003	26362720	GB802-HK
26115111	AG245	26267112	PR8002	26362730	GB802-SING
26115112	AG245	26268111	PR5002	26362740	GB802-TW
26115802	SAG245	26269113	PR5003MC	26362750	GB802-KOR
26180802	SAG125P	26270112	PR10003	26373131	PR1203
26181802	SAG245	26271110	PR503	26376120	PB153
26210110	AG104	26271112	PR503	26377120	AB104
26210111	AG104	26272110	PR2002	26412710	GB204-EC
26210112	AG104	26273112	PR2003	26412752	GB204-KOR
26210120	AG14K	26274112	PR2004	26414612	CB603-EC
26210610	CG503	26276110	PB303	26415130	AG204DR
26212110	AB204	26277110	AB204	26415131	AG204DR
26212112	AB204	26281801	SAG204	26415132	AG204DR
26215120	AG204	26281802	SAG204	26419130	PB303DR
26215121	AG204	26312120	AB104	26419131	PB303DR
26215122	AG204	26312122	AB104	26419500	B303
26219110	PB303	26315622	CG1003	26419501	B303
26219111	PB303	26319120	PB153	26419710	GB303-EC
26220112	PR503	26319121	PB153	26419751	GB303-KOR
26223110	PB1502	26328120	PB5001	26420122	PR503DR
26223111	PB1502	26328130	PB5001-S	26424120	PB3002DR
26224110	PB3002	26328131	PB5001-IN	26424121	PB3002DR
26224111	PB3002	26328300	PB5001-F	26424201	PB3002DR-DYN
26225112	PR2002	26328310	PB7001-F	26424710	GB3002-EC
26226112	PR5002	26329120	PR5001	26424711	GB3002-EC
26228110	PB8001	26329121	PR5001	26424720	GB3002-HK
26228120	PB8001-S	26330110	SB12001-S	26424721	GB3002-HK
26228121	PB8001-IN	26330120	SB12001	26424730	GB3002-SING
26228201	PB8001-DYN	26330710	GB16001-EC	26424731	GB3002-SING
26229110	PR8001	26330711	GB16001-EC	26424740	GB3002-TW
26229111	PR8001	26330720	GB16001-HK	26424741	GB3002-TW
26230110	SB16001	26330721	GB16001-HK	26424751	GB3002-KOR
26230120	SB16001-S	26330730	GB16001-SING	26426122	PR5002DR
26232110	S16001	26330731	GB16001-SING	26426161	PR5001-C
26232111	S16001	26330740	GB16001-TW	26428180	PB8001-C
26232112	S16001	26330741	GB16001-TW	26428320	PB8002DR-F
26233110	S32001	26330751	GB16001-KOR	26430140	SB16001DR
26233111	S32001	26331110	SB16001	26430300	SB16001DRF
26233112	S32001	26331120	SB16001-S	26430550	GL16DR
26236100	PZ8001-F	26331121	SB16001-IN	26431130	SB32001DR
26236110	PZ7001-F	26331710	GB16001-EC	26431131	SB32001DR
26236120	PZ7001-FM	26331720	GB16001-HK	26431310	SB32001DRF
26236130	PZ7001-FSC	26331730	GB16001-SING	26431311	SB32001DRF
26236140	PZ7001-FI	26331740	GB16001-TW	26431550	GL32DR
26236150	PZ8001	26331750	GB16001-KOR	26431551	GL32DR
26236160	PZ7001-FPU	26332120	S8001	26432130	S16001DR
26236170	PZ7001-FAI	26332121	S8001	26432131	S16001DR

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
26432132	 S16001DR	26523741	 GB1302-TW	26563750	 GB2002-KOR
26433120	 S32001DR	26523751	 GB1302-KOR	26565122	 PR803
26433121	 S32001DR	26524710	 GB2002-EC	26568130	 PR3001
26433122	 S32001DR	26524711	 GB2002-EC	26571131	 PR203
26433172	 S32000-C	26524720	 GB2002-HK	26571132	 PR203
26436170	 PZ8001DR-F	26524721	 GB2002-HK	26572120	 PR802
26438130	 S16001DR	26524730	 GB2002-SING	26572130	 PR502
26438160	 S32001DR	26524731	 GB2002-SING	26573141	 PR803
26439190	 SR64001DR	26524740	 GB2002-TW	26577130	 AB54
26463120	 PB3002DR	26524741	 GB2002-TW	26577500	 B154
26463200	 PB3002DR-DYN	26524751	 GB2002-KOR	26619150	 PB302-ZAG
26463710	 GB3002-EC	26525122	 PR802	26622613	 CB1503DR-EC
26463720	 GB3002-HK	26525133	 PR502	26622614	 CB1503DR-EC
26463730	 GB3002-SING	26528550	 GL3DR	26623160	 PB1501
26463740	 GB3002-TW	26528710	 GB6001-EC	26624130	 PB3001
26463750	 GB3002-KOR	26528711	 GB6001-EC	26624500	 B3002DR
26466123	 PR2003DR	26528720	 GB6001-HK	26624501	 B3002DR
26467122	 PR8002DR	26528721	 GB6001-HK	26624710	 GB3002DR-EC
26468121	 PR5002DR	26528730	 GB6001-SING	26624711	 GB3002DR-EC
26468161	 PR5001-C	26528731	 GB6001-SING	26624720	 GB3002DR-HK
26469122	 PR5003DU	26528740	 GB6001-TW	26624721	 GB3002DR-HK
26469132	 PR5003DU_RUS	26528741	 GB6001-TW	26624730	 GB3002DR-SIN
26471120	 PR503DR	26528751	 GB6001-KOR	26624731	 GB3002DR-SIN
26471122	 PR503DR	26529131	 PR3001	26624740	 GB3002DR-TW
26471201	 PR502-C	26530110	 SB8001-S	26624741	 GB3002DR-TW
26471202	 PR502-C	26530111	 SB8001-IN	26624751	 GB3002DR-KOR
26473121	 PR2003DR	26530130	 SB8001	26628130	 PB8000
26476130	 PB303DR	26531100	 SB8001-S	26628550	 GL8
26476500	 B303	26531101	 SB8001-IN	26629130	 PR8000
26476610	 CB603-EC	26531110	 SB12001-S	26629131	 PR8000
26476710	 GB303-EC	26531111	 SB12001-IN	26630150	 SB16000
26476750	 GB303-KOR	26531120	 SB12001	26631150	 SB32000
26477710	 GB204-EC	26531130	 SB24001DRS	26631151	 SB32000
26477750	 GB204-KOR	26531131	 SB24001DRS	26631300	 SB32000-F
26512132	 AB54	26531132	 SB24001DRI	26631301	 SB32000-F
26512500	 B154	26531140	 SB24001DR	26632140	 S16000
26512502	 B154	26531141	 SB24001DR	26632141	 S16000
26513110	 AB54	26531150	 SB8001	26632142	 S16000
26513111	 AB54	26538100	 S8001	26633130	 S32000
26520132	 PR203	26560800	 HG53	26633131	 S32000
26523130	 PB602	26560810	 HG53-HT	26633132	 S32000
26523131	 PB602	26562130	 PB602	26636550	 GL8R
26523150	 PB302	26562150	 PB302	26638140	 S32000
26523151	 PB302	26562500	 B1302	26639170	 SR64000
26523500	 B1302	26562710	 GB1302-EC	26662160	 PB1501
26523501	 B1302	26562720	 GB1302-HK	26663130	 PB3001
26523710	 GB1302-EC	26562730	 GB1302-SING	26663500	 B3002DR
26523711	 GB1302-EC	26562740	 GB1302-TW	26663710	 GB3002DR-EC
26523720	 GB1302-HK	26562750	 GB1302-KOR	26663720	 GB3002DR-HK
26523721	 GB1302-HK	26563710	 GB2002-EC	26663730	 GB3002DR-SIN
26523730	 GB1302-SING	26563720	 GB2002-HK	26663740	 GB3002DR-TW
26523731	 GB1302-SING	26563730	 GB2002-SING	26663750	 GB3002DR-KOR
26523740	 GB1302-TW	26563740	 GB2002-TW	26676150	 PB302-ZAG

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
26676610	 CB1503DR-EC	26863730	 GB3001-SING	61231110	 PG12001-SE
26714612	 CB203-EC	26863740	 GB3001-TW	61232110	 SG16001/E
26723170	 PB801	26863750	 GB3001-KOR	61233110	 SG32001/E
26723500	 B502	26914612	 CB103-EC	61238150	 SG32001/E
26723501	 B502	26976610	 CB103-EC	61268110	 PG5002/E-EC
26730150	 SB8001DR	32228110	 BP8000/E	61271110	 PG503/E-EC
26730160	 SB8000	32230110	 BP16000/E	61272110	 PG2002/E-EC
26731110	 SB8000	32328120	 BP5000/E	61329120	 PG5001/E
26731120	 SB16000	32330120	 BP12000/E	61330120	 PG5001-S/E
26731140	 SB16001DR	32331110	 BP16000/E	61332120	 SG8001/E
26731150	 SB8001DR	32430140	 BP1630DR/E	61333150	 SG32000P/E
26731160	 SB12001DR	32431130	 BP3260DR/E	61338120	 SG16001/E
26731300	 SB16001DRF	32431131	 BP3260DR/E	61338150	 SG32000P/E
26731550	 GL16DR	32531120	 BP12000/E	61411120	... PG503-SDR/E-EC
26738110	 S16000	32631150	 BP32/E	61415120	... PG5002-SDR/E-E
26762170	 PB801	32631151	 BP32/E	61415570	.. PG5002-SADRE-E
26762500	 B502	32731140	 BP1630DR/E	61420120	 PG503DR/E-EC
26776610	 CB203-EC	36228110	 BP8000	61426120	 PG5002DR/E-E
26823710	 GB1501-EC	36230110	 BP16000	61426590	 PG5002DR-A/E
26823711	 GB1501-EC	36328120	 BP5000	61431110	 PG12001DRE
26823720	 GB1501-HK	36330120	 BP12000	61432130	 SG16001DRE
26823721	 GB1501-HK	36331110	 BP16000	61433120	 SG32001DRE
26823730	 GB1501-SING	36430140	 BP1630DR	61438130	 SG16001DRE
26823731	 GB1501-SING	36431130	 BP3260DR	61438160	 SG32001DRE
26823740	 GB1501-TW	36431131	 BP3260DR	61468120	 PG5002DR/E-E
26823741	 GB1501-TW	36531120	 BP12000	61468590	 PG5002DR-A/E
26823751	 GB1501-KOR	36631150	 BP32	61471120	 PG503DR/E-EC
26824500	 B3001	36631151	 BP32	61511130	 PG203-S/E-EC
26824501	 B3001	36731140	 BP1630DR	61513121	 PG802-S/E-EC
26824710	 GB3001-EC	41235110	 OB12001E	61515200	 PG3001-S/E
26824711	 GB3001-EC	41235130	 OB32001E	61515210	 PG3000-S/E
26824720	 GB3001-HK	41237110	 OC12001E	61520130	 PG203/E-EC
26824721	 GB3001-HK	41237120	 OC22001/E	61525120	 PG802/E-EC
26824730	 GB3001-SING	41237130	 OC32001E	61525131	 PG502/E-EC
26824731	 GB3001-SING	44235110	 OB12001E	61526130	 PG3001/E
26824740	 GB3001-TW	44235130	 OB32001E	61526131	 PG3001/E
26824741	 GB3001-TW	44237110	 OC12001E	61538100	 SG8001/E
26824751	 GB3001-KOR	44237120	 OC22001/E	61565120	 PG803/E-EC
26829151	 PR5001-Q	44237130	 OC32001E	61568131	 PG3001/E-EC
26833112	 S32001DR-Q	46235110	 OB12001	61571131	 PG203/E-EC
26833152	 S32000-Q	46235120	 OB22001	61572120	 PG802/E-EC
26833162	 S32001DR-Q	46235130	 OB32001	61572130	 PG502/E-EC
26838100	 S32000-Q	46237110	 OC12001	61573140	 PG803/E-EC
26838110	 S32001DR-Q	46237120	 OC22001	61629130	 PG8000/E
26838120	 S32000-C	46237130	 OC32001	61630110	 PG8000-S/E
26862710	 GB1501-EC	61211110	 PG503-S/E-EC	61632140	 SG16000/E
26862720	 GB1501-HK	61213110	 PG2002-S/E-EC	61633130	 SG32000/E
26862730	 GB1501-SING	61215110	 PG5002-S/E-EC	61638140	 SG32000/E
26862740	 GB1501-TW	61220110	 PG503/E-EC	61738110	 SG16000/E
26862750	 GB1501-KOR	61225110	 PG2002/E-EC	62211110	 PG503-S/E-US
26863500	 B3001	61226110	 PG5002/E-EC	62211620	 CG2502-S/E-US
26863710	 GB3001-EC	61229110	 PG8001/E	62213110	 PG2002-S/E-US
26863720	 GB3001-HK	61230110	 PG8001-S/E	62215110	 PG5002-S/E-US

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
62220110	PG503/E-US	64420120	PG503DR/E-O	66326760	PG3002-G
62225110	PG2002/E-US	64426120	PG5002DR/E-O	66329120	PG5001
62226110	PG5002/E-US	64431110	PG12001DRE	66330120	PG5001-S
62230110	PG8001-S/E-US	64432130	SG16001DRE	66332120	SG8001
62231110	PG12001-S/E-US	64433120	SG32001DRE	66338120	SG16001
62268110	PG5002/E-US	64438130	SG16001DRE	66368760	PG3002-G
62271110	PG503/E-US	64438160	SG32001DRE	66411120	PG503-SDR
62272110	PG2002/E-US	64468120	PG5002DR/E-O	66415120	PG5002-SDR
62330120	PG5001-S/E-US	64471120	PG503DR/E-O	66415760	GG4002-SDR
62411120	PG503-SDR/E-US	64511130	PG203-S/E-O	66420120	PG503DR
62415120	PG5002-SDR/E-U	64513121	PG802-S/E-O	66426120	PG5002DR
62415760	GG4002-SDR/E-U	64515200	PG3001-S/E	66426760	PG5002-GDR
62420120	PG503DR/E-US	64515750	GG4002-S/E	66431110	PG12001DR
62426120	PG5002DR/E-U	64520130	PG203/E-O	66432130	SG16001DR
62431110	PG12001DR/E-US	64525120	PG802/E-O	66433120	SG32001DR
62468120	PG5002DR/E-U	64525131	PG502/E-O	66438130	SG16001DR
62471120	PG503DR/E-US	64526130	PG3001/E	66438160	SG32001DR
62511130	PG203-S/E-US	64526131	PG3001/E	66468120	PG5002DR
62513121	PG802-S/E-US	64538100	SG8001/E	66468760	PG5002-GDR
62515200	PG3001-S/E-US	64565120	PG803/E-O	66471120	PG503DR
62515750	GG4002-S/E-US	64568131	PG3001/E-O	66511131	PG203-S
62520130	PG203/E-US	64571131	PG203/E-O	66513120	PG802-S
62525120	PG802/E-US	64572120	PG802/E-O	66515200	PG3001-S
62525131	PG502/E-US	64572130	PG502/E-O	66515750	GG4002-S
62565120	PG803/E-US	64573140	PG803/E-O	66520130	PG203
62571131	PG203/E-US	64629130	PG8000/E	66524710	GB1302-CN
62572120	PG802/E-US	64630110	PG8000-S/E	66525120	PG802
62572130	PG502/E-US	64632140	SG16000/E	66525131	PG502
62573140	PG803/E-US	64633130	SG32000/E	66529130	PG3001
62630110	PG8000-S/E-US	64638140	SG32000/E	66530130	PG3001-S
64211110	PG503-S/E-O	64738110	SG16000/E	66538100	SG8001
64211620	CG2502-S/E	66211110	PG503-S	66565120	PG803
64213110	PG2002-S/E-O	66211620	CG2502-S	66568130	PG3001
64215110	PG5002-S/E-O	66213110	PG2002-S	66571131	PG203
64220110	PG503/E-O	66215110	PG5002-S	66572120	PG802
64225110	PG2002/E-O	66217620	CG13002-S	66572130	PG502
64226110	PG5002/E-O	66219710	GB303-CN	66573140	PG803
64229110	PG8001/E	66220110	PG503	66624710	GB3001-CN
64230110	PG8001-S/E	66224710	GB3002-CN	66629130	PG8000
64231110	PG12001-SE	66225110	PG2002	66630110	PG8000-S
64232110	SG16001/E	66226110	PG5002	66632140	SG16000
64233110	SG32001/E	66226760	PG5002-G	66633130	SG32000
64238150	SG32001/E	66229110	PG8001	66638140	SG32000
64268110	PG5002/E-O	66230110	PG8001-S	66724710	GB802-CN
64271110	PG503/E-O	66231110	PG12001-S	66726140	PG3600DR
64272110	PG2002/E-O	66232110	SG16001	66726760	PG3002-GDR
64329120	PG5001/E	66233110	SG32001	66738110	SG16000
64330120	PG5001-S/E	66238150	SG32001	66768140	PG3600DR
64332120	SG8001/E	66268110	PG5002	66768760	PG3002-GDR
64338120	SG16001/E	66268760	PG5002-G		
64411120	PG503-SDR/E-O	66271110	PG503		
64415120	PG5002-SDR/E-O	66272110	PG2002		
64415760	GG4002-SDR/E	66324710	GB2002-CN		

4.3 LARS type data V.860

4.3.1 B/G/R balances with old TDNR structure

TDNR in LARS, sorted by balance type. Explanation of the designations see [page 1-35!](#)

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
AB104	26312120	AG204	26215121	B32000PIE	21634190
AB104	26312122	AG204	26215122	B32000-PNG	21634180
AB104	26377120	AG204DR	26415130	B502	26723500
AB104/E	21312120	AG204DR	26415131	B502	26723501
AB104/E-EC	21312122	AG204DR	26415132	B502	26762500
AB104/E-EC	21377120	AG204DR	26415133	BB120	10072020
AB104/E-EC	24312122	AG204DRE	21415130	BB1200	10073040
AB104/E-EC	24377120	AG204DRE	21415131	BB1300	10073030
AB104/E-US	22312122	AG204DRE	21415132	BB240	10071010
AB104/E-US	22377120	AG204DRE	21415133	BB2400	10073010
AB184/E-A3	21312560	AG204E	21215120	BB244	10071020
AB184/E-A3	21377560	AG204E	21215121	BB2440	10073020
AB204	26212110	AG204E	21215122	BB3	10074020
AB204	26212112	AG245	26115110	BB300	10072010
AB204	26277110	AG245	26115111	BB3000	10074010
AB204/E	21212110	AG245	26115112	BB600	10073050
AB204/E-A	21212550	AG245E	21115110	BP12000	36330120
AB204/E-A	21212552	AG245E	21115111	BP12000	36531120
AB204/E-A	21277550	AG245E	21115112	BP12000/E	32330120
AB204/E-EC	21212112	AG285	26115102	BP12000/E	32531120
AB204/E-EC	21277110	AG285E	21115102	BP16000	36230110
AB204/E-EC	24212112	AG64	26210132	BP16000	36331110
AB204/E-EC	24277110	AG64E	21210132	BP16000/E	32230110
AB204/E-US	22212112	AJ100	10051010	BP16000/E	32331110
AB204/E-US	22277110	AJ100/E	11051010	BP1630DR	36430140
AB54	26512132	AM100	10021010	BP1630DR	36731140
AB54	26513110	AM100/E	11021010	BP1630DR/E	32430140
AB54	26513111	AM150	10022010	BP1630DR/E	32731140
AB54	26577130	AM150/E	11022010	BP32	36631150
AB54/E	21513110	AM260	10023010	BP32	36631151
AB54/E-EC	21512132	AM260/E	11023010	BP32/E	32631150
AB54/E-EC	21513111	AM50	10021020	BP32/E	32631151
AB54/E-EC	21577130	AM50/E	11021020	BP3260DR	36431130
AB54/E-EC	24512132	B1302	26523500	BP3260DR	36431131
AB54/E-EC	24577130	B1302	26523501	BP3260DR/E	32431130
AB54/E-US	22512132	B1302	26562500	BP3260DR/E	32431131
AB54/E-US	22513111	B154	26512500	BP5000	36328120
AB54/E-US	22577130	B154	26512502	BP5000/E	32328120
AG104	26210110	B154	26577500	BP8000	36228110
AG104	26210111	B3001	26824500	BP8000/E	32228110
AG104	26210112	B3001	26824501	CB103-EC	26914612
AG104E	21210110	B3001	26863500	CB103-EC	26976610
AG104E	21210111	B3002DR	26624500	CB1503DR/E-E	21622613
AG104E	21210112	B3002DR	26624501	CB1503DR/E-E	21622614
AG135	26110102	B3002DR	26663500	CB1503DR/E-E	21676610
AG135E	21110102	B303	26419500	CB1503DR/E-E	24622613
AG14K	26210120	B303	26419501	CB1503DR/E-E	24622614
AG204	26215120	B303	26476500	CB1503DR/E-E	24676610

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
CB1503DR/E-U	22622604	GB1302-EC	26523711	GB16001-TW	26330741
CB1503DR/E-U	22622605	GB1302-EC	26562710	GB16001-TW	26331740
CB1503DR/E-U	22676600	GB1302-HK	26523720	GB2002/E-EC	21524710
CB1503DR-EC	26622613	GB1302-HK	26523721	GB2002/E-EC	21524711
CB1503DR-EC	26622614	GB1302-HK	26562720	GB2002/E-EC	21563710
CB1503DR-EC	26676610	GB1302-KOR	26523751	GB2002/E-EC	24524711
CB203/E-EC	21714610	GB1302-KOR	26562750	GB2002/E-EC	24563710
CB203/E-EC	21714612	GB1302-SING	26523730	GB2002/E-US	22524701
CB203/E-EC	21776610	GB1302-SING	26523731	GB2002/E-US	22563700
CB203/E-EC	24714612	GB1302-SING	26562730	GB2002-CN	66324710
CB203/E-EC	24776610	GB1302-TW	26523740	GB2002-EC	26524710
CB203/E-US	22714603	GB1302-TW	26523741	GB2002-EC	26524711
CB203/E-US	22776600	GB1302-TW	26562740	GB2002-EC	26563710
CB203-EC	26714612	GB1501/E-EC	21823710	GB2002-HK	26524720
CB203-EC	26776610	GB1501/E-EC	21823711	GB2002-HK	26524721
CB603/E-EC	21414612	GB1501/E-EC	21862710	GB2002-HK	26563720
CB603/E-EC	21476610	GB1501/E-EC	24823711	GB2002-KOR	26524751
CB603/E-EC	24414612	GB1501/E-EC	24862710	GB2002-KOR	26563750
CB603/E-EC	24476610	GB1501/E-US	22823701	GB2002-SING	26524730
CB603/E-US	22414603	GB1501/E-US	22862700	GB2002-SING	26524731
CB603/E-US	22476600	GB1501-EC	26823710	GB2002-SING	26563730
CB603-EC	26414612	GB1501-EC	26823711	GB2002-TW	26524740
CB603-EC	26476610	GB1501-EC	26862710	GB2002-TW	26524741
CG1003	26315622	GB1501-HK	26823720	GB2002-TW	26563740
CG1003E	24315622	GB1501-HK	26823721	GB204-EC	26412710
CG1003E-US	22315622	GB1501-HK	26862720	GB204-EC	26477710
CG13002-S	66217620	GB1501-KOR	26823751	GB204-KOR	26412752
CG13002-S	66717621	GB1501-KOR	26862750	GB204-KOR	26477750
CG2502-S	66211620	GB1501-SING	26823730	GB3001/E-EC	21824710
CG2502-S/E	64211620	GB1501-SING	26823731	GB3001/E-EC	21824711
CG2502-S/E-US	62211620	GB1501-SING	26862730	GB3001/E-EC	21863710
CG503	26210610	GB1501-TW	26823740	GB3001/E-EC	24824711
CJ150	10052010	GB1501-TW	26823741	GB3001/E-EC	24863710
CJ150/E	11052010	GB1501-TW	26862740	GB3001/E-US	22824701
CJ500	10052020	GB16001/E-EC	21330710	GB3001/E-US	22863700
CJ500/E	11052020	GB16001/E-EC	21330711	GB3001-CN	66624710
CM1200	10014010	GB16001/E-EC	21331710	GB3001-EC	26824710
CM1200/E	11014010	GB16001/E-EC	24330711	GB3001-EC	26824711
CM200	10021030	GB16001/E-EC	24331710	GB3001-EC	26863710
CM200/E	11021030	GB16001/E-US	22330701	GB3001-HK	26824720
CM2000	10007030	GB16001/E-US	22331700	GB3001-HK	26824721
CM2000/E	11007030	GB16001-EC	26330710	GB3001-HK	26863720
CM400	10003050	GB16001-EC	26330711	GB3001-KOR	26824751
CM400/E	11003050	GB16001-EC	26331710	GB3001-KOR	26863750
GB1302/E-EC	21523710	GB16001-HK	26330720	GB3001-SING	26824730
GB1302/E-EC	21523711	GB16001-HK	26330721	GB3001-SING	26824731
GB1302/E-EC	21562710	GB16001-HK	26331720	GB3001-SING	26863730
GB1302/E-EC	24523711	GB16001-KOR	26330751	GB3001-TW	26824740
GB1302/E-EC	24562710	GB16001-KOR	26331750	GB3001-TW	26824741
GB1302/E-US	22523701	GB16001-SING	26330730	GB3001-TW	26863740
GB1302/E-US	22562700	GB16001-SING	26330731	GB3002/E-EC	21424710
GB1302-CN	66524710	GB16001-SING	26331730	GB3002/E-EC	21424711
GB1302-EC	26523710	GB16001-TW	26330740	GB3002/E-EC	21463710

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
GB3002/E-EC	24424711	GB6001-KOR	26528751	GL8/E	24628550
GB3002/E-EC	24463710	GB6001-SING	26528730	GL8MR/E	23428550
GB3002/E-US	22424701	GB6001-SING	26528731	GL8R	26636550
GB3002/E-US	22463700	GB6001-TW	26528740	GL8R/E	21636550
GB3002-CN	66224710	GB6001-TW	26528741	GL8R/E	22636550
GB3002DR/E-E	21624710	GB802/E-EC	21362710	GL8R/E	24636550
GB3002DR/E-E	21624711	GB802/E-EC	24362710	HG53	26560800
GB3002DR/E-E	21663710	GB802/E-US	22362700	HG53/E	21560800
GB3002DR/E-E	24624711	GB802-CN	66724710	HG53-HT	26560810
GB3002DR/E-E	24663710	GB802-EC	26362710	HG53-HT/E	21560810
GB3002DR/E-U	22624701	GB802-HK	26362720	HG63	26560830
GB3002DR/E-U	22663700	GB802-KOR	26362750	HG63/E	21560830
GB3002DR-EC	26624710	GB802-SING	26362730	HR73	26360800
GB3002DR-EC	26624711	GB802-TW	26362740	HR73/E	21360800
GB3002DR-EC	26663710	GG4002-S	66515750	HR73-HT	26360810
GB3002DR-HK	26624720	GG4002-S/E	64515750	HR73-HT/E	21360810
GB3002DR-HK	26624721	GG4002-S/E-US	62515750	HR73-PPG	26360820
GB3002DR-HK	26663720	GG4002-SDR	66415760	HR83	26360830
GB3002DR-KOR	26624751	GG4002-SDR/E	64415760	HR83/E	21360830
GB3002DR-KOR	26663750	GG4002-SDR/E-U	62415760	PB1501	26623160
GB3002DR-SIN	26624730	GG6002-S	66319750	PB1501	26662160
GB3002DR-SIN	26624731	GG6002-S/E-EC	61319750	PB1501/E	21623160
GB3002DR-SIN	26663730	GG6002-S/E-O	64319750	PB1501/E	21662160
GB3002DR-TW	26624740	GG6002-S/E-US	62319750	PB1501/E	22623160
GB3002DR-TW	26624741	GL16DR	26430550	PB1501/E	22662160
GB3002DR-TW	26663740	GL16DR	26731550	PB1501/E	24623160
GB3002-EC	26424710	GL16DR/E	21430550	PB1501/E	24662160
GB3002-EC	26424711	GL16DR/E	21731550	PB1501/E-A	21623550
GB3002-EC	26463710	GL16DR/E	22430550	PB1501/E-A	21623551
GB3002-HK	26424720	GL16DR/E	22731550	PB1501/E-A	21662550
GB3002-HK	26424721	GL16DR/E	24430550	PB1502	26223110
GB3002-HK	26463720	GL16DR/E	24731550	PB1502	26223111
GB3002-KOR	26424751	GL16MR/E	23331550	PB1502	26262110
GB3002-KOR	26463750	GL16MR/E	23430550	PB1502/E	21223110
GB3002-SING	26424730	GL16MR/E	23731550	PB1502/E-EC	21223111
GB3002-SING	26424731	GL3/E	23728550	PB1502/E-EC	21262110
GB3002-SING	26463730	GL32DR	26431550	PB1502/E-EC	24223111
GB3002-TW	26424740	GL32DR	26431551	PB1502/E-EC	24262110
GB3002-TW	26424741	GL32DR/E	21431550	PB1502/E-US	22223111
GB3002-TW	26463740	GL32DR/E	21431551	PB1502/E-US	22262110
GB303-CN	66219710	GL32DR/E	22431550	PB153	26319120
GB303-EC	26419710	GL32DR/E	22431551	PB153	26319121
GB303-EC	26476710	GL32DR/E	24431550	PB153	26376120
GB303-KOR	26419751	GL32DR/E	24431551	PB153/E	21319120
GB303-KOR	26476750	GL32MR/E	23431550	PB153/E-EC	21319121
GB6001/E-EC	21528710	GL32MR/E	23431551	PB153/E-EC	21376120
GB6001/E-EC	21528711	GL3DR	26528550	PB153/E-EC	24319121
GB6001/E-EC	24528711	GL3DR/E	21528550	PB153/E-EC	24376120
GB6001/E-US	22528701	GL3DR/E	22528550	PB153/E-US	22319121
GB6001-EC	26528710	GL3DR/E	24528550	PB153/E-US	22376120
GB6001-EC	26528711	GL8	26628550	PB3001	26624130
GB6001-HK	26528720	GL8/E	21628550	PB3001	26663130
GB6001-HK	26528721	GL8/E	22628550	PB3001/E	21624130

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PB3001/E	21663130	PB303DR/E-EC	21476130	PG1003-S/E-EC	61312120
PB3001/E	22624130	PB303DR/E-EC	24419131	PG1003-S/E-O	64312120
PB3001/E	22663130	PB303DR/E-EC	24476130	PG1003-S/E-US	62312120
PB3001/E	24624130	PB303DR/E-US	22419131	PG12000-S-P/E	61631110
PB3001/E	24663130	PB303DR/E-US	22476130	PG12001DR	66431110
PB3002	26224110	PB5000-PB	22628150	PG12001DR/E-US ..	62431110
PB3002	26224111	PB5001	26328120	PG12001DRE	61431110
PB3002	26263110	PB5001/E	21328120	PG12001DRE	64431110
PB3002/E	21224110	PB5001/E	22328120	PG12001-S	66231110
PB3002/E-EC	21224111	PB5001/E	24328120	PG12001-S/E-US ...	62231110
PB3002/E-EC	21263110	PB5001-F	26328300	PG12001-SE	61231110
PB3002/E-EC	24224111	PB5001-F/E	21328300	PG12001-SE	64231110
PB3002/E-EC	24263110	PB5001-F/E	22328300	PG2002	66225110
PB3002/E-US	22224111	PB5001-F/E	24328300	PG2002	66272110
PB3002/E-US	22263110	PB5001-IN	26328131	PG2002/E-EC	61225110
PB3002DR	26424120	PB5001-S	26328130	PG2002/E-EC	61272110
PB3002DR	26424121	PB602	26523130	PG2002/E-O	64225110
PB3002DR	26463120	PB602	26523131	PG2002/E-O	64272110
PB3002DR/E	21424120	PB602	26562130	PG2002/E-US	62225110
PB3002DR/E-A	21424550	PB602/E	21523130	PG2002/E-US	62272110
PB3002DR/E-A	21424551	PB602/E-EC	21523131	PG2002-S	66213110
PB3002DR/E-A	21463550	PB602/E-EC	21562130	PG2002-S/E-EC	61213110
PB3002DR/E-E	21424121	PB602/E-EC	24523131	PG2002-S/E-EC	61213111
PB3002DR/E-E	21463120	PB602/E-EC	24562130	PG2002-S/E-O	64213110
PB3002DR/E-E	24424121	PB602/E-US	22523131	PG2002-S/E-O	64213111
PB3002DR/E-E	24463120	PB602/E-US	22562130	PG2002-S/E-US	62213110
PB3002DR/E-U	22424121	PB7001-F	26328310	PG2002-S/E-US	62213111
PB3002DR/E-U	22463120	PB7001-F/E	21328310	PG2002-SDR	66413130
PB3002DR-DYN	26424201	PB7001-F/E	22328310	PG2002-SDR/E-E ...	61413130
PB3002DR-DYN	26463200	PB7001-F/E	24328310	PG2002-SDR/E-O ...	64413130
PB302	26523150	PB8000	26628130	PG2002-SDR/E-U ...	62413130
PB302	26523151	PB8000/E	21628130	PG203	66520130
PB302	26562150	PB8000/E	22628130	PG203	66571131
PB302-ZAG	26619150	PB8000/E	24628130	PG203/E-EC	61520130
PB302-ZAG	26676150	PB8000-PPE	23628140	PG203/E-EC	61571131
PB303	26219110	PB8001	26228110	PG203/E-O	64520130
PB303	26219111	PB8001/E	21228110	PG203/E-O	64571131
PB303	26276110	PB8001/E	22228110	PG203/E-US	62520130
PB303/E	21219110	PB8001/E	24228110	PG203/E-US	62571131
PB303/E-EC	21219111	PB8001-C	26428180	PG203-S	66511131
PB303/E-EC	21276110	PB8001-DYN	26228201	PG203-S/E-EC	61511130
PB303/E-EC	24219111	PB8001-IN	26228121	PG203-S/E-O	64511130
PB303/E-EC	24276110	PB8001-S	26228120	PG203-S/E-US	62511130
PB303/E-US	22219111	PB8002DR-F	26428320	PG3000-S/E	61515210
PB303/E-US	22276110	PB801	26723170	PG3000-SRE/E-O ...	64715820
PB303DR	26419130	PB801	26762170	PG3000-SRE/E-O ...	64715821
PB303DR	26419131	PB801/E	21723170	PG3001	66529130
PB303DR	26476130	PB801/E	21762170	PG3001	66568130
PB303DR/E	21419130	PB801/E	22723170	PG3001/E	61526130
PB303DR/E-A	21419300	PB801/E	22762170	PG3001/E	61526131
PB303DR/E-A	21419301	PB801/E	24723170	PG3001/E	64526130
PB303DR/E-A	21476300	PB801/E	24762170	PG3001/E	64526131
PB303DR/E-EC	21419131	PG1003-S	66312120	PG3001/E-EC	61568131

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PG3001/E-O	64568131	PG5002DR/E-U	62468120	PG6002-SDR/E-E ...	61719130
PG3001-S	66515200	PG5002DR-A/E	61426590	PG6002-SDR/E-O ...	64719130
PG3001-S	66530130	PG5002DR-A/E	61468590	PG6002-SDR/E-U ...	62719130
PG3001-S/E	61515200	PG5002-G	66226760	PG603DR-S	66712140
PG3001-S/E	64515200	PG5002-G	66268760	PG603-S	66512130
PG3001-S/E-US	62515200	PG5002-GDR	66426760	PG603-SDR/E-EC ...	61712140
PG3001-SBA/E	61730130	PG5002-GDR	66468760	PG603-SDR/E-O	64712140
PG3002-G	66326760	PG5002-S	66215110	PG603-SDR/E-US ...	62712140
PG3002-G	66368760	PG5002-S/E-EC	61215110	PG8000	66629130
PG3002-GDR	66726760	PG5002-S/E-O	64215110	PG8000/E	61629130
PG3002-GDR	66768760	PG5002-S/E-US	62215110	PG8000/E	64629130
PG3600DR	66726140	PG5002-SADRE-E ..	61415570	PG8000-S	66630110
PG3600DR	66768140	PG5002-SDR	66415120	PG8000-S/E	61630110
PG4002-S	66315130	PG5002-SDR/E-E ...	61415120	PG8000-S/E	64630110
PG4002-S/E-EC	61315130	PG5002-SDR/E-O ...	64415120	PG8000-S/E-US	62630110
PG4002-S/E-O	64315130	PG5002-SDR/E-U ...	62415120	PG8001	66229110
PG4002-S/E-US	62315130	PG502	66525131	PG8001/E	61229110
PG4002-SDR	66715140	PG502	66572130	PG8001/E	64229110
PG4002-SDR/E-E ...	61715140	PG502/E-EC	61525131	PG8001-S	66230110
PG4002-SDR/E-O ...	64715140	PG502/E-EC	61572130	PG8001-S/E	61230110
PG4002-SDR/E-U ...	62715140	PG502/E-O	64525131	PG8001-S/E	64230110
PG403-S	66311140	PG502/E-O	64572130	PG8001-S/E-US	62230110
PG403-S/E-EC	61311140	PG502/E-US	62525131	PG802	66525120
PG403-S/E-O	64311140	PG502/E-US	62572130	PG802	66572120
PG403-S/E-US	62311140	PG503	66220110	PG802/E-EC	61525120
PG403-SDR	66711150	PG503	66271110	PG802/E-EC	61572120
PG403-SDR/E-EC ...	61711150	PG503/E-EC	61220110	PG802/E-O	64525120
PG403-SDR/E-O	64711150	PG503/E-EC	61271110	PG802/E-O	64572120
PG403-SDR/E-US ...	62711150	PG503/E-O	64220110	PG802/E-US	62525120
PG5000-SRE/E-O ...	64615820	PG503/E-O	64271110	PG802/E-US	62572120
PG5000-SRE/E-O ...	64615821	PG503/E-US	62220110	PG802-S	66513120
PG5001	66329120	PG503/E-US	62271110	PG802-S/E-EC	61513121
PG5001/E	61329120	PG503DR	66420120	PG802-S/E-O	64513121
PG5001/E	64329120	PG503DR	66471120	PG802-S/E-US	62513121
PG5001-S	66330120	PG503DR/E-EC	61420120	PG803	66565120
PG5001-S/E	61330120	PG503DR/E-EC	61471120	PG803	66573140
PG5001-S/E	64330120	PG503DR/E-O	64420120	PG803/E-EC	61565120
PG5001-S/E-US	62330120	PG503DR/E-O	64471120	PG803/E-EC	61573140
PG5002	66226110	PG503DR/E-US	62420120	PG803/E-O	64565120
PG5002	66268110	PG503DR/E-US	62471120	PG803/E-O	64573140
PG5002/E-EC	61226110	PG503-S	66211110	PG803/E-US	62565120
PG5002/E-EC	61268110	PG503-S/E-EC	61211110	PG803/E-US	62573140
PG5002/E-O	64226110	PG503-S/E-O	64211110	PJ12	10061010
PG5002/E-O	64268110	PG503-S/E-US	62211110	PJ12/E	11061010
PG5002/E-US	62226110	PG503-SDR	66411120	PJ1220	10061020
PG5002/E-US	62268110	PG503-SDR/E-EC ...	61411120	PJ1220/E	11061020
PG5002DR	66426120	PG503-SDR/E-O	64411120	PJ1225	10062030
PG5002DR	66468120	PG503-SDR/E-US ...	62411120	PJ1225/E	11062030
PG5002DR/E-E	61426120	PG6002-S	66319120	PJ125	10062020
PG5002DR/E-E	61468120	PG6002-S/E-EC	61319120	PJ125/E	11062020
PG5002DR/E-O	64426120	PG6002-S/E-O	64319120	PJ15	10062010
PG5002DR/E-O	64468120	PG6002-S/E-US	62319120	PJ15/E	11062010
PG5002DR/E-U	62426120	PG6002-SDR	66719130	PJ200	10053010

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PJ200/E	11053010	PM3031	10030020	PR2003DR	26473121
PJ2000	10054010	PM3031/E	11030020	PR2003DR	26473122
PJ2000/E	11054010	PM3230	10035020	PR2003DR/E-E	21466123
PJ300	10053020	PM3230/E	11035020	PR2003DR/E-E	21473121
PJ300/E	11053020	PM3236	10035010	PR2003DR/E-E	21473122
PJ3000	10054020	PM3236/E	11035010	PR2003DR/E-O	24466123
PJ3000/E	11054020	PM3280	10034030	PR2003DR/E-O	24473121
PJ360	10053030	PM3280/E	11034030	PR2003DR/E-O	24473122
PJ360/E	11053030	PM3281	10032010	PR2004	26274112
PJ3600	10054030	PM3281/E	11032010	PR203	26520132
PJ3600/E	11054030	PM3286	10032020	PR203	26571131
PJ400	10053040	PM3286/E	11032020	PR203	26571132
PJ400/E	11053040	PM34	10030030	PR203/E-EC	21520132
PJ4000	10054040	PM34/E	11030030	PR203/E-EC	21571131
PJ4000/E	11054040	PM400	10003010	PR203/E-EC	21571132
PJ6	10054060	PM400/E	11003010	PR203/E-O	24520132
PJ6/E	11054060	PM4000	10005010	PR203/E-O	24571131
PJ600	10053050	PM4000/E	11005010	PR203/E-O	24571132
PJ600/E	11053050	PM460	10003030	PR3001	26529131
PJ6000	10054050	PM460/E	11003030	PR3001	26568130
PJ6000/E	11054050	PM4600	10005030	PR3001/E	21526131
PM100	10002020	PM4600/E	11005030	PR3001/E	21526132
PM100/E	11002020	PM480	10003020	PR3001/E	24526131
PM11	10030010	PM480/E	11003020	PR3001/E	24526132
PM11/E	11030010	PM4800	10005020	PR3001/E-E	21568132
PM1131	10031030	PM4800/E	11005020	PR3001/E-O	24568132
PM1131/E	11031030	PM6	10006020	PR5001	26329120
PM1181	10036030	PM6/E	11006020	PR5001	26329121
PM1181/E	11036030	PM600	10004020	PR5001/E-EU	21329121
PM1200	10011010	PM600/E	11004020	PR5001/E-O	24329121
PM1200/E	11011010	PM6000	10006010	PR5001-C	26426161
PM15	10031020	PM6000/E	11006010	PR5001-C	26468161
PM15/E	11031020	PM6100	10013010	PR5001-C/E	21426161
PM16	10031010	PM6100/E	11013010	PR5001-C/E	24426161
PM16/E	11031010	PR10003	26270112	PR5001-C/E-E	21468161
PM1680	10036020	PR1203	26265112	PR5001-C/E-O	24468161
PM1680/E	11036020	PR1203	26373131	PR5001-Q	26829151
PM1681	10036010	PR1203	26373132	PR5001-Q/E	24829151
PM1681/E	11036010	PR1203/E-EC	21265112	PR5001-Q/E-E	21829151
PM200	10002010	PR1203/E-EC	21373131	PR5001-Q/E-O	24829151
PM200/E	11002010	PR1203/E-EC	21373132	PR5002	26226112
PM2000	10004010	PR1203/E-O	24265112	PR5002	26268111
PM2000/E	11004010	PR1203/E-O	24373131	PR5002/E-EC	21226112
PM2100	10007010	PR1203/E-O	24373132	PR5002/E-EC	21268111
PM2100/E	11007010	PR2002	26225112	PR5002/E-O	24226112
PM2500	10007020	PR2002	26272110	PR5002/E-O	24268111
PM2500/E	11007020	PR2002/E-EC	21225112	PR5002DR	26426122
PM30	10030040	PR2002/E-EC	21272110	PR5002DR	26468121
PM30/E	11030040	PR2002/E-O	24225112	PR5002DR/E-E	21426122
PM300	10003040	PR2002/E-O	24272110	PR5002DR/E-E	21468121
PM300/E	11003040	PR2003	26266113	PR5002DR/E-O	24426122
PM3000	10012010	PR2003	26273112	PR5002DR/E-O	24468121
PM3000/E	11012010	PR2003DR	26466123	PR5003DU	26469122

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PR5003DU-RUS	26469132	PR803	26565122	S16001DR	26432132
PR5003MC	26269113	PR803	26573141	S16001DR	26432133
PR502	26525133	PR803	26573142	S16001DR	26438130
PR502	26572130	PR803/E-EC	21565122	S16001DR	26438131
PR502/E-EC	21525133	PR803/E-EC	21573141	S16001DR	26438230
PR502/E-EC	21572130	PR803/E-EC	21573142	S16001DR/E	21432131
PR502/E-O	24525133	PR803/E-O	24565122	S16001DR/E	21432132
PR502/E-O	24572130	PR803/E-O	24573141	S16001DR/E	21432133
PR502-C	26471201	PR803/E-O	24573142	S16001DR/E	21438130
PR502-C	26471202	PZ7001-F	26236110	S16001DR/E	21438131
PR502-C/E	21471201	PZ7001-FAI	26236170	S16001DR/E	24432132
PR502-C/E	24471201	PZ7001-FI	26236140	S16001DR/E	24432133
PR502-C/E-EC	21471202	PZ7001-FM	26236120	S16001DR/E	24438130
PR502-C/E-O	24471202	PZ7001-FPU	26236160	S16001DR/E	24438131
PR503	26220112	PZ7001-FSC	26236130	S32000	26633130
PR503	26271110	PZ8001	26236150	S32000	26633131
PR503	26271112	PZ8001DR-F	26436170	S32000	26633132
PR503/E-EC	21220112	PZ8001-F	26236100	S32000	26633133
PR503/E-EC	21271111	PZ8001-K	26236180	S32000	26638140
PR503/E-EC	21271112	S16000	26632140	S32000	26638141
PR503/E-O	24220112	S16000	26632141	S32000	26638240
PR503/E-O	24271111	S16000	26632142	S32000/E	21633131
PR503/E-O	24271112	S16000	26632143	S32000/E	21633132
PR503DR	26420122	S16000	26738110	S32000/E	21633133
PR503DR	26471120	S16000	26738111	S32000/E	21638140
PR503DR	26471122	S16000	26738210	S32000/E	21638141
PR503DR/E-EC	21420122	S16000/E	21632141	S32000/E	24633132
PR503DR/E-EC	21471121	S16000/E	21632142	S32000/E	24633133
PR503DR/E-EC	21471122	S16000/E	21632143	S32000/E	24638140
PR503DR/E-O	24420122	S16000/E	21738110	S32000/E	24638141
PR503DR/E-O	24471121	S16000/E	21738111	S32000/E	24638240
PR503DR/E-O	24471122	S16000/E	24632142	S32000-C	26433172
PR504DR	26171122	S16000/E	24632143	S32000-C	26433173
PR8000	26629130	S16000/E	24738110	S32000-C	26838120
PR8000	26629131	S16000/E	24738111	S32000-C	26838121
PR8000/E-EU	21629131	S16001	26232110	S32000-C/E	21433172
PR8000/E-O	24629131	S16001	26232111	S32000-C/E	21433173
PR8001	26229110	S16001	26232112	S32000-C/E	21838120
PR8001	26229111	S16001	26232113	S32000-C/E	21838121
PR8001/E-EC	21229111	S16001	26338120	S32000-C/E	24433172
PR8001/E-O	24229111	S16001	26338121	S32000-C/E	24433173
PR8002	26267112	S16001	26338220	S32000-C/E	24838120
PR8002/E-EC	21267112	S16001/E	21232111	S32000-C/E	24838121
PR8002/E-O	24267112	S16001/E	21232112	S32000-Q	26833152
PR8002DR	26467122	S16001/E	21232113	S32000-Q	26833153
PR8002DR/E-E	21467122	S16001/E	21338120	S32000-Q	26838100
PR8002DR/E-O	24467122	S16001/E	21338121	S32000-Q	26838101
PR802	26525122	S16001/E	24232112	S32000-Q	26838200
PR802	26572120	S16001/E	24232113	S32000-Q/E	21833152
PR802/E-EC	21525122	S16001/E	24338120	S32000-Q/E	21833153
PR802/E-EC	21572121	S16001/E	24338121	S32000-Q/E	21838100
PR802/E-O	24525122	S16001DR	26432130	S32000-Q/E	21838101
PR802/E-O	24572121	S16001DR	26432131	S32000-Q/E	21838200

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
S32000-Q/E	24833152	S64000	26639270	SB16000/E	22731120
S32000-Q/E	24833153	S64001	26239280	SB16000/E	24630150
S32000-Q/E	24838100	S64001DR	26439290	SB16000/E	24731120
S32000-Q/E	24838101	S8001	26332120	SB16001	26230110
S32000-Q/E	24838200	S8001	26332121	SB16001	26331110
S32001	26233110	S8001	26332122	SB16001/E	21230110
S32001	26233111	S8001	26332123	SB16001/E	21331110
S32001	26233112	S8001	26538100	SB16001/E	22230110
S32001	26233113	S8001	26538101	SB16001/E	22331110
S32001	26238150	S8001	26538200	SB16001/E	24230110
S32001	26238151	S8001/E	21332121	SB16001/E	24331110
S32001	26238250	S8001/E	21332122	SB16001DR	26430140
S32001/E	21233111	S8001/E	21332123	SB16001DR	26731140
S32001/E	21233112	S8001/E	21538100	SB16001DRE	21430140
S32001/E	21233113	S8001/E	21538101	SB16001DRE	21731140
S32001/E	21238150	S8001/E	24332122	SB16001DRE	22731140
S32001/E	21238151	S8001/E	24332123	SB16001DRE	24430140
S32001/E	24233112	S8001/E	24538100	SB16001DRE	24731140
S32001/E	24233113	S8001/E	24538101	SB16001DRF	26430300
S32001/E	24238150	S8001/E	24538200	SB16001DRF	26731300
S32001/E	24238151	SAG105	26080802	SB16001-FE	21331300
S32001DR	26433120	SAG105E	21080802	SB16001-FE	24331300
S32001DR	26433121	SAG125P	26180802	SB16001-IN	26331121
S32001DR	26433122	SAG125PE	21180802	SB16001-S	26230120
S32001DR	26433123	SAG204	26281801	SB16001-S	26331120
S32001DR	26438160	SAG204	26281802	SB24001DR	26531140
S32001DR	26438161	SAG204E	21281802	SB24001DR	26531141
S32001DR	26438260	SAG245	26115802	SB24001DRE	21531140
S32001DR/E	21433121	SAG245	26181802	SB24001DRE	21531141
S32001DR/E	21433122	SAG245E	21181802	SB24001DRE	22531140
S32001DR/E	21433123	SAG245PE	21115802	SB24001DRE	22531141
S32001DR/E	21438160	SAG285	26181803	SB24001DRE	24531140
S32001DR/E	21438161	SAG285E	21181803	SB24001DRE	24531141
S32001DR/E	24433122	SB12001	26330120	SB24001DRI	26531132
S32001DR/E	24433123	SB12001	26531120	SB24001DRS	26531130
S32001DR/E	24438160	SB12001/E	21330120	SB24001DRS	26531131
S32001DR/E	24438161	SB12001/E	21531120	SB30000P/E	21631160
S32001DR-Q	21838110	SB12001/E	22330120	SB30000-PE	22731100
S32001DR-Q	21838111	SB12001/E	22531120	SB30000-PE	22731101
S32001DR-Q	21838210	SB12001/E	24330120	SB32000	26631150
S32001DR-Q	24838110	SB12001/E	24531120	SB32000	26631151
S32001DR-Q	24838111	SB12001DR	26731160	SB32000/E	21631150
S32001DR-Q	24838210	SB12001DRE	21731160	SB32000/E	21631151
S32001DR-Q	26833112	SB12001DRE	21731161	SB32000/E	22631150
S32001DR-Q	26833162	SB12001DRE	24731160	SB32000/E	22631151
S32001DR-Q	26833163	SB12001-IN	26531111	SB32000/E	24631150
S32001DR-Q	26838110	SB12001-S	26330110	SB32000/E	24631151
S32001DR-Q	26838111	SB12001-S	26531110	SB32000/E-A	21631550
S32001DR-Q	26838210	SB16000	26630150	SB32000/E-A	21631551
S32001DR-Q/E	21833162	SB16000	26731120	SB32000/E-A	21631552
S32001DR-Q/E	21833163	SB16000/E	21630150	SB32000-F	26631300
S32001DR-Q/E	24833162	SB16000/E	21731120	SB32000-F	26631301
S32001DR-Q/E	24833163	SB16000/E	22630150	SB32000-FE	21631300

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
SB32000-FE	21631301	SB8000/E	24731110	SG32000	66638140
SB32000-FE	22631300	SB8001	26530130	SG32000	66638141
SB32000-FE	22631301	SB8001	26531150	SG32000/E	61633130
SB32000-FE	24631300	SB8001/E	21530130	SG32000/E	61633131
SB32000-FE	24631301	SB8001/E	21531150	SG32000/E	61638140
SB32000P/E	21631311	SB8001/E	22530130	SG32000/E	61638141
SB32000P/E	23631300	SB8001/E	22531150	SG32000/E	64633130
SB32000P/E	23631301	SB8001/E	24530130	SG32000/E	64633131
SB32000PAE	23634170	SB8001/E	24531150	SG32000/E	64638140
SB32000PDE	23634301	SB8001DR	26730150	SG32000/E	64638141
SB32000-PE	21631101	SB8001DR	26731150	SG32000P/E	61333150
SB32000-PE	21631102	SB8001-IN	26530111	SG32000P/E	61333151
SB32000-PE	21634101	SB8001-IN	26531101	SG32000P/E	61338150
SB32000-PE	22631100	SB8001-S	26530110	SG32000P/E	61338151
SB32000-PE	22631101	SB8001-S	26531100	SG32001	66233110
SB32000-PE	22634101	SG16000	66632140	SG32001	66233111
SB32000-PE	24631101	SG16000	66632141	SG32001	66238150
SB32000-PE	24634101	SG16000	66738110	SG32001	66238151
SB32000PFE	23631320	SG16000	66738111	SG32001/E	61233110
SB32000PHE	21634111	SG16000/E	61632140	SG32001/E	61233111
SB32000PHE	23634111	SG16000/E	61632141	SG32001/E	61238150
SB32000PHE	24631110	SG16000/E	61738110	SG32001/E	61238151
SB32000PHE	24631111	SG16000/E	61738111	SG32001/E	64233110
SB32000PHE	24634111	SG16000/E	64632140	SG32001/E	64233111
SB32000PME	23631121	SG16000/E	64632141	SG32001/E	64238150
SB32000PME	23634121	SG16000/E	64738110	SG32001/E	64238151
SB32000PPE	23634131	SG16000/E	64738111	SG32001DR	66433120
SB32000PSE	24634170	SG16001	66232110	SG32001DR	66433121
SB32001DR	26431130	SG16001	66232111	SG32001DR	66438160
SB32001DR	26431131	SG16001	66338120	SG32001DR	66438161
SB32001DRE	21431130	SG16001	66338121	SG32001DRE	61433120
SB32001DRE	21431131	SG16001/E	61232110	SG32001DRE	61433121
SB32001DRE	22431130	SG16001/E	61232111	SG32001DRE	61438160
SB32001DRE	22431131	SG16001/E	61338120	SG32001DRE	61438161
SB32001DRE	24431130	SG16001/E	61338121	SG32001DRE	64433120
SB32001DRE	24431131	SG16001/E	64232110	SG32001DRE	64433121
SB32001DRF	26431310	SG16001/E	64232111	SG32001DRE	64438160
SB32001DRF	26431311	SG16001/E	64338120	SG32001DRE	64438161
SB32x1DRFE	21431310	SG16001/E	64338121	SG8001	66332120
SB32x1DRFE	21431311	SG16001DR	66432130	SG8001	66332121
SB32x1DRFE	22431310	SG16001DR	66432131	SG8001	66538100
SB32x1DRFE	22431311	SG16001DR	66438130	SG8001	66538101
SB32x1DRFE	24431310	SG16001DR	66438131	SG8001/E	61332120
SB32x1DRFE	24431311	SG16001DRE	61432130	SG8001/E	61332121
SB35000-PE	22131160	SG16001DRE	61432131	SG8001/E	61538100
SB35000-PE	22131161	SG16001DRE	61438130	SG8001/E	61538101
SB8000	26730160	SG16001DRE	61438131	SG8001/E	64332120
SB8000	26731110	SG16001DRE	64432130	SG8001/E	64332121
SB8000/E	21730160	SG16001DRE	64432131	SG8001/E	64538100
SB8000/E	21731110	SG16001DRE	64438130	SG8001/E	64538101
SB8000/E	22730160	SG16001DRE	64438131	SM12	10040010
SB8000/E	22731110	SG32000	66633130	SM12/E	11040010
SB8000/E	24730160	SG32000	66633131	SM1220	10040020

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
SM1220/E	11040020	SR64001DRE	21439191		
SM1225	10043050	SR64001DRE	24439191		
SM1225/E	11043050	SR8001	26538102		
SM1230	10043060	SR8001/E	21538102		
SM1230/E	11043060	SR8001/E	24538102		
SM125	10043040				
SM125/E	11043040				
SM15	10043030				
SM15/E	11043030				
SM1503	10043010				
SM1503/E	11043010				
SM1520	10043020				
SM1520/E	11043020				
SM3000	10041020				
SM3000/E	11041020				
SM3600	10041030				
SM3600/E	11041030				
SM6000	10041010				
SM6000/E	11041010				
SR16000	26738112				
SR16000/E	21738112				
SR16000/E	24738112				
SR16001	26338122				
SR16001/E	21338122				
SR16001/E	24338122				
SR16001DR	26438132				
SR16001DRE	21438132				
SR16001DRE	24438132				
SR32000	26638142				
SR32000/E	21638142				
SR32000/E	24638142				
SR32000-C	26838122				
SR32000C/E	21838122				
SR32000C/E	24838122				
SR32000-Q	26838102				
SR32000Q/E	21838102				
SR32000Q/E	24838102				
SR32001	26238152				
SR32001/E	21238152				
SR32001/E	24238152				
SR32001DR	26438162				
SR32001DRE	21438162				
SR32001DRE	24438162				
SR32001DRQ	21838112				
SR32001DRQ	24838112				
SR32001DRQ	26838112				
SR64000	26639171				
SR64000/E	21639171				
SR64000/E	24639171				
SR64001	26239181				
SR64001/E	21239181				
SR64001/E	24239181				
SR64001DR	26439191				

Balances in LARS, sorted by TDNR.Explanation of the designations [page 1-35!](#)

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
10002010	PM200	10043040	SM125	11007030	CM2000/E
10002020	PM100	10043050	SM1225	11011010	PM1200/E
10003010	PM400	10043060	SM1230	11012010	PM3000/E
10003020	PM480	10051010	AJ100	11013010	PM6100/E
10003030	PM460	10052010	CJ150	11014010	CM1200/E
10003040	PM300	10052020	CJ500	11021010	AM100/E
10003050	CM400	10053010	PJ200	11021020	AM50/E
10004010	PM2000	10053020	PJ300	11021030	CM200/E
10004020	PM600	10053030	PJ360	11022010	AM150/E
10005010	PM4000	10053040	PJ400	11023010	AM260/E
10005020	PM4800	10053050	PJ600	11030010	PM11/E
10005030	PM4600	10054010	PJ2000	11030020	PM3031/E
10006010	PM6000	10054020	PJ3000	11030030	PM34/E
10006020	PM6	10054030	PJ3600	11030040	PM30/E
10007010	PM2100	10054040	PJ4000	11031010	PM16/E
10007020	PM2500	10054050	PJ6000	11031020	PM15/E
10007030	CM2000	10054060	PJ6	11031030	PM1131/E
10011010	PM1200	10061010	PJ12	11032010	PM3281/E
10012010	PM3000	10061020	PJ1220	11032020	PM3286/E
10013010	PM6100	10062010	PJ15	11034030	PM3280/E
10014010	CM1200	10062020	PJ125	11035010	PM3236/E
10021010	AM100	10062030	PJ1225	11035020	PM3230/E
10021020	AM50	10071010	BB240	11036010	PM1681/E
10021030	CM200	10071020	BB244	11036020	PM1680/E
10022010	AM150	10072010	BB300	11036030	PM1181/E
10023010	AM260	10072020	BB120	11040010	SM12/E
10030010	PM11	10073010	BB2400	11040020	SM1220/E
10030020	PM3031	10073020	BB2440	11041010	SM6000/E
10030030	PM34	10073030	BB1300	11041020	SM3000/E
10030040	PM30	10073040	BB1200	11041030	SM3600/E
10031010	PM16	10073050	BB600	11043010	SM1503/E
10031020	PM15	10074010	BB3000	11043020	SM1520/E
10031030	PM1131	10074020	BB3	11043030	SM15/E
10032010	PM3281	11002010	PM200/E	11043040	SM125/E
10032020	PM3286	11002020	PM100/E	11043050	SM1225/E
10034030	PM3280	11003010	PM400/E	11043060	SM1230/E
10035010	PM3236	11003020	PM480/E	11051010	AJ100/E
10035020	PM3230	11003030	PM460/E	11052010	CJ150/E
10036010	PM1681	11003040	PM300/E	11052020	CJ500/E
10036020	PM1680	11003050	CM400/E	11053010	PJ200/E
10036030	PM1181	11004010	PM2000/E	11053020	PJ300/E
10040010	SM12	11004020	PM600/E	11053030	PJ360/E
10040020	SM1220	11005010	PM4000/E	11053040	PJ400/E
10041010	SM6000	11005020	PM4800/E	11053050	PJ600/E
10041020	SM3000	11005030	PM4600/E	11054010	PJ2000/E
10041030	SM3600	11006010	PM6000/E	11054020	PJ3000/E
10043010	SM1503	11006020	PM6/E	11054030	PJ3600/E
10043020	SM1520	11007010	PM2100/E	11054040	PJ4000/E
10043030	SM15	11007020	PM2500/E		

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
11054050	PJ6000/E	21267112	PR8002/E-EC	21424710	GB3002/E-EC
11054060	PJ6/E	21268111	PR5002/E-EC	21424711	GB3002/E-EC
11061010	PJ12/E	21271111	PR503/E-EC	21426122	PR5002DR/E-E
11061020	PJ1220/E	21271112	PR503/E-EC	21426161	PR5001-C/E
11062010	PJ15/E	21272110	PR2002/E-EC	21430140	SB16001DRE
11062020	PJ125/E	21276110	PB303/E-EC	21430550	GL16DR/E
11062030	PJ1225/E	21277110	AB204/E-EC	21431130	SB32001DRE
21080802	SAG105E	21277550	AB204/E-A	21431131	SB32001DRE
21110102	AG135E	21281802	SAG204E	21431310	SB32x1DRFE
21115102	AG285E	21312120	AB104/E	21431311	SB32x1DRFE
21115110	AG245E	21312122	AB104/E-EC	21431550	GL32DR/E
21115111	AG245E	21312560	AB184/E-A3	21431551	GL32DR/E
21115112	AG245E	21319120	PB153/E	21432131	S16001DR/E
21115802	SAG245PE	21319121	PB153/E-EC	21432132	S16001DR/E
21180802	SAG125PE	21328120	PB5001/E	21432133	S16001DR/E
21181802	SAG245E	21328300	PB5001-F/E	21433121	S32001DR/E
21181803	SAG285E	21328310	PB7001-F/E	21433122	S32001DR/E
21210110	AG104E	21329121	PR5001/E-EU	21433123	S32001DR/E
21210111	AG104E	21330120	SB12001/E	21433172	S32000-C/E
21210112	AG104E	21330710	GB16001/E-EC	21433173	S32000-C/E
21210132	AG64E	21330711	GB16001/E-EC	21438130	S16001DR/E
21212110	AB204/E	21331110	SB16001/E	21438131	S16001DR/E
21212112	AB204/E-EC	21331300	SB16001-FE	21438132	SR16001DRE
21212550	AB204/E-A	21331710	GB16001/E-EC	21438160	S32001DR/E
21212552	AB204/E-A	21332121	S8001/E	21438161	S32001DR/E
21215120	AG204E	21332122	S8001/E	21438162	SR32001DRE
21215121	AG204E	21332123	S8001/E	21439191	SR64001DRE
21215122	AG204E	21338120	S16001/E	21463120	PB3002DR/E-E
21219110	PB303/E	21338121	S16001/E	21463550	PB3002DR/E-A
21219111	PB303/E-EC	21338122	SR16001/E	21463710	GB3002/E-EC
21220112	PR503/E-EC	21360800	HR73/E	21466123	PR2003DR/E-E
21223110	PB1502/E	21360810	HR73-HT/E	21467122	PR8002DR/E-E
21223111	PB1502/E-EC	21360830	HR83/E	21468121	PR5002DR/E-E
21224110	PB3002/E	21362710	GB802/E-EC	21468161	PR5001-C/E-E
21224111	PB3002/E-EC	21373131	PR1203/E-EC	21471121	PR503DR/E-EC
21225112	PR2002/E-EC	21373132	PR1203/E-EC	21471122	PR503DR/E-EC
21226112	PR5002/E-EC	21376120	PB153/E-EC	21471201	PR502-C/E
21228110	PB8001/E	21377120	AB104/E-EC	21471202	PR502-C/E-EC
21229111	PR8001/E-EC	21377560	AB184/E-A3	21473121	PR2003DR/E-E
21230110	SB16001/E	21414612	CB603/E-EC	21473122	PR2003DR/E-E
21232111	S16001/E	21415130	AG204DRE	21476130	PB303DR/E-EC
21232112	S16001/E	21415131	AG204DRE	21476300	PB303DR/E-A
21232113	S16001/E	21415132	AG204DRE	21476610	CB603/E-EC
21233111	S32001/E	21415133	AG204DRE	21512132	AB54/E-EC
21233112	S32001/E	21419130	PB303DR/E	21513110	AB54/E
21233113	S32001/E	21419131	PB303DR/E-EC	21513111	AB54/E-EC
21238150	S32001/E	21419300	PB303DR/E-A	21520132	PR203/E-EC
21238151	S32001/E	21419301	PB303DR/E-A	21523130	PB602/E
21238152	SR32001/E	21420122	PR503DR/E-EC	21523131	PB602/E-EC
21239181	SR64001/E	21424120	PB3002DR/E	21523710	GB1302/E-EC
21262110	PB1502/E-EC	21424121	PB3002DR/E-E	21523711	GB1302/E-EC
21263110	PB3002/E-EC	21424550	PB3002DR/E-A	21524710	GB2002/E-EC
21265112	PR1203/E-EC	21424551	PB3002DR/E-A	21524711	GB2002/E-EC

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
21525122	PR802/E-EC	21632141	S16000/E	21838200	S32000-Q/E
21525133	PR502/E-EC	21632142	S16000/E	21838210	S32001DR-Q
21526131	PR3001/E	21632143	S16000/E	21862710	GB1501/E-EC
21526132	PR3001/E	21633131	S32000/E	21863710	GB3001/E-EC
21528550	GL3DR/E	21633132	S32000/E	22131160	SB35000-PE
21528710	GB6001/E-EC	21633133	S32000/E	22131161	SB35000-PE
21528711	GB6001/E-EC	21634101	SB32000-PE	22212112	AB204/E-US
21530130	SB8001/E	21634111	SB32000PHE	22219111	PB303/E-US
21531120	SB12001/E	21634180	B32000-PNG	22223111	PB1502/E-US
21531140	SB24001DRE	21634190	B32000PIE	22224111	PB3002/E-US
21531141	SB24001DRE	21636550	GL8R/E	22228110	PB8001/E
21531150	SB8001/E	21638140	S32000/E	22230110	SB16001/E
21538100	S8001/E	21638141	S32000/E	22262110	PB1502/E-US
21538101	S8001/E	21638142	SR32000/E	22263110	PB3002/E-US
21538102	SR8001/E	21639171	SR64000/E	22276110	PB303/E-US
21560800	HG53/E	21662160	PB1501/E	22277110	AB204/E-US
21560810	HG53-HT/E	21662550	PB1501/E-A	22312122	AB104/E-US
21560830	HG63/E	21663130	PB3001/E	22315622	CG1003E-US
21562130	PB602/E-EC	21663710	GB3002DR/E-E	22319121	PB153/E-US
21562710	GB1302/E-EC	21676610	CB1503DR/E-E	22328120	PB5001/E
21563710	GB2002/E-EC	21714610	CB203/E-EC	22328300	PB5001-F/E
21565122	PR803/E-EC	21714612	CB203/E-EC	22328310	PB7001-F/E
21568132	PR3001/E-E	21723170	PB801/E	22330120	SB12001/E
21571131	PR203/E-EC	21730160	SB8000/E	22330701	GB16001/E-US
21571132	PR203/E-EC	21731110	SB8000/E	22331110	SB16001/E
21572121	PR802/E-EC	21731120	SB16000/E	22331700	GB16001/E-US
21572130	PR502/E-EC	21731140	SB16001DRE	22362700	GB802/E-US
21573141	PR803/E-EC	21731160	SB12001DRE	22376120	PB153/E-US
21573142	PR803/E-EC	21731161	SB12001DRE	22377120	AB104/E-US
21577130	AB54/E-EC	21731550	GL16DR/E	22414603	CB603/E-US
21622613	CB1503DR/E-E	21738110	S16000/E	22419131	PB303DR/E-US
21622614	CB1503DR/E-E	21738111	S16000/E	22424121	PB3002DR/E-U
21623160	PB1501/E	21738112	SR16000/E	22424701	GB3002/E-US
21623550	PB1501/E-A	21762170	PB801/E	22430550	GL16DR/E
21623551	PB1501/E-A	21776610	CB203/E-EC	22431130	SB32001DRE
21624130	PB3001/E	21823710	GB1501/E-EC	22431131	SB32001DRE
21624710	GB3002DR/E-E	21823711	GB1501/E-EC	22431310	SB32x1DRFE
21624711	GB3002DR/E-E	21824710	GB3001/E-EC	22431311	SB32x1DRFE
21628130	PB8000/E	21824711	GB3001/E-EC	22431550	GL32DR/E
21628550	GL8/E	21829151	PR5001-Q/E-E	22431551	GL32DR/E
21629131	PR8000/E-EU	21833152	S32000-Q/E	22463120	PB3002DR/E-U
21630150	SB16000/E	21833153	S32000-Q/E	22463700	GB3002/E-US
21631101	SB32000-PE	21833162	S32001DR-Q/E	22476130	PB303DR/E-US
21631102	SB32000-PE	21833163	S32001DR-Q/E	22476600	CB603/E-US
21631150	SB32000/E	21838100	S32000-Q/E	22512132	AB54/E-US
21631151	SB32000/E	21838101	S32000-Q/E	22513111	AB54/E-US
21631160	SB30000P/E	21838102	SR32000Q/E	22523131	PB602/E-US
21631300	SB32000-FE	21838110	S32001DR-Q	22523701	GB1302/E-US
21631301	SB32000-FE	21838111	S32001DR-Q	22524701	GB2002/E-US
21631311	SB32000P/E	21838112	SR32001DRQ	22528550	GL3DR/E
21631550	SB32000/E-A	21838120	S32000-C/E	22528701	GB6001/E-US
21631551	SB32000/E-A	21838121	S32000-C/E	22530130	SB8001/E
21631552	SB32000/E-A	21838122	SR32000C/E	22531120	SB12001/E

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
22531140	SB24001DRE	23634111	SB32000PHE	24373131	PR1203/E-O
22531141	SB24001DRE	23634121	SB32000PME	24373132	PR1203/E-O
22531150	SB8001/E	23634131	SB32000PPE	24376120	PB153/E-EC
22562130	PB602/E-US	23634170	SB32000PAE	24377120	AB104/E-EC
22562700	GB1302/E-US	23634301	SB32000PDE	24414612	CB603/E-EC
22563700	GB2002/E-US	23728550	GL3/E	24419131	PB303DR/E-EC
22577130	AB54/E-US	23731550	GL16MR/E	24420122	PR503DR/E-O
22622604	CB1503DR/E-U	24212112	AB204/E-EC	24424121	PB3002DR/E-E
22622605	CB1503DR/E-U	24219111	PB303/E-EC	24424711	GB3002/E-EC
22623160	PB1501/E	24220112	PR503/E-O	24426122	PR5002DR/E-O
22624130	PB3001/E	24223111	PB1502/E-EC	24426161	PR5001-C/E
22624701	GB3002DR/E-U	24224111	PB3002/E-EC	24430140	SB16001DRE
22628130	PB8000/E	24225112	PR2002/E-O	24430550	GL16DR/E
22628150	PB5000-PB	24226112	PR5002/E-O	24431130	SB32001DRE
22628550	GL8/E	24228110	PB8001/E	24431131	SB32001DRE
22630150	SB16000/E	24229111	PR8001/E-O	24431310	SB32x1DRFE
22631100	SB32000-PE	24230110	SB16001/E	24431311	SB32x1DRFE
22631101	SB32000-PE	24232112	S16001/E	24431550	GL32DR/E
22631150	SB32000/E	24232113	S16001/E	24431551	GL32DR/E
22631151	SB32000/E	24233112	S32001/E	24432132	S16001DR/E
22631300	SB32000-FE	24233113	S32001/E	24432133	S16001DR/E
22631301	SB32000-FE	24238150	S32001/E	24433122	S32001DR/E
22634101	SB32000-PE	24238151	S32001/E	24433123	S32001DR/E
22636550	GL8R/E	24238152	SR32001/E	24433172	S32000-C/E
22662160	PB1501/E	24239181	SR64001/E	24433173	S32000-C/E
22663130	PB3001/E	24262110	PB1502/E-EC	24438130	S16001DR/E
22663700	GB3002DR/E-U	24263110	PB3002/E-EC	24438131	S16001DR/E
22676600	CB1503DR/E-U	24265112	PR1203/E-O	24438132	SR16001DRE
22714603	CB203/E-US	24267112	PR8002/E-O	24438160	S32001DR/E
22723170	PB801/E	24268111	PR5002/E-O	24438161	S32001DR/E
22730160	SB8000/E	24271111	PR503/E-O	24438162	SR32001DRE
22731100	SB30000-PE	24271112	PR503/E-O	24439191	SR64001DRE
22731101	SB30000-PE	24272110	PR2002/E-O	24463120	PB3002DR/E-E
22731110	SB8000/E	24276110	PB303/E-EC	24463710	GB3002/E-EC
22731120	SB16000/E	24277110	AB204/E-EC	24466123	PR2003DR/E-O
22731140	SB16001DRE	24312122	AB104/E-EC	24467122	PR8002DR/E-O
22731550	GL16DR/E	24315622	CG1003E	24468121	PR5002DR/E-O
22762170	PB801/E	24319121	PB153/E-EC	24468161	PR5001-C/E-O
22776600	CB203/E-US	24328120	PB5001/E	24471121	PR503DR/E-O
22823701	GB1501/E-US	24328300	PB5001-F/E	24471122	PR503DR/E-O
22824701	GB3001/E-US	24328310	PB7001-F/E	24471201	PR502-C/E
22862700	GB1501/E-US	24329121	PR5001/E-O	24471202	PR502-C/E-O
22863700	GB3001/E-US	24330120	SB12001/E	24473121	PR2003DR/E-O
23331550	GL16MR/E	24330711	GB16001/E-EC	24473122	PR2003DR/E-O
23428550	GL8MR/E	24331110	SB16001/E	24476130	PB303DR/E-EC
23430550	GL16MR/E	24331300	SB16001-FE	24476610	CB603/E-EC
23431550	GL32MR/E	24331710	GB16001/E-EC	24512132	AB54/E-EC
23431551	GL32MR/E	24332122	S8001/E	24520132	PR203/E-O
23628140	PB8000-PPE	24332123	S8001/E	24523131	PB602/E-EC
23631121	SB32000PME	24338120	S16001/E	24523711	GB1302/E-EC
23631300	SB32000P/E	24338121	S16001/E	24524711	GB2002/E-EC
23631301	SB32000P/E	24338122	SR16001/E	24525122	PR802/E-O
23631320	SB32000PFE	24362710	GB802/E-EC	24525133	PR502/E-O

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
24526131	PR3001/E	24639171	SR64000/E	26210120	AG14K
24526132	PR3001/E	24662160	PB1501/E	26210132	AG64
24528550	GL3DR/E	24663130	PB3001/E	26210610	CG503
24528711	GB6001/E-EC	24663710	GB3002DR/E-E	26212110	AB204
24530130	SB8001/E	24676610	CB1503DR/E-E	26212112	AB204
24531120	SB12001/E	24714612	CB203/E-EC	26215120	AG204
24531140	SB24001DRE	24723170	PB801/E	26215121	AG204
24531141	SB24001DRE	24730160	SB8000/E	26215122	AG204
24531150	SB8001/E	24731110	SB8000/E	26219110	PB303
24538100	S8001/E	24731120	SB16000/E	26219111	PB303
24538101	S8001/E	24731140	SB16001DRE	26220112	PR503
24538102	SR8001/E	24731160	SB12001DRE	26223110	PB1502
24538200	S8001/E	24731550	GL16DR/E	26223111	PB1502
24562130	PB602/E-EC	24738110	S16000/E	26224110	PB3002
24562710	GB1302/E-EC	24738111	S16000/E	26224111	PB3002
24563710	GB2002/E-EC	24738112	SR16000/E	26225112	PR2002
24565122	PR803/E-O	24762170	PB801/E	26226112	PR5002
24568132	PR3001/E-O	24776610	CB203/E-EC	26228110	PB8001
24571131	PR203/E-O	24823711	GB1501/E-EC	26228120	PB8001-S
24571132	PR203/E-O	24824711	GB3001/E-EC	26228121	PB8001-IN
24572121	PR802/E-O	24829151	PR5001-Q/E	26228201	PB8001-DYN
24572130	PR502/E-O	24829151	PR5001-Q/E-O	26229110	PR8001
24573141	PR803/E-O	24833152	S32000-Q/E	26229111	PR8001
24573142	PR803/E-O	24833153	S32000-Q/E	26230110	SB16001
24577130	AB54/E-EC	24833162	S32001DR-Q/E	26230120	SB16001-S
24622613	CB1503DR/E-E	24833163	S32001DR-Q/E	26232110	S16001
24622614	CB1503DR/E-E	24838100	S32000-Q/E	26232111	S16001
24623160	PB1501/E	24838101	S32000-Q/E	26232112	S16001
24624130	PB3001/E	24838102	SR32000Q/E	26232113	S16001
24624711	GB3002DR/E-E	24838110	S32001DR-Q	26233110	S32001
24628130	PB8000/E	24838111	S32001DR-Q	26233111	S32001
24628550	GL8/E	24838112	SR32001DRQ	26233112	S32001
24629131	PR8000/E-O	24838120	S32000-C/E	26233113	S32001
24630150	SB16000/E	24838121	S32000-C/E	26236100	PZ8001-F
24631101	SB32000-PE	24838122	SR32000C/E	26236110	PZ7001-F
24631110	SB32000PHE	24838200	S32000-Q/E	26236120	PZ7001-FM
24631111	SB32000PHE	24838210	S32001DR-Q	26236130	PZ7001-FSC
24631150	SB32000/E	24862710	GB1501/E-EC	26236140	PZ7001-FI
24631151	SB32000/E	24863710	GB3001/E-EC	26236150	PZ8001
24631300	SB32000-FE	26080802	SAG105	26236160	PZ7001-FPU
24631301	SB32000-FE	26110102	AG135	26236170	PZ7001-FAI
24632142	S16000/E	26115102	AG285	26236180	PZ8001-K
24632143	S16000/E	26115110	AG245	26238150	S32001
24633132	S32000/E	26115111	AG245	26238151	S32001
24633133	S32000/E	26115112	AG245	26238152	SR32001
24634101	SB32000-PE	26115802	SAG245	26238250	S32001
24634111	SB32000PHE	26171122	PR504DR	26239181	SR64001
24634170	SB32000PSE	26180802	SAG125P	26239280	S64001
24636550	GL8R/E	26181802	SAG245	26262110	PB1502
24638140	S32000/E	26181803	SAG285	26263110	PB3002
24638141	S32000/E	26210110	AG104	26265112	PR1203
24638142	SR32000/E	26210111	AG104	26266113	PR2003
24638240	S32000/E	26210112	AG104	26267112	PR8002

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
26268111	PR5002	26360820	HR73-PPG	26432133	S16001DR
26269113	PR5003MC	26360830	HR83	26433120	S32001DR
26270112	PR10003	26362710	GB802-EC	26433121	S32001DR
26271110	PR503	26362720	GB802-HK	26433122	S32001DR
26271112	PR503	26362730	GB802-SING	26433123	S32001DR
26272110	PR2002	26362740	GB802-TW	26433172	S32000-C
26273112	PR2003	26362750	GB802-KOR	26433173	S32000-C
26274112	PR2004	26373131	PR1203	26436170	PZ8001DR-F
26276110	PB303	26373132	PR1203	26438130	S16001DR
26277110	AB204	26376120	PB153	26438131	S16001DR
26281801	SAG204	26377120	AB104	26438132	SR16001DR
26281802	SAG204	26412710	GB204-EC	26438160	S32001DR
26312120	AB104	26412752	GB204-KOR	26438161	S32001DR
26312122	AB104	26414612	CB603-EC	26438162	SR32001DR
26315622	CG1003	26415130	AG204DR	26438230	S16001DR
26319120	PB153	26415131	AG204DR	26438260	S32001DR
26319121	PB153	26415132	AG204DR	26439191	SR64001DR
26328120	PB5001	26415133	AG204DR	26439290	S64001DR
26328130	PB5001-S	26419130	PB303DR	26463120	PB3002DR
26328131	PB5001-IN	26419131	PB303DR	26463200	PB3002DR-DYN
26328300	PB5001-F	26419500	B303	26463710	GB3002-EC
26328310	PB7001-F	26419501	B303	26463720	GB3002-HK
26329120	PR5001	26419710	GB303-EC	26463730	GB3002-SING
26329121	PR5001	26419751	GB303-KOR	26463740	GB3002-TW
26330110	SB12001-S	26420122	PR503DR	26463750	GB3002-KOR
26330120	SB12001	26424120	PB3002DR	26466123	PR2003DR
26330710	GB16001-EC	26424121	PB3002DR	26467122	PR8002DR
26330711	GB16001-EC	26424201	PB3002DR-DYN	26468121	PR5002DR
26330720	GB16001-HK	26424710	GB3002-EC	26468161	PR5001-C
26330721	GB16001-HK	26424711	GB3002-EC	26469122	PR5003DU
26330730	GB16001-SING	26424720	GB3002-HK	26469132	PR5003DU-RUS
26330731	GB16001-SING	26424721	GB3002-HK	26471120	PR503DR
26330740	GB16001-TW	26424730	GB3002-SING	26471122	PR503DR
26330741	GB16001-TW	26424731	GB3002-SING	26471201	PR502-C
26330751	GB16001-KOR	26424740	GB3002-TW	26471202	PR502-C
26331110	SB16001	26424741	GB3002-TW	26473121	PR2003DR
26331120	SB16001-S	26424751	GB3002-KOR	26473122	PR2003DR
26331121	SB16001-IN	26426122	PR5002DR	26476130	PB303DR
26331710	GB16001-EC	26426161	PR5001-C	26476500	B303
26331720	GB16001-HK	26428180	PB8001-C	26476610	CB603-EC
26331730	GB16001-SING	26428320	PB8002DR-F	26476710	GB303-EC
26331740	GB16001-TW	26430140	SB16001DR	26476750	GB303-KOR
26331750	GB16001-KOR	26430300	SB16001DRF	26477710	GB204-EC
26332120	S8001	26430550	GL16DR	26477750	GB204-KOR
26332121	S8001	26431130	SB32001DR	26512132	AB54
26332122	S8001	26431131	SB32001DR	26512500	B154
26332123	S8001	26431310	SB32001DRF	26512502	B154
26338120	S16001	26431311	SB32001DRF	26513110	AB54
26338121	S16001	26431550	GL32DR	26513111	AB54
26338122	SR16001	26431551	GL32DR	26520132	PR203
26338220	S16001	26432130	S16001DR	26523130	PB602
26360800	HR73	26432131	S16001DR	26523131	PB602
26360810	HR73-HT	26432132	S16001DR	26523150	PB302

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
26523151	PB302	26560810	HG53-HT	26632143	S16000
26523500	B1302	26560830	HG63	26633130	S32000
26523501	B1302	26562130	PB602	26633131	S32000
26523710	GB1302-EC	26562150	PB302	26633132	S32000
26523711	GB1302-EC	26562500	B1302	26633133	S32000
26523720	GB1302-HK	26562710	GB1302-EC	26636550	GL8R
26523721	GB1302-HK	26562720	GB1302-HK	26638140	S32000
26523730	GB1302-SING	26562730	GB1302-SING	26638141	S32000
26523731	GB1302-SING	26562740	GB1302-TW	26638142	SR32000
26523740	GB1302-TW	26562750	GB1302-KOR	26638240	S32000
26523741	GB1302-TW	26563710	GB2002-EC	26639171	SR64000
26523751	GB1302-KOR	26563720	GB2002-HK	26639270	S64000
26524710	GB2002-EC	26563730	GB2002-SING	26662160	PB1501
26524711	GB2002-EC	26563740	GB2002-TW	26663130	PB3001
26524720	GB2002-HK	26563750	GB2002-KOR	26663500	B3002DR
26524721	GB2002-HK	26565122	PR803	26663710	GB3002DR-EC
26524730	GB2002-SING	26568130	PR3001	26663720	GB3002DR-HK
26524731	GB2002-SING	26571131	PR203	26663730	GB3002DR-SIN
26524740	GB2002-TW	26571132	PR203	26663740	GB3002DR-TW
26524741	GB2002-TW	26572120	PR802	26663750	GB3002DR-KOR
26524751	GB2002-KOR	26572130	PR502	26676150	PB302-ZAG
26525122	PR802	26573141	PR803	26676610	CB1503DR-EC
26525133	PR502	26573142	PR803	26714612	CB203-EC
26528550	GL3DR	26577130	AB54	26723170	PB801
26528710	GB6001-EC	26577500	B154	26723500	B502
26528711	GB6001-EC	26619150	PB302-ZAG	26723501	B502
26528720	GB6001-HK	26622613	CB1503DR-EC	26730150	SB8001DR
26528721	GB6001-HK	26622614	CB1503DR-EC	26730160	SB8000
26528730	GB6001-SING	26623160	PB1501	26731110	SB8000
26528731	GB6001-SING	26624130	PB3001	26731120	SB16000
26528740	GB6001-TW	26624500	B3002DR	26731140	SB16001DR
26528741	GB6001-TW	26624501	B3002DR	26731150	SB8001DR
26528751	GB6001-KOR	26624710	GB3002DR-EC	26731160	SB12001DR
26529131	PR3001	26624711	GB3002DR-EC	26731300	SB16001DRF
26530110	SB8001-S	26624720	GB3002DR-HK	26731550	GL16DR
26530111	SB8001-IN	26624721	GB3002DR-HK	26738110	S16000
26530130	SB8001	26624730	GB3002DR-SIN	26738111	S16000
26531100	SB8001-S	26624731	GB3002DR-SIN	26738112	SR16000
26531101	SB8001-IN	26624740	GB3002DR-TW	26738210	S16000
26531110	SB12001-S	26624741	GB3002DR-TW	26762170	PB801
26531111	SB12001-IN	26624751	GB3002DR-KOR	26762500	B502
26531120	SB12001	26628130	PB8000	26776610	CB203-EC
26531130	SB24001DRS	26628550	GL8	26823710	GB1501-EC
26531131	SB24001DRS	26629130	PR8000	26823711	GB1501-EC
26531132	SB24001DRI	26629131	PR8000	26823720	GB1501-HK
26531140	SB24001DR	26630150	SB16000	26823721	GB1501-HK
26531141	SB24001DR	26631150	SB32000	26823730	GB1501-SING
26531150	SB8001	26631151	SB32000	26823731	GB1501-SING
26538100	S8001	26631300	SB32000-F	26823740	GB1501-TW
26538101	S8001	26631301	SB32000-F	26823741	GB1501-TW
26538102	SR8001	26632140	S16000	26823751	GB1501-KOR
26538200	S8001	26632141	S16000	26824500	B3001
26560800	HG53	26632142	S16000	26824501	B3001

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
26824710	GB3001-EC	36328120	BP5000	61432131	SG16001DRE
26824711	GB3001-EC	36330120	BP12000	61433120	SG32001DRE
26824720	GB3001-HK	36331110	BP16000	61433121	SG32001DRE
26824721	GB3001-HK	36430140	BP1630DR	61438130	SG16001DRE
26824730	GB3001-SING	36431130	BP3260DR	61438131	SG16001DRE
26824731	GB3001-SING	36431131	BP3260DR	61438160	SG32001DRE
26824740	GB3001-TW	36531120	BP12000	61438161	SG32001DRE
26824741	GB3001-TW	36631150	BP32	61468120	PG5002DR/E-E
26824751	GB3001-KOR	36631151	BP32	61468590	PG5002DR-A/E
26829151	PR5001-Q	36731140	BP1630DR	61471120	PG503DR/E-EC
26833112	S32001DR-Q	61211110	PG503-S/E-EC	61511130	PG203-S/E-EC
26833152	S32000-Q	61213110	PG2002-S/E-EC	61513121	PG802-S/E-EC
26833153	S32000-Q	61213111	PG2002-S/E-EC	61515200	PG3001-S/E
26833162	S32001DR-Q	61215110	PG5002-S/E-EC	61515210	PG3000-S/E
26833163	S32001DR-Q	61220110	PG503/E-EC	61520130	PG203/E-EC
26838100	S32000-Q	61225110	PG2002/E-EC	61525120	PG802/E-EC
26838101	S32000-Q	61226110	PG5002/E-EC	61525131	PG502/E-EC
26838102	SR32000-Q	61229110	PG8001/E	61526130	PG3001/E
26838110	S32001DR-Q	61230110	PG8001-S/E	61526131	PG3001/E
26838111	S32001DR-Q	61231110	PG12001-SE	61538100	SG8001/E
26838112	SR32001DRQ	61232110	SG16001/E	61538101	SG8001/E
26838120	S32000-C	61232111	SG16001/E	61565120	PG803/E-EC
26838121	S32000-C	61233110	SG32001/E	61568131	PG3001/E-EC
26838122	SR32000-C	61233111	SG32001/E	61571131	PG203/E-EC
26838200	S32000-Q	61238150	SG32001/E	61572120	PG802/E-EC
26838210	S32001DR-Q	61238151	SG32001/E	61572130	PG502/E-EC
26862710	GB1501-EC	61268110	PG5002/E-EC	61573140	PG803/E-EC
26862720	GB1501-HK	61271110	PG503/E-EC	61629130	PG8000/E
26862730	GB1501-SING	61272110	PG2002/E-EC	61630110	PG8000-S/E
26862740	GB1501-TW	61311140	PG403-S/E-EC	61631110	PG12000-S-P/E
26862750	GB1501-KOR	61312120	PG1003-S/E-EC	61632140	SG16000/E
26863500	B3001	61315130	PG4002-S/E-EC	61632141	SG16000/E
26863710	GB3001-EC	61319120	PG6002-S/E-EC	61633130	SG32000/E
26863720	GB3001-HK	61319750	GG6002-S/E-EC	61633131	SG32000/E
26863730	GB3001-SING	61329120	PG5001/E	61638140	SG32000/E
26863740	GB3001-TW	61330120	PG5001-S/E	61638141	SG32000/E
26863750	GB3001-KOR	61332120	SG8001/E	61711150	PG403-SDR/E-EC
26914612	CB103-EC	61332121	SG8001/E	61712140	PG603-SDR/E-EC
26976610	CB103-EC	61333150	SG32000P/E	61715140	PG4002-SDR/E-E
32228110	BP8000/E	61333151	SG32000P/E	61719130	PG6002-SDR/E-E
32230110	BP16000/E	61338120	SG16001/E	61730130	PG3001-SBA/E
32328120	BP5000/E	61338121	SG16001/E	61738110	SG16000/E
32330120	BP12000/E	61338150	SG32000P/E	61738111	SG16000/E
32331110	BP16000/E	61338151	SG32000P/E	62211110	PG503-S/E-US
32430140	BP1630DR/E	61411120	PG503-SDR/E-EC	62211620	CG2502-S/E-US
32431130	BP3260DR/E	61413130	PG2002-SDR/E-E	62213110	PG2002-S/E-US
32431131	BP3260DR/E	61415120	PG5002-SDR/E-E	62213111	PG2002-S/E-US
32531120	BP12000/E	61415570	PG5002-SADRE-E	62215110	PG5002-S/E-US
32631150	BP32/E	61420120	PG503DR/E-EC	62220110	PG503/E-US
32631151	BP32/E	61426120	PG5002DR/E-E	62225110	PG2002/E-US
32731140	BP1630DR/E	61426590	PG5002DR-A/E	62226110	PG5002/E-US
36228110	BP8000	61431110	PG12001DRE	62230110	PG8001-S/E-US
36230110	BP16000	61432130	SG16001DRE	62231110	PG12001-S/E-US

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
62268110	PG5002/E-US	64271110	PG503/E-O	64633130	SG32000/E
62271110	PG503/E-US	64272110	PG2002/E-O	64633131	SG32000/E
62272110	PG2002/E-US	64311140	PG403-S/E-O	64638140	SG32000/E
62311140	PG403-S/E-US	64312120	PG1003-S/E-O	64638141	SG32000/E
62312120	PG1003-S/E-US	64315130	PG4002-S/E-O	64711150	PG403-SDR/E-O
62315130	PG4002-S/E-US	64319120	PG6002-S/E-O	64712140	PG603-SDR/E-O
62319120	PG6002-S/E-US	64319750	GG6002-S/E-O	64715140	PG4002-SDR/E-O
62319750	GG6002-S/E-US	64329120	PG5001/E	64715820	PG3000-SRE/E-O
62330120	PG5001-S/E-US	64330120	PG5001-S/E	64715821	PG3000-SRE/E-O
62411120	PG503-SDR/E-US	64332120	SG8001/E	64719130	PG6002-SDR/E-O
62413130	PG2002-SDR/E-U	64332121	SG8001/E	64738110	SG16000/E
62415120	PG5002-SDR/E-U	64338120	SG16001/E	64738111	SG16000/E
62415760	GG4002-SDR/E-U	64338121	SG16001/E	66211110	PG503-S
62420120	PG503DR/E-US	64411120	PG503-SDR/E-O	66211620	CG2502-S
62426120	PG5002DR/E-U	64413130	PG2002-SDR/E-O	66213110	PG2002-S
62431110	PG12001DR/E-US	64415120	PG5002-SDR/E-O	66215110	PG5002-S
62468120	PG5002DR/E-U	64415760	GG4002-SDR/E	66217620	CG13002-S
62471120	PG503DR/E-US	64420120	PG503DR/E-O	66219710	GB303-CN
62511130	PG203-S/E-US	64426120	PG5002DR/E-O	66220110	PG503
62513121	PG802-S/E-US	64431110	PG12001DRE	66224710	GB3002-CN
62515200	PG3001-S/E-US	64432130	SG16001DRE	66225110	PG2002
62515750	GG4002-S/E-US	64432131	SG16001DRE	66226110	PG5002
62520130	PG203/E-US	64433120	SG32001DRE	66226760	PG5002-G
62525120	PG802/E-US	64433121	SG32001DRE	66229110	PG8001
62525131	PG502/E-US	64438130	SG16001DRE	66230110	PG8001-S
62565120	PG803/E-US	64438131	SG16001DRE	66231110	PG12001-S
62571131	PG203/E-US	64438160	SG32001DRE	66232110	SG16001
62572120	PG802/E-US	64438161	SG32001DRE	66232111	SG16001
62572130	PG502/E-US	64468120	PG5002DR/E-O	66233110	SG32001
62573140	PG803/E-US	64471120	PG503DR/E-O	66233111	SG32001
62630110	PG8000-S/E-US	64511130	PG203-S/E-O	66238150	SG32001
62711150	PG403-SDR/E-US	64513121	PG802-S/E-O	66238151	SG32001
62712140	PG603-SDR/E-US	64515200	PG3001-S/E	66268110	PG5002
62715140	PG4002-SDR/E-U	64515750	GG4002-S/E	66268760	PG5002-G
62719130	PG6002-SDR/E-U	64520130	PG203/E-O	66271110	PG503
64211110	PG503-S/E-O	64525120	PG802/E-O	66272110	PG2002
64211620	CG2502-S/E	64525131	PG502/E-O	66311140	PG403-S
64213110	PG2002-S/E-O	64526130	PG3001/E	66312120	PG1003-S
64213111	PG2002-S/E-O	64526131	PG3001/E	66315130	PG4002-S
64215110	PG5002-S/E-O	64538100	SG8001/E	66319120	PG6002-S
64220110	PG503/E-O	64538101	SG8001/E	66319750	GG6002-S
64225110	PG2002/E-O	64565120	PG803/E-O	66324710	GB2002-CN
64226110	PG5002/E-O	64568131	PG3001/E-O	66326760	PG3002-G
64229110	PG8001/E	64571131	PG203/E-O	66329120	PG5001
64230110	PG8001-S/E	64572120	PG802/E-O	66330120	PG5001-S
64231110	PG12001-SE	64572130	PG502/E-O	66332120	SG8001
64232110	SG16001/E	64573140	PG803/E-O	66332121	SG8001
64232111	SG16001/E	64615820	PG5000-SRE/E-O	66338120	SG16001
64233110	SG32001/E	64615821	PG5000-SRE/E-O	66338121	SG16001
64233111	SG32001/E	64629130	PG8000/E	66368760	PG3002-G
64238150	SG32001/E	64630110	PG8000-S/E	66411120	PG503-SDR
64238151	SG32001/E	64632140	SG16000/E	66413130	PG2002-SDR
64268110	PG5002/E-O	64632141	SG16000/E	66415120	PG5002-SDR

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
66415760	GG4002-SDR	66738111	SG16000		
66420120	PG503DR	66768140	PG3600DR		
66426120	PG5002DR	66768760	PG3002-GDR		
66426760	PG5002-GDR				
66431110	PG12001DR				
66432130	SG16001DR				
66432131	SG16001DR				
66433120	SG32001DR				
66433121	SG32001DR				
66438130	SG16001DR				
66438131	SG16001DR				
66438160	SG32001DR				
66438161	SG32001DR				
66468120	PG5002DR				
66468760	PG5002-GDR				
66471120	PG503DR				
66511131	PG203-S				
66512130	PG603-S				
66513120	PG802-S				
66515200	PG3001-S				
66515750	GG4002-S				
66520130	PG203				
66524710	GB1302-CN				
66525120	PG802				
66525131	PG502				
66529130	PG3001				
66530130	PG3001-S				
66538100	SG8001				
66538101	SG8001				
66565120	PG803				
66568130	PG3001				
66571131	PG203				
66572120	PG802				
66572130	PG502				
66573140	PG803				
66624710	GB3001-CN				
66629130	PG8000				
66630110	PG8000-S				
66632140	SG16000				
66632141	SG16000				
66633130	SG32000				
66633131	SG32000				
66638140	SG32000				
66638141	SG32000				
66711150	PG403-SDR				
66712140	PG603DR-S				
66715140	PG4002-SDR				
66717621	CG13002-S				
66719130	PG6002-SDR				
66724710	GB802-CN				
66726140	PG3600DR				
66726760	PG3002-GDR				
66738110	SG16000				

4.3.2 Balances with new TDNR structure

TDNR in LARS, sorted by balance type. Explanation of the designations see [page 1-35!](#)

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
AB104-N	2.5.2.107.16	AB204-E	1.0.5.58.5	AB204-S02	1.0.5.75.32
AB104-N	2.5.2.152.16	AB204-E	1.0.5.58.5	AB204-S02	1.0.5.75.32
AB104-N	2.5.2.152.63	AB204-E	1.0.5.58.5	AB204-S02	1.0.5.75.32
AB104-N	2.5.2.80.16	AB204-E	1.0.5.58.5	AB204-S03	1.0.5.162.65
AB104-S	1.0.5.161.65	AB204-E	1.0.5.58.5	AB204-S03	1.0.5.162.65
AB104-S	1.0.5.208.65	AB204-E	1.0.5.58.5	AB204-S03	1.0.5.162.65
AB104-S	1.0.5.22.5	AB204-E	1.0.5.58.5	AB204-S03	1.0.5.162.65
AB104-S	1.0.5.59.5	AB204-E	1.0.5.58.5	AB204-S03	1.0.5.209.65
AB104-S	1.0.5.74.32	AB204-N	2.5.1.106.16	AB204-S03	1.0.5.58.5
AB104-S/A	1.0.1.164.66	AB204-N	2.5.1.151.16	AB204-S03	1.0.5.58.5
AB104-S/A	1.0.1.211.66	AB204-N	2.5.1.151.63	AB204-S03	1.0.5.58.5
AB104-S/A	1.0.1.25.6	AB204-N	2.5.1.79.16	AB204-S03	1.0.5.58.5
AB104-S/A	1.0.1.61.6	AB204-S	1.0.5.15.5	AB204-S03	1.0.5.58.5
AB104-S/A	1.0.1.78.31	AB204-S	1.0.5.162.65	AB204-S03	1.0.5.75.32
AB104-S/M	1.0.1.164.66	AB204-S	1.0.5.209.65	AB204-S03	1.0.5.75.32
AB104-S/M	1.0.1.164.66	AB204-S	1.0.5.58.5	AB204-S03	1.0.5.75.32
AB104-S/M	1.0.1.211.66	AB204-S	1.0.5.75.32	AB204-S03	1.0.5.75.32
AB104-S/M	1.0.1.25.6	AB204-S/A	1.0.1.16.6	AB204-S04	1.0.5.162.65
AB104-S/M	1.0.1.25.6	AB204-S/A	1.0.1.165.66	AB204-S04	1.0.5.162.65
AB104-S/M	1.0.1.25.6	AB204-S/A	1.0.1.212.66	AB204-S04	1.0.5.162.65
AB104-S/M	1.0.1.61.6	AB204-S/A	1.0.1.62.6	AB204-S04	1.0.5.162.65
AB104-S/M	1.0.1.61.6	AB204-S/A	1.0.1.76.31	AB204-S04	1.0.5.162.65
AB104-S/M	1.0.1.78.31	AB204-S/A/US	1.0.1.165.93	AB204-S04	1.0.5.209.65
AB104-S/M	1.0.1.78.31	AB204-S/A/US	1.0.1.212.93	AB204-S04	1.0.5.58.5
AB104-S/A/M	1.0.1.164.67	AB204-S/A/US	1.0.1.62.27	AB204-S04	1.0.5.58.5
AB104-SRS	1.0.5.59.5	AB204-S/M	1.0.1.16.6	AB204-S04	1.0.5.58.5
AB104-SRS	1.0.5.59.5	AB204-S/M	1.0.1.16.6	AB204-S04	1.0.5.58.5
AB104-SRS/A	1.0.1.61.6	AB204-S/M	1.0.1.165.66	AB204-S04	1.0.5.58.5
AB104-SRS/A	1.0.1.61.6	AB204-S/M	1.0.1.165.66	AB204-S04	1.0.5.75.32
AB104-SRS/A	1.0.1.61.6	AB204-S/M	1.0.1.212.66	AB204-S04	1.0.5.75.32
AB104-SRS/M	1.0.1.61.6	AB204-S/M	1.0.1.62.6	AB204-S04	1.0.5.75.32
AB104-SRS/M	1.0.1.61.6	AB204-S/M	1.0.1.62.6	AB204-S04	1.0.5.75.32
AB104-SRS/M	1.0.1.61.6	AB204-S/M	1.0.1.76.31	AB204-S04	1.0.5.75.32
AB135-S	11.6.14.396.145	AB204-S/M	1.0.1.76.31	AB204-S05	1.0.5.162.65
AB135-S/A	11.6.4.397.146	AB204-S/M03	1.0.1.212.66	AB204-S05	1.0.5.162.65
AB135-S/M	11.6.4.397.146	AB204-S01	1.0.5.162.65	AB204-S05	1.0.5.162.65
AB184-S-A/A	1.0.1.166.67	AB204-S01	1.0.5.162.65	AB204-S05	1.0.5.162.65
AB184-S-A/A	1.0.1.213.84	AB204-S01	1.0.5.209.65	AB204-S05	1.0.5.162.65
AB184-S-A/A	1.0.1.26.11	AB204-S01	1.0.5.58.5	AB204-S05	1.0.5.162.65
AB184-S-A/A	1.0.1.63.11	AB204-S01	1.0.5.58.5	AB204-S05	1.0.5.209.65
AB184-S-A/M	1.0.1.166.67	AB204-S01	1.0.5.75.32	AB204-S05	1.0.5.58.5
AB184-S-A/M	1.0.1.166.67	AB204-S01	1.0.5.75.32	AB204-S05	1.0.5.58.5
AB184-S-A/M	1.0.1.213.84	AB204-S02	1.0.5.162.65	AB204-S05	1.0.5.58.5
AB184-S-A/M	1.0.1.26.11	AB204-S02	1.0.5.162.65	AB204-S05	1.0.5.58.5
AB184-S-A/M	1.0.1.26.11	AB204-S02	1.0.5.162.65	AB204-S05	1.0.5.58.5
AB184-S-A/M	1.0.1.63.11	AB204-S02	1.0.5.209.65	AB204-S05	1.0.5.58.5
AB184-S-A/M	1.0.1.63.11	AB204-S02	1.0.5.58.5	AB204-S05	1.0.5.75.32
AB204-E	1.0.5.218.104	AB204-S02	1.0.5.58.5	AB204-S05	1.0.5.75.32
AB204-E	1.0.5.58.5	AB204-S02	1.0.5.58.5	AB204-S05	1.0.5.75.32

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
AB204-S05	1.0.5.75.32	AB304-S/M	1.0.1.174.66	AB54-S03	1.0.5.57.32
AB204-S05	1.0.5.75.32	AB304-S/M	1.0.1.174.66	AB54-S03	1.0.5.57.32
AB204-S05	1.0.5.75.32	AB304-S/M	1.0.1.228.66	AB54-S03	1.0.5.57.5
AB204-S06	1.0.5.162.65	AB304-S/M	1.0.1.67.6	AB54-S03	1.0.5.57.5
AB204-S06	1.0.5.162.65	AB304-S/M	1.0.1.67.6	AB54-S03	1.0.5.57.5
AB204-S06	1.0.5.162.65	AB304-S/M	1.0.1.73.31	AB54-S03	1.0.5.57.5
AB204-S06	1.0.5.162.65	AB304-S/M	1.0.1.73.31	AB54-S04	1.0.5.163.65
AB204-S06	1.0.5.162.65	AB304-S/M	1.0.1.98.31	AB54-S04	1.0.5.163.65
AB204-S06	1.0.5.162.65	AB304-S/M	1.0.1.98.31	AB54-S04	1.0.5.163.65
AB204-S06	1.0.5.162.65	AB54-S	1.0.5.163.65	AB54-S04	1.0.5.163.65
AB204-S06	1.0.5.209.65	AB54-S	1.0.5.210.65	AB54-S04	1.0.5.163.65
AB204-S06	1.0.5.58.5	AB54-S	1.0.5.24.5	AB54-S04	1.0.5.210.65
AB204-S06	1.0.5.58.5	AB54-S	1.0.5.57.32	AB54-S04	1.0.5.57.32
AB204-S06	1.0.5.58.5	AB54-S	1.0.5.57.5	AB54-S04	1.0.5.57.32
AB204-S06	1.0.5.58.5	AB54-S/A	1.0.1.167.66	AB54-S04	1.0.5.57.32
AB204-S06	1.0.5.58.5	AB54-S/A	1.0.1.214.66	AB54-S04	1.0.5.57.32
AB204-S06	1.0.5.58.5	AB54-S/A	1.0.1.27.6	AB54-S04	1.0.5.57.32
AB204-S06	1.0.5.58.5	AB54-S/A	1.0.1.64.31	AB54-S04	1.0.5.57.5
AB204-S06	1.0.5.75.32	AB54-S/A	1.0.1.64.6	AB54-S04	1.0.5.57.5
AB204-S06	1.0.5.75.32	AB54-S/M	1.0.1.167.66	AB54-S04	1.0.5.57.5
AB204-S06	1.0.5.75.32	AB54-S/M	1.0.1.167.66	AB54-S04	1.0.5.57.5
AB204-S06	1.0.5.75.32	AB54-S/M	1.0.1.214.66	AB54-S04	1.0.5.57.5
AB204-S06	1.0.5.75.32	AB54-S/M	1.0.1.27.6	AB54-S05	1.0.5.163.65
AB204-S06	1.0.5.75.32	AB54-S/M	1.0.1.27.6	AB54-S05	1.0.5.163.65
AB204-S06	1.0.5.75.32	AB54-S/M	1.0.1.64.31	AB54-S05	1.0.5.163.65
AB204-S06	1.0.5.75.32	AB54-S/M	1.0.1.64.31	AB54-S05	1.0.5.163.65
AB204-SRS	1.0.5.58.5	AB54-S/M	1.0.1.64.6	AB54-S05	1.0.5.163.65
AB204-SRS	1.0.5.58.5	AB54-S/M	1.0.1.64.6	AB54-S05	1.0.5.163.65
AB204-SRS	1.0.5.58.5	AB54-S/M03	1.0.1.214.66	AB54-S05	1.0.5.210.65
AB204-SRS	1.0.5.58.5	AB54-S01	1.0.5.163.65	AB54-S05	1.0.5.57.32
AB204-SRS	1.0.5.58.5	AB54-S01	1.0.5.163.65	AB54-S05	1.0.5.57.32
AB204-SRS	1.0.5.58.5	AB54-S01	1.0.5.210.65	AB54-S05	1.0.5.57.32
AB204-SRS	1.0.5.58.5	AB54-S01	1.0.5.57.32	AB54-S05	1.0.5.57.32
AB204-SRS	1.0.5.58.5	AB54-S01	1.0.5.57.32	AB54-S05	1.0.5.57.32
AB204-SRS	1.0.5.58.5	AB54-S01	1.0.5.57.5	AB54-S05	1.0.5.57.32
AB204-SRS/A	1.0.1.62.6	AB54-S01	1.0.5.57.5	AB54-S05	1.0.5.57.5
AB204-SRS/A	1.0.1.62.6	AB54-S02	1.0.5.163.65	AB54-S05	1.0.5.57.5
AB204-SRS/A	1.0.1.62.6	AB54-S02	1.0.5.163.65	AB54-S05	1.0.5.57.5
AB204-SRS/A	1.0.1.62.6	AB54-S02	1.0.5.163.65	AB54-S05	1.0.5.57.5
AB204-SRS/M	1.0.1.62.6	AB54-S02	1.0.5.210.65	AB54-S05	1.0.5.57.5
AB204-SRS/M	1.0.1.62.6	AB54-S02	1.0.5.57.32	AB54-S05	1.0.5.57.5
AB204-SRS/M	1.0.1.62.6	AB54-S02	1.0.5.57.32	AB54-S06	1.0.5.163.65
AB265-S	11.6.14.391.141	AB54-S02	1.0.5.57.5	AB54-S06	1.0.5.163.65
AB265-S/A	11.6.4.398.146	AB54-S02	1.0.5.57.5	AB54-S06	1.0.5.163.65
AB265-S/M	11.6.4.398.146	AB54-S02	1.0.5.57.5	AB54-S06	1.0.5.163.65
AB304-S	1.0.5.173.65	AB54-S03	1.0.5.163.65	AB54-S06	1.0.5.163.65
AB304-S	1.0.5.227.65	AB54-S03	1.0.5.163.65	AB54-S06	1.0.5.163.65
AB304-S	1.0.5.66.5	AB54-S03	1.0.5.163.65	AB54-S06	1.0.5.210.65
AB304-S	1.0.5.72.30	AB54-S03	1.0.5.210.65	AB54-S06	1.0.5.57.32
AB304-S	1.0.5.97.30	AB54-S03	1.0.5.57.32	AB54-S06	1.0.5.57.32
AB304-S/A	1.0.1.174.66	AB54-S03	1.0.5.57.32	AB54-S06	1.0.5.57.32
AB304-S/A	1.0.1.228.66	AB54-S03	1.0.5.57.32	AB54-S06	1.0.5.57.32
AB304-S/A	1.0.1.67.6	AB54-S03	1.0.5.57.32	AB54-S06	1.0.5.57.32
AB304-S/A	1.0.1.73.31	AB54-S03	1.0.5.57.32	AB54-S06	1.0.5.57.32
AB304-S/A	1.0.1.98.31				

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
AB54-S06	1.0.5.57.32	AX105DR/M01 ...	3.6.5.260.48	AX26	3.8.12.131.47
AB54-S06	1.0.5.57.32	AX105DRJP	3.6.15.127.47	AX26	3.8.12.264.47
AB54-S06	1.0.5.57.32	AX105DRJP	3.6.15.127.47	AX26	3.8.12.92.35
AB54-S06	1.0.5.57.5	AX105DRJP	3.6.15.127.57	AX26/A	3.8.2.131.51
AB54-S06	1.0.5.57.5	AX105DRJP	3.6.15.259.47	AX26/M	3.8.2.131.51
AB54-S06	1.0.5.57.5	AX106	3.8.14.309.119	AX26JP	3.8.12.131.47
AB54-S06	1.0.5.57.5	AX106H	3.8.14.309.127	AX26JP	3.8.12.131.47
AB54-S06	1.0.5.57.5	AX16004	3.16.1.279.105	AX26JP	3.8.12.131.57
AB54-S06	1.0.5.57.5	AX16004	3.16.1.349.128	AX26JP	3.8.12.264.47
AB54-S06	1.0.5.57.5	AX204	3.6.16.118.45	AX26DR	3.8.13.124.47
AB54-SRS	1.0.5.57.5	AX204	3.6.16.122.49	AX26DR	3.8.13.132.47
AB54-SRS	1.0.5.57.5	AX204	3.6.16.253.49	AX26DR	3.8.13.255.47
AB54-SRS	1.0.5.57.5	AX204	3.6.16.83.36	AX26DR	3.8.13.85.35
AB54-SRS	1.0.5.57.5	AX204/O1	3.6.16.253.49	AX26DR/O1	3.8.13.255.47
AB54-SRS	1.0.5.57.5	AX204/A	3.6.6.122.50	AX26DR/A	3.8.3.124.51
AB54-SRS	1.0.5.57.5	AX204/A01	3.6.6.122.50	AX26DR/A	3.8.3.124.51
AB54-SRS	1.0.5.57.5	AX204/M	3.6.6.122.50	AX26DR/A	3.8.3.132.51
AB54-SRS	1.0.5.57.5	AX204/M01	3.6.6.122.50	AX26DR/A01	3.8.3.132.51
AB54-SRS/A	1.0.1.64.6	AX204JP	3.6.16.122.49	AX26DR/M	3.8.3.124.51
AB54-SRS/A	1.0.1.64.6	AX204JP	3.6.16.122.49	AX26DR/M	3.8.3.132.51
AB54-SRS/A	1.0.1.64.6	AX204JP	3.6.16.122.58	AX26DR/M01	3.8.3.132.51
AB54-SRS/M	1.0.1.64.6	AX204JP	3.6.16.253.49	AX26DRJP	3.8.13.132.47
AB54-SRS/M	1.0.1.64.6	AX204DR	3.6.16.296.49	AX26DRJP	3.8.13.132.47
AB54-SRS/M	1.0.1.64.6	AX204DR/A	3.6.6.297.50	AX26DRJP	3.8.13.132.57
AB54-S-TeX	1.0.5.171.69	AX204DR/M	3.6.6.297.50	AX26DRJP	3.8.13.255.47
AB54-S-TeX	1.0.5.65.21	AX205	3.6.12.120.47	AX304	3.7.14.126.49
AB54-S-TeX	1.0.5.77.33	AX205	3.6.12.251.47	AX304	3.7.14.149.49
AB54-S-TeX	1.0.5.77.33	AX205	3.6.12.251.47	AX304	3.7.14.257.49
AB54-S-TeX/A	1.0.1.167.71	AX205	3.6.12.81.35	AX304	3.7.14.87.36
AB54-S-TeX/A	1.0.1.64.26	AX205/O1	3.6.12.251.47	AX304/O1	3.7.14.257.49
AB54-S-TeX/A	1.0.1.64.34	AX205/A	3.6.2.120.48	AX304/A	3.7.4.126.50
AB54-S-TeX/A	1.0.1.64.34	AX205/A01	3.6.2.120.48	AX304/A	3.7.4.126.50
AB54-S-TeX/M	1.0.1.167.71	AX205/M	3.6.2.120.48	AX304/A	3.7.4.149.50
AB54-S-TeX/M	1.0.1.167.71	AX205/M01	3.6.2.120.48	AX304/A	3.7.4.149.50
AB54-S-TeX/M	1.0.1.64.26	AX205JP	3.6.12.120.47	AX304/A	3.7.4.258.50
AB54-S-TeX/M	1.0.1.64.26	AX205JP	3.6.12.120.47	AX304/A01	3.7.4.258.50
AB54-S-TeX/M	1.0.1.64.34	AX205JP	3.6.12.120.57	AX304/M	3.7.4.126.50
AB54-S-TeX/M	1.0.1.64.34	AX205JP	3.6.12.251.47	AX304/M	3.7.4.149.50
AB54-S-TeX/M	1.0.1.64.34	AX205DR	3.6.13.117.44	AX304/M	3.7.4.258.50
AJ3230	2.5.2.280.106	AX205DR	3.6.13.121.47	AX304/M01	3.7.4.258.50
AX1004	3.6.16.308.119	AX205DR	3.6.13.252.47	AX304JP	3.7.14.149.49
AX1005	3.6.14.307.119	AX205DR	3.6.13.82.35	AX304JP	3.7.14.149.49
AX1006	3.8.14.309.127	AX205DR/O1 ...	3.6.13.252.47	AX304JP	3.7.14.149.58
AX105DR	3.6.15.127.47	AX205DR/A	3.6.3.121.48	AX304JP	3.7.14.257.49
AX105DR	3.6.15.259.47	AX205DR/A01 ...	3.6.3.121.48	AX32004	3.16.1.279.105
AX105DR	3.6.15.88.35	AX205DR/M	3.6.3.121.48	AX32004	3.16.1.279.105
AX105DR/O1 ...	3.6.15.259.47	AX205DR/M01 ...	3.6.3.121.48	AX32004	3.16.1.349.128
AX105DR/A	3.6.5.127.48	AX205DRJP	3.6.12.251.47	AX504	3.7.12.125.49
AX105DR/A	3.6.5.127.48	AX205DRJP	3.6.13.121.47	AX504	3.7.12.148.49
AX105DR/A	3.6.5.260.48	AX205DRJP	3.6.13.121.47	AX504	3.7.12.256.49
AX105DR/A01	3.6.5.260.48	AX205DRJP	3.6.13.121.57	AX504	3.7.12.86.36
AX105DR/M	3.6.5.127.48	AX205DRJP	3.6.13.252.47	AX504/O1	3.7.12.256.49
AX105DR/M	3.6.5.260.48	AX206	3.8.14.309.119	AX504/A	3.7.2.125.50

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
AX504/A	3.7.2.125.50	GB1302-S/A	1.1.1.143.24	GB3001-S/M	1.1.3.35.41
AX504/A	3.7.2.148.50	GB1302-S/A	1.1.1.185.72	GB3001-S/M	1.1.3.35.41
AX504/A01	3.7.2.148.50	GB1302-S/A	1.1.1.236.92	GB3001-S/KR1100.1.7.202.99	
AX504/M	3.7.2.125.50	GB1302-S/M	1.1.1.143.24	GB3001-S/KR2200.1.7.202.99	
AX504/M	3.7.2.148.50	GB1302-S/M	1.1.1.143.24	GB3002-S	0.1.5.199.82
AX504/M01	3.7.2.148.50	GB1302-S/M	1.1.1.185.72	GB3002-S	0.1.5.7.1
AX504\JP	3.7.12.148.49	GB1302-S/M	1.1.1.185.72	GB3002-S	0.1.5.7.1
AX504\JP	3.7.12.148.49	GB1302-S/M	1.1.1.236.92	GB3002-S	0.1.5.7.4
AX504\JP	3.7.12.148.58	GB1302-S/KR1100.1.5.207.99		GB3002-S/A	1.1.1.17.13
AX504\JP	3.7.12.256.49	GB1302-S/KR2200.1.5.207.99		GB3002-S/A	1.1.1.17.24
AX504DR	3.7.13.123.49	GB1501-S	0.1.5.9.1	GB3002-S/A	1.1.1.17.24
AX504DR	3.7.13.147.49	GB1501-S	0.1.7.201.82	GB3002-S/A	1.1.1.17.41
AX504DR	3.7.13.254.49	GB1501-S	0.1.7.9.1	GB3002-S/A	1.1.1.178.72
AX504DR	3.7.13.84.36	GB1501-S	0.1.7.9.1	GB3002-S/A	1.1.1.178.72
AX504DR/01 ...	3.7.13.254.49	GB1501-S/A	1.1.1.34.41	GB3002-S/A	1.1.1.178.72
AX504DR/A	3.7.3.123.50	GB1501-S/A	1.1.3.180.75	GB3002-S/A	1.1.1.221.92
AX504DR/A	3.7.3.123.50	GB1501-S/A	1.1.3.223.91	GB3002-S/M	1.1.1.17.13
AX504DR/A	3.7.3.147.50	GB1501-S/A	1.1.3.34.41	GB3002-S/M	1.1.1.17.13
AX504DR/A01 ...	3.7.3.147.50	GB1501-S/A	1.1.3.34.41	GB3002-S/M	1.1.1.17.24
AX504DR/M	3.7.3.123.50	GB1501-S/M	1.1.1.34.41	GB3002-S/M	1.1.1.17.24
AX504DR/M	3.7.3.147.50	GB1501-S/M	1.1.1.34.41	GB3002-S/M	1.1.1.17.24
AX504DR/M01 ...	3.7.3.147.50	GB1501-S/M	1.1.3.180.75	GB3002-S/M	1.1.1.17.24
AX504DR\JP ...	3.7.13.147.49	GB1501-S/M	1.1.3.180.75	GB3002-S/M	1.1.1.17.41
AX504DR\JP ...	3.7.13.147.49	GB1501-S/M	1.1.3.223.91	GB3002-S/M	1.1.1.17.41
AX504DR\JP ...	3.7.13.147.58	GB1501-S/M	1.1.3.34.41	GB3002-S/M	1.1.1.178.72
AX504DR\JP ...	3.7.13.254.49	GB1501-S/M	1.1.3.34.41	GB3002-S/M	1.1.1.178.72
AX64004	3.16.1.279.105	GB1501-S/M	1.1.3.34.41	GB3002-S/M	1.1.1.178.72
AX64004	3.16.1.279.105	GB1501-S/KR1100.1.7.201.99		GB3002-S/M	1.1.1.178.72
AX64004	3.16.1.279.105	GB1501-S/KR2200.1.7.201.99		GB3002-S/M	1.1.1.221.92
AX64004	3.16.1.349.128	GB2002-S	0.1.5.138.1	GB3002-S/KR1100.1.5.199.99	
B154-S	1.0.5.23.10	GB2002-S	0.1.5.206.82	GB3002-S/KR2200.1.5.199.99	
B154-S	1.0.5.60.10	GB2002-S/A	1.1.1.141.24	GB3002-SDR	0.1.5.139.1
B2002-S	0.1.5.12.2	GB2002-S/A	1.1.1.183.72	GB3002-SDR	0.1.5.200.82
B2002-S	0.1.5.204.83	GB2002-S/A	1.1.1.235.92	GB3002-SDR	0.1.5.8.4
B203-S	0.0.7.190.80	GB2002-S/M	1.1.1.141.24	GB3002-SDR/A ..	1.1.1.179.72
B203-S	0.0.7.5.2	GB2002-S/M	1.1.1.141.24	GB3002-SDR/A ..	1.1.1.179.72
B204-S	1.0.5.172.70	GB2002-S/M	1.1.1.235.92	GB3002-SDR/A ..	1.1.1.179.72
B204-S	1.0.5.218.86	GB2002-S/KR1100.1.5.206.99		GB3002-SDR/A ..	1.1.1.222.92
B204-S	1.0.5.71.10	GB2002-S/KR2200.1.5.206.99		GB3002-SDR/A	1.1.1.33.13
B3001-S	0.1.7.10.2	GB3001-S	0.1.5.10.1	GB3002-SDR/A	1.1.1.33.24
B3001-S	0.1.7.202.83	GB3001-S	0.1.7.10.1	GB3002-SDR/A	1.1.1.33.24
B303-S	0.0.7.191.80	GB3001-S	0.1.7.10.1	GB3002-SDR/M ..	1.1.1.179.72
B303-S	0.0.7.3.2	GB3001-S	0.1.7.202.82	GB3002-SDR/M ..	1.1.1.179.72
B303-S/21	0.0.7.191.80	GB3001-S/A	1.1.1.35.41	GB3002-SDR/M ..	1.1.1.179.72
B502-S	0.1.5.11.2	GB3001-S/A	1.1.3.224.91	GB3002-SDR/M ..	1.1.1.179.72
B502-S	0.1.5.203.83	GB3001-S/A	1.1.3.35.41	GB3002-SDR/M ..	1.1.1.222.92
CB303-N	2.5.2.281.107	GB3001-S/A	1.1.3.35.41	GB3002-SDR/M ...	1.1.1.33.13
CB303-N	2.5.2.281.113	GB3001-S/A	1.1.3.35.41	GB3002-SDR/M ...	1.1.1.33.13
CB603-N	2.5.2.282.107	GB3001-S/M	1.1.1.35.41	GB3002-SDR/M ...	1.1.1.33.24
CB603-N	2.5.2.285.107	GB3001-S/M	1.1.1.35.41	GB3002-SDR/M ...	1.1.1.33.24
CB603-N	2.5.2.285.113	GB3001-S/M	1.1.3.224.91	GB3002-SDR/M ...	1.1.1.33.24
GB1302-S	0.1.5.142.1	GB3001-S/M	1.1.3.35.41	GB3002-SDR/M ...	1.1.1.33.24
GB1302-S	0.1.5.207.82	GB3001-S/M	1.1.3.35.41	GB6001-S	0.13.5.195.82

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
GB6001-S	0.2.5.13.1	PB1501-S/A	1.1.3.223.74	PB1501-S06	0.1.7.9.1
GB6001-S	0.2.5.13.3	PB1501-S/A	1.1.3.34.15	PB1501-S06	0.1.7.9.1
GB6001-S	0.2.5.13.4	PB1501-S/A	1.1.3.34.41	PB1501-S06	0.1.7.9.1
GB6001-S	0.2.5.195.82	PB1501-S/A	1.1.3.34.7	PB1501-S06	0.1.7.9.1
GB6001-S	0.2.5.237.82	PB1501-S/M	1.1.3.180.74	PB1501-S-CN/A ...	1.1.3.34.20
GB6001-S/A	1.2.1.233.92	PB1501-S/M	1.1.3.180.74	PB1501-S-CN/A ...	1.1.3.34.24
GB6001-S/A	1.2.1.37.13	PB1501-S/M	1.1.3.223.74	PB1501-SRS	0.1.7.9.1
GB6001-S/A	1.2.1.37.13	PB1501-S/M	1.1.3.34.15	PB1501-SRS	0.1.7.9.1
GB6001-S/A	1.2.1.37.24	PB1501-S/M	1.1.3.34.15	PB1501-SRS	0.1.7.9.1
GB6001-S/AUS ..	1.2.1.233.90	PB1501-S/M	1.1.3.34.41	PB1501-SRS	0.1.7.9.1
GB6001-S/AUS ...	1.2.1.37.60	PB1501-S/M	1.1.3.34.41	PB1501-SRS	0.1.7.9.1
GB6001-S/M	1.2.1.233.92	PB1501-S/M	1.1.3.34.41	PB1501-SRS	0.1.7.9.1
GB6001-S/M	1.2.1.37.13	PB1501-S/M	1.1.3.34.41	PB1501-SRS	0.1.7.9.1
GB6001-S/M	1.2.1.37.24	PB1501-S/M	1.1.3.34.7	PB1501-SRS	0.1.7.9.1
GB6001-S/M	1.2.1.37.24	PB1501-S/M	1.1.3.34.7	PB1501-SRS	0.1.7.9.1
GB6001-SKR1100.2.5.237.99		PB1501-S/M03..	1.1.3.223.74	PB1501-SRS/A	1.1.3.34.15
GB6001-SKR2200.2.5.237.99		PB1501-SKR1100.1.7.201.98		PB1501-SRS/A	1.1.3.34.15
GB802-S	0.1.5.137.1	PB1501-SKR2200.1.7.201.98		PB1501-SRS/A	1.1.3.34.15
GB802-S	0.1.5.205.82	PB1501-S01	0.1.7.201.81	PB1501-SRS/M	1.1.3.34.15
GB802-S/A	1.1.1.140.24	PB1501-S01	0.1.7.9.1	PB1501-SRS/M	1.1.3.34.15
GB802-S/A	1.1.1.182.72	PB1501-S01	0.1.7.9.1	PB1501-SRS/M	1.1.3.34.15
GB802-S/A	1.1.1.234.92	PB1501-S01	0.1.7.9.1	PB1502-S	0.1.5.1.1
GB802-S/M	1.1.1.140.24	PB1501-S02	0.1.7.201.81	PB1502-S	0.1.5.198.81
GB802-S/M	1.1.1.140.24	PB1501-S02	0.1.7.9.1	PB1502-S/A	1.1.1.177.72
GB802-S/M	1.1.1.234.92	PB1501-S02	0.1.7.9.1	PB1502-S/A	1.1.1.220.72
GB802-SKR110 ..	0.1.5.205.99	PB1501-S02	0.1.7.9.1	PB1502-S/A	1.1.1.32.24
GB802-SKR220 ..	0.1.5.205.99	PB1501-S02	0.1.7.9.1	PB1502-S/A	1.1.1.32.7
HB43	4.10.5.93.39	PB1501-S03	0.1.7.201.81	PB1502-S/M	1.1.1.177.72
HB43	4.10.5.93.43	PB1501-S03	0.1.7.9.1	PB1502-S/M	1.1.1.177.72
MX5	3.9.16.119.46	PB1501-S03	0.1.7.9.1	PB1502-S/M	1.1.1.220.72
MX5	3.9.16.128.52	PB1501-S03	0.1.7.9.1	PB1502-S/M	1.1.1.32.24
MX5	3.9.16.261.52	PB1501-S03	0.1.7.9.1	PB1502-S/M	1.1.1.32.24
MX5	3.9.16.89.37	PB1501-S03	0.1.7.9.1	PB1502-S/M	1.1.1.32.7
MX5	3.9.16.94.37	PB1501-S04	0.1.7.201.81	PB1502-S/M	1.1.1.32.7
MX5/01	3.9.16.261.52	PB1501-S04	0.1.7.9.1	PB1502-SKR1100.1.5.198.98	
MX5/A	3.9.6.128.53	PB1501-S04	0.1.7.9.1	PB1502-SKR2200.1.5.198.98	
MX5/A01	3.9.6.128.53	PB1501-S04	0.1.7.9.1	PB1502-S-CN/A ...	1.1.1.32.19
MX5/M	3.9.6.128.53	PB1501-S04	0.1.7.9.1	PB1502-S-CN/A ...	1.1.1.32.24
MX5/M01	3.9.6.128.53	PB1501-S04	0.1.7.9.1	PB1502-S-CN/A ...	1.1.1.32.24
MX5\JP	3.9.16.128.52	PB1501-S04	0.1.7.9.1	PB1502-S-CN/A ...	1.1.1.32.24
MX5\JP	3.9.16.128.52	PB1501-S05	0.1.7.201.81	PB1502-SRS	0.1.5.1.1
MX5\JP	3.9.16.128.59	PB1501-S05	0.1.7.9.1	PB1502-SRS	0.1.5.1.1
MX5\JP	3.9.16.261.52	PB1501-S05	0.1.7.9.1	PB1502-SRS/A	1.1.1.32.7
PB1501-E	2.4.2.104.17	PB1501-S05	0.1.7.9.1	PB1502-SRS/A	1.1.1.32.7
PB1501-E	2.4.2.104.17	PB1501-S05	0.1.7.9.1	PB1502-SRS/A	1.1.1.32.7
PB1501-E	2.4.2.46.17	PB1501-S05	0.1.7.9.1	PB1502-SRS/M	1.1.1.32.7
PB1501-N	2.4.2.104.17	PB1501-S05	0.1.7.9.1	PB1502-SRS/M	1.1.1.32.7
PB1501-N	2.4.2.104.64	PB1501-S05	0.1.7.9.1	PB1502-SRS/M	1.1.1.32.7
PB1501-N	2.4.2.46.17	PB1501-S06	0.1.7.201.81	PB153-S	0.0.7.0.0
PB1501-N	2.4.2.46.17	PB1501-S06	0.1.7.9.1	PB153-S	0.0.7.188.79
PB1501-S	0.1.7.201.81	PB1501-S06	0.1.7.9.1	PB153-S/21	0.0.7.0.0
PB1501-S	0.1.7.9.1	PB1501-S06	0.1.7.9.1	PB153-S/21	0.0.7.0.0
PB1501-S/A	1.1.3.180.74	PB1501-S06	0.1.7.9.1	PB153-S/21	0.0.7.188.79

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PB153-S/21VKR1100.0.7.188.97		PB153-S06	0.0.7.0.0	PB3001-S-CN/A ...	1.1.3.35.24
PB153-S/21VKR2200.0.7.188.97		PB153-S06	0.0.7.0.0	PB3001-SRS	0.1.7.10.1
PB153-S/A	1.0.3.168.68	PB153-S06	0.0.7.0.0	PB3001-SRS	0.1.7.10.1
PB153-S/A	1.0.3.215.85	PB153-S06	0.0.7.188.79	PB3001-SRS	0.1.7.10.1
PB153-S/A	1.0.3.28.12	PB153-S-CN/A	1.0.3.28.18	PB3001-SRS/A	1.1.3.35.15
PB153-S/A	1.0.3.28.23	PB153-S-CN/A	1.0.3.28.23	PB3001-SRS/A	1.1.3.35.15
PB153-S/A21 ...	1.0.3.215.85	PB153-S-CN/A	1.0.3.28.23	PB3001-SRS/A	1.1.3.35.15
PB153-S/M	1.0.3.168.68	PB153-S-CN/A	1.0.3.28.23	PB3001-SRS/M	1.1.3.35.15
PB153-S/M	1.0.3.168.68	PB153-SRS	0.0.7.0.0	PB3001-SRS/M	1.1.3.35.15
PB153-S/M	1.0.3.215.85	PB153-SRS	0.0.7.0.0	PB3001-SRS/M	1.1.3.35.15
PB153-S/M	1.0.3.28.12	PB153-SRS	0.0.7.0.0	PB3002-E	2.4.1.103.17
PB153-S/M	1.0.3.28.12	PB153-SRS	0.0.7.0.0	PB3002-E	2.4.1.103.17
PB153-S/M	1.0.3.28.23	PB153-SRS	0.0.7.0.0	PB3002-E	2.4.1.103.17
PB153-S/M	1.0.3.28.23	PB153-SRS	0.0.7.0.0	PB3002-E	2.4.1.45.17
PB153-S/M03	1.0.3.215.85	PB153-SRS	0.0.7.0.0	PB3002-N	2.4.1.103.17
PB153-S/M21 ...	1.0.3.215.85	PB153-SRS	0.0.7.0.0	PB3002-N	2.4.1.103.17
PB153-SVKR110 0.0.7.188.97		PB153-SRS	0.0.7.0.0	PB3002-N	2.4.1.103.64
PB153-SVKR220 0.0.7.188.97		PB153-SRS	0.0.7.0.0	PB3002-N	2.4.1.45.17
PB153-S01	0.0.7.0.0	PB153-SRS/A	1.0.3.28.12	PB3002-N	2.4.1.45.17
PB153-S01	0.0.7.0.0	PB153-SRS/A	1.0.3.28.12	PB3002-N	2.4.1.45.17
PB153-S01	0.0.7.0.0	PB153-SRS/A	1.0.3.28.12	PB3002-N	2.4.1.45.17
PB153-S01	0.0.7.188.79	PB153-SRS/M	1.0.3.28.12	PB3002-N/EL ...	2.4.1.103.64
PB153-S02	0.0.7.0.0	PB153-SRS/M	1.0.3.28.12	PB3002-S	0.1.5.199.81
PB153-S02	0.0.7.0.0	PB153-SRS/M	1.0.3.28.12	PB3002-S	0.1.5.7.1
PB153-S02	0.0.7.0.0	PB2002-E	2.4.1.102.17	PB3002-S/A	1.1.1.17.24
PB153-S02	0.0.7.0.0	PB2002-E	2.4.1.102.17	PB3002-S/A	1.1.1.17.7
PB153-S02	0.0.7.188.79	PB2002-E	2.4.1.44.17	PB3002-S/A	1.1.1.178.72
PB153-S03	0.0.7.0.0	PB2002-N	2.4.1.102.17	PB3002-S/A	1.1.1.221.72
PB153-S03	0.0.7.0.0	PB2002-N	2.4.1.102.64	PB3002-S/AKR2201.1.1.221.96	
PB153-S03	0.0.7.0.0	PB2002-N	2.4.1.44.17	PB3002-S/M	1.1.1.17.24
PB153-S03	0.0.7.0.0	PB2002-N	2.4.1.44.17	PB3002-S/M	1.1.1.17.24
PB153-S03	0.0.7.0.0	PB203-E	2.3.1.41.16	PB3002-S/M	1.1.1.17.24
PB153-S03	0.0.7.0.0	PB203-E	2.3.1.41.16	PB3002-S/M	1.1.1.17.7
PB153-S03	0.0.7.188.79	PB203-N	2.3.1.41.16	PB3002-S/M	1.1.1.17.7
PB153-S04	0.0.7.0.0	PB203-N	2.3.1.41.63	PB3002-S/M	1.1.1.178.72
PB153-S04	0.0.7.0.0	PB3001-S	0.1.7.10.1	PB3002-S/M	1.1.1.178.72
PB153-S04	0.0.7.0.0	PB3001-S	0.1.7.202.81	PB3002-S/M	1.1.1.221.72
PB153-S04	0.0.7.0.0	PB3001-S/A	1.1.3.181.74	PB3002-S/M03..	1.1.1.221.72
PB153-S04	0.0.7.0.0	PB3001-S/A	1.1.3.224.74	PB3002-SVKR1100.1.5.199.98	
PB153-S04	0.0.7.0.0	PB3001-S/A	1.1.3.35.15	PB3002-SVKR2200.1.5.199.98	
PB153-S04	0.0.7.188.79	PB3001-S/A	1.1.3.35.41	PB3002-S01 ...	0.1.5.199.81
PB153-S05	0.0.7.0.0	PB3001-S/A	1.1.3.35.7	PB3002-S01	0.1.5.7.1
PB153-S05	0.0.7.0.0	PB3001-S/M	1.1.3.181.74	PB3002-S01	0.1.5.7.1
PB153-S05	0.0.7.0.0	PB3001-S/M	1.1.3.181.74	PB3002-S01	0.1.5.7.1
PB153-S05	0.0.7.0.0	PB3001-S/M	1.1.3.224.74	PB3002-S02 ...	0.1.5.199.81
PB153-S05	0.0.7.0.0	PB3001-S/M	1.1.3.35.15	PB3002-S02	0.1.5.7.1
PB153-S05	0.0.7.0.0	PB3001-S/M	1.1.3.35.15	PB3002-S02	0.1.5.7.1
PB153-S05	0.0.7.0.0	PB3001-S/M	1.1.3.35.41	PB3002-S02	0.1.5.7.1
PB153-S05	0.0.7.188.79	PB3001-S/M	1.1.3.35.41	PB3002-S02	0.1.5.7.1
PB153-S06	0.0.7.0.0	PB3001-S/M	1.1.3.35.7	PB3002-S03 ...	0.1.5.199.81
PB153-S06	0.0.7.0.0	PB3001-S/M	1.1.3.35.7	PB3002-S03	0.1.5.7.1
PB153-S06	0.0.7.0.0	PB3001-SVKR1100.1.7.202.98		PB3002-S03	0.1.5.7.1
PB153-S06	0.0.7.0.0	PB3001-SVKR2200.1.7.202.98		PB3002-S03	0.1.5.7.1
PB153-S06	0.0.7.0.0	PB3001-S-CN/A ...	1.1.3.35.20	PB3002-S03	0.1.5.7.1

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PB3002-S03	0.1.5.7.1	PB3002-SDR-A/M1.1.1.179.73		PB303-S/21	0.0.7.3.0
PB3002-S04	0.1.5.199.81	PB3002-SDR-A/M1.1.1.222.87		PB303-S/21VKR1100.0.7.191.97	
PB3002-S04	0.1.5.7.1	PB3002-SDR-A/M 1.1.1.33.11		PB303-S/21VKR2200.0.7.191.97	
PB3002-S04	0.1.5.7.1	PB3002-SDR-A/M 1.1.1.33.11		PB303-S/A	1.0.3.169.68
PB3002-S04	0.1.5.7.1	PB3002-SDR-A/M 1.1.1.33.14		PB303-S/A	1.0.3.216.85
PB3002-S04	0.1.5.7.1	PB3002-SDR-A/M 1.1.1.33.14		PB303-S/A	1.0.3.29.12
PB3002-S04	0.1.5.7.1	PB3002-SDR-A/M 1.1.1.33.22		PB303-S/A	1.0.3.29.23
PB3002-S04	0.1.5.7.1	PB3002-SDR-A/M 1.1.1.33.22		PB303-S/A21	1.0.3.216.85
PB3002-S05	0.1.5.199.81	PB3002-SDR-CN/A1.1.1.33.19		PB303-S/M	1.0.3.169.68
PB3002-S05	0.1.5.7.1	PB3002-SDR-CN/A1.1.1.33.24		PB303-S/M	1.0.3.169.68
PB3002-S05	0.1.5.7.1	PB3002-SDR-CN/A1.1.1.33.24		PB303-S/M	1.0.3.216.85
PB3002-S05	0.1.5.7.1	PB3002-SDR-CN/A1.1.1.33.24		PB303-S/M	1.0.3.29.12
PB3002-S05	0.1.5.7.1	PB3002-SDR-CN/A1.1.1.33.24		PB303-S/M	1.0.3.29.12
PB3002-S05	0.1.5.7.1	PB3002-SDR-CN/A1.1.1.33.24		PB303-S/M	1.0.3.29.23
PB3002-S05	0.1.5.7.1	PB3002-SDR-CN/A1.1.1.33.24		PB303-S/M	1.0.3.29.23
PB3002-S05	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S/M	1.0.3.29.23
PB3002-S05	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S/M03	1.0.3.216.85
PB3002-S05	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S/M21	1.0.3.216.85
PB3002-S06	0.1.5.199.81	PB3002-SRS	0.1.5.7.1	PB303-SVKR110 0.0.7.191.97	
PB3002-S06	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-SVKR220 0.0.7.191.97	
PB3002-S06	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S01	0.0.7.191.79
PB3002-S06	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S01	0.0.7.3.0
PB3002-S06	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S01	0.0.7.3.0
PB3002-S06	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S02	0.0.7.191.79
PB3002-S06	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S02	0.0.7.3.0
PB3002-S06	0.1.5.7.1	PB3002-SRS	0.1.5.7.1	PB303-S02	0.0.7.3.0
PB3002-S06	0.1.5.7.1	PB3002-SRS/A	1.1.1.17.7	PB303-S02	0.0.7.3.0
PB3002-S06	0.1.5.7.1	PB3002-SRS/A	1.1.1.17.7	PB303-S02	0.0.7.3.0
PB3002-S-CN/A ...	1.1.1.17.19	PB3002-SRS/A	1.1.1.17.7	PB303-S02	0.0.7.3.0
PB3002-S-CN/A ...	1.1.1.17.24	PB3002-SRS/M	1.1.1.17.7	PB303-S03	0.0.7.191.79
PB3002-S-CN/A ...	1.1.1.17.24	PB3002-SRS/M	1.1.1.17.7	PB303-S03	0.0.7.3.0
PB3002-S-CN/A ...	1.1.1.17.24	PB3002-SRS/M	1.1.1.17.7	PB303-S03	0.0.7.3.0
PB3002-S-CN/A ...	1.1.1.17.24	PB3002-SRS/M	1.1.1.17.7	PB303-S03	0.0.7.3.0
PB3002-S-CN/A ...	1.1.1.17.24	PB3002-SRSDR	0.1.5.8.1	PB303-S03	0.0.7.3.0
PB3002-S-CN/A ...	1.1.1.17.24	PB3002-SRSDR	0.1.5.8.1	PB303-S03	0.0.7.3.0
PB3002-SDR	0.1.5.200.81	PB3002-SRSDR/A ..	1.1.1.33.7	PB303-S04	0.0.7.191.79
PB3002-SDR	0.1.5.8.1	PB3002-SRSDR/A ..	1.1.1.33.7	PB303-S04	0.0.7.3.0
PB3002-SDR/A ..	1.1.1.179.72	PB3002-SRSDR/A ..	1.1.1.33.7	PB303-S04	0.0.7.3.0
PB3002-SDR/A ..	1.1.1.222.72	PB3002-SRSDR/M ..	1.1.1.33.7	PB303-S04	0.0.7.3.0
PB3002-SDR/A	1.1.1.33.24	PB3002-SRSDR/M ..	1.1.1.33.7	PB303-S04	0.0.7.3.0
PB3002-SDR/A	1.1.1.33.7	PB3002-SRSDR/M ..	1.1.1.33.7	PB303-S04	0.0.7.3.0
PB3002-SDR/M ..	1.1.1.179.72	PB303-E	2.3.1.42.16	PB303-S05	0.0.7.191.79
PB3002-SDR/M ..	1.1.1.179.72	PB303-E	2.3.1.42.16	PB303-S05	0.0.7.3.0
PB3002-SDR/M ..	1.1.1.222.72	PB303-E	2.3.1.42.16	PB303-S05	0.0.7.3.0
PB3002-SDR/M ...	1.1.1.33.24	PB303-N	2.3.1.42.16	PB303-S05	0.0.7.3.0
PB3002-SDR/M ...	1.1.1.33.24	PB303-N	2.3.1.42.16	PB303-S05	0.0.7.3.0
PB3002-SDR/M ...	1.1.1.33.24	PB303-N	2.3.1.42.63	PB303-S05	0.0.7.3.0
PB3002-SDR/M	1.1.1.33.7	PB303-S	0.0.7.191.79	PB303-S05	0.0.7.3.0
PB3002-SDR/M	1.1.1.33.7	PB303-S	0.0.7.3.0	PB303-S05	0.0.7.3.0
PB3002-SDR\KR1100.1.5.200.98		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.191.79
PB3002-SDR\KR2200.1.5.200.98		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.3.0
PB3002-SDR-A/A 1.1.1.179.73		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.3.0
PB3002-SDR-A/A 1.1.1.222.87		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.3.0
PB3002-SDR-A/A 1.1.1.33.11		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.3.0
PB3002-SDR-A/A 1.1.1.33.14		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.3.0
PB3002-SDR-A/A 1.1.1.33.22		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.3.0
PB3002-SDR-A/M1.1.1.179.73		PB303-S	0.0.7.3.0	PB303-S06	0.0.7.3.0
		PB303-S/21	0.0.7.191.79	PB303-S-CN/A	1.0.3.29.18

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PB303-S-CN/A	1.0.3.29.23	PB303-SRS/A	1.0.3.29.12	PB403-S/A21 ..	1.12.5.231.85
PB303-S-CN/A	1.0.3.29.23	PB303-SRS/M	1.0.3.29.12	PB403-S/M	1.12.3.133.23
PB303-S-CN/A	1.0.3.29.23	PB303-SRS/M	1.0.3.29.12	PB403-S/M	1.12.3.133.23
PB303-SDR	0.0.7.189.79	PB303-SRS/M	1.0.3.29.12	PB403-S/M	1.12.3.146.23
PB303-SDR	0.0.7.4.0	PB303-SRSDR	0.0.7.4.0	PB403-S/M	1.12.3.146.23
PB303-SDR/21 ..	0.0.7.189.79	PB303-SRSDR	0.0.7.4.0	PB403-S/M	1.12.3.231.85
PB303-SDR/21	0.0.7.4.0	PB303-SRSDR	0.0.7.4.0	PB403-S/M	1.12.5.231.85
PB303-SDR/21	0.0.7.4.0	PB303-SRSDR/A ..	1.0.3.30.12	PB403-S/M	1.12.5.231.85
PB303-SDR/21\KR1100.0.7.189.97		PB303-SRSDR/A ..	1.0.3.30.12	PB403-S/M	1.12.5.231.85
PB303-SDR/21\KR2200.0.7.189.97		PB303-SRSDR/A ..	1.0.3.30.12	PB403-S/M	1.12.5.231.85
PB303-SDR/A	1.0.3.144.23	PB303-SRSDR/M..	1.0.3.30.12	PB403-S/M	1.12.7.175.68
PB303-SDR/A	1.0.3.170.68	PB303-SRSDR/M..	1.0.3.30.12	PB403-S/M	1.12.7.175.68
PB303-SDR/A	1.0.3.217.85	PB303-SRSDR/M..	1.0.3.30.12	PB403-S/M21 ..	1.12.3.231.85
PB303-SDR/A	1.0.3.245.85	PB4001-E	2.4.2.105.17	PB403-S/M21 ..	1.12.5.231.85
PB303-SDR/A	1.0.3.30.12	PB4001-E	2.4.2.105.17	PB403-S/M21 ..	1.12.5.231.85
PB303-SDR/A	1.0.3.30.23	PB4001-E	2.4.2.105.17	PB403-S\KR1100.12.7.192.97	
PB303-SDR/A21 ..	1.0.3.217.85	PB4001-E	2.4.2.47.17	PB403-S\KR2200.12.7.192.97	
PB303-SDR/A21 ..	1.0.3.217.85	PB4001-N	2.4.2.105.17	PB5001-S	0.13.5.193.81
PB303-SDR/A21 ..	1.0.3.217.85	PB4001-N	2.4.2.105.17	PB5001-S	0.2.5.193.81
PB303-SDR/A21 ..	1.0.3.245.85	PB4001-N	2.4.2.105.64	PB5001-S	0.2.5.2.1
PB303-SDR/M ...	1.0.3.144.23	PB4001-N	2.4.2.47.17	PB5001-S/A	1.2.1.225.88
PB303-SDR/M ...	1.0.3.144.23	PB4001-N	2.4.2.47.17	PB5001-S/A	1.2.1.36.24
PB303-SDR/M ...	1.0.3.170.68	PB4001-N	2.4.2.47.17	PB5001-S/A	1.2.1.36.7
PB303-SDR/M ...	1.0.3.170.68	PB4002-N	2.4.3.284.64	PB5001-S/M	1.2.1.225.88
PB303-SDR/M ...	1.0.3.217.85	PB4002-S	0.13.5.135.1	PB5001-S/M	1.2.1.36.24
PB303-SDR/M ...	1.0.3.217.85	PB4002-S	0.13.5.187.78	PB5001-S/M	1.2.1.36.24
PB303-SDR/M ...	1.0.3.245.85	PB4002-S	0.13.5.187.81	PB5001-S/M	1.2.1.36.7
PB303-SDR/M	1.0.3.30.12	PB4002-S	0.2.5.135.1	PB5001-S/M	1.2.1.36.7
PB303-SDR/M	1.0.3.30.12	PB4002-S/A ...	1.13.1.136.24	PB5001-S/M03..	1.2.1.225.88
PB303-SDR/M	1.0.3.30.23	PB4002-S/A ...	1.13.1.232.88	PB5001-S\KR1100.2.5.193.98	
PB303-SDR/M	1.0.3.30.23	PB4002-S/A	1.2.1.136.24	PB5001-S\KR2200.2.5.193.98	
PB303-SDR/M21 ..	1.0.3.217.85	PB4002-S/M ...	1.13.1.136.24	PB5001-S01 ...	0.13.5.193.81
PB303-SDR/M21 ..	1.0.3.217.85	PB4002-S/M ...	1.13.1.136.24	PB5001-S01 ...	0.13.5.193.81
PB303-SDR/M21 ..	1.0.3.217.85	PB4002-S/M ...	1.13.1.232.88	PB5001-S01	0.2.5.193.81
PB303-SDR/M21 ..	1.0.3.217.85	PB4002-S/M	1.2.1.136.24	PB5001-S01	0.2.5.2.1
PB303-SDR/M21 ..	1.0.3.245.85	PB4002-S/M	1.2.1.136.24	PB5001-S01	0.2.5.2.1
PB303-SDR\KR1100.0.7.189.97		PB4002-S\KR1100.13.5.187.98		PB5001-S02 ...	0.13.5.193.81
PB303-SDR\KR2200.0.7.189.97		PB4002-S\KR2200.13.5.187.98		PB5001-S02 ...	0.13.5.193.81
PB303-SDR-CN/A ..	1.0.3.30.18	PB403-N	2.3.2.283.63	PB5001-S02 ...	0.13.5.193.81
PB303-SDR-CN/A ..	1.0.3.30.23	PB403-S	0.12.7.134.0	PB5001-S02	0.2.5.193.81
PB303-SDR-CN/A ..	1.0.3.30.23	PB403-S	0.12.7.186.77	PB5001-S02	0.2.5.2.1
PB303-SDR-CN/A ..	1.0.3.30.23	PB403-S	0.12.7.192.79	PB5001-S02	0.2.5.2.1
PB303-SRS	0.0.7.3.0	PB403-S/21 ...	0.12.7.192.79	PB5001-S02	0.2.5.2.1
PB303-SRS	0.0.7.3.0	PB403-S/21\KR1100.12.7.192.97		PB5001-S03 ...	0.13.5.193.81
PB303-SRS	0.0.7.3.0	PB403-S/21\KR2200.12.7.192.97		PB5001-S03 ...	0.13.5.193.81
PB303-SRS	0.0.7.3.0	PB403-S/A	1.12.3.133.23	PB5001-S03 ...	0.13.5.193.81
PB303-SRS	0.0.7.3.0	PB403-S/A	1.12.3.146.23	PB5001-S03 ...	0.13.5.193.81
PB303-SRS	0.0.7.3.0	PB403-S/A	1.12.3.231.85	PB5001-S03	0.2.5.193.81
PB303-SRS	0.0.7.3.0	PB403-S/A	1.12.5.231.85	PB5001-S03	0.2.5.2.1
PB303-SRS	0.0.7.3.0	PB403-S/A	1.12.5.231.85	PB5001-S03	0.2.5.2.1
PB303-SRS	0.0.7.3.0	PB403-S/A	1.12.5.231.85	PB5001-S03	0.2.5.2.1
PB303-SRS/A	1.0.3.29.12	PB403-S/A	1.12.7.175.68	PB5001-S04 ...	0.13.5.193.81
PB303-SRS/A	1.0.3.29.12	PB403-S/A21 ..	1.12.3.231.85		

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PB5001-S04 ... 0.13.5.193.81		PB5001-SRS/M 1.2.1.36.7		PB602-S04 0.1.5.197.81	
PB5001-S04 ... 0.13.5.193.81		PB5001-SRS/M 1.2.1.36.7		PB602-S04 0.1.5.6.1	
PB5001-S04 ... 0.13.5.193.81		PB5001-SRS/M 1.2.1.36.7		PB602-S04 0.1.5.6.1	
PB5001-S04 ... 0.13.5.193.81		PB602-E 2.4.1.101.17		PB602-S04 0.1.5.6.1	
PB5001-S04 0.2.5.193.81		PB602-E 2.4.1.101.17		PB602-S04 0.1.5.6.1	
PB5001-S04 0.2.5.2.1		PB602-E 2.4.1.101.17		PB602-S04 0.1.5.6.1	
PB5001-S04 0.2.5.2.1		PB602-E 2.4.1.43.17		PB602-S04 0.1.5.6.1	
PB5001-S04 0.2.5.2.1		PB602-N 2.4.1.101.17		PB602-S05 0.1.5.197.81	
PB5001-S04 0.2.5.2.1		PB602-N 2.4.1.101.17		PB602-S05 0.1.5.6.1	
PB5001-S04 0.2.5.2.1		PB602-N 2.4.1.101.64		PB602-S05 0.1.5.6.1	
PB5001-S05 ... 0.13.5.193.81		PB602-N 2.4.1.43.17		PB602-S05 0.1.5.6.1	
PB5001-S05 ... 0.13.5.193.81		PB602-N 2.4.1.43.17		PB602-S05 0.1.5.6.1	
PB5001-S05 ... 0.13.5.193.81		PB602-N 2.4.1.43.17		PB602-S05 0.1.5.6.1	
PB5001-S05 ... 0.13.5.193.81		PB602-S 0.1.5.197.81		PB602-S05 0.1.5.6.1	
PB5001-S05 ... 0.13.5.193.81		PB602-S 0.1.5.6.1		PB602-S05 0.1.5.6.1	
PB5001-S05 ... 0.13.5.193.81		PB602-S/22 1.1.5.184.76		PB602-S06 0.1.5.197.81	
PB5001-S05 0.2.5.193.81		PB602-S/22 1.1.5.230.89		PB602-S06 0.1.5.6.1	
PB5001-S05 0.2.5.2.1		PB602-S/22 1.1.5.31.28		PB602-S06 0.1.5.6.1	
PB5001-S05 0.2.5.2.1		PB602-S/22 1.1.5.68.29		PB602-S06 0.1.5.6.1	
PB5001-S05 0.2.5.2.1		PB602-S/22 1.1.5.68.29		PB602-S06 0.1.5.6.1	
PB5001-S05 0.2.5.2.1		PB602-S/23 0.1.5.197.81		PB602-S06 0.1.5.6.1	
PB5001-S05 0.2.5.2.1		PB602-S/23 0.1.5.6.1		PB602-S06 0.1.5.6.1	
PB5001-S05 0.2.5.2.1		PB602-S/23 0.1.5.6.1		PB602-S06 0.1.5.6.1	
PB5001-S06 ... 0.13.5.193.81		PB602-S/25 0.1.5.197.81		PB602-S06 0.1.5.6.1	
PB5001-S06 ... 0.13.5.193.81		PB602-S/A 1.1.1.176.72		PB602-S-CN/A 1.1.1.31.19	
PB5001-S06 ... 0.13.5.193.81		PB602-S/A 1.1.1.219.72		PB602-S-CN/A 1.1.1.31.24	
PB5001-S06 ... 0.13.5.193.81		PB602-S/A 1.1.1.31.24		PB602-S-CN/A 1.1.1.31.24	
PB5001-S06 ... 0.13.5.193.81		PB602-S/A 1.1.1.31.7		PB602-S-CN/A 1.1.1.31.24	
PB5001-S06 ... 0.13.5.193.81		PB602-S/M 1.1.1.176.72		PB602-SRS 0.1.5.6.1	
PB5001-S06 ... 0.13.5.193.81		PB602-S/M 1.1.1.176.72		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.193.81		PB602-S/M 1.1.1.219.72		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.2.1		PB602-S/M 1.1.1.31.24		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.2.1		PB602-S/M 1.1.1.31.24		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.2.1		PB602-S/M 1.1.1.31.7		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.2.1		PB602-S/M 1.1.1.31.7		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.2.1		PB602-S/M03 ... 1.1.1.219.72		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.2.1		PB602-SKR110 0.1.5.197.98		PB602-SRS 0.1.5.6.1	
PB5001-S06 0.2.5.2.1		PB602-SKR220 0.1.5.197.98		PB602-SRS/A 1.1.1.31.7	
PB5001-S-CN/A ... 1.2.1.36.19		PB602-S01 0.1.5.197.81		PB602-SRS/A 1.1.1.31.7	
PB5001-S-CN/A ... 1.2.1.36.24		PB602-S01 0.1.5.6.1		PB602-SRS/A 1.1.1.31.7	
PB5001-S-CN/A ... 1.2.1.36.24		PB602-S01 0.1.5.6.1		PB602-SRS/M 1.1.1.31.7	
PB5001-S-CN/A ... 1.2.1.36.24		PB602-S01 0.1.5.6.1		PB602-SRS/M 1.1.1.31.7	
PB5001-SRS 0.2.5.2.1		PB602-S02 0.1.5.197.81		PB602-SRS/M 1.1.1.31.7	
PB5001-SRS 0.2.5.2.1		PB602-S02 0.1.5.6.1		PB8000-S 0.13.5.196.81	
PB5001-SRS 0.2.5.2.1		PB602-S02 0.1.5.6.1		PB8000-S 0.2.7.196.81	
PB5001-SRS 0.2.5.2.1		PB602-S02 0.1.5.6.1		PB8000-S 0.2.7.69.1	
PB5001-SRS 0.2.5.2.1		PB602-S02 0.1.5.6.1		PB8000-S/A 1.2.3.229.75	
PB5001-SRS 0.2.5.2.1		PB602-S03 0.1.5.197.81		PB8000-S/A 1.2.3.70.15	
PB5001-SRS 0.2.5.2.1		PB602-S03 0.1.5.6.1		PB8000-S/A 1.2.3.70.41	
PB5001-SRS 0.2.5.2.1		PB602-S03 0.1.5.6.1		PB8000-S/M 1.2.3.229.75	
PB5001-SRS/A 1.2.1.36.7		PB602-S03 0.1.5.6.1		PB8000-S/M 1.2.3.70.15	
PB5001-SRS/A 1.2.1.36.7		PB602-S03 0.1.5.6.1		PB8000-S/M 1.2.3.70.15	
PB5001-SRS/A 1.2.1.36.7		PB602-S03 0.1.5.6.1		PB8000-S/M 1.2.3.70.41	

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PB8000-S/M.....	1.2.3.70.41	PL1502-S/O3..	7.19.3.311.110	PL4002	7.26.3.346.110
PB8000-S/KR1100..	2.7.196.98	PL1502-S/10..	7.19.3.311.110	PL4002	7.26.3.382.110
PB8000-S/KR2200..	2.7.196.98	PL1502-S/11..	7.19.3.311.110	PL403	7.25.1.344.120
PB8001-S	0.13.5.194.81	PL1502-S/12..	7.19.3.311.110	PL403	7.25.1.381.120
PB8001-S	0.2.5.14.1	PL1502-S/13..	7.19.3.311.110	PL6000-S	7.20.1.291.109
PB8001-S	0.2.5.194.81	PL1502-S/A03..	7.19.3.323.122	PL6000-S	7.20.1.295.110
PB8001-S/A	1.2.1.18.24	PL1502-S/M037..	7.19.3.323.122	PL6000-S/O1..	7.20.1.295.110
PB8001-S/A	1.2.1.18.7	PL153	7.25.1.335.120	PL6000-S/O2..	7.20.1.295.110
PB8001-S/A	1.2.1.226.88	PL153-S	7.23.3.314.120	PL6000-S/O3..	7.20.1.295.110
PB8001-S/AUS....	1.2.1.18.25	PL153-S/O1 ...	7.23.3.314.120	PL6000-S/O10..	7.20.1.295.110
PB8001-S/M	1.2.1.18.24	PL153-S/O2 ...	7.23.3.314.120	PL6000-S/O11..	7.20.1.295.110
PB8001-S/M	1.2.1.18.24	PL153-S/O3 ...	7.23.3.314.120	PL6000-S/O12..	7.20.1.295.110
PB8001-S/M	1.2.1.18.7	PL153-S/O10 ...	7.23.3.314.120	PL6000-S/O13..	7.20.1.295.110
PB8001-S/M	1.2.1.18.7	PL153-S/O11 ...	7.23.3.314.120	PL6000-S/A03..	7.20.3.321.121
PB8001-S/M	1.2.1.226.88	PL153-S/O12 ...	7.23.3.314.120	PL6000-S/A03..	7.20.3.387.121
PB8001-S/M20....	1.2.1.18.11	PL153-S/O13 ...	7.23.3.314.120	PL6000-S/A13..	7.20.3.387.121
PB8001-S/M20..	1.2.1.226.87	PL153-S/A03..	7.23.3.325.123	PL6000-S/M037..	20.3.321.121
PB8001-S/KR1100..	2.5.194.98	PL153-S/M03..	7.23.3.325.123	PL6000-S/M037..	20.3.321.121
PB8001-S/KR2200..	2.5.194.98	PL2002	7.26.3.345.110	PL6000-S/M037..	20.3.387.121
PB8001-S-CN/A ...	1.2.1.18.19	PL202-S	7.18.1.289.109	PL6000-S/M137..	20.3.387.121
PB8001-S-CN/A ...	1.2.1.18.24	PL202-S	7.18.1.293.110	PL6001-S	7.20.3.312.110
PB8001-S-CN/A ...	1.2.1.18.24	PL202-S/O1 ...	7.18.1.293.110	PL6001-S/O1..	7.20.3.312.110
PB8001-S-CN/A ...	1.2.1.18.24	PL202-S/O2 ...	7.18.1.293.110	PL6001-S/O2..	7.20.3.312.110
PB8001-SRS	0.2.5.14.1	PL202-S/O3 ...	7.18.1.293.110	PL6001-S/O3..	7.20.3.312.110
PB8001-SRS	0.2.5.14.1	PL202-S/O10 ...	7.18.1.293.110	PL6001-S/O10..	7.20.3.312.110
PB8001-SRS/A	1.2.1.18.7	PL202-S/O11 ...	7.18.1.293.110	PL6001-S/O11..	7.20.3.312.110
PB8001-SRS/A	1.2.1.18.7	PL202-S/O12 ...	7.18.1.293.110	PL6001-S/O12..	7.20.3.312.110
PB8001-SRS/A	1.2.1.18.7	PL202-S/O13 ...	7.18.1.293.110	PL6001-S/O13..	7.20.3.312.110
PB8001-SRS/M	1.2.1.18.7	PL202-S/A	7.18.3.318.121	PL6001-S/A03..	7.20.3.321.122
PB8001-SRS/M	1.2.1.18.7	PL202-S/M	7.18.3.318.121	PL6001-S/A13..	7.20.3.321.122
PB8001-SRS/M	1.2.1.18.7	PL202-S2/A03..	7.18.3.385.121	PL6001-S/M037..	20.3.321.122
PL1501-S	7.19.1.290.109	PL202-S2/A13..	7.18.3.385.121	PL6001-S/M137..	20.3.321.122
PL1501-S	7.19.1.294.110	PL202-S2/M037..	7.18.3.385.121	PL601-S	7.17.1.286.108
PL1501-S/O1..	7.19.1.294.110	PL202-S2/M137..	7.18.3.385.121	PL601-S	7.17.1.286.109
PL1501-S/O2..	7.19.1.294.110	PL203	7.25.1.343.120	PL601-S	7.17.1.286.110
PL1501-S/O3..	7.19.1.294.110	PL3001-S	7.20.3.315.110	PL601-S/O1 ...	7.17.1.286.110
PL1501-S/O10..	7.19.1.294.110	PL3001-S/O1..	7.20.3.315.110	PL601-S/O2 ...	7.17.1.286.110
PL1501-S/O11..	7.19.1.294.110	PL3001-S/O2..	7.20.3.315.110	PL601-S/O3 ...	7.17.1.286.110
PL1501-S/O12..	7.19.1.294.110	PL3001-S/O3..	7.20.3.315.110	PL601-S/O10 ...	7.17.1.286.110
PL1501-S/O13..	7.19.1.294.110	PL3001-S/O10..	7.20.3.315.110	PL601-S/O11 ...	7.17.1.286.110
PL1501-S/A ...	7.19.3.320.121	PL3001-S/O11..	7.20.3.315.110	PL601-S/O12 ...	7.17.1.286.110
PL1501-S/A ...	7.19.3.350.121	PL3001-S/O12..	7.20.3.315.110	PL601-S/O13 ...	7.17.1.286.110
PL1501-S/M ..	7.19.3.320.121	PL3001-S/O13..	7.20.3.315.110	PL601-S/A03..	7.17.3.319.121
PL1501-S/M ..	7.19.3.320.121	PL3001-S/A ...	7.20.3.326.121	PL601-S/A13..	7.17.3.319.121
PL1501-S/M ..	7.19.3.350.121	PL3001-S/M ..	7.20.3.326.121	PL601-S/M03..	7.17.3.319.121
PL1501-S2/A037..	7.19.3.386.121	PL3001-S2/A037..	20.3.388.121	PL601-S/M13..	7.17.3.319.121
PL1501-S2/A137..	7.19.3.386.121	PL3001-S2/A137..	20.3.388.121	PL602-S	7.17.3.310.110
PL1501-S2/M037..	7.19.3.386.121	PL3001-S2/M037..	20.3.388.121	PL602-S/O1 ...	7.17.3.310.110
PL1501-S2/M137..	7.19.3.386.121	PL3001-S2/M137..	20.3.388.121	PL602-S/O2 ...	7.17.3.310.110
PL1502	7.26.3.337.110	PL3002	7.26.3.338.110	PL602-S/O3 ...	7.17.3.310.110
PL1502-S	7.19.3.311.110	PL303	7.25.1.336.120	PL602-S/O10 ...	7.17.3.310.110
PL1502-S/O1..	7.19.3.311.110	PL4001	7.26.1.339.110	PL602-S/O11 ...	7.17.3.310.110
PL1502-S/O2..	7.19.3.311.110	PL4001	7.26.1.380.110	PL602-S/O12 ...	7.17.3.310.110

Balance type	TDNR	Balance type	TDNR	Balance type	TDNR
PL602-S/13 ...	7.17.3.310.110	UMX5	3.9.12.91.38		
PL602-S/A03 ..	7.17.3.322.122	UMX5	3.9.12.96.40		
PL602-S/A13 ..	7.17.3.322.122	UMX5/A	3.9.2.130.55		
PL602-S/M03 ..	7.17.3.322.122	UMX5/A	3.9.2.130.55		
PL602-S/M13 ..	7.17.3.322.122	UMX5/A	3.9.2.158.55		
PL8001-S	7.20.3.317.110	UMX5/M	3.9.2.130.55		
PL8001-S/A ...	7.20.3.328.122	UMX5/M	3.9.2.158.55		
PL8001-S/M ..	7.20.3.328.122	UMX5\JP	3.9.12.158.52		
PL802-S	7.17.3.316.110	UMX5\JP	3.9.12.158.52		
PL802-S/A	7.17.3.327.122	UMX5\JP	3.9.12.158.59		
PL802-S/M	7.17.3.327.122	UMX5\JP	3.9.12.263.52		
PL83-S	7.23.3.313.120	UMX6	3.9.12.298.52		
PL83-S/01	7.23.3.313.120	WK124-S	6.0.5.305.117		
PL83-S/02	7.23.3.313.120	WK124-S	6.0.5.305.137		
PL83-S/03	7.23.3.313.120	WK124-S	6.0.5.305.139		
PL83-S/10	7.23.3.313.120	WK3002-S	6.1.5.304.116		
PL83-S/11	7.23.3.313.120	WK3002-S	6.1.5.304.138		
PL83-S/12	7.23.3.313.120	WK303-S	6.0.3.246.102		
PL83-S/13	7.23.3.313.120	WK303-S	6.0.7.306.118		
PL83-S/A03 ...	7.23.3.324.123	WK303-S	6.0.7.306.139		
PL83-S/A13 ...	7.23.3.324.123	X104B	9.6.5.403.150		
PL83-S/M03 ..	7.23.3.324.123	X105BDU	9.6.3.402.149		
PL83-S/M13 ..	7.23.3.324.123	X204B	9.6.5.400.148		
SAT	10.28.0.389.142	X204BDR	9.6.7.401.148		
UMX2	3.11.12.129.54	X205BDU	9.6.3.399.147		
UMX2	3.11.12.150.52	X64B	9.6.7.404.150		
UMX2	3.11.12.150.54				
UMX2	3.11.12.262.52				
UMX2	3.11.12.262.52				
UMX2	3.11.12.302.52				
UMX2	3.11.14.95.40				
UMX2	3.9.14.90.38				
UMX2/01	3.11.12.302.52				
UMX2/A	3.11.2.129.55				
UMX2/A	3.11.2.129.55				
UMX2/A	3.11.2.150.55				
UMX2/A	3.11.2.150.55				
UMX2/A	3.11.2.303.55				
UMX2/A01	3.11.2.303.55				
UMX2/M	3.11.2.129.55				
UMX2/M	3.11.2.150.55				
UMX2/M	3.11.2.303.55				
UMX2/M01	3.11.2.303.55				
UMX2\JP	3.11.12.150.52				
UMX2\JP	3.11.12.150.52				
UMX2\JP	3.11.12.150.59				
UMX2\JP	3.11.12.262.52				
UMX2\JP	3.11.12.302.52				
UMX5	3.9.12.130.54				
UMX5	3.9.12.158.52				
UMX5	3.9.12.158.54				
UMX5	3.9.12.263.52				

Balances in LARS, sorted by TDNRExplanation of the designations [page 1-35!](#)

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
0.0.7.0.0	 PB153-S	0.0.7.188.79	 PB153-S04	0.0.7.3.0	 PB303-S04
0.0.7.0.0	 PB153-S/21	0.0.7.188.79	 PB153-S05	0.0.7.3.0	 PB303-S05
0.0.7.0.0	 PB153-S/21	0.0.7.188.79	 PB153-S06	0.0.7.3.0	 PB303-S05
0.0.7.0.0	 PB153-S01	0.0.7.188.97	PB153-S/21\KR110	0.0.7.3.0	 PB303-S05
0.0.7.0.0	 PB153-S01	0.0.7.188.97	PB153-S/21\KR220	0.0.7.3.0	 PB303-S05
0.0.7.0.0	 PB153-S01	0.0.7.188.97	PB153-S\KR110	0.0.7.3.0	 PB303-S05
0.0.7.0.0	 PB153-S02	0.0.7.188.97	PB153-S\KR220	0.0.7.3.0	 PB303-S05
0.0.7.0.0	 PB153-S02	0.0.7.189.79	 PB303-SDR	0.0.7.3.0	 PB303-S06
0.0.7.0.0	 PB153-S02	0.0.7.189.79	.. PB303-SDR/21	0.0.7.3.0	 PB303-S06
0.0.7.0.0	 PB153-S02	0.0.7.189.97	PB303-SDR/21\KR110	0.0.7.3.0	 PB303-S06
0.0.7.0.0	 PB153-S03	0.0.7.189.97	PB303-SDR/21\KR220	0.0.7.3.0	 PB303-S06
0.0.7.0.0	 PB153-S03	0.0.7.189.97	PB303-SDR\KR110	0.0.7.3.0	 PB303-S06
0.0.7.0.0	 PB153-S03	0.0.7.189.97	PB303-SDR\KR220	0.0.7.3.0	 PB303-S06
0.0.7.0.0	 PB153-S03	0.0.7.190.80	 B203-S	0.0.7.3.0	 PB303-S06
0.0.7.0.0	 PB153-S04	0.0.7.191.79	 PB303-S	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S04	0.0.7.191.79	 PB303-S/21	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S04	0.0.7.191.79	 PB303-S01	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S04	0.0.7.191.79	 PB303-S02	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S04	0.0.7.191.79	 PB303-S03	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S04	0.0.7.191.79	 PB303-S04	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S04	0.0.7.191.79	 PB303-S05	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S05	0.0.7.191.79	 PB303-S06	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S05	0.0.7.191.80	 B303-S	0.0.7.3.0	 PB303-SRS
0.0.7.0.0	 PB153-S05	0.0.7.191.80	 B303-S/21	0.0.7.3.2	 B303-S
0.0.7.0.0	 PB153-S05	0.0.7.191.97	PB303-S/21\KR110	0.0.7.4.0	 PB303-SDR
0.0.7.0.0	 PB153-S05	0.0.7.191.97	PB303-S/21\KR220	0.0.7.4.0	 PB303-SDR/21
0.0.7.0.0	 PB153-S05	0.0.7.191.97	PB303-S\KR110	0.0.7.4.0	 PB303-SDR/21
0.0.7.0.0	 PB153-S05	0.0.7.191.97	PB303-S\KR220	0.0.7.4.0	 PB303-SRSDR
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.0.7.4.0	 PB303-SRSDR
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.0.7.4.0	 PB303-SRSDR
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.0.7.5.2	 B203-S
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.1.5.1.1	 PB1502-S
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.1.5.1.1	 PB1502-SRS
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.1.5.1.1	 PB1502-SRS
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.1.5.10.1	 GB3001-S
0.0.7.0.0	 PB153-S06	0.0.7.3.0	 PB303-S	0.1.5.11.2	 B502-S
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S/21	0.1.5.12.2	 B2002-S
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S01	0.1.5.137.1	 GB802-S
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S01	0.1.5.138.1	 GB2002-S
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S02	0.1.5.139.1	 GB3002-SDR
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S02	0.1.5.142.1	 GB1302-S
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S02	0.1.5.197.81	 PB602-S
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S03	0.1.5.197.81	 PB602-S/23
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S03	0.1.5.197.81	 PB602-S/25
0.0.7.0.0	 PB153-SRS	0.0.7.3.0	 PB303-S03	0.1.5.197.81	 PB602-S01
0.0.7.188.79	 PB153-S	0.0.7.3.0	 PB303-S03	0.1.5.197.81	 PB602-S02
0.0.7.188.79	 PB153-S/21	0.0.7.3.0	 PB303-S04	0.1.5.197.81	 PB602-S03
0.0.7.188.79	 PB153-S01	0.0.7.3.0	 PB303-S04	0.1.5.197.81	 PB602-S04
0.0.7.188.79	 PB153-S02	0.0.7.3.0	 PB303-S04	0.1.5.197.81	 PB602-S05
0.0.7.188.79	 PB153-S03	0.0.7.3.0	 PB303-S04	0.1.5.197.81	 PB602-S06

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
0.1.5.197.98	PB602-SKR110	0.1.5.6.1	 PB602-S05	0.1.5.7.1	 PB3002-S06
0.1.5.197.98	PB602-SKR220	0.1.5.6.1	 PB602-S05	0.1.5.7.1	 PB3002-S06
0.1.5.198.81	 PB1502-S	0.1.5.6.1	 PB602-S05	0.1.5.7.1	 PB3002-S06
0.1.5.198.98	PB1502-SKR110	0.1.5.6.1	 PB602-S05	0.1.5.7.1	 PB3002-S06
0.1.5.198.98	PB1502-SKR220	0.1.5.6.1	 PB602-S05	0.1.5.7.1	 PB3002-S06
0.1.5.199.81	 PB3002-S	0.1.5.6.1	 PB602-S05	0.1.5.7.1	 PB3002-S06
0.1.5.199.81	 PB3002-S01	0.1.5.6.1	 PB602-S05	0.1.5.7.1	 PB3002-S06
0.1.5.199.81	 PB3002-S02	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.81	 PB3002-S03	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.81	 PB3002-S04	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.81	 PB3002-S05	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.81	 PB3002-S06	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.82	 GB3002-S	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.98	PB3002-SKR110	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.98	PB3002-SKR220	0.1.5.6.1	 PB602-S06	0.1.5.7.1	 PB3002-SRS
0.1.5.199.99	GB3002-SKR110	0.1.5.6.1	 PB602-SRS	0.1.5.7.1	 PB3002-SRS
0.1.5.199.99	GB3002-SKR220	0.1.5.6.1	 PB602-SRS	0.1.5.7.1	 PB3002-SRS
0.1.5.200.81	 PB3002-SDR	0.1.5.6.1	 PB602-SRS	0.1.5.7.4	 GB3002-S
0.1.5.200.82	 GB3002-SDR	0.1.5.6.1	 PB602-SRS	0.1.5.8.1	 PB3002-SDR
0.1.5.200.98	PB3002-SDRKR110	0.1.5.6.1	 PB602-SRS	0.1.5.8.1	 PB3002-SRSDR
0.1.5.200.98	PB3002-SDRKR220	0.1.5.6.1	 PB602-SRS	0.1.5.8.1	 PB3002-SRSDR
0.1.5.203.83	 B502-S	0.1.5.6.1	 PB602-SRS	0.1.5.8.4	 GB3002-SDR
0.1.5.204.83	 B2002-S	0.1.5.6.1	 PB602-SRS	0.1.5.9.1	 GB1501-S
0.1.5.205.82	 GB802-S	0.1.5.6.1	 PB602-SRS	0.1.7.10.1	 GB3001-S
0.1.5.205.99	GB802-SKR110	0.1.5.6.1	 PB602-SRS	0.1.7.10.1	 GB3001-S
0.1.5.205.99	GB802-SKR220	0.1.5.7.1	 GB3002-S	0.1.7.10.1	 PB3001-S
0.1.5.206.82	 GB2002-S	0.1.5.7.1	 GB3002-S	0.1.7.10.1	 PB3001-SRS
0.1.5.206.99	GB2002-SKR110	0.1.5.7.1	 PB3002-S	0.1.7.10.1	 PB3001-SRS
0.1.5.206.99	GB2002-SKR220	0.1.5.7.1	 PB3002-S01	0.1.7.10.1	 PB3001-SRS
0.1.5.207.82	 GB1302-S	0.1.5.7.1	 PB3002-S01	0.1.7.10.2	 B3001-S
0.1.5.207.99	GB1302-SKR110	0.1.5.7.1	 PB3002-S01	0.1.7.201.81	 PB1501-S
0.1.5.207.99	GB1302-SKR220	0.1.5.7.1	 PB3002-S02	0.1.7.201.81	 PB1501-S01
0.1.5.6.1	 PB602-S	0.1.5.7.1	 PB3002-S02	0.1.7.201.81	 PB1501-S02
0.1.5.6.1	 PB602-S/23	0.1.5.7.1	 PB3002-S02	0.1.7.201.81	 PB1501-S03
0.1.5.6.1	 PB602-S/23	0.1.5.7.1	 PB3002-S02	0.1.7.201.81	 PB1501-S04
0.1.5.6.1	 PB602-S01	0.1.5.7.1	 PB3002-S03	0.1.7.201.81	 PB1501-S05
0.1.5.6.1	 PB602-S01	0.1.5.7.1	 PB3002-S03	0.1.7.201.81	 PB1501-S06
0.1.5.6.1	 PB602-S01	0.1.5.7.1	 PB3002-S03	0.1.7.201.82	 GB1501-S
0.1.5.6.1	 PB602-S02	0.1.5.7.1	 PB3002-S03	0.1.7.201.98	PB1501-SKR110
0.1.5.6.1	 PB602-S02	0.1.5.7.1	 PB3002-S03	0.1.7.201.98	PB1501-SKR220
0.1.5.6.1	 PB602-S02	0.1.5.7.1	 PB3002-S04	0.1.7.201.99	GB1501-SKR110
0.1.5.6.1	 PB602-S02	0.1.5.7.1	 PB3002-S04	0.1.7.201.99	GB1501-SKR220
0.1.5.6.1	 PB602-S02	0.1.5.7.1	 PB3002-S04	0.1.7.202.81	 PB3001-S
0.1.5.6.1	 PB602-S03	0.1.5.7.1	 PB3002-S04	0.1.7.202.82	 GB3001-S
0.1.5.6.1	 PB602-S03	0.1.5.7.1	 PB3002-S04	0.1.7.202.83	 B3001-S
0.1.5.6.1	 PB602-S03	0.1.5.7.1	 PB3002-S04	0.1.7.202.98	PB3001-SKR110
0.1.5.6.1	 PB602-S03	0.1.5.7.1	 PB3002-S05	0.1.7.202.98	PB3001-SKR220
0.1.5.6.1	 PB602-S03	0.1.5.7.1	 PB3002-S05	0.1.7.202.99	GB3001-SKR110
0.1.5.6.1	 PB602-S04	0.1.5.7.1	 PB3002-S05	0.1.7.202.99	GB3001-SKR220
0.1.5.6.1	 PB602-S04	0.1.5.7.1	 PB3002-S05	0.1.7.9.1	 GB1501-S
0.1.5.6.1	 PB602-S04	0.1.5.7.1	 PB3002-S05	0.1.7.9.1	 GB1501-S
0.1.5.6.1	 PB602-S04	0.1.5.7.1	 PB3002-S05	0.1.7.9.1	 PB1501-S
0.1.5.6.1	 PB602-S04	0.1.5.7.1	 PB3002-S05	0.1.7.9.1	 PB1501-S01
0.1.5.6.1	 PB602-S04	0.1.5.7.1	 PB3002-S06	0.1.7.9.1	 PB1501-S01

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
0.1.7.9.1	PB1501-S01	0.13.5.193.81	PB5001-S	0.2.5.2.1	PB5001-S01
0.1.7.9.1	PB1501-S02	0.13.5.193.81 ...	PB5001-S01	0.2.5.2.1	PB5001-S02
0.1.7.9.1	PB1501-S02	0.13.5.193.81 ...	PB5001-S01	0.2.5.2.1	PB5001-S02
0.1.7.9.1	PB1501-S02	0.13.5.193.81 ...	PB5001-S02	0.2.5.2.1	PB5001-S02
0.1.7.9.1	PB1501-S02	0.13.5.193.81 ...	PB5001-S02	0.2.5.2.1	PB5001-S03
0.1.7.9.1	PB1501-S03	0.13.5.193.81 ...	PB5001-S02	0.2.5.2.1	PB5001-S03
0.1.7.9.1	PB1501-S03	0.13.5.193.81 ...	PB5001-S03	0.2.5.2.1	PB5001-S03
0.1.7.9.1	PB1501-S03	0.13.5.193.81 ...	PB5001-S03	0.2.5.2.1	PB5001-S03
0.1.7.9.1	PB1501-S03	0.13.5.193.81 ...	PB5001-S03	0.2.5.2.1	PB5001-S04
0.1.7.9.1	PB1501-S04	0.13.5.193.81 ...	PB5001-S04	0.2.5.2.1	PB5001-S04
0.1.7.9.1	PB1501-S04	0.13.5.193.81 ...	PB5001-S04	0.2.5.2.1	PB5001-S04
0.1.7.9.1	PB1501-S04	0.13.5.193.81 ...	PB5001-S04	0.2.5.2.1	PB5001-S04
0.1.7.9.1	PB1501-S04	0.13.5.193.81 ...	PB5001-S04	0.2.5.2.1	PB5001-S05
0.1.7.9.1	PB1501-S04	0.13.5.193.81 ...	PB5001-S04	0.2.5.2.1	PB5001-S05
0.1.7.9.1	PB1501-S05	0.13.5.193.81 ...	PB5001-S05	0.2.5.2.1	PB5001-S05
0.1.7.9.1	PB1501-S05	0.13.5.193.81 ...	PB5001-S05	0.2.5.2.1	PB5001-S05
0.1.7.9.1	PB1501-S05	0.13.5.193.81 ...	PB5001-S05	0.2.5.2.1	PB5001-S05
0.1.7.9.1	PB1501-S05	0.13.5.193.81 ...	PB5001-S05	0.2.5.2.1	PB5001-S06
0.1.7.9.1	PB1501-S05	0.13.5.193.81 ...	PB5001-S05	0.2.5.2.1	PB5001-S06
0.1.7.9.1	PB1501-S06	0.13.5.193.81 ...	PB5001-S06	0.2.5.2.1	PB5001-S06
0.1.7.9.1	PB1501-S06	0.13.5.193.81 ...	PB5001-S06	0.2.5.2.1	PB5001-S06
0.1.7.9.1	PB1501-S06	0.13.5.193.81 ...	PB5001-S06	0.2.5.2.1	PB5001-S06
0.1.7.9.1	PB1501-S06	0.13.5.193.81 ...	PB5001-S06	0.2.5.2.1	PB5001-S06
0.1.7.9.1	PB1501-S06	0.13.5.193.81 ...	PB5001-S06	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-S06	0.13.5.193.81 ...	PB5001-S06	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-S06	0.13.5.194.81	PB8001-S	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-S06	0.13.5.195.82	GB6001-S	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-S06	0.13.5.196.81	PB8000-S	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-SRS	0.2.5.13.1	GB6001-S	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-SRS	0.2.5.13.3	GB6001-S	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-SRS	0.2.5.13.4	GB6001-S	0.2.5.2.1	PB5001-SRS
0.1.7.9.1	PB1501-SRS	0.2.5.135.1	PB4002-S	0.2.5.237.82	GB6001-S
0.1.7.9.1	PB1501-SRS	0.2.5.14.1	PB8001-S	0.2.5.237.99GB6001-S\KR110	
0.1.7.9.1	PB1501-SRS	0.2.5.14.1	PB8001-SRS	0.2.5.237.99GB6001-S\KR220	
0.1.7.9.1	PB1501-SRS	0.2.5.14.1	PB8001-SRS	0.2.7.196.81	PB8000-S
0.1.7.9.1	PB1501-SRS	0.2.5.193.81	PB5001-S	0.2.7.196.98PB8000-S\KR110	
0.1.7.9.1	PB1501-SRS	0.2.5.193.81	PB5001-S01	0.2.7.196.98PB8000-S\KR220	
0.12.7.134.0	PB403-S	0.2.5.193.81	PB5001-S02	0.2.7.69.1	PB8000-S
0.12.7.186.77	PB403-S	0.2.5.193.81	PB5001-S03	1.0.1.16.6	AB204-S/A
0.12.7.192.79	PB403-S	0.2.5.193.81	PB5001-S04	1.0.1.16.6	AB204-S/M
0.12.7.192.79	PB403-S/21	0.2.5.193.81	PB5001-S05	1.0.1.16.6	AB204-S/M
0.12.7.192.97PB403-S/21\KR110		0.2.5.193.81	PB5001-S06	1.0.1.164.66	AB104-S/A
0.12.7.192.97PB403-S/21\KR220		0.2.5.193.98PB5001-S\KR110		1.0.1.164.66	AB104-S/M
0.12.7.192.97PB403-S\KR110		0.2.5.193.98PB5001-S\KR220		1.0.1.164.66	AB104-S/M
0.12.7.192.97PB403-S\KR220		0.2.5.194.81	PB8001-S	1.0.1.164.67	AB104-S-A/M
0.13.5.135.1	PB4002-S	0.2.5.194.98PB8001-S\KR110		1.0.1.165.66	AB204-S/A
0.13.5.187.78	PB4002-S	0.2.5.194.98PB8001-S\KR220		1.0.1.165.66	AB204-S/M
0.13.5.187.81	PB4002-S	0.2.5.195.82	GB6001-S	1.0.1.165.66	AB204-S/M
0.13.5.187.98PB4002-S\KR110		0.2.5.2.1	PB5001-S	1.0.1.165.93	AB204-S/AUS
0.13.5.187.98PB4002-S\KR220		0.2.5.2.1	PB5001-S01	1.0.1.166.67	AB184-S-A/A

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
1.0.1.166.67	 AB184-S-A/M	1.0.1.63.11	 AB184-S-A/M	1.0.3.215.85	... PB153-S/M21
1.0.1.166.67	 AB184-S-A/M	1.0.1.63.11	 AB184-S-A/M	1.0.3.216.85	 PB303-S/A
1.0.1.167.66	 AB54-S/A	1.0.1.64.26	 AB54-S-Tex/A	1.0.3.216.85	... PB303-S/A21
1.0.1.167.66	 AB54-S/M	1.0.1.64.26	 AB54-S-Tex/M	1.0.3.216.85	 PB303-S/M
1.0.1.167.66	 AB54-S/M	1.0.1.64.26	 AB54-S-Tex/M	1.0.3.216.85	... PB303-S/M03
1.0.1.167.71	 AB54-S-Tex/A	1.0.1.64.31	 AB54-S/A	1.0.3.216.85	... PB303-S/M21
1.0.1.167.71	 AB54-S-Tex/M	1.0.1.64.31	 AB54-S/M	1.0.3.217.85	 PB303-SDR/A
1.0.1.167.71	 AB54-S-Tex/M	1.0.1.64.31	 AB54-S/M	1.0.3.217.85	PB303-SDR/A21
1.0.1.174.66	 AB304-S/A	1.0.1.64.34	 AB54-S-Tex/A	1.0.3.217.85	PB303-SDR/A21
1.0.1.174.66	 AB304-S/M	1.0.1.64.34	 AB54-S-Tex/A	1.0.3.217.85	PB303-SDR/A21
1.0.1.174.66	 AB304-S/M	1.0.1.64.34	 AB54-S-Tex/M	1.0.3.217.85	... PB303-SDR/M
1.0.1.211.66	 AB104-S/A	1.0.1.64.34	 AB54-S-Tex/M	1.0.3.217.85	... PB303-SDR/M
1.0.1.211.66	 AB104-S/M	1.0.1.64.34	 AB54-S-Tex/M	1.0.3.217.85	PB303-SDR/M21
1.0.1.212.66	 AB204-S/A	1.0.1.64.6	 AB54-S/A	1.0.3.217.85	PB303-SDR/M21
1.0.1.212.66	 AB204-S/M	1.0.1.64.6	 AB54-S/M	1.0.3.217.85	PB303-SDR/M21
1.0.1.212.66	 AB204-S/M03	1.0.1.64.6	 AB54-S/M	1.0.3.217.85	PB303-SDR/M21
1.0.1.212.93	 AB204-S/AUS	1.0.1.64.6	 AB54-SRS/A	1.0.3.245.85	 PB303-SDR/A
1.0.1.213.84	 AB184-S-A/A	1.0.1.64.6	 AB54-SRS/A	1.0.3.245.85	PB303-SDR/A21
1.0.1.213.84	 AB184-S-A/M	1.0.1.64.6	 AB54-SRS/A	1.0.3.245.85	... PB303-SDR/M
1.0.1.214.66	 AB54-S/A	1.0.1.64.6	 AB54-SRS/M	1.0.3.245.85	PB303-SDR/M21
1.0.1.214.66	 AB54-S/M	1.0.1.64.6	 AB54-SRS/M	1.0.3.28.12	 PB153-S/A
1.0.1.214.66	 AB54-S/M03	1.0.1.64.6	 AB54-SRS/M	1.0.3.28.12	 PB153-S/M
1.0.1.228.66	 AB304-S/A	1.0.1.67.6	 AB304-S/A	1.0.3.28.12	 PB153-S/M
1.0.1.228.66	 AB304-S/M	1.0.1.67.6	 AB304-S/M	1.0.3.28.12	 PB153-SRS/A
1.0.1.25.6	 AB104-S/A	1.0.1.67.6	 AB304-S/M	1.0.3.28.12	 PB153-SRS/A
1.0.1.25.6	 AB104-S/M	1.0.1.73.31	 AB304-S/A	1.0.3.28.12	 PB153-SRS/A
1.0.1.25.6	 AB104-S/M	1.0.1.73.31	 AB304-S/M	1.0.3.28.12	 PB153-SRS/M
1.0.1.26.11	 AB184-S-A/A	1.0.1.73.31	 AB304-S/M	1.0.3.28.12	 PB153-SRS/M
1.0.1.26.11	 AB184-S-A/M	1.0.1.76.31	 AB204-S/A	1.0.3.28.12	 PB153-SRS/M
1.0.1.26.11	 AB184-S-A/M	1.0.1.76.31	 AB204-S/M	1.0.3.28.18	 PB153-S-CN/A
1.0.1.27.6	 AB54-S/A	1.0.1.76.31	 AB204-S/M	1.0.3.28.23	 PB153-S/A
1.0.1.27.6	 AB54-S/M	1.0.1.78.31	 AB104-S/A	1.0.3.28.23	 PB153-S/M
1.0.1.27.6	 AB54-S/M	1.0.1.78.31	 AB104-S/M	1.0.3.28.23	 PB153-S/M
1.0.1.61.6	 AB104-S/A	1.0.1.78.31	 AB104-S/M	1.0.3.28.23	 PB153-S-CN/A
1.0.1.61.6	 AB104-S/M	1.0.1.98.31	 AB304-S/A	1.0.3.28.23	 PB153-S-CN/A
1.0.1.61.6	 AB104-S/M	1.0.1.98.31	 AB304-S/M	1.0.3.28.23	 PB153-S-CN/A
1.0.1.61.6	 AB104-SRS/A	1.0.1.98.31	 AB304-S/M	1.0.3.29.12	 PB303-S/A
1.0.1.61.6	 AB104-SRS/A	1.0.3.144.23	... PB303-SDR/A	1.0.3.29.12	 PB303-S/M
1.0.1.61.6	 AB104-SRS/A	1.0.3.144.23	... PB303-SDR/M	1.0.3.29.12	 PB303-S/M
1.0.1.61.6	 AB104-SRS/M	1.0.3.144.23	... PB303-SDR/M	1.0.3.29.12	 PB303-SRS/A
1.0.1.61.6	 AB104-SRS/M	1.0.3.168.68	 PB153-S/A	1.0.3.29.12	 PB303-SRS/A
1.0.1.61.6	 AB104-SRS/M	1.0.3.168.68	 PB153-S/M	1.0.3.29.12	 PB303-SRS/A
1.0.1.62.27	 AB204-S/AUS	1.0.3.168.68	 PB153-S/M	1.0.3.29.12	 PB303-SRS/M
1.0.1.62.6	 AB204-S/A	1.0.3.169.68	 PB303-S/A	1.0.3.29.12	 PB303-SRS/M
1.0.1.62.6	 AB204-S/M	1.0.3.169.68	 PB303-S/M	1.0.3.29.12	 PB303-SRS/M
1.0.1.62.6	 AB204-S/M	1.0.3.169.68	 PB303-S/M	1.0.3.29.18	 PB303-S-CN/A
1.0.1.62.6	 AB204-SRS/A	1.0.3.170.68	... PB303-SDR/A	1.0.3.29.23	 PB303-S/A
1.0.1.62.6	 AB204-SRS/A	1.0.3.170.68	... PB303-SDR/M	1.0.3.29.23	 PB303-S/M
1.0.1.62.6	 AB204-SRS/A	1.0.3.170.68	... PB303-SDR/M	1.0.3.29.23	 PB303-S/M
1.0.1.62.6	 AB204-SRS/M	1.0.3.215.85	 PB153-S/A	1.0.3.29.23	 PB303-S-CN/A
1.0.1.62.6	 AB204-SRS/M	1.0.3.215.85	... PB153-S/A21	1.0.3.29.23	 PB303-S-CN/A
1.0.1.62.6	 AB204-SRS/M	1.0.3.215.85	 PB153-S/M	1.0.3.29.23	 PB303-S-CN/A
1.0.1.63.11	 AB184-S-A/A	1.0.3.215.85	... PB153-S/M03	1.0.3.30.12	 PB303-SDR/A

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
1.0.3.30.12	PB303-SDR/M	1.0.5.163.65	AB54-S03	1.0.5.57.32	AB54-S03
1.0.3.30.12	PB303-SDR/M	1.0.5.163.65	AB54-S03	1.0.5.57.32	AB54-S04
1.0.3.30.12 ..	PB303-SRSDR/A	1.0.5.163.65	AB54-S04	1.0.5.57.32	AB54-S04
1.0.3.30.12 ..	PB303-SRSDR/A	1.0.5.163.65	AB54-S04	1.0.5.57.32	AB54-S04
1.0.3.30.12 ..	PB303-SRSDR/A	1.0.5.163.65	AB54-S04	1.0.5.57.32	AB54-S04
1.0.3.30.12 .	PB303-SRSDR/M	1.0.5.163.65	AB54-S04	1.0.5.57.32	AB54-S04
1.0.3.30.12 .	PB303-SRSDR/M	1.0.5.163.65	AB54-S04	1.0.5.57.32	AB54-S05
1.0.3.30.12 .	PB303-SRSDR/M	1.0.5.163.65	AB54-S05	1.0.5.57.32	AB54-S05
1.0.3.30.18 .	PB303-SDR-CN/A	1.0.5.163.65	AB54-S05	1.0.5.57.32	AB54-S05
1.0.3.30.23	PB303-SDR/A	1.0.5.163.65	AB54-S05	1.0.5.57.32	AB54-S05
1.0.3.30.23	PB303-SDR/M	1.0.5.163.65	AB54-S05	1.0.5.57.32	AB54-S05
1.0.3.30.23	PB303-SDR/M	1.0.5.163.65	AB54-S05	1.0.5.57.32	AB54-S05
1.0.3.30.23 .	PB303-SDR-CN/A	1.0.5.163.65	AB54-S05	1.0.5.57.32	AB54-S06
1.0.3.30.23 .	PB303-SDR-CN/A	1.0.5.163.65	AB54-S06	1.0.5.57.32	AB54-S06
1.0.3.30.23 .	PB303-SDR-CN/A	1.0.5.163.65	AB54-S06	1.0.5.57.32	AB54-S06
1.0.5.15.5	AB204-S	1.0.5.163.65	AB54-S06	1.0.5.57.32	AB54-S06
1.0.5.161.65	AB104-S	1.0.5.163.65	AB54-S06	1.0.5.57.32	AB54-S06
1.0.5.162.65	AB204-S	1.0.5.163.65	AB54-S06	1.0.5.57.32	AB54-S06
1.0.5.162.65	AB204-S01	1.0.5.163.65	AB54-S06	1.0.5.57.32	AB54-S06
1.0.5.162.65	AB204-S01	1.0.5.163.65	AB54-S06	1.0.5.57.5	AB54-S
1.0.5.162.65	AB204-S02	1.0.5.171.69	AB54-S-Tex	1.0.5.57.5	AB54-S01
1.0.5.162.65	AB204-S02	1.0.5.172.70	B204-S	1.0.5.57.5	AB54-S01
1.0.5.162.65	AB204-S02	1.0.5.173.65	AB304-S	1.0.5.57.5	AB54-S02
1.0.5.162.65	AB204-S03	1.0.5.208.65	AB104-S	1.0.5.57.5	AB54-S02
1.0.5.162.65	AB204-S03	1.0.5.209.65	AB204-S	1.0.5.57.5	AB54-S02
1.0.5.162.65	AB204-S03	1.0.5.209.65	AB204-S01	1.0.5.57.5	AB54-S03
1.0.5.162.65	AB204-S03	1.0.5.209.65	AB204-S02	1.0.5.57.5	AB54-S03
1.0.5.162.65	AB204-S04	1.0.5.209.65	AB204-S03	1.0.5.57.5	AB54-S03
1.0.5.162.65	AB204-S04	1.0.5.209.65	AB204-S04	1.0.5.57.5	AB54-S03
1.0.5.162.65	AB204-S04	1.0.5.209.65	AB204-S05	1.0.5.57.5	AB54-S04
1.0.5.162.65	AB204-S04	1.0.5.209.65	AB204-S06	1.0.5.57.5	AB54-S04
1.0.5.162.65	AB204-S04	1.0.5.210.65	AB54-S	1.0.5.57.5	AB54-S04
1.0.5.162.65	AB204-S05	1.0.5.210.65	AB54-S01	1.0.5.57.5	AB54-S04
1.0.5.162.65	AB204-S05	1.0.5.210.65	AB54-S02	1.0.5.57.5	AB54-S04
1.0.5.162.65	AB204-S05	1.0.5.210.65	AB54-S03	1.0.5.57.5	AB54-S05
1.0.5.162.65	AB204-S05	1.0.5.210.65	AB54-S04	1.0.5.57.5	AB54-S05
1.0.5.162.65	AB204-S05	1.0.5.210.65	AB54-S05	1.0.5.57.5	AB54-S05
1.0.5.162.65	AB204-S05	1.0.5.210.65	AB54-S06	1.0.5.57.5	AB54-S05
1.0.5.162.65	AB204-S06	1.0.5.218.104	AB204-E	1.0.5.57.5	AB54-S05
1.0.5.162.65	AB204-S06	1.0.5.218.86	B204-S	1.0.5.57.5	AB54-S05
1.0.5.162.65	AB204-S06	1.0.5.22.5	AB104-S	1.0.5.57.5	AB54-S06
1.0.5.162.65	AB204-S06	1.0.5.227.65	AB304-S	1.0.5.57.5	AB54-S06
1.0.5.162.65	AB204-S06	1.0.5.23.10	B154-S	1.0.5.57.5	AB54-S06
1.0.5.162.65	AB204-S06	1.0.5.24.5	AB54-S	1.0.5.57.5	AB54-S06
1.0.5.162.65	AB204-S06	1.0.5.57.32	AB54-S	1.0.5.57.5	AB54-S06
1.0.5.163.65	AB54-S	1.0.5.57.32	AB54-S01	1.0.5.57.5	AB54-S06
1.0.5.163.65	AB54-S01	1.0.5.57.32	AB54-S01	1.0.5.57.5	AB54-S06
1.0.5.163.65	AB54-S01	1.0.5.57.32	AB54-S02	1.0.5.57.5	AB54-SRS
1.0.5.163.65	AB54-S02	1.0.5.57.32	AB54-S02	1.0.5.57.5	AB54-SRS
1.0.5.163.65	AB54-S02	1.0.5.57.32	AB54-S02	1.0.5.57.5	AB54-SRS
1.0.5.163.65	AB54-S02	1.0.5.57.32	AB54-S03	1.0.5.57.5	AB54-SRS
1.0.5.163.65	AB54-S03	1.0.5.57.32	AB54-S03	1.0.5.57.5	AB54-SRS
1.0.5.163.65	AB54-S03	1.0.5.57.32	AB54-S03	1.0.5.57.5	AB54-SRS

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
1.0.5.57.5	AB54-SRS	1.0.5.71.10	B204-S	1.1.1.17.24	PB3002-S/A
1.0.5.57.5	AB54-SRS	1.0.5.72.30	AB304-S	1.1.1.17.24	PB3002-S/M
1.0.5.58.5	AB204-E	1.0.5.74.32	AB104-S	1.1.1.17.24	PB3002-S/M
1.0.5.58.5	AB204-E	1.0.5.75.32	AB204-S	1.1.1.17.24	PB3002-S/M
1.0.5.58.5	AB204-E	1.0.5.75.32	AB204-S01	1.1.1.17.24 ...	PB3002-S-CN/A
1.0.5.58.5	AB204-E	1.0.5.75.32	AB204-S01	1.1.1.17.24 ...	PB3002-S-CN/A
1.0.5.58.5	AB204-E	1.0.5.75.32	AB204-S02	1.1.1.17.24 ...	PB3002-S-CN/A
1.0.5.58.5	AB204-E	1.0.5.75.32	AB204-S02	1.1.1.17.24 ...	PB3002-S-CN/A
1.0.5.58.5	AB204-E	1.0.5.75.32	AB204-S02	1.1.1.17.24 ...	PB3002-S-CN/A
1.0.5.58.5	AB204-E	1.0.5.75.32	AB204-S03	1.1.1.17.41	GB3002-S/A
1.0.5.58.5	AB204-S	1.0.5.75.32	AB204-S03	1.1.1.17.41	GB3002-S/M
1.0.5.58.5	AB204-S01	1.0.5.75.32	AB204-S03	1.1.1.17.41	GB3002-S/M
1.0.5.58.5	AB204-S01	1.0.5.75.32	AB204-S03	1.1.1.17.7	PB3002-S/A
1.0.5.58.5	AB204-S02	1.0.5.75.32	AB204-S04	1.1.1.17.7	PB3002-S/M
1.0.5.58.5	AB204-S02	1.0.5.75.32	AB204-S04	1.1.1.17.7	PB3002-S/M
1.0.5.58.5	AB204-S02	1.0.5.75.32	AB204-S04	1.1.1.17.7	PB3002-SRS/A
1.0.5.58.5	AB204-S03	1.0.5.75.32	AB204-S04	1.1.1.17.7	PB3002-SRS/A
1.0.5.58.5	AB204-S03	1.0.5.75.32	AB204-S04	1.1.1.17.7	PB3002-SRS/A
1.0.5.58.5	AB204-S03	1.0.5.75.32	AB204-S05	1.1.1.17.7	PB3002-SRS/M
1.0.5.58.5	AB204-S03	1.0.5.75.32	AB204-S05	1.1.1.17.7	PB3002-SRS/M
1.0.5.58.5	AB204-S04	1.0.5.75.32	AB204-S05	1.1.1.17.7	PB3002-SRS/M
1.0.5.58.5	AB204-S04	1.0.5.75.32	AB204-S05	1.1.1.176.72	PB602-S/A
1.0.5.58.5	AB204-S04	1.0.5.75.32	AB204-S05	1.1.1.176.72	PB602-S/M
1.0.5.58.5	AB204-S04	1.0.5.75.32	AB204-S05	1.1.1.176.72	PB602-S/M
1.0.5.58.5	AB204-S04	1.0.5.75.32	AB204-S06	1.1.1.177.72	PB1502-S/A
1.0.5.58.5	AB204-S05	1.0.5.75.32	AB204-S06	1.1.1.177.72	PB1502-S/M
1.0.5.58.5	AB204-S05	1.0.5.75.32	AB204-S06	1.1.1.177.72	PB1502-S/M
1.0.5.58.5	AB204-S05	1.0.5.75.32	AB204-S06	1.1.1.178.72	GB3002-S/A
1.0.5.58.5	AB204-S05	1.0.5.75.32	AB204-S06	1.1.1.178.72	GB3002-S/A
1.0.5.58.5	AB204-S05	1.0.5.75.32	AB204-S06	1.1.1.178.72	GB3002-S/A
1.0.5.58.5	AB204-S05	1.0.5.75.32	AB204-S06	1.1.1.178.72	GB3002-S/M
1.0.5.58.5	AB204-S06	1.0.5.77.33	AB54-S-Tex	1.1.1.178.72	GB3002-S/M
1.0.5.58.5	AB204-S06	1.0.5.77.33	AB54-S-Tex	1.1.1.178.72	GB3002-S/M
1.0.5.58.5	AB204-S06	1.0.5.97.30	AB304-S	1.1.1.178.72	GB3002-S/M
1.0.5.58.5	AB204-S06	1.1.1.140.24	GB802-S/A	1.1.1.178.72	PB3002-S/A
1.0.5.58.5	AB204-S06	1.1.1.140.24	GB802-S/M	1.1.1.178.72	PB3002-S/M
1.0.5.58.5	AB204-S06	1.1.1.140.24	GB802-S/M	1.1.1.178.72	PB3002-S/M
1.0.5.58.5	AB204-S06	1.1.1.141.24	GB2002-S/A	1.1.1.179.72 ..	GB3002-SDR/A
1.0.5.58.5	AB204-SRS	1.1.1.141.24	GB2002-S/M	1.1.1.179.72 ..	GB3002-SDR/A
1.0.5.58.5	AB204-SRS	1.1.1.141.24	GB2002-S/M	1.1.1.179.72 ..	GB3002-SDR/A
1.0.5.58.5	AB204-SRS	1.1.1.143.24	GB1302-S/A	1.1.1.179.72 ..	GB3002-SDR/M
1.0.5.58.5	AB204-SRS	1.1.1.143.24	GB1302-S/M	1.1.1.179.72 ..	GB3002-SDR/M
1.0.5.58.5	AB204-SRS	1.1.1.143.24	GB1302-S/M	1.1.1.179.72 ..	GB3002-SDR/M
1.0.5.58.5	AB204-SRS	1.1.1.17.13	GB3002-S/A	1.1.1.179.72 ..	GB3002-SDR/M
1.0.5.58.5	AB204-SRS	1.1.1.17.13	GB3002-S/M	1.1.1.179.72 ..	PB3002-SDR/A
1.0.5.58.5	AB204-SRS	1.1.1.17.13	GB3002-S/M	1.1.1.179.72 ..	PB3002-SDR/M
1.0.5.58.5	AB204-SRS	1.1.1.17.19 ...	PB3002-S-CN/A	1.1.1.179.72 ..	PB3002-SDR/M
1.0.5.59.5	AB104-S	1.1.1.17.24	GB3002-S/A	1.1.1.179.73 ..	PB3002-SDR-A/A
1.0.5.59.5	AB104-SRS	1.1.1.17.24	GB3002-S/A	1.1.1.179.73 ..	PB3002-SDR-A/M
1.0.5.59.5	AB104-SRS	1.1.1.17.24	GB3002-S/M	1.1.1.179.73 ..	PB3002-SDR-A/M
1.0.5.60.10	B154-S	1.1.1.17.24	GB3002-S/M	1.1.1.182.72	GB802-S/A
1.0.5.65.21	AB54-S-Tex	1.1.1.17.24	GB3002-S/M	1.1.1.183.72	GB2002-S/A
1.0.5.66.5	AB304-S	1.1.1.17.24	GB3002-S/M	1.1.1.185.72	GB1302-S/A

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
1.1.1.185.72	GB1302-S/M	1.1.1.32.7	PB1502-SRS/A	1.1.3.181.74	PB3001-S/A
1.1.1.185.72	GB1302-S/M	1.1.1.32.7	PB1502-SRS/M	1.1.3.181.74	PB3001-S/M
1.1.1.219.72	PB602-S/A	1.1.1.32.7	PB1502-SRS/M	1.1.3.181.74	PB3001-S/M
1.1.1.219.72	PB602-S/M	1.1.1.32.7	PB1502-SRS/M	1.1.3.223.74	PB1501-S/A
1.1.1.219.72 ...	PB602-S/M03	1.1.1.33.11 .	PB3002-SDR-A/A	1.1.3.223.74	PB1501-S/M
1.1.1.220.72	PB1502-S/A	1.1.1.33.11	PB3002-SDR-A/M	1.1.3.223.74 .	PB1501-S/M03
1.1.1.220.72	PB1502-S/M	1.1.1.33.11	PB3002-SDR-A/M	1.1.3.223.91	GB1501-S/A
1.1.1.221.72	PB3002-S/A	1.1.1.33.13	GB3002-SDR/A	1.1.3.223.91	GB1501-S/M
1.1.1.221.72	PB3002-S/M	1.1.1.33.13 ...	GB3002-SDR/M	1.1.3.224.74	PB3001-S/A
1.1.1.221.72 .	PB3002-S/M03	1.1.1.33.13 ...	GB3002-SDR/M	1.1.3.224.74	PB3001-S/M
1.1.1.221.92	GB3002-S/A	1.1.1.33.14 .	PB3002-SDR-A/A	1.1.3.224.91	GB3001-S/A
1.1.1.221.92	GB3002-S/M	1.1.1.33.14	PB3002-SDR-A/M	1.1.3.224.91	GB3001-S/M
1.1.1.221.96PB3002-S/A	AKR220	1.1.1.33.14	PB3002-SDR-A/M	1.1.3.34.15	PB1501-S/A
1.1.1.222.72 ..	PB3002-SDR/A	1.1.1.33.19	PB3002-SDR-CN/A	1.1.3.34.15	PB1501-S/M
1.1.1.222.72 .	PB3002-SDR/M	1.1.1.33.22 .	PB3002-SDR-A/A	1.1.3.34.15	PB1501-S/M
1.1.1.222.87	PB3002-SDR-A/A	1.1.1.33.22	PB3002-SDR-A/M	1.1.3.34.15	PB1501-SRS/A
1.1.1.222.87	PB3002-SDR-A/M	1.1.1.33.22	PB3002-SDR-A/M	1.1.3.34.15	PB1501-SRS/A
1.1.1.222.92 ..	GB3002-SDR/A	1.1.1.33.24	GB3002-SDR/A	1.1.3.34.15	PB1501-SRS/A
1.1.1.222.92 .	GB3002-SDR/M	1.1.1.33.24	GB3002-SDR/A	1.1.3.34.15	PB1501-SRS/M
1.1.1.234.92	GB802-S/A	1.1.1.33.24 ...	GB3002-SDR/M	1.1.3.34.15	PB1501-SRS/M
1.1.1.234.92	GB802-S/M	1.1.1.33.24 ...	GB3002-SDR/M	1.1.3.34.15	PB1501-SRS/M
1.1.1.235.92	GB2002-S/A	1.1.1.33.24 ...	GB3002-SDR/M	1.1.3.34.20 ...	PB1501-S-CN/A
1.1.1.235.92	GB2002-S/M	1.1.1.33.24 ...	GB3002-SDR/M	1.1.3.34.24 ...	PB1501-S-CN/A
1.1.1.236.92	GB1302-S/A	1.1.1.33.24	PB3002-SDR/A	1.1.3.34.41	GB1501-S/A
1.1.1.236.92	GB1302-S/M	1.1.1.33.24 ...	PB3002-SDR/M	1.1.3.34.41	GB1501-S/A
1.1.1.31.19	PB602-S-CN/A	1.1.1.33.24 ...	PB3002-SDR/M	1.1.3.34.41	GB1501-S/M
1.1.1.31.24	PB602-S/A	1.1.1.33.24 ...	PB3002-SDR/M	1.1.3.34.41	GB1501-S/M
1.1.1.31.24	PB602-S/M	1.1.1.33.24	PB3002-SDR-CN/A	1.1.3.34.41	GB1501-S/M
1.1.1.31.24	PB602-S/M	1.1.1.33.24	PB3002-SDR-CN/A	1.1.3.34.41	PB1501-S/A
1.1.1.31.24	PB602-S/M	1.1.1.33.24	PB3002-SDR-CN/A	1.1.3.34.41	PB1501-S/M
1.1.1.31.24	PB602-S-CN/A	1.1.1.33.24	PB3002-SDR-CN/A	1.1.3.34.41	PB1501-S/M
1.1.1.31.24	PB602-S-CN/A	1.1.1.33.24	PB3002-SDR-CN/A	1.1.3.34.41	PB1501-S/M
1.1.1.31.24	PB602-S-CN/A	1.1.1.33.24	PB3002-SDR-CN/A	1.1.3.34.41	PB1501-S/M
1.1.1.31.24	PB602-S-CN/A	1.1.1.33.24	PB3002-SDR-CN/A	1.1.3.34.41	PB1501-S/M
1.1.1.31.7	PB602-S/A	1.1.1.33.7	PB3002-SDR/A	1.1.3.34.41	PB1501-S/M
1.1.1.31.7	PB602-S/M	1.1.1.33.7	PB3002-SDR/M	1.1.3.34.7	PB1501-S/A
1.1.1.31.7	PB602-S/M	1.1.1.33.7	PB3002-SDR/M	1.1.3.34.7	PB1501-S/M
1.1.1.31.7	PB602-SRS/A	1.1.1.33.7 ..	PB3002-SRSDR/A	1.1.3.34.7	PB1501-S/M
1.1.1.31.7	PB602-SRS/A	1.1.1.33.7 ..	PB3002-SRSDR/A	1.1.3.35.15	PB3001-S/A
1.1.1.31.7	PB602-SRS/A	1.1.1.33.7 ..	PB3002-SRSDR/A	1.1.3.35.15	PB3001-S/M
1.1.1.31.7	PB602-SRS/M	1.1.1.33.7 .	PB3002-SRSDR/M	1.1.3.35.15	PB3001-S/M
1.1.1.31.7	PB602-SRS/M	1.1.1.33.7 .	PB3002-SRSDR/M	1.1.3.35.15	PB3001-SRS/A
1.1.1.31.7	PB602-SRS/M	1.1.1.33.7 .	PB3002-SRSDR/M	1.1.3.35.15	PB3001-SRS/A
1.1.1.31.7	PB602-SRS/M	1.1.1.33.7 .	PB3002-SRSDR/M	1.1.3.35.15	PB3001-SRS/A
1.1.1.32.19 ...	PB1502-S-CN/A	1.1.1.34.41	GB1501-S/A	1.1.3.35.15	PB3001-SRS/M
1.1.1.32.24	PB1502-S/A	1.1.1.34.41	GB1501-S/M	1.1.3.35.15	PB3001-SRS/M
1.1.1.32.24	PB1502-S/M	1.1.1.34.41	GB1501-S/M	1.1.3.35.15	PB3001-SRS/M
1.1.1.32.24	PB1502-S/M	1.1.1.35.41	GB3001-S/A	1.1.3.35.15	PB3001-SRS/M
1.1.1.32.24 ...	PB1502-S-CN/A	1.1.1.35.41	GB3001-S/M	1.1.3.35.20 ...	PB3001-S-CN/A
1.1.1.32.24 ...	PB1502-S-CN/A	1.1.1.35.41	GB3001-S/M	1.1.3.35.24 ...	PB3001-S-CN/A
1.1.1.32.24 ...	PB1502-S-CN/A	1.1.3.180.74	PB1501-S/A	1.1.3.35.41	GB3001-S/A
1.1.1.32.24 ...	PB1502-S-CN/A	1.1.3.180.74	PB1501-S/M	1.1.3.35.41	GB3001-S/A
1.1.1.32.7	PB1502-S/A	1.1.3.180.74	PB1501-S/M	1.1.3.35.41	GB3001-S/A
1.1.1.32.7	PB1502-S/M	1.1.3.180.75	GB1501-S/A	1.1.3.35.41	GB3001-S/M
1.1.1.32.7	PB1502-S/M	1.1.3.180.75	GB1501-S/M	1.1.3.35.41	GB3001-S/M
1.1.1.32.7	PB1502-SRS/A	1.1.3.180.75	GB1501-S/M	1.1.3.35.41	GB3001-S/M
1.1.1.32.7	PB1502-SRS/A	1.1.3.180.75	GB1501-S/M	1.1.3.35.41	GB3001-S/M

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
1.1.3.35.41	GB3001-S/M	1.2.1.18.7	PB8001-S/M	2.3.1.42.16	PB303-E
1.1.3.35.41	PB3001-S/A	1.2.1.18.7	PB8001-S/M	2.3.1.42.16	PB303-E
1.1.3.35.41	PB3001-S/M	1.2.1.18.7	PB8001-SRS/A	2.3.1.42.16	PB303-N
1.1.3.35.41	PB3001-S/M	1.2.1.18.7	PB8001-SRS/A	2.3.1.42.16	PB303-N
1.1.3.35.7	PB3001-S/A	1.2.1.18.7	PB8001-SRS/A	2.3.1.42.63	PB303-N
1.1.3.35.7	PB3001-S/M	1.2.1.18.7	PB8001-SRS/M	2.3.2.283.63	PB403-N
1.1.3.35.7	PB3001-S/M	1.2.1.18.7	PB8001-SRS/M	2.4.1.101.17	PB602-E
1.1.5.184.76	PB602-S/22	1.2.1.18.7	PB8001-SRS/M	2.4.1.101.17	PB602-E
1.1.5.230.89	PB602-S/22	1.2.1.225.88	PB5001-S/A	2.4.1.101.17	PB602-E
1.1.5.31.28	PB602-S/22	1.2.1.225.88	PB5001-S/M	2.4.1.101.17	PB602-N
1.1.5.68.29	PB602-S/22	1.2.1.225.88	PB5001-S/M03	2.4.1.101.17	PB602-N
1.1.5.68.29	PB602-S/22	1.2.1.226.87	PB8001-S/M20	2.4.1.101.64	PB602-N
1.12.3.133.23	PB403-S/A	1.2.1.226.88	PB8001-S/A	2.4.1.102.17	PB2002-E
1.12.3.133.23	PB403-S/M	1.2.1.226.88	PB8001-S/M	2.4.1.102.17	PB2002-E
1.12.3.133.23	PB403-S/M	1.2.1.233.90	GB6001-S/AUS	2.4.1.102.17	PB2002-N
1.12.3.146.23	PB403-S/A	1.2.1.233.92	GB6001-S/A	2.4.1.102.64	PB2002-N
1.12.3.146.23	PB403-S/M	1.2.1.233.92	GB6001-S/M	2.4.1.103.17	PB3002-E
1.12.3.146.23	PB403-S/M	1.2.1.36.19	PB5001-S-CN/A	2.4.1.103.17	PB3002-E
1.12.3.231.85	PB403-S/A	1.2.1.36.24	PB5001-S/A	2.4.1.103.17	PB3002-E
1.12.3.231.85	PB403-S/A21	1.2.1.36.24	PB5001-S/M	2.4.1.103.17	PB3002-N
1.12.3.231.85	PB403-S/M	1.2.1.36.24	PB5001-S/M	2.4.1.103.17	PB3002-N
1.12.3.231.85	PB403-S/M21	1.2.1.36.24	PB5001-S-CN/A	2.4.1.103.64	PB3002-N
1.12.5.231.85	PB403-S/A	1.2.1.36.24	PB5001-S-CN/A	2.4.1.103.64	PB3002-N/EL
1.12.5.231.85	PB403-S/A	1.2.1.36.24	PB5001-S-CN/A	2.4.1.43.17	PB602-E
1.12.5.231.85	PB403-S/A	1.2.1.36.7	PB5001-S/A	2.4.1.43.17	PB602-N
1.12.5.231.85	PB403-S/A21	1.2.1.36.7	PB5001-S/M	2.4.1.43.17	PB602-N
1.12.5.231.85	PB403-S/M	1.2.1.36.7	PB5001-S/M	2.4.1.43.17	PB602-N
1.12.5.231.85	PB403-S/M	1.2.1.36.7	PB5001-SRS/A	2.4.1.44.17	PB2002-E
1.12.5.231.85	PB403-S/M	1.2.1.36.7	PB5001-SRS/A	2.4.1.44.17	PB2002-N
1.12.5.231.85	PB403-S/M	1.2.1.36.7	PB5001-SRS/A	2.4.1.44.17	PB2002-N
1.12.5.231.85	PB403-S/M21	1.2.1.36.7	PB5001-SRS/M	2.4.1.45.17	PB3002-E
1.12.5.231.85	PB403-S/M21	1.2.1.36.7	PB5001-SRS/M	2.4.1.45.17	PB3002-N
1.12.7.175.68	PB403-S/A	1.2.1.36.7	PB5001-SRS/M	2.4.1.45.17	PB3002-N
1.12.7.175.68	PB403-S/M	1.2.1.37.13	GB6001-S/A	2.4.1.45.17	PB3002-N
1.12.7.175.68	PB403-S/M	1.2.1.37.13	GB6001-S/A	2.4.2.104.17	PB1501-E
1.13.1.136.24	PB4002-S/A	1.2.1.37.13	GB6001-S/M	2.4.2.104.17	PB1501-E
1.13.1.136.24	PB4002-S/M	1.2.1.37.24	GB6001-S/A	2.4.2.104.17	PB1501-N
1.13.1.136.24	PB4002-S/M	1.2.1.37.24	GB6001-S/M	2.4.2.104.64	PB1501-N
1.13.1.232.88	PB4002-S/A	1.2.1.37.24	GB6001-S/M	2.4.2.105.17	PB4001-E
1.13.1.232.88	PB4002-S/M	1.2.1.37.24	GB6001-S/M	2.4.2.105.17	PB4001-E
1.2.1.136.24	PB4002-S/A	1.2.1.37.60	GB6001-S/AUS	2.4.2.105.17	PB4001-E
1.2.1.136.24	PB4002-S/M	1.2.3.229.75	PB8000-S/A	2.4.2.105.17	PB4001-N
1.2.1.136.24	PB4002-S/M	1.2.3.229.75	PB8000-S/M	2.4.2.105.17	PB4001-N
1.2.1.136.24	PB4002-S/M	1.2.3.70.15	PB8000-S/A	2.4.2.105.17	PB4001-N
1.2.1.18.11	PB8001-S/M20	1.2.3.70.15	PB8000-S/M	2.4.2.105.64	PB4001-N
1.2.1.18.19	PB8001-S-CN/A	1.2.3.70.15	PB8000-S/M	2.4.2.46.17	PB1501-E
1.2.1.18.24	PB8001-S/A	1.2.3.70.41	PB8000-S/A	2.4.2.46.17	PB1501-N
1.2.1.18.24	PB8001-S/M	1.2.3.70.41	PB8000-S/M	2.4.2.46.17	PB1501-N
1.2.1.18.24	PB8001-S/M	1.2.3.70.41	PB8000-S/M	2.4.2.47.17	PB4001-E
1.2.1.18.24	PB8001-S-CN/A	2.3.1.41.16	PB203-E	2.4.2.47.17	PB4001-N
1.2.1.18.24	PB8001-S-CN/A	2.3.1.41.16	PB203-E	2.4.2.47.17	PB4001-N
1.2.1.18.24	PB8001-S-CN/A	2.3.1.41.16	PB203-N	2.4.2.47.17	PB4001-N
1.2.1.18.25	PB8001-S/AUS	2.3.1.41.63	PB203-N	2.4.3.284.64	PB4002-N
1.2.1.18.7	PB8001-S/A	2.3.1.42.16	PB303-E	2.5.1.106.16	AB204-N

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
2.5.1.151.16	AB204-N	3.6.12.251.47	AX205DR\JP	3.7.12.148.49	AX504
2.5.1.151.63	AB204-N	3.6.12.81.35	AX205	3.7.12.148.49	AX504\JP
2.5.1.79.16	AB204-N	3.6.13.117.44	AX205DR	3.7.12.148.49	AX504\JP
2.5.2.107.16	AB104-N	3.6.13.121.47	AX205DR	3.7.12.148.58	AX504\JP
2.5.2.152.16	AB104-N	3.6.13.121.47	AX205DR\JP	3.7.12.256.49	AX504
2.5.2.152.63	AB104-N	3.6.13.121.47	AX205DR\JP	3.7.12.256.49	AX504/01
2.5.2.280.106	AJ3230	3.6.13.121.57	AX205DR\JP	3.7.12.256.49	AX504\JP
2.5.2.281.107	CB303-N	3.6.13.252.47	AX205DR	3.7.12.86.36	AX504
2.5.2.281.113	CB303-N	3.6.13.252.47 ...	AX205DR/01	3.7.13.123.49	AX504DR
2.5.2.282.107	CB603-N	3.6.13.252.47	AX205DR\JP	3.7.13.147.49	AX504DR
2.5.2.285.107	CB603-N	3.6.13.82.35	AX205DR	3.7.13.147.49 ...	AX504DR\JP
2.5.2.285.113	CB603-N	3.6.14.307.119	AX1005	3.7.13.147.49 ...	AX504DR\JP
2.5.2.80.16	AB104-N	3.6.15.127.47	AX105DR	3.7.13.147.58 ...	AX504DR\JP
3.11.12.129.54	UMX2	3.6.15.127.47	AX105DR\JP	3.7.13.254.49	AX504DR
3.11.12.150.52	UMX2	3.6.15.127.47	AX105DR\JP	3.7.13.254.49 ...	AX504DR/01
3.11.12.150.52	UMX2\JP	3.6.15.127.57	AX105DR\JP	3.7.13.254.49 ...	AX504DR\JP
3.11.12.150.52	UMX2\JP	3.6.15.259.47	AX105DR	3.7.13.84.36	AX504DR
3.11.12.150.54	UMX2	3.6.15.259.47 ...	AX105DR/01	3.7.14.126.49	AX304
3.11.12.150.59	UMX2\JP	3.6.15.259.47	AX105DR\JP	3.7.14.149.49	AX304
3.11.12.262.52	UMX2	3.6.15.88.35	AX105DR	3.7.14.149.49	AX304\JP
3.11.12.262.52	UMX2	3.6.16.118.45	AX204	3.7.14.149.49	AX304\JP
3.11.12.262.52	UMX2\JP	3.6.16.122.49	AX204	3.7.14.149.58	AX304\JP
3.11.12.302.52	UMX2	3.6.16.122.49	AX204\JP	3.7.14.257.49	AX304
3.11.12.302.52	UMX2/01	3.6.16.122.49	AX204\JP	3.7.14.257.49	AX304/01
3.11.12.302.52	UMX2\JP	3.6.16.122.58	AX204\JP	3.7.14.257.49	AX304\JP
3.11.14.95.40	UMX2	3.6.16.253.49	AX204	3.7.14.87.36	AX304
3.11.2.129.55	UMX2/A	3.6.16.253.49	AX204/01	3.7.2.125.50	AX504/A
3.11.2.129.55	UMX2/A	3.6.16.253.49	AX204\JP	3.7.2.125.50	AX504/A
3.11.2.129.55	UMX2/M	3.6.16.296.49	AX204DR	3.7.2.125.50	AX504/M
3.11.2.150.55	UMX2/A	3.6.16.308.119	AX1004	3.7.2.148.50	AX504/A
3.11.2.150.55	UMX2/A	3.6.16.83.36	AX204	3.7.2.148.50	AX504/A01
3.11.2.150.55	UMX2/M	3.6.2.120.48	AX205/A	3.7.2.148.50	AX504/M
3.11.2.303.55	UMX2/A	3.6.2.120.48	AX205/A01	3.7.2.148.50	AX504/M01
3.11.2.303.55	UMX2/A01	3.6.2.120.48	AX205/M	3.7.3.123.50	AX504DR/A
3.11.2.303.55	UMX2/M	3.6.2.120.48	AX205/M01	3.7.3.123.50	AX504DR/A
3.11.2.303.55	UMX2/M01	3.6.3.121.48	AX205DR/A	3.7.3.123.50	AX504DR/M
3.16.1.279.105	AX16004	3.6.3.121.48 ...	AX205DR/A01	3.7.3.147.50	AX504DR/A
3.16.1.279.105	AX32004	3.6.3.121.48	AX205DR/M	3.7.3.147.50 ...	AX504DR/A01
3.16.1.279.105	AX32004	3.6.3.121.48 ...	AX205DR/M01	3.7.3.147.50	AX504DR/M
3.16.1.279.105	AX64004	3.6.5.127.48	AX105DR/A	3.7.3.147.50 ...	AX504DR/M01
3.16.1.279.105	AX64004	3.6.5.127.48	AX105DR/A	3.7.4.126.50	AX304/A
3.16.1.279.105	AX64004	3.6.5.127.48	AX105DR/M	3.7.4.126.50	AX304/A
3.16.1.349.128	AX16004	3.6.5.260.48	AX105DR/A	3.7.4.126.50	AX304/M
3.16.1.349.128	AX32004	3.6.5.260.48 ...	AX105DR/A01	3.7.4.149.50	AX304/A
3.16.1.349.128	AX64004	3.6.5.260.48	AX105DR/M	3.7.4.149.50	AX304/A
3.6.12.120.47	AX205	3.6.5.260.48 ...	AX105DR/M01	3.7.4.149.50	AX304/M
3.6.12.120.47	AX205\JP	3.6.6.122.50	AX204/A	3.7.4.258.50	AX304/A
3.6.12.120.47	AX205\JP	3.6.6.122.50	AX204/A01	3.7.4.258.50	AX304/A01
3.6.12.120.57	AX205\JP	3.6.6.122.50	AX204/M	3.7.4.258.50	AX304/M
3.6.12.251.47	AX205	3.6.6.122.50	AX204/M01	3.7.4.258.50	AX304/M01
3.6.12.251.47	AX205	3.6.6.297.50	AX204DR/A	3.8.12.131.47	AX26
3.6.12.251.47	AX205/01	3.6.6.297.50	AX204DR/M	3.8.12.131.47	AX26\JP
3.6.12.251.47	AX205\JP	3.7.12.125.49	AX504	3.8.12.131.47	AX26\JP

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
3.8.12.131.57	AX26\JP	3.9.6.128.53	MX5/A	7.18.3.318.121	PL202-S/M
3.8.12.264.47	AX26	3.9.6.128.53	MX5/A01	7.18.3.385.121	PL202-S2/A03
3.8.12.264.47	AX26\JP	3.9.6.128.53	MX5/M	7.18.3.385.121	PL202-S2/A13
3.8.12.92.35	AX26	3.9.6.128.53	MX5/M01	7.18.3.385.121	PL202-S2/M03
3.8.13.124.47	AX26DR	4.10.5.93.39	HB43	7.18.3.385.121	PL202-S2/M13
3.8.13.132.47	AX26DR	4.10.5.93.43	HB43	7.19.1.290.109	PL1501-S
3.8.13.132.47	AX26DR\JP	6.0.3.246.102	WK303-S	7.19.1.294.110	PL1501-S
3.8.13.132.47	AX26DR\JP	6.0.5.305.117	WK124-S	7.19.1.294.110	PL1501-S/01
3.8.13.132.57	AX26DR\JP	6.0.5.305.137	WK124-S	7.19.1.294.110	PL1501-S/02
3.8.13.255.47	AX26DR	6.0.5.305.139	WK124-S	7.19.1.294.110	PL1501-S/03
3.8.13.255.47	AX26DR/01	6.0.7.306.118	WK303-S	7.19.1.294.110	PL1501-S/10
3.8.13.255.47	AX26DR\JP	6.0.7.306.139	WK303-S	7.19.1.294.110	PL1501-S/11
3.8.13.85.35	AX26DR	6.1.5.304.116	WK3002-S	7.19.1.294.110	PL1501-S/12
3.8.14.309.119	AX106	6.1.5.304.138	WK3002-S	7.19.1.294.110	PL1501-S/13
3.8.14.309.119	AX206	7.17.1.286.108	PL601-S	7.19.3.311.110	PL1502-S
3.8.14.309.127	AX1006	7.17.1.286.109	PL601-S	7.19.3.311.110	PL1502-S/01
3.8.14.309.127	AX106H	7.17.1.286.110	PL601-S	7.19.3.311.110	PL1502-S/02
3.8.2.131.51	AX26/A	7.17.1.286.110	PL601-S/01	7.19.3.311.110	PL1502-S/03
3.8.2.131.51	AX26/M	7.17.1.286.110	PL601-S/02	7.19.3.311.110	PL1502-S/10
3.8.3.124.51	AX26DR/A	7.17.1.286.110	PL601-S/03	7.19.3.311.110	PL1502-S/11
3.8.3.124.51	AX26DR/A	7.17.1.286.110	PL601-S/10	7.19.3.311.110	PL1502-S/12
3.8.3.124.51	AX26DR/M	7.17.1.286.110	PL601-S/11	7.19.3.311.110	PL1502-S/13
3.8.3.132.51	AX26DR/A	7.17.1.286.110	PL601-S/12	7.19.3.320.121	PL1501-S/A
3.8.3.132.51	AX26DR/A01	7.17.1.286.110	PL601-S/13	7.19.3.320.121	PL1501-S/M
3.8.3.132.51	AX26DR/M	7.17.3.310.110	PL602-S	7.19.3.320.121	PL1501-S/M
3.8.3.132.51	AX26DR/M01	7.17.3.310.110	PL602-S/01	7.19.3.323.122	PL1502-S/A03
3.9.12.130.54	UMX5	7.17.3.310.110	PL602-S/02	7.19.3.323.122	PL1502-S/M03
3.9.12.158.52	UMX5	7.17.3.310.110	PL602-S/03	7.19.3.350.121	PL1501-S/A
3.9.12.158.52	UMX5\JP	7.17.3.310.110	PL602-S/10	7.19.3.350.121	PL1501-S/M
3.9.12.158.52	UMX5\JP	7.17.3.310.110	PL602-S/11	7.19.3.386.121	PL1501-S2/A03
3.9.12.158.54	UMX5	7.17.3.310.110	PL602-S/12	7.19.3.386.121	PL1501-S2/A13
3.9.12.158.59	UMX5\JP	7.17.3.310.110	PL602-S/13	7.19.3.386.121	PL1501-S2/M03
3.9.12.263.52	UMX5	7.17.3.316.110	PL802-S	7.19.3.386.121	PL1501-S2/M13
3.9.12.263.52	UMX5\JP	7.17.3.319.121	PL601-S/A03	7.20.1.291.109	PL6000-S
3.9.12.298.52	UMX6	7.17.3.319.121	PL601-S/A13	7.20.1.295.110	PL6000-S
3.9.12.91.38	UMX5	7.17.3.319.121	PL601-S/M03	7.20.1.295.110	PL6000-S/01
3.9.12.96.40	UMX5	7.17.3.319.121	PL601-S/M13	7.20.1.295.110	PL6000-S/02
3.9.14.90.38	UMX2	7.17.3.322.122	PL602-S/A03	7.20.1.295.110	PL6000-S/03
3.9.16.119.46	MX5	7.17.3.322.122	PL602-S/A13	7.20.1.295.110	PL6000-S/10
3.9.16.128.52	MX5	7.17.3.322.122	PL602-S/M03	7.20.1.295.110	PL6000-S/11
3.9.16.128.52	MX5\JP	7.17.3.322.122	PL602-S/M13	7.20.1.295.110	PL6000-S/12
3.9.16.128.52	MX5\JP	7.17.3.327.122	PL802-S/A	7.20.1.295.110	PL6000-S/13
3.9.16.128.59	MX5\JP	7.17.3.327.122	PL802-S/M	7.20.3.312.110	PL6001-S
3.9.16.261.52	MX5	7.18.1.289.109	PL202-S	7.20.3.312.110	PL6001-S/01
3.9.16.261.52	MX5/01	7.18.1.293.110	PL202-S	7.20.3.312.110	PL6001-S/02
3.9.16.261.52	MX5\JP	7.18.1.293.110	PL202-S/01	7.20.3.312.110	PL6001-S/03
3.9.16.89.37	MX5	7.18.1.293.110	PL202-S/02	7.20.3.312.110	PL6001-S/10
3.9.16.94.37	MX5	7.18.1.293.110	PL202-S/03	7.20.3.312.110	PL6001-S/11
3.9.2.130.55	UMX5/A	7.18.1.293.110	PL202-S/10	7.20.3.312.110	PL6001-S/12
3.9.2.130.55	UMX5/A	7.18.1.293.110	PL202-S/11	7.20.3.312.110	PL6001-S/13
3.9.2.130.55	UMX5/M	7.18.1.293.110	PL202-S/12	7.20.3.315.110	PL3001-S
3.9.2.158.55	UMX5/A	7.18.1.293.110	PL202-S/13	7.20.3.315.110	PL3001-S/01
3.9.2.158.55	UMX5/M	7.18.3.318.121	PL202-S/A	7.20.3.315.110	PL3001-S/02

TDNR	Balance type	TDNR	Balance type	TDNR	Balance type
7.20.3.315.110	PL3001-S/O3	7.26.1.380.110	 PL4001		
7.20.3.315.110	PL3001-S/10	7.26.3.337.110	 PL1502		
7.20.3.315.110	PL3001-S/11	7.26.3.338.110	 PL3002		
7.20.3.315.110	PL3001-S/12	7.26.3.345.110	 PL2002		
7.20.3.315.110	PL3001-S/13	7.26.3.346.110	 PL4002		
7.20.3.317.110	 PL8001-S	7.26.3.382.110	 PL4002		
7.20.3.321.121	PL6000-S/A03	9.6.5.403.150	 X104B		
7.20.3.321.121	PL6000-S/M03	9.6.3.402.149	 X105BDU		
7.20.3.321.121	PL6000-S/M03	9.6.5.400.148	 X204B		
7.20.3.321.122	PL6001-S/A03	9.6.7.401.148	 X204BDR		
7.20.3.321.122	PL6001-S/A13	9.6.3.399.147	 X205BDU		
7.20.3.321.122	PL6001-S/M03	9.6.7.404.150	 X64B		
7.20.3.321.122	PL6001-S/M13	10.28.0.389.142	 SAT		
7.20.3.326.121	... PL3001-S/A	11.6.14.391.141	 AB265-S		
7.20.3.326.121	.. PL3001-S/M	11.6.14.396.145	 AB135-S		
7.20.3.328.122	... PL8001-S/A	11.6.4.397.146	 AB135-S/A		
7.20.3.328.122	.. PL8001-S/M	11.6.4.397.146	 AB135-S/M		
7.20.3.387.121	PL6000-S/A03	11.6.4.398.146	 AB265-S/A		
7.20.3.387.121	PL6000-S/A13	11.6.4.398.146	 AB265-S/M		
7.20.3.387.121	PL6000-S/M03				
7.20.3.387.121	PL6000-S/M13				
7.20.3.388.121	PL3001-S2/A03				
7.20.3.388.121	PL3001-S2/A13				
7.20.3.388.121	PL3001-S2/M03				
7.20.3.388.121	PL3001-S2/M13				
7.23.3.313.120	 PL83-S				
7.23.3.313.120	 PL83-S/O1				
7.23.3.313.120	 PL83-S/O2				
7.23.3.313.120	 PL83-S/O3				
7.23.3.313.120	 PL83-S/10				
7.23.3.313.120	 PL83-S/11				
7.23.3.313.120	 PL83-S/12				
7.23.3.313.120	 PL83-S/13				
7.23.3.314.120	 PL153-S				
7.23.3.314.120	.. PL153-S/O1				
7.23.3.314.120	.. PL153-S/O2				
7.23.3.314.120	.. PL153-S/O3				
7.23.3.314.120	.. PL153-S/10				
7.23.3.314.120	.. PL153-S/11				
7.23.3.314.120	.. PL153-S/12				
7.23.3.314.120	.. PL153-S/13				
7.23.3.324.123	... PL83-S/A03				
7.23.3.324.123	... PL83-S/A13				
7.23.3.324.123	.. PL83-S/M03				
7.23.3.324.123	.. PL83-S/M13				
7.23.3.325.123	.. PL153-S/A03				
7.23.3.325.123	PL153-S/M03				
7.25.1.335.120	 PL153				
7.25.1.336.120	 PL303				
7.25.1.343.120	 PL203				
7.25.1.344.120	 PL403				
7.25.1.381.120	 PL403				
7.26.1.339.110	 PL4001				

5 Special types

5.1 What are special types?

Special types are balances for selected markets. In most cases, they are derived from a basic type, but they differ from the corresponding basic type in their applications. However, they can also include balances which are standalone products without a basic type.

5.2 Allocation of special types to basic types

Special type	Basic type	Comments	Technical data, adjustment tolerances see section
AB54-S-TEX	AB54	Textile balance for yarn count determination, operating instruction: 11780353.	8, 1.1.1
AB104-A2/M	AB104e	A2 = lower apothecary level, M = certified balance EU	8, 1.1.1
AB184-A3/M	AB204	Weighing range/readability 181 g x 0,1 mg, Menu: only CAL. Units: only g/mg. Balance top housing white, from CB1503DR (6000192). Operating instructions-Add: 11780104, Model plate: 228178	8, 1.1.1
AB184-S-A	AB204-S	Apothecary balance with formulation, supplement to operating instructions: 11780357 (only german)	8, 1.1.1
AB204-A	AB204		8, 1.1.1
AG204-A/M	AG204	Apothecary balance	8, 1.2.1
B154-S/204-S	AB204-S	College balance , capacity 151 g, only g/Newton, no piece counting. Top housing: 11103858, membrane keypad: 11103448.	8, 1.1.1
B203-S	PB303-S	College balance , capacity 210 g, only g/Newton, no piece counting. Top housing: 11103858, membrane keypad: 11103448.	8, 1.1.1
B303-S	PB303-S	College balance , only g/Newton, no piece counting. Top housing: 11103858, membrane keypad: 11103448.	8, 1.1.1
B502-S	PB602-S	College balance , capacity 510 g, only g/Newton, no piece counting. Top housing: 11103858, membrane keypad: 11103448.	8, 1.1.1
B2002-S	PB3002-S	College balance , capacity 2100 g, only g/Newton, no piece counting. Top housing: 11103858, membrane keypad: 11103448.	8, 1.1.1
B3001-S	PB3001-S	College balance , only g/Newton, no piece counting. Top housing: 11103858, membrane keypad: 11103448.	8, 1.1.1
B3002-S	PB3002-S	College balance , only g/Newton, no piece counting. Top housing: 11103858, membrane keypad: 11103448.	8, 1.1.1
CG1003	AG204	Weighing range 1010 ct x 0.001 ct; no functions	8, 1.2.1
CG2502-S	PG503-S	Cell PR5003, Weighing range 2510 ct x 0.01 ct; no functions	8, 1.2.1
CG13002-S	PG-S	Weighing range 13500 ct x 0.01 ct; no functions	8, 1.3.1
GB204	AB204	Top housing as CB1503 DR	8, 1.1.1
GB303	PB303	Top housing as CB203	8, 1.1.1



Special type	Basic type	Comments	Technical data, adjustment tolerances see section
GB2002-A2/M	GB2002eEC	A2 = lower pharmacy level, M = certified balance EC	8, 1.1.1
GB802-S	PB602-S	Gold balance , capacity 810 g, RS interface, no piece counting	8, 1.1.1
GB1302-S	PB1502-S	Gold balance, capacity 1310 g, RS interface, no piece counting	8, 1.1.1
GB1501-S	PB1501-S	Gold balance, RS interface, no piece counting	8, 1.1.1
GB2002-S	PB3002-S	Gold balance, capacity 2100 g, RS interface, no piece counting	8, 1.1.1
GB3001-S	PB3001-S	Gold balance, RS interface, no piece counting	8, 1.1.1
GB3002-S/DR	PB3002-S/DR	Gold balance, RS interface, no piece counting	8, 1.1.1
GB6001-S	PB8001-S	Gold balance, capacity 6100 g, RS interface, no piece counting	8, 1.1.1
GG4002-S	PG5002-S	Weighing range 4100 g x 0.01 g; no functions	8, 1.2.1
GG4002DR	PG5002-SDR	Weighing range 4100 g/800 g x 0.1 g/0.01 g; no functions	8, 1.2.1
GG6002-S	PG5002-S	Weighing range 6100 g x 0.01 g; no functions	8, 1.2.1
GL3DR	–		8, 2.2
GL8	PB8000		8, 1.1.2
GL8R	–		8, 2.2
GL16DR	SB16000	Overlay 230551, spare parts as SB	8, 1.1.2
GL32DR	SB32000	Overlay 230561, spare parts as SB	8, 1.1.2
HR73-P/OPW	HR73-P	Special switch-off criterias → OI Supplement 11780453 (only german)	8, 1.1.3
LabStyle54	AB54-S	Coloured balance with patterned dust cover	8, 1.1.1
LabStyle153	PB153-S	Coloured balance with patterned dust cover	8, 1.1.1
LabStyle204	AB204-S	Coloured balance with patterned dust cover	8, 1.1.1
LabStyle303	PB303-S	Coloured balance with patterned dust cover	8, 1.1.1
LabStyle602	PB602-S	Coloured balance with patterned dust cover	8, 1.1.1
PB302-ZAG		Draft shield, round weighing pan, LC-B, LC-RS9, Power adapter 238620, power cable 11600073	8, 1.1.1
PB302-DAC	PB302	EPROM: 229164, D/A converter board: 229179, operating instructions: 11780013 (jap.; english available at LMS/TD)	8, 1.1.1
PB303DR-A/M	PB303DR	without draft shield	8, 1.1.1
PB1501-A	PB1501		8, 1.1.1
PB3000-P	PB8000	Postal scale	8, 1.1.2
PB3002DR-A	PB3002DR		8, 1.1.1
PB3002-DYN	PB3002	EPROM on LC-B Option: 228211; 3 fixed foots, masked level	8, 1.1.1
PB3002-S-A-DR/E	PB3002-SDR/E		8, 1.1.1
PB5001-F	PB5001		8, 1.1.2
PB7001-F	–		8, 2.2
PB8000-P	PB8000	Postal scale	8, 1.1.2



Special type	Basic type	Comments	Technical data, adjustment tolerances see section
PB8000-P	PB8000	Postal scale	8, 1.1.2
PB8001-C	PB8001	Count scale	8, 1.1.2
PB8001-DYN	PB8001	EPROM on LC-B Option: 228211; 3 fixed foots, masked level	8, 1.1.2
PB8001-S/M20	PB8001-S	Apothecary balance with formulation, supplement to operating instructions: 11780357 (only german)	8, 1.1.1
PG3000-SRE PG5000-SRE/W	PG5002-S	Restaurant balance, weighing pan 204 x 204, order no. 11101355. Technical data: 11780414 (only german), Special cassette, interface compatible to NCR.	8, 1.2.1
PG3600DR	PG5002	Gold balance, VFD display, without internal calibration, external power supply, model plate 225815	8, 1.2.1
PG3002-GDR	PG5002	Gold balance, VFD display, without internal calibration, external power supply, model plate 225816	8, 1.2.1
PG3002-G	PG5002	Gold balance, VFD display, without internal calibration, external power supply, model plate 225817	8, 1.2.1
PG5002-GDR	PG5002	Gold balance, VFD display, without internal calibration, external power supply, model plate 225818	8, 1.2.1
PG5002G	PG5002	Gold balance, VFD display, without internal calibration, external power supply, model plate 225819	8, 1.2.1
PG5002-SADR	PG5002-SDR	Weighing range 5100 g/1000 g x 0.1 g/0.01 g; apothecary model, no function except formulation	8, 1.2.1
PG5002DR-A/M	PG5002DR	Apothecary model, external power supply	8, 1.2.1
PG8000-P	PG8000	Postal scale	8, 1.3.2
PR/SR Japan	PR/SR	ProFact without timecontrolled calibration, cassette 225859	8, 1.3.2
PR/SR Holland	PR/SR	Cassette R special V1.10 B version, 225883	8, 1.3.2
PZ7001-F	–		8, 2.2
Rxxx	PRxxx	Balance without terminal e.g. R203	8, 1.3.1
SAG245/204/203F AG245		Separated electronic. Exchange of balance PCB → Reg. 5, 3.1.9 . Spare parts → Section 2, 2.1.4 , technical data 11780281A.	8, 1.2.1
SAG125P/SAG245P AG245		Separated electronic, pipette calibration. Installation instructions 11780340. Spare parts → Section 2, 2.1.4 . Exchange of balance PCB → Sec. 5, 3.1.9	8, 1.2.1
SAG105/285	AG245	Separated electronic, wind shield, pipette calibration. Operating instructions 11780412. Spare parts → Section 2, 2.1.4 . Exchange of balance PCB → Sec. 5, 3.1.9	8, 1.2.1
SB12001DR-K	SB12001	Ceramics scale	8, 1.1.2
SB32000-A	SB32000		8, 1.1.2
SB32001-F DR	SB32001DR		8, 1.1.2
SB32000-F	SB32000		8, 1.1.2



Special type	Basic type	Comments	Technical data, adjustment tolerances see section
SB32000-P	SB32000	Postal scale	<u>8, 1.1.2</u>
SB32000-PP	SB32000	Postal scale	<u>8, 1.1.2</u>
SB32000-PM	SB32000	Postal scale	<u>8, 1.1.2</u>
SB32000-PH	SB32000	Postal scale	<u>8, 1.1.2</u>
SB32000-PD	SB32000	Postal scale	<u>8, 1.1.2</u>
SG32000-P	S/SR/SG32000	Postal scale	<u>8, 1.3.2</u>
S32000-Q	S/SR/SG32000	Dispensing scale	<u>8, 1.3.2</u>
S32001DR-Q	S/SR/SG32001DR	Dispensing scale	<u>8, 1.3.2</u>
SR32000-Q	S/SR/SG32000	Dispensing scale	<u>8, 1.3.</u>
SR32001DR-Q	S/SR/SG32001DR	Dispensing scale	<u>8, 1.3.2</u>
SR32000-C	S/SR/SG32000	Count scale	<u>8, 1.3.2</u>
UAS-4	PR503DR	Special cassette 21900761, order spare parts at BASY!	<u>8, 1.3.1</u>

Contents		page
1	B balance line	4
1.1	Laboratory balances	4
1.1.1	AB/CB/B balances ○	4
1.1.3	0.1 mg draft shield (AB/CB/B balances) ○	6
1.1.5	CB/PB/B balances ○	8
1.1.7	mg draft shield for PB/B balances ○	10
1.1.9	PB/GB/B balances (low housing □, conventional measuring cell)	12
1.1.11	PB/GB/B balances (low housing □, monobloc)	14
1.1.12	AB/CB/PB/B balances ○ (low housing + Monobloc measuring cell)	16
1.1.13	B-S balances ≤ 400 g, exploded view drawing	18
1.1.14	B-S balances > 400 g, exploded view drawing	22
1.1.15	Draft shield, high, for B-S balances;	26
1.1.16	Draft shield, low, for B-S balances	28
	Blank pages	31-34
1.2	Industrial balances	36
1.2.1	PB/GB balances (high housing □)	36
1.2.3	SB/GL balances with low profile	38
1.2.9	SB/GL balances with high profile	44
1.2.13	Exploded view drawing PZ and GL8R balances	48
2	G balance line	50
2.1	Laboratory balances	50
2.1.1	AG balances: Top part	50
2.1.3	AG balances: Bottom part	52
2.1.4	SAG Balances	54
	Blank pages	57-62
2.1.5	PG-S Balances	64
	PG balances see PR balances	
	Blank pages	67-70
2.2	Industrial balances	72
2.2.1	PG-S balances (0,1g and 1g)	72
	SG balances see SR balances	
3	R/G-balance Line	76
3.1	Lab-balances	76
3.1.1	PR/PG-power supply unit	76
3.1.3	PR Terminal	78
3.1.4	PG Terminal	80
3.1.5	PR/PG draft shield low	82
3.1.6	PR/PG draft shield high (accessory)	82
3.1.7	PR/PG Balances with draft shield (conventional measuring cell)	84
3.1.8	PR/PG Balances without draft shield (conventional measuring cell)	88
3.1.9	PR/PG Balances without draft shield (monobloc measuring cell)	90
3.1.10	PR/PG Balances with draft shield (monobloc measuring cell)	92
	Blank pages	97-98
3.2	Industrial balances	100
3.2.1	PR-/PG balance monobloc	100

Continuation ➡

Contents	page
3.2.3 S/SR-/SG terminal	102
3.2.5 S/SR-/SG balances with conventional cell, part 1	104
3.2.7 S/SR-/SG balances with conventional cell, part 2	106
3.2.9 S/SR-/SG balances with monobloc with integrated calibration drive, part 1	108
3.2.11 S/SR-/SG balances with monobloc with integrated calibration drive, part 2	110
3.2.12 S/SR64 balances, part 1	112
S/SR64 balances, part 2	114
Blank pages	117-118
4 HG/HR Moisture Analyzers	120
4.1 Top housing, CPU- and power supply board, sample chamber drive	120
4.2 Sample chamber and ventilation	122
4.3 Dryer unit	124
5 HB Moisture Analyzer	128
5.1 Top housing	128
5.2 Bottom housing	130
5.3 Dryer unit	132
Blank pages	135-148
10 Plates, packagings	149
10.1 Model strips	149
10.2 Model plates	150
10.3 Overlays and membrane keypads	151
10.4 Packagings	152

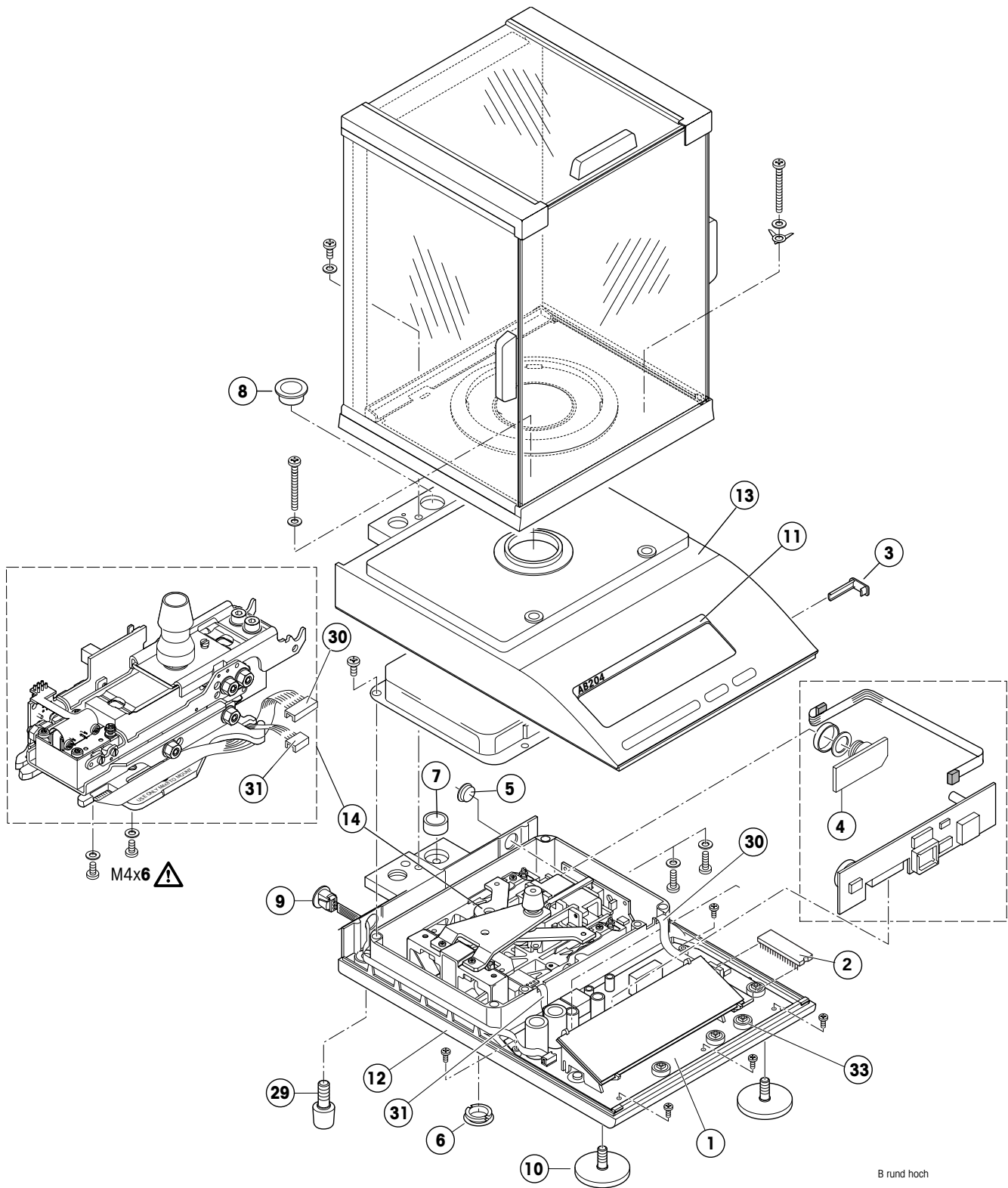
Information on symbols

- → Information on symbols
- → Model with rectangular weighing pan

1 B balance line

1.1 Laboratory balances

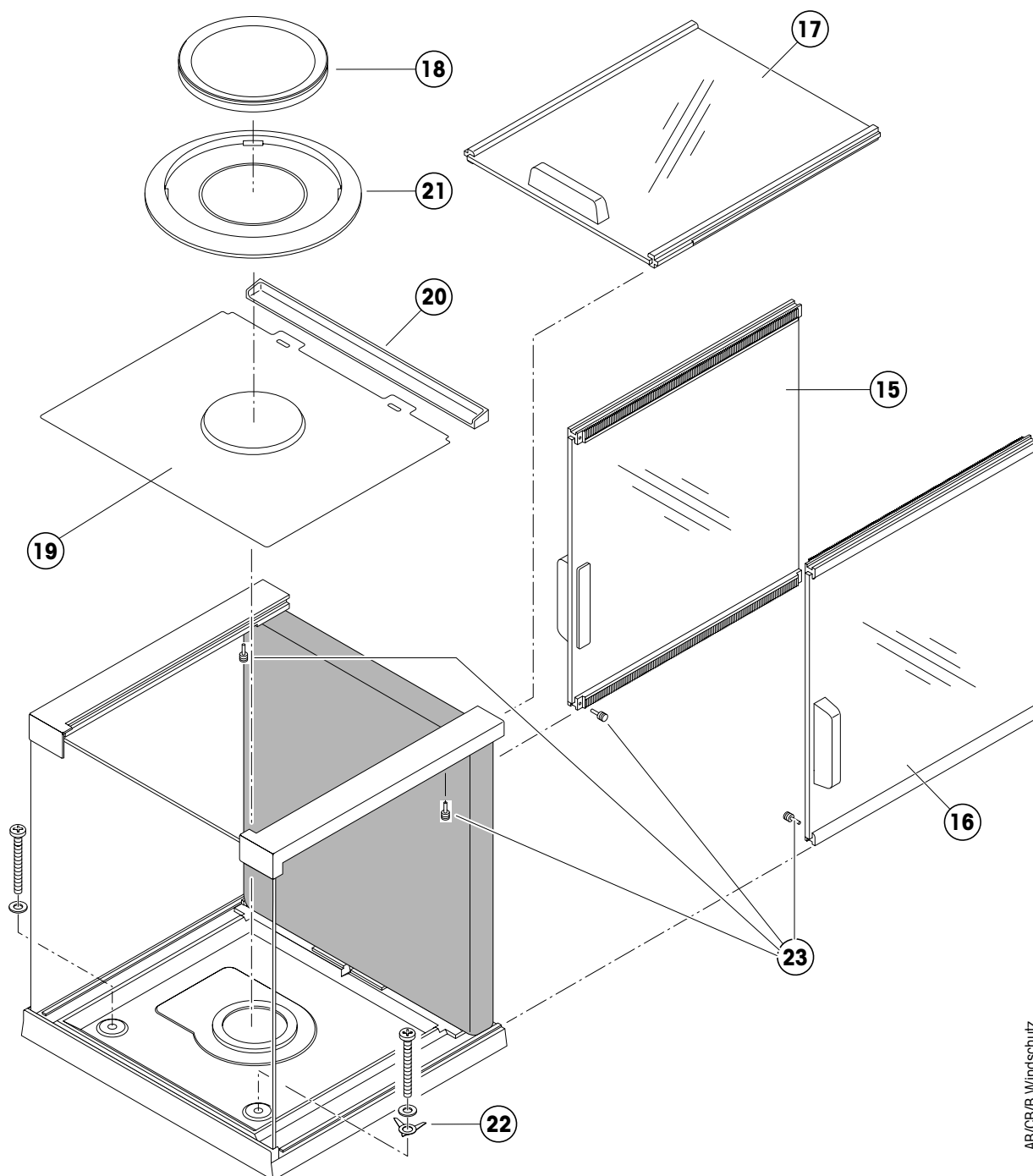
1.1.1 Exploded view drawing AB/CB/B balances ○



1.1.2 Spare parts list AB/CB/B balances m (special Types see 1, 5.2)

Item	Designation	AB54 AB204 B154	AB104	CB1503DR
		Order No.	Order No.	Order No.
1	Balance board (with EPROM)	224416	224416	224416
2	EPROM 32 pin (incl. SW; RS 232)	224017	224017	224017
	EPROM 32 pin (incl. SW; without RS 232)	224016	224016	224016
	EPROM 28 pin (old, incl. SW; without RS232)	600150	600150	600150
3	Calibration cover	224230	224230	
	Calibration cover, special		224603	224603
4	CAN socket	228128	228128	228128
5	Dummy plug	71906	71906	71906
6	Hanger feedthrough cover	215051	215051	215051
7	Level	215053	215053	215053
8	Level cover	215060	215060	215060
9	Power socket with cable	11101558	11101558	11101558
10	Leveling foot	224237	224237	224237
11	Model plate	See model plate list, point 10.1		
12	Bottom housing	228070	228070	228070
13	Top housing	600190	600190	
	Top housing College		600191	
	Top housing Carat			600192
14	Measuring cell, assembled 1)	600151	600151	600185
29	Fixed foot	224236	224236	224236
30	Detector cable, conventional cell:	224410 11103753	224410 11103753	224410 11103753
	Detector cable, monobloc cell:	228121	228121	228121
31	Coil cable, conventional cell:	224409	224409	224409
	Coil cable, monobloc cell:	225139	225139	225139
33	Key-switch	89688	89688	89688

- 1) new: under this number will only the monobloc cell be delivered, equipped with universal adapter plate, mounting screws in the adequate length, cone extension as well as detector and coil cable.

1.1.3 Exploded view drawing 0.1 mg draft shield (AB/CB/B balances)

AB/CB/B Windschutz

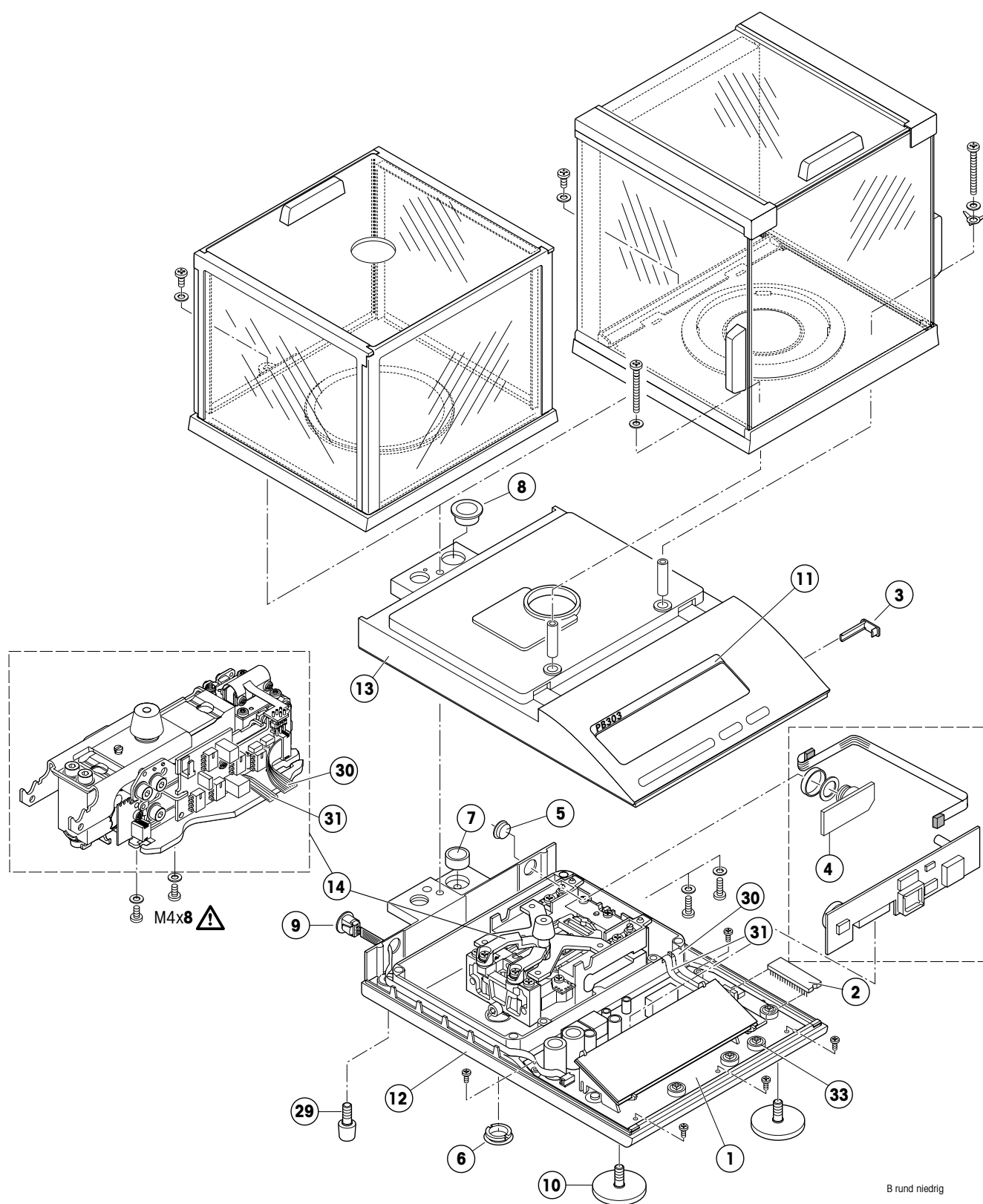
1.1.4 Spare parts list 0.1 mg draft shield (AB/CB/B balances) (special Types see 1, 5.2)

Draft shield complete → [section 9, 1.20.2](#)

Item	Designation	AB54	AB104 AB204 B154	CB1503DR	CB203 CB603
		Order No.	Order No.	Order No.	Order No.
15	Door, left	224313	600188	224313	224313
16	Door, right	224314	600189	224314	224314
17	Door, top	224319	224319	224319	224319
18	Weighing pan low	228027	228027	228027	–
	Weighing pan high 1)	224218	224218	224218	224218
19	Bottom plate	224324	224324	224324	224324
20	Strip	224336	224336	224336	224336
21	Ring	33548	33548	33548	33548
22	Contact spring	224323	224323	224323	224323
23	Bolt	224322	224322	224322	224322

- 1) the low weighing pan must be used with the bottom housing 228070 with the high cell compartment, the high weighing pan with the bottom housing 224201 with the low cell compartment.

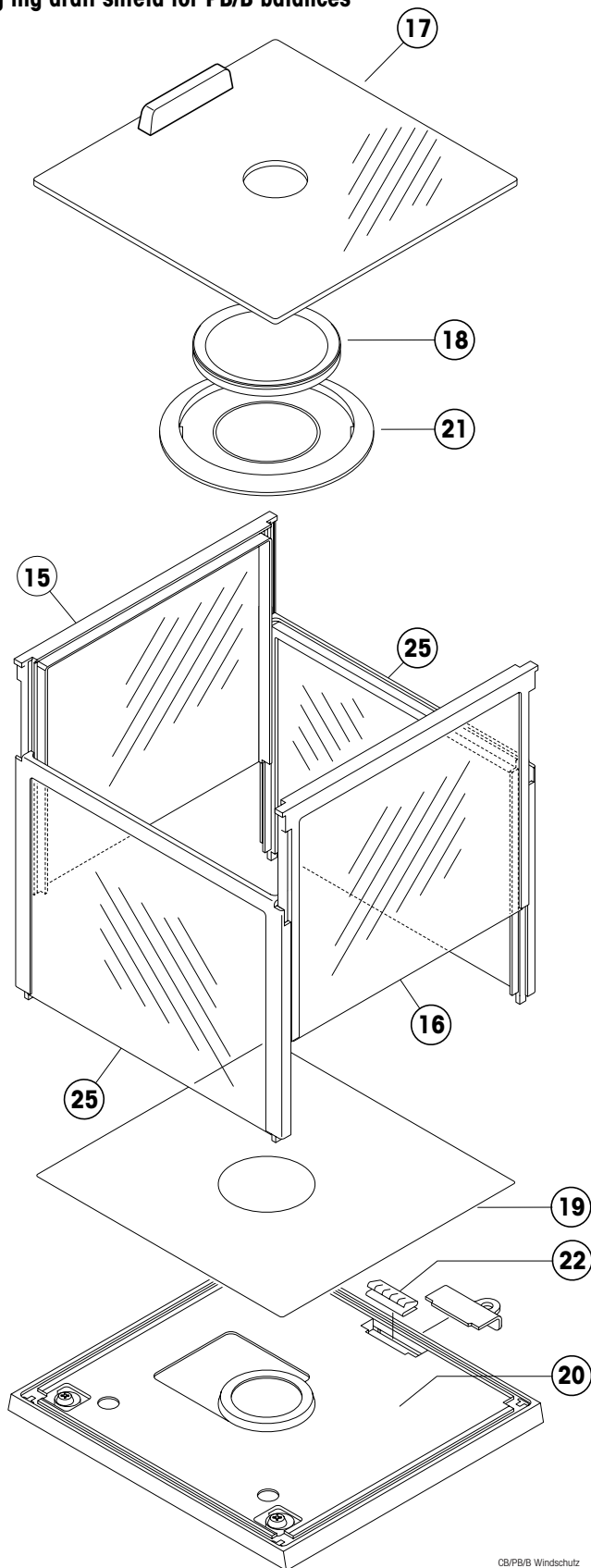
1.1.5 Exploded view drawing CB/PB/B balances ○



1.1.6 Spare parts list CB/PB/B balances ○ (special Types see 1, 5.2)

Item	Designation		PB153 PB303 PB303DR B303	CB203 CB603
			Order No.	Order No.
1	Balance PCB (with EPROM)		224416	224416
	Balance PCB (display backlit)		224422	224422
2	EPROM 32 pin (incl. SW; RS 232)	224017	224017	224017
	EPROM 32 pin (incl. SW; without RS 232)	224016	224016	224016
	EPROM 28 pin (old, incl. SW; without RS232)	600150	600150	600150
3	Calibration cover		224230	
	Calibration cover, special		224603	224603
4	CAN socket		228128	228128
5	Dummy plug		71906	71906
6	Hanger feedthrough cover		215051	215051
7	Level		215053	215053
8	Level cover		215060	215060
9	Power socket with cable		11101558	11101558
10	Leveling foot		224237	224237
11	Model plate	see model plate list, point 10.1		
12	Bottom housing		224201	224201
13	Top housing PB		224204	
	Top housing B (College)		224604	
	Top housing CB (Carat)			224244
14	Measuring cell, assembled 1)		600153	600152
29	Fixed foot		224236	224236
30	detector cable, conventional cell:		224410	224410
			11103753	11103753
	detector cable, monobloc cell:		224413	224413
31	coil cable, conventional cell:		224409	224409
	coil cable, monobloc cell:		225139	225139
33	Key-switch		89688	89688

- 1) new: under this number will only the monobloc cell be delivered, equipped with universal adapter plate, mounting screws in the adequate length as well as detector and coil cable.

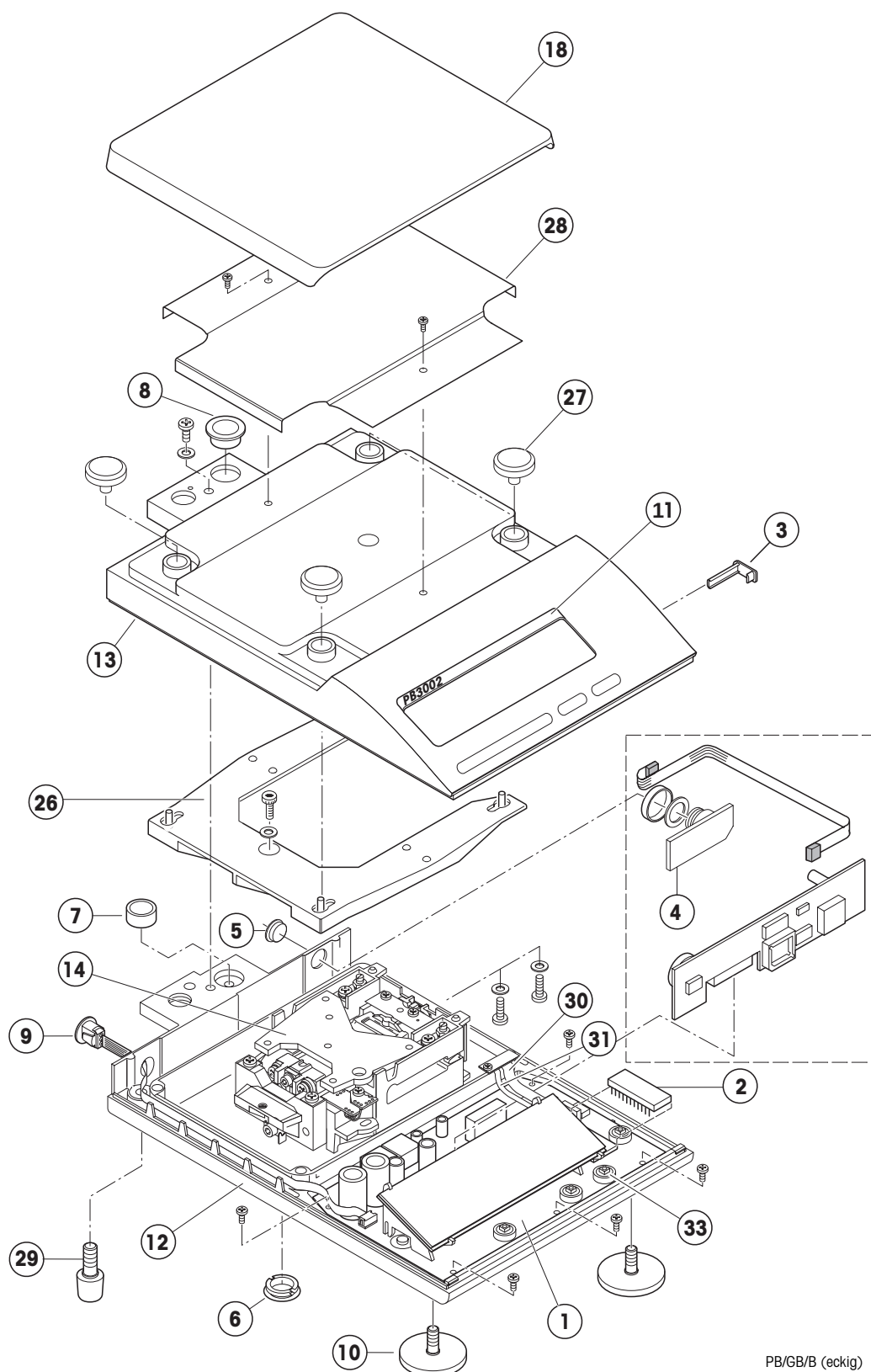
1.1.7 Exploded view drawing mg draft shield for PB/B balances

CB/PB/B Windschutz

1.1.8 Spare parts list mg draft shield for PB/B balances (special Types see 1, 5.2)Draft shield complete → [section 9, 1.20.2](#)

Item	Designation	PB153 PB303 PB303DR B303
		Order No.
15	Door, left	224352
16	Door, right	224352
17	Door, top	600149
18	Weighing pan	224221
19	Bottom plate	224359
20	Draft shield base	224357
21	Ring	224366
22	Contact spring	224361
25	Door, front and back	224351

1.1.9 Exploded view drawing PB/GB/B balances (low housing □, conventional measuring cell)



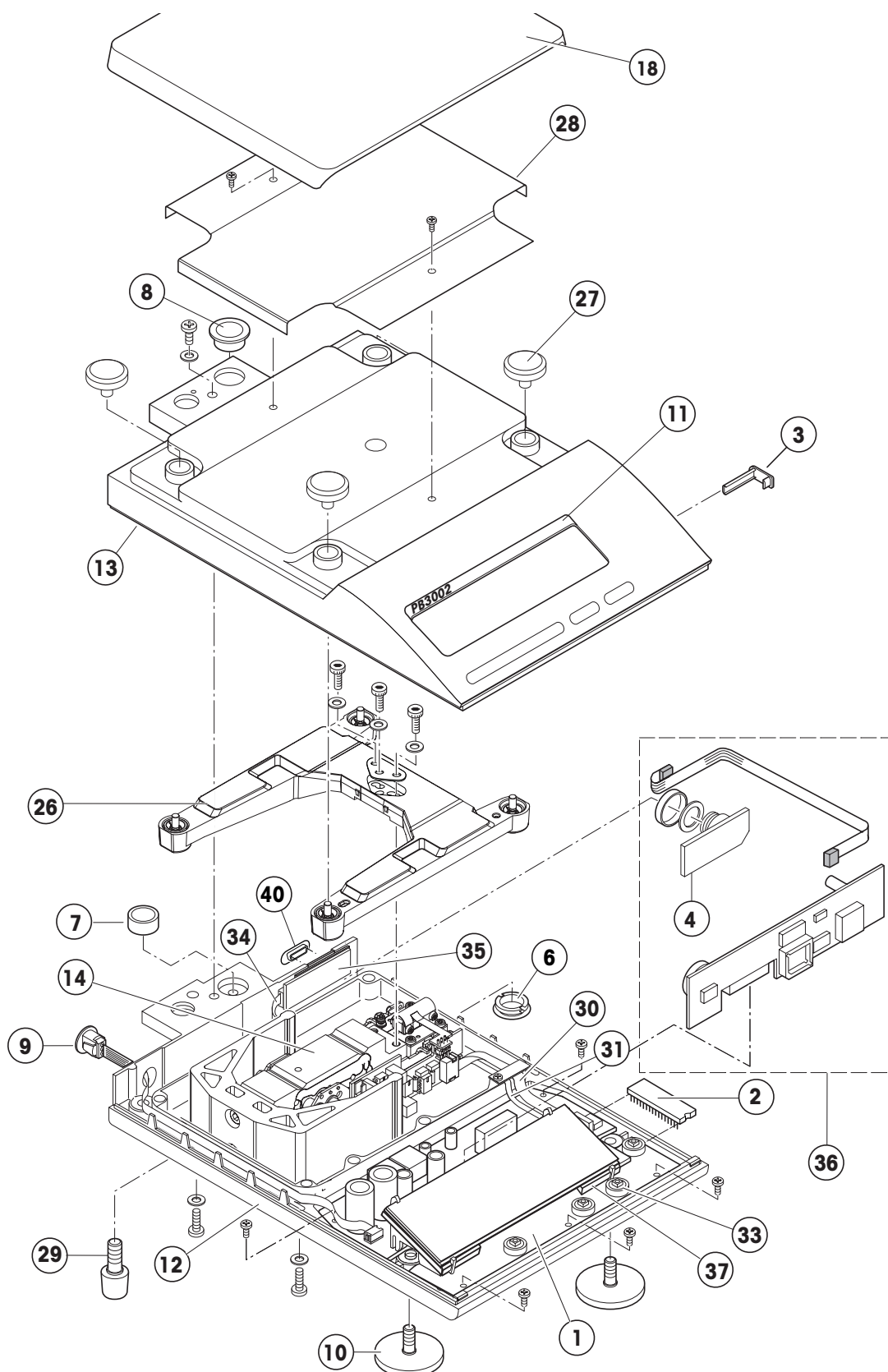
PB/GB/B (eckig)

1.1.10 Spare parts list PB/GB/B balances (low housing ☐, conventional measuring cell) **(special Types see 1, 5.2)**

Item	Designation	PB302/PB602/PB801 PB1501/PB1502 B502/B1302 GB802/1302/GB1501	PB3001/PB3002/PB3002DR B3001/B3002DR GB2002/GB3001 GB3002/GB3002DR
		Order No.	Order No.
1	Balance PCB (with EPROM)	224416	224416
	Balance PCB (display backlit)	224422	224422
2	EPROM 32 pin (incl. SW; RS 232)	224017	224017
	EPROM 32 pin (incl. SW; without RS232)	224016	224016
	EPROM 28 pin (old; incl. SW, without RS232)	600150	600150
3	Calibration cover	224230	224230
	Calibration cover, special	224603	224603
4	CAN socket	228128	228128
5	Dummy plug	71906	71906
6	Hanger feedthrough cover	215051	215051
7	Level	215053	215053
8	Level cover	215060	215060
9	Power socket with cable	11101558	11101558
10	Leveling foot	224237	224237
11	Model plate	see model plate list, point 10.1	
12	Bottom housing 1)	224201	224201
13	Top housing PB (standard)	224205	224205
	Top housing B (College)	224605	224605
	Top housing GB (Gold)	224665	224665
14	Measuring cell, assembled	600154	600155
18	Weighing pan	224223	224223
26	Overload protection	224194	224194
27	Pan support	215047	215047
28	Fastening plate	224216	224216
29	Fixed foot	224236	224236
30	Detector cable	224410	224410
		11103753	11103753
31	Coil cable	224409	224409
33	Key-switch	89688	89688
36	LC-B Option (LocalCAN)	228110	228110

- 1) On replacement of the bottom housing with round opening for LocalCAN, the cover 217402 must also be ordered.

1.1.11 Exploded view drawing PB/GB/B balances (low housing □, monobloc)



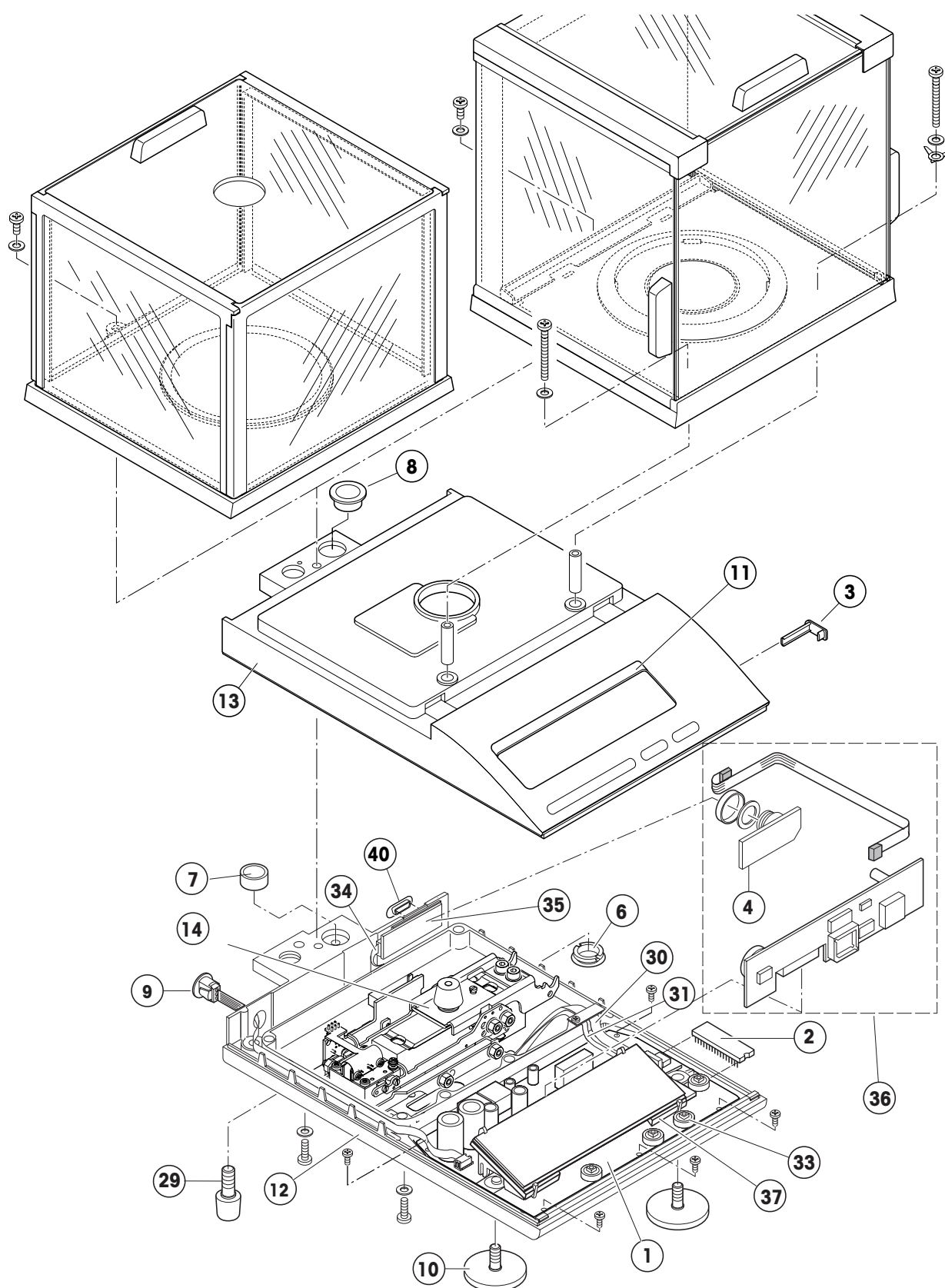
B eckig mono Lab

Spare parts list PB/GB/B balances (low housing □, monobloc)

Item	Designation	PB302/PB602/PB801 PB1501/PB1502 B502/B1302 GB802/1302/GB1501	PB3001/PB3002/PB3002DR B3001/B3002DR GB2002/GB3001 GB3002/GB3002DR
		Order No.	Order No.
1	Balance PCB (with EPROM) Balance PCB (display with backlight)	224416 224422	224416 224422
2	EPROM 32 pin (incl. SW; RS 232) EPROM 32 pin (incl. SW; without RS232) EPROM 28 pin (old; incl. SW, without RS232)	224017 224016 600150	224017 224016 600150
3	Calibration cover Calibration cover, B.../GB...balances	224230 224603	224230 224603
4	CAN socket	228128	228128
6	Hanger feedthrough cover	215051	215051
7	Level	215053	215053
8	Level cover	215060	215060
9	Power socket with cable	11101558	11101558
10	Leveling foot	224237	224237
11	Model plate	see model plate list, point 10.1	
12	Bottom housing	217315	217315
13	Top housing PB Top housing B (College) Top housing GB (Gold)	224205 224605 224665	224205 224605 224665
14	Measuring cell, assembled	217403	217404
18	Weighing pan	224223	224223
26	Overload protection	217310	217310
27	Pan support 1)	215047	215047
28	Fastening plate	224216	224216
29	Fixed foot	224236	224236
30	detector cable	224413	224413
31	Coil cable	224414	224414
33	Key-switch	89688	89688
34	RS232 connection cable	224420	224420
35	RS232 socket with PCB and blind	224419	224419
36	LC-B Option (LocalCAN)	228110	228110
37	Backlight	224253	224253
40	RS-cover	11101560	11101560

- 1) Care with old spare parts: The pan support was modified at the beginning of '95. The old part can continue to be used for balances with a conventional measuring cell, but not for those with a monobloc.

old   new (The new pan support is inscribed with two figures)

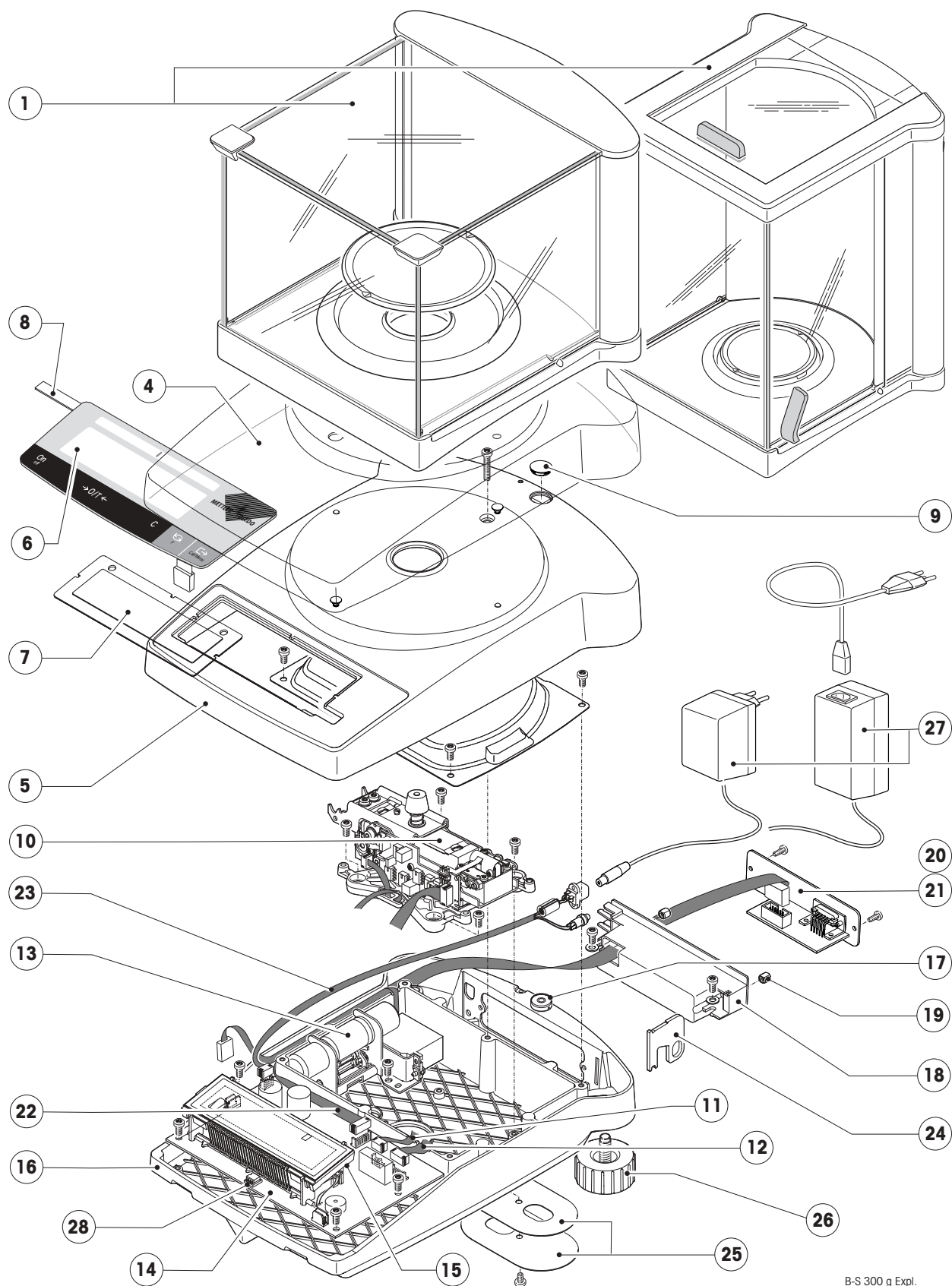
1.1.12 AB/CB/PB/B balances ○ (low housing + Monobloc measuring cell)

B Update

Spare parts list AB/CB/PB/B balances ○ (low housing, monobloc)

Item	Designation	AB54 AB104 AB204 B154	PB153 PB303 PB303DR B303	CB203 CB603 CB1503DR
		Order No.	Order No.	Order No.
1	Balance PCB (with EPROM)	224416	224416	224416
	Balance PCB (display with backlight)	–	224422	224422
2	EPROM 32 pin (incl. SW; RS 232)	224017	224017	224017
3	Calibration cover	224230	224230	–
	Calibration cover, B.../GB...balances	224603	224603	224603
4	CAN socket	228128	228128	228128
6	Hanger feedthrough cover	215051	215051	215051
7	Level	215053	215053	215053
8	Level cover	215060	215060	215060
9	Power socket with cable	11101558	11101558	11101558
10	Leveling foot	224237	224237	224237
11	Model plate	see model plate list, point 10.1		
12	Bottom housing	217315	217315	217315
13	Top housing PB	224204	224204	–
	Top housing B (College)	224604	224604	–
	Top housing CB (Carat)	–	–	224244
14	Measuring cell, assembled	217406	217406	217406
29	Fixed foot	224236	224236	224236
30	Detector cable	228121	228121	228121
31	Coil cable	224414	224414	224414
33	Key-switch	89688	89688	89688
34	RS232 connection cable	224420	224420	224420
35	RS232 socket with PCB and blind	224419	224419	224419
36	LC-B Option (LocalCAN)	228110	228110	228110
37	Backlight	–	224253	224253
40	RS-cover	11101560	11101560	11101560

1.1.13 B-S balances ≤ 400 g, with MonoBloc, exploded view drawing



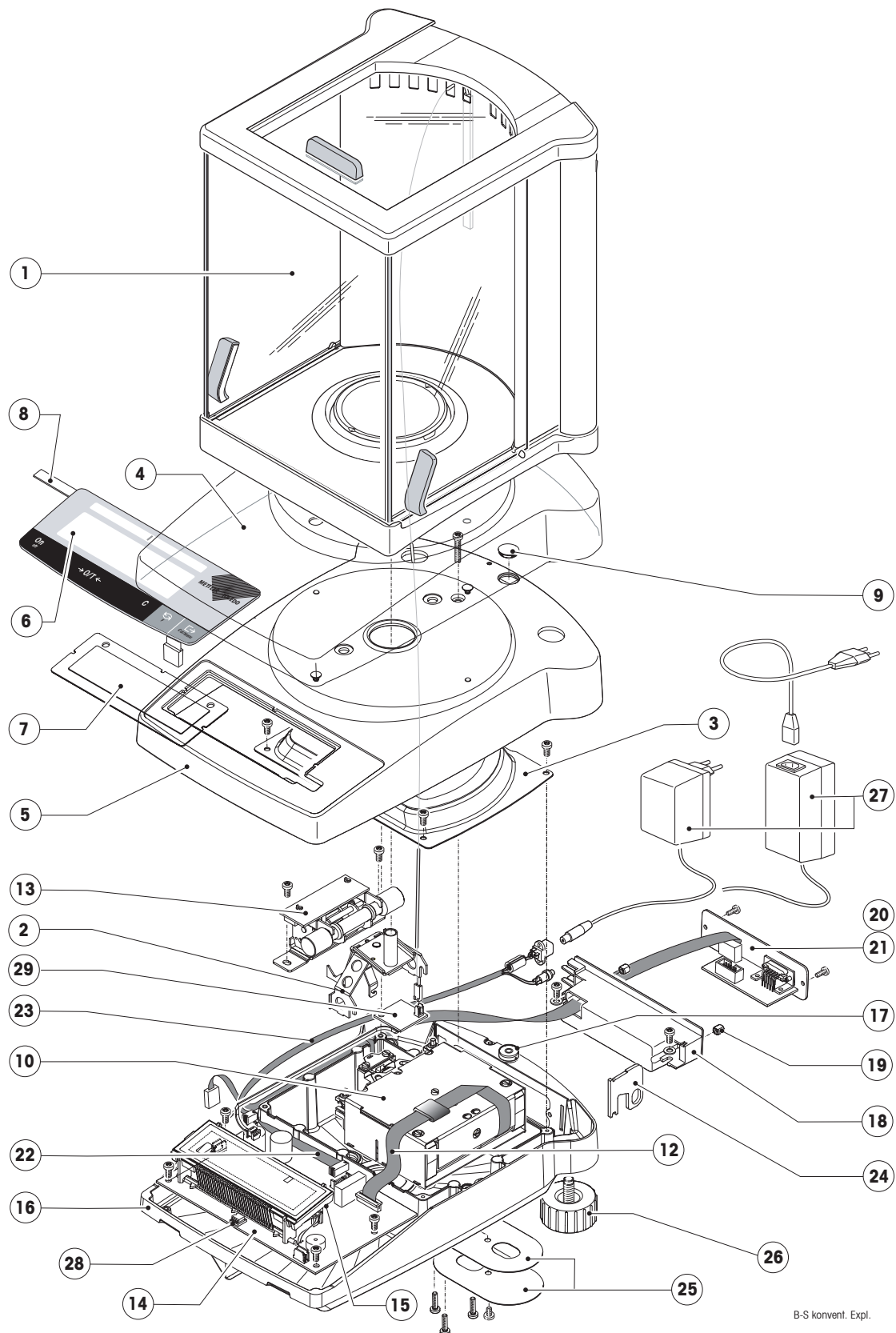
B-S 300 g Expl.

B-S balances ≤ 400 g, spare parts list (special Types see 1, 5.2)Continuation 

Item	Designation	(E = certified balance)		AB54-S, AB54-S/E AB104-S, AB104-S/E AB184-S-A/E AB204-S, AB204-S/E AB304-S	B154-S B204-S
		B203-S B303-S			
		PB153-S PB303-S PB303-SDR		PB153-S/E PB303-S/E PB303-SDR/E	
		Order No.		Order No.	Order No.
1	Draft shield and weighing pan	→ 1.1.15 and 1.1.16			
4	Protective cover	→ chapter 9, 1.20.1			
5	Top housing, assembled, comprising items 5, 6, 7, 9.	11103852 11103859	For vacuum	11103852 11103859	11103852 11103859
6	Membrane keypad	11103444		11103444	11103444
7	Display glass	11103443		11103443	
8	Model plate	→ chapter 10.1			
9	Level cover	210374		210374	210374
10	Measuring cell, assembled 1) Cell data EAROM on balance board	11103800 "E"		11103800 "A"	11103800 "E"
11	Coil cable (4-core)	228076		228076	228076
12	Detector cable (8-core)	11103753		11103753	11103753
13	Calibration drive, without calibration weight	–		11103820	–
14	Balance board Balance board, backlit	11103700 11103701		11103853 11103854	11103853 11103854
15	Backlighting	224253		224253	224253
16	Bottom housing incl. item 17	11103821		11103821	11103821
17	Level	11101335		11101335	11101335
18	Connection holder without insert nut	11103434		11103434	11103434
19	Insert nut (10 items)	11103445		11103445	11103445
20	Blank plate	11103435		11103435	11103435
21	RS232 interface, without cable	→ section 9, 1.20.5			
22	RS232 connection cable (10-core)	11103751		11103751	11103751
23	Power cable with socket	11103756		11103756	11103756
24	Lug for antitheft device	11103433		11103433	11103433
25	Cover plate for weighing below balance	11103432		11103432	11103432
26	Leveling foot	11101302		11101302	11101302
27	AC adapter	→ section 9, 1.20.3			
28	Cell data EAROM 2)	11103757+SNR		11103757+SNR	11103757+SNR

1) Mount the appropriate EAROM (Easy or Advanced) for the balance model on the balance board.

2) The order has to contain the serial number SNR of the balance!

B-S balances ≤ 200 g, with conv. Cell, exploded view drawing

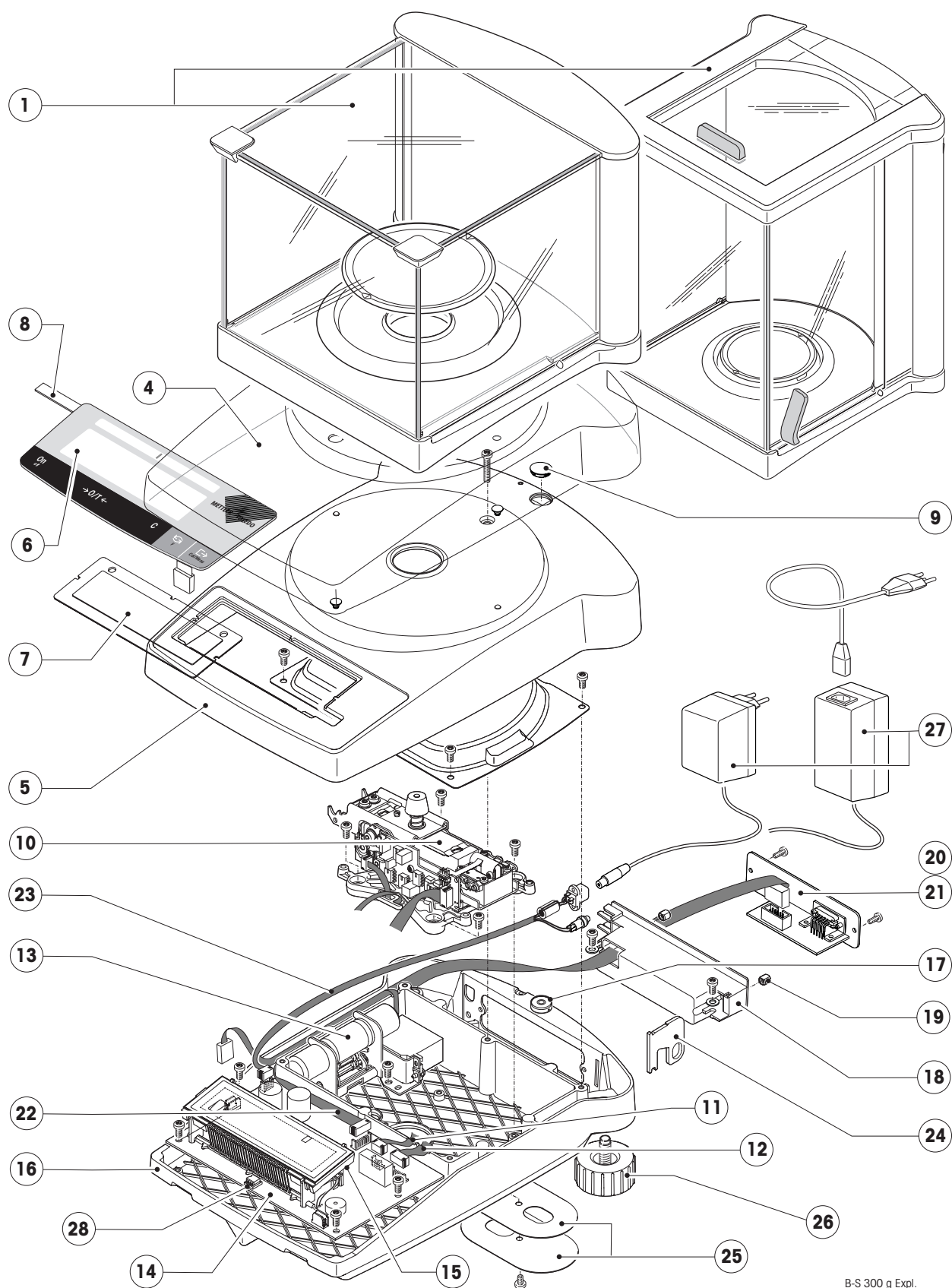
B-S konvent. Expl.

B-S balances ≤ 200 g, with conv. Cell, spare parts list (special Types see 1, 5.2)

Item	Designation	(E = certified balance)	AB54-S, AB54-S/E AB104-S, AB104-S/E AB204-S, AB204-S/E AB135-S, AB135/E AB265-S, AB265/E		
			Bestell-Nr.	Bestell-Nr.	Bestell-Nr.
1	Draft shield and weighing pan			→ 1.1.15	
2	Support			11135430	
3	Wägezellen-Abschirmung			11135431	
4	Protective cover			→ Register 9, 1.20.1	
5	Top housing, assembled, comprising items 5, 6, 7, 9.			11135402	
6	Membrane keypad			11103444	
7	Display glass			11103443	
8	Model plate			→ Abschnitt 10.1	
9	Level cover			210374	
10	Measuring cell, assembled 1) Cell data EAROM on balance board			11135410 "100 g" "200 g"	
12	Coil cable (11-core, 225 mm)			11600516	
13	Calibration drive, without calibration weight			11135432	
14	Balance board Balance board, backlit (not for ABxx5-S)			11135420 11135421	
15					
16	Bottom housing incl. item 17			11135401	
17	Level			11101335	
18	Connection holder without insert nut			11103434	
19	Insert nut (10 items)			11103445	
20	Blank plate			11103435	
21	RS232 interface, without cable			→ Register 9, 1.20.5	
22	RS232 connection cable (10-core)			11103751	
23	Power cable with socket			11103756 11135165	
24	Lug for antitheft device			11103433	
25	Cover plate for weighing below balance			11103432	
26	Leveling foot			11101302	
27	AC adapter			→ Register 9, 1.20.3	
28	EAROM 2)			11135425	
29	Stabilizer-PCB			11135422	

1) Mount the appropriate EAROM (**100 g** or **200 g**) for the balance model on the balance board.

2) The order has to contain the serial number SNR of the balance!

B-S balances ≤ 400 g, with MonoBloc, exploded view drawing (continuation)

B-S 300 g Expl.

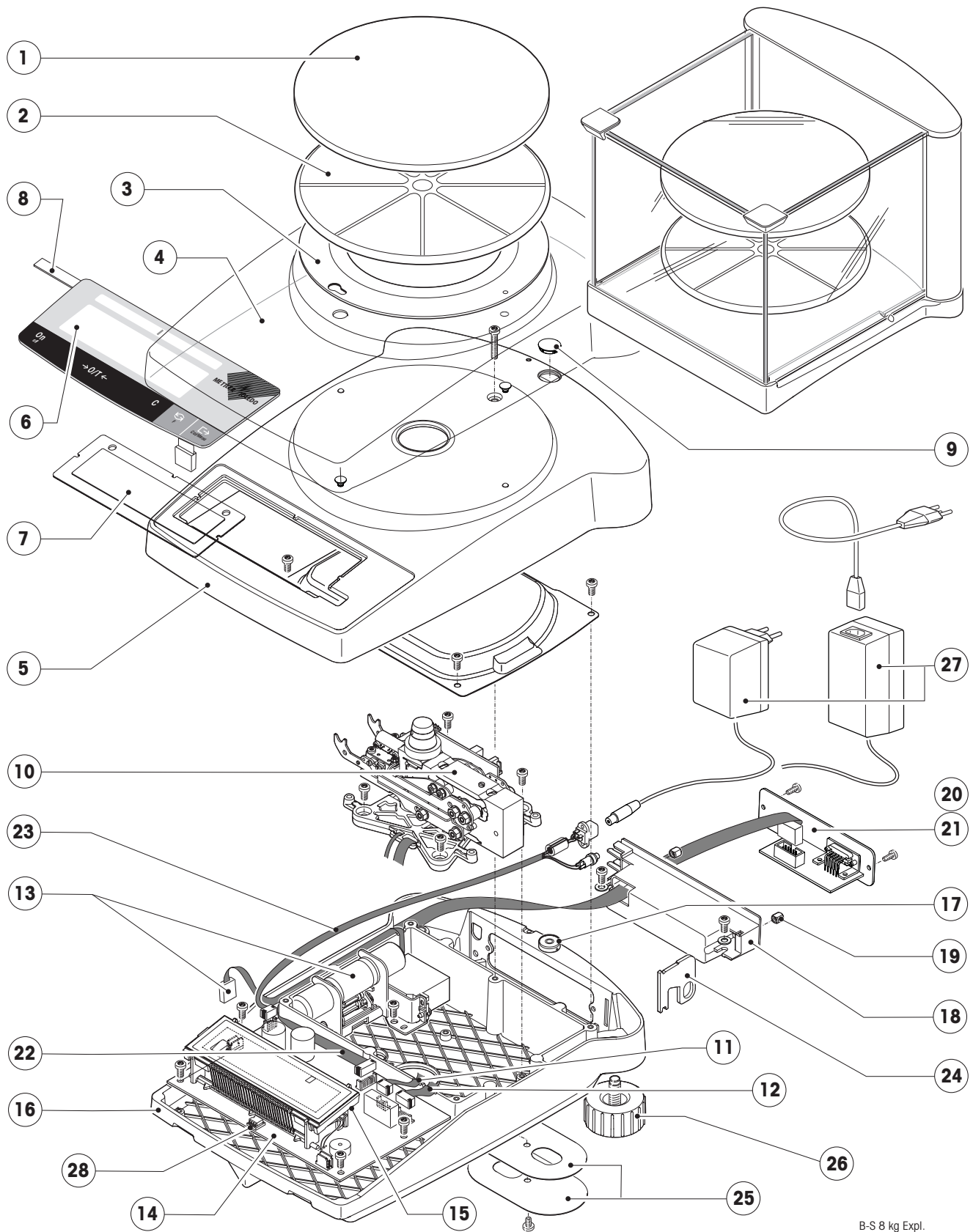
B-S balances ≤ 400 g, with MonoBloc, spare parts list (continuation) (special Types see 1, 5.2)
 [Start](#)

Item	Designation (/E = certified balance)	PB403-S	PB403-S/E
		Order No.	Order No.
1	Draft shield and weighing pan	→ 1.1.15 and 1.1.16	
4	Protective cover	→ chapter 9, 1.20.1	
5	Top housing, assembled, comprising items 5, 6, 7, 9.	11103852	11103852
	For vacuum	11103859	11103859
6	Membrane keypad	11103444	11103444
7	Display glass	11103443	11103443
8	Model plate	→ chapter 10.1	
9	Level cover	210374	210374
10	Measuring cell, assembled 1) Cell data EAROM on balance board	11103806 "E"	11103806 "A"
11	Coil cable (4-core)	228076	228076
12	Detector cable (8-core)	11103753	11103753
13	Calibration drive, without calibration weight	—	11103820
14	Balance board	11103700	11103853
	Balance board, backlit	11103701	11103854
15	Backlighting	224253	224253
16	Bottom housing incl. item 17	11103821	11103821
17	Level	11101335	11101335
18	Connection holder without insert nut	11103434	11103434
19	Insert nut (10 items)	11103445	11103445
20	Blank plate	11103435	11103435
21	RS232 interface, without cable	→ section 9, 1.20.5	
22	RS232 connection cable (10-core)	11103751	11103751
23	Power cable with socket	11103756	11103756
24	Lug for antitheft device	11103433	11103433
25	Cover plate for weighing below balance	11103432	11103432
26	Leveling foot	11101302	11101302
27	AC adapter	→ section 9, 1.20.3	
28	Cell data EAROM 2)	11103757+SNR	11103757+SNR

1) Mount the appropriate EAROM (**E**asy or **A**dvanced) for the balance model on the balance board.

2) The order has to contain the serial number SNR of the balance!

1.1.14 B-S balances > 400 g, with MonoBloc, exploded view drawing



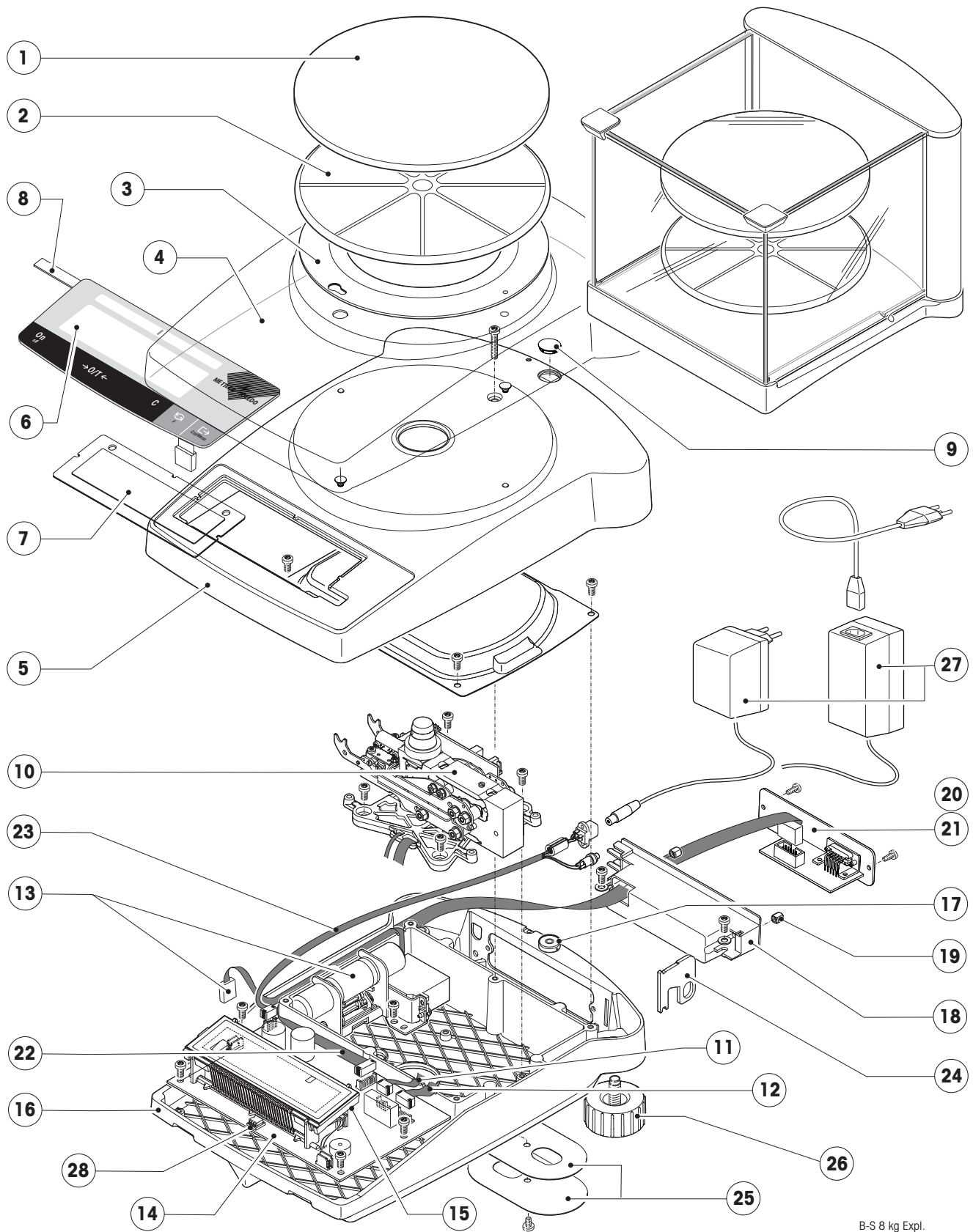
B-S 8 kg Expl.

B-S balances > 400 g, with MonoBloc, spare parts list (special Types see 1, 5.2)Continuation 

Item	Designation (E = certified balance)	PB602-S PB1502-S PB3002-S PB3002-SDR PB1501-S PB3001-S Order No.	PB602-S/E PB1502-S/E PB3002-S/E PB3002-SDR/E PB1501-S/E PB3001-S/E Order No.	PB8000-S GB6001-S PB5001-S PB8001-S Order No.	GB6001-S/E PB5001-S/E PB8001-S/E Order No.
1	Weighing pan ø 180 mm Draft shield low and weighing pan → chapter 1.1.16	11103280	11103280	11103280	11103280
2	Pan support (weighing pan ø 180 mm)	11103279	11103279	11103279	11103279
3	Retaining ring (balance without draft shield)	11103568	11103568	11103568	11103568
4	Protective cover → chapter 9, 1.20.1				
5	Top housing, assembled, comprising items 5, 6, 7, 9 for vacuum	11103852 11103859	11103852 11103859	11103852 11103859	11103852 11103859
6	Membrane keypad	11103444	11103444	11103444	11103444
7	Display glass	11103443	11103443	11103443	11103443
8	Model plate → chapter 10.1				
9	Level cover	210374	210374	210374	210374
10	Measuring cell, assembled 1) Cell data EAROM on balance board	11103801 "E"	11103801 "A"	11103802 "E"	11103802 "A"
11	Coil cable (4-core)	11103754	11103754	11103754	11103754
12	Detector cable (8-core)	11103755	11103755	11103755	11103755
13	Calibration drive, without calibration weight	—	11103820	—	11103820
14	Balance board Balance board, backlit	11103700 11103701	11103853 11103854	11103700 11103701	11103853 11103854
15	Backlighting	224253	224253	224253	224253
16	Bottom housing incl. item 17	11103821	11103821	11103821	11103821
17	Level	11101335	11101335	11101335	11101335
18	Connection holder without insert nut	11103434	11103434	11103434	11103434
19	Insert nut (10 items)	11103445	11103445	11103445	11103445
20	Blank plate	11103435	11103435	11103435	11103435
21	RS232 interface, without cable → section 9, 1.20.5				
22	RS232 connection cable (10-core)	11103751	11103751	11103751	11103751
23	Power cable with socket	11103756	11103756	11103756	11103756
24	Lug for antitheft device	11103433	11103433	11103433	11103433
25	Cover plate for weighing below balance	11103432	11103432	11103432	11103432
26	Leveling foot	11101302	11101302	11101302	11101302
27	AC adapter → section 9, 1.20.3				
28	Cell data EAROM 2)	11103757+SNR	11103757+SNR	11103757+SNR	11103757+SNR

1) Mount the appropriate EAROM (**E**asy or **A**dvanced) for the balance model on the balance board.

2) The order has to contain the serial number SNR of the balance!

B-S balances > 400 g, with MonoBloc, exploded view drawing (continuation)


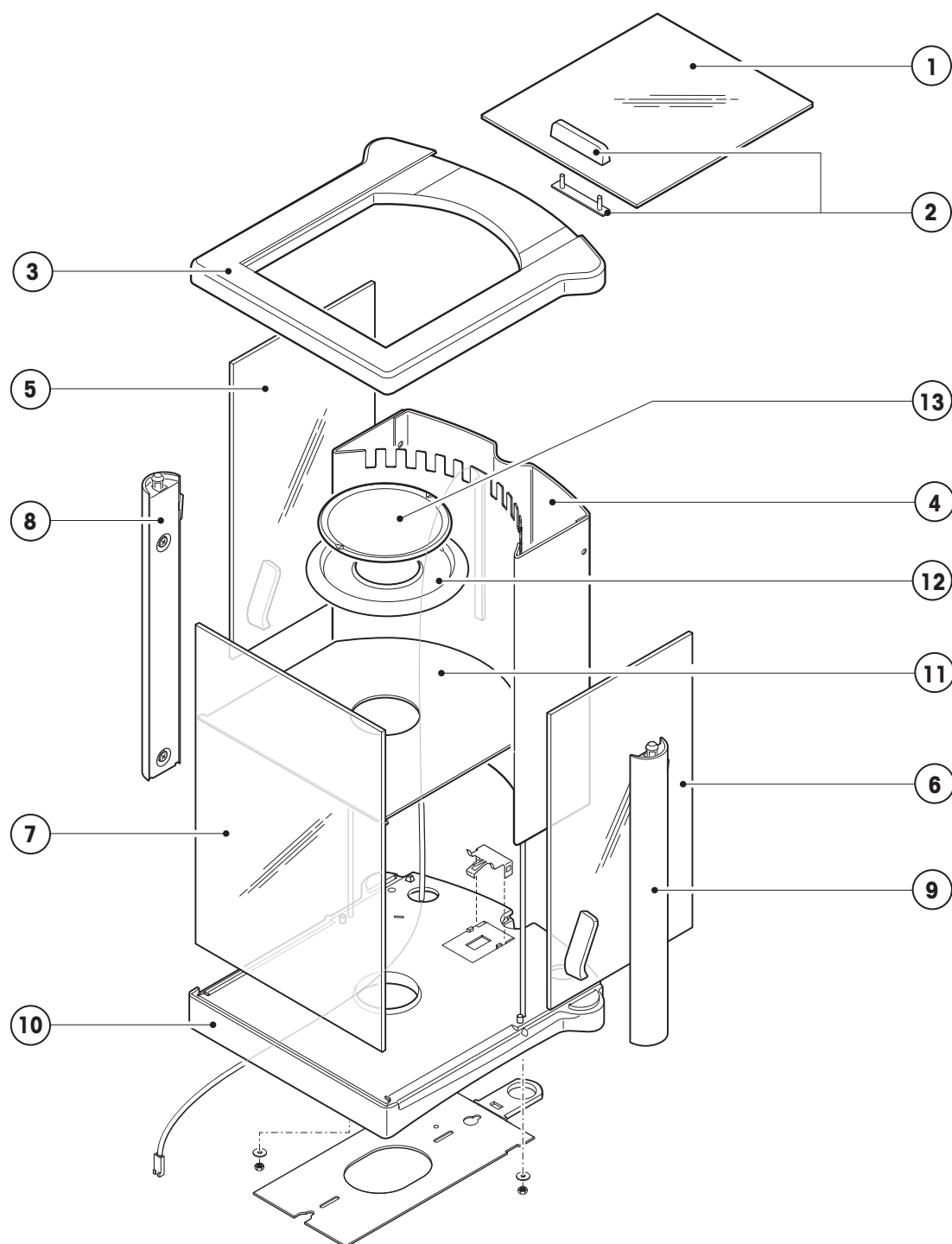
B-S 8 kg Expl.

B-S balances > 400 g, with MonoBloc, spare parts list (continuation) (special Types see 1, 5.2)
 [Start](#)

Item	Designation (/E = certified balance)	PB4002-S	PB4002-S/E	Order No.	Order No.	Order No.	Order No.
		Order No.	Order No.				
1	Weighing pan Ø 180 mm Draft shield low and weighing pan	11103280	11103280				
			→ chapter 1.1.16				
2	Pan support (weighing pan Ø 180 mm)	11103279	11103279				
3	Retaining ring (balance without draft shield)	11103568	11103568				
4	Protective cover		→ chapter 9, 1.20.1				
5	Top housing, assembled, comprising items 5, 6, 7, 9 for vacuum	11103852 11103859	11103852 11103859				
6	Membrane keypad	11103444	11103444				
7	Display glass	11103443	11103443				
8	Model plate		→ chapter 10.1				
9	Level cover	210374	210374				
10	Measuring cell, assembled 1) Cell data EARAM on balance board	11103804 "E"	11103804 "A"				
11	Coil cable (4-core)	11103754	11103754				
12	Detector cable (8-core)	11103755	11103755				
13	Calibration drive, without calibration weight	–	11103820				
14	Balance board Balance board, backlit	11103700 11103701	11103853 11103854				
15	Backlighting	224253	224253				
16	Bottom housing incl. item 17	11103821	11103821				
17	Level	11101335	11101335				
18	Connection holder without insert nut	11103434	11103434				
19	Insert nut (10 items)	11103445	11103445				
20	Blank plate	11103435	11103435				
21	RS232 interface, without cable		→ section 9, 1.20.5				
22	RS232 connection cable (10-core)	11103751	11103751				
23	Power cable with socket	11103756	11103756				
24	Lug for antitheft device	11103433	11103433				
25	Cover plate for weighing below balance	11103432	11103432				
26	Leveling foot	11101302	11101302				
27	AC adapter		→ section 9, 1.20.3				
28	Cell data EARAM 2)	11103757+SNR	11103757+SNR				

1) Mount the appropriate EARAM (**E**asy or **A**dvanced) for the balance model on the balance board.

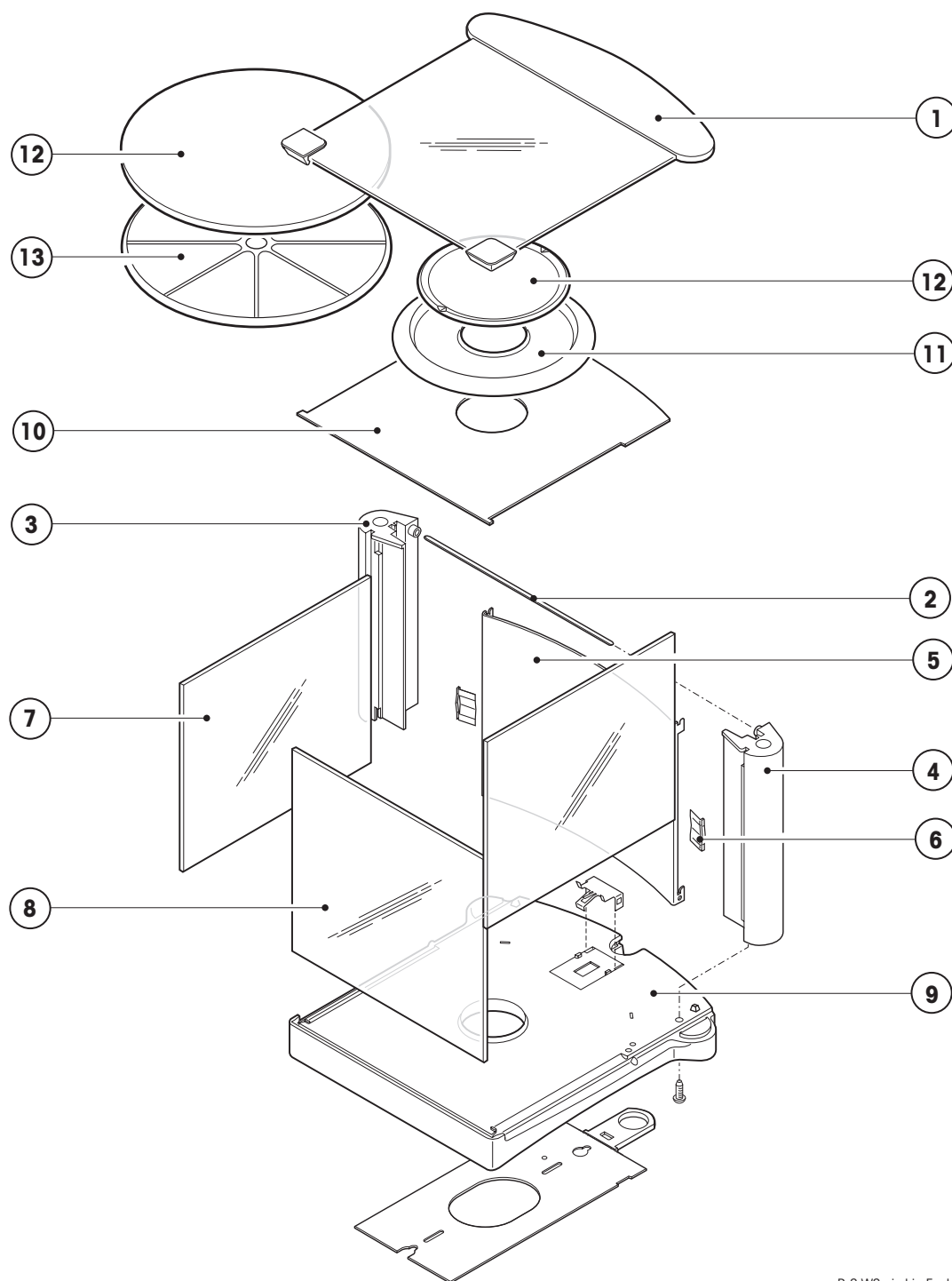
2) The order has to contain the serial number SNR of the balance!

1.1.15 Draft shield, high, for B-S balances

B-S WS hoch Expl.

Draft shield, high, for B-S balances, spare parts list (special Types see 1, 5.2)Draft shield complete → [section 9, 1.20.2](#)

Item	Designation (/E = certified balance)	xBxx4-S (z.B. PB303-S/E)	ABxx5-S
		xBxx4-S/E xBxx3-S/E	ABxx5-S/E
		Order No.	Order No.
1	Door top	11103543	11103543
2	Handle for door, top	11103822	11103822
3	Draft shield top frame	11103831	11103831
4	Draft shield rear panel Draft shield rear panel	11135433	11135412
5	Door, left with handle	11103823	11103823
6	Door, right with handle	11103824	11103824
7	Front pane	11103535	11103535
8	Left corner post	11103825	11103825
9	Right corner post	11103826	11103826
10	Draft shield base, assembled	11103827	11103827
11	Bottom plate	11103542	11103542
12	Ring (weighing pan Ø 80 mm)	11103569	11103569
13	Weighing pan Ø 80 mm	11135434	11135434

1.1.16 Draft shield, low, for B-S balances

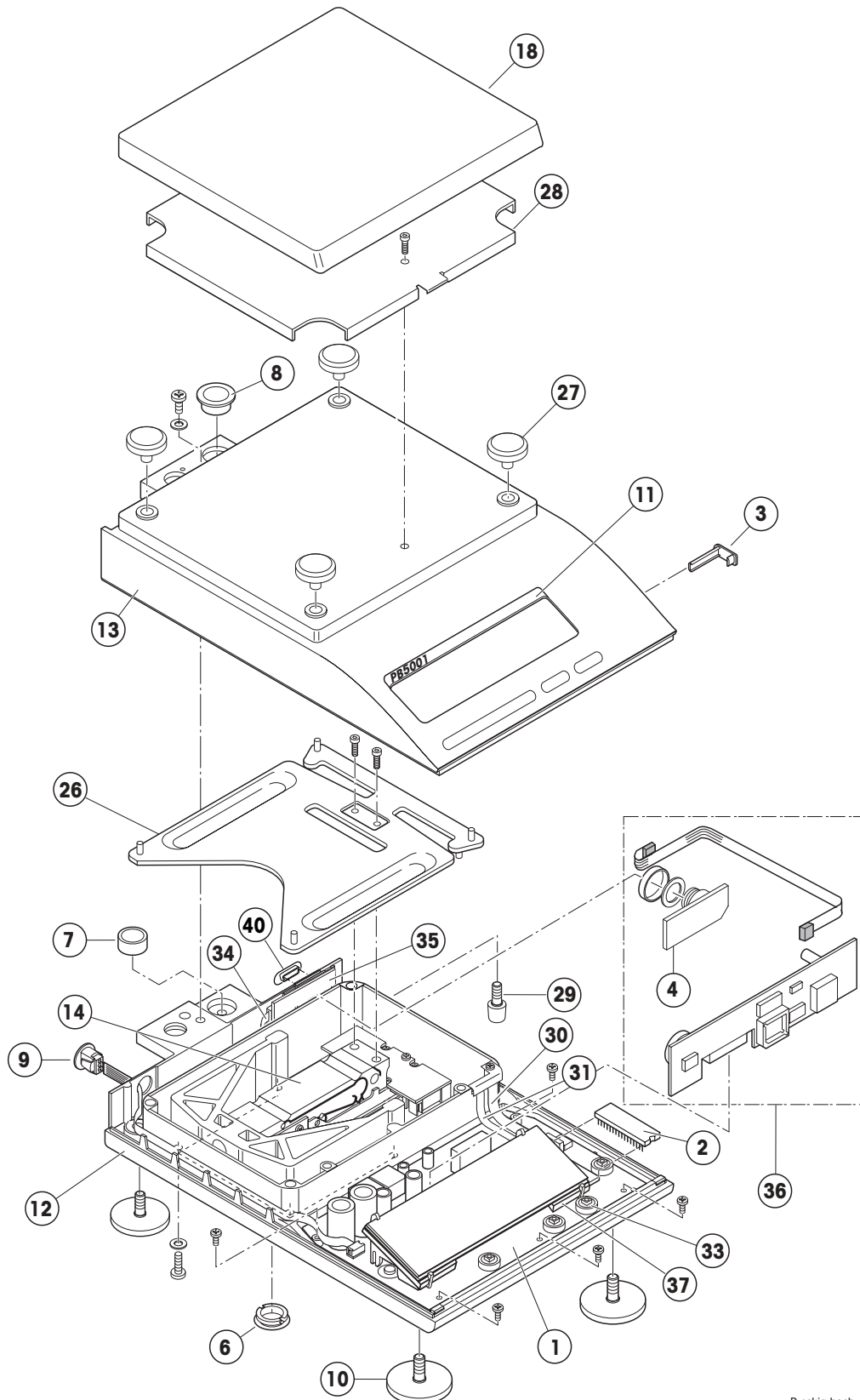
B-S WS niedrig Expl.

Draft shield, low, for B-S balances, spare parts list (special Types see 1, 5.2)Draft shield complete → [section 9, 1.20.2](#)

Item	Designation	(/E = certified balance)	xBxx3-S, xBxx3-S/E xBxx2-S, xBxx2-S/E xBxx1-S, xBxx1-S/E	(z.B. PB303-S/E)
			Order No.	
1	Cover		11103828	
2	Leaf spring		11103562	
3	Left corner post, with cap		11103832	
4	Right corner post, with cap		11103833	
5	Rear panel		11103553	
6	Retaining springs (10 items)		11103573	
7	Side pane		11103558	
8	Front pane		11103559	
9	Draft shield base, assembled		11103827	
10	Bottom plate		11103565	
11	Ring (for weighing pan Ø 100 mm)		224366	
12	Weighing pan Ø 100 mm		11103855	
	for: xBxx3-S, xBxx3-S/E			
	Weighing pan Ø 175 mm			
	for: xBxx2-S, xBxx2-S/E		11103283	
	xBxx1-S, xBxx1-S/E			
13	Pan holder (weighing pan Ø 175 mm)		11103857	
	Weighing pan Ø 175 mm incl.			
	Pan holder		11103680	

1.2 Industrial balances

1.2.1 PB/GB balances (high housing ☐)

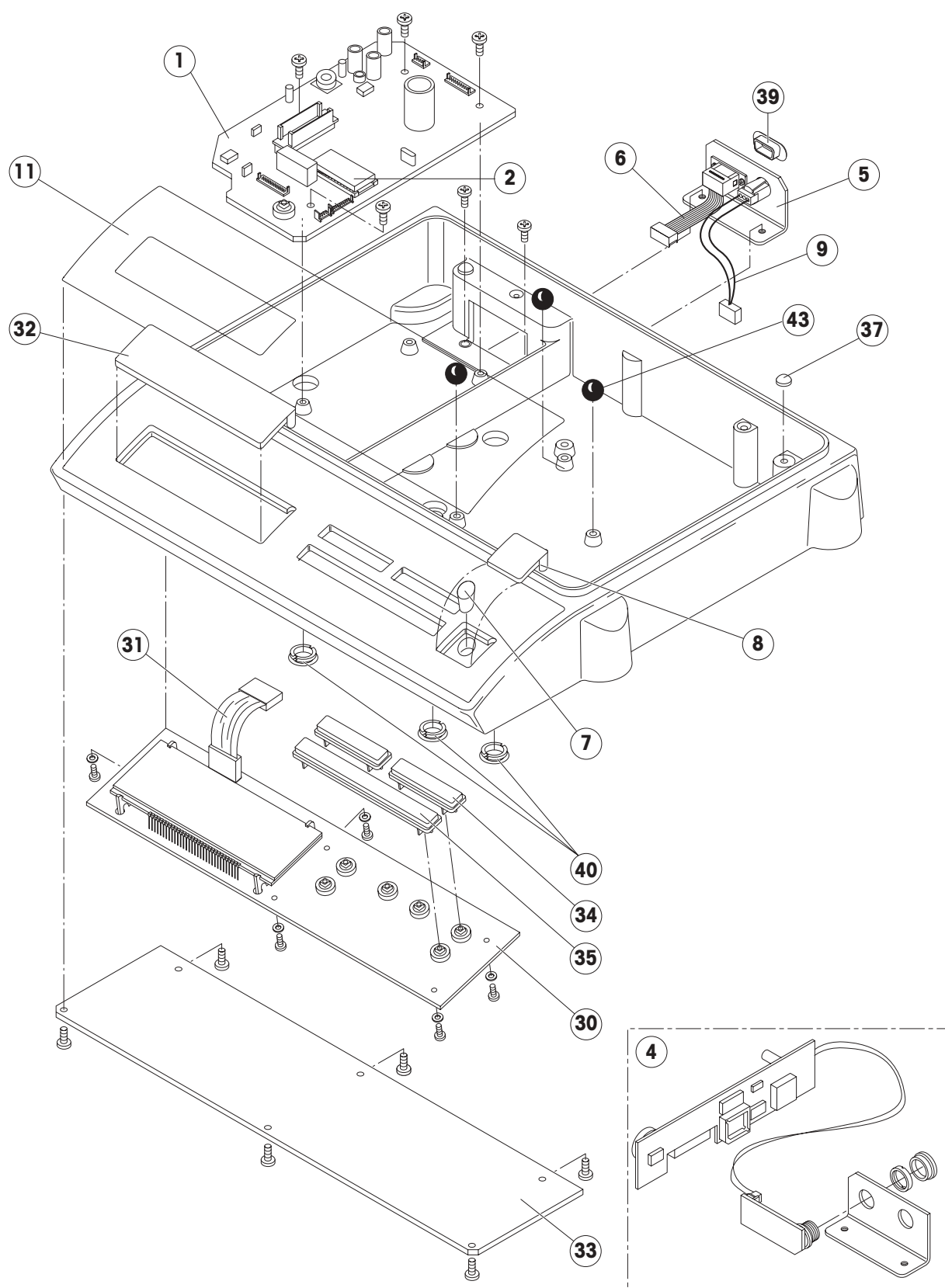


B eckig hoch

Spare parts list PB/GB balances (high housing □)

Item	Designation	PB5001 PB8000 PB8001 GB6001 Order No.
1	Balance board (with EPROM) Balance PCB (display with backlight)	224416 224422
2	EPROM 32 pin (programmed; with RS232) EPROM 32 pin (programmed; without RS232) EPROM 28 pin (old; programmed, without RS232)	224017 224016 600150
3	Calibration cover Calibration cover, special	224230 224603
4	CAN socket	228128
5	Dummy plug	71906
6	Hanger feedthrough cover	215051
7	Level	215053
8	Level cover	215060
9	Power socket with cable	11101558
10	Leveling foot	224237
11	Model plate	see model plate list, point 10.1
12	Bottom housing	228071
13	Top housing PB (standard) Top housing GB (Gold)	228077 228185
14	Measuring cell, assembled	600156
18	Weighing pan	228082
26	Overload protection	228080
27	Pan support	215047
28	Fastening plate	228079
29	Fixed foot	224236
30	Detector cable	1110375
31	Coil cable	228076
33	Key-switch	89688
34	RS232 connection cable	224420
35	RS232 socket with PCB and blind	224419
36	LC-B Option (LocalCAN)	228110
37	Backlight	224253
40	RS-cover	11101560

1.2.3 SB/GL balances with low profile

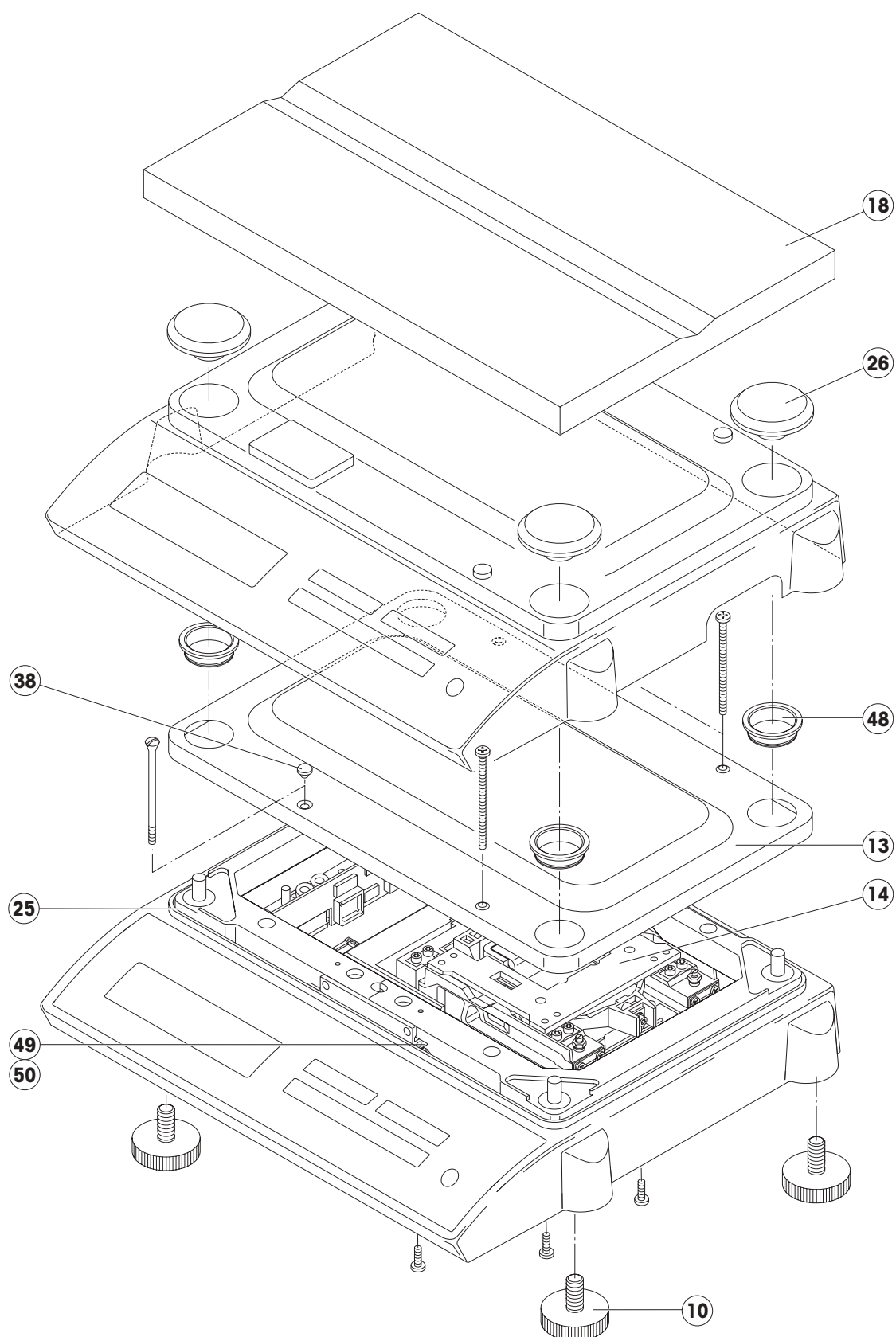


Spare parts list SB/GL balances with low profile

Continuation 

Item	Designation	Types with conventional cell	Types with monobloc cell
		SB8000,SB8001 SB12001,SB16000 SB16001,SB16001DR GB16001,GL16DR	SB8000,SB8001 SB8001DR SB12001,SB16000 SB16001,SB16001DR GB16001,GL16DR SB24001DR SB32000,SB32001DR GL32DR
		Order No.	Order No.
1	Balance board	21301095	21301095
2	EPROM (programmed)	224017	224017
	EPROM 32 pin (programmed; without RS232)	224016	224016
	EPROM 28 pin (old; programmed, without RS232)	600150	600150
4	CAN interface ¹⁾		
5	Female connector plate RS232C, assembled ¹⁾		21300688
6	RS cable, 9-pin ¹⁾		21301654
7	Level	215053	215053
8	Level glass	230217	230217
9	Power cable, 3-pin (40 mm)	230065	230065
11	Overlay (see overlay list, 10.3)		
30	Display board	230053	230053
	Display board with backlighting		21301495
31	Display cable	230054	230054
32	Display glass	230216	230216
33	Cover	230229	230229
34	Key, short	230222	230222
35	Key, long	230223	230223
37	Protective bumper, adhesive	72469	72469
39	CAN plug	71906	71906
	RS dust cover		11101560
40	Cover	87420	87420
43	Plastic ball bearing	410001	410001
	Adapter (-> 5-23, 2.2.10)	230081	230081

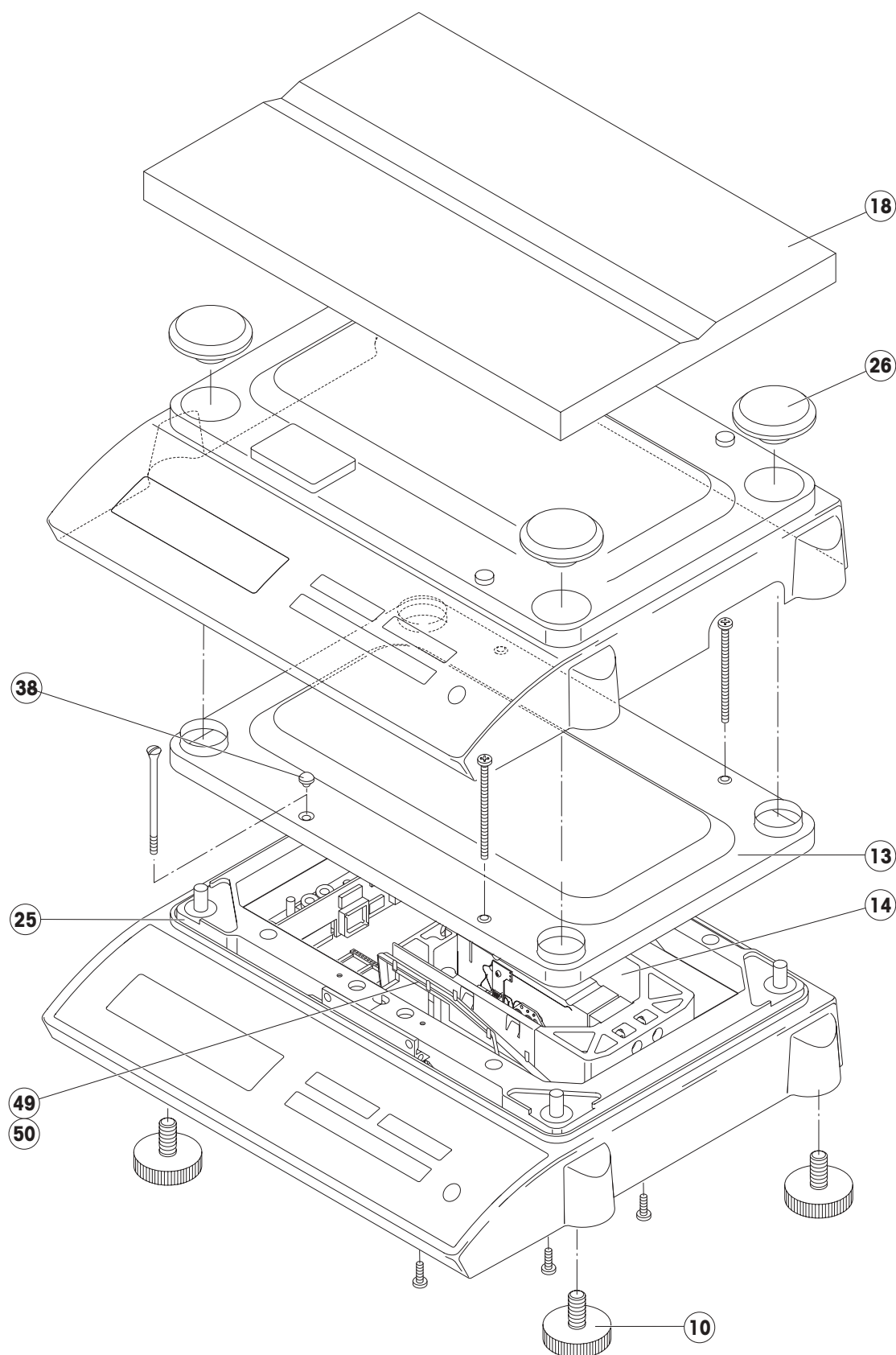
¹⁾ **Note on the interfaces:** Up to spring 1997 the standard balances/scales were supplied without an interface, but could be fitted with an optional CAN interface (LC-B universal interface). After spring 1997 the balances/scales will be equipped in the factory with an RS232C interface. Instead of the RS232C these balances/scales can be optionally fitted with the CAN interface. The RS232C interface can also be installed in older scales, however this requires that the balance/scale board be changed (type of construction after spring 1997, see also section 4, 2.3).

SB/GL balances with low profile and conventional measuring cell (continuation)

Spare parts list SB/GL balances with low profile and conventional measuring cell (continuation)

Continuation 

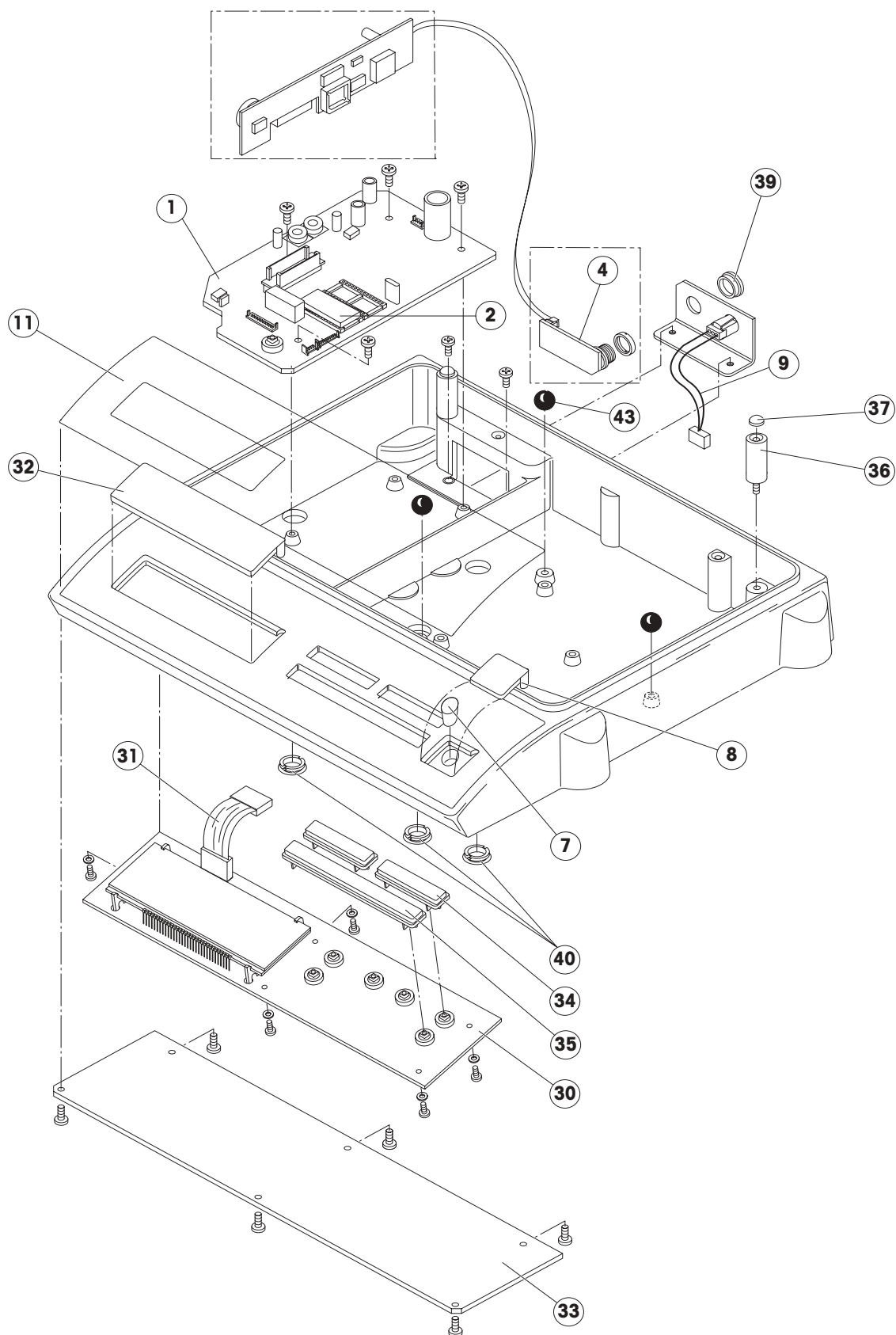
Item	Designation	SB8000 SB8001 SB8001DR SB12001 SB16000 SB16001 SB16001DR GB16001 GL16DR Order No.
10	Leveling foot	230236
13	Cover, complete (top part)	230214
14	Measuring cell, complete	625039
18	Weighing pan	21301093
25	Overload protection, complete	230121
26	Pan support	230207
38	Plug	71904
48	Guard ring (integrated in item 13 with newer models)	230205
49	Detector cable	230060
50	Coil cable	230061

SB/GL balances with low profile and monobloc measuring cell (continuation)

Spare parts list SB/GL balances with low profile and monobloc measuring cell (continuation)

 [Start](#)

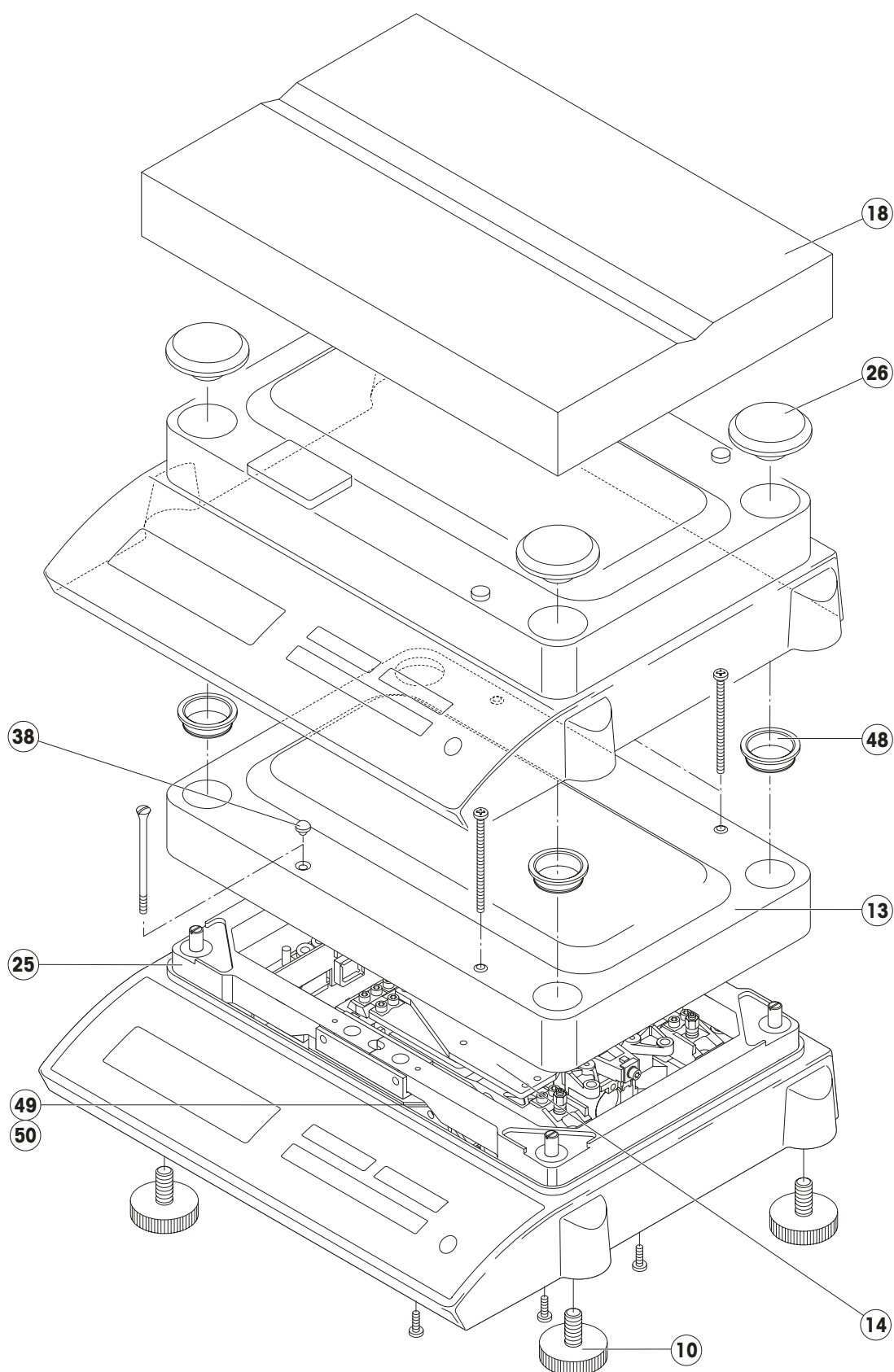
Item	Designation	SB8000 SB8001 SB8001DR SB12001 SB16000 SB16001 SB16001DR GB16001 GL16DR SB24001DR SB32000 SB32001DR GL32DR
		Order No.
10	Leveling foot	230236
13	Cover, complete (top part)	230214
14	Measuring cell, complete	21300933
18	Weighing pan	21301093
25	Overload protection, complete	230122
26	Pan support	230207
38	Plug	71904
49	Detector cable	21300691
50	Coil cable	228111

1.2.9 SB/GL balances with high profile

Spare parts list SB/GL balances with high profile

Continuation 

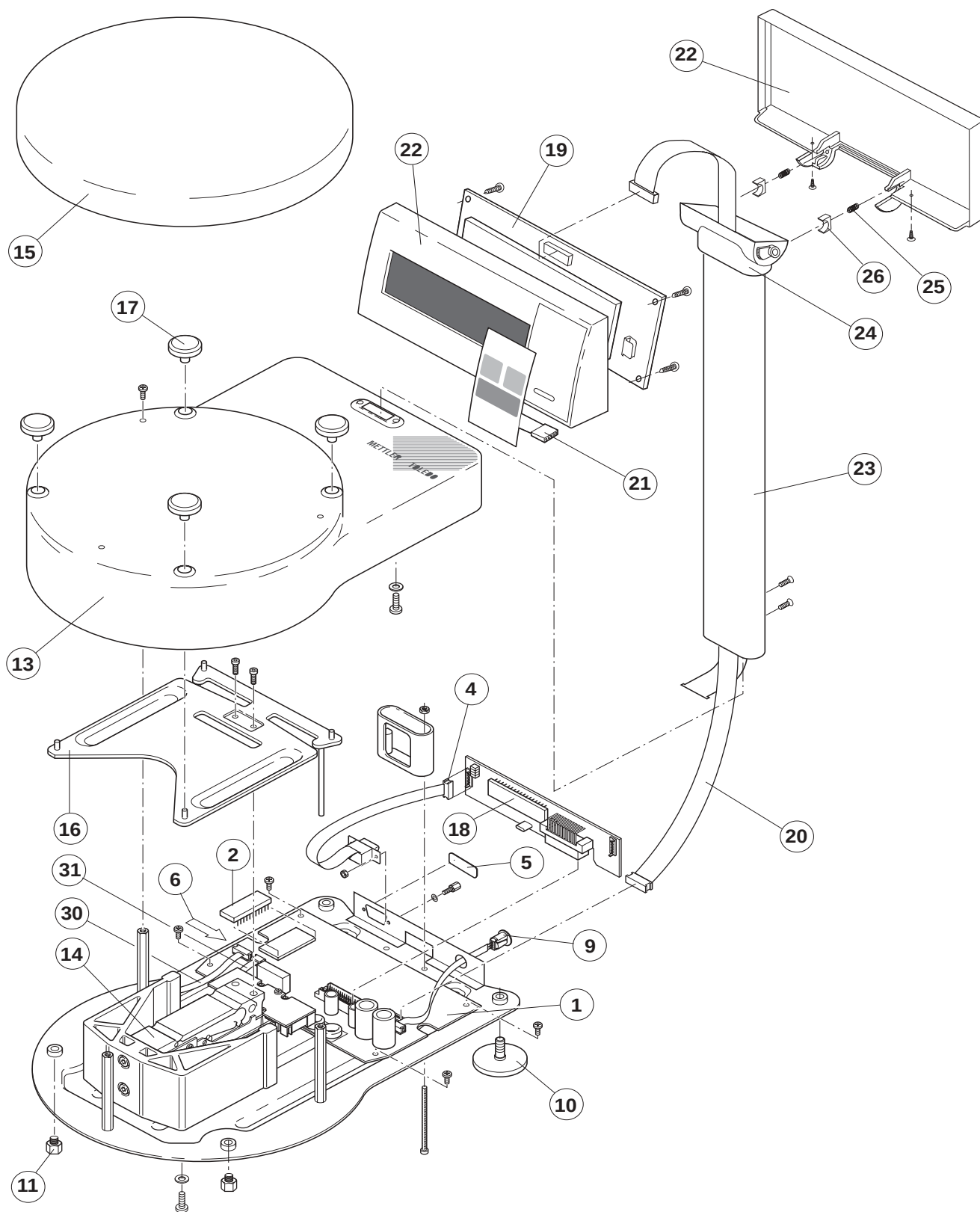
Item	Designation	SB24001DR SB32000 SB32001DR GL32DR
		Order No.
1	Balance board	21301095
2	EPROM (programmed)	224017
	EPROM 32 pin (programmed; without RS232)	224016
	EPROM 28 pin (old; programmed, without RS232)	600150
4	CAN Socket	228128
7	Level	215053
8	Level glass	230217
9	Power cable, 3-pin (40 mm)	230065
11	Overlay	(see overlay list, 10.3)
30	Display board	230053
31	Display cable	230054
32	Display glass	230216
33	Cover	230229
34	Key, short	230222
35	Key, long	230223
36	Sleeve	230226
37	Protective bumper, adhesive	72469
39	Plug	71906
40	Cover	87420
43	Plastic ball bearing	410002
	Adapter (-> 5-23, 2.2.10)	230081

SB/GL balances with high profile (continuation)

Spare parts list SB/GL balances with high profile (continuation) [Start](#)

Item	Designation	SB24001DR SB32000 SB32001DR GL32DR
		Order No.
10	Leveling foot	230236
13	Cover, complete (top part)	230215
14	Measuring cell, complete	625037
18	Weighing pan	230209
25	Overload protection, complete	230122
26	Pan support	230207
38	Plug	71904
48	Guard ring (integrated in item 13 with newer models)	230205
49	Detector cable	230057
50	Coil cable	230061

1.2.13 PZ and GL8R balances



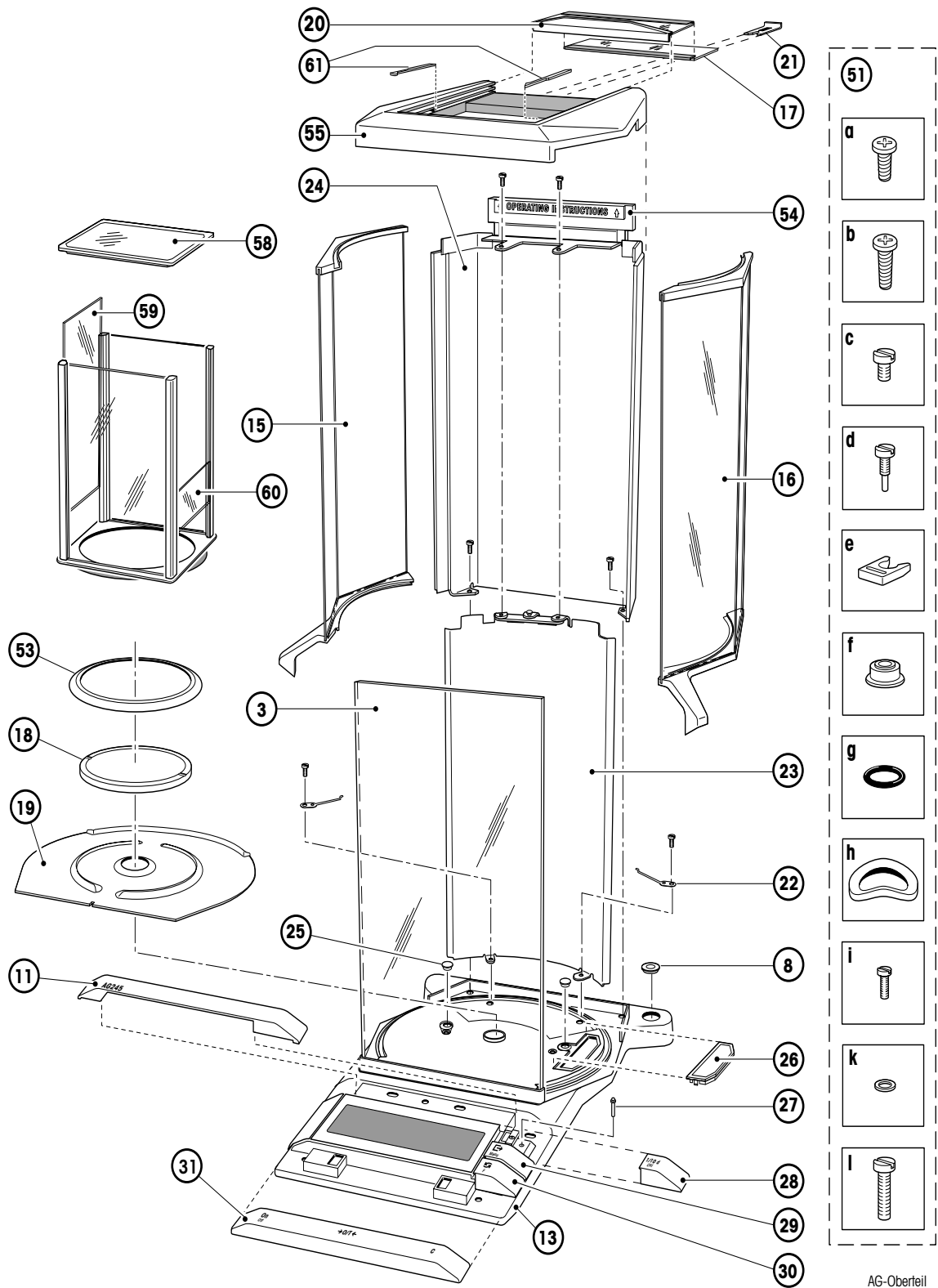
Spare parts list PZ and GL8R balances

Item	Designation	PZ7001-F PZ7001-F S	GL8R
		Order No.	Order No.
1	Balance board (without EPROM)	472012	472012
2	EPROM (programmed)	21300540	21300541
4	RS 9-pin connector with cable	472017	–
5	D-subminiature cover plate	–	410027
6	Plug	71904	71904
9	Power socket with cable	230065	230065
10	Leveling foot, adjustable	216321	216321
11	Fixed foot	625050	625050
13	Top housing	472041	472041
	Top housing PZ7001-FS	472034	–
14	Measuring cell, assembled	600156	600156
15	Weighing pan	472042	472042
16	Overload protection	472030	472030
17	Pan support	215047	215047
18	Option board RS232	472014	–
19	Terminal display VFD	472010	472010
20	Display cable, 14-pin	472016	472016
21	Membrane keypad	472047	230531
22	Terminal housing	472045	230530
23	Stand rod	472043	472043
24	Rotary mechanism	229089	229089
25	Compression spring	229093	229093
26	Slide	229091	229091
30	Detector cable	224410	224410
		11103753	11103753
31	Coil cable	228076	228076

2 G balance line

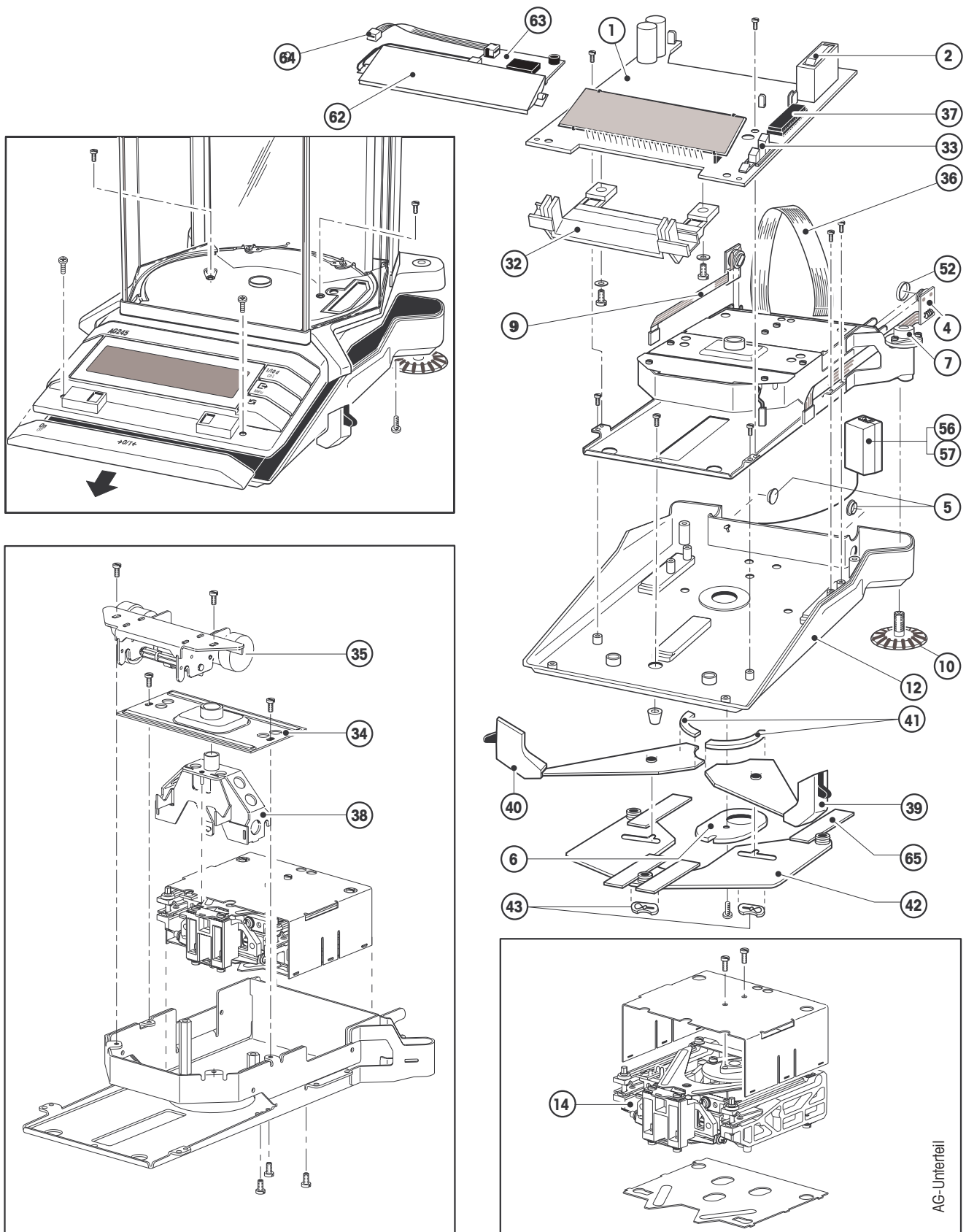
2.1 Laboratory balances

2.1.1 AG balances: Top part Bottom part



2.1.2 Spare parts AG balances: Top part

Item	Designation	AG64/104/AG204 AG204DR	AG135/245/285	
		Order-No.	Order-No.	Order-No.
3	Front glass	238411	238411	
8	Level cover	210374	210374	
11	Model strip	see model plate list, point 10.2		
13	Top housing	238756	238756	
15	Door, left	238759	238759	
16	Door, right	238758	238758	
17	Top pane	238760	238760	
18	Weighing pan	238762	238762	
19	Cover plate	238304	238304	
20	Pane with handle, top	238761	238761	
21	Locking device	238347	238347	
22	Contact spring	238359	238359	
23	Partition	238763	238763	
24	Rear panel	238757	238757	
25	Cover	238391	238391	
26	Cassette cover	238390	238390	
27	Bolt	238378	238378	
28	Key "1/10 d"	238382	238382	
29	Key "Print"	238383	238383	
30	Key "Switch"	238384	238384	
31	Key "Tare"	238425	238425	
51	Small parts set	238293		
	a) 5 Plastic screw $\varnothing$ 3 x 8 (Chassis)		f) 1 Sleeve (Detector)	
	b) 5 Plastic screw $\varnothing$ 3 x 10 (Top housing)		g) 1 O-ring $\varnothing$ 7 x 1,5 (Detector)	
	c) 5 Fillister head screw $\varnothing$ 3 x 5 (Rear panel)		h) 1 Saddle washer (Level)	
	d) 1 Stop screw (Detector)		i) 2 Fillister head screw $\varnothing$ 2,5 x 3 (Dead load)	
	e) 1 Clamp (Detector)		k) 6 Washer $\varnothing$ 2,7/5 x 0,5 (Dead load)	
			l) 1 Fillister head screw $\varnothing$ 3 x 18 (Detector)	
53	Draft shield element	—	238362	
54	Slide	238367	238367	
55	Housing cover	238372	238372	
58	Top glass		238443	
59	Glass, lateral		238441	
60	Glass, lateral 20 mm		238442	
61	Clip	238386	238386	

2.1.3 AG balances: Bottom part
 Top part


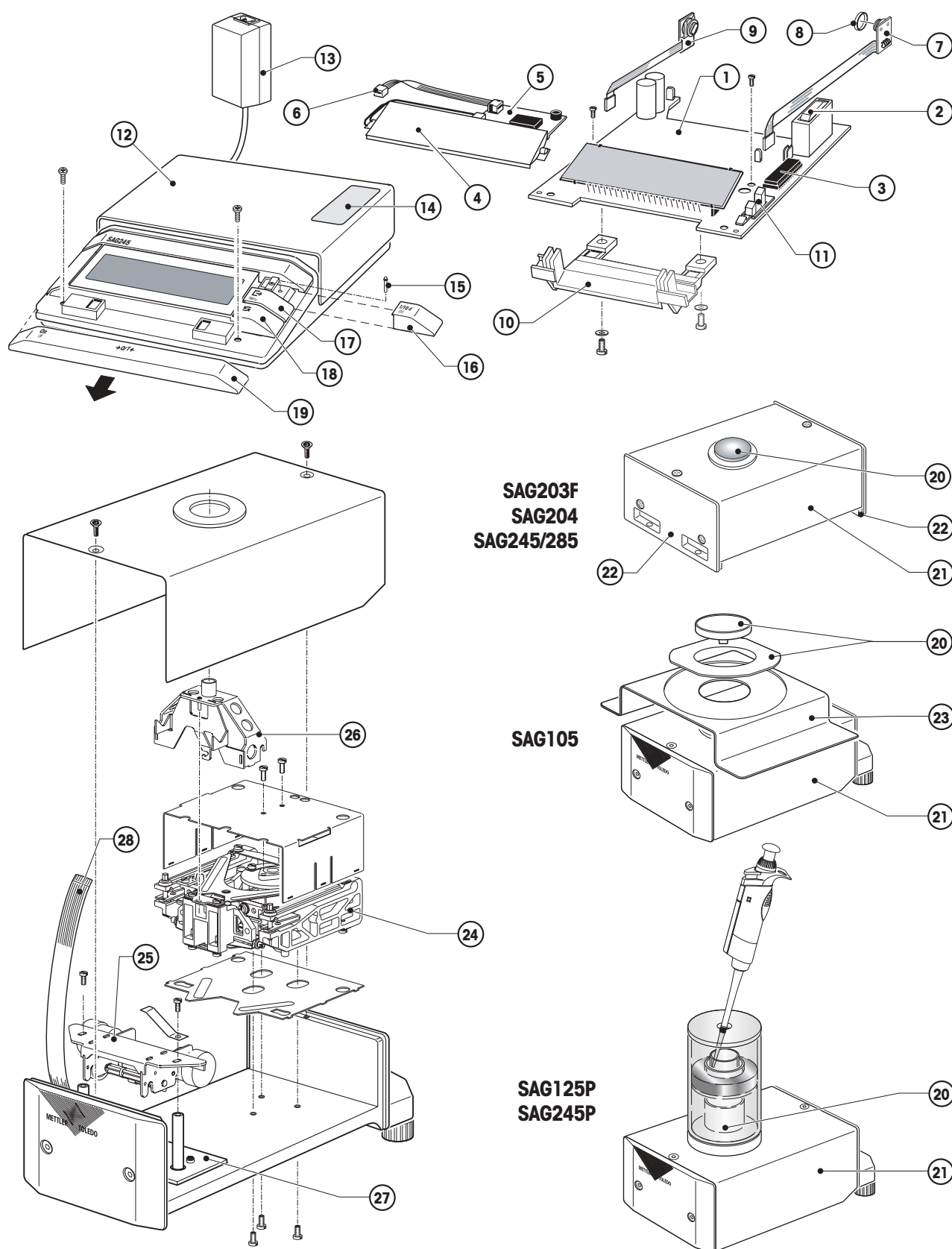
Spare parts list AG balances: Bottom part

Item	Designation	AG64/104/AG204 AG204DR	AG135/245/285	
		Order-No.	Order-No.	Order-No.
1	Balance board (with EPROM 1) and display with separate reflector)	238770	238770	
2	Program cassette (standard)	238765	238765	
4	CAN socket with cable	238755	238755	
5	Cap	238392	238392	
6	Hanger cover	238354	238354	
7	Level	238311	238311	
9	Power socket with cable	238754	238754	
10	Leveling foot	238398	238398	
12	Bottom housing	238750	238750	
14	Measuring cell, assembled	238292	238292	
32	Key holder, front	238375	238375	
33	Key spring	238379	238379	
34	Skinplate	238316	238316	
35	Calibration (without calibr. weight)	238753	238753	
36	Measuring cell cable	89825	89825	
37	EPROM (old, only operating system) EPROM (new, operating system and program [standard])	238764	238764	
		238769	238769	
38	Cantilever arm	238752	238752	
39	Lever, right, compl.	238313	238313	
40	Lever, left, compl.	238314	238314	
41	Lever guide	238402	238402	
42	Slide, compl.	238751	238751	
43	Glider	238387	238387	
52	Nut, CAN socket	225028	225028	
56	AC adapter, 115 V	238621	238621	
57	AC adapter, 230 V	238620	238620	
62	Backlighting	238625	– 2)	
63	Power supply for backlighting	238626	– 2)	
64	Ribbon cable	238623	– 2)	
65	Guide rail, set of 4	238289	238289	

1) With the new balances the standard weighing program is integrated in the EPROM.

2) The AG135/245/285 is not equipped with backlighting for thermal reasons.

2.1.4 SAG Balances

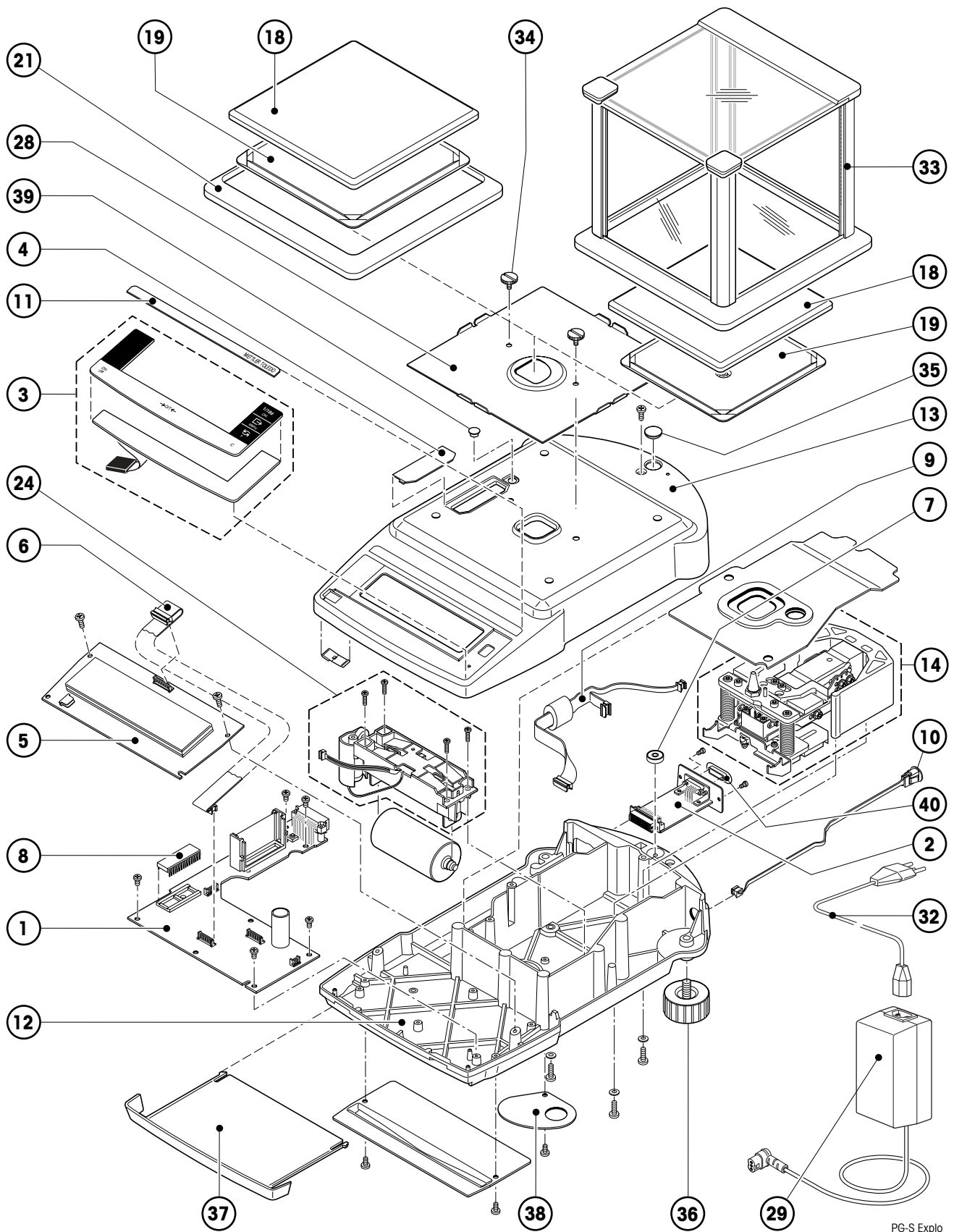


SAG Explo

Spare Parts SAG Balances

Item	Designation	SAG204 SAG245/285	SAG203F	SAG105	SAG125P SAG245P
		Order-No.	Order-No.	Order-No.	Order-No.
1	Balance board (with EPROM and display with separate reflector)	238770	238770	238770	238770
2	Program cassette (standard) (special, stabilization time 1 s)	238765	238644	238765	238765
3	EPROM (old, only operating system) EPROM (new, operating system and program [standard])	238764 238769	238764 238769	238764 238769	238764 238769
4	Backlighting	238625	238625	238625	238625
5	Power supply for backlighting	238626	238626	238626	238626
6	Ribbon cable	238623	238623	238623	238623
7	CAN socket with cable	238755	238755	238755	238755
8	Nut, CAN socket	225028	225028	225028	225028
9	Power socket with cable	238754	238754	238754	238754
10	Key holder, front	238375	238375	238375	238375
11	Key spring	238379	238379	238379	238379
12	Cover control unit SE	238817	238817	238817	238817
13	AC adapter, 115 V AC adapter, 230 V	238621 238620	238621 238620	238621 238620	238621 238620
14	Cassette cover	34314	34314	34314	34314
15	Bolt	238378	238378	238378	238378
16	Key "1/10 d"	238382	238382	238382	238382
17	Key "Print"	238383	238383	238383	238383
18	Key "Switch"	238384	238384	238384	238384
19	Key "Tare"	238425	238425	238425	238425
20	Weighing pan	ø 85 mm 238762 ø 36 mm 238839	ø 85 mm 238762 ø 36 mm 238839	ø 50 mm 238472 —	—> Sect. 9, 1.7 —
21	Cover weighing unit	238837	238837	238860	238860
22	Front/Back weighing unit	238834	238834	—	—
23	Cover plate	—	—	238784	—
24	Weighing cell, assembled	238292	238292	238292	238292
25	Calibration (without calibr. weight)	238753	238753	238753	238753
26	Cantilever arm	238752	238752	238752	238752
27	Cell board with flat cable + RS socket	238785	238785	238785	238785
28	Cell cable	89825	89825	89825	89825

2.1.5 PG-S Balances



PG-S Expl

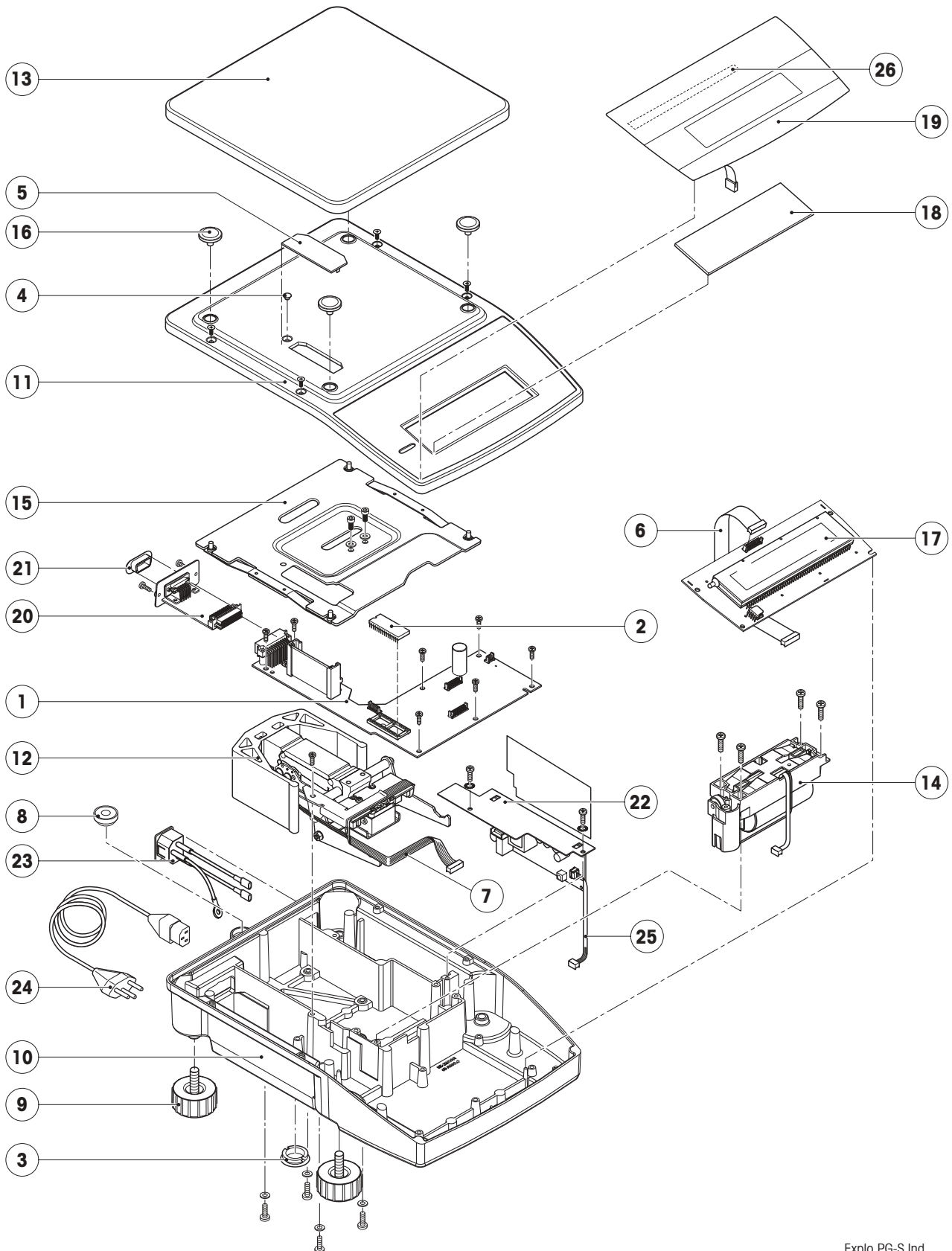
Spare parts list PG-S balances

Item	Designation	PG-S	PG203-S/E PG403-S/SDR/E PG503-S/SDR/E	PG1003-S/E PG603-S/SDR/E	PG-802-S/E PG2002-S/SDR/E	PG3001-S/E PG4002-S/SDR/E PG5002-S/SDR/E
		Order-No.	Order-No.	Order-No.	Order-No.	Order-No.
1	Balance-PCB	11101500				
2	RS-Interface	11101508				
3	Membrane keypad	11101822				
4	Cassette cover	238390				
5	Display-PCB	11101502				
6	Connection cable for displa	11101559				
7	Level indicator	11101335				
8	EPROM (OS+Standard)	11101850				
9	Connection cable for cel	11101555				
10	Connection cable with socke	11101558				
11	Model strip 1	see model plate list point 10.				
12	Housing base	11101305				
13	Top housing with iter8	11101820				
14	Measuring cell (without overload protection)		225660	225767	225661 PG6002-S/SDR/E - 225631	225662
18	Weighing pan		225165	225165	225158	225158
19	Pan support		225658	225658	225588	225588
21	Draft shield element		–	–	225159	225159
24	Calibration drive	225050				
28	Fastening plate	11101322				
29	Bench power supply V	110 230V	238621 238620			
32	Power cable K	D GB USA AUS SA EU (Schuko) CH I	87452 89405 88668 88751 89728 87925 87920 87457			
33	Draft shield 1)		225269	225269	–	–
34	Knurled screw	11101329				
35	Level cover	210374				
36	Leveling foot	11101302				
37	Slider	11101325				
38	Hanger slide	11101339				
39	Cover	238391				
40	RS-cover	11101560				

1) Spare parts see 3.1.5

2.2 Industrial balances

2.2.1 PG-S balances (0,1g and 1g)



Explo PG-S Ind

Spare parts list PG-S balances (0,1g and 1g)

Item	Designation	PG3001-S* PG5001-S PG8001-S PG8000-S	PG12001-S PG12001-S DR
		Order No.	Order No.
1	Balance board	11101500	11101500
2	EPROM (with program)	11101850	11101850
3	Hanger cover	87420	87420
4	Calibration cover	238391	238391
5	Cassette cover	238390	238390
6	Display cable	11101559	11101559
7	Cell cable	11101555	11101555
8	Level	11101335	11101335
9	Leveling foot, complete	11101302	11101302
10	Bottom housing	21203001	21203001
11	Top housing	21203059	21203059
12	Measuring cell Monobloc 8 kg (supplied w/o calibration weight holder)	600156	—
	Measuring cell Monobloc 12 kg (supplied w/o calibration weight holder)	—	21202694
13	Weighing pan complete	21203061	21203061
14	Calibration drive	225050	225050
15	Overload protection, complete	21202889	21202889
16	Pan mount	215047	215047
17	Display board	11101502	11101502
18	Display pane	21203045	21203045
19	Membrane keypad	11101650	11101650
20	Interface board RS232C	11101508	11101508
21	Cover for interface RS232C	11101560	11101560
22	Power supply board	21203039	21203039
23	Power socket, complete	21203062	21203062
24	Power cable, complete	CH EU I DK GB USA AUS ZA IL	87920 87925 87457 87452 89405 88668 88751 89728 225297
25	Power supply cable	225139	225139
26	Model strip	see section 10.1	

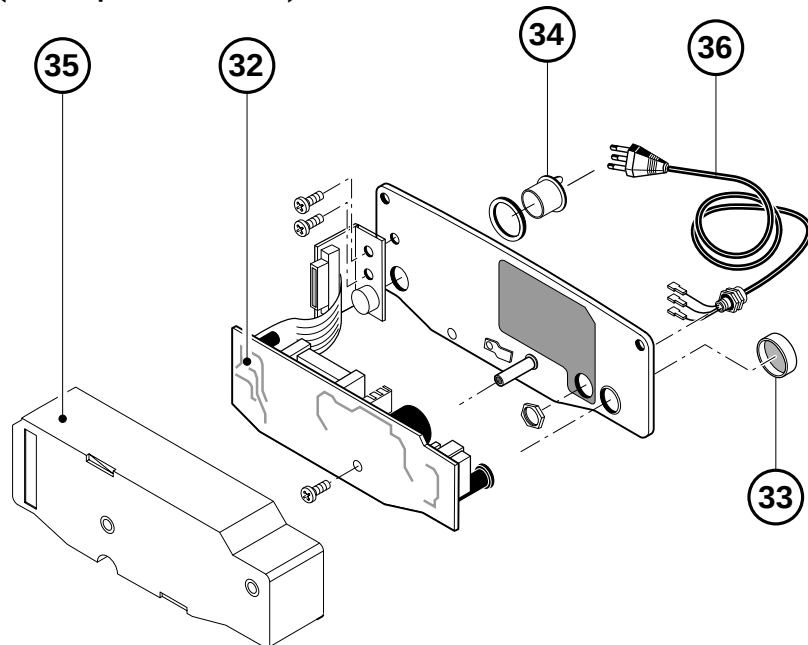
*) non-certifiable model (for certifiable PG3001-S refer to lab balances)

3 R/G-balance Line

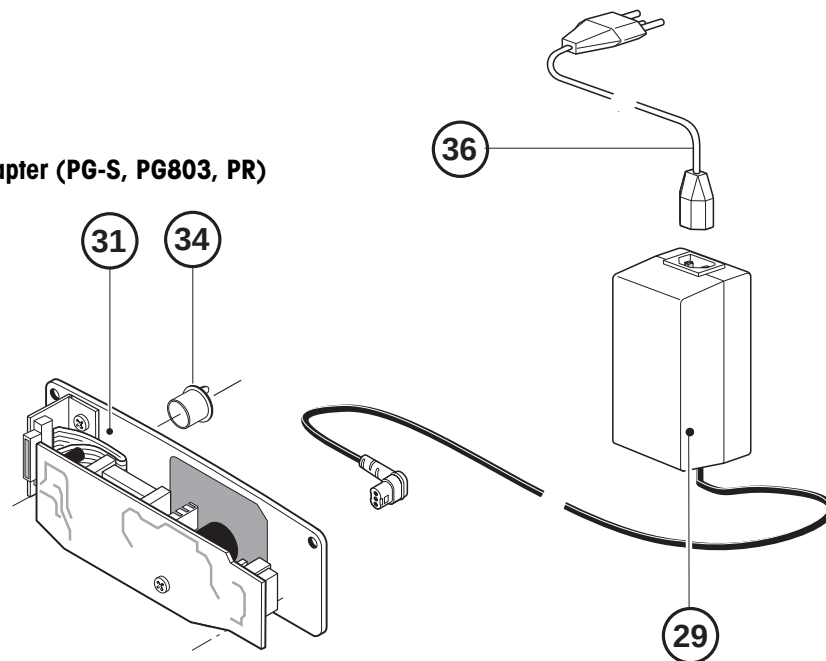
3.1 Lab-balances

3.1.1 PR/PG-power supply unit

Direct mains connection (PG except PG803, PR old)



Mains connection via AC adapter (PG-S, PG803, PR)

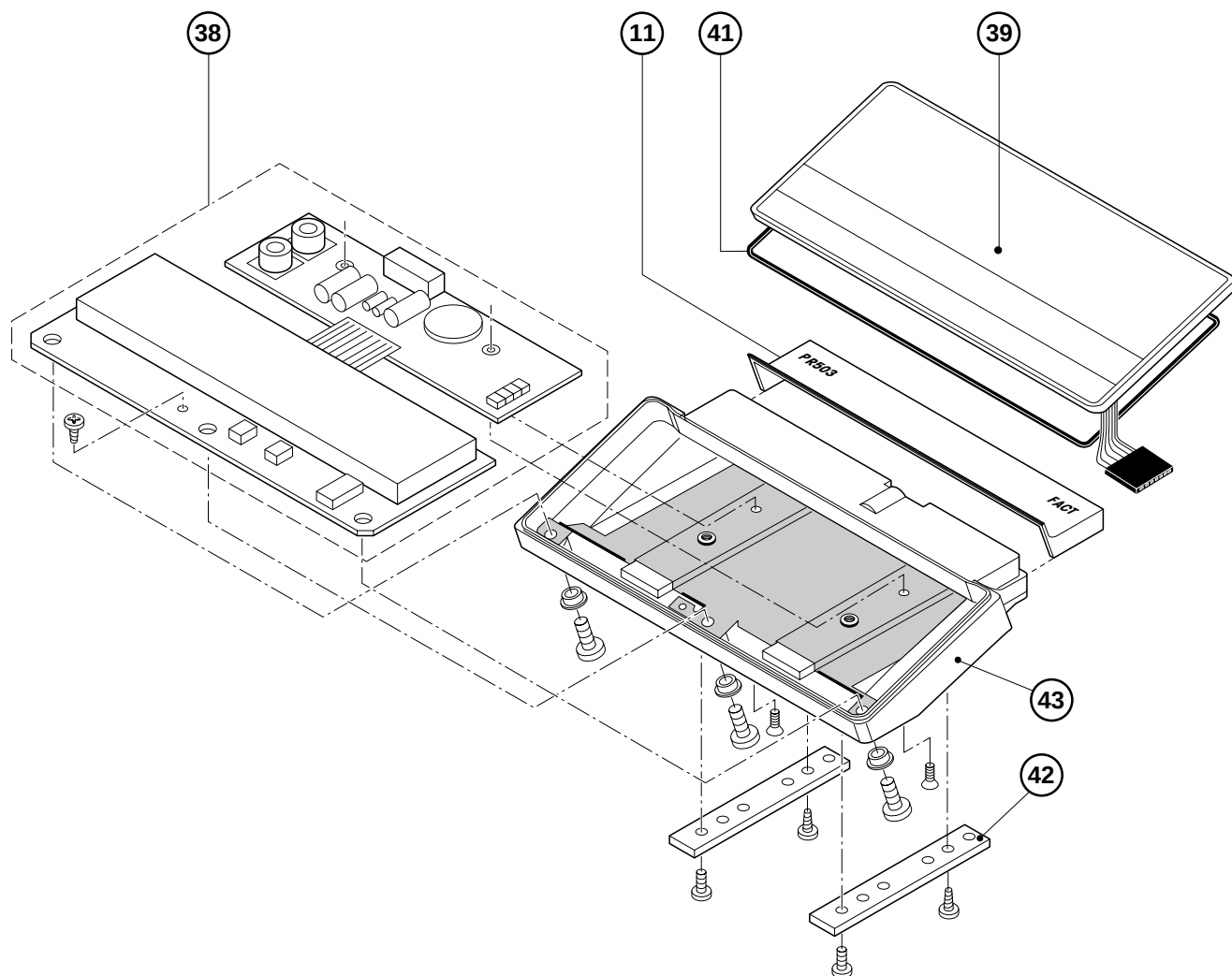


Spare parts list PR/PG power supply unit with direct mains connection

Item	Designation	Order-No.
32	Power supply board	600148
33	Fuse cover	225213
34	LC-cover	225027
35	Power supply cover	225211
36	Power cable	DK 225272
		GB 225273
		USA 225274
		AUS 225275
		SA 225276
		EU (Schuko) 225270
		CH 225204
		I 225271
		Israel 225283

Spare parts list PR/PG power supply unit with mains connection via AC adapter

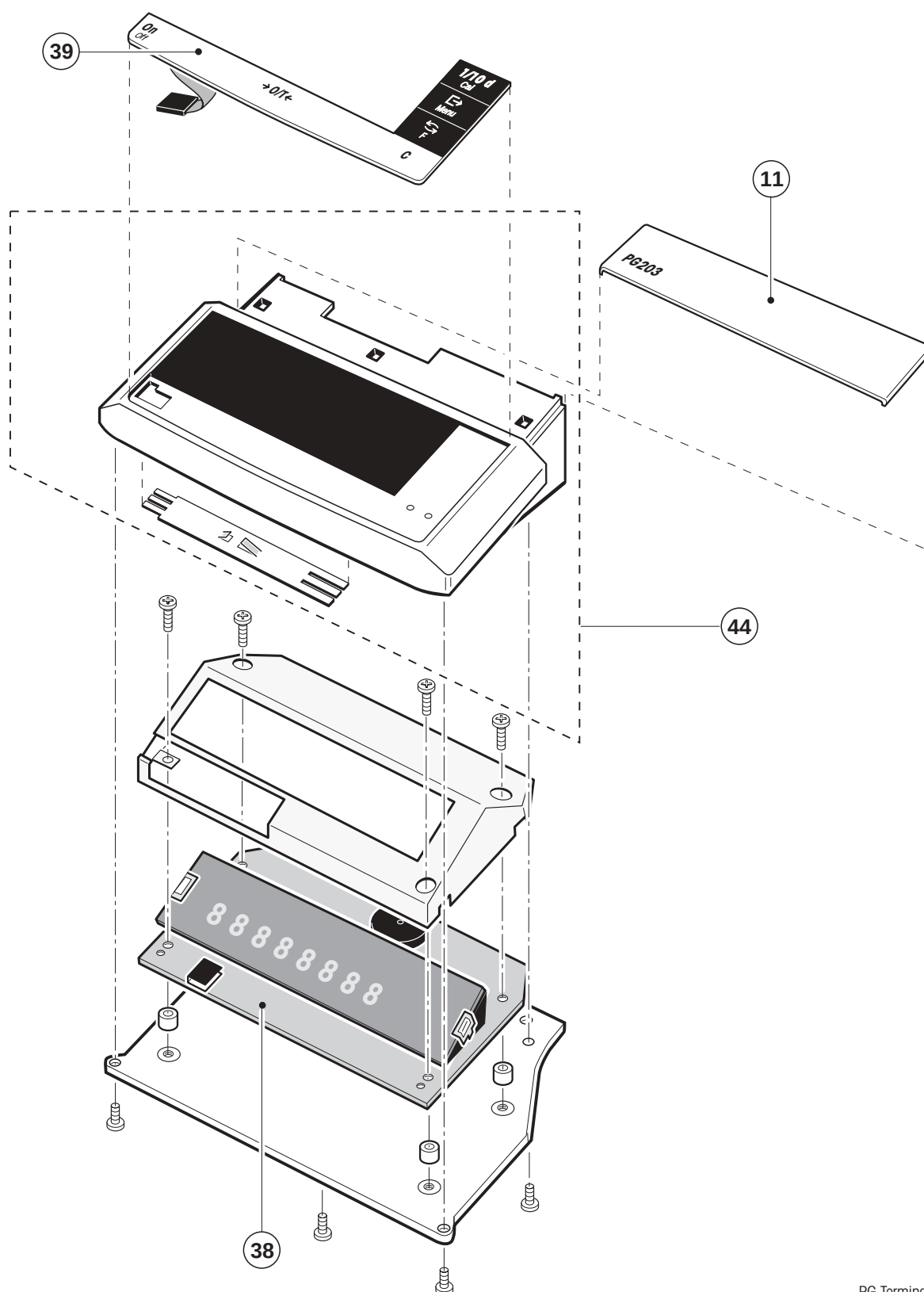
Item	Designation	Order-No.
29	AC adapter	115 V 238621
		230 V 238620
31	Power supply	225691
34	LC-cover	225027
36	Power cable	DK 87452
		GB 89405
		USA 88668
		AUS 88751
		SA 89728
		EU (Schuko) 87925
		CH 87920
		I 87457

3.1.3 PR Terminal

Spare parts list PR Terminal

Item	Designation	Order No.
38	Display board CAN	(Tare key -> O/T <-) 225006
		(Tare key -> T <-) 225657
39	Terminal keypad	(Tare key -> O/T <-) 600173
		(Tare key -> T <-) 225396
41	Seal	225124
42	Connecting piece	225125
43	Terminal housing	225121

3.1.4 PG Terminal

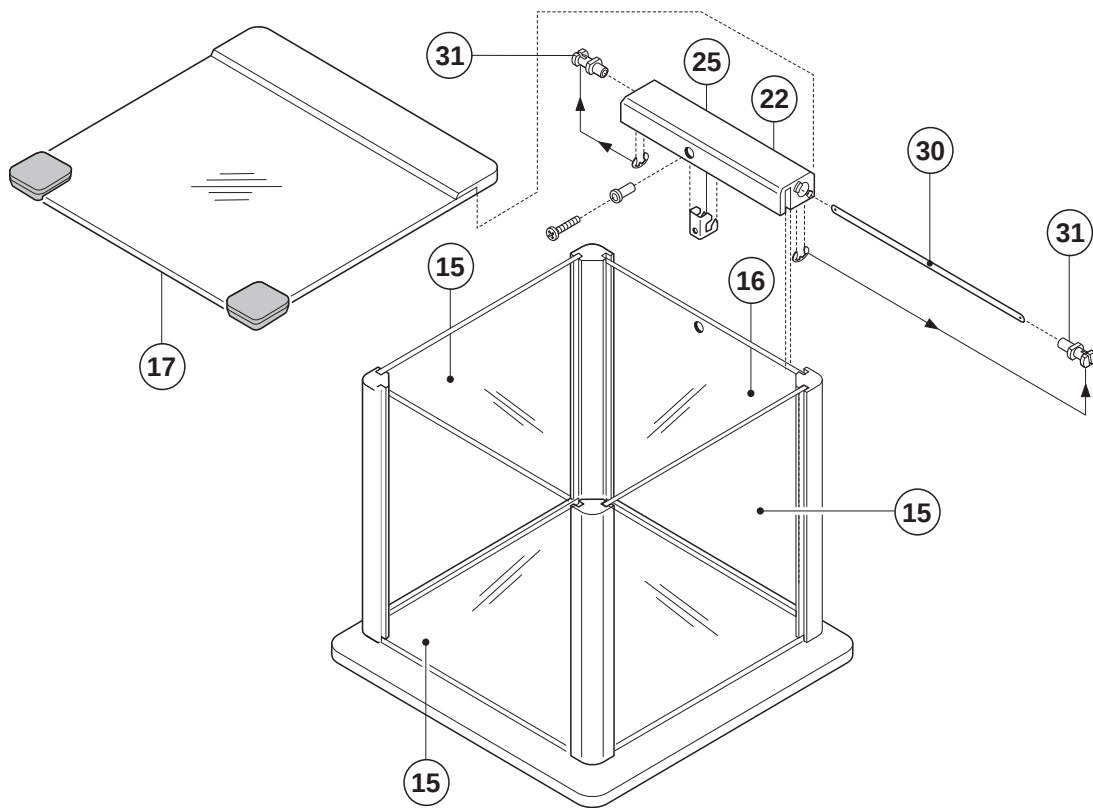


PG Terminal

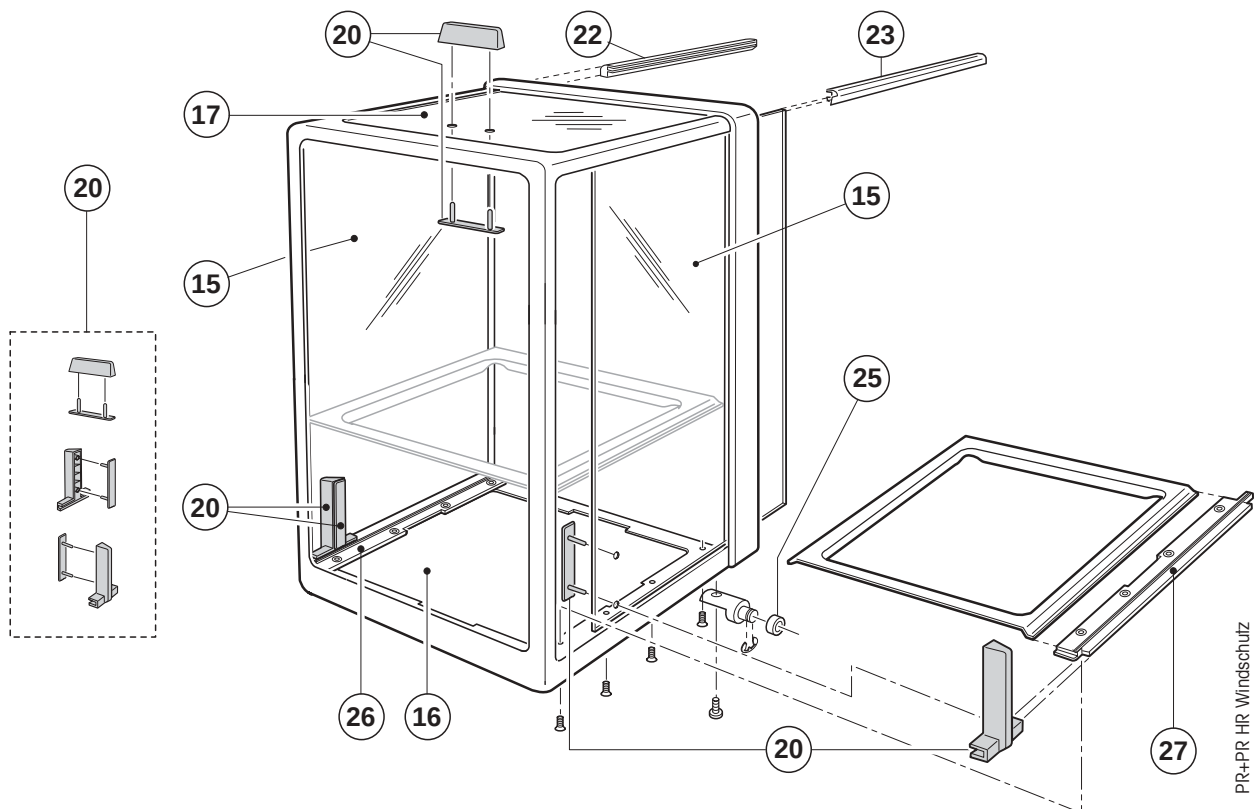
Spare parts list PG Terminal

Item	Designation	Order No.
11	Model strip	see model plate list point 10.2
38	Display board	225408
39	Membrane keypad, complete	225668
44	Terminal top part, complete	225666

3.1.5 PR/PG draft shield low



3.1.6 PR/PG draft shield high (accessory)



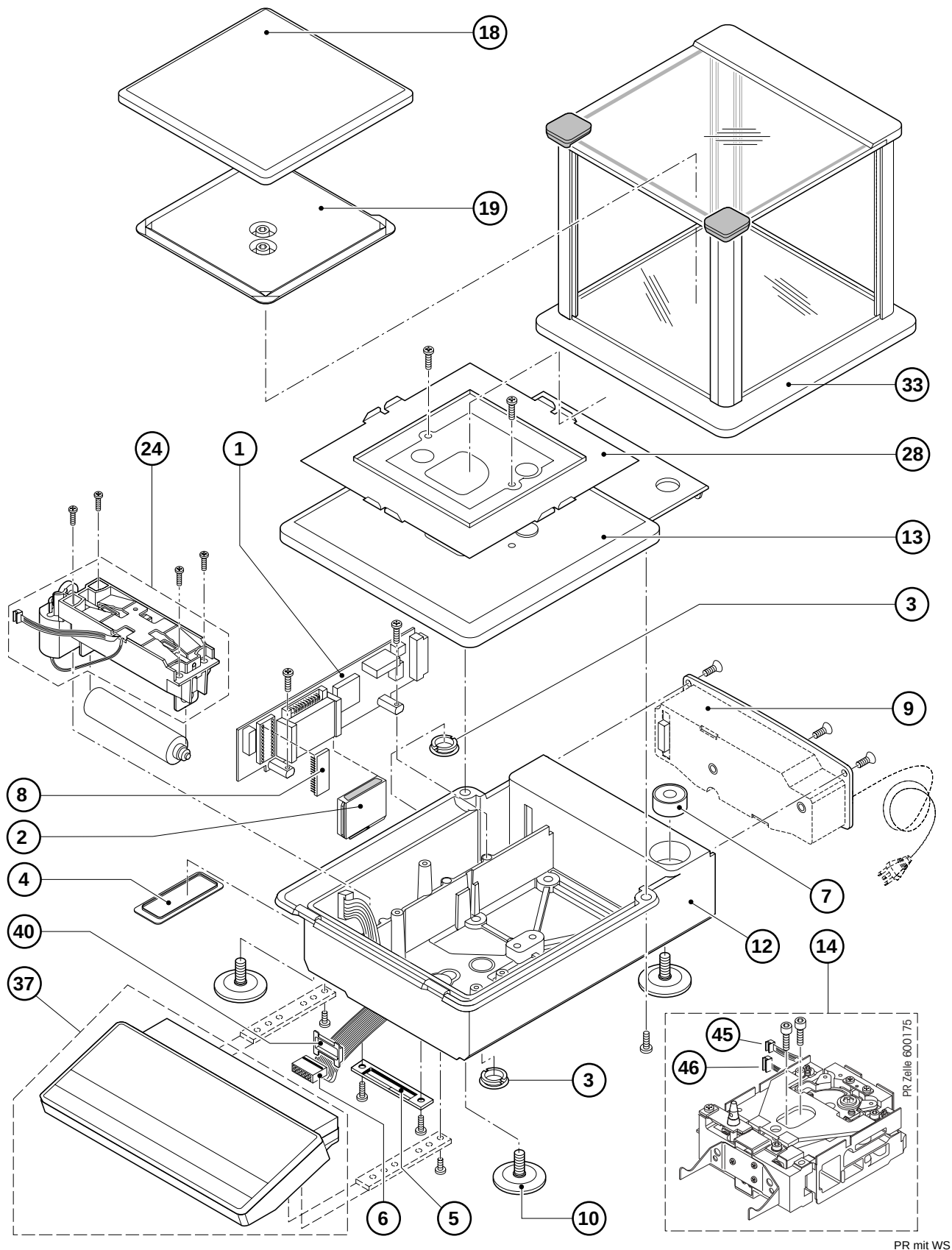
Spare parts list PR/PG draft shield low

Item	Designation	PR/PG203 PR/PG503 PR/PG503DR PR/PG803 PR1203 PR2003DR
		Order No.
15	Left/right/front door	225234
16	Rear door	225235
17	Top cover	225248
22	Hinged half	225237
25	Support	225240
30	Torsion spring	225239
31	Retaining bolts	225241

Spare parts list PR/PG draft shield high (accessory)

Item	Designation	PR/PG203 PR/PG503 PR/PG503DR PR/PG803 PR1203 PR2003DR, PR2003 PR/PG5002, PR/PG5002DR, PR5003 PR8002, PR8002DR
		Order No.
15	Door left/right	225512
16	Window front	225478
17	Door, top	225511
20	Door handle set (left, right, top)	225488
22	Guide rail, top left	34303
23	Guide rail, top right	34304
25	Roller	225518
26	Guide rail, bottom left	225506
27	Guide rail, bottom right	225505

3.1.7 PR/PG Balances with draft shield (conventional measuring cell)



PR mit WS

Spare parts list PR/PG Balances with draft shield (conventional measuring cell)

Continuation 

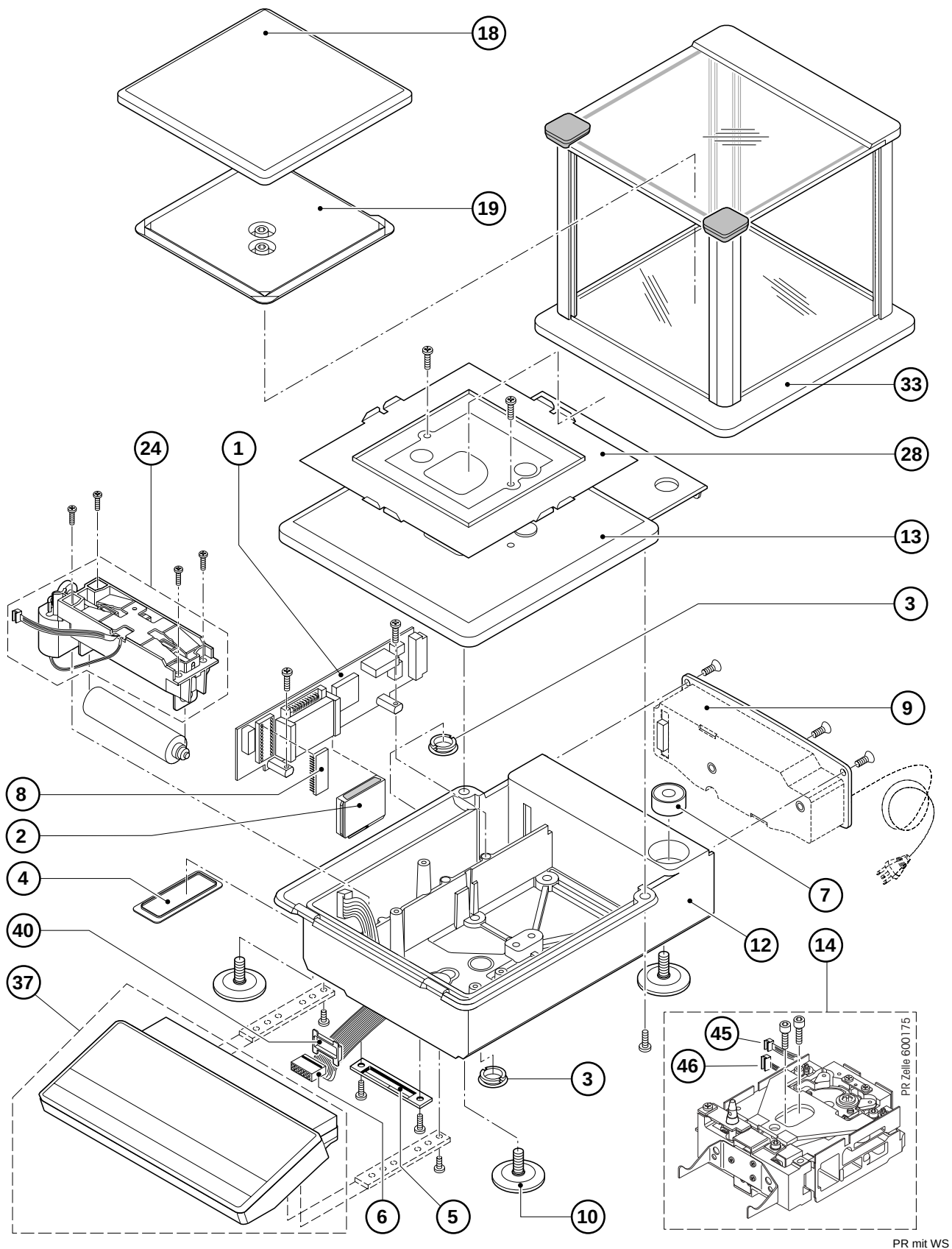
Item	Designation	PR203 PR503 PR503DR	PG203 PG503 PG503DR	PR803 PR1203	PG803
		Order-No.	Order-No.	Order-No.	Order-No.
1	Balance board	225490	225490	225490	225490
2	Program cassette R (key -> O/T <-) (key -> T <-)	600171 225397	– –	– 225397	– –
	Program cassette G 3)	–	225690	–	225690
3	Hanger calibration cover	87420	87420	87420	87420
4	Cassette cover	225214	225214	225214	225214
5	Cable protection	225154	225154	225154	225154
6	Terminal cable	225156	225156	225156	225156
7	Level	17104	17104	17104	17104
8	EPROM (with operating system OS)	600170	600170	225688	225688
9	Power 1) mains connection new: supply unit mains connection old:	adapter direct	direct direct	adapter adapter	adapter adapter
10	Leveling foot	225227	225227	225227	225227
12	Bottom housing	225168	225168	225168	225168
13	Top housing	225157	225157	225157	225157
14	Measuring cell	600175	600175	225634	225634
18	Weighing pan	225165	225165	225165	225165
19	Pan support	225658	225658	225658	225658
24	Calibration drive	225050	225050	225050	225050
28	Fastening plate	225160	225160	225160	225160
33	Draft shield		-> chapter 3.1.5		
37	Terminal-R 2) (Tare key -> O/T <-) (Tare key -> T <-)	225120 225656	– –	– 225656	– –
	Terminal-G	–	225410	–	225410
40	Connector cover	225135	–	225135	–
45	Coil cable	225139	225139	225139	225139
46	Detector cable	225144	225144	225144	225144

1) • Spare parts see 3.1.1

2) • Components see 3.1.3 and 3.1.4

- On replacement of the old terminal with combined tare-zero key (->O/T<-) by a new one with separate tare and zero keys (->T<-), the program cassette (item 2) must also be changed and the version of the operating system EPROM (item 8) must be ≥ 1.20.

3) Necessary only with older balance boards (with the new ones, the program is located in an EPROM soldered onto the actual balance board).

PR/PG Balances with draft shield (conventional measuring cell), continuation


PR mit WS

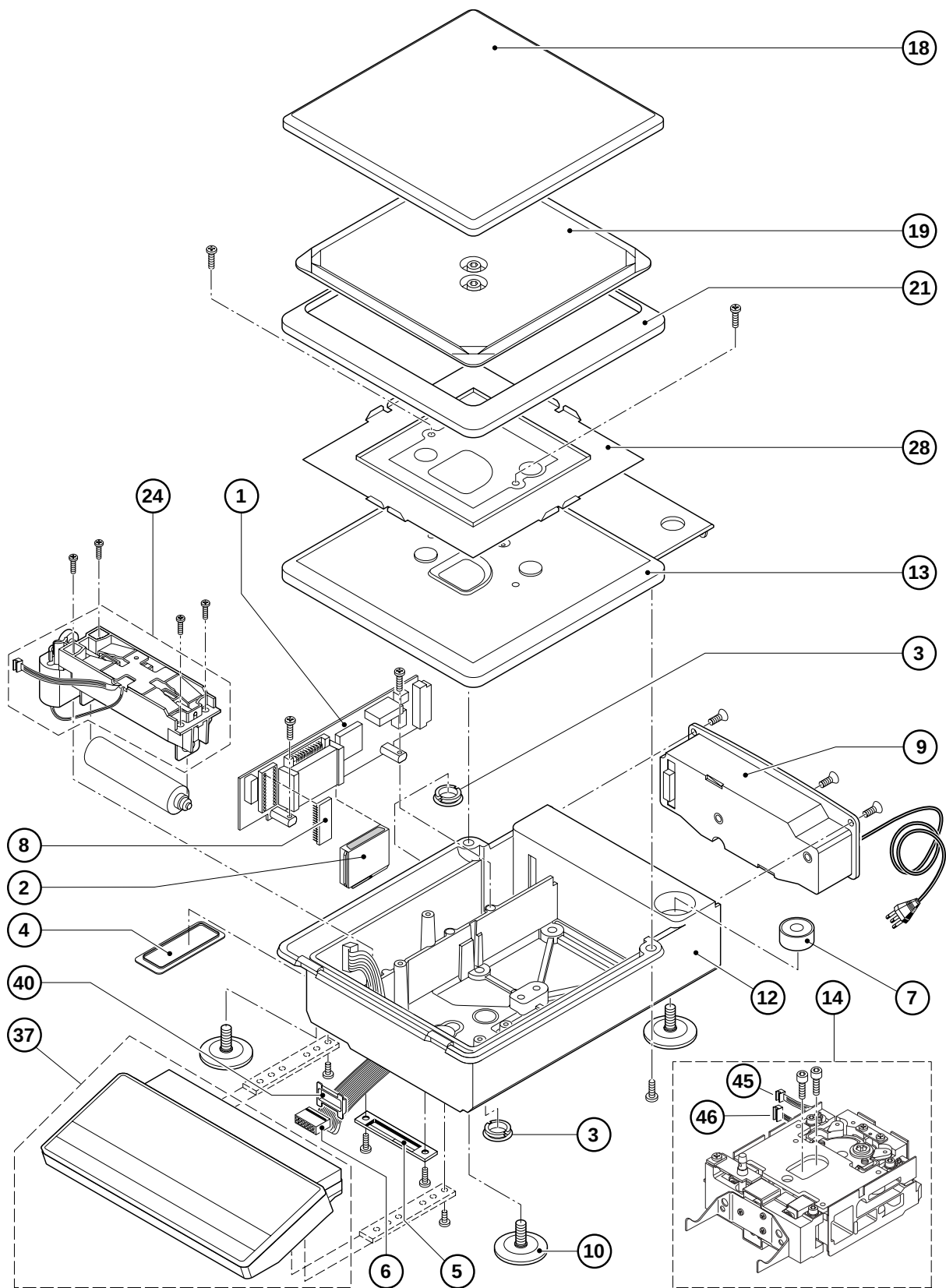
Spare parts list PR/PG Balances with draft shield (conventional measuring cell), continuation

 Beginning

Item	Designation	PR2003DR	PR2003
		Order-No.	Order-No.
1	Balance board	225490	225490
2	Program cassette R (key -> T <-)	225397	225397
3	Hanger calibration cover	87420	87420
4	Cassette cover	225214	225214
5	Cable protection	225154	225154
6	Terminal cable	225156	225156
7	Level	17104	17104
8	EPROM (with operating system OS)	225688	225688
9	Power supply unit 1) mains connection: adapter		adapter
10	Leveling foot	225227	225289
12	Bottom housing	225168	225168
13	Top housing	225157	225157
14	Measuring cell	225633	225633
18	Weighing pan	225165	225752
19	Pan support	225658	225658
24	Calibration drive	225050	225050
28	Fastening plate	225160	225160
33	Draft shield	-> chapter <u>3.1.5</u>	
37	Terminal-R 2) (Tare key -> T <-)	225656	225656
40	Connector cover	225135	225135
45	Coil cable	225139	225139
46	Detector cable	225144	225144

1) Spare parts see 3.1.12) Components see 3.1.3 and 3.1.4

3.1.8 PR/PG Balances without draft shield (conventional measuring cell)



PR ohne WS

Spare parts list PR/PG Balances (conventional measuring cell)

Item	Designation	PR502 PR802 PR2002	PG502 PG802 PG2002	PR3001/E PR5002 PR5002DR PR5001C	PG3001/E PG5002 PG5002DR
		Order-No.	Order-No.	Order-No.	Order-No.
1	Balance board	225490	225490	225490	225490
2	Program cassette R (key -> O/T <-)	600171	–	600171	–
	(key -> T <-)	225397	–	225397	–
	Program cassette G 3)	–	225690	–	225690
3	Hanger/calibration cover	87420	87420	87420	87420
4	Cassette cover	225214	225214	225214	225214
5	Cable protection	225154	225154	225154	225154
6	Terminal cable	225156	225156	225156	225156
7	Level	17104	17104	17104	17104
8	EPROM (with operating system OS)	600170	600170	600170	600170
9	Power 1) mains connection new: supply unit mains connection old:	adapter direct	direct direct	adapter direct	direct direct
10	Leveling foot	225227	225227	225227	225227
12	Bottom housing	225168	225168	225168	225168
13	Top housing	225157	225157	225157	225157
14	Measuring cell	600186	600186	600180	600180
18	Weighing pan	225158	225158	225158	225158
19	Pan support	225588	225588	225588	225588
21	Draft shield element	225159	225159	225159	225159
24	Calibration drive	225050	225050	225050	225050
28	Fastening plate	225160	225160	225160	225160
37	Terminal-R 2) (Tare key -> O/T <-)	225120	–	225120	–
	(Tara key -> T <-)	225656	–	225656	–
	Terminal-G	–	225410	–	225410
40	Connector cover	225135	–	225135	–
45	Coil cable	225139	225139	225139	225139
46	Detector cable	225144	225144	225144	225144

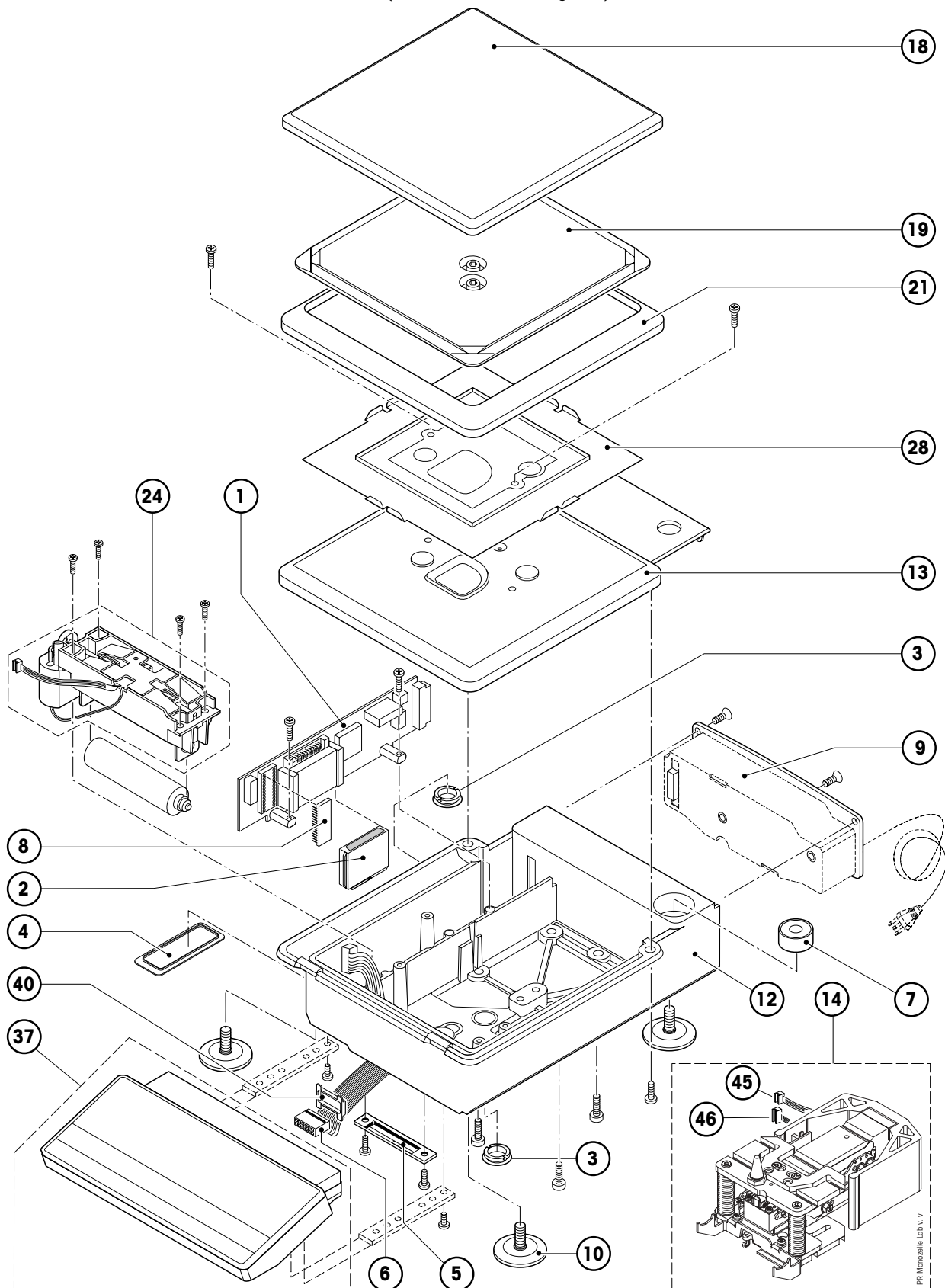
1) • Spare parts see 3.1.1

2) • Components see 3.1.3 and 3.1.4

- On replacement of the old terminal with combined tare-zero key (->O/T<-) by a new one with separate tare and zero keys (->T<-), the program cassette (item 2) must also be changed and the version of the operating system EPROM (item 8) must be ≥ 1.20.

3) Necessary only with older balance boards (with the new ones, the program is located in an EPROM soldered onto the actual balance board).

3.1.9 PR/PG Balances without draft shield (monobloc measuring cell)

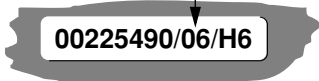


PR ohne WS Mono

Spare parts list PR/PG Balances without draft shield (monobloc measuring cell)

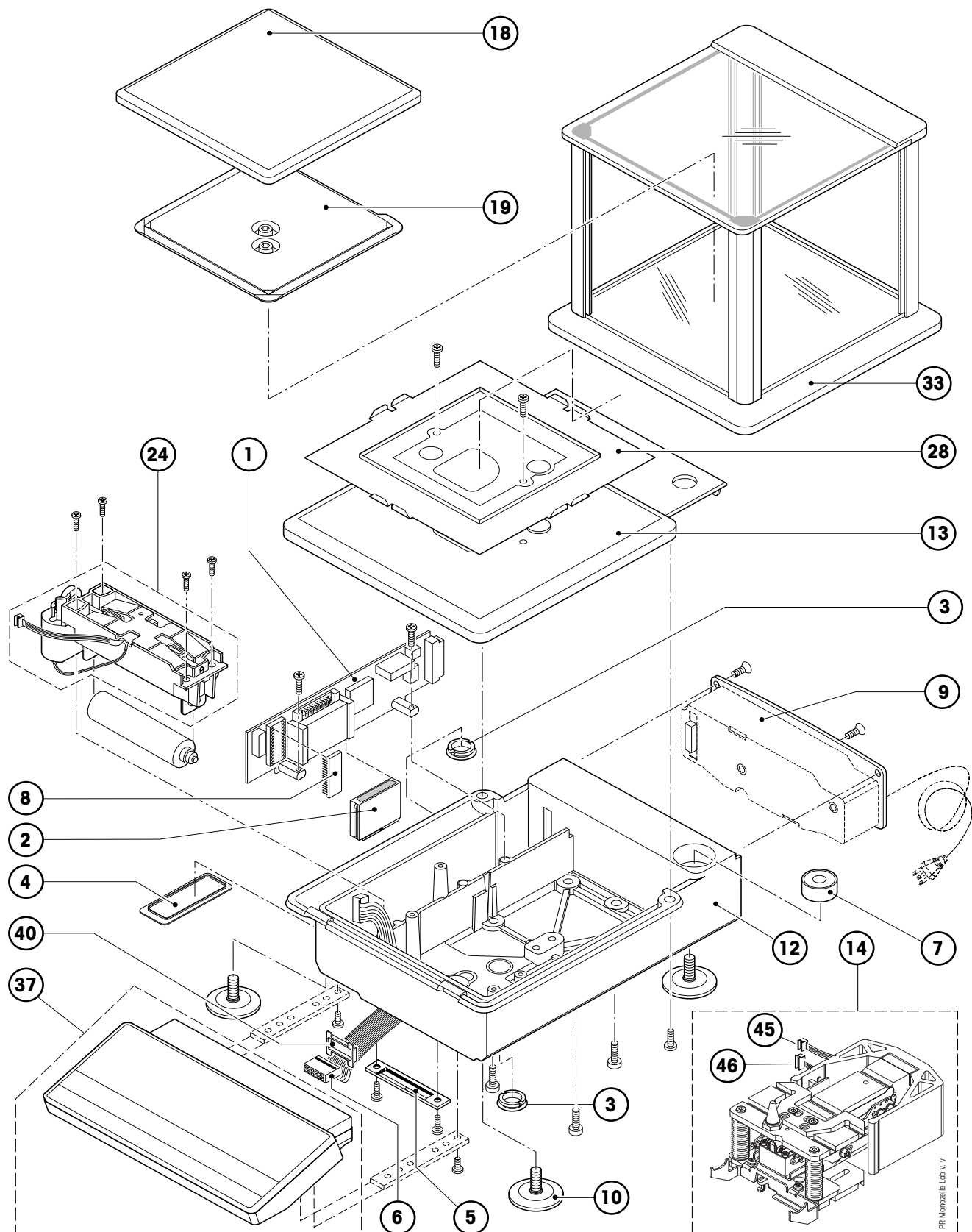
Item	Designation		PR502 PR802 PR2002	PG502 PG802 PG2002	PR5002 PR5002DR	PG5002 PG5002DR	PR8002 PR8002DR
			Order-No.	Order-No.	Order-No.	Order-No.	Order-No.
1	Balance board	0	22549	225490	225490	225490	225490
2	Program cassette R (Tastat -> T <-)		22539	–	225397	–	225397
	Program cassette G 1) –			225690	–	225690	–
3	Hanger/calibration cage	0	8742	87420	87420	87420	87420
4	Cassette cover	4	22521	225214	225214	225214	225214
5	Cable protection	4	22515	225154	225154	225154	225154
6	Terminal cable	6	22515	225156	225156	225156	225156
7	Level	4	1710	17104	17104	17104	17104
8	EPROM (with operating system OS) 2		60017	600170	600170	600170	225688
9	Power supply unit 3); mains connection new mains connection old:		adapter direct	direct direct	adapter direct	direct direct	adapter adapter
10	Leveling foot	7	22522	225227	225227	225227	225227
12	Bottom housing	9	22555	225559	225559	225559	225559
13	Top housing	7	22515	225157	225157	225157	225157
14	Measuring cell (without overload protection)		22566	225661	225662	225662	225631
18	Weighing pan	8	22515	225158	225158	225158	225158
19	Pan support	8	22558	225588	225588	225588	225588
21	Draft shield element	9	22515	225159	225159	225159	225159
24	Calibration drive	0	22505	225050	225050	225050	225050
28	Fastening plate	0	22516	225160	225160	225160	225160
37	Terminal R	6	22565	–	225656	–	225656
	Terminal G	–		225410	–	225410	–
40	Connector cover	5	22513	–	225135	–	225135
45	Coil cable	9	22513	225139	225139	225139	225139
46	Detector cable	5	22563	225635	225635	225635	225635

- 1) Only needed for updates
- 2) On update of the OS to a version $\geq 1.80/2.80$, the balance board (item 1) must also be replaced by one with technical level ≥ 06 (see yellow sticker).
- 3) Spare parts see 3.1.1



00225490/06/H6

3.1.10 PR/PG Balances with draft shield (monobloc measuring cell)



PR mit WS Mono

Spare parts list PR/PG Balances with draft shield (monobloc measuring cell)

Continuation 

Item	Designation	PR203 PR503 PR504DR PR503DR	PG203 PG503 PG503DR	PR803 PR1203	PG803
		Order-No.	Order-No.	Order-No.	Order-No.
1	Balance board	225490	225490	225490	225490
2	Program cassette R	225397	–	225397	–
	Program cassette G 1)	–	225690	–	225690
3	Hanger/calibration cover	87420	87420	87420	87420
4	Cassette cover	225214	225214	225214	225214
5	Cable protection	225154	225154	225154	225154
6	Terminal cable	225156	225156	225156	225156
7	Level	17104	17104	17104	17104
8	EPROM (with operating system OS) 2)	600170	600170	225688	225688
9	Power supply unit 3)	mains connection new: adapter direct	direct direct	adapter adapter	adapter adapter
	mains connection old:				
10	Leveling foot	225227	225227	225227	225227
12	Bottom housing	225559	225559	225559	225559
13	Top housing	225157	225157	225157	225157
14	Measuring cell (without overload protection)	225660	225660	225767	225767
18	Weighing pan	225165	225165	225165	225165
19	Pan support	225658	225658	225658	225658
24	Calibration drive	225050	225050	225050	225050
28	Fastening plate	225160	225160	225160	225160
33	Draft shield	-> 3.1.5			
37	Terminal R 4)	225656	–	225656	–
	Terminal G 5)	–	225410	–	225410
40	Connector cover	225135	–	225135	–
45	Coil cable	225139	225139	225139	225139
46	Detector cable	225635	225635	225635	225635

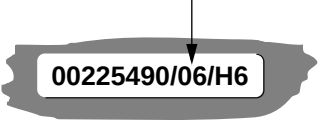
1) Necessary only with older balance boards (with the new ones, the program is located in an EPROM soldered onto the actual balance board).

2) On update of the OS to a version $\geq 1.80/2.80$, the balance board (item 1) must also be replaced by one with technical level ≥ 06 (see yellow sticker).

3) Spare parts see 3.1.1

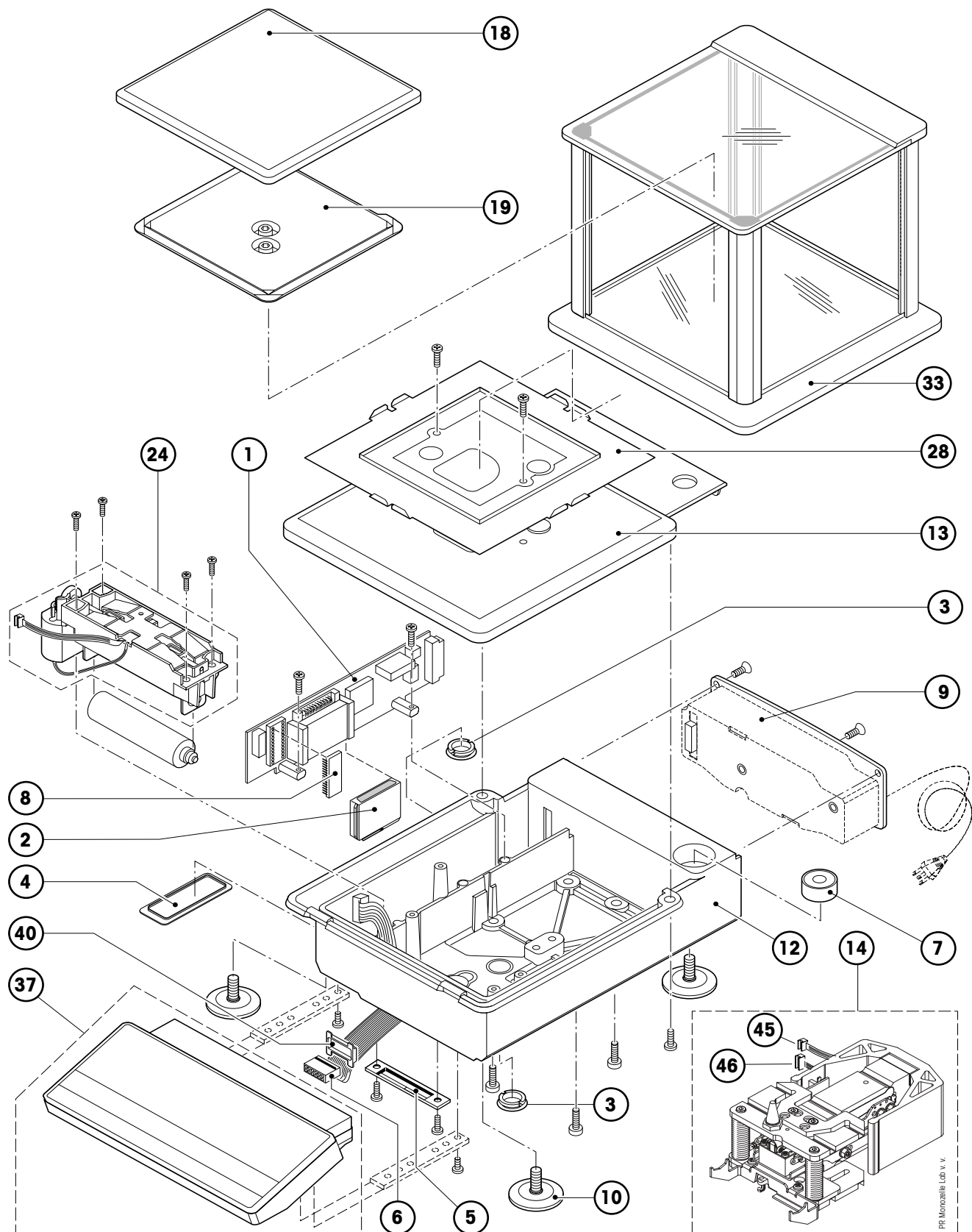
4) Spare parts see 3.1.3

5) Spare parts see 3.1.4



00225490/06/H6

PR/PG Balances with draft shield (monobloc measuring cell), continuation



PR mit WS Mono

Spare parts list PR/PG Balances with draft shield (monobloc measuring cell), continuation

 Beginning

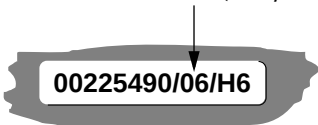
Item	Designation	PR2003 (MC)	PR2003DR	PR2004 (MC)	PR5003 (MC)	PR5003DU (DualRange)	PR10003 (MC)
		Order No.	Order No.	Order No.	Order No.	Order No.	Order No.
1	Balance board	225490	225490	225490	225490	225490	225490
2	Program cassette R	225397	225397	225397	225397	225397	225397
3	Hanger/calibration cover	87420	87420	87420	87420	87420	87420
4	Cassette cover	225214	225214	225214	225214	225214	225214
5	Cable protection	225154	225154	225154	225154	225154	225154
6	Terminal cable	225156	225156	225156	225156	225156	225156
7	Level	17104	17104	17104	17104	17104	17104
8	EPROM (with operating system OS) 1)	225688	225688	225688	225688	225688	225688
9	Power supply 2) mains connection:	adapter	adapter	adapter	adapter	adapter	adapter
10	Leveling foot	225289	225227	225289	225289	225289	225289
12	Bottom housing	225559	225559	225559	225559	225559	225559
13	Top housing	225157	225157	225157	225157	225157	225157
14	Measuring cell (without overload protection)	225767	225767	4) 11102606	225632	225766	225732
18	Weighing pan	225752	225165	225752	225752	225752	225752
19	Pan support	225658	225658	225658	225658	225658	225658
18+19	Levelmatic weighing pan	225675	–	225675	225675	–	225675
24	Calibration drive	225050	225050	225050	225050	225050	225050
28	Fastening plate	225160	225160	225160	225160	225160	225160
37	Terminal R 3)	225656	225656	239273	225656	225656	225656
40	Connector cover	225135	225135	225135	225135	225135	225135
45	Coil cable	225139	225139	225139	225139	225139	225139
46	Detector cable	225635	225635	225635	225635	225635	225635

1) On update of the OS to a version $\geq 1.80/2.80$, the balance board (item 1) must also be replaced by one with technical level ≥ 06 (see yellow sticker).

2) Spare parts see 3.1.1

3) Spare parts see 3.1.3, PR2004MC: 3.2.3

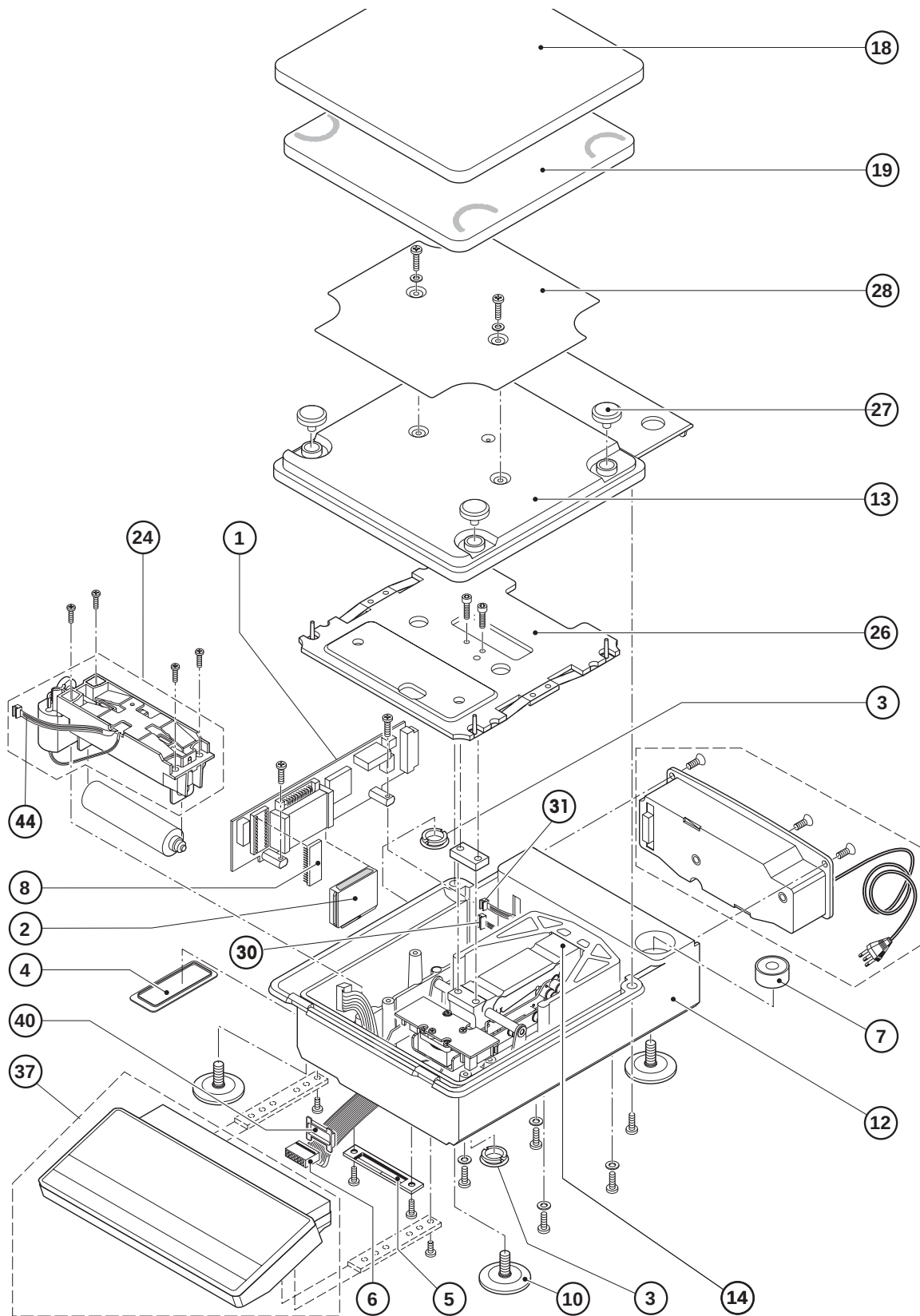
4) Measuring cell
with overload protection



00225490/06/H6

3.2 Industrial balances

3.2.1 PR-/PG balance monobloc

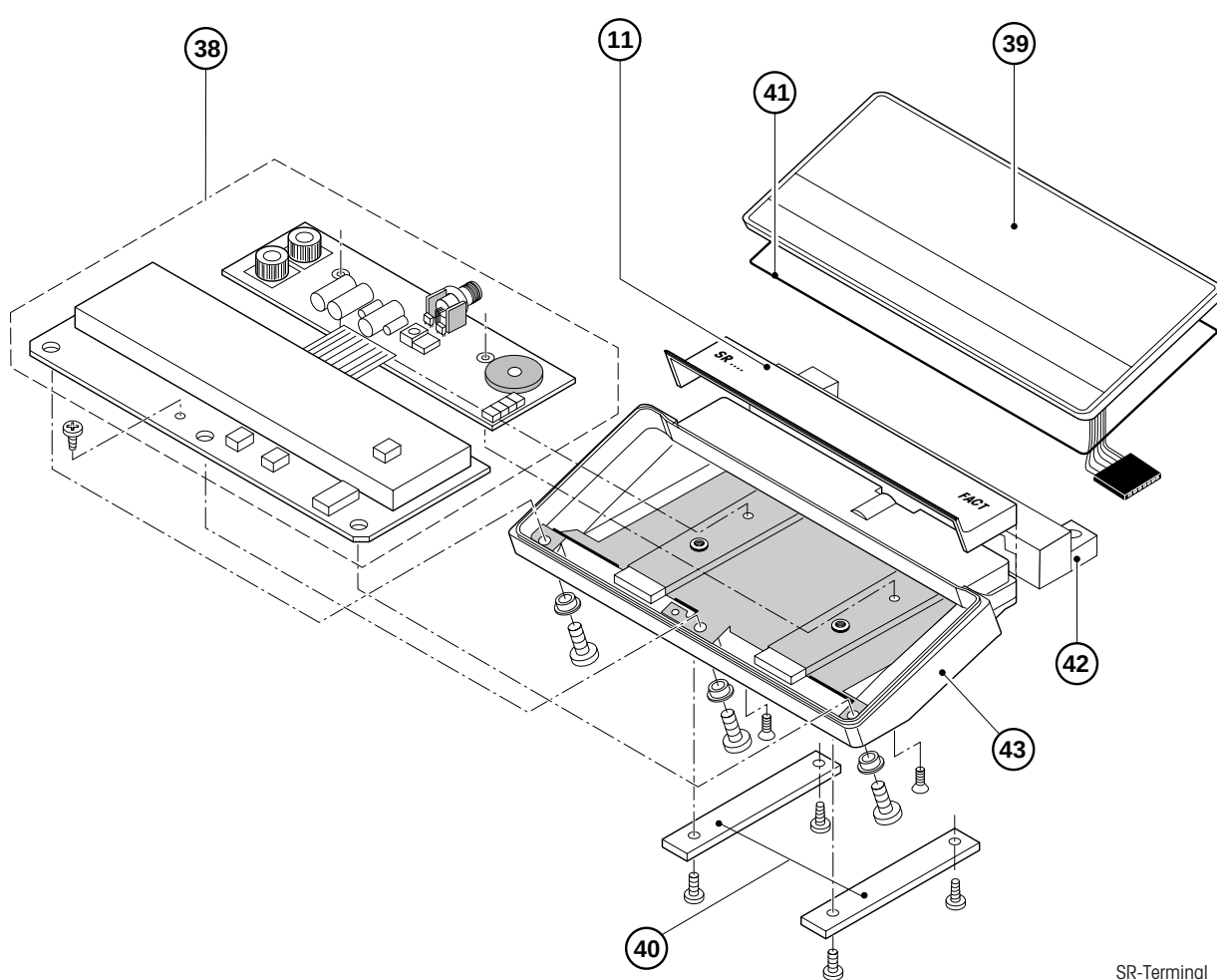


Spare parts list PR-/PG balance monobloc

Item	Designation		PR3001* PR5001 PR8000 PR8001	PG3001* PG5001 PG8000 PG8001
			Order No.	Order No.
1	Balance board		225490	225490
2	Program cassette-R	(Key -> O/T <-)	600171	–
		(Key -> T <-)	225397	–
	Program cassette-G		–	225690
3	Hanger/calibration cover		87420	87420
4	Cassette cover		225214	225214
5	Cable protection		225154	225154
6	Terminal cable		225156	225156
7	Level		17104	17104
8	EPROM (with operating system)		600170	600170
10	Leveling foot		225227	225227
12	Bottom housing		225151	225151
13	Top housing		225251	225251
14	Measuring cell, assembled (without calibration arm)		600156	600156
18	Weighing pan		225253	225253
19	Pan support		225252	225252
24	Calibration drive		225050	225050
26	Overload protection		225254	225254
27	Pan mount		215047	215047
28	Fastening plate		225178	225178
30	Detector cable		225145	225145
31	Coil cable		228076	228076
37	Terminal-R	(Key -> O/T <-)	225120	1) –
		(Key -> T <-)	225656	–
	Terminal-G		–	225410
40	Connector cover		225135	225135
44	Calibration cable		225061	225061

1) When replacing the old terminal (-> O/T <-) against a new one (-> T <-) the program cassette (Pos. 2) has to be replaced and the operating system EPROM (Pos. 8) to be updated to a version ≥ 1.20 .

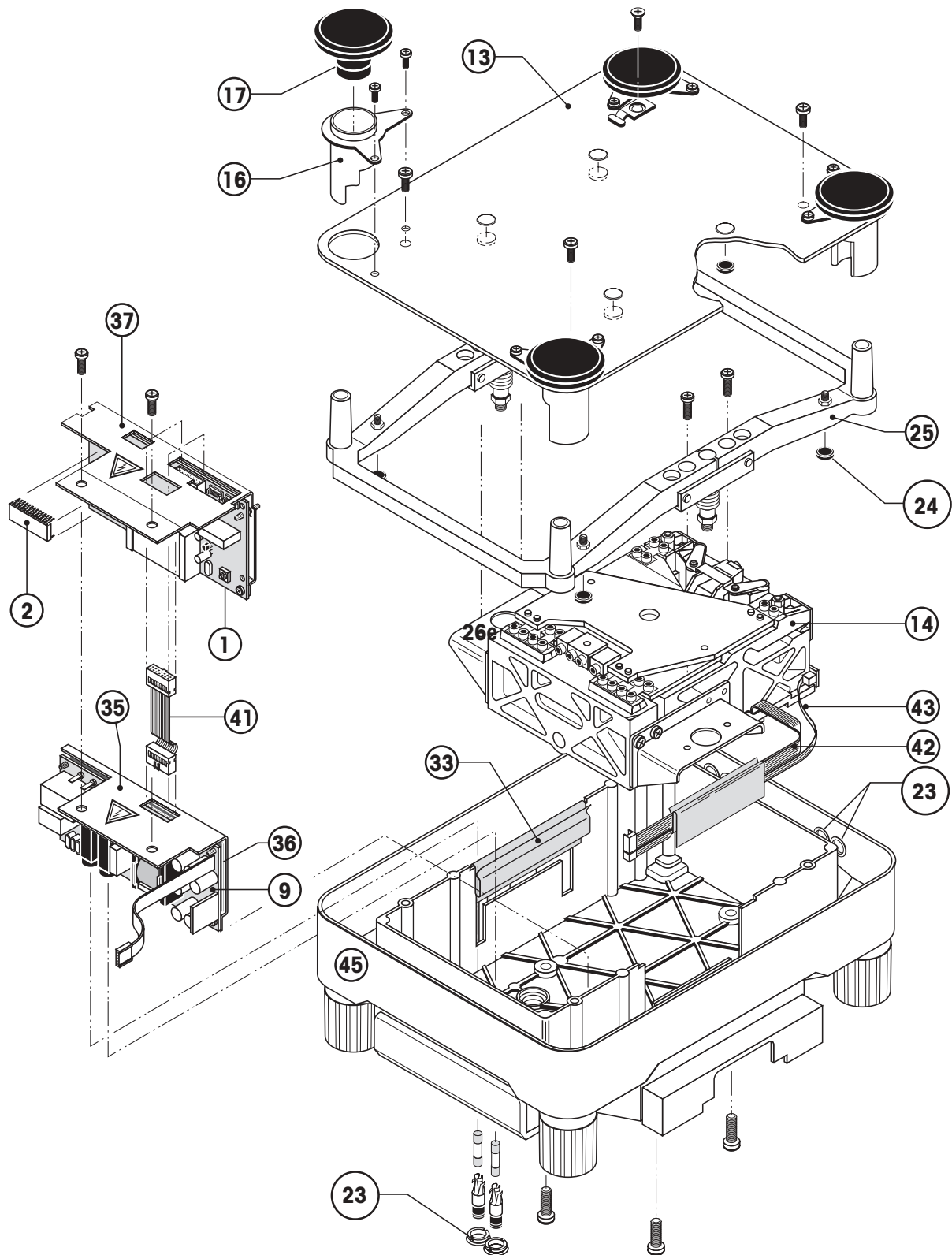
*) Non certified

3.2.3 S/SR-/SG terminal

SR-Terminal

Spare parts list S/SR-/SG terminal

Item	Designation		S/SR8001 S/SR16000 S/SR16001 S/SR16001DR S/SR32000 S/SR32001 S/SR32001DR S/SR64000 S/SR64001 S/SR64001DR		SG8001 SG16000 SG16001 SG16001DR SG32000 SG32001 SG32001DR	
			Order No.		Order No.	
11	Model strip		(see model strip list, point 10.2)			
38	Display board CAN	(Key -> O/T <-)	225044		–	
		(Key -> T <-)	21200763		–	
	Display board CAN		–		225592	
39	Terminal keypad	(Key -> O/T <-)	600173		–	
		(Key -> T <-)	225396		–	
	Terminal keypad		–		21200991	
40	Connecting plate		239261		239261	
41	Seal		225124		225124	
42	Intermediate piece		239272		239272	
43	Terminal housing		225121		225121	

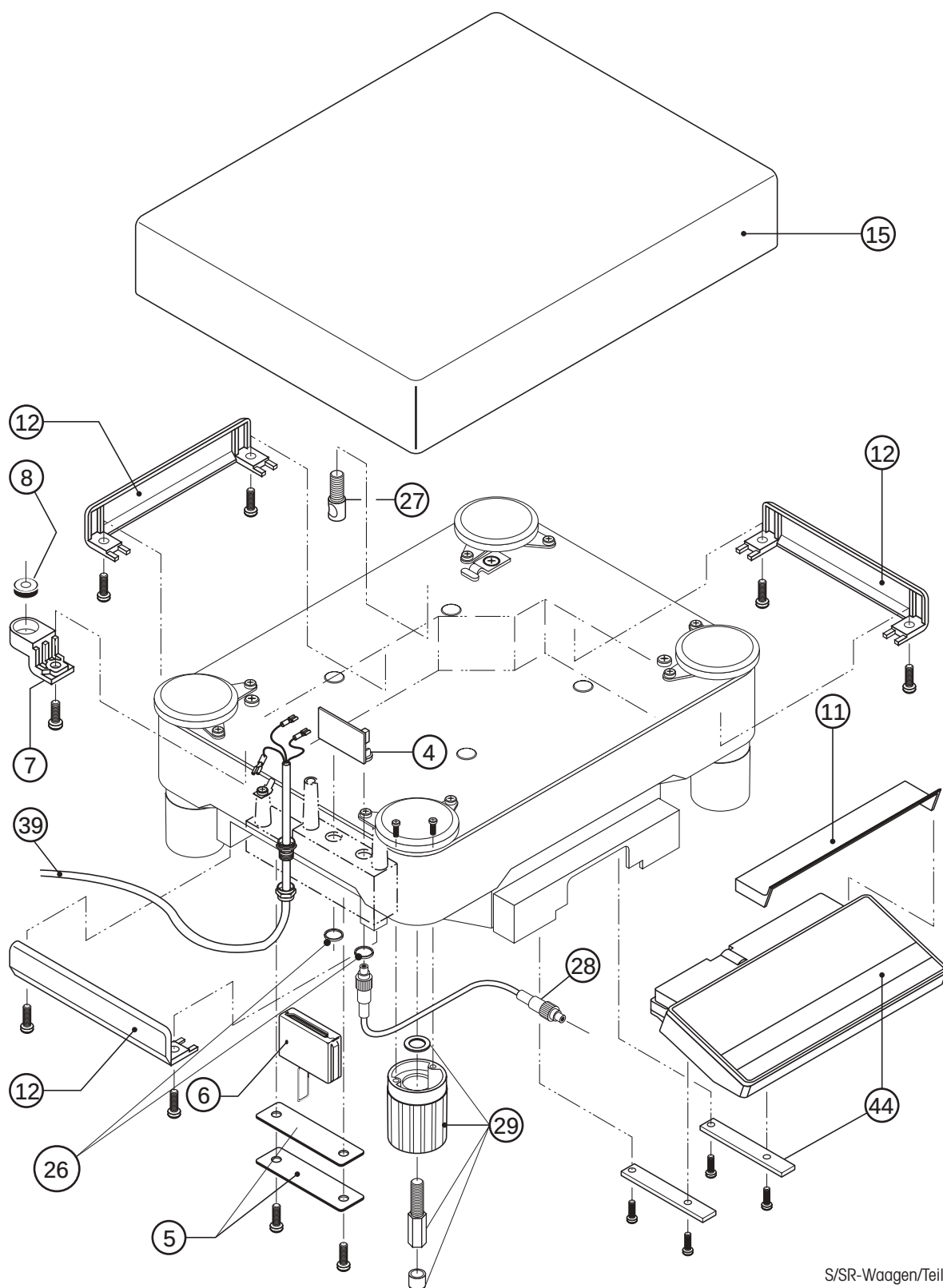
3.2.5 S/SR-/SG balances with conventional cell, part 1 [Part 2](#) ➡

S/SR-Waagen/Teil 1

Spare parts list S/SR-/SG balances with conventional cell, part 1

Item	Designation	S/SR8001 S/SR16000 S/SR16001 S/SR16001DR SG8001 SG16000 SG16001 SG16001DR	S/SR32000 S/SR32001DR SG32000 SG32001DR	S/SR32001 SG32001
		Order No.	Order No.	Order No.
1	Balance board	21201770	21201770	21201770
2	EPROM (with program) EPROM for SG-Balances with MT-SICS	225688 11107023	225688 11107023	225688 11107023
9	Power supply board (HV tested)	21200137	21200137	21200137
13	Housing cover	239040	239040	239040
14	Measuring cell, assembled	21200131	21200132	21200138
16	Guard ring (4 needed)	239036	239036	239036
17	Pan mount (4 needed)	239104	239104	239104
23	Cover	87420	87420	87420
24	Protective bumper	72469	72469	72469
25	Overload protection, assembled	239107	239108	239108
33	Cable guide	239039	239039	239039
35	Protective plate	239035	239035	239035
36	Insulating plate	239038	239038	239038
37	Shielding plate	239034	239034	239034
41	Ribbon cable	239366	239366	239366
42	Cell cable	239365	239365	239365
43	Coil cable	239367	239367	239367
45	Bottom housing	239026	239026	239026

3.2.7 S/SR-/SG balances with conventional cell, part 2 [Part 1](#)



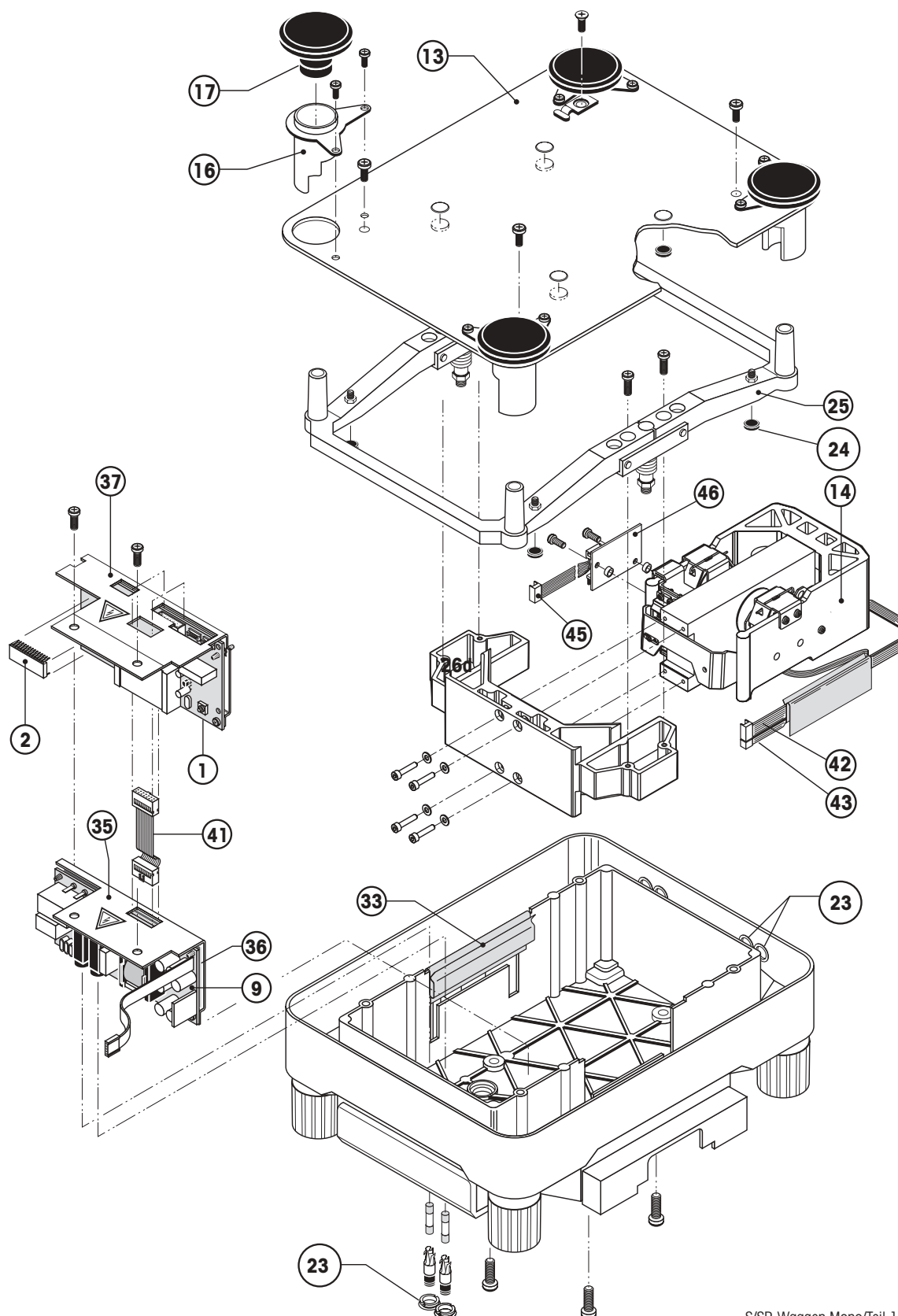
S/SR-Waagen/Teil 2

Spare parts list S/SR-/SG balances with conventional cell, part 2

Item	Designation	S/SR8001 S/SR16000 S/SR16001 S/SR16001DR SG8001 SG16000 SG16001 SG16001DR	S/SR32000 S/SR32001DR SG32000 SG32001DR	S/SR32001 SG32001
		Order No.	Order No.	Order No.
4	CAN board	239360	239360	239360
5	Cassette cover, complete	21200135	21200135	21200135
6	Program cassette-R (Key -> O/T <-)	600171	600171	600171
	Program cassette-R (Key -> T <-)	225397	225397	225397
	Program cassette-G	225690	225690	225690
7	Level support	239041	239041	239041
8	Level	215053	215053	215053
11	Model strip	see model strip list, point 10.2		
12	Buffer protecting strip	239037	239037	239037
15	Weighing pan	239105	239105	239105
26	Nut (CAN)	225028	225028	225028
27	Antitheft device	230163	230163	230163
28	Platform cable (standard)	239259	239259	239259
29	Foot, complete (4 needed)	21200136	21200136	21200136
39	Power cable CH	225204	225204	225204
	EU	225270	225270	225270
	I	225271	225271	225271
	DK	225272	225272	225272
	GB	225273	225273	225273
	USA	225274	225274	225274
	AUS	225275	225275	225275
	SA	225276	225276	225276
44	Terminal-SR 2) (Key -> O/T <-)	21239273 1)	21239273 1)	21239273 1)
	Terminal-SR 2) (Key -> T <-)	239273	239273	239273
	Terminal-SG 2)	225594	225594	225594

1) When replacing the old terminal (-> O/T <-) against a new one (-> T <-) the program cassette (Pos. 6) has to be replaced and the operating system EPROM (Pos. 2) to be updated to a version ≥ 1.20 .

2) Spare parts -> [3.2.3](#)

3.2.9 S/SR/SG balances with monobloc with integrated calibration drive, part 1 Part 2


S/SR-Waagen Mono/Teil 1

Spare parts list S/SR/SG balances with monobloc with integrated calibration drive, part 1

Item	Designation	S/SR8001 S/SR16000 S/SR16001 S/SR16001DR SG8001 SG16000 SG16001 SG16001DR	S/SR32000 S/SR32001 S/SR32001DR SG32000 SG32001 SG32001DR
		Order No.	Order No.
1	Balance board ¹⁾	21201770	21201770
2	EPROM (with program) EPROM for SG-Balances with MT-SICS	225688 11107023	225688 11107023
9	Power supply board (HV tested)	21200137	21200137
13	Housing cover	239040	239040
14	Measuring cell, assembled	21202541	21202541
16	Guard ring (4 needed)	239036	239036
17	Pan mount (4 needed)	239104	239104
23	Cover	87420	87420
24	Protective bumper	72469	72469
25	Overload protection, assembled	239107	239108
33	Cable guide	239039	239039
35	Protective plate	239035	239035
36	Insulating plate	239038	239038
37	Shielding plate	239034	239034
41	Ribbon cable	239366	239366
42	Cell cable	21100248	21100248
43	Coil cable	21100246	21100246
45	Drive cable	21100247	21100247
46	Servo-control	21150007	21150007

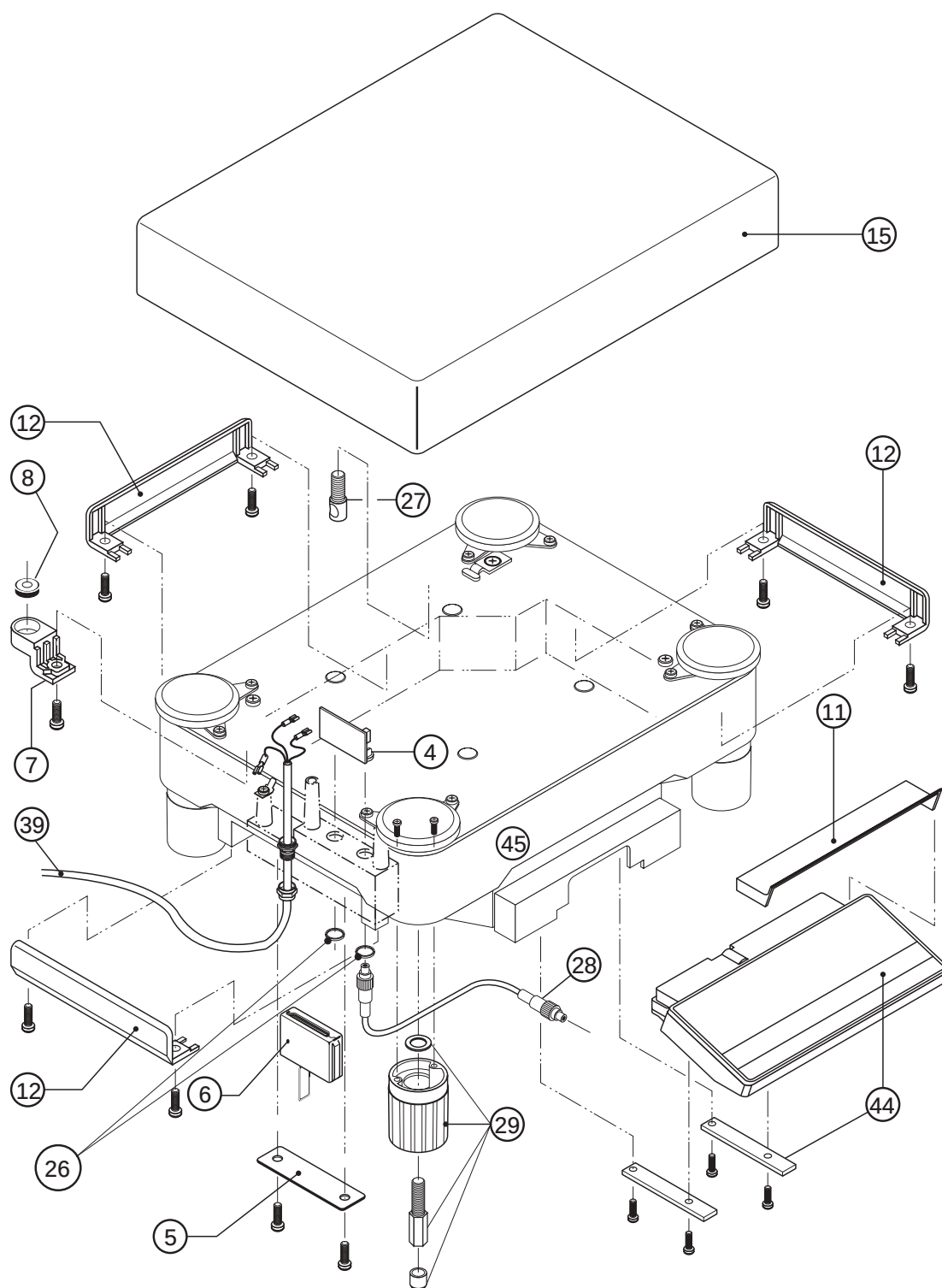
¹⁾ In connection with the upgrading of S/SR/SG balances to monobloc technology, the balance board also had to be modified. The new balance board is backward compatible and thus has the same order number as the old balance board. It can be installed in all S/SR/SG balances.

Since February 1997 only the new balance board has been installed in the S/SR/SG. The old balance board must not be installed in S/SR/SG balances with a monobloc measuring cell. Please check the technical level of your spare part balance boards on the yellow sticker:

21200804/01/xx	Old technical level: only for S/SR/SG balances with conventional measuring cell
21200804/02/xx	New technical level: for all balances of the S/SR/SG series

3.2.11 S/SR/SG balances with monobloc with integrated calibration drive, part 2

Part 1

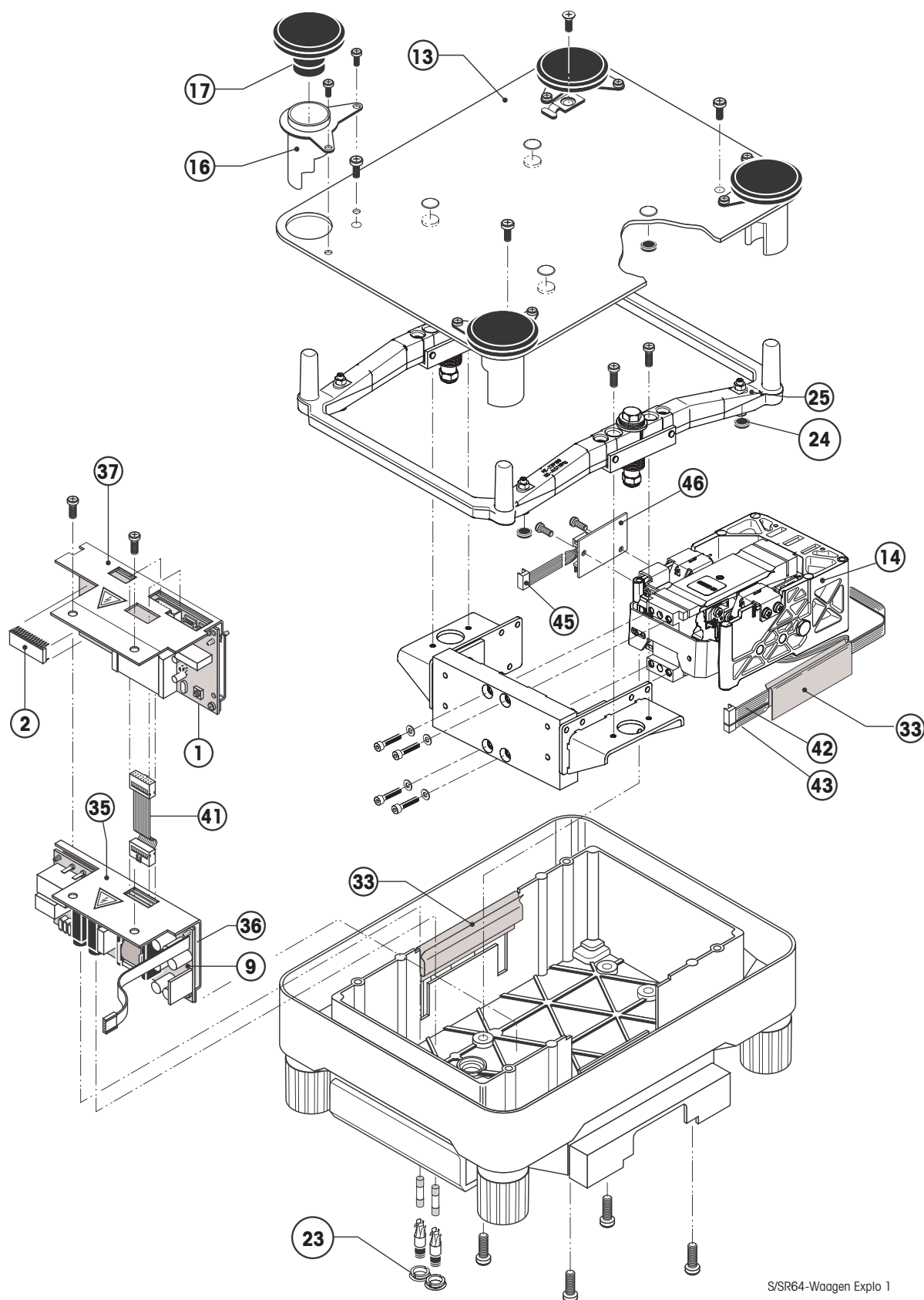


S/SR-Waagen Mono/Teil 2

Spare parts list S/SR/SG balances with monobloc with integrated calibration drive, part 2

Item	Designation		S/SR8001 S/SR16000 S/SR16001 S/SR16001DR SG8001 SG16000 SG16001 SG16001DR	S/SR32000 S/SR32001 S/SR32001DR SG32000 SG32001 SG32001DR
			Order No.	Order No.
4	CAN board		239360	239360
5	Cassette cover		21200135	21200135
6	Program cassette-R	(Key -> O/T <-)	600171	600171
	Program cassette-R	(Key -> T <-)	225397	225397
	Program cassette-G		225690	225690
7	Level support		239041	239041
8	Level		215053	215053
11	Model strip		see model strip list, point 10.2	
12	Buffer protecting strip		239037	239037
15	Weighing pan		239105	239105
26	Nut (CAN)		225028	225028
27	Antitheft device		230163	230163
28	Platform cable (standard)		239259	239259
29	Foot, complete (4 needed)		21200136	21200136
39	Power cable	CH	225204	225204
		EU	225270	225270
		I	225271	225271
		DK	225272	225272
		GB	225273	225273
		USA	225274	225274
		AUS	225275	225275
		SA	225276	225276
44	Terminal-SR 1)	(Key -> T <-)	239273	239273
	Terminal-SG		225594	225594
45	Bottom housing		239026	239026

1) Spare parts -> 3.2.3

3.2.12 S/SR64 balances, part 1 Part 2 ➔


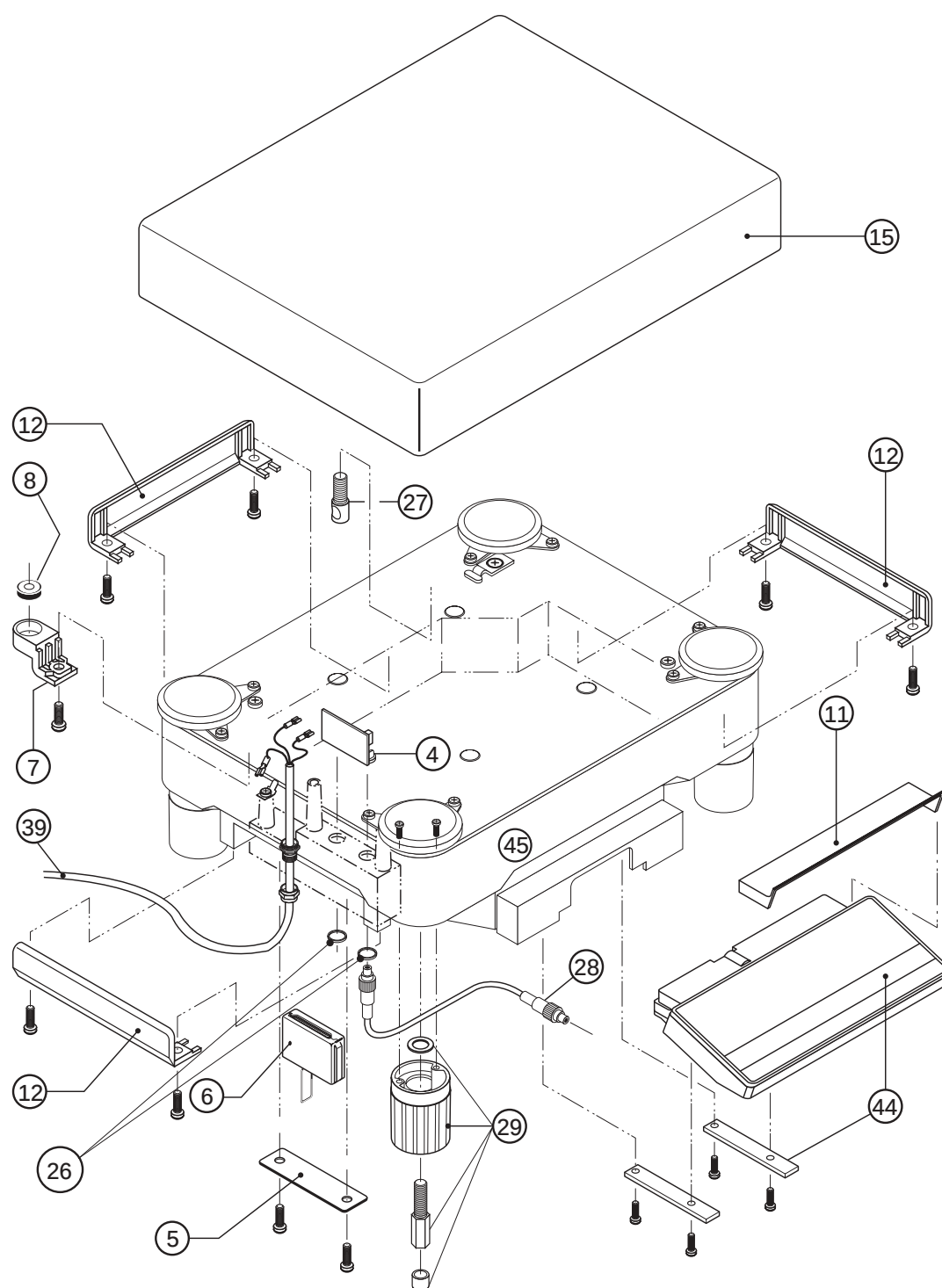
S/SR64-Waagen Explo 1

Spare parts list S/SR64 balances , part 1

Item	Designation	S/SR64000 S/SR64001 S/SR64001DR	
		Order No.	Order No.
1	Balance board (new: without EPROM)	21201770	
2	EPROM (with program)	on request	
9	Power supply board (HV tested)	21200137	
13	Housing cover	239040	
14	Measuring cell, assembled	11102159	
16	Guard ring (4 needed)	239036	
17	Pan mount (4 needed)	239104	
23	Cover	87420	
25	Overload protection, assembled	11102152	
33	Cable guide	239039	
35	Protective plate	239035	
36	Insulating plate	239038	
37	Shielding plate	239034	
41	Ribbon cable	239366	
42	Cell cable	21100248	
43	Coil cable	21100246	
45	Motor cable	21100247	
46	Servo control	21150007	

S/SR64 balances, part 2

part 1



S/SR-Waagen Mono/Teil 2

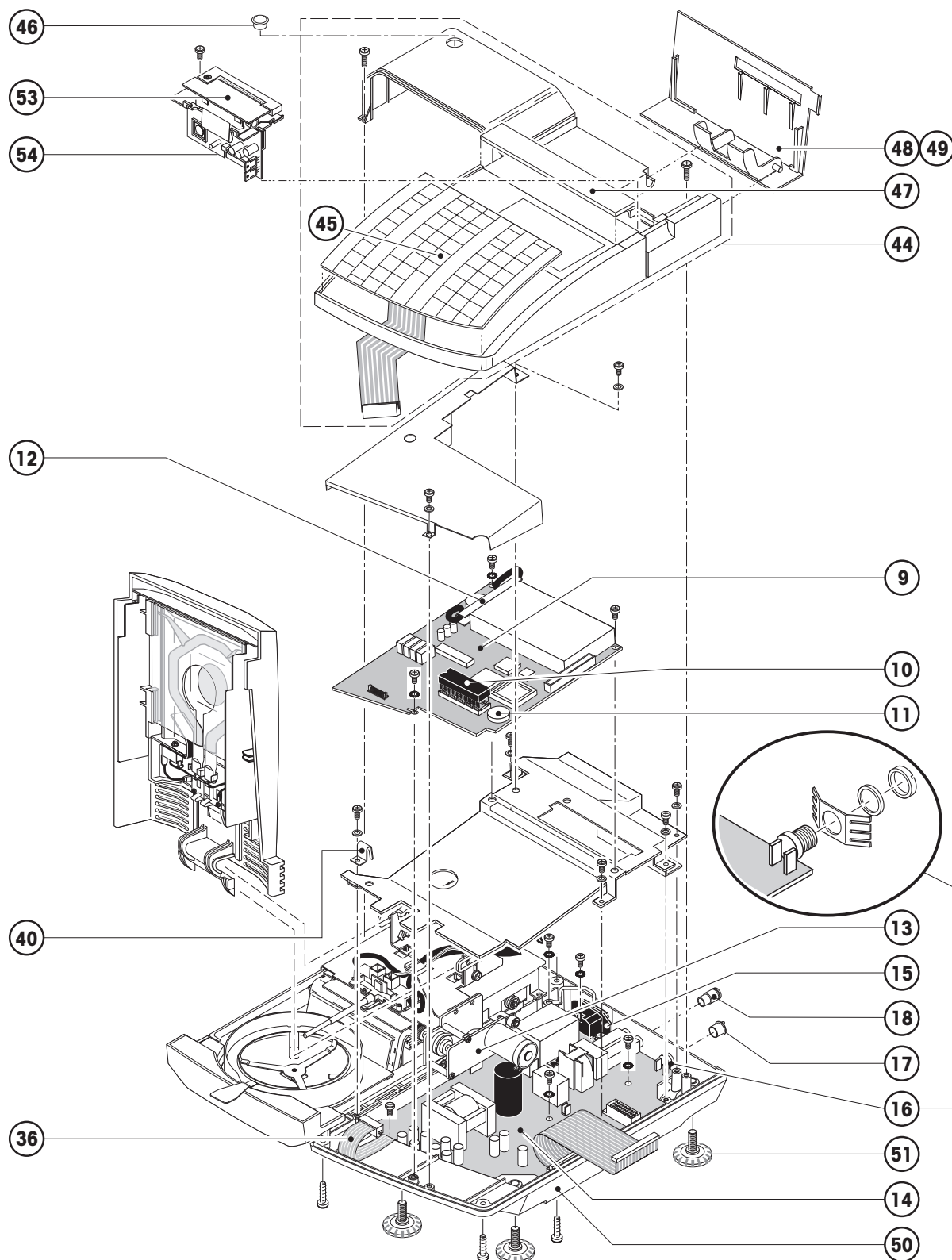
Spare parts list S/SR64 balances , part 2

Item	Designation	S/SR64000 S/SR64001 S/SR64001DR	
		Order No.	
4	CAN board	239360	
5	Cassette cover	21200135	
6	Program cassette	225397	
7	Level support	239041	
8	Level	215053	
11	Model strip	see model strip list, point 10.2	
12	Buffer protecting strip	239037	
15	Weighing pan	11102124	
26	Nut (CAN)	225028	
27	Antitheft device	230163	
28	Platform cable (standard)	239259	
29	Foot, complete (4 needed)	21200136	
39	Power cable	CH	225204
		EU	225270
		I	225271
		DK	225272
		GB	225273
		USA	225274
		AUS	225275
		SA	225276
44	Terminal-SR 1)	239273	
45	Bottom housing	239026	

1) Spare parts → [3.2.3](#)

4 HG/HR Moisture Analyzers

4.1 Top housing, CPU- and power supply board, sample chamber drive Sample chamber ➡



HG/HR Expl 1

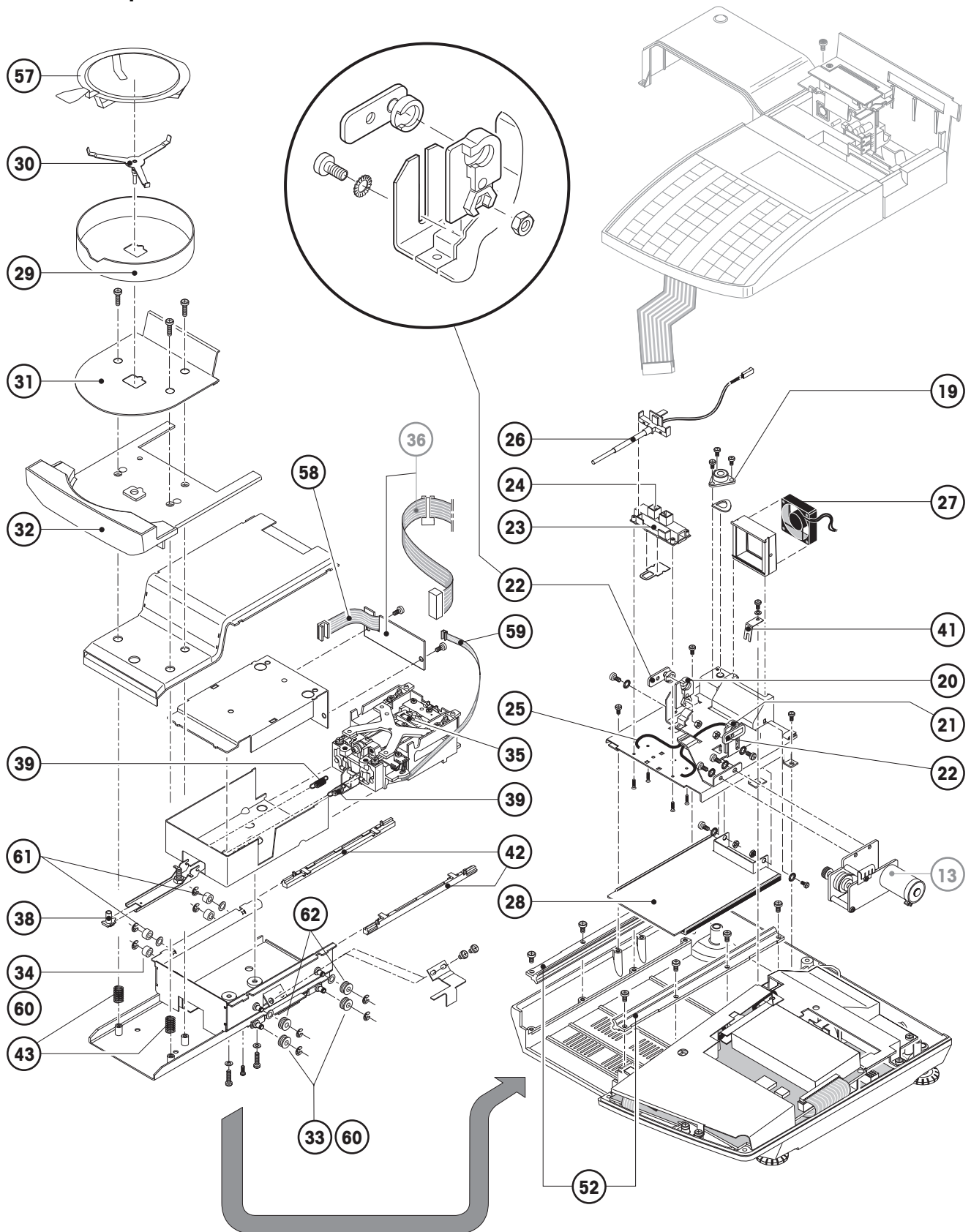
Spare parts list top housing, CPU- and power supply board, sample chamber drive

Item	Designation	HR73	HR83	HG53	HR63
		Order No.	Order No.	Order No.	Order No.
9	CPU board	214405	214405	214431	214431
10	Program EPROM	214671	214760	214671	214760
11	Rechargeable battery	086330	086330	086330	086330
12	Backlighting	214426	214426	–	–
13	Sample chamber drive	214675	214675	214675	214675
14	Power supply board	214411	214411	214411	214411
15	Power receptacle	089928	089928	089928	089928
16	CAN port	225031	225031	225031	225031
17	CAN cover	225027	225027	225027	225027
18	Microfuse cap	089290	089290	089290	089290
36	Sample chamber cable with connection board	214697	214697	214697	214697
40	EMC spring, front	214644	214644	214644	214644
44	Top housing (with keypad)	214676	214762	214677	214761
45	Membrane keypad with cable	214364	214721	214352	217720
46	Level cover	210374	210374	210374	210374
47	Model strip	214365	214722	214353	214353
48	Cover without paper slot 1)	214324	214324	214324	214324
49	Cover with paper slot	214444	214444	214444	214444
50	Bottom housing	214320 214726	214726	214320 214726	214726
51	Leveling screw	214337	214337	214337	214337
53	Printing unit	214681	214681	214681	214681
54	Printer board with holder	214673	214673	214673	214673

1) For types without printer (HR73, HG53: without printer; HR73-P, HG53-P: with printer)

4.2 Sample chamber and ventilation

 Top housing
  Dryer unit



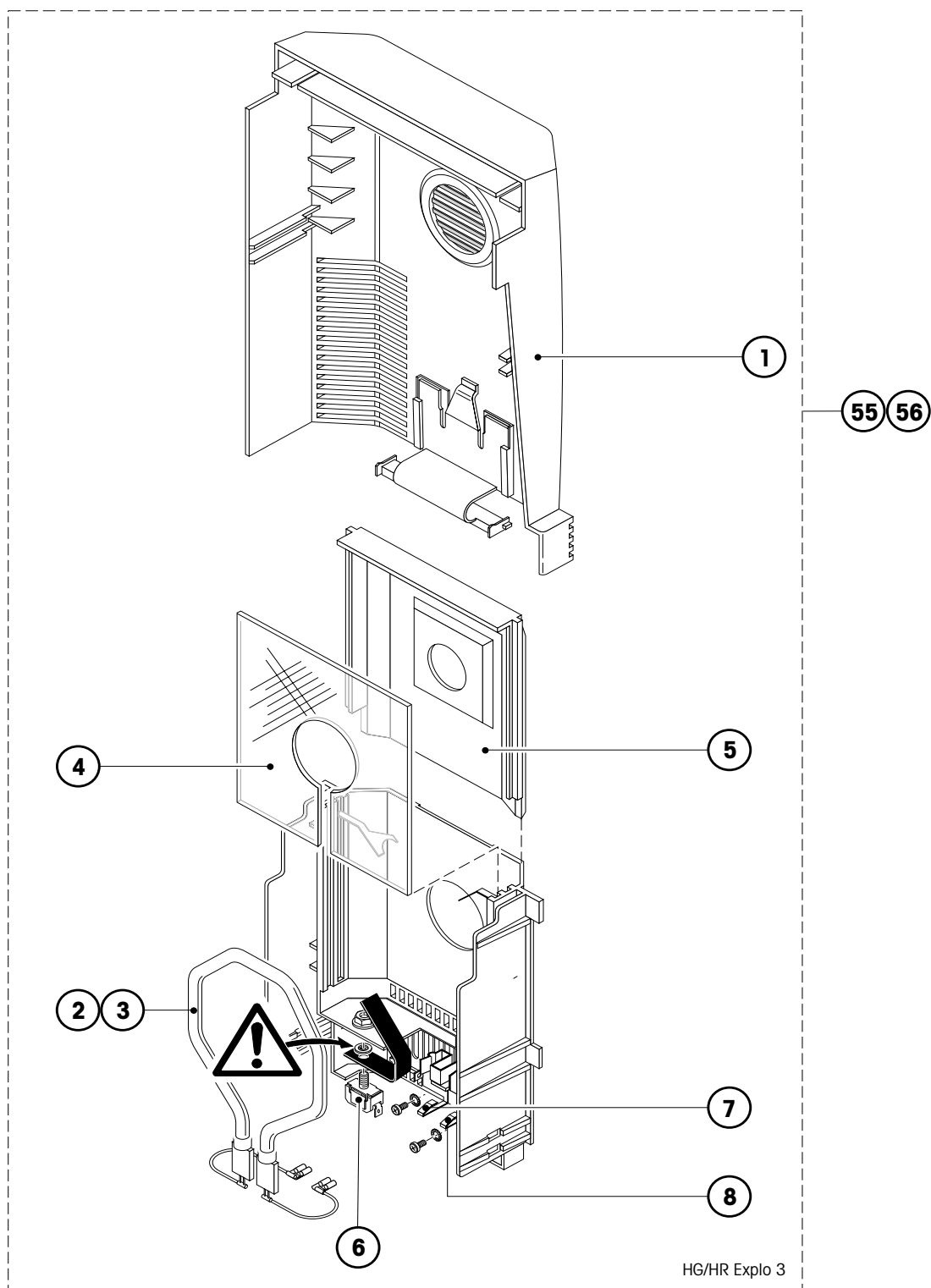
HG/HR Explo 2

Spare parts list sample chamber and ventilation

Item	Designation	HR73	HR83	HG53	HG63
		Order No.	Order No.	Order No.	Order No.
19	Level	238311	238311	238311	238311
20	Pivot bearing, left	214329	214329	214329	214329
21	Pivot bearing, right	214330	214330	214330	214330
22	Closure lever	214395	214395	214395	214395
23	Contact block housing	214331	214331	214331	214331
24	Contact block	299037	299037	299037	299037
25	Radiator cable	214427	214427	214427	214427
26	Temperature sensor	214349	214349	214349	214349
27	Fan	214622	214622	214622	214622
28	Air duct, rear	214613	214613	214613	214613
29	Draft shield	214368	214368	214368	214368
30	Sample pan holder	214642	214642	214642	214642
31	Heat shield	214624	214624	214624	214624
32	Sample chamber front	214393 214733	214733	214393 214733	214733
33	Guide roller, lower 2 pieces	214327 1)	214327	214327 1)	214327
34	Supporting roller, lower	214480 1)	214480	214480 1)	214480
35	Weighing cell	214670	214670		
36	→ 2-121				
38	Bearing sleeve	214386	214386	214386	214386
39	Tension spring	214496	214496	214496	214496
41	EMC spring, rear	214643	214643	214643	214643
42	Gear rack	214332	214332	214332	214332
43	EMC compression spring	11600064	11600064	11600064	11600064
52	Guide rail	214328	214328	214328	214328
57	Sample pan handler	214526	214526	214526	214526
58	Weighing cell cable	214634	214634	214634	214634
59	Cell cable	224409	224409	224409	224409
60	Repair kit	214747	-	214747	-
61	Supporting roller, upper (set)	-	214764	-	214764
62	Guide roller, upper (set)	-	214763	-	214763

1) Use repair kit Item 60

4.3 Dryer unit ◀ Sample chamber



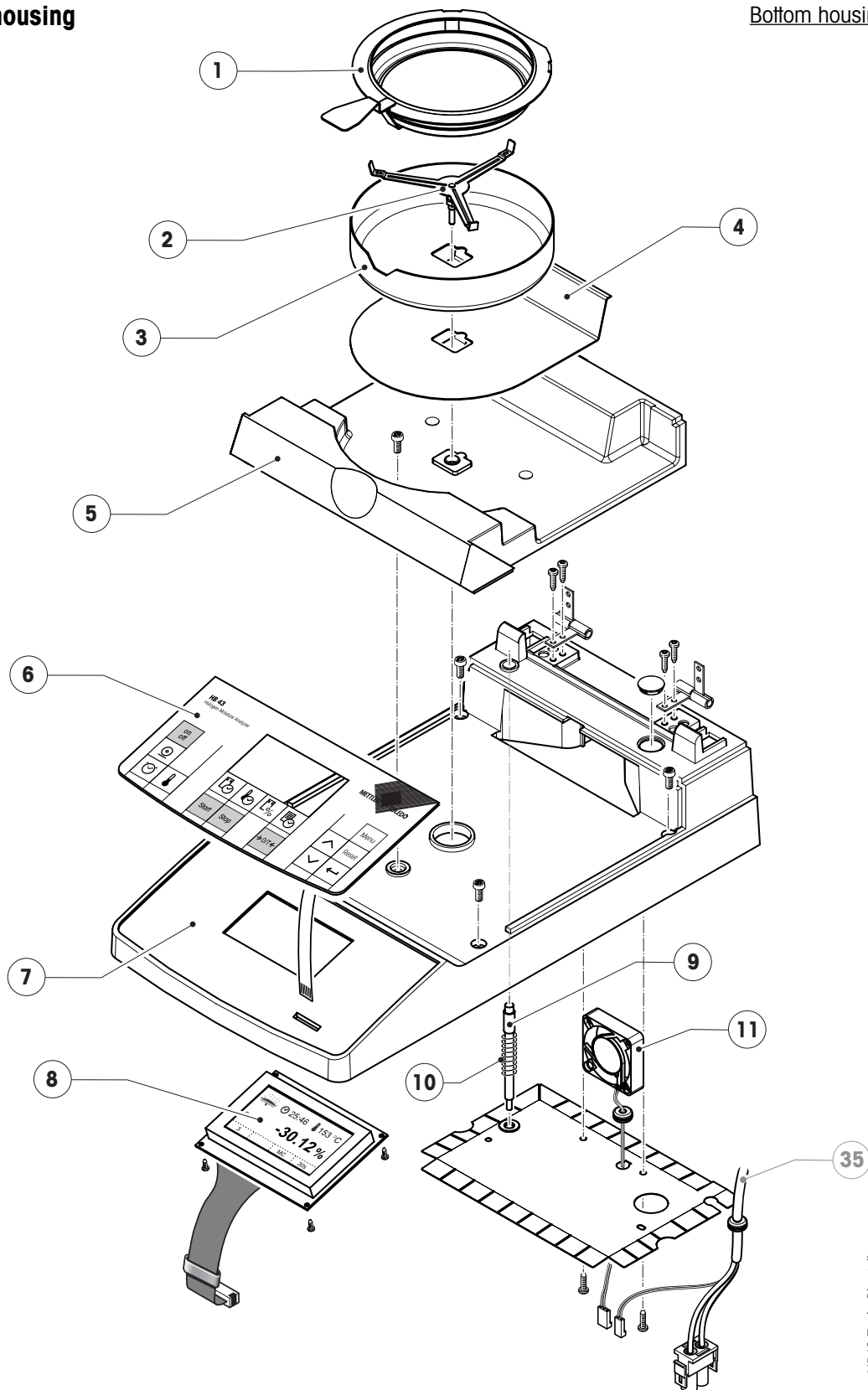
Spare parts list dryer unit

Item	Designation	HR73	HR83	HG53	HG63
		Order No.	Order No.	Order No.	Order No.
1	Dryer unit housing	214344 214734	214734	214344 214734	214734
2	Halogen radiator 110 V	214417	214417	214417	214417
3	Halogen radiator 230 V	214418	214418	214418	214418
4	Protective glass	214360	214360	214360	214360
5	Reflector	214382	214382	214382	214382
6	Temperature controller	214698	214698	214698	214698
7	Metal contact, left	214355	214355	214355	214355
8	Metal contact, right	214356	214356	214356	214356
55	Dryer unit 110 V	214737	214737	214737	214737
56	Dryer unit 230 V	214738	214738	214738	214738

5 HB Moisture Analyzer

5.1 Top housing

Bottom housing ➡

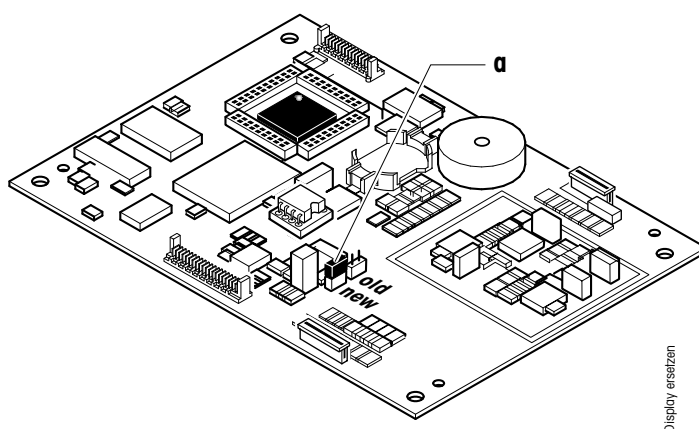


HB43 Explo Oberteil

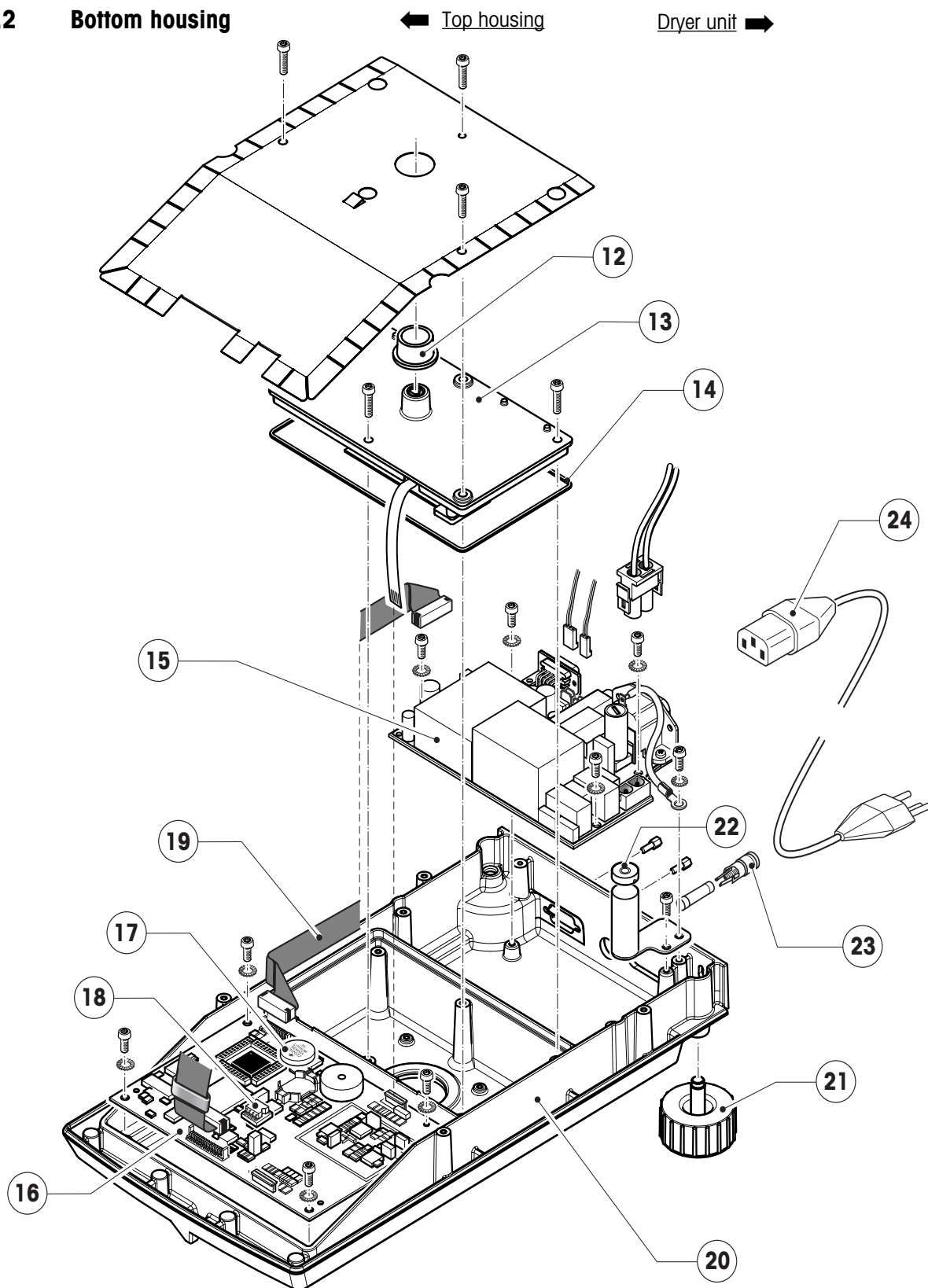
Spare parts list top housing

Item	Designation	HB43
		Order No.
1	Sample pan handler (accessory, 3 pieces) Sample pan handler, 1 piece	214526 11113873
2	Sample pan holder	214642
3	Draft shield	214368
4	Heat shield	11113360
5	Sample chamber	11113358
6	Membrane keypad	11113381
7	Top housing with keypad (without display)	11113861
8	Display with cable 1)	11113772
9	Safety pin	11113367
10	Spring for safety pin	11600360
11	Fan	11113770

- 1) The version of Display and CPU board has to correspond. A new display requests a new CPU board with its jumper (a) set to position "new". If CPU board and display do not correspond, the contrast of the display is either too high or too low.



5.2 Bottom housing



HB43 Explo Unterteil

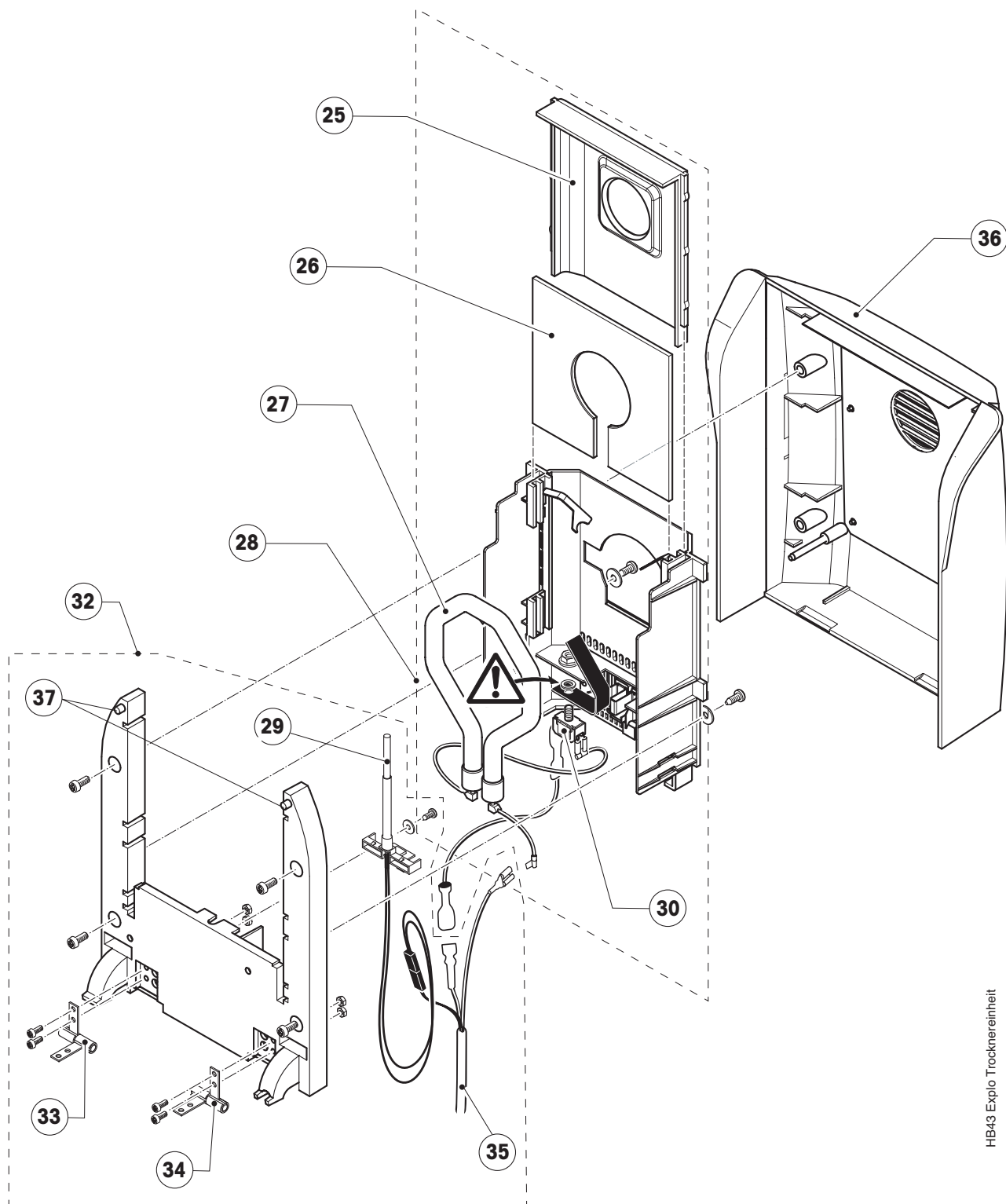
Bottom housing

Item	Designation	HB43
		Order No
12	Seal for housing top	11113362
13	Weighing cell incl. EEPROM (Item 18) and seal	11113850
14	Seal for weighing cell	11600363
15	Power supply board	11113780
16	CPU board	11113852
17	Battery 3 V, Lithium, CR 2032 or equivalent	86320
18	Cell EEPROM 1)	11103757+SNR
19	Cable CPU – power supply	11113773
20	Bottom housing	11113350
21	Leveling screw	11101302
22	Level	11101335
23	Microfuse cap (fuse T6,3 A/250 V)	89290
24	Line cable (accessory)	→ Section 9, 1.20.3, B-S balances universal AC adapter line cable

1) The order has to contain the serial number SNR of the balance!

5.3 Dryer unit

◀ Bottom housing



HB43 Explo Trockereinheit

Spare parts list dryer unit

Pos.	Bezeichnung	HB43
		Bestell-Nr.
25	Reflector	214382
26	Protective glass	214360
27	Halogen radiator 110V	214417
	Halogen radiator 230V	214418
28	Heating module 110V	11113500
	Heating module 230V	11113501
29	Temperature sensor	214349
30	Temperature controller	214698
32	Dryer unit support	11113555
		11113385
33	Dryer unit hinge left	11600358
34	Dryer unit hinge right	11600357
35	Dryer unit cable	11113771
36	Dryer unit cover	11113502
37	Rubber	11113382

10 Plates, packagings

10.1 Model strips

Balance type	Strip No.
AB54	228101
AB54-S/E 1)	11103132
AB104	228103
AB104-S/E 1)	11103130
AB135-S/E	11135121
AB184-S-A/E 1)	11103192
AB204	228072
AB204-S/E 1)	11103131
AB265-S/E	11135122
B154	224293
B154-S	11103147
B203-S	11103148
B303	224294
B502	224295
B502-S	11103149
B1302	224296
B2002-S	11103150
B3002DR	224297
B3001	224298
B3001-S	11103151
CB203	224291
CB603	224292
CB1503DR	228143
GB204	224663
GB303	224664
GB1302	224651
GB1501	224654
GB2002	224662
GB3002	224652
GB3002DR	224653
GB3001	224655
GB6001	228177
GB6001-S/E 1)	11103157
GL3DR	230501
GL8	230516
PB153	224280

Balance type	Strip No.
PB153-S/E 1)	11103133
PB303	224281
PB303-S/E 1)	11103134
PB303-SDR/E 1)	11103135
PB303DR	224282
PB302	224283
PB602	224284
PB602-S/E 1)	11103137
PB801	224288
PB1501	224289
PB1501-S/E 1)	11103142
PB1502	224285
PB1502-S/E 1)	11103138
PB3001	224290
PB3001-S/E 1)	11103143
PB3002	224286
PB3002-S/E 1)	11103139
PB3002DR	224287
PB3002-S DR/E 1)	11103140
PB3002-S DR-A	11103193
PB3002-DYN	224279
PB5001	228094
PB5001-S/E 1)	11103144
PB5001-F	230401
PB5001-S	473010
PB7001-F	230411
PB7001-FB	230421
PB7001-FP	230424
PB8001	228085
PB8001-S/E 1)	11103145
PB8000	228141
PB8001-DYN	224277
PG203-S	11101158
PG203-S/E	11101168
PG503-S	11101156
PG503-S/E	11101166

Balance type	Strip No.
PG503-SDR	11101157
PG503-SDR/E	11101167
PG802-S	11101154
PG802-S/E	11101164
PG2002-S	11101152
PG2002-S/E	11101162
PG3001-S/E 1)	11101170
PG5001-S/E 1)	11101611
PG5002-S	11101150
PG5002-S/E	11101160
PG5002-SDR	11101151
PG5002-SDR/E	11101161
PG8001-S/E 1)	11101612
PG8000-S/E 1)	11101613
PG12001-S/E 1)	11101614
PG12001-SDR/E 1)	11101615
PG403-S/E	11101131
PG403-SDR/E	11101193
PG603-S/E	11101195
PG603-SDR/E	11101197
PG6002-S/E	11101184
PG6002-SDR/E	11101189
PG1003-S/E	11101136

1) When replacing, the certified balance model strip is also used for the normal balance.

10.2 Model plates

Balance type	Model plate No.	
	Standard balance 1)	Certified bal.
AG64	–	238269
AG104	–	238271
AG135	–	238281
AG204	–	238273
AG204DR	–	238275
AG245	–	238277
AG285	–	238432
PG203	–	225565
PG503	–	225566
PG502	–	225569
PG503DR	–	225567
PG803	–	225568
PG802	–	225570
PG2002	–	225571
PG3001	–	21200811
PG5002	–	225572
PG5002DR	–	225573
PG5001	–	225574
PG8001	–	225575
PG8000	–	225576
PR203	–	225823
PR503	–	225825
PR503DR	–	225827
PR502	–	225386
PR802	–	225829
PR803	–	225831
PR1203	–	225833
PR2003	225837	–
PR2003DR	–	225838
PR2002	–	225835
PR3001	–	21200809
PR5001	–	225223

Balance type	Model plate No.	
	Standard balance 1)	Certified bal.
PR5001-C	–	21201602
PR5002	–	225840
PR5002DR	–	225842
PR5003	225844	–
PR5003DU	225845	–
PR8000	–	225188
PR8001	–	225185
PR8002	–	225846
PR8002DR	–	225848
PR10003	225623	–
SG8001	–	21200573
SG16000	–	21200575
SG16001	–	21200577
SG16001DR	–	21200579
SG32000	–	21200581
SG32001	–	21200583
SG32001DR	–	21200585
SR8001	–	239200
SR16000	–	239201
SR16001	–	239202
SR16001DR	–	239203
SR32000	–	239206
SR32001	–	239204
SR32001DR	–	239205
SR32001-C	–	21201600
SR64000	–	11102227
SR64001	–	11102225
SR64001DR	–	11102229

1) When replacing, the certified balance model strip is also used for the normal balance.

10.3 Overlays and membrane keypads

Balance type	Overlay No.
SB8000	230269
SB8001	230264
SB8001-S	473015
SB12001	230265
SB12001S	473017
SB16000	230270
SB16001	230225
SB16001S	473019
SB16001DR	230272
SB24001DR	230273
SB24001DR-S	473021
SB32000	230224
SB32000-F	230481
SB32001DR	230274
SB32001DR-F	230483
GB16001DR	230275

Balance type	Membrane keypad No.	
	Standard balance	Certified bal.
GL8R	230531	–
PG3001-S	21202277	–
PG5001-S	21202278	21202279
PG8001-S	21202280	21202281
PG8000-S	21202282	21202283
PG12001-S	21202284	21202285
PG8001-SDR	21202286	21202287
PZ7001-F	472047	–
PZ7001-FS		

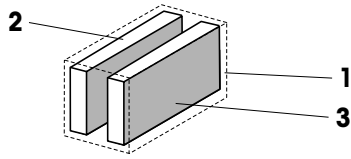
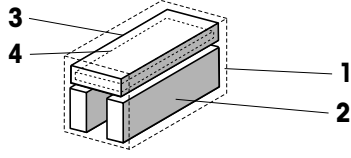
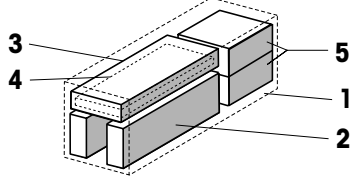
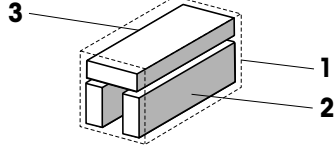
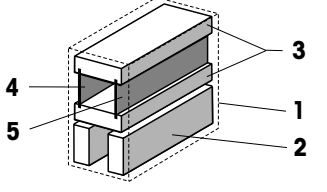
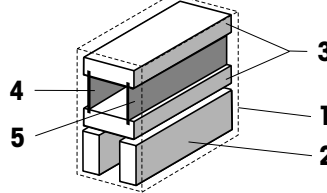
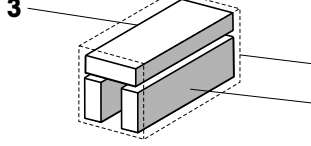
10.4 Packagings

Designation	Application	Order No.
Platform carton	SG/SR balances	239401
Platform foam cushioning (2 pieces needed)	SG/SR balances	239402
Export foam cushioning halves	AB104, AB204, AB54, CB1503, CB203, CB603	224061
	SB8000, SB8001, SB12001, SB16000, SB16001(DR), GB16001DR SB24001DR, SB32000 SB32001DR, GL16DR, GL32DR	230026
	PG/PR203, PG/PR503, PG/PR503DR, PG/PR803, PR1203, PR2003DR, PG/PR502, PG/PR802, PG/PR2002, PG/PR5002, PG/PR5002DR, PR8002, PR8002DR	225358
	AG balances (2 foam cushioning halves)	238461
	HG/HR Moisture Analyzer (2 foam cushioning halves)	214608
	HB43 Moisture Analyzer	11113702
Export carton	AB104, AB204	224069
	AB54, CB1503, CB203, CB603	224071
	PB153, PB303(DR), B303	224072
	PB302, PB602, PB801, PB1501, PB1502, B502, B1302, GB1302, GB1501	224070
	PB3001, PB3002(DR), B3002(DR), GB2002, GB3001, GB3002(DR)	
	PB5001, PB8000, PB8001, GB6001, GL3DR, GL8	224073
	SB8000, SB8001, SB12001, SB16000, SB16001(DR), GB16001DR SB24001DR, SB32000 SB32001DR, GL16DR, GL32DR	230029
	PZ7001, GL8R, GL16DR	472027
	PR/PG203, PR/PG503, PR/PG503DR, PR/PG803, PR1203, PR2003DR	225650
	PR/PG502, PR/PG802, PR/PG2002, PR/PG5002, PR/PG5002DR, PR8002 PR8002DR	225651
	PR2003, PR5003DU, PR10003, PG3001, PG5001, PG8000, PG8001 PR3001, PR5001, PR8001, PR8000	225438
	AG balances	238452
	HG/HR Moisture Analyzer	214605
	HB43 Moisture Analyzer	11113720
	LC-P45	229026
Holder for doors	AB54, AB104, AB204, CB203, CB603, CB1503	224060
Inner carton	SB8000, SB8001, SB12001, SB16000, SB16001(DR), GB16001DR SB24001DR, SB32000 SB32001DR, GL16DR, GL32DR	230030
Cone protection	PR/PG5002, PR/PG5002DR	225219
Plastic bag	SB8000, SB8001, SB12001, SB16000, SB16001(DR), GB16001DR SB24001DR, SB32000 SB32001DR	48924
Foam cushioning for draft shield	CB203, CB603	224064



Designation	Application	Order No.
Foam cushioning left+right	HB43 Moisture Analyzer	11113702
Accessories foam cushioning	HB43 Moisture Analyzer	11113724
Foam cushioning left	PB302, PB602, PB801, PB1501, PB1502, B502, B1302, GB1302, GB1501 PB3001, PB3002(DR), B3002(DR), GB2002, GB3001, GB3002(DR) PZ7001, GL8R	224088 472028
Foam cushioning right	PB302, PB602, PB801, PB1501, PB1502, B502, B1302, GB1302, GB1501 PB3001, PB3002(DR), B3002(DR), GB2002, GB3001, GB3002(DR) PZ7001, GL8R	224087 472029
Transportation lock	PR/PG203, PR/PG503, PR/PG503DR, PR/PG803, PR1203, PR2003DR PR/PG502, PR/PG802, PR/PG2002	225369
Terminal foam cushioning left	SG/SR balances	239407
Terminal foam cushioning right	SG/SR balances	239408
Top packaging	AB104, AB204 AB54, CB1503 CB203, CB603 PB153, PB303(DR), B303 PB5001, PB8000, PB8001, GB6001, GL3DR, GL8 HB43 Moisture Analyzer	224056 224057 224058 224063 224068 11113724
Bottom packaging	AB54, AB104, AB204, CB203, CB603, CB1503 PB153, PB303(DR), B303, CB203, CB603, PB5001, PB8000 PB8001, GB6001	224055 224062
Balance packaging	PR203, PR503, PR/PG503DR, PR502, PR802, PR2002, PR/PG5002 PR/PG5002DR, PG3001, PG5001, PG8000, PG8001, PR3001, PR5001 PR8001, PR8000/E	225350
Draft shield packaging	PR/PG203, PR/PG503, PR/PG503DR, PR/PG803, PR1203	225325
Cutout for accessories	AB54, AB104, AB204, CB203, CB603, CB1503	224059
Cutout	SB8000, SB8001, SB12001, SB16000, SB16001(DR), GB16001DR	230027
Seal belt	all balances	2679

PG-S, B-S ➔

Balance type	Packing	Item	Construction	Order No.
PGxx0-S PGxx1-S PGxxx1-S		1	Export carton	21202585
		2	Export foam cushioning left	–
		3	Export foam cushioning right	–
		2+3	Export foam cushioning set	11101641
PGxx2-S		1	Export carton	11101411
		2	2 Export foam cushioning	11101418
		3	Accessories carton (necessary as space filler)	11101412
		4	Accessories foam cushioning	11101417
PGxx3-S		1	Export carton	11101410
		2	2 Export foam cushioning	11101418
		3	Accessories carton (necessary as space filler)	11101412
		4	Accessories foam cushioning	11101417
		5	2 Draft shield foam cushioning	225325
PBxx2-S PBxxx2-S PBxxx1-S		1	Export carton	11103631
		2	2 Export foam cushioning	11103603
		3	Accessories foam cushioning	11103633
ABxx4-S PBxx3-S (MonoBloc)		1	Export carton	11103630
		2	2 Export foam cushioning	11103603
		3	2 draft shield foam cushioning	11103604
		4	Left cardboard support sheet	11103638
		5	Right cardboard support sheet	11103639
ABxx4-S ABxx5-S (conv. Cell)		1	Export carton	11103630
		2,3,4	Export foam cushioning set	11135270
		5	Accessoires carton	11135275
		6	Accessories foam cushioning	11135274
HB		1	Export carton	11113720
		2	2 Export foam cushioning	11113702
		3	Top packing	11113724

Contents	Page
1. Checklists B, G (except AG) and R balances	3
1.1 Checklist Maintenance	3
1.2 Checklist Repairs and adjustment	4
2. Checklists AG balances	5
2.1 Checklist Maintenance	5
2.2 Checklist Repairs and adjustment	6
3 Checklists HG/HR/HB Moisture Analyzer	7
3.1 Checklist Maintenance HG/HR Moisture Analyzer	7
3.2 Checklist control and adjustment following repair	8

1. Checklists B, G and R balances

1.1 Checklist Maintenance

Warning

Standby circuit. The balance is live when it is attached to the power supply. It is thus also live even if the display is switched off.

Visual inspection

- Completeness check in accordance with standard equipment
- Check condition of following parts:
 - Housing and display glass
 - Weighing pan and pan support
 - Operating keys, PR: SmartBar
 - Leveling feet and level
 - Model plate (with balances of high profile ➡ overlay)
 - Protective cover
 - Draft shield if present; PR: draft shield frame
 - AC adapter, and power cable and fuse
 - Data transmission cable of interface
 - Hand/foot switch, peripherals
- B balances with LocalCAN universal interface:
 - LC-B interface board plugged in correctly?
 - CAN socket correctly installed?
 - Connection cable must not touch overload protection.
- B/G balances with RS (or LocalCAN) interface:
 - Interface PCB correctly mounted?

Function check

- Leveling
- Connect balance to power supply: does the display test run and is this followed by the number of the current software version
- Check key functions.
- Test of the accuracy and hysteresis with full load and without load.
- Test reproducibility ➡ section 7, function 13.
- Check overload protection.
- Check cornerload and linearity ➡ section 7, functions 14 and 15; if adjustment needed: follow by primary calibration (with balances with internal calibration) and calibration!
- Check any peripherals.
- Check cable/plug-in connections (first **disconnect balance from power supply!**)
 - Power supply and balance board
 - Measuring cell, coil and detector
 - If need be, calibration drive
 - Display

Cleaning

- Disconnect balance from power supply!
- For cleaning in the area of the front glass, it may be necessary to remove the protective cover.
Warning: Never use nitro solvents!

1.2 Checklist Repairs and adjustment

Troubleshooting

- Troubleshooting, ➡ section 4.
- Working with the LC-PT45 Performance Tester, ➡ section 6.

Repairs

- Disconnect power plug.
- Replace damaged and/or faulty parts, ➡ section 5.

Adjustment

- Print out or note down customer's configuration or store in LC-PT45.
- Disconnect any peripherals attached to balance.
- Check height of lever stop and adjust if necessary.
- Level.
- Adjust cornerload. Test cornerload ➡ section 7, function 14.
- Check leveling if lever has been changed.
- Perform adjustment, ➡ section 7, 2.
- Primary calibration (with balances with internal calibration) and calibration ➡ section 7, functions 8 and 7

Final worksteps

- Set up customer's original configuration.
- Attach peripherals.
- Perform certification work, ➡ section 8.
- Calibrate if need be.

Important note

With SR balances and SB balances with high profile, the cell can not be repaired.

2. Checklists AG balances

2.1 Checklist Maintenance

Warning!

Standby circuit. The balance is live when it is attached to the power supply. It is also live when the display is switched off.

Visual inspection

- Completeness check according to standard equipment
- Check condition of the following parts:
 - Housing and display glass
 - Weighing chamber with left-right operation
 - Slider of short-form operating instructions inserted
 - Weighing pan and pan support (draft shield element in AG245 case)
 - Contact springs under cover plate
 - All covers under cover plate installed
 - Cover plate in place at bottom
 - Operating keys, model strip
 - Keys with correct arrangement
 - Leveling feet and level
 - Protective cover (optional) over keypad
 - AC adapter (connector-AC adapter - connector-balance)
 - Hand/foot switch, peripherals

Function check

- Leveling
- Test left-right operation for smooth running and function (locking)
- Check display test on switching on
- Check key functions
- LocalCAN data transfer
- Check calibration
- Test of accuracy with full load and with half load
- Test reproducibility ➡ section 7, function 13
- Check cornerload and linearity ➡ section 7, functions 14 and 15
- Check any peripherals present
- Check cable/plug connections for damage (**first disconnect balance from power supply!**)

Cleaning

- Disconnect balance from power supply
- Remove doors and cover plate ➡ operating instructions, section 6.3.
- Clean door guides with cotton buds
- Check contact springs and cover plate bottom (contact surface) for cleanliness and correct position

Warning: Never use nitro-containing solvents (acetone is allowed)!

2.2 Checklist Repairs and adjustment

Troubleshooting

- Troubleshooting, ➡ section 4.
- Working with the LC-PT45 Performance Tester, ➡ section 6.

Repairs

- Disconnect power plug.
- Replace damaged and/or faulty parts, ➡ section 5.

Adjustment

- Print out or note down customer's configuration or store in LC-PT45.
- Disconnect any peripherals attached to balance.
- Level.
- Test cornerload ➡ section 7, function 14.
- Check leveling if lever or guide has been changed.
- Perform adjustment (if detector has been changed) ➡ section 7.
- Primary calibration (if calibration drive has been changed) and calibration ➡ section 7, functions 8 and 7

Final worksteps

- Set up customer's original configuration.
- Attach peripherals.
- Calibrate if need be.

3 Checklists HG/HR/HB Moisture Analyzer

3.1 Checklist Maintenance HG/HRHB Moisture Analyzer

Warning!

Standby circuit. The instrument is live when it is connected to the power supply. It is also live when the display is switched off.

Visual inspection

- Check on completeness in accordance with standard equipment
- Check condition of the following parts
 - Housing • Keypad and display
 - Draft shield with heat shield, sample chamber support and sample chamber holder
 - Dryer unit with protective glass, halogen radiator, reflector
 - Fan grill (rear)
 - **HR/HG:** Built-in printer with ribbon
 - Leveling screws and level • Rating plate
 - LocalCAN- or RS232-data transfer cable

Check on the dryer functions

- Is the ventilation system blocked with dust (fan grill, **HR/HG:** fan grill – rear air duct – front air duct)?
- If poor air passage suspected:
 - HR/HG:**
 - Remove top housing and front air duct (⇒ chapter 5, section 5)
 - Pull fan up and out of the holder and clean rear air duct
 - If necessary, dismantle sample chamber so that the rear air duct is also accessible from the front
 - HB:** Remove sample chamber (⇒ chapter 5, 6.2.)
- Keypad: Do the keys make contact? Does the beeper work?
- Display test when instrument switched on: **HR/HG:** are all segments switched on? **HB:** Nothing abnormal with the matrix display?
- **HR/HG:** Does the sample chamber move in and out? **HR/HG/HB:** does the halogen radiator switch on?
- **HR/HG:** Does the built-in printer work properly? (Start printer test: press feed key and then simultaneously the on/off key)
- Adjust dryer unit with certified thermometer or, if not available drying with coin as sample; 160 °C for 15 minutes: Display of moisture: 0.000 g ± 0.005 g
- Remain after disconnecting the power cable for 5 seconds and connecting it again the procedures (HR/HG) and time setting unchanged? If not: replace the battery (guaranteed lifetime 5 ... 10 years).
- If applicable, test peripheral units

Function check on the built-in balance

- Moisture Analyzer leveled?
- Test of the accuracy and hysteresis with full load and without load
- **HR/HG:** Check overload protection
- Test reproducibility ⇒ chapter 7, function 13

Cleaning

- Disconnect instrument from the power supply! **Warning:** Never use nitro-containing solvents!

3.2 Checklist control and adjustment HG/HR/HB following repair

After the instrument has been repaired (Troubleshooting ➔ chapter 4. Working with the LC-PT45 performance tester ➔ chapters 6 and 7, Replacing damaged and/or faulty parts ➔ chapter 5), the following checklist can be used to check whether anything has been forgotten.

Control and adjustment of the dryer functions

- Are the reflector and protective glass installed in the dryer unit?
- After board replacement, are all serrated lock washers again located beneath the screw heads? (especially with **yellow/green protective ground cable of the power supply board**)
- Does the fan run during the drying? (cable plugged in?)

HR/HG:

- Is the closed dryer unit positioned precisely on the top housing? (after removal of the dryer unit support)
- At the front near the CPU board, is the sample chamber cable pinched under the top housing?
- Does the sample chamber move in and out at a uniform speed and without any impact noise? (Switch vane set properly after dismantling? Cable support clip of the sample chamber cable – at the rear of the sample chamber – positioned sufficiently far to the left so that the support clip is not pinched?)
- After removal of the dryer unit support, does the rear air duct wedge in the front one when sample chamber moves in and out? (Test: Move sample chamber by hand in and out without motor and feel the resistance to movement. If need be, position rear air duct better: Pull fan up and out of the holder so that the screws are accessible)
- Is the new or repaired weighing cell so built in that the bearing sleeve of the sample pan holder does not touch in the hole of the sample chamber front? (Symptom: hysteresis in the result display)
- Is the backlighting of the display fully in the display holder also on the right side?
- Perform a drying at 160 °C during 1 hour with a coin as a sample. Set the printer to a print interval of 10 minutes and protocol the drying. If the deviation toward the end of the drying exceeds 5 mg there is possibly a temperature bridge between weighing cell and weighing cell screening plate. Rectification ➔ chapter 5, 5.22.10.2, point 6.

Control and adjustment of the built-in balance

HR/HG:

- If applicable, vertical stop checked and readjusted if need be?
- Cornerload adjusted? Test cornerload ➔ chapter 7, function 14
- Level checked (if the lever has been changed)?
- Linearity adjusted? ➔ **HR/HG:** with LARS, **HB:** service menu or LARS

Final work steps

- Set original customer configuration.
- Attach peripheral units.
- Adjust balance
- Adjust dryer unit with certified thermometer or, if not available drying with coin as sample; 160 °C for 15 minutes: Display of moisture: 0.000 g ± 0.005 g
- Print out service record.

Contents	Page
0. General information	2
0.1 Test points B/G/R balances	2
0.2 Troubleshooting PG-S balances	2
1. Troubleshooting B balances	3
1.1 Troubleshooting B balances (without SB)	3
1.2 Troubleshooting SB balances	6
1.3 Troubleshooting B-S balances	7
2. Schematic diagram B balances, electronics with test points	11
2.1 Balance board AB/CB/PB/GB/B/PZ balances	11
2.2 Detector board AB/CB/PB/GB/B	12
2.3 Balance board SB	12
3. Troubleshooting R/G balances (PG-S see 6.2)	
3.1 Troubleshooting PR/SR/PG/SG balances	14
4. Schematic diagram R balances, electronics with test points	17
4.1 Block diagram PR balances	17
4.2 Balance board SR balances	18
4.3 Power supply board SR balances	18
4.4 CAN board SR balances	19
5. Error messages and warnings with the LC-PT45	
➔ Section 7, Point 3	
6. Troubleshooting G balances	
6.1 Troubleshooting AG balances	21
6.2 Troubleshooting PG-S balances	23
6.3 Troubleshooting PG-S "Industry" (0.1 g and 1 g)	26
7. Schematic diagram G balances	29
7.1 Block diagram AG balances	29
7.2 Block diagram PG-S balances	30
7.3 Power supply board PG-S scales (only models with integrated power supply)	31
	Blank pages 33-40
8. Troubleshooting Moisture Analyzers	41
8.1 HG/HR Moisture Analyzers	41
8.2 HB Moisture Analyzers	43

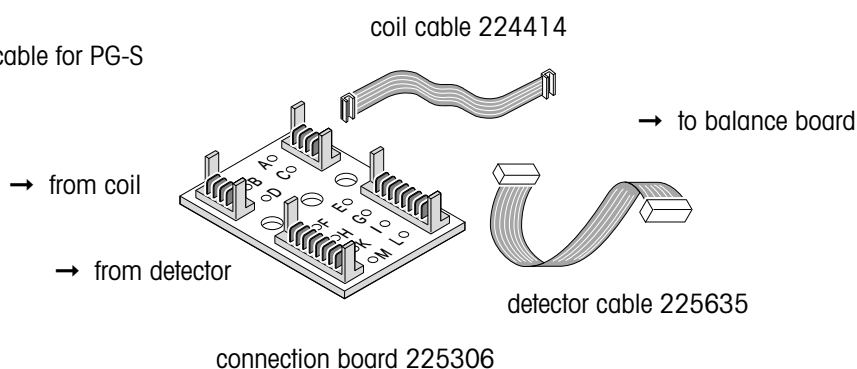
0. General information

0.1 Test points B/G/R balances

To adjust the detector or to test the measuring cell outside of the balance there is an extension cable available (not necessary for PG-S balances). It consists of coil and detector cable and connection board.

On the connection board are test points to check the power supply voltages.

Remark: not applicable for PG-S



	A	+23 V	coil
COIL	B		
	C	+23 V	coil
COIL	D		
	E	+15 V	CAN
AGND	F		
	G	+10 V	power supply
AGND	H		balance
	I		
	K		
	L		
	M		

0.2 Troubleshooting PG-S balances

If the keypad is required for work when the housing is open, the extension cable Display PG-S 11101880 (service case) is available.

1. Troubleshooting B balances

1.1 Troubleshooting B balances (without SB)

Error	Possible cause	Rectification
Balance can not be switched on/off	- No power line voltage - Power cable of AC adapter or power cable with socket not plugged in or faulty - Power supply unit faulty - Detector cable short circuited to frame - Balance board faulty	Plug in power cable of AC adapter or power-cable with socket or replace Check voltage Change power supply unit Check detector cable Check voltage Change balance board ➡ section 5, 2.
Taring not possible	- See balance can not be switched off - Balance board faulty	Change balance board ➡ section 5, 2.
Individual segments of display do not light up	Display or display driver faulty	Check voltages Change balance board ➡ section 5, 2.
Measuring cell (lever) does not equilibrate	- Stop out of adjustment - Coil touching - Power supply - Cell or coil cable not plugged in or loose - Coil/coil connections have break/short circuit or are not plugged in - TC sensor short circuited to frame - Faulty soldered joints of TC sensor connections - Detector board faulty	Preadjust stop Check coil Adjust stop possibly change complete lever Check voltages Plug in cell or coil cable properly Check coil/coil connections, possibly replace complete lever Check TC sensor Resolder TC sensor connections Change detector board ➡ measuring cell manual
Abrupt change of display	- Hair/fiber touching coil, guide, lever, etc. - Moving part touching measuring cell - Loose screws at measuring cell - Poor plug-in contact/poor soldered joint - Detector board faulty - Severe vibrations at weighing station	Check/clean moving parts Check measuring cell Check screws Check plug-in contacts, soldered joints Change board ➡ measuring cell manual Adjust vibration adapter



Error	Possible cause	Rectification
Overload/underload display	- Stop out of adjustment - Detector board faulty - Break in coil/coil connection; winding short - Wrong dead load weight, wrong pan supports or wrong pan - Cell/coil cables not plugged in or faulty	Adjust stop Change detector board ➡ cell manual Check coil/coil connections Check counterweight/pan supports and pan Check/replace cell/coil cables
Overload display before full load reached	- Dead load weight somewhat too low - Wrong weighing pan - Wrong type definition	Insert additional, nonmagnetic washer from small parts set Enter correct type definition
Calibration not possible	- Protective cover touching - Wrong test weight - Wrong type definition - Wrong reference resistor - Calibration blocked for certification reasons	Mount protective cover properly Load correct test weight Enter correct type definition Check/replace reference resistor
Hysteresis or unstable display	- Hair/fiber touching coil, guide, lever, etc. - Moving part touching measuring cell - Loose screws at measuring cell - Detector loose/dirty/faulty - Flexible bearings/link tensioned/dirty/faulty - Hanger mounted at an angle - Magnet system dirty - Lateral stop touching	Check/clean moving parts Check measuring cell Check all screws Check detector Check flexible bearings and link Install hanger properly ➡ meas. cell manual Clean magnet system Check lateral stop
Display drift	- Temperature compensation inadequate - Flexible bearings/link tensioned - Detector board faulty	Perform temperature compensation or replace measuring cell ➡ section 7, 7-26 Remove flexible bearings and link ➡ measuring cell manual Replace board ➡ measuring cell manual
Cornerload can not be adjusted	- Guide faulty/guide fastening tensioned/loose - Setscrew/cornerload screw loose - Link faulty	Check guide/guide fastening Screw in setscrew/cornerload screw ➡ measuring cell manual Replace hanger ➡ measuring cell manual



Error	Possible cause	Rectification
Linearity not adjustable	• Cornerload not adjusted • Flexible bearings/link tensioned/faulty • Detector board faulty	Check basic settings Check flexible bearings and link Change detector board ➡ measuring cell manual

1.2 Troubleshooting SB balances

Error	Possible cause	Rectification
Balance can not be switched on/off	- No power line voltage - SB PowerPack battery discharged - Balance board faulty	Check power supply unit Attach power supply unit, change battery if need be Check voltage, change board
Taring not possible	- Key faulty - Balance board faulty - Terminal cable not plugged in	Change key Change board ➔ section 5
Individual segments of display do not light up	- Display faulty - Program cassette faulty	Check voltage, change board Change program cassette
Weighing system (beam) does not equilibrate	- Board faulty - Weighing system faulty	Change board Change weighing system
Overload/underload display	Balance board faulty	Change balance board
Overload display before full load reached	- See calibration not possible - Wrong type definition No.	Load correct TDNR
Abrupt change of display	- Poor plug-in contact/soldered joint - Weighing system faulty - Balance board faulty	Change weighing system ➔ section 5 Change board
Hysteresis or unstable display	- Weighing system faulty - Cell cable touching - Protective cover touching	Change weighing system ➔ section 5
Display drift	- Temperature compensation inadequate - Balance board faulty - Weighing system faulty	Perform temperature compens. ➔ section 7 Change board Change weighing system ➔ section 5
Cornerload not adjustable	- Fastening plate for adjustm. not loosened - Weighing system faulty	Change weighing system ➔ section 5
Linearity not adjustable	- Cornerload not adjusted - Weighing system faulty - Balance board faulty	Adjust cornerload ➔ sec. 1, measuring cells Change weighing system ➔ section 5 Change board
Calibration not possible	- Protective cover touching - Certification seal - Wrong test weight - Balance board faulty	Unblock calibration ➔ section 8 Use correct test weight Change board ➔ section 5

1.3 Troubleshooting B-S balances

Error	Possible cause	Rectification
Balance can not be switched on	- No power line voltage - AC adapter not plugged in or defective - Connection cable for cell short circuited to frame - Balance PCB defective - Display PCB not attached - Membrane keypad defective or not plugged in	Plug in AC adapter or replace it Check connection cable for cell Change Balance PCB ➔ section 5, 2.4.14 Plug in Connection cable for display Replace or connect membrane keypad ➔ section 5, 2.4.5
Taring not possible	→ "Balance can not be switched on" - Balance display unstable - Pan support touches fastening plate, or hook for below balance weighing touching	Wait min. 1 minute (until display appears) Check pan support and hook for below balance weighing
Keypad does not work	Membrane keypad not attached or faulty	Attache or replace ➔ section 5, 2.4.5
Individual segments of display do not light up	Display faulty	Replace display PCB ➔ section 5, 2.4.14
Measuring cell (beam) does not equilibrate	- Detector displaced laterally or height stop out of adjustment - Coil touching - Bench power supply faulty - Connection cable for cell unplugged or loose - Coil/coil connections have break/short circuit or are not plugged in - Faulty soldered joints of TC sensor connections - TC sensor short circuited to frame - Detector board faulty	Adjust ➔ cell manual, section 4.3/5 Check coil, possibly replace lever ➔ cell manual, section 8, 4.3 Replace power supply Plug in cable properly Check coil/coil connections, possibly replace lever ➔ cell manual, section 8, 4.3 Resolder connections Change measuring cell ➔ Balances manual section 5, 2.4.8-9 Change detector ➔ cell manual, section 8, 4.2



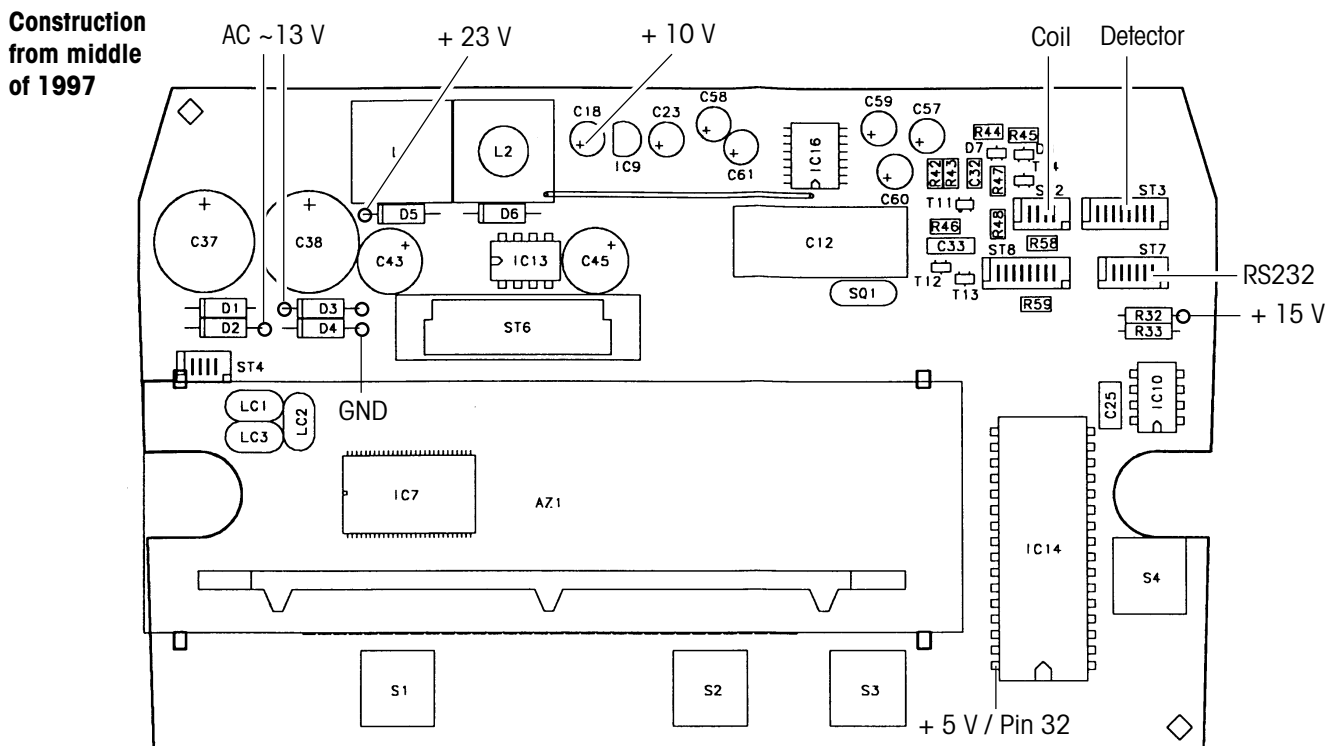
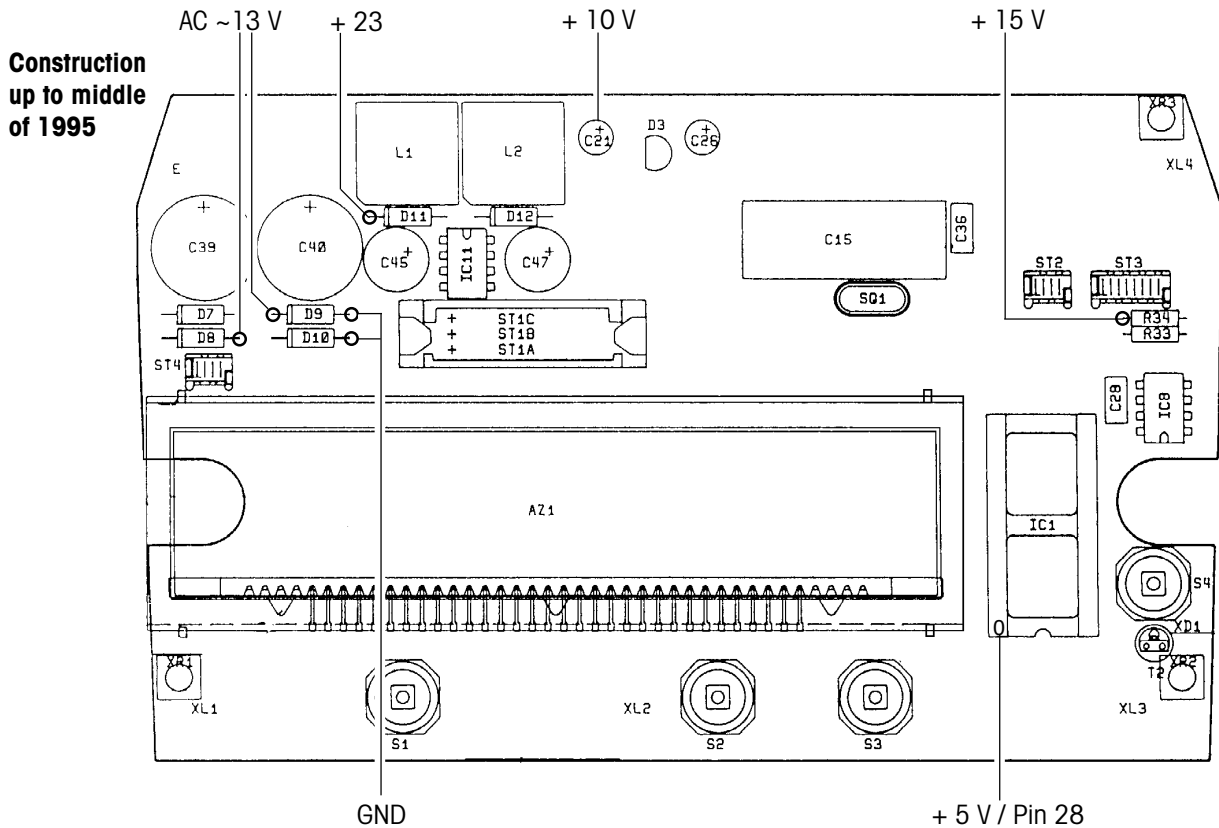
Error	Possible cause	Rectification
Abrupt change of display, unstable display, Hysteresis	• Pan support touching fastening plate, or hook for below balance weighing touching • Hair/fiber touching coil, monobloc; lever touching detector laterally • Coil wires touch each other • Moving part of measuring cell touching • Loose screws at measuring cell • Poor contact/poor soldered joint • Detector loose/dirty/faulty • Severe vibrations at weighing station • Arms of internal calibration weight touching • Balance PCB or cell PCB faulty	Check Clean magnet system, align detector Spread coil wires ➡ cell manual, sect. 8, 4.4, 9. Align measuring cell Check screws Check contacts and soldered joints Check detector ➡ cell manual, sect. 8, 4.2 Reduce vibrations or select another location Align measuring cell Change PCB ➡ section 5, 2.4.14 or cell manual, section 8, 4.6
Overload/under-load display	• Height stop out of adjustment • Detector faulty • Break in coil/coil connection; winding short • Coil short circuited to frame • Wrong pan support or wrong pan • Connection cable for cell not plugged in or faulty • Wrong switch-on zero	Adjust stop ➡ cell manual, section 8, 4.3 Change detector ➡ cell manual, section 8, 4.2 Check coil connections Measure continuity coil - ground at coil board; change beam ➡ cell manual, section 8, 4.3 Check pan support and pan Plug in or change connection cable for cell Balance unloaded, switch on/off with the weighing pan appropriate to balance
Overload display before full load reached	• Dead load weight somewhat too high • Wrong weighing pan • Wrong type definition • Wrong switch-on zero	Enter correct type definition ➡ section . 7, <i>Func 1</i> and 2 Balance unloaded, switch on/off with the weighing pan appropriate to balance
External calibration impossible	• Wrong test weight • Wrong type definition • Calibration blocked for certification reasons	Load correct test weight Enter correct type definition ➡ section 7 Unblock calibration ➡ section 8, 3.6
Internal calibration impossible	• Calibration weight touching • Calibration drive faulty • Wrong type definition	Align measuring cell Change calibration drive ➡ section 5, 2.4.10 Load correct type definition ➡ section 7
Primary calibration incorrect	• Cornerload/linearity adjusted without subsequent primary calibration • Cornerload wrongly adjusted • Linearity changed • Calibration weight touching	Perform primary calibration ➡ section 7 Adjust cornerload ➡ cell manual, section 8, 5.2, then primary calibration ➡ section 7 Adjust linearity, then primary calibration ➡ section 7 Align measuring cell



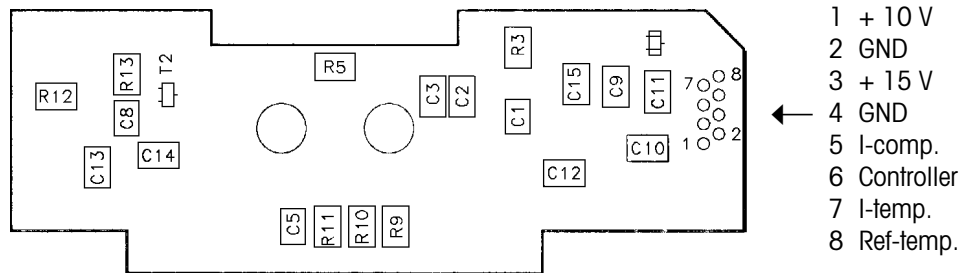
Error	Possible cause	Rectification
Display drift	• Temperature compensation inadequate • Detector faulty	Replace measuring cell ➔ balance manual, section.5, 2.4.8+9 Change detector ➔ cell manual, section.8, 4.2
Linearity not adjustable	• Cornerload not adjusted • Detector faulty	Check/adjust cornerload ➔ cell manual, section 8, 5.2 Change detector ➔ cell manual, section 8, 4.2
Linearity poor	• Linearity adjustment missing	Perform 3-point linearization ➔ section 7
No connection between peripheral device and balance	• RS232 connection cable not correctly plugged in or RS232 interface defective • Baud rate set incorrectly	Plug in correctly or replace RS232 interface ➔ Reg. 5, 2.4.6 Select correct baud rate in menu (factory setting: 2400 baud, 7 bit even parity)
ERROR 4	• Incorrect or defective cell data EARM	Check that correct EARM for balance model is being used („E“ or „A“ ➔ section 2, spare parts list 1.1.13 or 1.1.14, item 10)
ERROR 6	• No Standard Calibration	

2. Schematic diagram B balances, electronics with test points

2.1 Balance board AB/CB/PB/GB/B/PZ balances

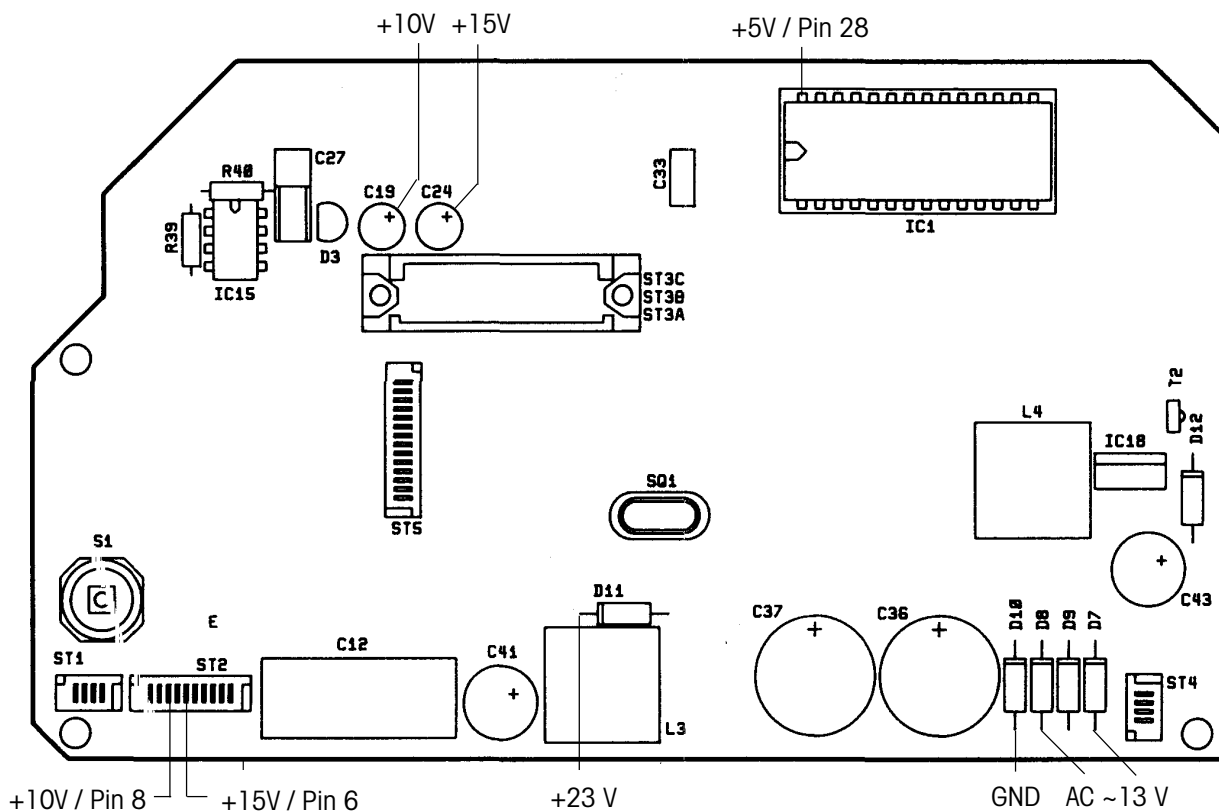


2.2 Detector board AB/CB/PB/GB/B

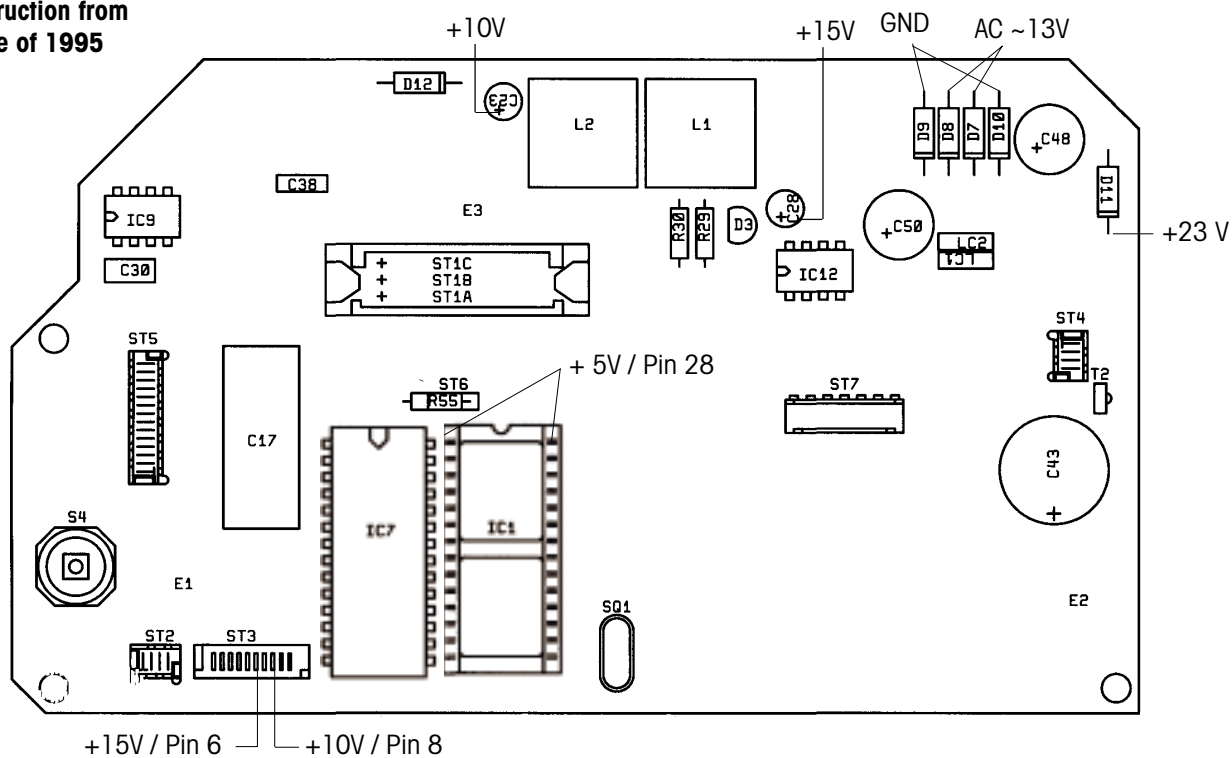


2.3 Balance board SB

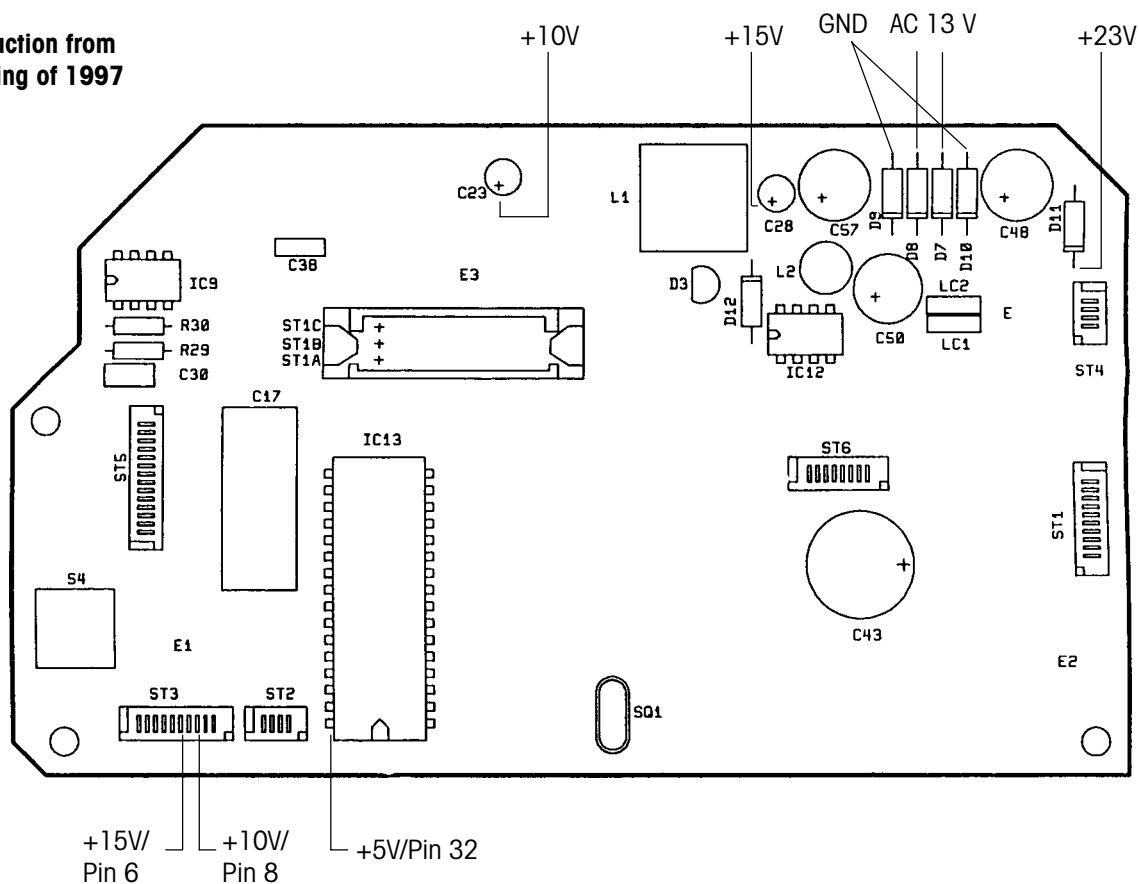
Construction up to middle of 1995



Construction from middle of 1995



Construction from beginning of 1997



3. Troubleshooting R/G balances

3.1 Troubleshooting PR/PG and SR/SG balances

Error	Possible cause	Rectification
Balance can not be switched on	- No power line voltage - Power cable not plugged in or faulty - Power supply board faulty 1) - Detector cable short circuited to frame - Balance board faulty 1) - Terminal not attached - Terminal cable faulty - Terminal faulty - Power line fuse (power supply unit) faulty	Plug in power cable or replace Check voltage (connecting board ➡ 0.1), replace power supply board Check detector cable Check voltage (connecting board), change balance board ➡ page 5-2 Plug in terminal cable Replace terminal cable Change display board or terminal keypad ➡ section 5, 5.4 Change power line fuse (PR/PG: slow-blow 630 mA) (SR/SG: slow-blow 1A)
Taring not possible	→ "Balance can not be switched on" - Balance display unstable	Wait min. 1 minute (until display appears)
SmartBar does not function	Program cassette not plugged in or faulty	Plug in or replace program cassette
Individual segments of display do not light up	Display or display driver faulty	Check voltages (connecting board) Change terminal board ➡ section 5,4.
Measuring cell (beam) does not equilibrate	- Lateral or height stop out of adjustment 2) - Coil touching 2) - Power supply unit faulty - Detector or coil cable not plugged in or loose - Coil/coil connections have break/short circuit or are not plugged in 1), 2) - Faulty soldered joints of TC sensor connections 2) - TC sensor short circuited to frame - Detector board faulty 2)	Preadjust stops ➡ cell manual, section 6, 4.5 Check coil, adjust stops, possibly replace beam ➡ cell manual, page 6-1 Check voltages (connecting board), does LED of detector light up? ➡ 0.1 Plug in cable properly Check coil/coil connections, possibly replace lever ➡ cell manual, page 6-1 Resolder connections on detector board Change measuring cell ➡ section 5, 4. Change detector ➡ cell manual, sect. 6, 4.8
Abrupt change of display	- Hair/fiber touching coil, guide, beam, etc. 2) - Moving part touching measuring cell - Loose screws at measuring cell - Poor contact/poor soldered joint	Check/clean moving parts Check measuring cell Check screws Check contacts and soldered joints



Error	Possible cause	Rectification
Abrupt change of display	- Detector faulty 2) - Severe vibrations at weighing station - Arms of internal calibration weight touching 2) - Balance board faulty	Change detector ➡ cell manual, section 6, 4.8 Adjust weighing parameter "Vibr" ➡ operating instructions Align measuring cell Change balance board ➡ section 5, 4.
Overload/underload display	- Height stop out of adjustment 2) - Detector faulty 2) - Break in coil/coil connection; winding short 1), 2) - Coil short circuited to frame 1), 2) - Wrong dead load weight, wrong pan support or wrong pan - Coil cable not plugged in or faulty - Wrong switch-on zero	Adjust stop ➡ cell manual, section 6, 4.5 Change detector ➡ cell manual, section 6, 4.8 Check coil connections Measure continuity coil - ground at coil board; change beam ➡ cell manual, section 6, 4.4 Check dead load weight/pan support and pan Plug in or change coil cable Balance unloaded, switch on/off with the weighing pan appropriate to balance
Overload display before full load reached	- Dead load weight somewhat too low 2) - Wrong weighing pan - Wrong type definition - Wrong switch-on zero - Wrong reference resistor	Enter correct type definition ➡ section 7 Balance unloaded, switch on/off with the weighing pan appropriate to balance On replacement of the detector, unsolder reference resistor from old detector and solder onto new one ➡ cell manual
Calibration not possible	- Protective cover touching - Wrong test weight - Wrong type definition - Wrong reference resistor - Calibration blocked for certification reasons	Mount protective cover properly Load correct test weight Enter correct type definition ➡ section 7 On replacement of the detector, unsolder reference resistor from old detector and solder onto new one ➡ cell manual, section 6, 4.8 Unblock calibration ➡ section 8, page 8-1
Internal calibration impossible	- Calibration weight touching - External calibration selected in the menu - Calibration board faulty, limit switch link bent 2) - Wrong calibration weight installed 2) - Wrong type definition	Align measuring cell Select the correct function under CAL ➡ operating instructions Change calibration drive ➡ section 5, 4.1.5 Install correct calibration weight ➡ section 8 Load correct type definition ➡ section 7
Primary calibration incorrect	- Cornerload/linearity adjusted without subsequent primary calibration - Cornerload wrongly adjusted - Linearity changed - Calibration weight touching	Perform primary calibration ➡ section 7 Adjust cornerload ➡ cell manual, section 6, 5.3, then primary calibration ➡ section 7 Adjust linearity, then primary calibration ➡ section 7 Align measuring cell



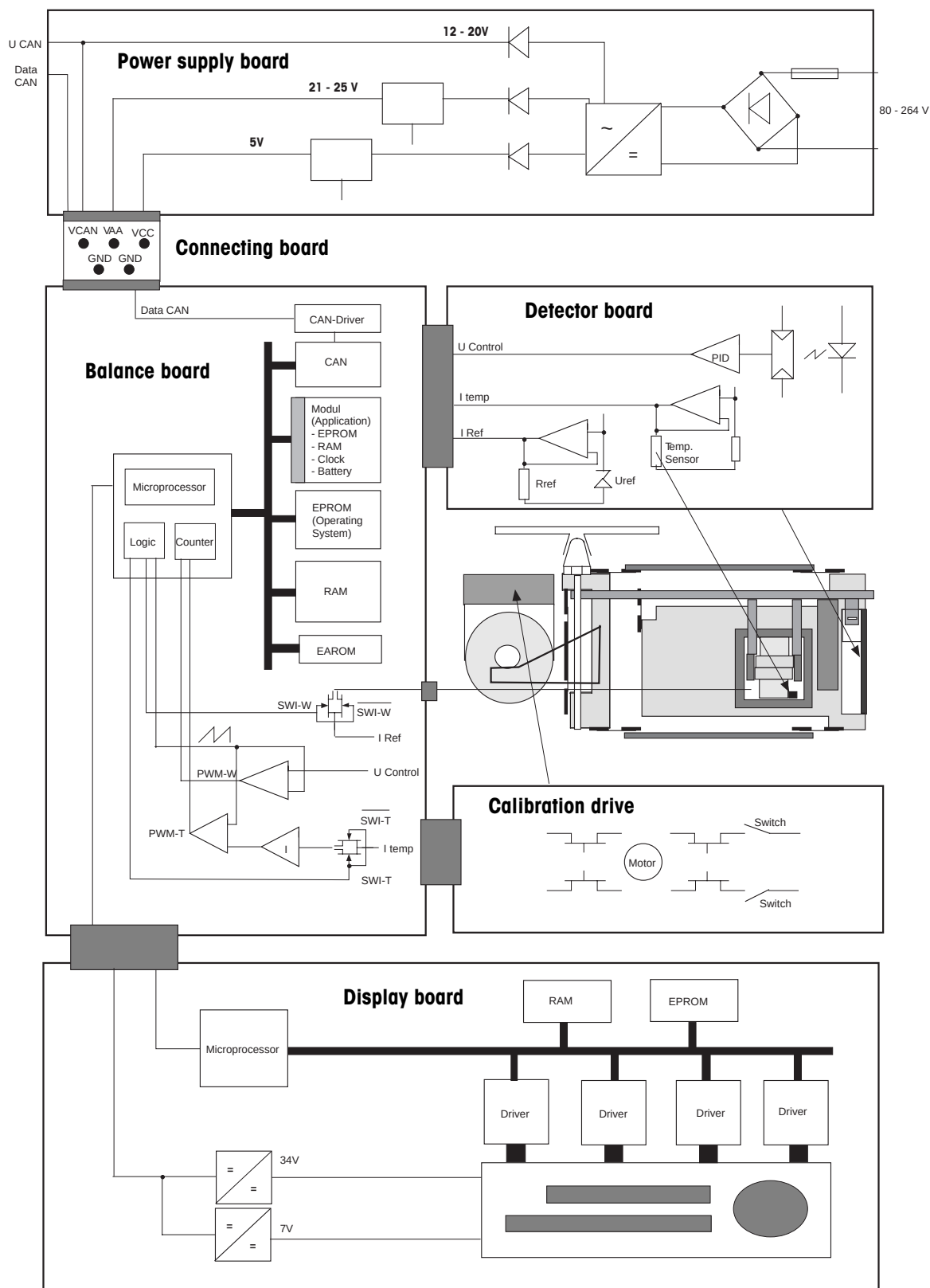
Error	Possible cause	Rectification
Hysteresis or unstable display	- Hair/fiber on coil, guide, beam, etc. 2) - Moving part touching measuring cell - Loose screws at measuring cell - Detector loose/dirty/faulty 2) - Guide/link tensioned/dirty/faulty 2) - Hanger mounted at an angle 2) - Magnet system dirty 2) - Lateral stop touching 2) - Calibration weight touching	Clean magnet system Align measuring cell Check screws Check detector Check guide and link Mount hanger straight ➡ cell manual, section 6, 4.6 Clean magnet system Check lateral stop Align measuring cell
Display drift	- Temperature compensation inadequate 2) - Flexible bearings/link tensioned 2) - Detector faulty 2)	Adjust temperature compensation, possibly change measuring cell (the enclosed paper strip contains the TC adjustment data) ➡ section 7 Loosen guide/link and tighten without tension, possibly replace ➡ cell manual, section 6, 4.7 Change detector ➡ , cell manual, section 6, 4.8
Cornerload can not be adjusted	- Guide faulty/tensioned/loose 2) - Setscrew/cornerload screw loose - Fastening plate not loosened - Link faulty 2) - Cornerload spring broken	Check guide Tighten locking nut (underside of cell) Loosen fastening plate screws ➡ cell manual, section 6, 5.3) Change link ➡ cell manual, section 6, 4.7 Change measuring cell ➡ section 5, 4.
Linearity not adjustable	- Cornerload not adjusted - Flexible bearings/link tensioned/faulty 2) - Detector faulty 2)	Check basic setting cornerload screw/setscrew ➡ cell manual, section 6, 5.3 Check flexible bearings and link Change detector ➡ cell manual
Linearity poor	3-point instead of 5-point linearization performed	Perform 5-point linearization ➡ section 7

Important information

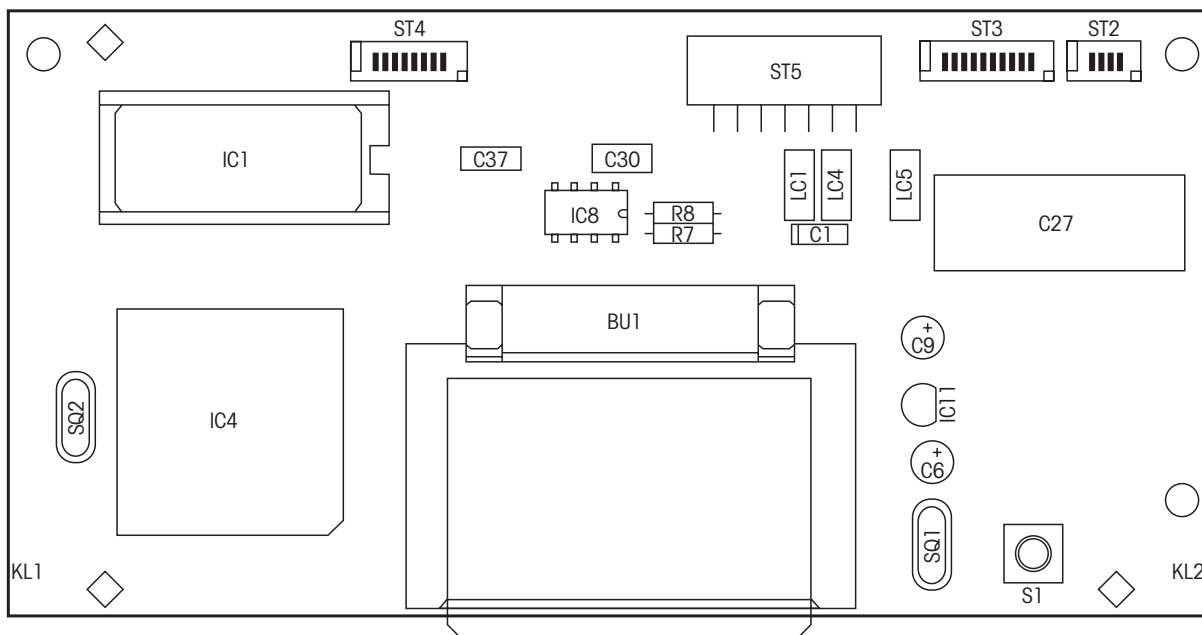
- 1) On short circuit to frame (voltage V AA - GND on connecting board ➡ 4.1 = 0 V), a fusing resistor on the power supply board can blow. First rectify short circuit to frame and then - if need be - change power supply board.
- 2) The conventional measuring cells of the SR/SG balances must not be disassembled. If a measuring cell is faulty, it must be replaced as a complete unit.

4. Schematic diagram R balances, electronics with test points

4.1 Block diagram PR balances



4.2 Balance board SR balances

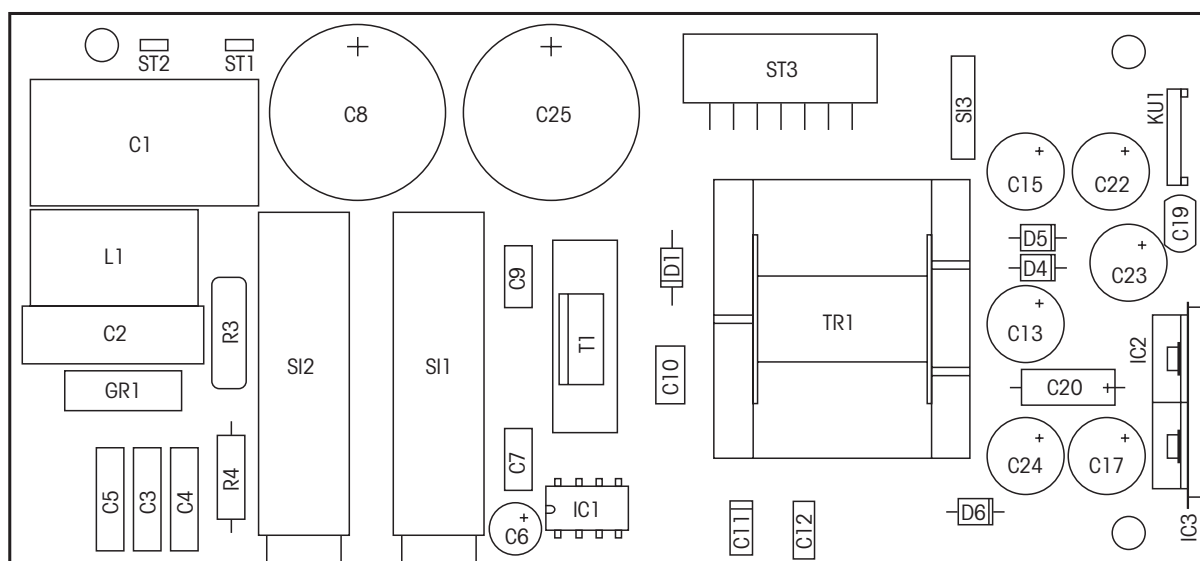


4.3 Power supply board SR balances

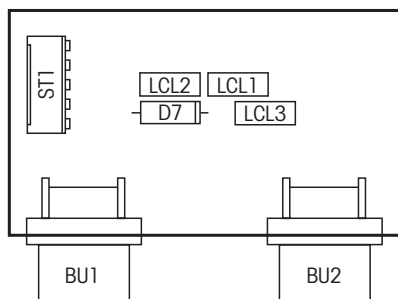


Caution 400 V voltage, danger!

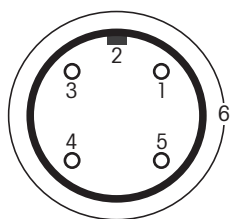
It is essential to disconnect balance from the power supply before changing the power supply board.



4.4 CAN board SR balances



Pin assignment of the CAN sockets (BU1, BU2)



1. **-CAN** (negative signal line)
2. Pin coding
3. **+CAN** (positive signal line)
4. **V CAN** (plus terminal of power supply for peripherals 14 V $\pm$ 2 V)
5. **0 V** (minus terminal of power supply for peripherals)
6. Shielding

6. Troubleshooting G balances

6.1 Troubleshooting AG balances

Error	Possible cause	Rectification
Balance can not be switched on	- No line voltage - Power cable AC adapter and/or cable to balance not plugged in or faulty - Wrong or faulty AC adapter - Program cassette not inserted or faulty - Calibration touching - Cable connections in the balance not plugged in or faulty - Board faulty - Measuring cell faulty	Plug in power cable or replace Test (115 V/230 V) or replace Insert program cassette or replace Adjust ➡ balance manual, section. 5, 3.1.11 Plug in cable or replace Change board ➡ section 5, 3.1.9 Test/replace ➡ cell manual
Keys do not function	- Mechanical transmission elements faulty or dirty - Bolt not inserted - Tare bar not centred - Microswitch on balance board faulty	Check or clean Insert bolt Loosen 2 front screws at bottom housing slightly and center tare bar Replace balance board
Individual segments of the display do not light up	Display or display driver faulty	Change balance board
Abrupt change in the display	- Vibrations at the workplace - Drafts or fluctuations in atmospheric pressure - No contact at cover plate (electrostatics) - No contact at screening plate (electrostatics) - Hair/fiber between moving parts - Dirt between weighing pan and cover plate, or baseplate not positioned properly - Dirt, fibers between pan support cone and sealing plate sleeve - Applies especially to 10 µg range: Stabilizer cable not plugged in or pinched (short circuit). - Measuring cell does not stabilize	Location, see operating instructions Screen weighing location Check connection contact springs/cover plate ➡ section 5, 3.1.7 Check connection contact springs top housing at bottom/screening plate of cell Check/clean moving parts Clean, press down baseplate Clean or center Plug in cable, check (partition must be at constant temperature!) see next section
Overload/underload display	- Calibration weight touching, correct position not reached - Rocker stuck	Check/adjust calibration Check movement of rocker, check switch on balance board
Calibration not possible	- Calibration cable not plugged in - Link buckled - Wrong type definition - Dead load not right - Detector board	Check Replace Enter correct type definition Weighing pan too light, check lever counterweight Replace ➡

Error	Possible cause	Rectification
Weighing cell does not stabilize Hysteresis or unstable display Flashing 0.00000	• Cable and/or connector • Touching, dirt or fibers between the stationary and moving parts • Stop plate or coil not centred • Supply strips touching or poorly soldered in • Balance board and/or detector board faulty • Measuring cell cable damaged by long screws at contact springs/partition • Flexible bearings and/or link deformed or mounted tensioned • Loose screws at measuring cell • Weighing pan not mounted	Check, if need be unplug then plug in again Clean, special magnet system Check, readjust ➡ cell manual section 3,4.5 Check, replace if necessary Replace Check screws, replace measuring cell cable if necessary Check, replace if necessary ➡ cell manual section 3, 4. Check, tighten according to ➡ cell manual 3, 2. Mount weighing pan
Cornerload not adjustable	• Guide faulty, guide fastening tensioned/loose • Adjustment screw loose • Link faulty or tensioned	Check, align guide or replace ➡ cell manual section 3,4.4 Tighten locking nut ➡ cell manual, section 3,5.2 Check, replace if necessary ➡ cell manual 3,4.
Linearity error, poor reproducibility	• Link deformed or mounted tensioned • Cornerload not adjusted • Calibration weight not in correct position	Replace link or remount and then linearize ➡ cell manual section 3, 4. Adjust cornerload ➡ cell manual section 3, 5.4 Test, readjust ➡ section 5, 3.1.12
Display drift	• Weighing sample not temperature adjusted, hygroscopic or highly electrostatically charged • Sunlight, powerful draft • Switch-on behavior (~ 15 minutes) not complied with • Flexible bearings/link tensioned • Temperature compensation insufficient • No contact at cover plate (electrostatics) • No contact at screening plate (electrostatics) • Board faulty	See operating instructions, section 6 See operating instructions, section 2.2 Check, remount or replace Perform temperature compensation ➡ cell manual Check connection contact springs/cover plate ➡ cell manual 5, 3.1.7 Check connection contact springs top housing at bottom/screening plate of cell Replace board
Data interface (CAN) without signal	• CAN cable not plugged in • CAN board/connector faulty • Configuration wrong	Check ➡ section 5, 3.1.9 Replace CAN filter ➡ section 5, 3.1.17 Check CAN box setting
AC adapter	• Overload triggered through faulty board, can lead to insufficient voltage	Replace AC adapter 115 V Disconnect AC adapter 230 V from power supply and reconnect (this makes the temperature-controlled switch operable again)

6.2 Troubleshooting PG-S balances

Error	Possible cause	Rectification
Balance can not be switched on	- No power line voltage - Power cable not plugged in or faulty - Connection cable for cell short circuited to frame - Balance PCB - Display PCB not attached - Display faulty - Bench power supply faulty - Keypad defective	Plug in power cable or replace Check connection cable for cell Change Balance PCB ➡ section 5, 3.2.9 Plug in Connection cable for display Replace display PCB ➡ section 5, 3.2.8 Change bench power supply Replace keypad ➡ section 5, 3.2.5
Taring not possible	→ "Balance can not be switched on" - Balance display unstable - Pan support touches fastening plate, or hook for below balance weighing touching	Wait min. 1 minute (until display appears) Check pan support and hook for below balance weighing
Keypad does not work	Keypad not attached or faulty	Attache or replace ➡ section 5, 3.2.5
Individual segments of display do not light up	Display faulty	Replace display PCB ➡ section 5, 3.2.8
Measuring cell (beam) does not equilibrate	- Detector displaced laterally or height stop out of adjustment - Coil touching - Bench power supply faulty - Connection cable for cell unplugged or loose - Coil/coil connections have break/short circuit or are not plugged in - Faulty soldered joints of TC sensor connections - TC sensor short circuited to frame - Detector board faulty	Adjust ➡ cell manual, section 8, 4.3/5 Check coil, possibly replace lever ➡ cell manual, section 8, 4.3 Check voltages on balance PCB Plug in cable properly Check coil/coil connections, possibly replace lever ➡ cell manual, section 8, 4.3 Resolder connections Change measuring cell ➡ section 5, 3.2.10 Change detector ➡ cell manual, sect. 8, 4.2
Abrupt change of display, unstable display, Hysteresis	- Pan support touching fastening plate, or hook for below balance weighing touching - Hair/fiber touching coil, monobloc; lever touching detector laterally - Moving part of measuring cell touching - Loose screws at measuring cell - Poor contact/poor soldered joint - Detector loose/dirty/faulty - Severe vibrations at weighing station - Arms of internal calibration weight touching - Balance PCB or cell PCB faulty	Check Clean magnet system, align detector Align measuring cell Check screws Check contacts and soldered joints Check detector ➡ cell manual, sect. 8, 4.2 Adjust weighing parameter "Vibration adapter" ➡ operating instructions Align measuring cell Change PCB ➡ section 5, 3.2.9 or cell manual, section 8, 4.6



Error	Possible cause	Rectification
Overload/under-load display	- Height stop out of adjustment - Detector faulty - Break in coil/coil connection; winding short - Coil short circuited to frame - Wrong pan support or wrong pan - Connection cable for cell not plugged in or faulty - Wrong switch-on zero	Adjust stop ➡ cell manual, section 8, 4.3 Change detector ➡ cell manual, section 8, 4.2 Check coil connections Measure continuity coil - ground at coil board; change beam ➡ cell manual, section 8, 4.3 Check pan support and pan Plug in or change connection cable for cell Balance unloaded, switch on/off with the weighing pan appropriate to balance
Overload display before full load reached	- Dead load weight somewhat too high - Wrong weighing pan - Wrong type definition - Wrong switch-on zero - Wrong reference resistor	Enter correct type definition ➡ section . 7, <i>Func 1</i> and 2 Balance unloaded, switch on/off with the weighing pan appropriate to balance On replacement of the detector, unsolder reference resistor from old detector and solder onto new one ➡ cell manual, page 8-6
Calibration not possible	- Wrong test weight - Wrong type definition - Wrong reference resistor - Calibration blocked for certification reasons	Load correct test weight Enter correct type definition ➡ section 7 On replacement of the detector, unsolder reference resistor from old detector and solder onto new one ➡ cell manual, page 8-6 Unblock calibration ➡ section 8, 3.5
Internal calibration impossible	- Calibration weight touching „VariCal“ selected in the menu - Calibration drive faulty - Wrong calibration weight installed - Wrong type definition - No primary calibration	Align measuring cell Select „Cal int“ or „FACT“ ➡ operating instructions Change calibration drive ➡ section 5, 3.2.7 Install correct calibration weight ➡ section 8 Load correct type definition ➡ section 7 Perform primary calibration ➡ section 7
Primary calibration incorrect	- Cornerload/linearity adjusted without subsequent primary calibration - Cornerload wrongly adjusted - Linearity changed - Calibration weight touching	Perform primary calibration ➡ section 7 Adjust cornerload ➡ cell manual, section 8, 5.2, then primary calibration ➡ section 7 Adjust linearity, then primary calibration ➡ section 7 Align measuring cell



Error	Possible cause	Rectification
Display drift	• Temperature compensation inadequate • Detector faulty	Test/Adjust temperature compensation (page 7-26,27), possibly change measuring cell Change detector ➔ cell manual, section 8, 4.2
Linearity not adjustable	• Cornerload not adjusted • Detector faulty	Check/adjust cornerload ➔ cell manual, section 8, 5.2 Change detector ➔ cell manual, section 8, 4.2
Linearity poor	• 3-point instead of 5-point linearization performed	Perform 5-point linearization ➔ section 7
Balance blocked	• In the menu under Handshake „HS Hard“ selected	Switch on the connected peripheral unit

6.3 Troubleshooting PG-S industrial scales (0.1 g and 1 g)

Fault	Possible cause	Rectification
Scale can not be switched on	- No line voltage - Power cable not plugged in or faulty - Connection cable of cell has short circuit to frame - Scale PCB faulty - Display PCB not connected - Display faulty - Power supply board faulty	Plug in power cable or replace Check connection cable of cell Change scale PCB ➡ section 5, 3.3.6 Plug in connection cable of display Change display PCB ➡ section 5, 3.3.4 Change power supply board
Taring not possible	→ "Scale can not be switched on" - Scale display unstable - Pan mount touching top housing, or hook for below-scale weighings grazing sth.	Wait min. 1 minute (until display appears) Check pan mounts and hook for below-the-scale weighing
Keypad inoperative	Keypad not plugged in or faulty	Plug in or change ➡ section 5, 3.3.2
Individual segments of the display do not light up	Display faulty	Change display PCB ➡ section 5, 3.3.4
Measuring cell (lever) does not equilibrate	- Detector shifted laterally or vertical stop out of adjustment - Coil touching - Power supply board faulty - Cell cable not plugged in or loose - Coil/coil connections break/short circuit/not plugged in - TC sensor connections poor solder joints - TC sensor has short circuit to frame - Detector faulty	Adjustment ➡ cell manual, section 7, 3.2 - 3.5, 5 Check coil, possibly change lever ➡ cell manual, section 7, 3.3 Check voltages on scale PCB Plug cable in properly Check coil/coil connections, possible change lever ➡ cell manual, section 7, 3.3 Resolder connections Change measuring cell ➡ section 5, 3.3.7 Change detector ➡ cell manual, section 7, 3.2
Abrupt, unstable display, hysteresis	- Pan mount touching top housing, or hook for below-scale weighings grazing sth. - Hair/fiber on coil, monobloc; lever touching detector at side - Moving part of the measuring cell touching - Loose screws on measuring cell - Poor contact, poor solder joint - Detector loose/dirty/faulty - Powerful vibrations at weighing station - Arms of internal calibration weight touching something - Scale PCB or cell faulty	Check Clean magnet system, center detector Align measuring cell Check screws Check contacts and solder joints Check/change detector ➡ cell manual, section 7, 3.2 Adjust weighing parameter "Vibration adapter" ➡ operating instructions Align measuring cell Change PCB ➡ section 5, 3.3.6, 3.3.7



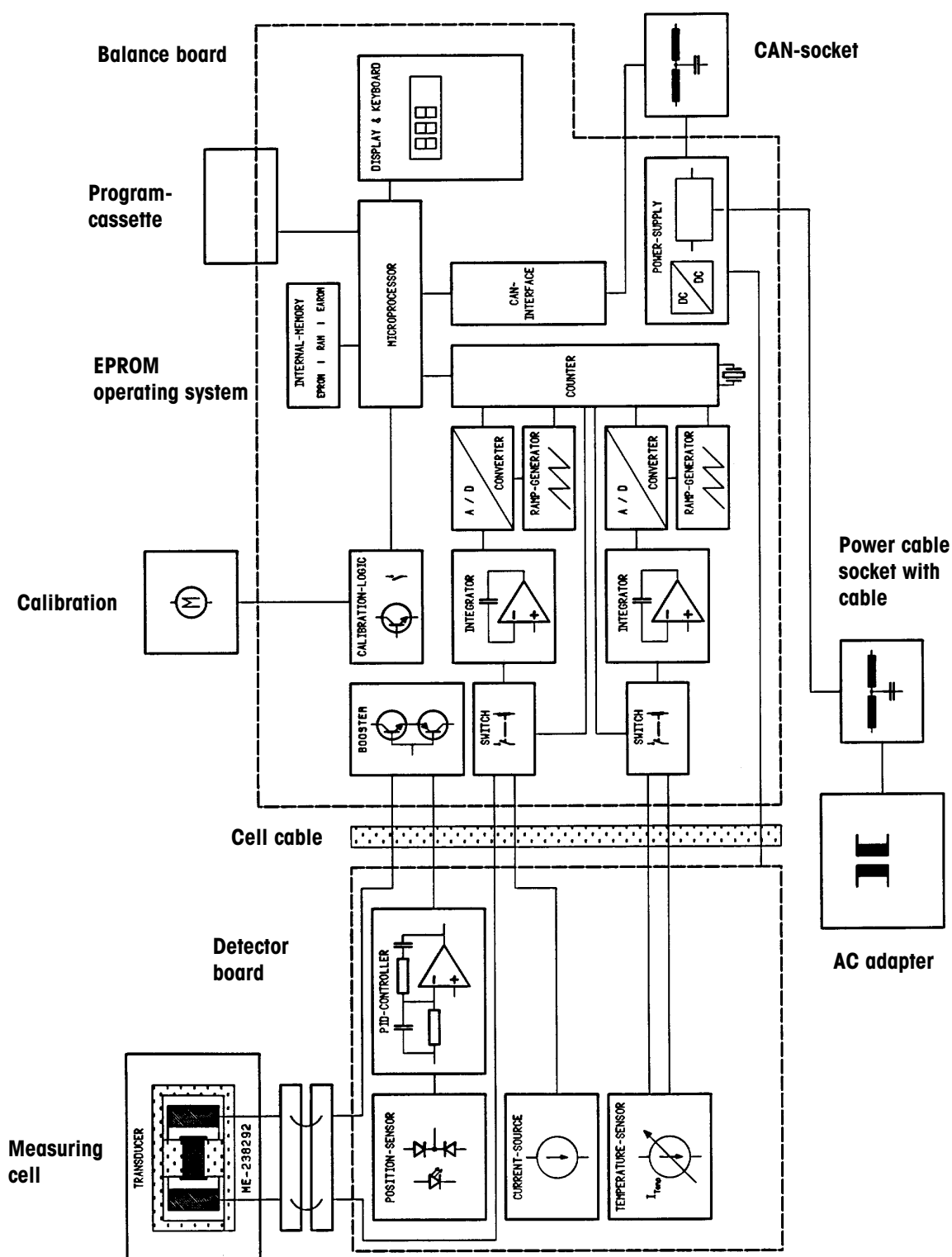
Fault	Possible cause	Rectification
Overload/underload display	• Vertical stop out of adjustment • Detector faulty • Break in coil/coil connection; winding short • Short circuit of coil to frame • Wrong pan support or wrong pan • Connection cable of cell not plugged in or faulty • Wrong switch-on zero	Adjust stop ➡ cell manual, section 7, 6.1 Change detector ➡ cell manual, section 7, 3.2 Check coil connections Measure continuity coil–ground at coil board; change lever ➡ cell manual, section 7, 3.3 Check pan support and pan Plug in or change cable Scale unloaded, switch on/off with weighing pan appropriate to scale
Overload display before full load reached	• Dead load somewhat too small • Wrong weighing pan • Wrong type definition • Wrong switch-on zero • Wrong reference resistor	Enter correct type definition ➡ section 7, <i>Func 1</i> and <i>2</i> Scale unloaded, switch on/off with weighing pan appropriate to scale If detector changed, solder reference resistor from old detector onto new one ➡ cell manual, section 7, 3.5
Calibration (adjustment) impossible	• Protective cover mounted wrongly • Wrong test weight • Wrong type definition • Wrong reference resistor • Calibration (adjustment) blocked for certification reasons	Mount protective cover properly Load correct test weight Enter correct type identification ➡ section 7 If detector changed, solder reference resistor from old detector onto new one ➡ cell manual, section 7, 3.5 Unblock calibration (adjustment) ➡ section 8, 3.5
Internal calibration (adjustment) impossible	• Calibration weight touching • „VariCal„ selected in the menu • Calibration drive faulty • Wrong calibration weight installed • Wrong type definition	Align measuring cell Select „Cal int„ or „FACT„ ➡ operating instructions Change calibration drive ➡ section 5, 3.3.3 Install correct calibration weight ➡ section 8 Load correct type definition ➡ section 7
Primary calibration not right	• Cornerload/linearity adjusted without subsequent primary calibration • Cornerload poor • Linearity changed • Calibration weight touching	Perform primary calibration ➡ section 7 Adjust cornerload ➡ cell manual, section 7, 6.3, then primary calibration ➡ section 7 Adjust linearity, then primary calibration ➡ section 7 Align measuring cell



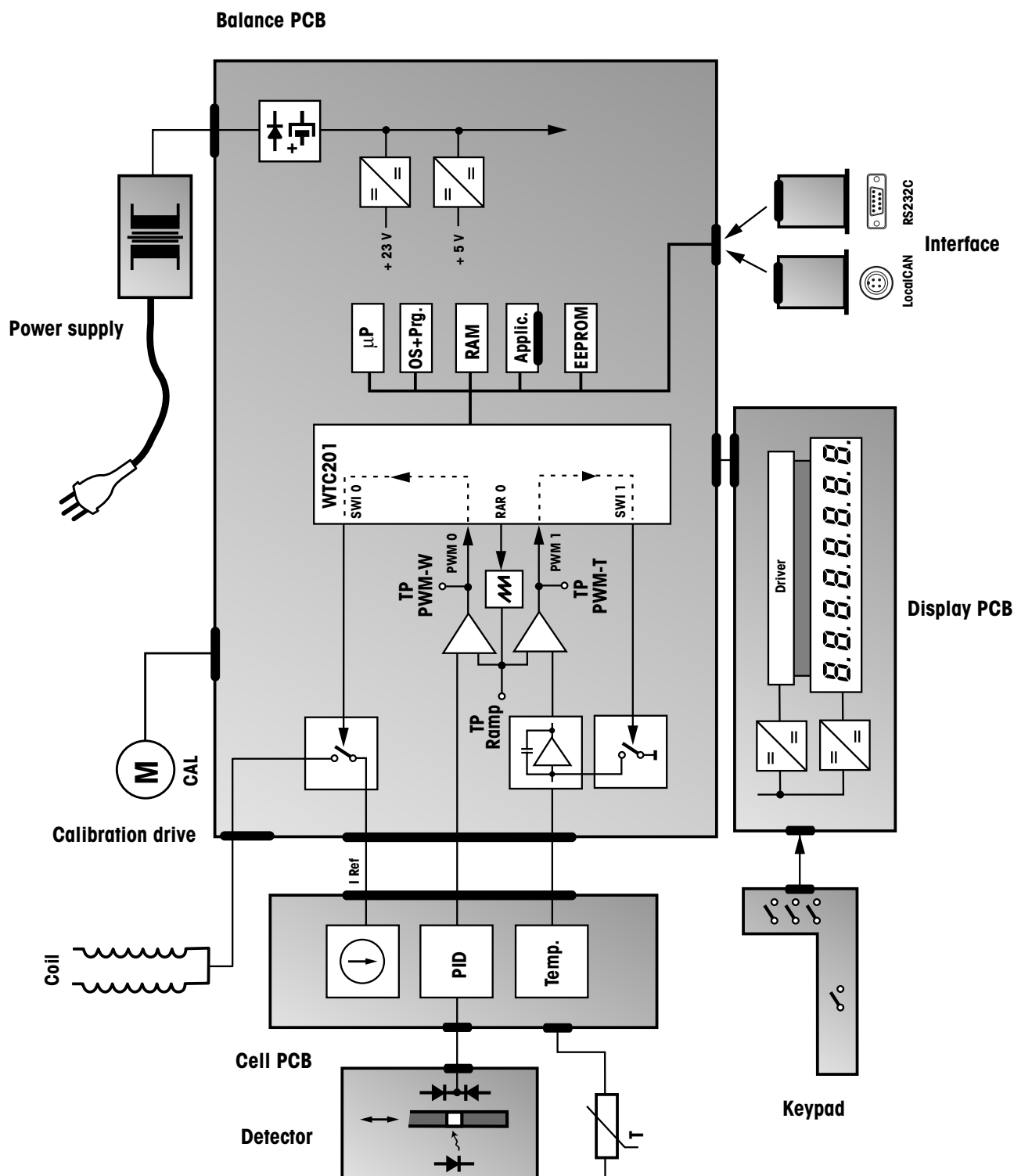
Fault	Possible cause	Rectification
Display drift	• Temperature compensation inadequate • Detector faulty	Test/adjust TC ➡ section 7 (pages 26/27), possibly replace measuring cell Change detector ➡ cell manual, section 7, 3.2
Linearity can not be adjusted	• Cornerload not adjusted • Detector faulty	Check/adjust cornerload ➡ cell manual, section 7, 6.3 Change detector ➡ cell manual, section 7, 3.2
Linearity poor	• 3-point instead of 5-point linearization performed	Perform 5-point linearization ➡ section 7
Scale blocked	• In menu option Handshake setting „HS Hard„ selected.	Switch on attached peripheral device.

7. Schematic diagram G balances

7.1 Block diagram AG balances



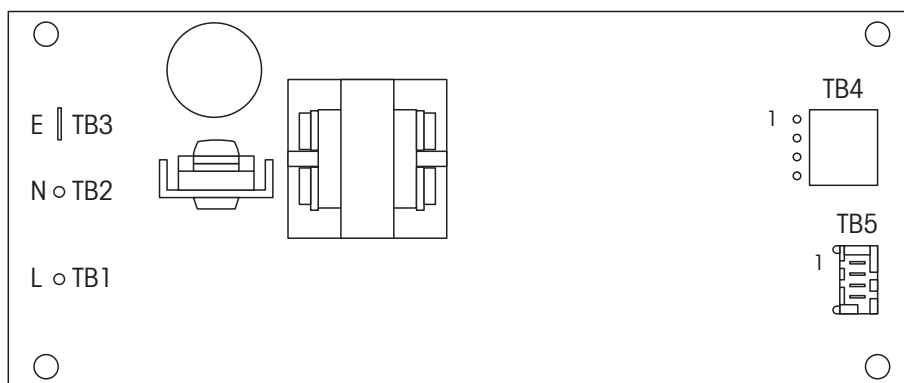
7.2 Block diagram PG-S balances



7.3 Power supply board PG-S scales (only models with integrated power supply)

**Warning: Danger! Voltage 400 V**

Be sure to disconnect the scale from the power supply before changing the supply board!

**Primary side:**

TB1: Connection terminal AC phase
TB2: Connection terminal AC neutral
TB3: Connection terminal AC ground

Secondary side:

TB5: Terminal strip output DC:
Pin 1: no assignment
Pin 2: GND
Pin 3: no assignment
Pin 4: +15 V

8. Troubleshooting the Moisture Analyzer

8.1 HR/HG

8.1.1 Built-in balance

In principle the troubleshooting list for the B balances applies ➔ Section 1.1

8.1.2 Dryer

Error messages and corrective measures at user level are already described in the **Operating Instructions, Chapter 8**.

Fault	Possible Cause	Remedy
Moisture analyzer cannot be switched on	- Power supply cable not plugged in or no power supply voltage - Faulty fuse - Cable connections inside instrument not plugged in or faulty - Faulty board	Check The power supply is designed for 100...240 VAC but the drying unit only for 110 or 230 VAC. Check whether the correct drying unit is installed. Plug in or replace cable Replace board ➔ Section 5
Some keys do not respond	- In the menu "Key protection" or "Procedures off" has been selected - Conductive path of keypad cable interrupted by kink in cable	In menu item 6 select "Key protection off" and in item 14 "Procedures on" Replace membrane keypad ➔ Section 5.4
Keypad does not function	Plug not plugged in	Check
Some segments of the display do not light up	Display or display drive faulty	Replace CPU board ➔ Section 5
Add-on printer does not print some characters	Printer board not plugged in straight so some pins are bent at an angle and without contact	Remove printer and straighten pins
Hysteresis of the results display	Support bushing of sample pan carrier catches in hole of sample chamber front	Position weighing cell in sample chamber chassis ➔ Section 5, Chap. 5.22.10
Halogen lamp does not switch on after "Start"	- Temperature controller/overtemperature switch has responded - Faulty temperature controller - Lamp contacts of drying unit bent or faulty - Faulty halogen lamp	Press switch with finger to reset, or on older version wait 10 minutes until it resets automatically ➔ Section 5, Chapter 5.1.4 Replace if resistance after resetting is $>1\ \Omega$ ➔ Section 5, Chap. 5.1.4. Replace contact block ➔ Section 5, Chap. 5.10 or contact plate ➔ Section 5.1.4. Replace if resistance $> 20\ \Omega$ (check whether 110 or 230 VAC) ➔ Section 5, Chap. 5.1.3



Fault	Possible Cause	Remedy
Halogen lamp does not switch on after "Start"	• Temperature sensor not plugged in • Faulty temperature sensor • Faulty sample chamber cable • Faulty power supply board • Faulty CPU board	Plug in sensor Replace ➡ Section 5, Chap. 5.8 Replace ➡ Section 5, Chap. 5.22.11 Replace ➡ Section 5, Chap. 5.21 Replace ➡ Section 5, Chap. 5.16
Temperature rises above 205 °_C	• Faulty temperature sensor • Faulty power supply board • Faulty CPU board	Replace ➡ Section 5, Chap. 5.8 Replace ➡ Section 5, Chap. 5.21 Replace ➡ Section 5, Chap. 5.16
Unstable weight display (repeatedly "Error 1"), poor repeatability of measurement results, or temperature jumps	• Soiled weighing cell • Fatigue breakage of sample chamber cable (usually the gray-colored version)	Clean weighing cell Test cable ➡ Section 7, <i>Func 79</i> /replace ➡ Section 5, Chapter 5.22.11
Sample chamber does not move in and out	• Plug of sample chamber drive not plugged in • Toothed belt of sample chamber drive faulty	Plug in ➡ Section 5, Chap. 5.22.2 Replace sample chamber drive ➡ Section 5, Chapter 5.22.2
System Errors	• Internal calculation errors	Clear RAM General Reset Connect the power and hold the reset key If error occurs repeatedly note how error occurs and contact Helpdesk LMS.

8.2 HB Moisture Analyzer

Error messages and corrective measures at user level are already described in the **Operating Instructions, Chapter 7**.

Fault	Possible Cause	Remedy
Moisture analyzer cannot be switched on	- Power supply cable not plugged in or no power supply voltage - Faulty main fuse	Check The power supply is designed for 100...240 VAC but the drying unit only for 110 or 230 VAC. Check whether the correct drying unit is installed. Then replace the fuse on the back of the instrument ➔ Section 5, 6.8 Item 9.
Moisture analyzer cannot be switched on even though green LED on power supply board lights up	- Cable connections inside instrument not plugged in or faulty - Faulty CPU board - Faulty Membrane keypad	Plug in or replace cable ➔ explosion drawing Section 2, 5. Replace CPU board ➔ Section 5, 6.7
Moisture analyzer cannot be switched and green LED on power supply board does not light up	- Faulty power supply fuse - Faulty power supply board	Replace power supply fuse on power supply board ➔ Section 5, 6.8 Item 9. Replace power supply board ➔ Section 5, 6.8
Some keys do not respond	- In menu "Key protection on" was selected - Conductive path of keypad cable interrupted by kink in cable	Select "Key protection off" ➔ BA, 5.8 Replace membrane keypad ➔ Section 5, 6.3+4
Keypad does not function	Keypad cable not plugged in	Check ➔ Section 5, 6.10
Some segments of the display do not light up	Faulty display	Replace display ➔ Section 5, 6.5
Halogen lamp does not switch on after "Start"	- Temperature controller has responded - Faulty temperature controller - Faulty halogen lamp - Temperature sensor not plugged in or faulty - Faulty power supply board - Faulty CPU board	Reset switch with finger ➔ Section 5, 6.1.4 Replace if resistance after resetting is $> 1 \Omega$ ➔ Section 5, 6.1.4. Replace if resistance $> 20 \Omega$ (check whether 110 or 230 VAC) ➔ Section 5, 6.1.3 Plug in or replace sensor ➔ Section 5, 6.1.5 Replace ➔ Section 5, 6.8 Replace ➔ Section 5, 6.7



Fault	Possible Cause	Remedy
Temperature rises above 205 °C	- Faulty temperature sensor - Faulty power supply board - Faulty CPU board	Replace ➡ Section 5, 6.1.5 Replace ➡ Section 5, 6.8 Replace ➡ Section 5, 6.7
Unstable weight indication	The air current which cools the weighing cell is blocked	Clean the ventilation grating on the HB, remove sample chamber and clean ➡ Section 5, 6.2
ERROR 9: – Function error 1 – Function error 2	Temperature control disturbed : - Temperature adjustment missing - Temperature sensor not connected or faulty - CPU board faulty - EEPROM faulty or data damaged	Adjust temperature Connect sensor or replace it ➡ Section 5, 6.1.5. Replace it ➡ Section 5, 6.7 Restore data or replace EEPROM ➡ Section 5, 6.7 (Point 5)

Contents	Page
1. General information	7
2 Repairs of B balances	8
2.1 Repairs of the AB/CB/PB/GB and B balances	8
2.1.1 Draft shield repairs	8
2.1.2 Opening the balances	9
2.1.3 Replacing the interfaces	10
2.1.4 Replace backlighting	11
2.1.5 Replacing the balance board	11
2.1.6 Replacing the measuring cell	12
2.1.7 Replacing the level	13
2.1.8 Replacing the top housing	13
2.1.10 Closing the balance	14
2.1.9 Replacing the bottom housing	14
Repair of B-S balances → 2.4	
	Blank pages 15-20
2.2 Repairs of the SB balances	21
2.2.1 Opening the SB balances	21
2.2.2 Replacing the "LC-B Option" interface board of SB balances	21
2.2.3 Replacing the balance board of SB balances	21
2.2.4 Removing the conventional measuring cell of SB balances with low construction	21
2.2.5 Removing the monobloc measuring cell of SB balances with low construction	22
2.2.6 Removing the measuring cells of SB balances with high construction	22
2.2.7 Installing the measuring cell	23
2.2.8 Replacing the display board of SB balances	23
2.2.9 Replacing the level of SB balances	23
2.2.10 Installation of the adapter for connection of the 8- or 10-pin measuring cells and balance boards	23
2.3 Repair of PZ and GL8R balances	25
2.3.1 Opening the PZ and GL8R balances	25
2.3.2 Replacing the RS interface (refinish balances)	25
2.3.3 Replacing the balance board	25
2.3.4 Replacing the measuring cell	25
2.3.5 Replacing the terminal display	26
2.3.6 Replacing the display cable	26
	Blank pages 27-30
2.4 Repair of B-S balances	31
2.4.1 Repairs to B-S low draft shield	31
2.4.2 Repairs to B-S high draft shield	32

Continuation 

2.4.5	Replacing membrane keypad	33
2.4.3	Opening the B-S balance	33
2.4.4	Closing the B-S balance	33
2.4.6	Fitting RS232 interface and connection cable	34
2.4.7	Replacing power cable	34
2.4.8	Removing measuring cell	35
2.4.9	Fitting measuring cell	35
2.4.11	Replacing spirit level	36
2.4.10	Replacing calibration drive or calibration weight	36
2.4.13	Replacing bottom housing	37
2.4.12	Replacing top housing	37
2.4.14	Replacing balance board	38
2.4.15	Replacing backlighting	38
2.5	Repair of AB-S balances	39
3.	Repairs of the G balances	51
3.1	Repairs of the AG balances	51
3.1.1	Removing weighing chamber	51
3.1.2	Installing weighing chamber	51
3.1.3	Removing top housing, assembled	52
3.1.4	Installing top housing, assembled	52
3.1.5	Removing rear panel	53
3.1.6	Installing rear panel	53
3.1.7	Replacing partition	53
3.1.8	Replacing model strip, keys and bolt	53
3.1.9	Removing/installing or replacing balance board	54
3.1.10	Replacing key holder and key spring	55
3.1.9.1	Replace backlighting	55
3.1.11	Removing sealing plate, calibration drive and arm	56
3.1.12	Installing arm, calibration drive and sealing plate	56
3.1.13	Removing measuring cell with shielding	57
3.1.14	Installing measuring cell with shielding	57
3.1.15	Removing chassis, assembled (with measuring cell and calibration drive)	58
3.1.16	Installing chassis, assembled (with measuring cell and calibration drive)	58
3.1.17	Replacing CAN filter with cable	58
3.1.18	Replacing supply cable	58
3.1.19	Replacing level	58
3.1.20	Removing hanger cover, slide, left and right lever with lever guides	59
3.1.21	Installing left and right lever with lever guides, slide and hanger cover	59
3.1.22	Replacing top housing	60

Continuation 

3.1.23	Replacing bottom housing	60
	Blank pages	61-64
3.2	Repairs to PG-S balances "laboratory"	65
3.2.1	Repairs to PG-S low draft shield	65
3.2.2	Repairs to PG-S high draft shield	65
3.2.3	Opening the PG-S balance 3.2.3	66
3.2.4	Closing the PG-S balance	66
3.2.5	Changing membrane keypad	67
3.2.6	Changing model plate	67
3.2.7	Changing calibration drive and calibration weight	68
3.2.8	Changing display PCB	69
3.2.9	Changing balance PCB	69
3.2.10	Removing the measuring cell	70
3.2.11	Installing measuring cell	70
3.2.12	Changing level	70
3.2.13	Changing top housing	71
3.2.14	Changing housing base	71
3.3	Repairing the PG-S scales "industry" (0.1 g/1 g)	73
3.3.1	Opening the PG-S scales (0.1 g/1 g)	73
3.3.2	Replacing membrane keypad and front glass	73
3.3.3	Replacing calibration drive	73
3.3.4	Replacing the display board	74
3.3.5	Replacing interface board	74
3.3.6	Replacing scale board	74
3.3.7	Replacing measuring cell	75
3.3.9	Replacing power socket	76
3.3.10	Replacing the level	76
3.3.8	Replacing power supply board	76
	Blank pages	77-90
4	Repairs of R and G balances	91
4.1	Repairs of the PR/PG balances	91
4.1.1	Repairs to PR/PG draft shield, low	91
4.1.2	Repairs to PR/PG draft shield, high	92
4.1.3	Opening the PR/PG balance	93
4.1.4	Power supply unit repairs	94
4.1.5	Replacing the calibration drive and calibration weight	95
4.1.6	Replacing the balance board	95
4.1.7	Replacing the measuring cell	96
4.1.8	Replacing the level	97

Continuation 

4.1.9	Replacing the top housing	97
4.1.10	Replacing the bottom housing	98
4.1.11	Closing the balance	99
4.1.12	Replacing the R terminal	100
4.1.13	Changing the G terminal	102
	Blank pages 105-110	
4.2	Repairs of the S/SR-/SG balances	111
4.2.1	Opening the S/SR-SG balances	111
4.2.2	Replacing the EPROM and the balance board	111
4.2.3	Replacing the power supply board	112
4.2.4	Replacing the CAN board	112
4.2.5	Removing the measuring cell and the overload protection	113
4.2.6	Adjusting the overload protection	115
4.2.7	Replacing the level	116
4.2.8	Removing/installing the terminal	116
4.2.9	Replacing the display board	117
4.2.10	Removing/installing the buffer protecting strips (model plates)	118
4.2.11	Installing/removing the program cassette	118
4.2.12	Changing the fuses	118
4.2.13	Replacing the feet	119
4.2.14	Replacing the antitheft device	119
4.2.15	Replacing the power cable	119
	Blank pages 121-150	
5.	Repairing the HG/HR Moisture Analyzer	151
5.1.2	Replacing protective glass	151
5.1.2.1	Dismantling protective glass	151
5.1	Repairing dryer unit	151
5.1.1	Dismantling dryer unit	151
5.1.3	Replacing halogen radiator	152
5.1.3.1	Dismantling halogen radiator	152
5.1.2.2	Mounting protective glass	152
5.1.4	Replacing left and right contact or temperature controller/overtemperature switch	153
5.1.5	Installing dryer unit	153
5.1.3.2	Mounting halogen radiator	153
5.2.2	Replacing printing unit or printer board	154
5.2.3	Installing built-in printer	154
5.2	Repairing built-in printer	154
5.2.1	Dismantling built-in printer	154

Continuation 

	Repairing parts in the interior of the HG/HR	155
5.3	Removing top housing	155
5.5	Mounting membrane keypad	155
5.4	Removing membrane keypad	155
5.6	Replacing top housing	155
5.7	Mounting top housing	155
5.8	Replacing temperature sensor	156
5.9	Dismantling dryer unit support	156
5.10	Replacing contact block housing or contact block or rear air duct	157
5.11	Installing dryer unit support	158
5.12	Replacing fan	158
5.13	Replacing pivot bearings	158
5.15	Dismantling CPU board	159
5.16	Replacing CPU board	159
5.14	Replacing level	159
5.17	Installing CPU board	160
5.18	Replacing program EPROM	160
5.19	Replacing battery	160
5.20	Replacing backlighting	161
5.21	Replacing power supply board	161
5.21.1	Dismantling power supply screening plate	162
5.21.2	Installing power supply screening plate	162
5.22	Repairing sample chamber	162
5.22.1	Replacing heat shield or sample chamber front	162
5.22.2	Replacing sample chamber drive	163
5.22.3	Replacing gear rack	163
5.22.4	Dismantling sample chamber	163
5.22.5	Dismantling front air duct	164
5.22.6	Installing front air duct	164
5.22.7	Installing sample chamber	164
5.22.8	Replacing guide rails	165
5.22.9	Replacing guide and supporting rollers	165
5.22.10	Replacing weighing cell	165
5.22.10.1	Dismantling faulty weighing cell	165
5.22.10.2	Installing new weighing cell	166
5.22.11	Replacing sample chamber cable	167
5.23	Replacing bottom housing	168
5.23.1	Dismantling bottom housing	168
5.23.2	Installing bottom housing	168

Continuation 

6.	Repairing the HB Moisture Analyzer	181
6.1	Repairing the drying unit	181
6.1.1	Dismantle heating module	181
6.1.2	Replacing the protective glass and reflector	182
6.1.2.1	Dismantle protective glass and reflector	182
6.1.2.2	Install protective glass and reflector	182
6.1.3	Replacing the halogen lamp	183
6.1.3.1	Dismantle halogen lamp	183
6.1.3.2	Install halogen lamp	183
6.1.4	Replacing the temperature controller	183
6.1.5	Replacing the temperature sensor	184
6.1.6	Installing the heating module	184
6.2	Removing housing top	185
6.3	Removing the membrane keypad	187
6.4	Installing the membrane keypad	187
6.5	Replacing the display	188
6.6	Replacing the fan	188
6.7	Replacing the CPU board	189
6.8	Replacing the power supply board	190
6.9	Replacing the weighing cell	191
6.10	Installing the housing top	192
6.11	Replacing the housing base	194

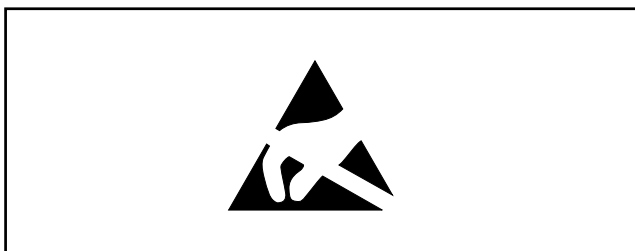
1. General information

ESD protective measures (ElectroStatic Discharge)

CMOS components are used in all balances and are sensitive to electrostatic voltages. If such a voltage discharges across a CMOS component, the component may be destroyed or a CMOS memory chip may lose its data (EARAM).

To protect these components, there are various ESD protective measures which need to be observed when servicing the balances:

- When removing and installing the measuring cell, neither the detector board nor the cable contacts may be touched.
- If no workplace with ESD protection is available, always touch the bottom housing or any other metal part of the balance before any contact with the electronics. Following this action, the board and the balance are at the same electrical potential as the person performing the work.
- Boards which are returned for repair must be packaged in the original antistatic packaging regardless of the fault.
- EPROMs kept outside the balance must be stored on conductive foam.
- If soldering work is performed on the boards, a soldering iron isolated from the power supply (isolating transformer) is recommended.



- Exchangeable components which are sensitive to electrostatic discharge are marked with an ESD protection symbol (see illustration).

2 Repairs of B balances

2.1 Repairs of the AB/CB/PB/GB and B balances

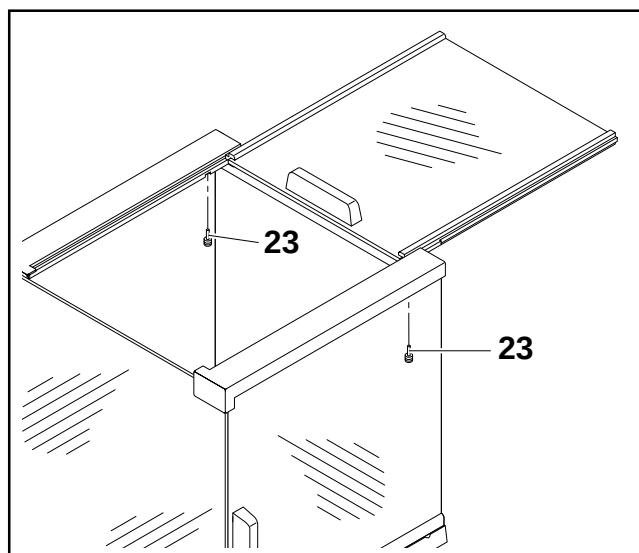
AB, CB, PB, GB and B balances are divided into balances with draft shield and round weighing pan and balances without draft shield and rectangular weighing pan.

For a better understanding and overview of the situation, it is advisable to take out the appropriate exploded view drawing in section 2. This also provides information on the spare parts available.

2.1.1 Draft shield repairs

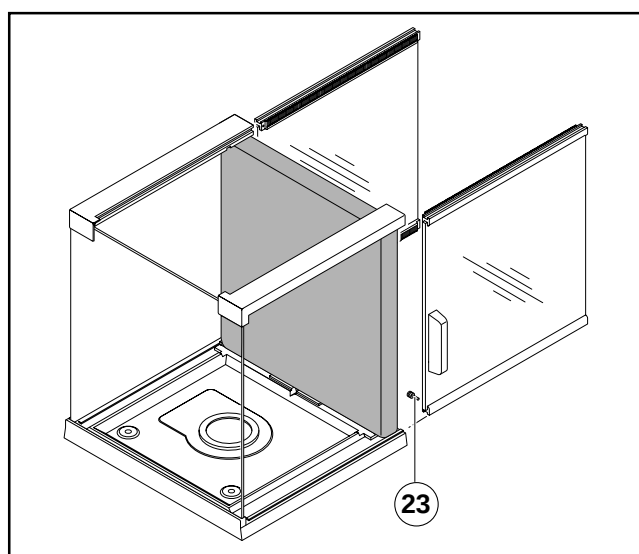
Note: The draft shield can remain mounted on the balance during replacement of the appropriate draft shield door.

2.1.1.1 0.1 mg draft shield



Replacing top door

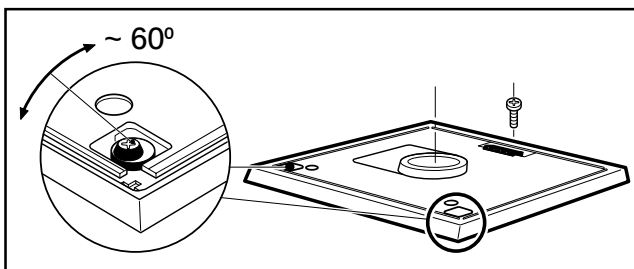
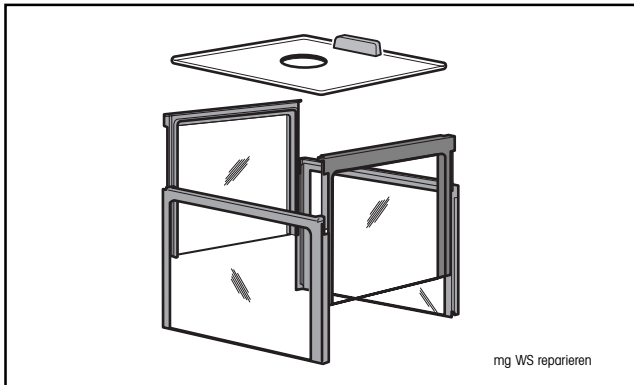
1. Remove the two brass-colored locking pins (23) at the bottom of the sidepieces (at rear). The door can now be pulled out.
2. Insert new door, press locking pins into sidepieces.



Replacing left and right doors

1. Open draft shield, remove weighing pan, ring and bottom plate.
2. Remove brass-colored locking pin (23) from guide rail. Pull out door.
3. Arrange new door parallel to the gear wheels at top and bottom and push in so that the rack rails simultaneously mesh in the gear wheels. Only in this manner is the side door positioned optimally. If the door has been inserted correctly, it can be easily slid back and forth. The front edge of the pane ends flush with the front door.
4. Press locking pin (23) into guide rail.

2.1.1.2 mg draft shield



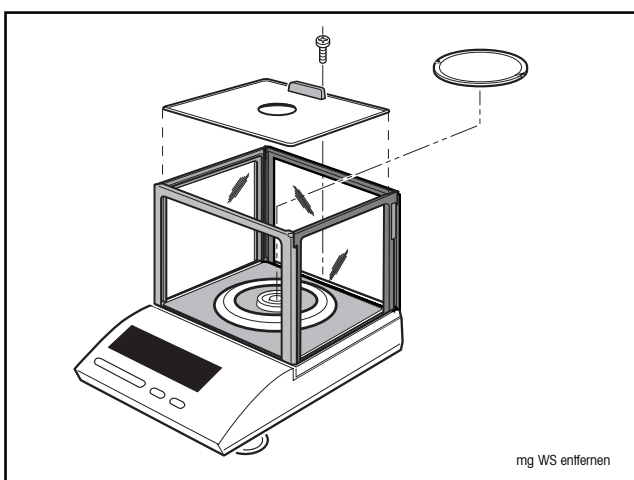
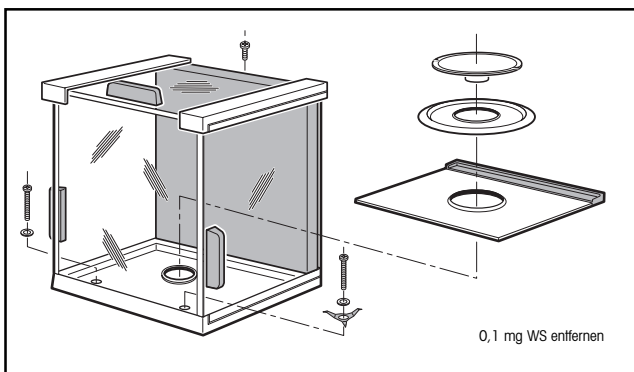
Replacing doors

1. Lift off top door.
2. Pull out left and right side doors holding the pane at the front and back with your free hand.
3. Tilt the doors at the front and back in the direction of the weighing pan and remove.
4. Replace defective pane.

Notes

- The baseplate must be removed only if the complete draft shield is replaced. Installation instructions 705176
- 0.1 mg draft shield and mg draft shield can be interchanged at any time. Installation instructions 705175

2.1.2 Opening the balances



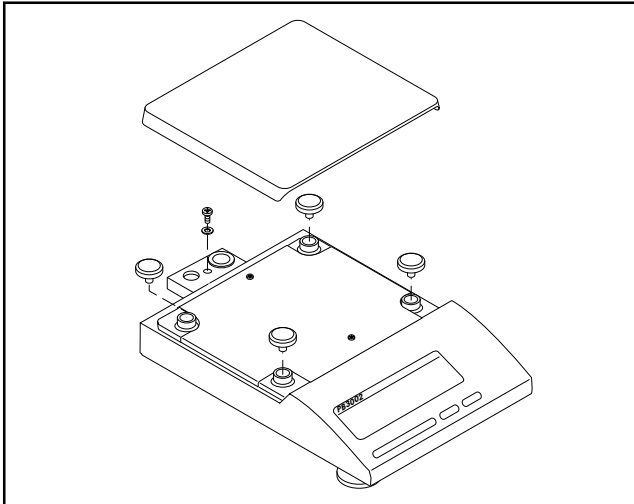
1. Disconnect AC adapter.

2a. Balances with 0.1 mg draft shield

1. Open draft shield.
2. Remove weighing pan, ring and bottom plate.
3. Unscrew the two screws now visible and remove fastener screw next to the level.
4. The draft shield can now be lifted off.
5. Pull protective cover over the level support.
6. Lift up top housing at back approx. 45°, push forward slightly and remove.

2b. Balances with mg draft shield

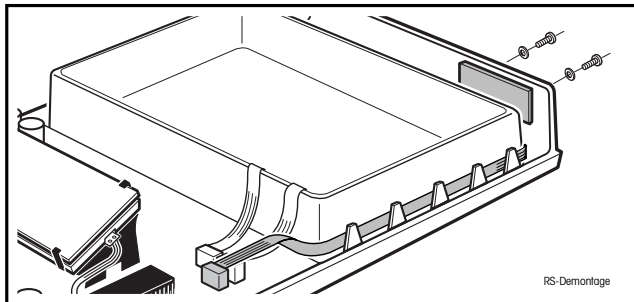
1. Open draft shield.
2. Remove weighing pan
3. Remove fastener screw next to level.
4. Pull protective cover over level holder.
5. Lift up top housing with mounted draft shield at back approx. 45°, push slightly forward and remove.



2c. Balances with rectangular weighing pan

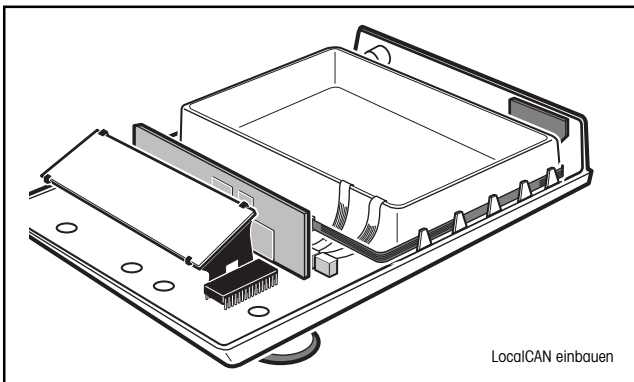
1. Remove weighing pan and pan supports.
2. Unscrew fastener screw next to level and remove.
3. Pull protective cover over the level holder.
4. Lift up top housing at back approx. 45°, push slightly forward and remove.

2.1.3 Replacing the interfaces



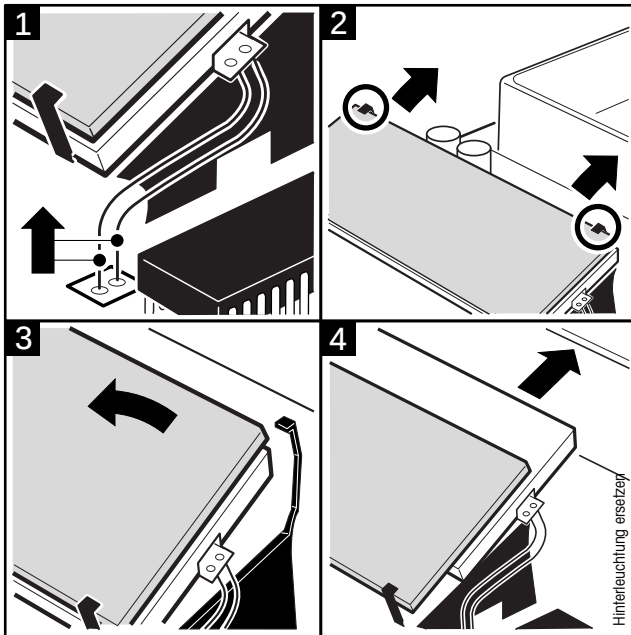
Dismantle RS232

1. Open balance (see point 2.1.2).
2. Dismantle RS232 connection cable and socket with PCB and blind.



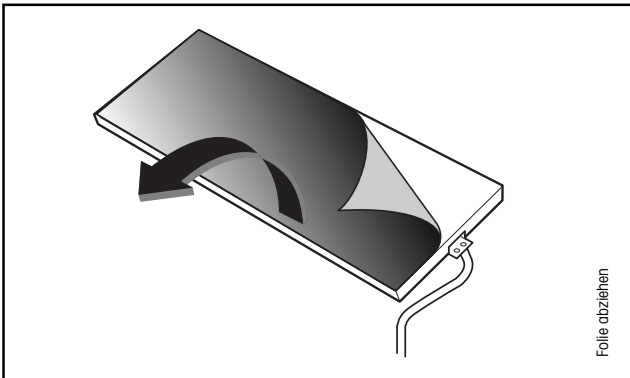
Installing LocalCAN

3. Hold LocalCAN interface PCB at both ends and plug into the connector.
4. Install LocalCAN socket with PCB and blind and plug in connection cable at LocalCAN PCB.

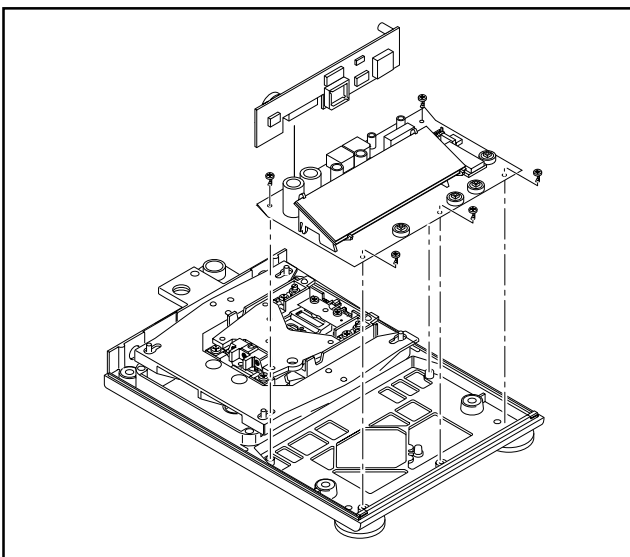


2.1.4 Replace backlighting

Desmantle defective backlighting.



Before installing the new backlighting draw off the protective foil.



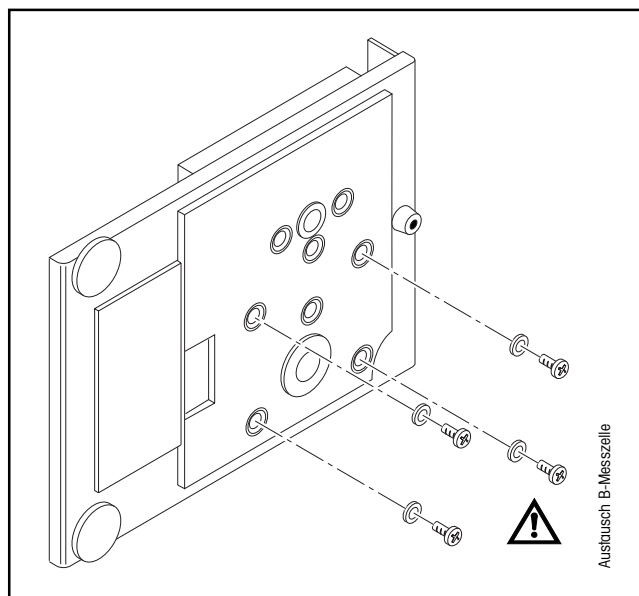
2.1.5 Replacing the balance board

1. Open balance (see point 2.1.2).
2. Disconnect ribbon cables of power supply, coil and detector.
3. If the LC-B interface is installed: pull out LC-B.
4. Unscrew the 5 fastener screws.
5. Lift out balance board and replace.

Notes

- 2 EPROMs are supplied with the balance board. For balances without or with LC interface: use EPROM "without RS". For balances with RS interface: use EPROM "with RS".
- The balance type definition must always be reloaded with the LC-PT45 (see section 7).

2.1.6 Replacing the measuring cell



1. Open balance (see point 2.1.2).
2. With PB/GB/B balances with rectangular weighing pan, remove overload protection from hanger.
- 3a. With PB/GB/B balances with rectangular weighing pan, loosen cable retaining strips and move to one side.
- 3b. With AB/CB/B 0.1 mg balances: Remove screening cover.
4. Disconnect ribbon cables of coil and detector.
5. Hold measuring cell at left and right at chassis and tilt entire balance to the side.
6. Remove fastener screws with spring washers from below.
7. Remove measuring cell.

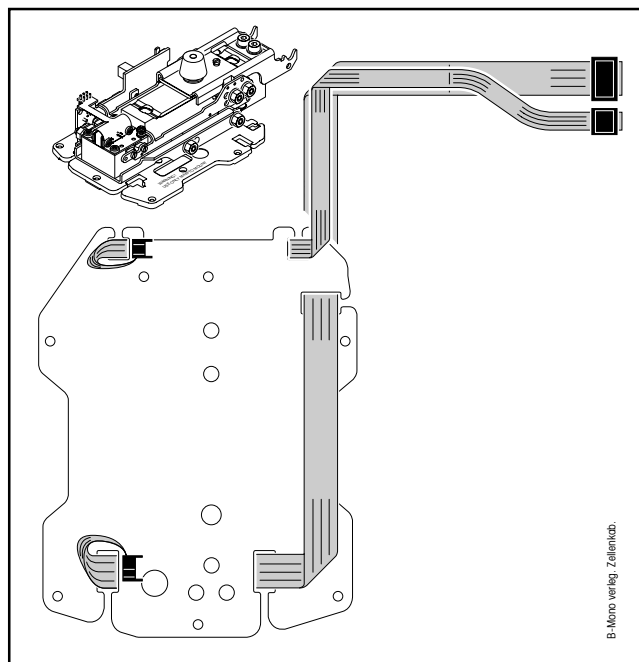
Note

- Repaired or replaced measuring cells must be reinstalled in the reverse sequence.

Caution

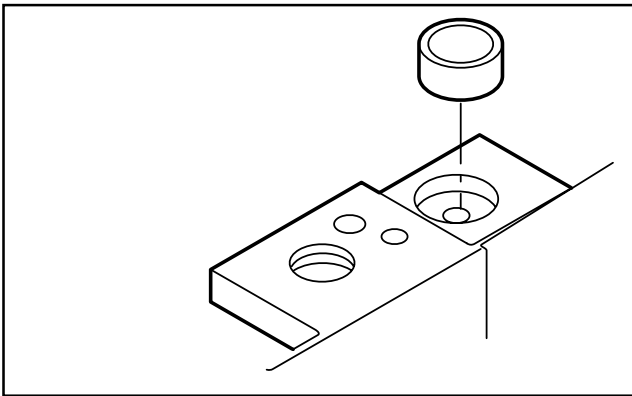
- When installing the measuring cell, ensure that the detector board cable is not pinched under the chassis feet
- Weighing pan supports must not touch top housing: Align overload protection with top housing.
-  If replacing a conventional measuring cell against a monobloc cell with support plate only the screws added to the spare part must be used (too long screws destroy the under guide). Load TDNR of monobloc-type.

Replacing the measuring cell in case of B balances with monobloc and support plate



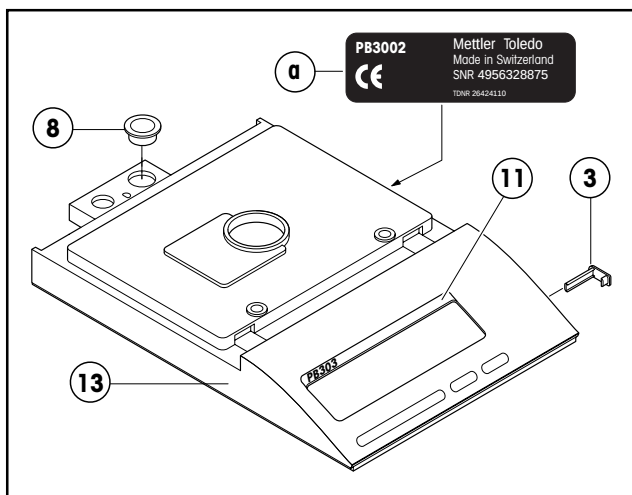
Place detector- and coil cable as shown so that they will not be squeezed between support plate and bottom housing.

2.1.7 Replacing the level



1. Open balance (see point 2.1.2).
2. If the level cover is defective, remove this from top housing and replace by a new one.
3. Knock out old level from the back through the hole using a 2 mm punch.
4. Remove any residual adhesive from bottom housing and degrease.
5. Carefully place test level from tool kit on top guide (flexible bearings are sensitive to pressure!) and level balance with leveling feet.
6. Coat the hollow for the level with a thin layer of adhesive, insert new level and align it so that the air bubble matches that of the test level.
7. Remove test level, allow adhesive to dry.
8. Close balance (see point 2.1.10).

2.1.8 Replacing the top housing



1. Open balance (see point 2.1.2).
2. Replace top housing.
The following parts can be transferred from the defective top housing if they are undamaged:

1. Level cover (item 8)
2. Certification cover (item 3)
3. Protective cover (operating instructions, accessories)
4. Insert connecting spring.

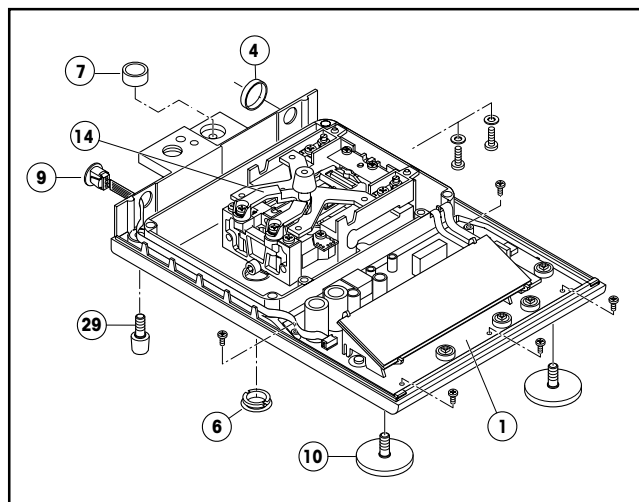
Following parts must be reordered:

1. Model plate (item 11).
2. Serial number plate (a).

Requirement: Serial number, country and balance type must be quoted when ordering.

3. Close balance (see point 2.1.10).

2.1.9 Replacing the bottom housing



1. Open balance (see point 2.1.2).

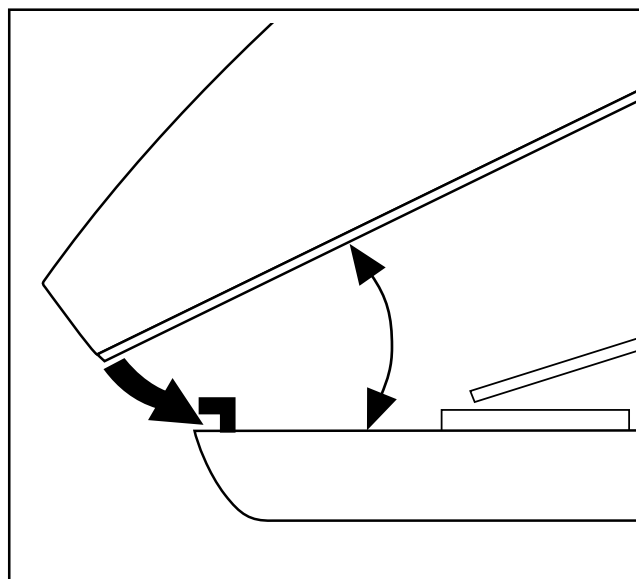
2. Replace bottom housing.

The following parts can be transferred from the defective bottom part if they are undamaged:

1. Balance board (item 1)
2. Measuring cell (item 14)
3. Power socket with cable (item 9)
4. Optional CAN socket (item 4)
5. Hanger feedthrough cover (item 6)
6. Leveling feet (item 10)
7. Level (item 7)
8. Fixed foot (item 29)

3. Close balance (see point 2.1.10)

2.1.10 Closing the balance



1. Slide top housing at an angle of approx. 45° on bottom housing from the front. The tongues of the top housing must lie on the flange of the bottom housing. Lower back end so that the housing halves close without use of force.

2a. Balances without draftshield

1. Pull protective cover back over the level holder.
2. Mount draft shield (self-positioning) and tighten the 2 fastener screws.

Note

Mount the contact spring together with one of the fastener screws in the draft shield (ground).

3. Tighten screw next to level.
4. Insert bottom plate, ring and weighing pan.

2b. Balances with mg draft shield

1. Mount top housing with draft shield (see point 1).
2. Pull protective cover back over the level holder.
3. Tighten screw next to level.
4. Mount weighing pan.

2c. Balances with rectangular weighing pan

1. Pull protective cover back over the level holder.
2. Tighten screw next to level.
3. Mount pan supports and weighing pan.
3. Attach balance to power cable.

2.2 Repairs of the SB balances

2.2.1 Opening the SB balances

1. Disconnect power cable
2. Remove weighing pan, pan supports and protective cover.
3. Unscrew the 4 fastener screws and remove.
4. Remove balance cover.

Close in reverse order.

2.2.2 Replacing the "LC-B Option" interface board of SB balances

1. Open balance (see point 2.2.1).
2. Unplug ribbon cable connector.
3. Carefully hold interface board at both ends and lift out.

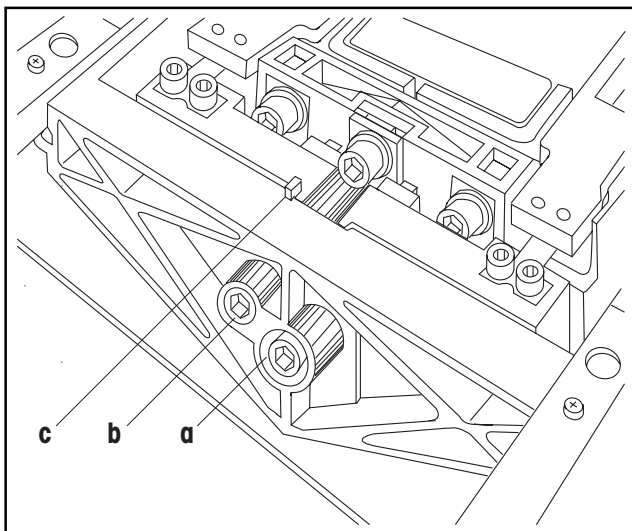
Installation in reverse order.

2.2.3 Replacing the balance board of SB balances

1. Open balance (see point 2.2.1).
2. Unplug all ribbon cable connectors on the board (with small plug-in connections, use tweezers but exercise caution).
3. Remove the 4 board fastener screws.
4. Lift out board.

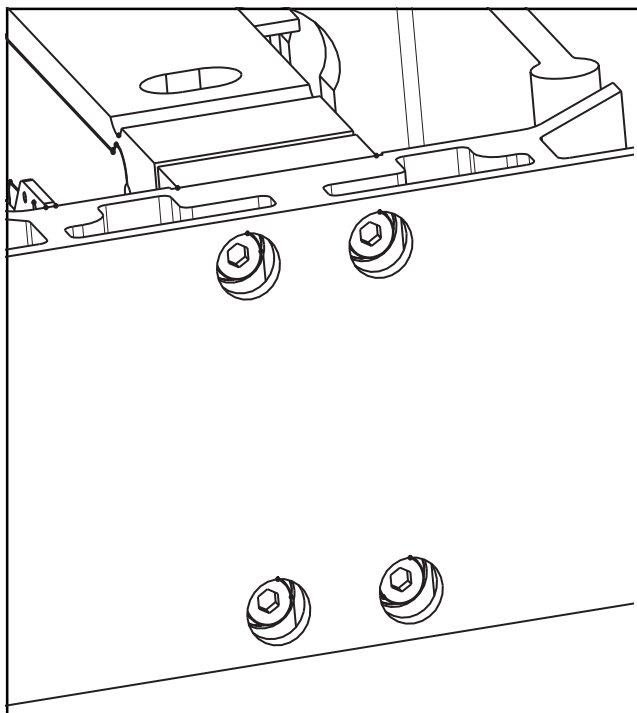
Installation in reverse order. Load TDNR, cell data and SNR. Adjust balance.

2.2.4 Removing the conventional measuring cell of SB balances with low construction



1. Open balance (see point 2.2.1).
2. Disconnect two ribbon cable connectors of cell from balance board.
3. Turn balance over and place on overload protection.
4. Unscrew the 3 Phillips screws on balance base and remove.
5. Carefully lift off housing.
6. Turn cell with overload protection over and place on a flat, clean bench surface.
7. Unscrew Allen screw (a).
8. Undo eccentric (b) and take out.
9. Remove Allen screw (a) at crosspiece of overload protection.
10. Remove wedge (c)
11. Remove overload protection.

2.2.5 Removing the monobloc measuring cell of SB balances with low construction

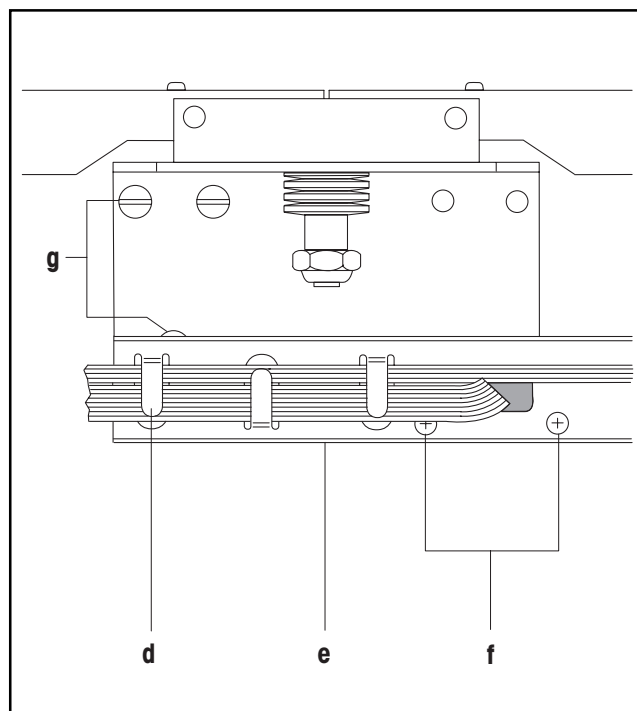


1. Open balance (see point 2.2.1).
2. Disconnect two ribbon cable connectors of cell from balance board.
3. Turn balance over and place on overload protection.
4. Unscrew the 3 Phillips screws on balance base and remove.
5. Carefully lift off housing.
6. Turn cell with overload protection over and place on a flat, clean bench surface.
7. Remove 4 screws on hanger.

Notes (for assembly)

- Tightening torque: 4.0 Nm
 - When assembling, ensure parallelism between cell and hanger.
8. Put overload protection with hanger to one side.
 9. Push both ribbon cables out of the retaining clips of the ribbon cable holder.
 10. Remove ribbon cable holder from U-section.

2.2.6 Removing the measuring cells of SB balances with high construction



1. Open balance (see point 2.2.1).
2. Disconnect two ribbon cable connectors of cell from balance board.
3. Turn balance over and place on overload protection.
4. Unscrew the 3 Phillips screws on balance base and remove.
5. Carefully lift off housing.
6. Turn cell with overload protection over and place on a flat, clean bench surface.
7. Disconnect ribbon cable connector from detector board.
8. Push wide ribbon cable out of retaining clips (d) of the ribbon cable holder (e).
9. Remove the 2 screws (f) at ribbon cable holder.
10. Remove ribbon cable holder (carefully pull over ribbon cable).
11. Remove 4 screws (g) in the overload protection.
12. Remove overload protection.

2.2.7 Installing the measuring cell

After the measuring cell has been repaired (monobloc) or replaced, it can be reinstalled in the reverse order to that described in section 2.2.4, 2.2.5 or 2.2.6 "Removing the measuring cell...".

Notes

- Before fastening the measuring cell, ensure that the cell cable is not pinched.
- The weighing pan must be aligned with the top housing.
- When the large cell is replaced, ensure parallelism between overload protection and bottom housing.

2.2.8 Replacing the display board of SB balances

1. Open balance (see point 2.2.1).
2. Disconnect ribbon cable connector of display board from balance board.
3. Turn balance over and place on overload protection.
4. Remove the 6 screws and cover.
5. Remove the 5 board fastener screws.
6. Lift out board.

Installation in reverse order.

2.2.9 Replacing the level of SB balances

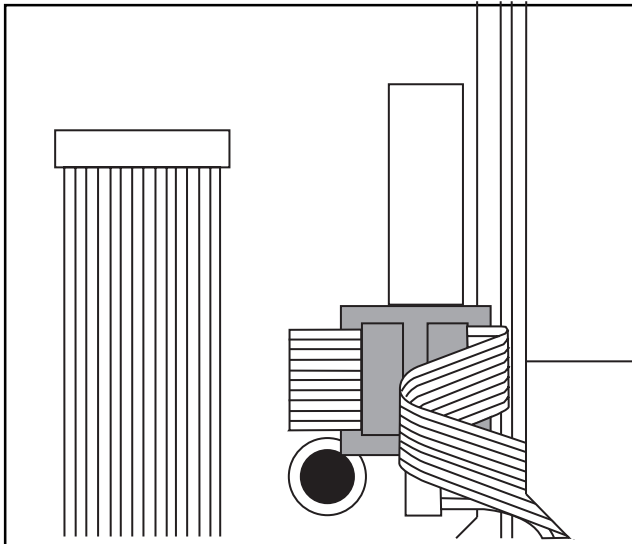
1. Remove overlay, level glass and display glass.
2. Remove weighing pan.
3. Turn balance over and place on pan supports.
4. Remove the 6 screws and cover plate.
5. Knock old level out of hole from the back using a punch.
6. Turn balance over.
7. Remove residual adhesive from bottom housing and degrease adhesion surfaces with alcohol.
8. Place test level from tool kit carefully on upper guide (flexible bearings are sensitive to pressure!) and level balance with leveling feet.
9. Apply 1-2 drops acrylate adhesive to hollow for the level, insert new level and align so that the air bubble is in the center.
10. Remove test level, allow adhesive to dry.
11. Clean level glass and display glass and insert ensuring correct lateral positioning (pin in opening provided).
12. Stick on new overlay.
13. Turn balance over and mount cover plate.

2.2.10 Installation of the adapter for connection of the 8- or 10-pin measuring cells and balance boards

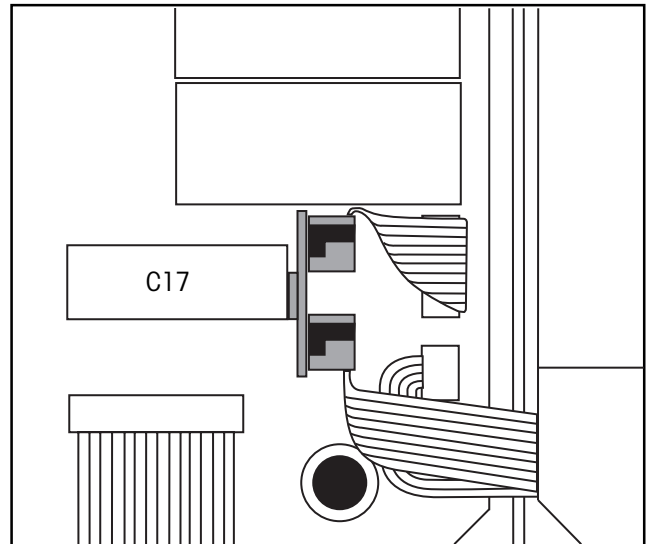
Since the middle of November 1993, all SB balances have been supplied with 10-pin measuring cells and a 10-pin balance board connection. Before this date, the SB balances were supplied with 8-pin measuring cells and an 8-pin balance board connection. If the measuring cell or the balance board of such an SB balance has to be changed, an adapter is needed (order number: 230081) to make the connection. This adapter is supplied in set form (1 small board with adhesive tape and 2 adapter

cables). Depending on the type of connection, one or other adapter cable must be used. One adapter is always left over. After the connections have been plugged together, the adapter is fixed to the connector with the adhesive tape. With balance boards with the new construction (from middle of 1995), the adapter is fastened edgewise to capacitor C17.

Example: 8-pin cell to 10-pin balance board with old construction



Example: 8-pin cell to 10-pin balance board with new construction



2.3 Repair of PZ and GL8R balances

2.3.1 Opening the PZ and GL8R balances

1. Disconnect power cable
2. Remove weighing pan, pan mounts and protective cover.
3. Remove the middle screw of the 3 screws on the top housing.
4. Hold balance by stand and tilt entire balance to one side.
5. Unscrew the two hex socket-head screws on bottom part of balance until they turn freely.

Note

- Hold stand firmly, raise slightly and carefully hinge down toward bottom housing.

6. Remove the two remaining screws at the top housing.
7. Carefully raise top housing including stand and undo plug-in connection of balance board.

2.3.2 Replacing the RS interface (refinish balances)

1. Open balance (see section 2.3.1)
2. Disconnect RS cable from interface board.
3. Hold interface board at both ends and pull out.

2.3.3 Replacing the balance board

1. Open balance (see section 2.3.1).
2. Withdraw ribbon cables of power supply, coil and detector.
3. If the RS interface is installed: Pull out RS interface board.
4. Remove the 4 fastener screws.
5. Lift out balance board and replace.

Notes

- New balance boards are not equipped with the balance software, this must be transferred from the faulty balance board or new software ordered.
- The balance type definition must always be reloaded with the PC-PT45 (see section 7).

2.3.4 Replacing the measuring cell

1. Open balance (see section 2.3.1).
2. Unscrew screws on overload protection and remove overload protection.
3. Withdraw ribbon cables of the coil and detector.
4. Hold measuring cell at left and right on formed chassis and tilt entire balance to one side.
5. Remove fastener screws with spring washers from below.
6. Remove measuring cell

Note

- Repaired or replaced measuring cells must be installed in reverse order.

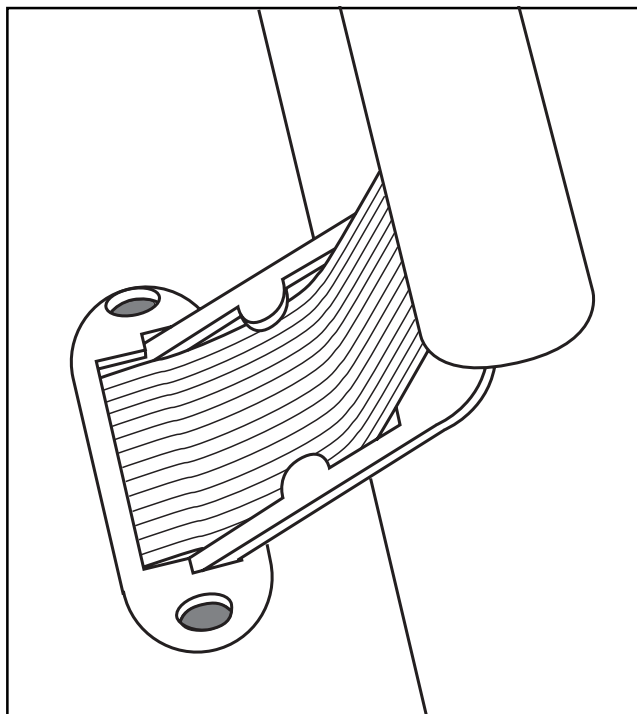
Caution

- Pan mounts must not project at the top housing: Center overload protection with top housing.

2.3.5 Replacing the terminal display

1. Tilt balance and place on bench so that the rear of the terminal housing lies on the bench.
2. Remove screws at underside of terminal housing.
3. Raise front part of the terminal housing on the side of the rotational mechanism and turn up over the top edge of the rear part.
4. Unscrew 4 screws at terminal display.
5. Raise terminal display slightly, remove connectors of membrane keypad and lift out terminal display and replace.

2.3.6 Replacing the display cable



1. Open balance (see section 2.3.1).
2. Remove 2 screws at bottom edge of stand.
3. Push guide clip through top housing and over display cable connector and remove.
4. Place terminal housing with rear side resting on the bench.
5. Remove screws on underside of the terminal housing.
6. Raise front part of terminal housing on the side of the rotational mechanism and turn up over the top edge of the rear part.
7. Unscrew 4 screws at terminal display.
8. Raise terminal housing slightly and pull out connector of the display cable.

Note

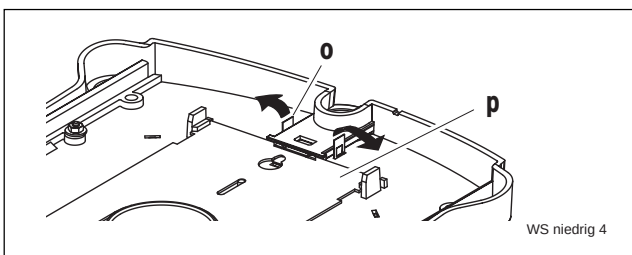
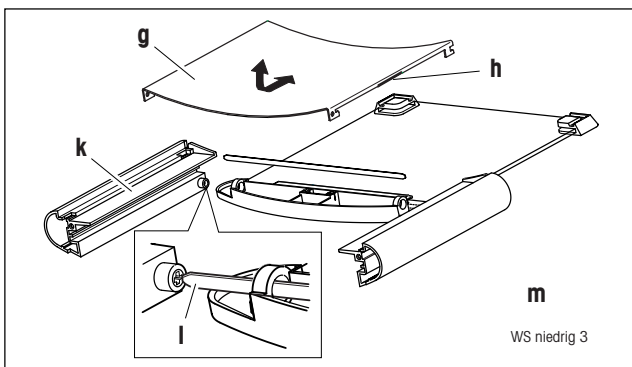
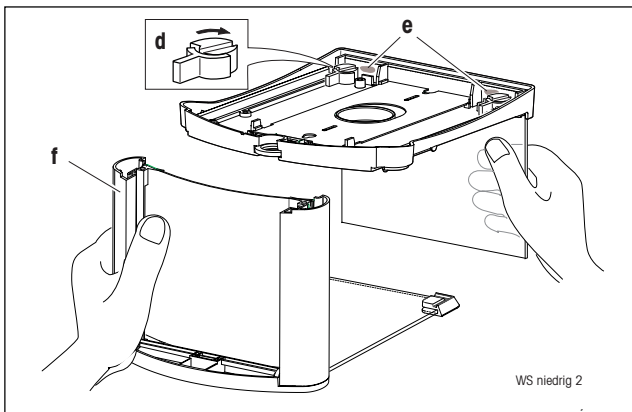
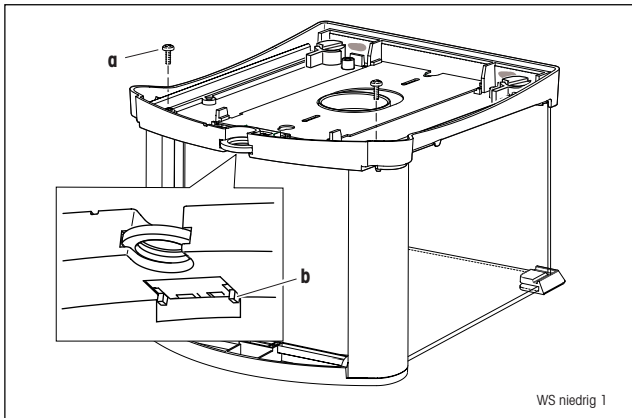
- Raise terminal display carefully as membrane keypad is plugged in.

Caution

- When installing the display cable, ensure correct cable guidance in the guide clip (see drawing).

2.4 Repair of B-S balances

2.4.1 Repairs to B-S low draft shield



Disassembling low draft shield

1. Open cover and remove side panes.
2. Remove ring and bottom plate.
3. Turn draft shield upside down and stand on cover.
4. Remove the 2 corner post retaining screws (a).
5. Hold the corner post (f) steady with the left hand and with the right hand raise the front pane together with the draft shield base.
6. Turn corner posts (k) and rear panel down to lie flat.
7. Withdraw rear panel (g).
8. Pull off corner posts sideways and remove leaf spring (l).

Assembling low draft shield

1. Place cover as shown in the illustration (m), insert leaf spring (l) and push on corner posts (k) at the sides.
2. Insert rear panel (with retaining springs (h) left and right) and push to the rear until it clicks into place.
3. With the left hand hold up the corner post (f) and rear panel together.
4. Verify the correct position of the nibs (b).
5. Insert the screws (a) and secure the draft shield base to the corner posts.
6. Turn the draft shield over and fit the bottom plate, ring and side panes.

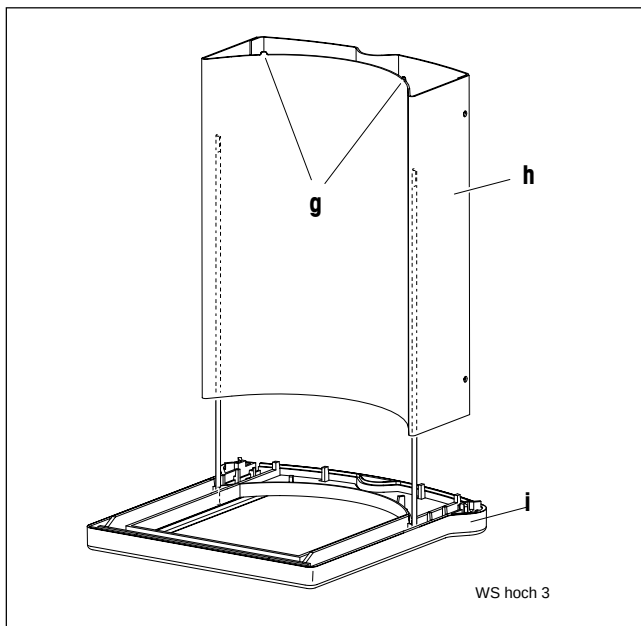
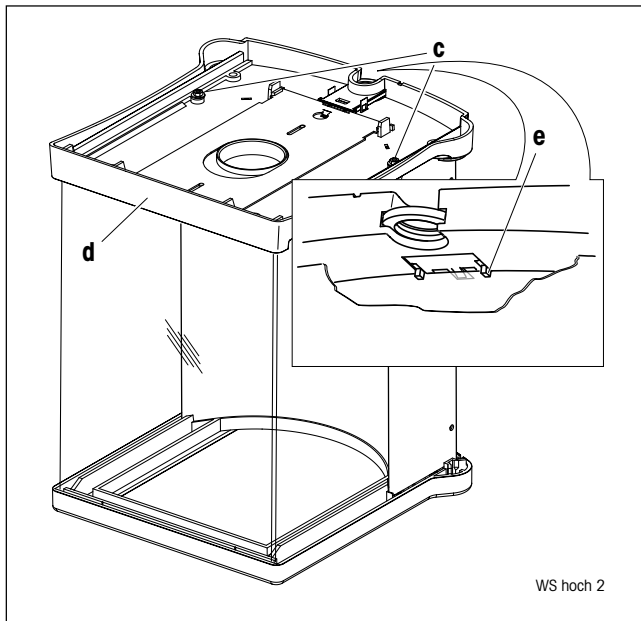
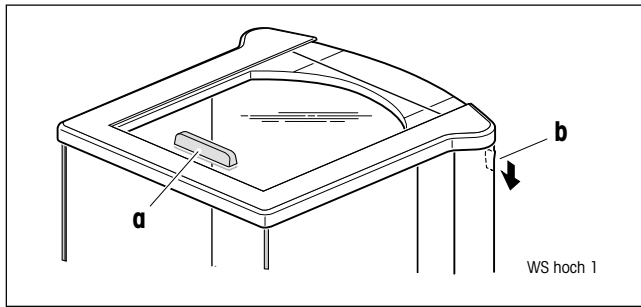
Replacing front pane

1. Bond the new front pane with 2 drops of silicon adhesive (e).
2. Insert the eccentric (d) and turn clockwise to tighten. Check: the front pane must stand up vertically.

Replacing draft shield base

- The old locking plate and contact spring must be retained for the new base.
1. Splay the tabs of the contact spring (o) on the underside of the base outward and push out the contact spring downward.
 2. Withdraw the locking plate (p) together with its handle out of the draft shield base.

2.4.2 Repairs to B-S high draft shield



Disassembling high draft shield

Removing side doors

1. Unlatch (b) the corner posts left and right and remove.
2. Push out the side doors to the rear.

Removing top door

1. Disassemble handle (a) by pulling out the lower part from the upper part.
2. Pull out door from the rear.

Removing draft shield base and draft shield top frame

1. Remove ring and bottom plate.
2. Turn draft shield upside down.
3. Remove nuts (c) and washers.
4. Raise draft shield (d) without front pane.
5. Remove front pane.
6. Lift off rear panel (h).

Replacing draft shield base → 2.4.1

Assembling the draft shield

Assembling draft shield base, rear panel and draft shield top frame

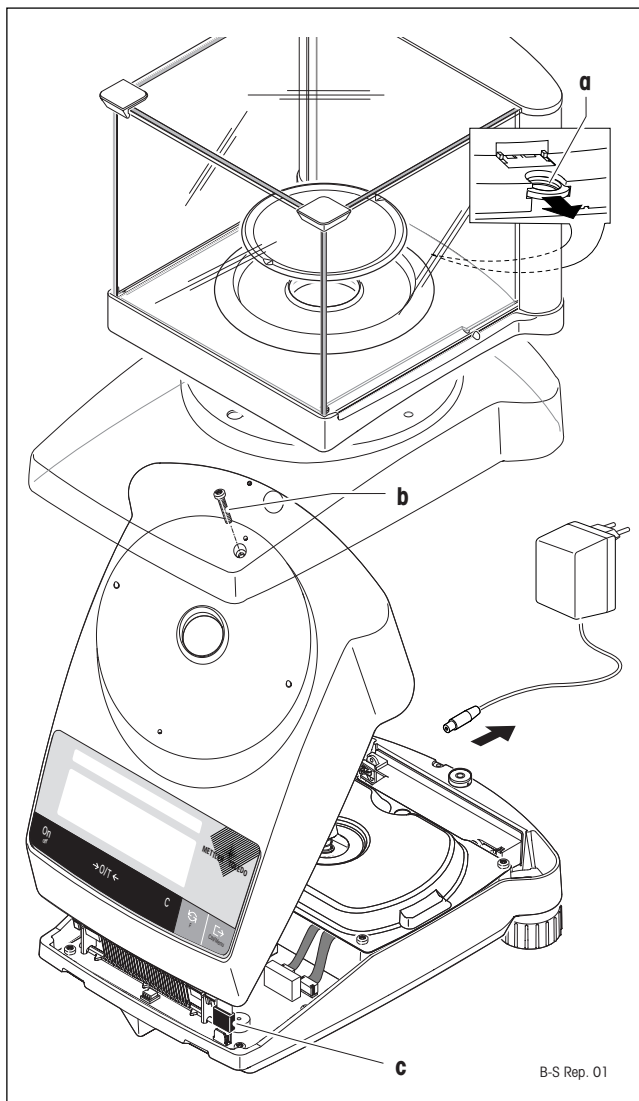
1. Place draft shield top frame (i) on the bench with the studs pointing upward.
2. Place the rear panel (h) on draft shield top frame with the lugs (g) upward.
3. Insert front pane in draft shield top frame.
4. Fit draft shield base, checking the positions of the nibs (e) and lugs (g).
5. Secure the draft shield base to the studs with the washers (c) and nuts. (**Do not overtighten nuts!!**)

Fitting side doors

1. Turn draft shield over to stand on its base.
2. Insert side doors from the rear.
3. Insert left and right corner posts with the latches (b) at the rear.

Inserting top door

1. Insert door.
 2. Fit handle.
- Fit bottom plate and ring.

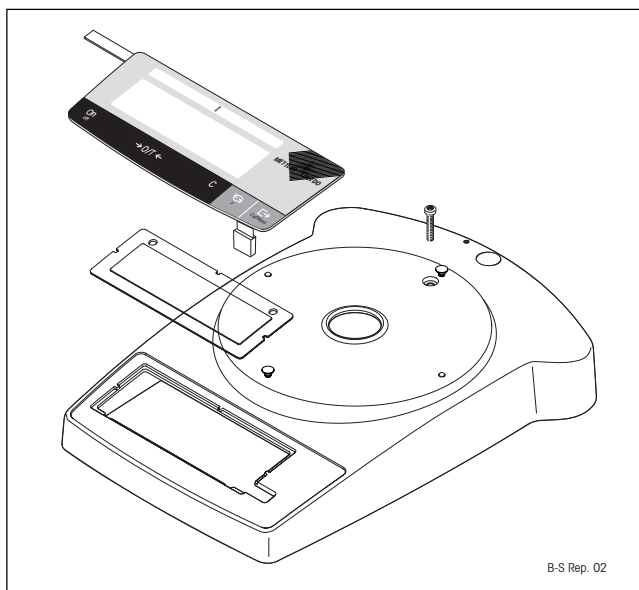


2.4.3 Opening the B-S balance

1. Unplug the power cable.
2. Remove weighing pan, pan holder and retaining ring, or unlatch (a) draft shield and remove.
3. Remove protective cover.
4. Remove screw (b).
5. Raise top housing at rear at an angle of about 45° and at the front disconnect the cable (c) connecting the membrane keypad to the balance board.
6. Remove top housing.

2.4.4 Closing the B-S balance

1. Fit top housing and connect the cable (c) for the membrane keypad.
2. Raise top housing at rear at an angle of about 45°, engage with bottom housing at front and then lower into place at the rear.
3. Insert screw.
4. Fit protective cover.
5. Fit draft shield or weighing pan, pan holder and retaining ring.



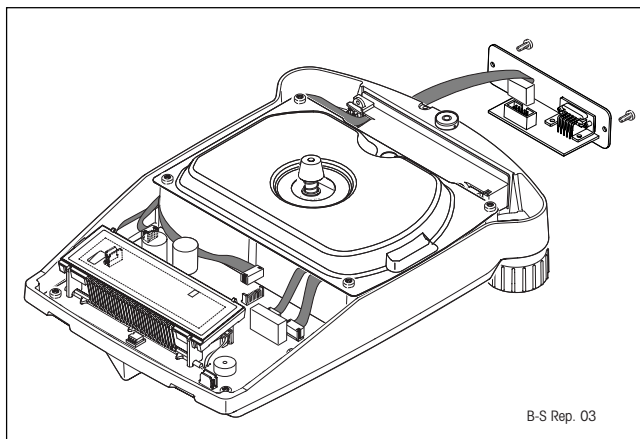
2.4.5 Replacing membrane keypad

1. Open balance → 2.4.3.
2. Push out membrane keypad from top housing. Retain the original model plate and display glass (withdrawing the model plate at the left).
3. Clean top housing and display glass to remove all traces of grease and adhesive.
4. Place the model plate in the new membrane keypad.
5. Place the display glass loosely in the top housing so that the notches fit snugly over the nibs.



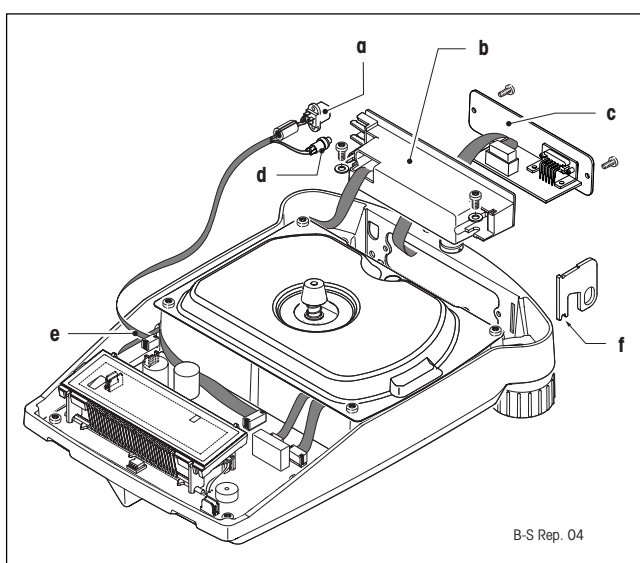
Avoid leaving fingerprints on the glass and window of the membrane keypad!!

6. Carefully use adhesive to bond the membrane keypad without trapping any air.
7. Close balance → 2.4.4.



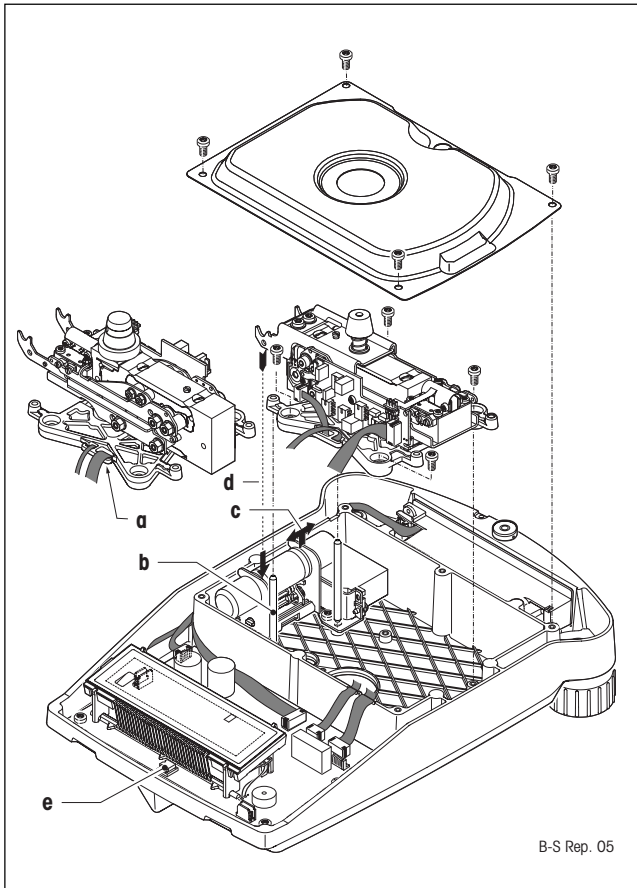
2.4.6 Fitting RS232 interface and connection cable

1. Open balance → [2.4.3](#)
2. Remove blank plate at rear of balance.
3. Fit RS232 connection cable:
 - Pass ribbon cable through opening in connection holder.
 - Plug in connectors on interface and balance boards.
4. Secure interface with screws.
5. Close balance → [2.4.4](#)



2.4.7 Replacing power cable

1. Open balance → [2.4.3](#)
2. Remove RS232 interface or blank plate (c).
3. Unplug power cable (e) from balance board.
4. Remove connection holder (b).
5. Remove power socket (a) and certification switch (d) from connection holder.
6. Fit new power cable:
 - Insert cable for certification switch into slot and press switch fully home.
 - Insert power socket at the side with the round part underneath.
7. Fit connection holder (b) into balance bottom housing:
 - Place anti-theft lug in bottom housing (notch (f) over rib of housing).
 - Insert connection holder from above and screw down securely with the power socket (a) flush with the bottom housing.
8. Fit blank plate or RS232 interface.
9. Plug in power cable (e) to balance board.
10. Close balance → [2.4.4](#)



2.4.8 Removing measuring cell

1. Open balance → [2.4.3](#)
2. Remove cell shielding.
3. Disconnect detector and coil cables from balance board.
4. Unscrew measuring cell from bottom housing and remove it.
 - Without calibration drive: lift out cell.
 - Balance with calibration drive: raise cell at right at an angle of about 45° and withdraw from calibration drive.

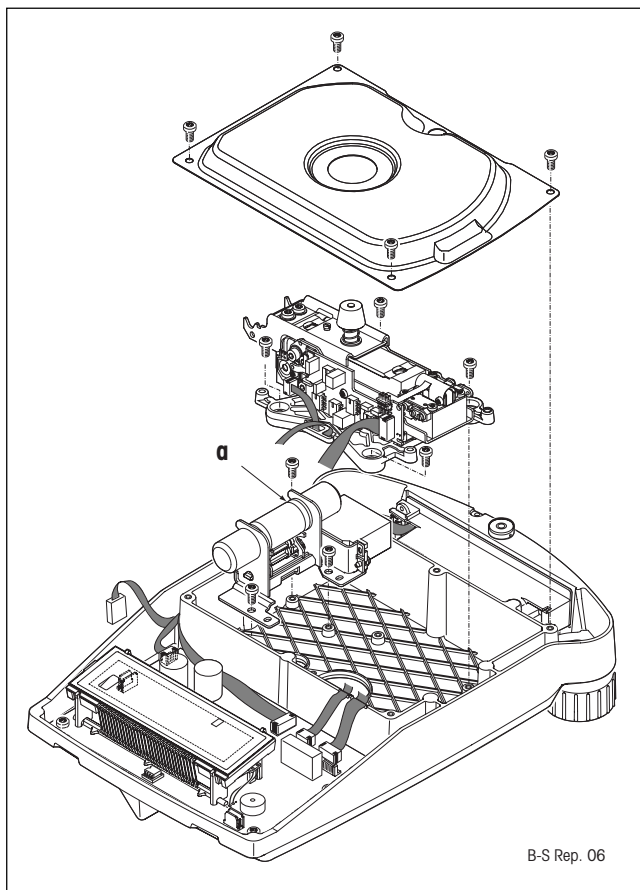
2.4.9 Fitting measuring cell

1. Pass detector and coil cables through guides (a) in mounting plate.
2. Balances **without** calibration drive:
 - Place measuring cell in bottom housing and screw down securely.

Balances **with** calibration drive:

- **Raise** cell at right at an angle of about 45°, insert into calibration drive, lower and secure with screws.
 - Slacken the 3 screws of the calibration drive.
 - Insert two Ø 3.47 mm centering pins (b) from tool case in locating holes in mounting plate.
 - Move calibration drive sideways (c) to align it with calibration weight support (d).
 - Tighten calibration drive screws.
 - Remove centering pins.
3. Plug in detector and coil cables to balance board.
 4. Fit cell shielding.
 5. When replacing the measuring cell also replace EAROM (e) on balance board: select appropriate EAROM for balance type (see spare parts list in section 2, 1.1.13 / 1.1.14, item 10).

Close balance → [2.4.4](#)

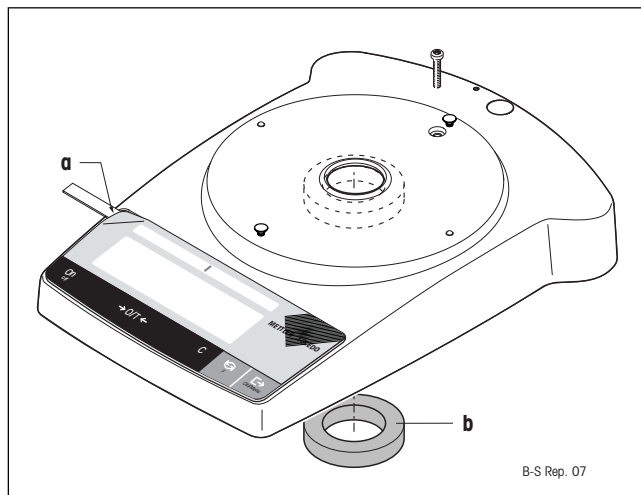


2.4.10 Replacing calibration drive or calibration weight

1. Open balance → [2.4.3](#).
 2. Remove cell shielding
 3. Remove measuring cell → [2.4.8](#).
 4. Disconnect calibration drive cable.
 5. Remove calibration drive.
 6. The calibration weight must be retained:
 - Connect calibration drive to balance board and lower calibration weight using service software.
 - Remove calibration weight.
 7. Place calibration weight in new drive:
 - Connect calibration drive to balance board and lower using service software.
 - Insert calibration weight with the flat surface facing downward and raise using service software.
-  The calibration weight must be at the top position when fitting the measuring cell, otherwise the cell will be damaged!
8. Screw calibration drive loosely in place in bottom housing.
 9. Plug in calibration drive cable on balance board.
 10. Fit measuring cell → [2.4.9](#) (incl. positioning the calibration drive).
 11. Close balance → [2.4.4](#).
 12. Check standard calibration and execute if necessary → section 7, *Func 8*.

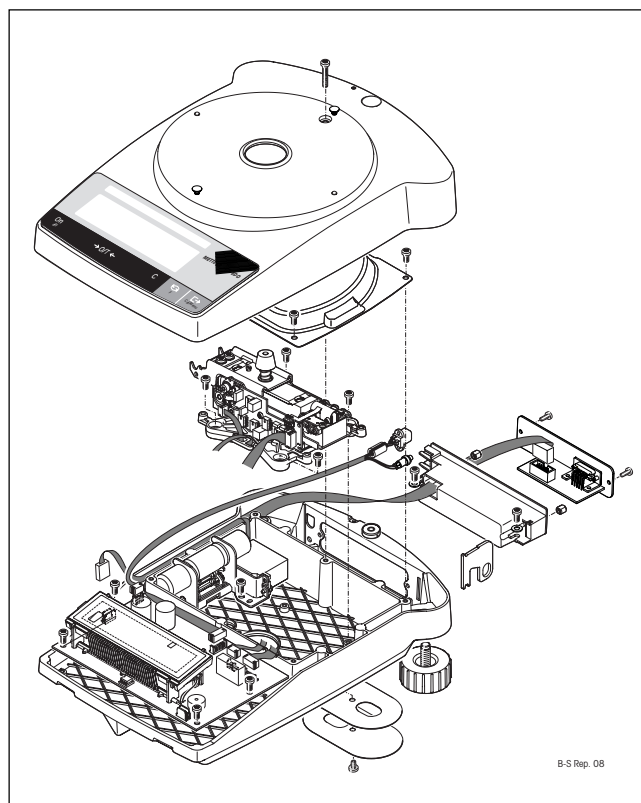
2.4.11 Replacing spirit level

1. Open balance → [2.4.3](#)
2. Remove level (**avoid blows** to the instrument, these could damage the measuring cell!).
3. Clean level seat thoroughly, removing all traces of grease and adhesive.
4. Place the test level from tool case on monobloc and level the balance. Remove the test level.
5. Fit new level:
 - Apply a thin layer of adhesive.
 - Place level and adjust it so that the air bubble is in the center.
6. Close balance → [2.4.4](#)



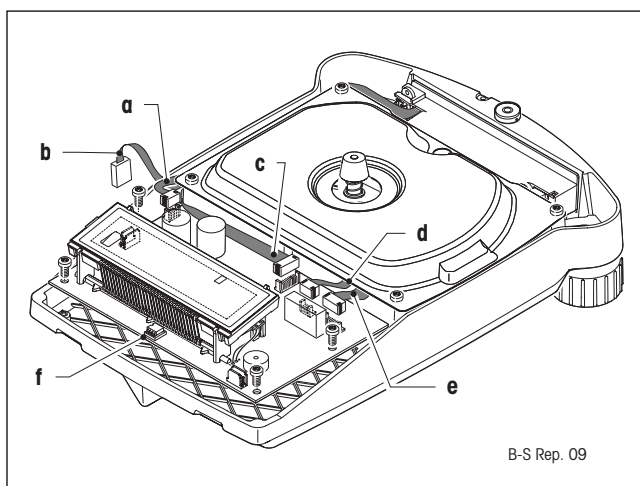
2.4.12 Replacing top housing

1. Open balance → [2.4.3](#)
2. Insert model plate from old balance in new membrane keypad: slightly raise the opening for model plate (a) and insert it.
3. Analytical balances: affix self-adhesive seal ring (b) supplied with the housing around opening for cone.
4. Close balance → [2.4.4](#)



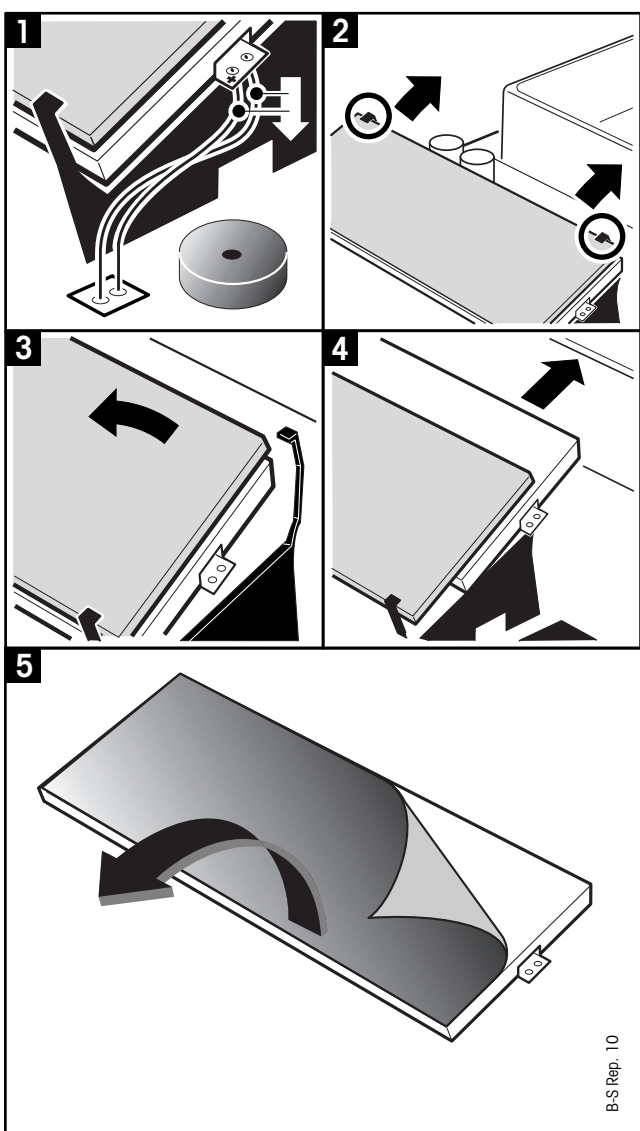
2.4.13 Replacing bottom housing

1. Open balance → [2.4.3](#)
2. Remove balance board → [2.4.14](#)
3. Remove measuring cell → [2.4.8](#)
4. Remove calibration drive → [2.4.10](#)
5. Remove RS232 interface and connection holder → [2.4.7](#)
6. Remove lug for antitheft device.
7. Remove leveling feet.
8. Remove hanger cover.
9. Fit new bottom housing:
 - hanger cover
 - leveling feet (grease threads)
 - connection holder and blank plate or RS232 interface → [2.4.7](#)
 - balance board → [2.4.14](#)
 - calibration drive → [2.4.10](#)
 - measuring cell → [2.4.8](#)
10. Close balance → [2.4.4](#)



2.4.14 Replacing balance board

1. Open balance → [2.4.3](#)
2. Disconnect cables for:
 - power (a)
 - calibration drive (b)
 - detector (e)
 - coil (d)
 - RS232 (c)
3. Remove screws and balance board.
4. Retain cell data E2PROM (f) for new balance board.
5. Fit and connect new board in reverse order.
6. Load TDNR.



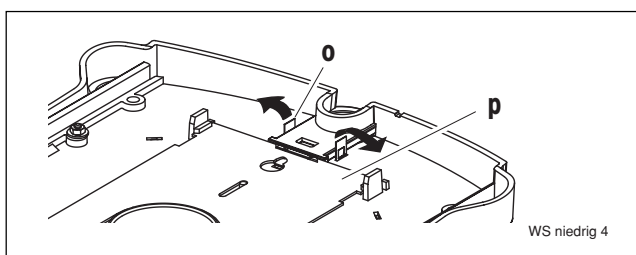
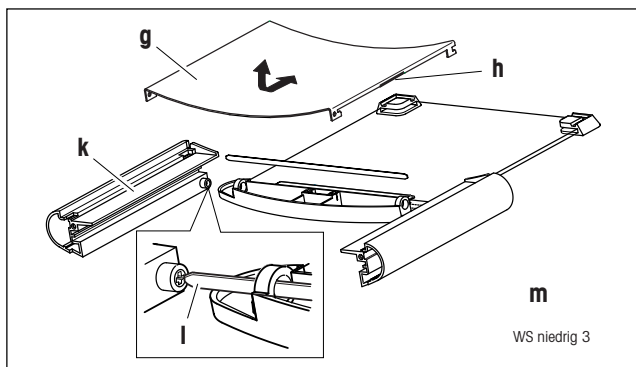
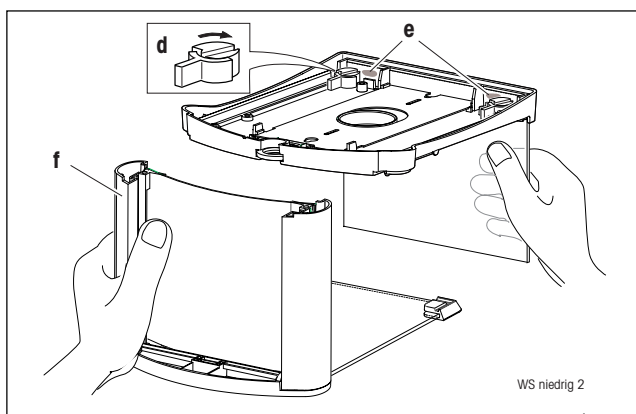
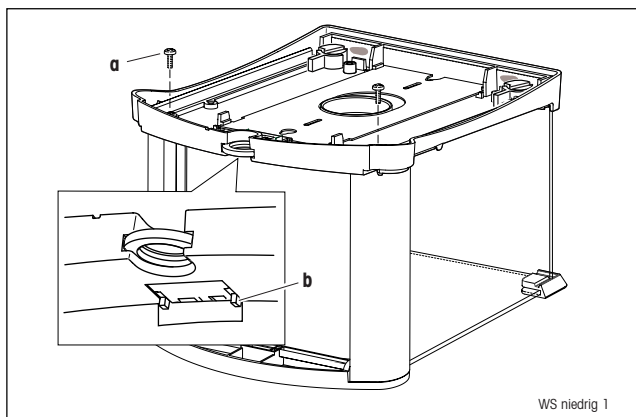
2.4.15 Replacing backlighting

Open balance → [2.4.3](#)

1. Unsolder cables.
2. Bend retaining tabs slightly to the rear.
3. Turn the display upward.
4. Remove backlighting unit (unsoldering cable).
5. Remove protective film from the new backlighting unit.
6. Fit the new backlighting unit.
7. Solder the cables as shown in Fig. 1 with correct polarity.
8. Close balance → [2.4.4](#)

2.5 Repair of AB-S balances (with conventional cell)

2.5.1 Repairs to AB-S low draft shield



Disassembling low draft shield

1. Open cover and remove side panes.
2. Remove ring and bottom plate.
3. Turn draft shield upside down and stand on cover.
4. Remove the 2 corner post retaining screws (a).
5. Hold the corner post (f) steady with the left hand and with the right hand raise the front pane together with the draft shield base.
6. Turn corner posts (k) and rear panel down to lie flat.
7. Withdraw rear panel (g).
8. Pull off corner posts sideways and remove leaf spring (l).

Assembling low draft shield

1. Place cover as shown in the illustration (m), insert leaf spring (l) and push on corner posts (k) at the sides.
2. Insert rear panel (with retaining springs (h) left and right) and push to the rear until it clicks into place.
3. With the left hand hold up the corner post (f) and rear panel together.
4. Verify the correct position of the nibs (b).
5. Insert the screws (a) and secure the draft shield base to the corner posts.
6. Turn the draft shield over and fit the bottom plate, ring and side panes.

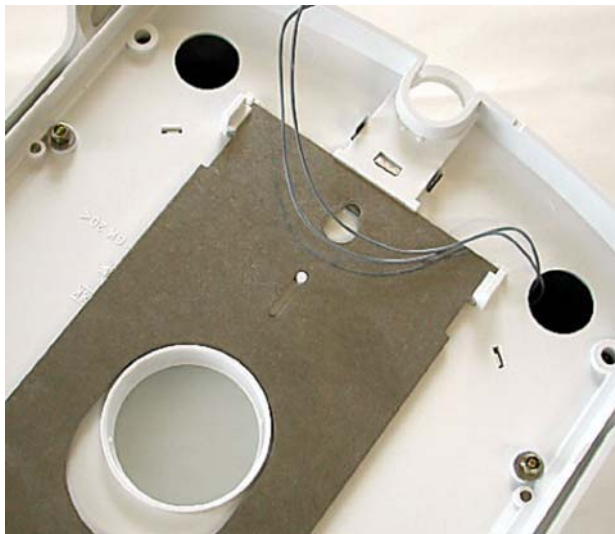
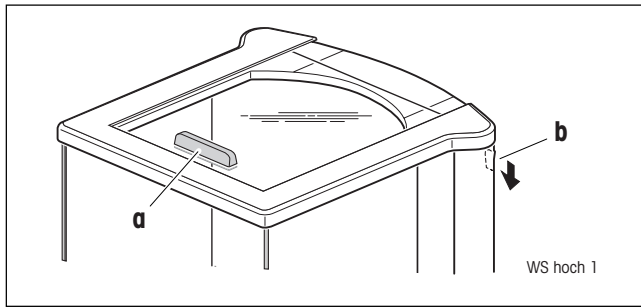
Replacing front pane

1. Bond the new front pane with 2 drops of silicon adhesive (e).
2. Insert the eccentric (d) and turn clockwise to tighten. Check: the front pane must stand up vertically.

Replacing draft shield base

- The old locking plate and contact spring must be retained for the new base.
1. Splay the tabs of the contact spring (o) on the underside of the base outward and push out the contact spring downward.
 2. Withdraw the locking plate (p) together with its handle out of the draft shield base.

2.5.2 Repairs to high draft shield



Disassembling high draft shield

Removing side doors

1. Unlatch (b) the corner posts left and right and remove.
2. Push out the side doors to the rear.

Removing top door

1. Disassemble handle (a) by pulling out the lower part from the upper part.
2. Pull out door from the rear.

Removing draft shield base and draft shield top frame

1. Remove ring and bottom plate.
2. Turn draft shield upside down.
3. Remove nuts and washers.
4. Raise draft shield without front pane.
5. Remove front pane.
6. Lift off rear panel.

Replacing draft shield base → 2.5.1

Assembling the draft shield

Assembling draft shield base, rear panel and draft shield top frame

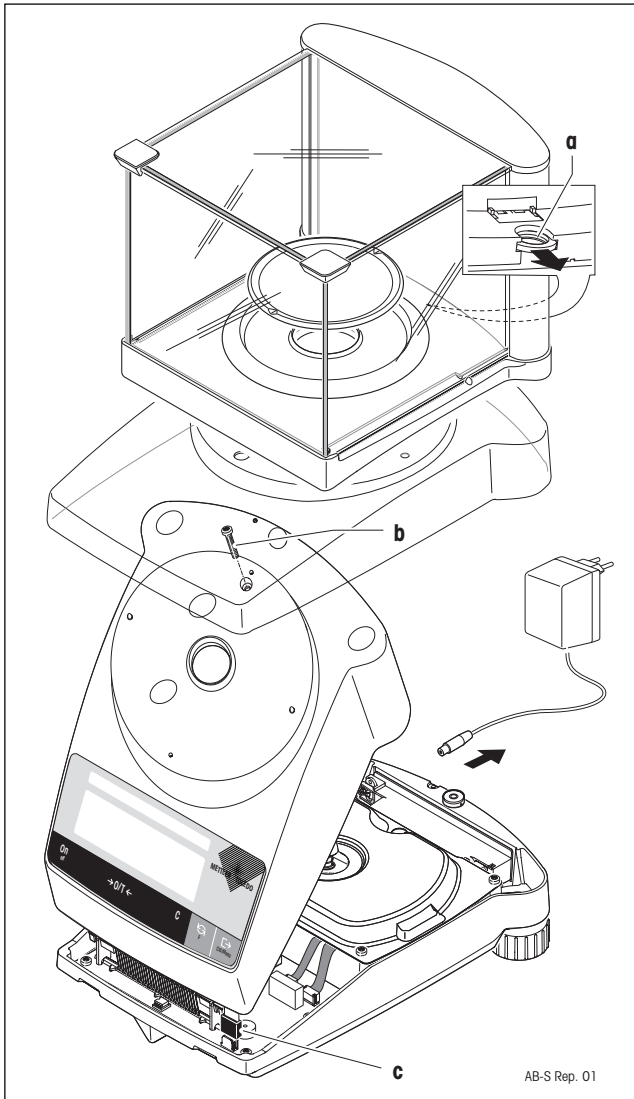
1. Place draft shield top frame on the bench with the studs pointing upward.
2. Place the rear panel on draft shield top frame with the lugs upward.
3. Insert front pane in draft shield top frame.
4. Insert stabilizer cable through draft shield base.
5. Fit draft shield base, checking the positions of the nibs and lugs.
6. Secure the draft shield base to the studs with the washers and nuts. (**Do not overtighten nuts!!**)

Fitting side doors

1. Turn draft shield over to stand on its base.
2. Insert side doors from the rear.
3. Insert left and right corner posts with the latches at the rear.

Inserting top door

1. Insert door.
 2. Fit handle.
- Fit bottom plate and ring.



2.5.3 Opening the AB-S balance

1. Unplug the power cable.
2. Remove weighing pan, pan holder and retaining ring, or unlatch (a) draft shield and remove. In the case of ABxx5 balances, disconnect stabilizer cable.
3. Remove protective cover.
4. Remove screw (b).
5. Raise top housing at rear at an angle of about 45° and at the front disconnect the cable (c) connecting the membrane keypad to the balance board.
6. Remove top housing.

2.5.4 Closing the AB-S balance

1. Fit top housing and connect the cable (c) for the membrane keypad.
2. Raise top housing at rear at an angle of about 45°, engage with bottom housing at front and then lower into place at the rear.
3. Insert screw.
4. Fit protective cover.
5. Fit draft shield or weighing pan, pan holder and retaining ring. In the case of ABxx5 balances, disconnect stabilizer cable.



2.5.5 Replacing membrane keypad

1. Open balance → 2.5.3.
2. Push out membrane keypad from top housing. Retain the original model plate and display glass (withdrawing the model plate at the left).
3. Clean top housing and display glass to remove all traces of grease and adhesive.
4. Place the model plate in the new membrane keypad.
5. Place the display glass loosely in the top housing so that the notches fit snugly over the nibs.



Avoid leaving fingerprints on the glass and window of the membrane keypad!!

6. Carefully use adhesive to bond the membrane keypad without trapping any air.
7. Close balance → 2.5.4.



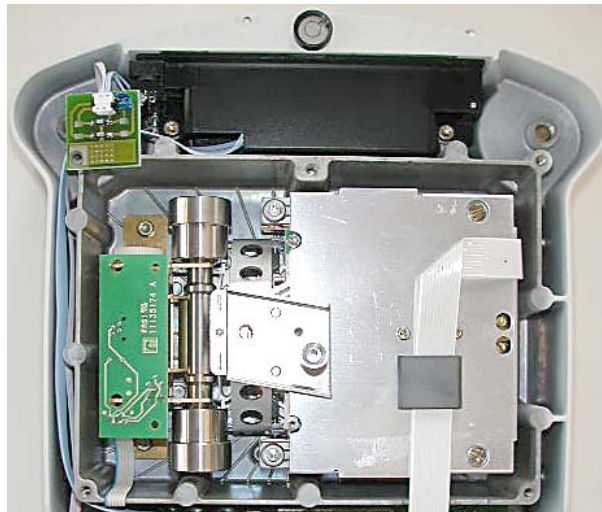
2.5.6 Fitting RS232 interface and connection cable

1. Open balance → [2.5.3](#)
2. Remove blank plate at rear of balance.
3. Fit RS232 connection cable:
 - Pass ribbon cable through opening in connection holder.
 - Plug in connectors on interface and balance boards.
4. Secure interface with screws.
5. Close balance → [2.5.4](#)



2.5.7 Replacing power cable

1. Open balance → [2.5.3](#)
2. Remove RS232 interface or blank plate.
3. Unplug power cable from balance- and from stabilizer board.
4. Remove connection holder.
5. Remove power socket and certification switch from connection holder.
6. Fit new power cable:
 - Insert cable for certification switch into slot and press switch fully home.
 - Insert power socket at the side with the round part underneath.
7. Fit connection holder into balance bottom housing:
 - Place anti-theft lug in bottom housing (notch over rib of housing).
 - Insert connection holder from above and screw down securely with the power socket flush with the bottom housing.
8. Fit blank plate or RS232 interface.
9. Plug in power cable to balance- and to stabilizer board.
10. Close balance → [2.5.4](#)

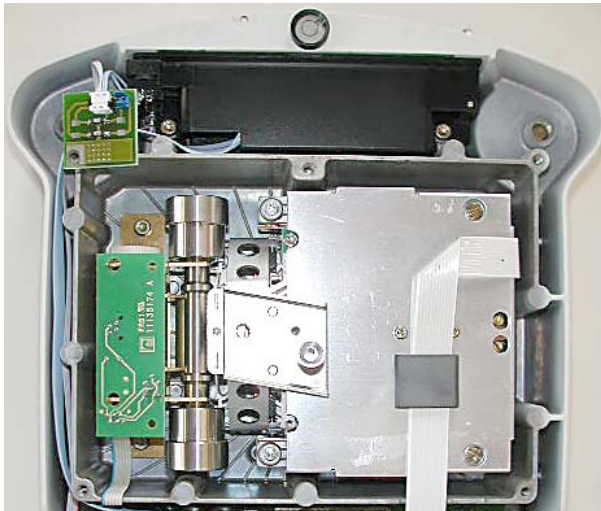


2.5.8 Removing measuring cell



Work with ESD protective mat!

1. Open balance → [2.5.3](#)
2. Remove cell shielding.
3. Disassemble calibration drive.
 - Disconnect calibration drive connection cable from PCB balance.
 - Unscrew calibration drive screws. Hold calibration drive in order to prevent it from tipping
 - Carefully remove calibration drive.
4. Remove arm.
5. Disconnect PCB balance cell's connection cable from PCB balance.
6. Hold balance upside-down and remove the 3 cell screws.
7. Carefully turn the balance right side up and place it on the table, taking care to prevent the cell falling out.
8. Lift cell out.



2.5.9 Fitting measuring cell



Work with ESD protective mat!

1. Place cell in balance housing.
2. Carefully turn the balance housing upside-down and hold in the hand.
Take care to ensure that the cell does not fall out.
3. Screw in 3 screws, **do not tighten**
4. Position cell.
 - Fit hanger cover
 - Fit cell cover
 - Move the cell on the centre fastening screw until the conical sleeve is centred in the cell cover.
5. Remove cell shielding
6. Plug cell cable into PCB balance.
7. Install calibration drive in housing base and screw tight.

Warning:

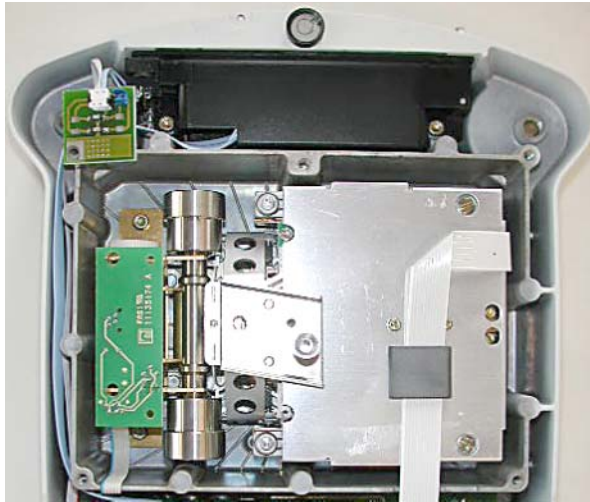
Do not touch the weight with the fingers, if necessary clean it.

Do not allow the weight to fall onto the arm as this could damage the cell.

8. Plug calibration drive cable into the cell board.
9. Connect balance to LARS and switch on service mode.
10. Lower motor with LARS and position calibration drive in such a way that the weight is placed on the hanger cover without lateral movement.
11. Fit cell cover;

Warning:

Do not pinch the cable.



2.5.10 Replacing calibration drive or calibration weight

1. Open balance → [2.5.3](#).
2. Remove cell shielding
3. Disassemble calibration drive.
 - Disconnect calibration drive connection cable from PCB Balance.
 - Remove 2 calibration drive screws. Hold calibration drive in order to prevent it tipping.
 - Carefully remove calibration drive ensuring that the weight does not fall onto the arm.
4. Rotate the gear wheel until the weight can be removed.
5. Install the weight in the new motor and turn the gear wheel until the calibration drive has reached the top position.

Warning:

Only install the calibration drive in the lower housing with the weight lifted up (top position). Otherwise, the cell could be damaged.

6. Install calibration drive in housing base and screw tight.

Warning:

Do not touch the weight with the fingers, if necessary clean it.

Do not allow the weight to fall onto the arm as this could damage the cell.

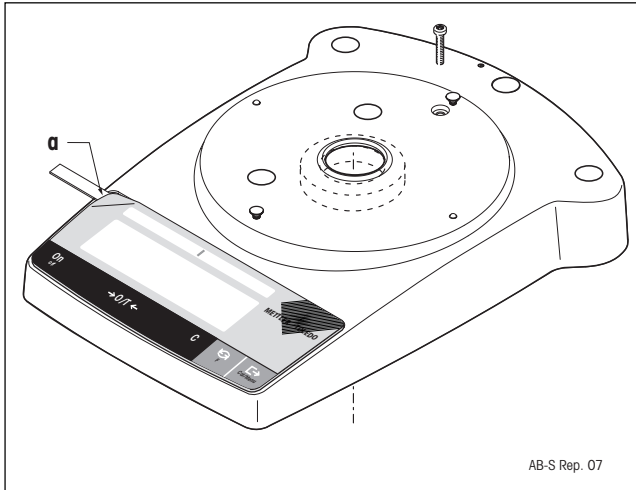
7. Plug calibration drive cable into the cell board.
8. Connect balance to LARS and switch on service mode.
9. Lower motor with LARS and position calibration drive in such a way that the weight is placed on the hanger cover without lateral movement.
10. Fit cell cover;

Warning:

Do not pinch the cable.

2.4.11 Replacing spirit level

1. Open balance → [2.5.3](#)
2. Remove level (**avoid blows** to the instrument, these could damage the measuring cell!).
3. Clean level seat thoroughly, removing all traces of grease and adhesive.
4. Place the test level from tool case on monobloc and level the balance. Remove the test level.
5. Fit new level:
 - Apply a thin layer of adhesive.
 - Place level and adjust it so that the air bubble is in the center.
6. Close balance → [2.5.4](#)

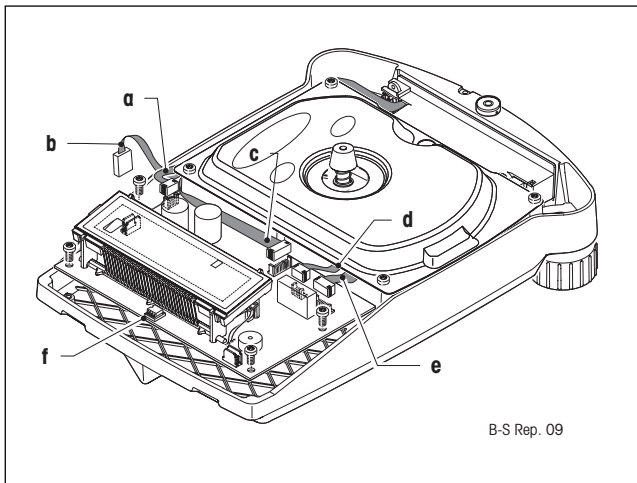


2.5.12 Replacing top housing

1. Open balance → [2.4.3](#)
2. Insert model plate from old balance in new membrane keypad: slightly raise the opening for model plate (a) and insert it.
3. Analytical balances: affix self-adhesive seal ring (b) supplied with the housing around opening for cone.
4. Close balance → [2.4.4](#)

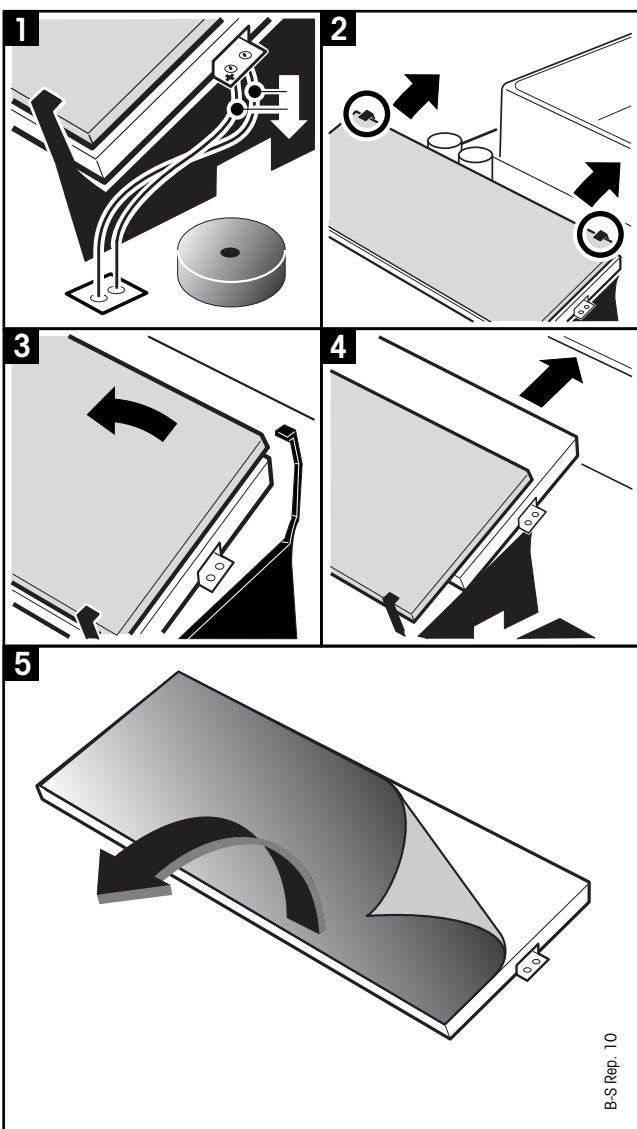
2.5.13 Replacing bottom housing

1. Open balance → [2.4.3](#)
2. Remove balance board → [2.4.14](#)
3. Remove measuring cell → [2.4.8](#)
4. Remove calibration drive → [2.4.10](#)
5. Remove RS232 interface and connection holder → [2.4.7](#)
6. Remove lug for antitheft device.
7. Remove leveling feet.
8. Remove hanger cover.
9. Fit new bottom housing:
 - hanger cover
 - leveling feet (grease threads)
 - connection holder and blank plate or RS232 interface → [2.4.7](#)
 - balance board → [2.4.14](#)
 - calibration drive → [2.4.10](#)
 - measuring cell → [2.4.8](#)
10. Close balance → [2.4.4](#)



2.5.14 Replacing balance board

1. Open balance → [2.5.3](#)
2. Disconnect cables for:
 - power (a)
 - calibration drive (b)
 - detector (e)
 - coil (d)
 - RS232 (c)
3. Remove screws and balance board.
4. Retain cell data E2PROM (f) for new balance board.
5. Fit and connect new board in reverse order.
6. Load TDNR.



2.5.15 Replacing backlighting

Open balance → [2.5.3](#)

1. Unsolder cables.
2. Bend retaining tabs slightly to the rear.
3. Turn the display upward.
4. Remove backlighting unit (unsoldering cable).
5. Remove protective film from the new backlighting unit.
6. Fit the new backlighting unit.
7. Solder the cables as shown in Fig. 1 with correct polarity.
8. Close balance → [2.5.4](#)

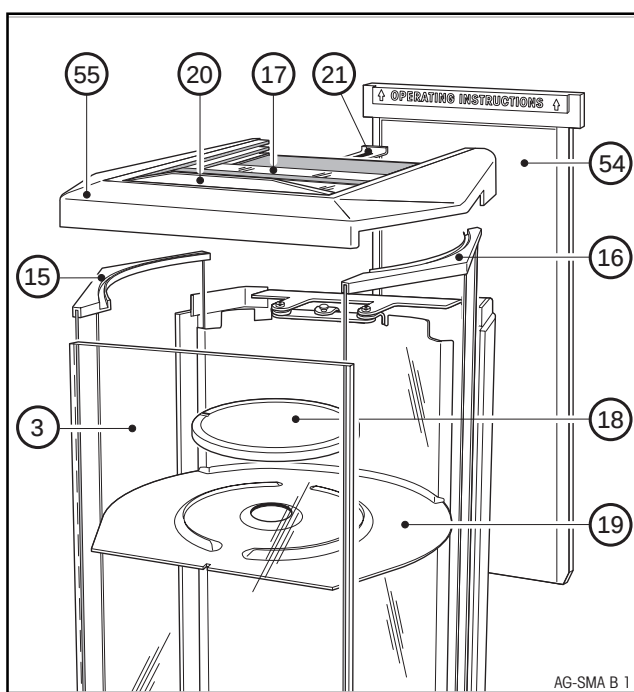
3. Repairs of the G balances

3.1 Repairs of the AG balances



Important information for protection against electrostatics in service work!

Damage caused by electrostatics is difficult to detect as it can result in a confusing range of faults. MOS switching transistors with electrostatic damage have appreciably higher, thermally unstable leakage currents. This causes the balance to drift more and the display can fluctuate as in the case of exposure to drafts. To avoid damage caused by electrostatics, work is performed in production with conducting floors, controlled atmospheric humidity and EMC mats. It is thus appropriate, also during service work - as soon as the balance has been opened - to discharge electrostatic charges by use of the ESD service kit (section 11, service case, order number 11600009).

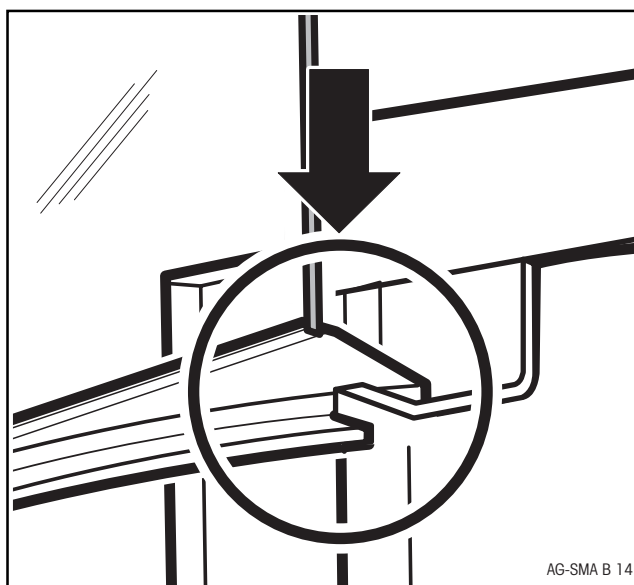


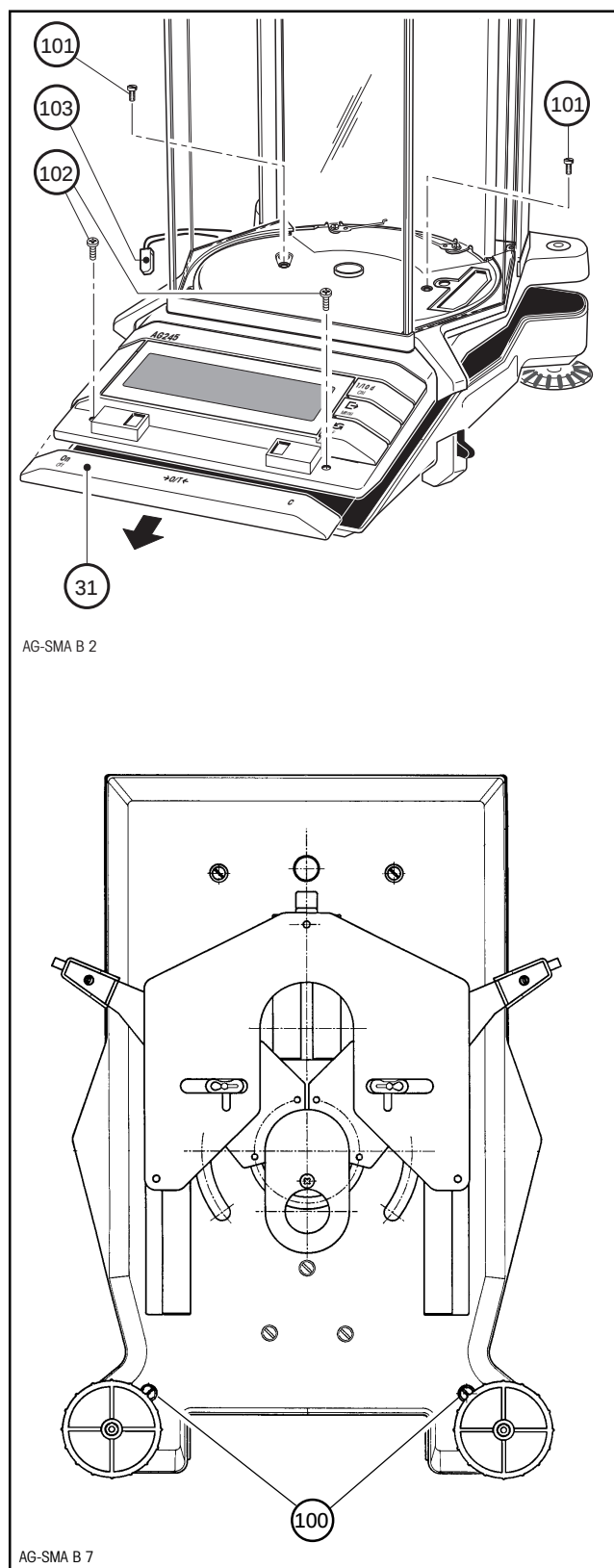
3.1.1 Removing weighing chamber

1. Disconnect power cable.
2. Remove weighing pan (18).
 - AG245: Remove draft shield element.
3. Remove cover plate (19).
4. Lift slider (54) up and out.
5. Withdraw panes (17 + 20) backward.
 - Hold bottom pane (17) to prevent it falling.
6. Removing housing cover (55):
 - Pull locking device (21) backward to the stop.
 - Carefully take off housing cover (55).
7. Remove front glass (3).
8. Lift doors (15 + 16) up and out.
 - Locking devices (39 + 40) open (bottom item).

3.1.2 Installing weighing chamber

1. Insert doors (15 + 16), push to partition and slide in (see illustration AG SM, B 14).
2. Insert front glass (3).
3. Mounting housing cover:
 - Pull locking device (21) backward to stop.
 - Mount housing cover (55).
 - Slight pressure on housing cover (55) and push in locking device (21). Check fixation!
4. Insert top panes (20 + 17).
5. Insert slider (54).
6. Lay in cover plate (19).
7. Mount weighing pan (18).
 - AG245: Install draft shield element.
8. Attach power cable.





3.1.3 Removing top housing, assembled

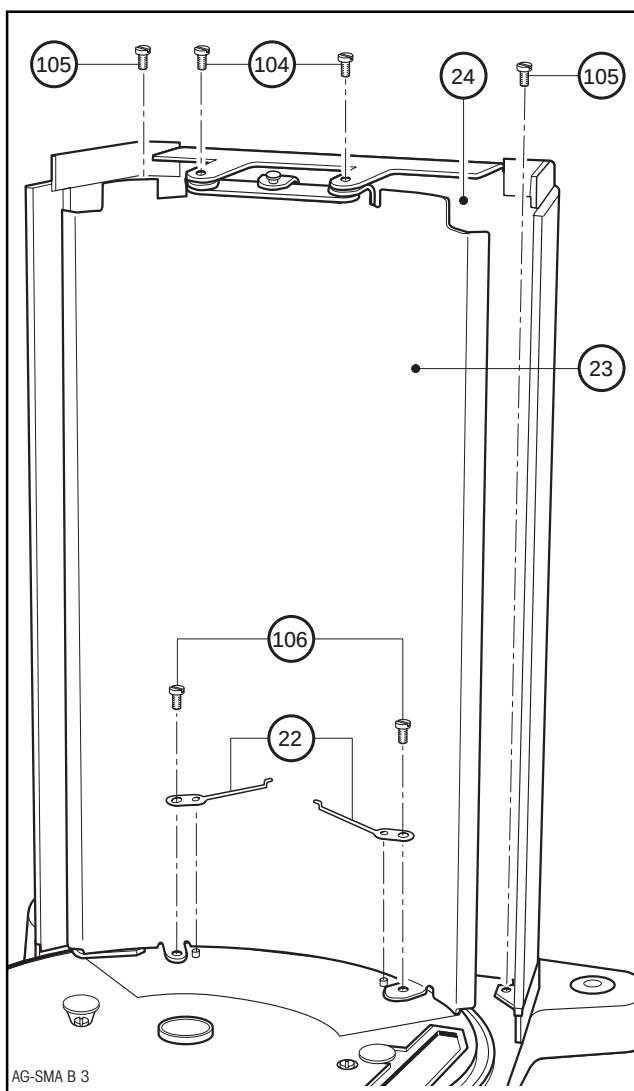
Electrostatics → work with ESD service kit!

1. Disconnect power cable.
2. Remove weighing pan (18) and cover plate (19).
 - AG245: Remove draft shield element.
3. Place balance on rear panel.
4. Remove 2 screws (100) on baseplate.
5. Place balance upright.
6. Remove 2 screws (101) in the weighing chamber.
7. Pull tare bar (31) forward.
8. Remove 2 screws (102) of tare bar.
9. Raise top housing slightly.
 - Disconnect stabilizer cable (103) and take off housing completely.

3.1.4 Installing top housing, assembled

1. Place top housing on bottom housing ensuring that stabilizer cable (103) is not pinched.

Warning: Plug in stabilizer cable (103) before closing.
2. Insert 2 screws (102) of tare bar.
3. Push in tare bar (31) from front.
4. Insert 2 screws M3 x 8 mm (101) (weighing chamber).
5. Place balance on rear panel.
6. Insert 2 screws (100) in baseplate.
7. Place balance upright.
8. Install cover plate (19) and weighing pan (18).
 - AG245: Insert draft shield element.
9. Attach power cable.



3.1.5 Removing rear panel

1. Remove weighing chamber (see point 3.1.1).
2. Remove 2 screws (104) on partition (23) at top.
3. Remove 2 screws (105) and take off rear panel (24).

3.1.6 Installing rear panel

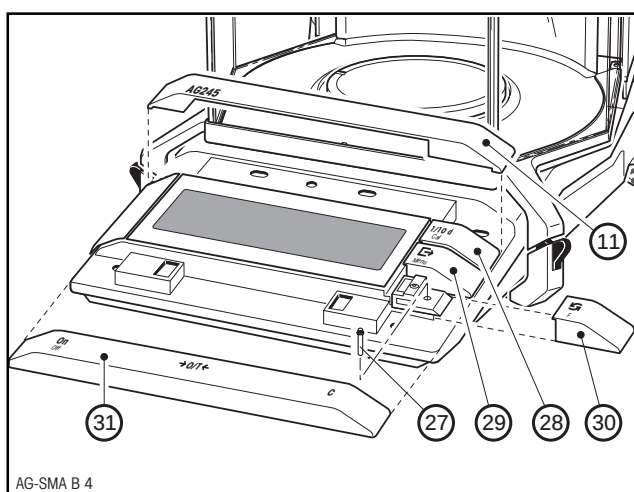
1. Insert rear panel (24) in the top housing and fasten with 2 screws (105).
2. Insert 2 screws (104) in partition (23) at top.
3. Install weighing chamber (see point 3.1.2).

3.1.7 Replacing partition

1. Remove top housing, assembled (see point 3.1.3).
2. Remove weighing chamber (see point 3.1.1).
3. Remove 2 screws (104).
4. Remove 2 screws (106) and 2 contact springs (22).
5. Pull off cable fastening (adhesive tape) on underside of top housing and remove partition (23).

Installation in reverse order.

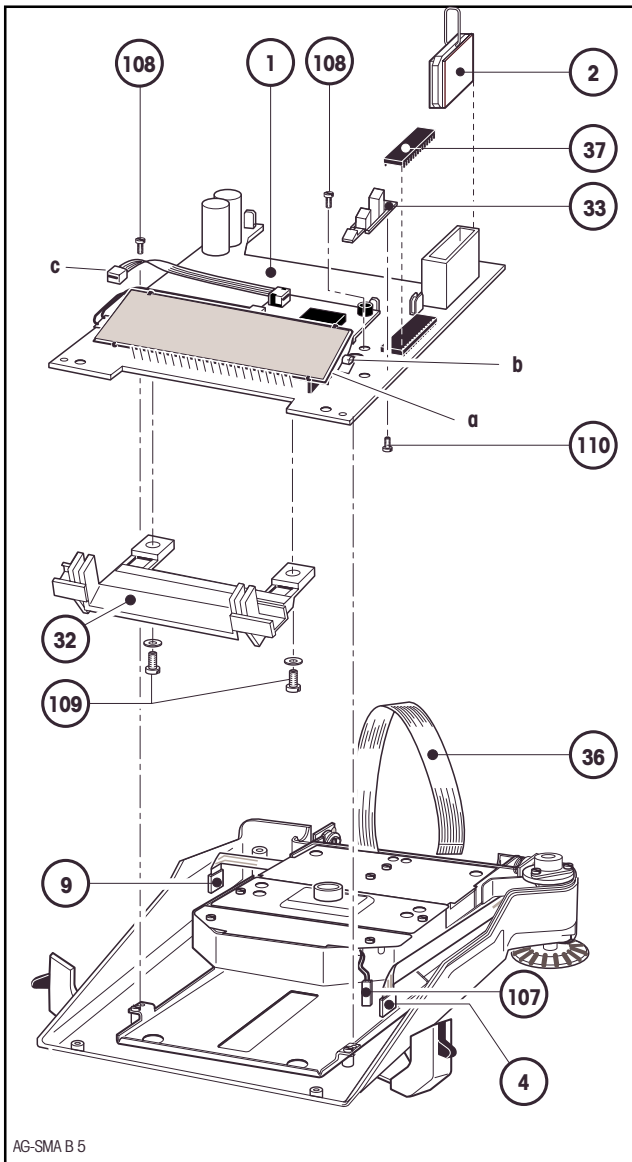
- Install weighing chamber (see point 3.1.2).
- Install top housing, assembled (see point 3.1.4).



3.1.8 Replacing model strip, keys and bolt

1. Lift off model strip (11).
2. Take off tare bar (31) forward.
3. Pull off keys (28), (29), (30) sideways.
4. Pull out bolt (27).

Installation in reverse order.



3.1.9 Removing/installing or replacing balance board

Electrostatics → work with ESD service kit!

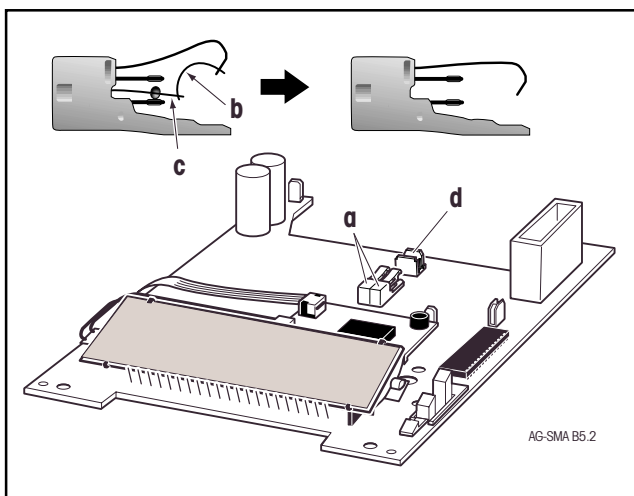
1. Remove top housing (see point 3.1.3).
2. Take out program cassette (2).
3. Disconnect supply cable (9) from the board.
4. Disconnect CAN cable (4) from the board.
5. Disconnect calibration cable (107) from the board.
6. Disconnect cell cable (36) from the board:
 - Raise connector at both ends slightly with a screwdriver .
 - Disconnect cable and plug in at cell screening at rear (equalized potential).
7. Remove balance board (1) as follows:
 - Remove 2 screws (108).
 - Lift up board at front slightly and pull off forwards.

If the balance board is changed, also do following:

- Carefully take off EPROM (37).
- Remove key holder and key spring (see point 3.1.10).
- if needed, remove backlighting (b) → 3.1.9.1

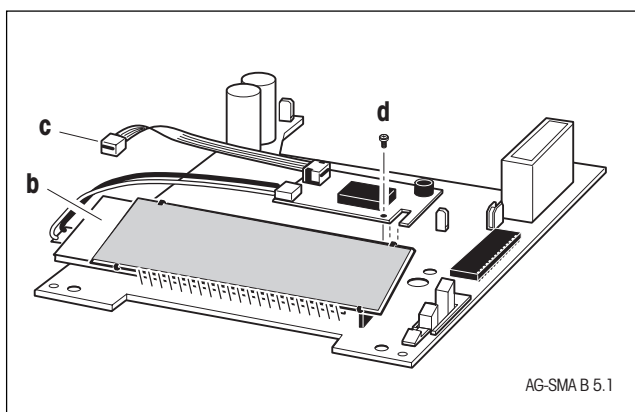
Installation in reverse order.

- in case of display with backlighting: remove reflector (a) and mount backlighting (b) → 3.1.9.1. Do not forget plug (c).
- When installing the cell cable, press down connector at both ends with a screwdriver.
- Install top housing, assembled (see point 3.1.4).



SAG balances, replacement of the balance board

- Take the new balance board, and prepare the calibration weight switches (a) as follows:
 - Remove the spring (b) with a pair of tweezers.
 - Pull the contact spring (c) with a pointed pliers – moving slightly to the left and to the right – out of the plastic bloc and remove it.
- Unsolder carefully the connector (d) on the old balance board, and solder it in the same position to the new one.



3.1.9.1 Replace backlighting

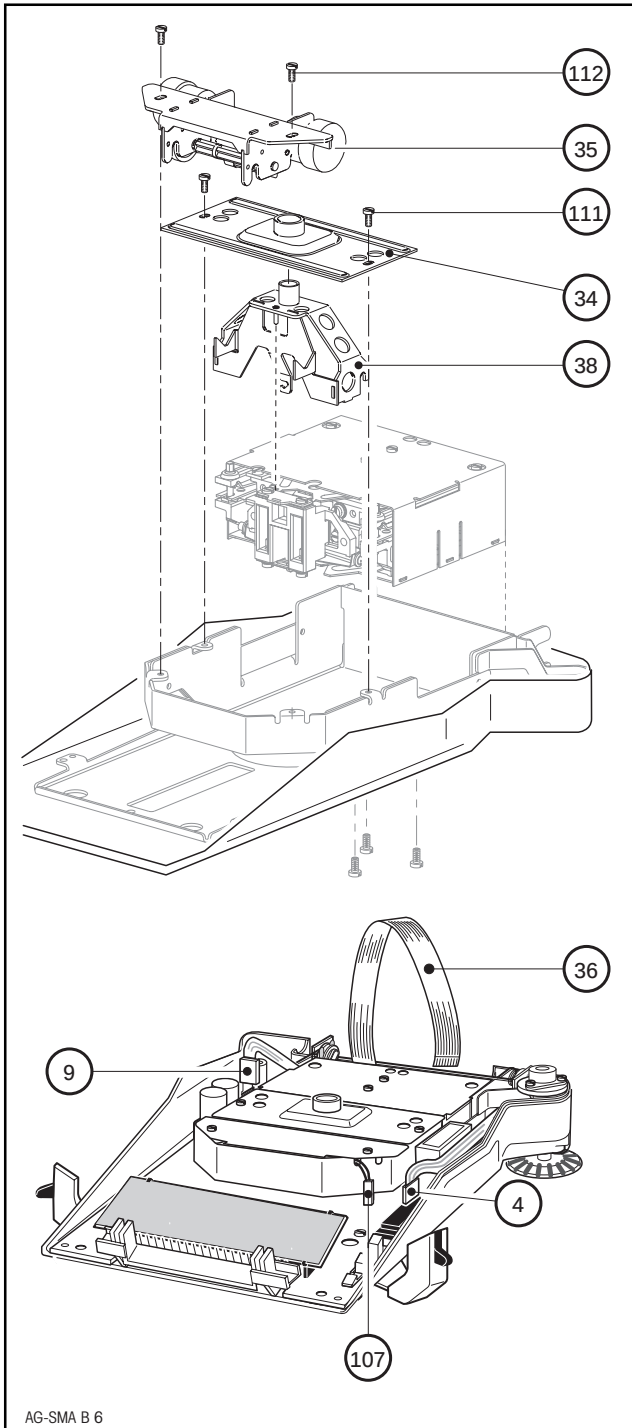
1. Remove top housing, assembled (section [3.1.3](#))
2. Pull off plug (c).
3. Remove power supply (d).
4. Draw out backlighting (b) to the left.
5. Install new backlighting.
6. Install top housing, assembled (→ section [3.1.4](#))

3.1.10 Replacing key holder and key spring

1. Remove balance board (see point 3.1.9).
2. Remove key holder (32) by unscrewing the 2 screws (109) on the board at the bottom.
3. Remove key spring (33) by unscrewing the screw (110) on the board at the bottom.

Installation in reverse order.

- Install balance board (see point 3.1.9).
- Install top housing, assembled (see point [3.1.4](#)).
 - Adjust key holder (32) with mounted tare bar when balance assembled.



3.1.11 Removing sealing plate, calibration drive and arm

Electrostatics → work with ESD service kit!

1. Remove top housing, assembled (see point 3.1.3).
2. Pull off cell cable (36):
 - Raise connector at both ends slightly with a screwdriver.
 - Pull off cable and plug in at cell shielding at rear (equalized potential).
3. Disconnect calibration cable (107).
4. Unscrew 2 screws (111) and remove sealing plate (34).
5. Remove 2 screws (112) and take off calibration drive (35).

Replacing calibration drive:

On replacement, the calibration weight must be transferred! The motor may **only** be operated **electrically** (never by hand).

Procedure after 5. above:

- Hold calibration drive (35) in your hand.
- Plug in calibration cable (107).
- Attach supply cable to balance.
- The weight holders open.
- Disconnect calibration cable (107) and supply cable.
- Remove calibration weight with «clean cloths».

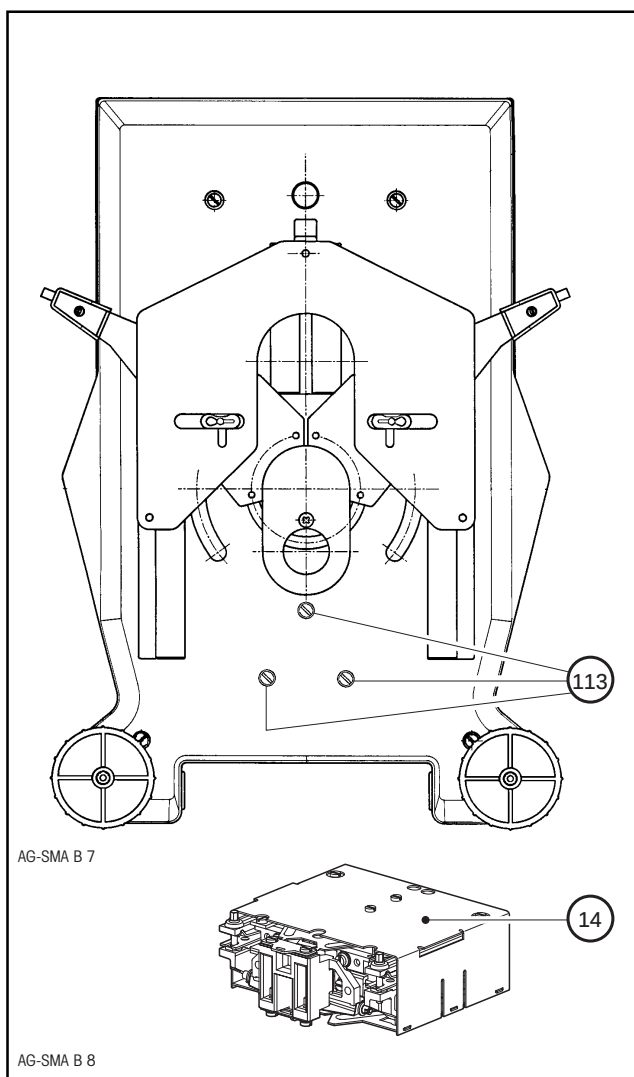
When installing the calibration weight, pay attention to the same points.

6. Carefully remove arm (38).

3.1.12 Installing arm, calibration drive and sealing plate

1. Insert arm (38).
The arm must be inserted in the Teflon sockets of the hanger.
2. Install calibration drive (35).
 - Run cable through slot in the chassis.
 - Loosely insert 2 screws (112).

3. To adjust the calibration drive, lift up arm (38) until the calibration weight is centred in the support of the arm.
4. Tighten the 2 screws (112).
5. Center sealing plate (34) with arm and fasten with 2 screws (111).
6. Plug in calibration cable (107).
7. Install cell cable (36):
 - On installation of the cell cable, push down the connector at both ends with a screwdriver.
8. Install top housing, assembled (see point 3.1.4).

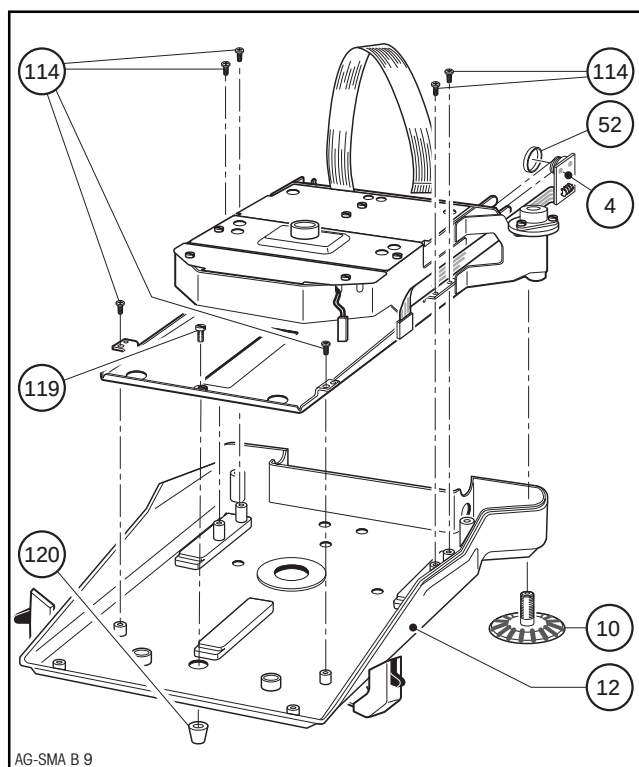


3.1.13 Removing measuring cell with shielding

1. Remove sealing plate, calibration drive and arm (see point 3.1.11).
2. Remove measuring cell (14) as follows:
 - Position baseplate so that it is accessible from below.
 - Hold measuring cell and unscrew the 3 screws (113).
 - Take off measuring cell.

3.1.14 Installing measuring cell with shielding

1. Insert measuring cell (14) in chassis.
2. Turn baseplate (hold measuring cell),,
3. Insert 3 screws (113).
4. Align measuring cell and then tighten screws (113).
5. Install arm, calibration drive and sealing plate (see point 3.1.12).



3.1.15 Removing chassis, assembled (with measuring cell and calibration drive)

1. Remove balance board (see point 3.1.9).
2. Remove screw (119) and the foot (120).
3. Unscrew 2 leveling feet (10).
4. Remove 6 screws (114).
5. Take out chassis, assembled.

3.1.16 Installing chassis, assembled (with measuring cell and calibration drive)

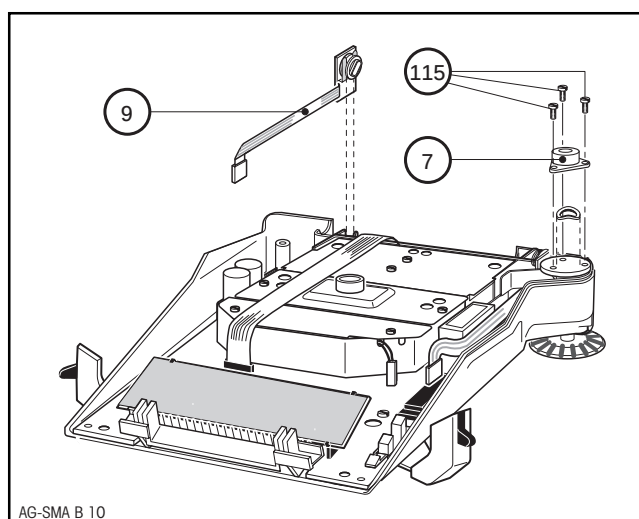
1. Insert chassis, assembled in baseplate (12).
2. Insert 6 screws (114).
3. Install 2 leveling feet (10).
4. Fasten foot (120) with screw (119).
5. Install balance board (see point 3.1.9).

3.1.17 Replacing CAN filter with cable

1. Remove chassis, assembled (see point 3.1.15).
2. Unscrew nut (52) at the CAN socket and remove CAN filter with cable (4).

Installation in reverse order.

- Install chassis, assembled (see point 3.1.16).



3.1.18 Replacing supply cable

1. Remove top housing, assembled (see point 3.1.3).
2. Disconnect supply cable (9) at balance board.
3. Lift supply cable (9) up and out.

Installation in reverse order.

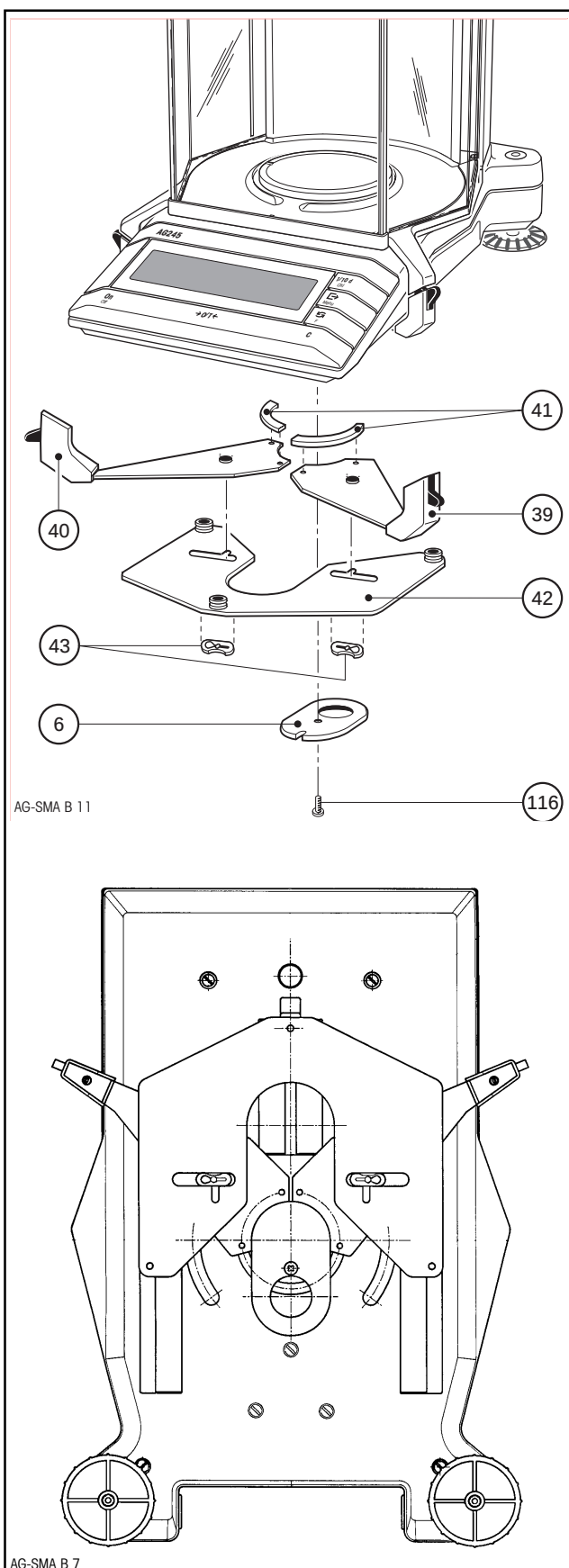
- Install top housing, assembled (see point 3.1.4).

3.1.19 Replacing level

1. Remove top housing, assembled (see point 3.1.3).
2. Remove 3 screws (115) and take out level (7).

Installation in reverse order.

- Adjust level (see cell manual, section 3).
- Install top housing, assembled (see point 3.1.4).

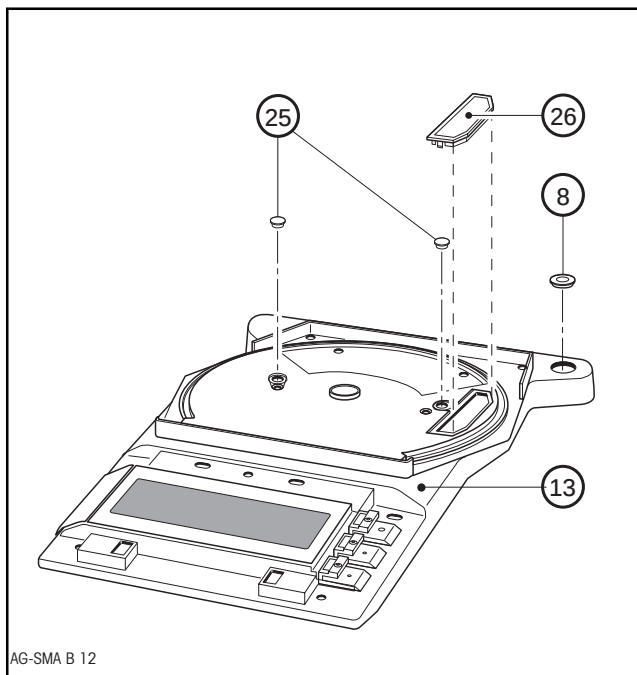


3.1.20 Removing hanger cover, slide, left and right lever with lever guides

1. Disconnect power cable.
2. Remove weighing pan.
 - AG245: Remove draft shield element.
3. Place balance on rear panel.
4. Remove screw (116) and take off hanger cover (6).
5. Remove 2 gliders (43).
6. Push slide (42) right to top (front) and detach.
7. Take off left (40) and right (39) lever.
8. Pull lever guides (41) out of the two levers (39 + 40).
 - Applicable only when lever or lever guides replaced.

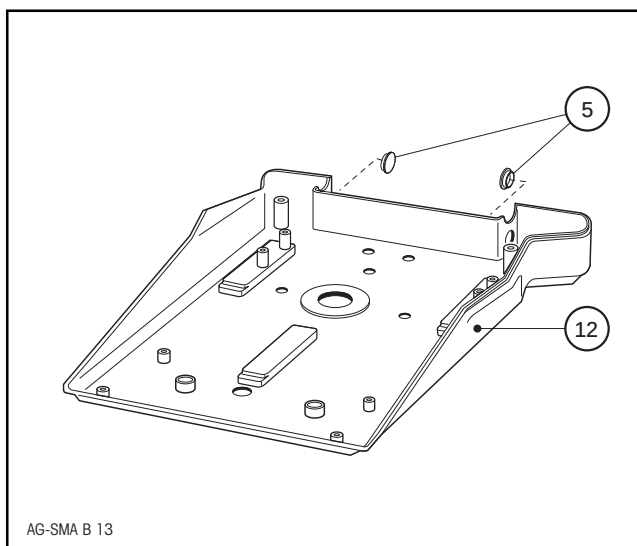
3.1.21 Installing left and right lever with lever guides, slide and hanger cover

1. Place left (40) and right (39) lever with installed lever guides (41) in the baseplate and turn upward (front).
2. Insert slide (42) right at front in the long grooves of the baseplate and pull down a little.
3. Insert 2 gliders (43) and move to engagement position.
4. Fasten hanger cover (6) with the screw (116) to the baseplate.
5. Place balance in working position.
6. Mount weighing pan.
 - AG245: Install draft shield element.
7. Attach power cable.



3.1.22 Replacing top housing

1. Remove model strip, keys and bolt (see point [3.1.8](#)).
2. Remove top housing, assembled (see point [3.1.3](#)).
3. Remove weighing chamber (see point [3.1.1](#)).
4. Remove level cover (8).
5. Remove 2 stoppers (25).
6. Remove cassette cover (26).
7. Change top housing (13).
8. Insert cassette cover (26).
9. Insert 2 stoppers (25).
10. Insert level cover (8).
11. Install weighing chamber (see point [3.1.2](#)).
12. Install top housing, assembled (see point [3.1.4](#)).
13. Insert model strip, bolt and keys (see point [3.1.8](#)).



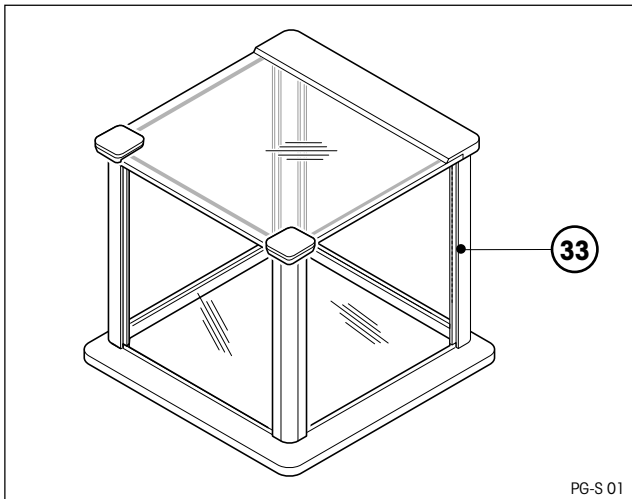
3.1.23 Replacing bottom housing

1. Remove hanger cover, slide, left and right lever with lever guides (see point [3.1.20](#)).
2. Remove chassis, mounted (see point [3.1.15](#)).
3. Take out 2 dummy stoppers (5), or remove anti-theft device if used.
4. Change bottom housing (12).
5. Insert 2 dummy stoppers (5), or install anti-theft device if used.
6. Install chassis, mounted (see point [3.1.16](#)).
7. Install left and right lever with lever guides, slide and hanger cover (see point [3.1.21](#)).

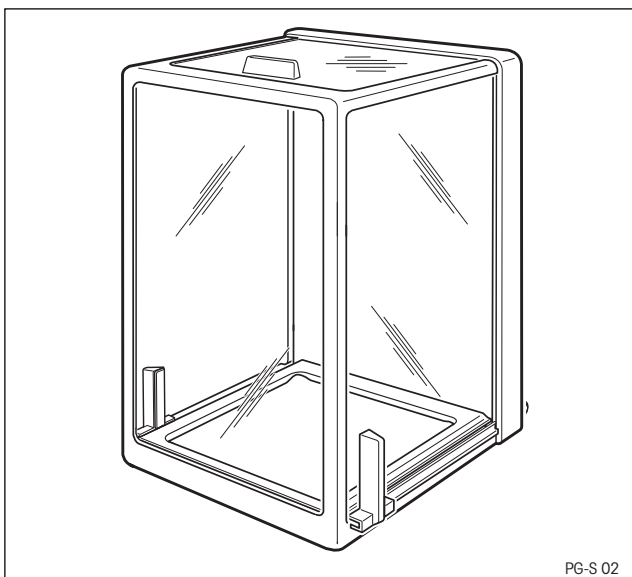
3.2 Repairs to PG-S balances

The PG-S balances can be divided into balances with a draft shield and a small square weighing pan and balances without a draft shield and a large square weighing pan.

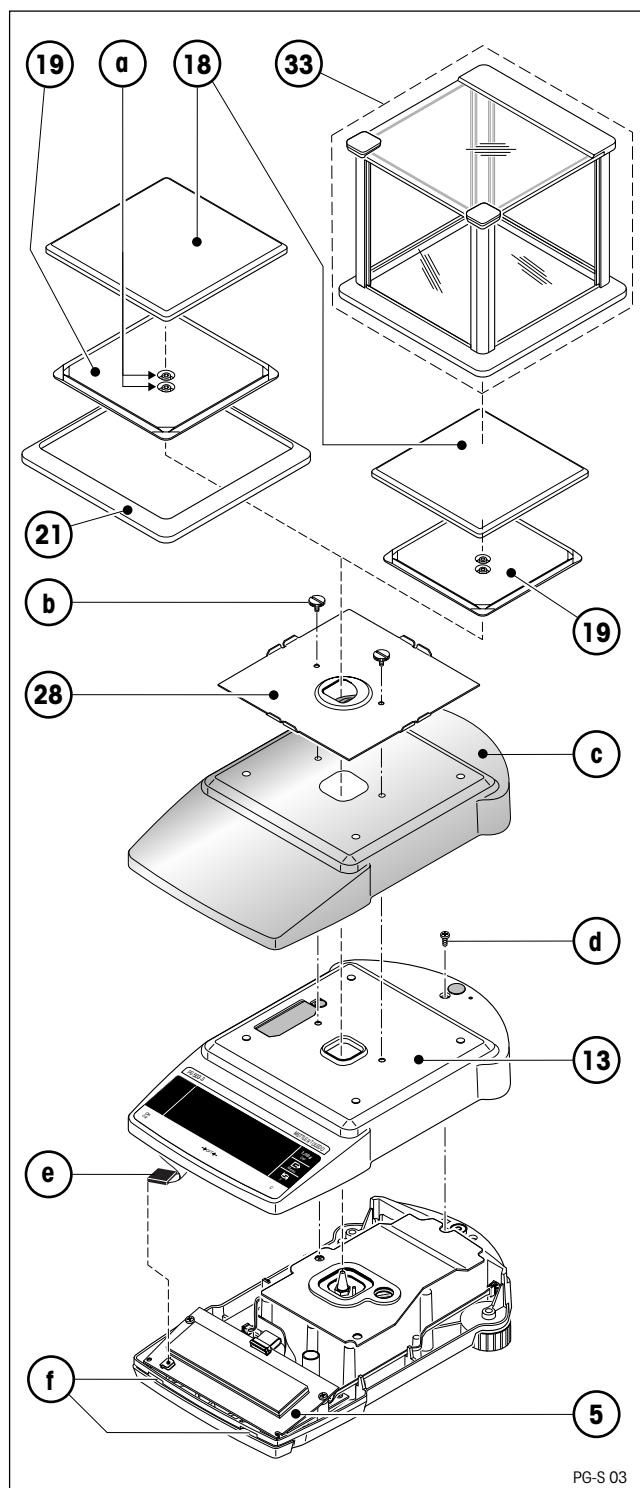
For a better understanding and overview, it is advisable to have the appropriate exploded view drawing in section 2 in front of you. This also provides information on the available spare parts.



3.2.1 Repairs to PG-S low draft shield → 4.1.1



3.2.2 Repairs to PG-S high draft shield → 4.1.2



3.2.3 Opening the PG-S balance 3.2.3

1. Disconnect power cable..
- 2a. With 1 mg balances, lift up complete draft shield (33).
- 2b. With 10 mg balances, remove draft shield frame (21).
3. Remove weighing pan (18) and weighing pan support (19).

Note: The weighing pan support may be firmly seated on the conical part (lift up weighing pan support carefully).

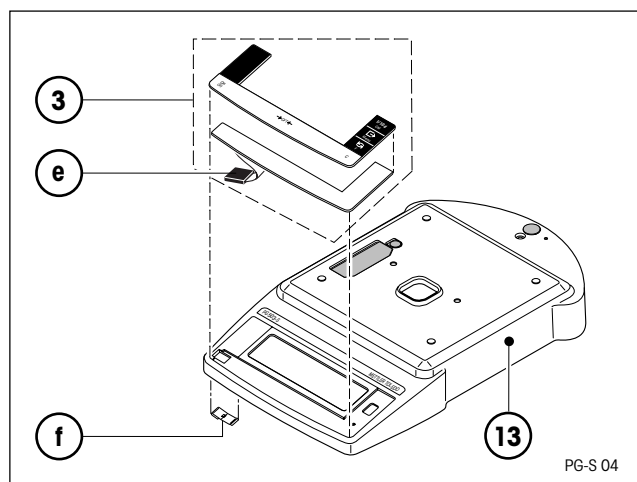
4. Unscrew the 2 knurled screws (b) of fastening plate (28). Remove fastening plate. Remove in-use cover (c).
5. Unscrew screw (d).
6. Removing top housing (13):
 - Lift up at back by approx. 45 ° and **carefully** disconnect the connector of the connection cable (e) at the display PCB (5).
 - Remove top housing.

3.2.4 Closing the PG-S balance

1. Mounting top housing (13):
 - Plug in connection cable (e) at display PCB.

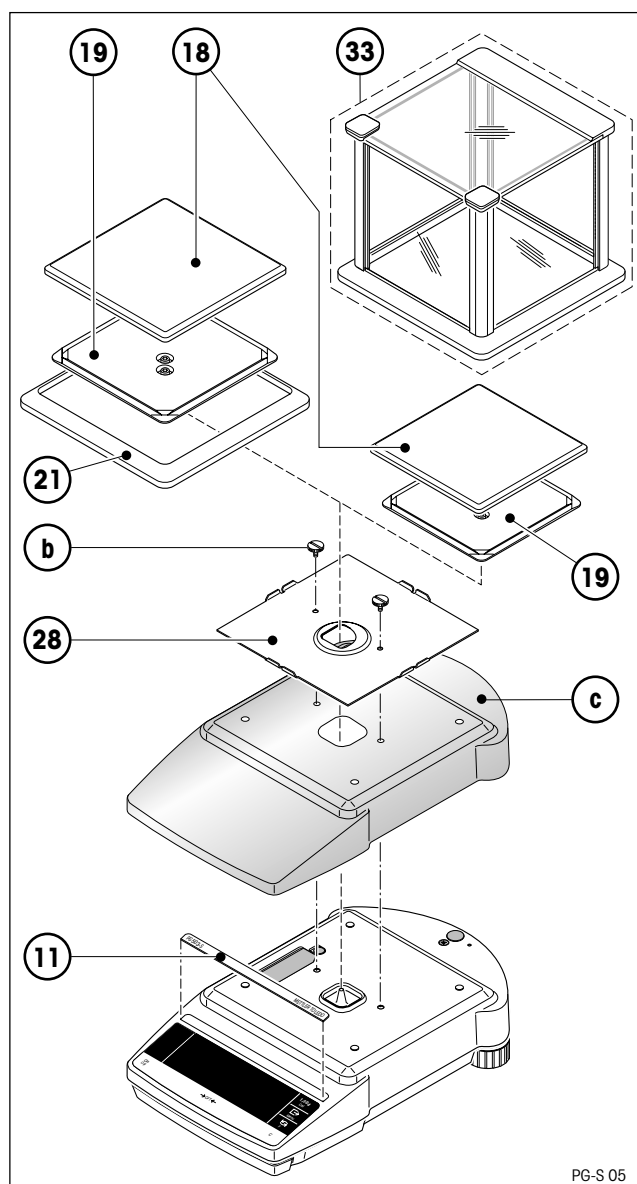
Note: Never exert force on the cable, push only the connector!

 - First insert top housing in housing base (f) at the front at an angle of approx. 45 ° and then lower toward the rear.
2. Screw in screw (d).
3. Mount in-use cover (c).
4. Mount fastening plate (28).
5. Screw 2 knurled screws (b) by hand (not with a screwdriver) into fastening plate (28).
6. Mount weighing pan support (19) and weighing pan (18).
7. Mount draft shield frame (21) or, depending on the model, the complete draft shield (33).
 - If the weighing pan support is out of line with the draft shield/draft shield frame, the weighing pan support can be aligned by loosening the 2 screws (a).
8. Connect power cable.



3.2.5 Changing membrane keypad

1. Open balance → 3.2.3
2. Peel off membrane keypad (3) from the cable end.
3. Remove residual adhesive.
4. Attaching new membrane keypad:
 - Pass connection cable (e) of the new membrane keypad through top housing (13).
 - Detach cover film from membrane keypad.
 - Align membrane keypad and press firmly onto housing.
 - Stick on keypad overlay.
5. Contact spring (f) must be inserted between cable and housing.
6. Close balance → 3.2.4



3.2.6 Changing model plate

1. If in-use cover installed:
 - With 1 mg balances, lift off draft shield (33).
 - With 10 mg balances, remove draft shield frame (21).
 - Remove weighing pan (18) and weighing pan support (19).

Note:

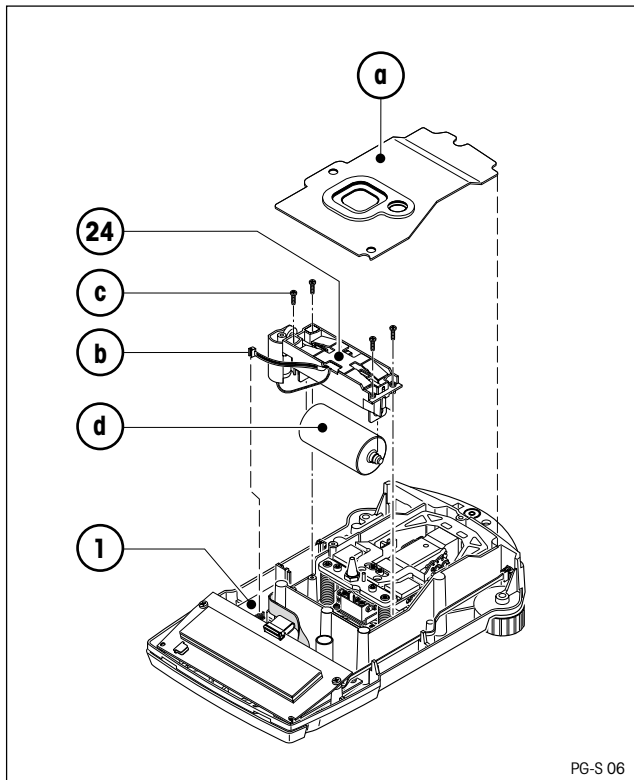
The weighing pan support may be firmly seated on the conical part (lift up weighing pan support carefully).

- Unscrew 2 knurled screws (b) of fastening plate (28).

In installation, the 2 knurled screws (b) must be screwed into fastening plate (28) by hand (not with a screwdriver).

- Remove fastening plate (28).
 - Remove in-use cover (c).
2. Detach model plate (11).
 3. Remove residual adhesive.
 4. Attaching new model plate: Detach cover film from model plate. Align model plate and press firmly onto housing.

If the in-use cover is mounted, the remaining assembly is in the reverse sequence.



3.2.7 Changing calibration drive and calibration weight

Note: When the calibration drive is changed, the old calibration weight must be transferred to the new drive! The motor may only be operated electrically (never by hand).

1. Open balance → 3.2.3
2. If used, remove cell screening (a).
3. Disconnect ribbon cable (b) of the calibration drive (24) from the balance PCB (1).
4. Unscrew 4 screws (c).
5. Lift out calibration drive (24).
6. Removing calibration weight (d):
 - For removal, the calibration weight must be in the bottom calibration position!

Note

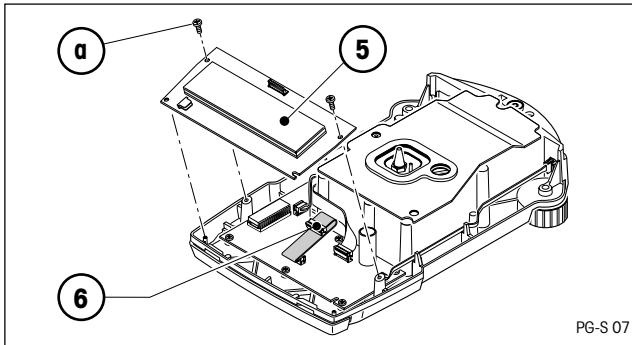
Use the LC-PT45 (*Func 41*) to move the calibration weight to the bottom position.

- Remove calibration weight using a “clean cloth”.
7. Install cleaned calibration weight in the new calibration drive.

Warning

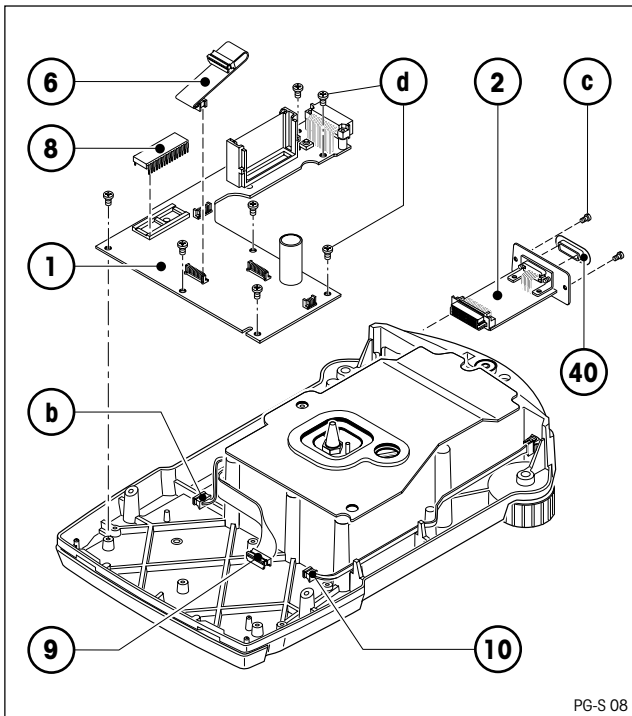
When inserting the calibration weight, pay attention to the same points (point 6)!

8. Use the LC-PT45 (*Func 42*) to move the calibration weight to the top position.
9. Remaining installation steps are performed in reverse sequence.
10. Test calibration drive with LC-PT45 (*Func 43*).
11. Close balance → 3.2.4



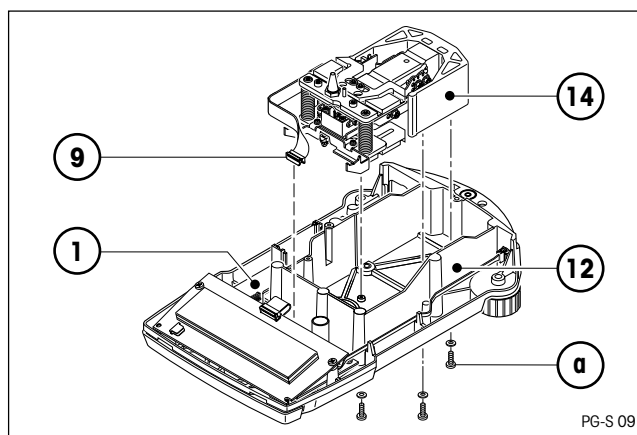
3.2.8 Changing display PCB

1. Open balance → 3.2.3
2. Disconnect connection cable (6) from display PCB.
3. Unscrew 2 screws (a) of display PCB (5).
4. Remove display PCB.
5. Install new display PCB in reverse sequence.
6. Close balance → 3.2.4



3.2.9 Changing balance PCB

1. Remove display PCB → 3.2.8
2. Disconnecting connection cables at balance PCB (1):
 - Connection cable calibration drive (b)
 - Connection cable cell (9)
 - Connection cable power supply (10)
 - Connection cable display (6)
3. Remove RS cover (40).
4. Unscrew 2 screws (c) at RS interface (2).
5. Pull off RS interface toward rear.
6. Unscrew 7 screws (d) at balance PCB (1).
7. Remove balance PCB.
8. When changing the balance PCB, also carefully remove the EPROM (8).
9. Installation is in the reverse sequence!
 - The EPROM (8) of the faulty balance PCB must be used in the new balance PCB.
 - Adjust balance → section 7, 2.

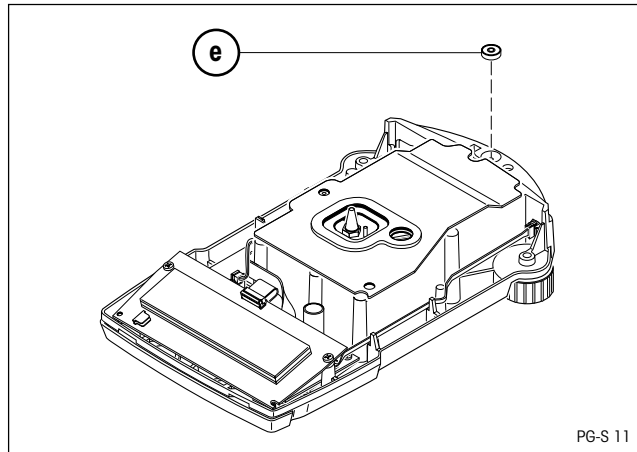
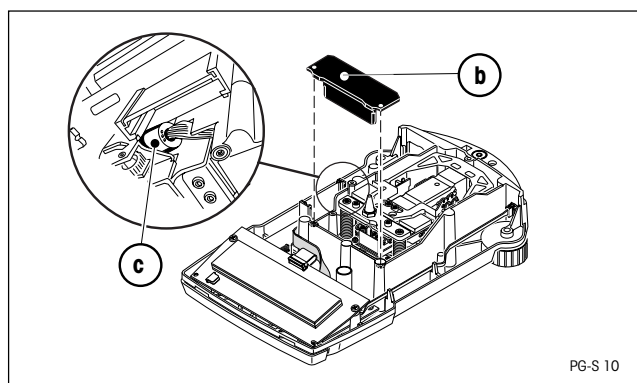


3.2.10 Removing the measuring cell

1. Remove calibration drive → 3.2.7
2. Disconnect connection cable of cell (9) from balance PCB (1).
3. Removing measuring cell:
 - Place housing base (12) upright and hold measuring cell (14) firmly.
 - Unscrew 3 screws (a).
 - Remove measuring cell (14).

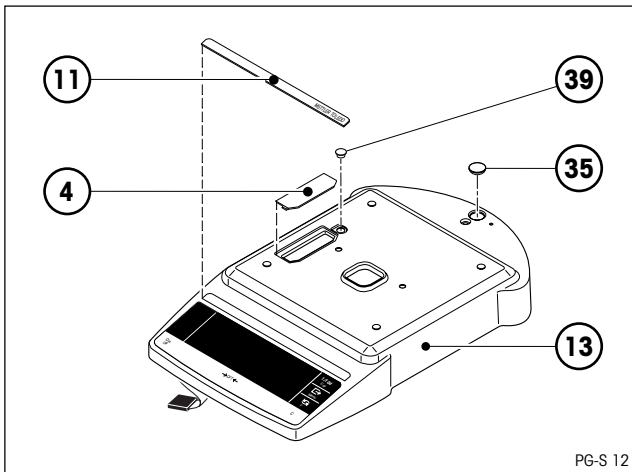
3.2.11 Installing measuring cell

1. Installation of the measuring cell:
 - Install measuring cell (14) in the housing base (12).
 - Hold measuring cell firmly and place housing base upright.
 - Insert 3 screws (a).
 - Using the measuring cell gauge (b), align measuring cell parallel in the housing base and then tighten the 3 screws (a).
2. Plug connection cable of cell (9) into balance PCB (1) and place ferrite core (c).
3. Install calibration drive → 3.2.7



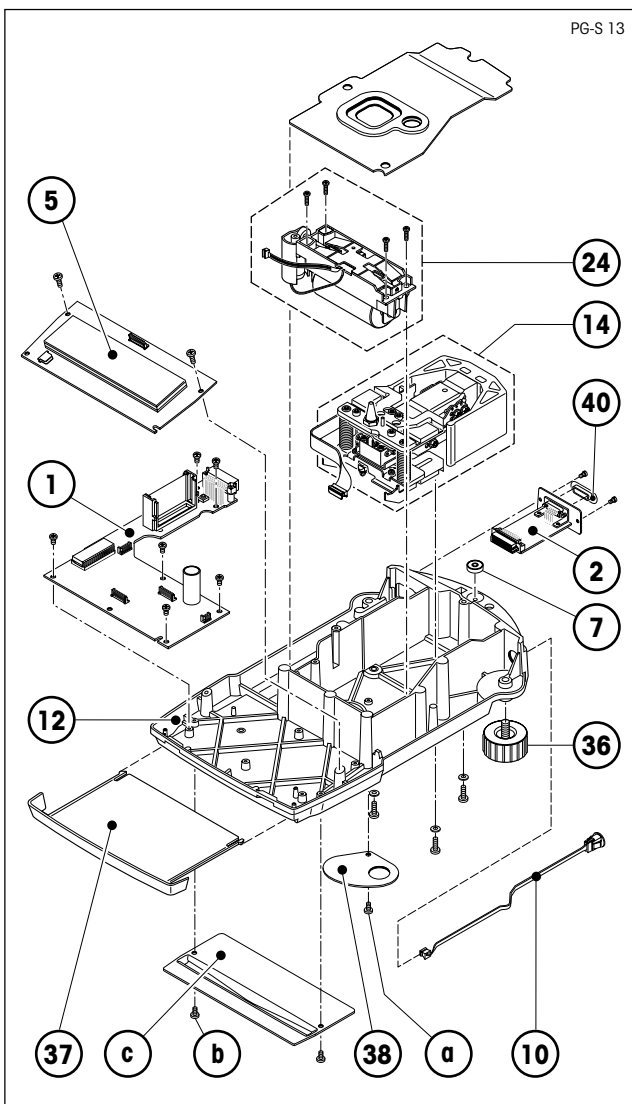
3.2.12 Changing level

1. Open balance → 3.2.3
2. Knock out level (7) from below using a punch.
3. Remove residual adhesive and all traces of grease.
4. Carefully position test level from the tool kit on the monobloc cell and level balance using the leveling feet.
5. Installing new level:
 - Apply a thin layer of adhesive in the recess.
 - Insert level and align so that the air bubble matches that of the test level.
6. Remove test level.
7. Close balance → 3.2.4
 - Wait for the adhesive to dry before closing the balance.



3.2.13 Changing top housing

1. Open balance → 3.2.3
2. Remove following parts:
 - Cassette cover (4)
 - Cap (39) Level indicator window (35)
3. Equipping new top housing (13):
 - Affix model plate (11) → 3.2.6
 - Level indicator window (35)
 - Cap (39)
 - Cassette cover (4)
4. Close balance → 3.2.4



3.2.14 Changing housing base

1. Remove display PCB (5) → 3.2.8
2. Remove balance PCB (1) and RS interface (2) → 3.2.9
3. Disconnect connection cable/power supply (10).
4. Remove calibration drive (24) → 3.2.7
5. Remove measuring cell (14) → 3.2.10
6. Remove slide (37).
7. Unscrew screw (a) and remove rotary slide (38).
8. Unscrew 2 screws (b) and remove stand plate (c).
9. Remove 2 leveling feet (36).
10. Equipping new housing base (12):
 - Install 2 leveling feet (36).
 - Install stand plate (c) with 2 screws (b).
 - Install rotary slide (38) with screw (a).
 - Install slide (37).
11. Install measuring cell (14) → 3.2.11
12. Install calibration drive (24) → 3.2.7
13. Install connection cable/power supply (10)
14. Install balance PCB (1) and RS interface (2) → 3.2.9
15. Install display PCB (5) → 3.2.8
 - Before closing the balance, affix level (7) in the housing base → 3.2.12

3.3 Repairing the PG-S scales (0.1 g/1 g)

The repair work described in what follows applies to all PG-S scales (0.1 g/1 g) with the exception of the certifiable version of the PG3001-S. The repair work for this model is described under the PG-S lab models.

Warning: In all repair work described below, it is essential to disconnect the scale from the power supply!

3.3.1 Opening the PG-S scales (0.1 g/1 g)

1. **Disconnect power cable from power socket at rear of scale.**
2. Lift up weighing pan and remove the 4 pan mounts.
3. Unscrew 4 Phillips screws in top housing.
4. Raise top housing at back a short way and detach the ribbon cable of the keypad from the scale board at the rear of the scale. Lift off top housing.
5. Unscrew the two hex screws of the overload plate (Allen key, 2.5 mm) and lift up overload plate. Close in reverse sequence.

3.3.2 Replacing membrane keypad and front glass

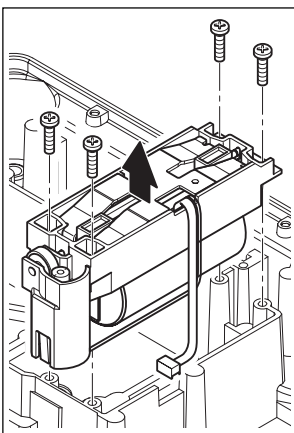
1. Open scale → section 3.3.1.
2. Pull damaged membrane keypad off the top housing.
3. Remove residual adhesive from top housing (use ligroin if necessary).
4. If necessary: Remove damaged front glass and lay new front glass in the recess, with green cover-varnish downwards.
5. Pull cable of the new membrane keypad through the slot in the top housing.



Avoid finger prints and dust on display pane and membrane keypad!!

6. Lay model strip in the membrane keypad.
7. Pull off cover film of the membrane keypad, align membrane keypad and press onto top housing.

3.3.3 Replacing calibration drive



1. Open scale → section 3.3.1.
2. Detach ribbon cable of the calibration drive from the scale board.
3. Unscrew Phillips screws which fix the calibration drive in the housing base.
4. Pull calibration drive out of housing base.
5. Insert new calibration drive, screw on firmly and connect cable to the scale board.
6. After assembly of the scale, check the functioning of the calibration drive ("FACT" or "CAL Int").

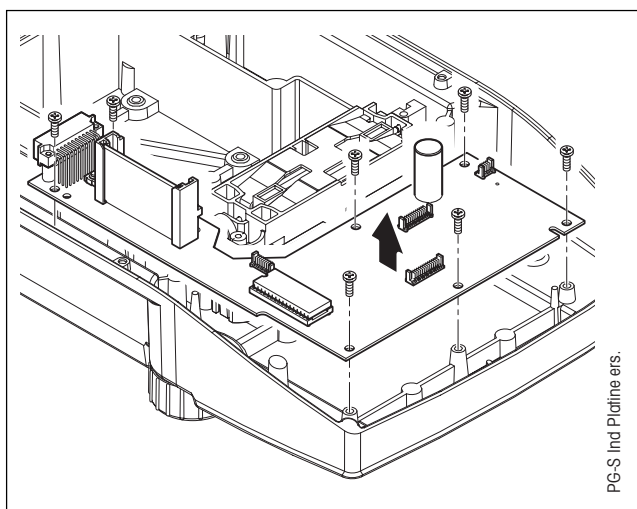
3.3.4 Replacing the display board

1. Open scale —> section 3.3.1.
2. Disconnect connector of the ribbon cable on the display board.
3. Unscrew two Phillips screws which fix the display board in the housing base.
4. Insert new display board, fasten and attach ribbon cable.

3.3.5 Replacing interface board

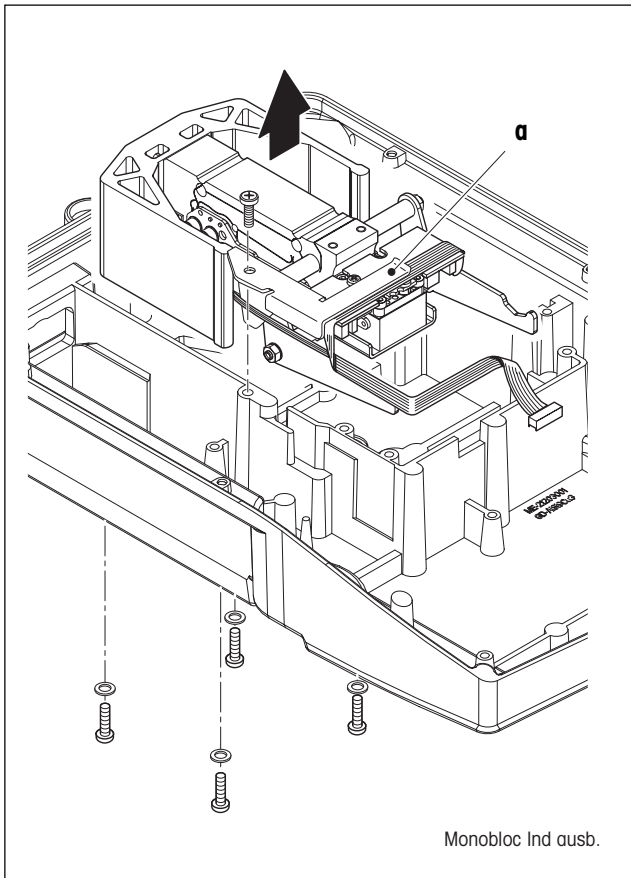
1. Unscrew two fastener screws of the interface board at the rear of the scale.
2. Pull interface board backward out of housing base.
3. Insert new interface board carefully and screw it in place.

3.3.6 Replacing scale board



1. Open scale —> section 3.3.1.
2. Remove display board —> section 3.3.4 (detach ribbon cable from scale board).
3. Remove interface board —> section 3.3.5.
4. Detach ribbon cables of the measuring cell and the calibration drive from the scale board.
5. Unscrew the seven Phillips screws which fix the scale board in the housing base.
6. Lift scale board up and out of the housing base.
7. Insert new board and screw in firmly. If applicable, remove the EPROM from the old scale board and insert in the new board.
8. Plug ribbon cables of the measuring cell and the calibration drive into scale board.
9. Install interface board.
10. Plug ribbon cable of the display board into scale board and install display board.

3.3.7 Replacing measuring cell



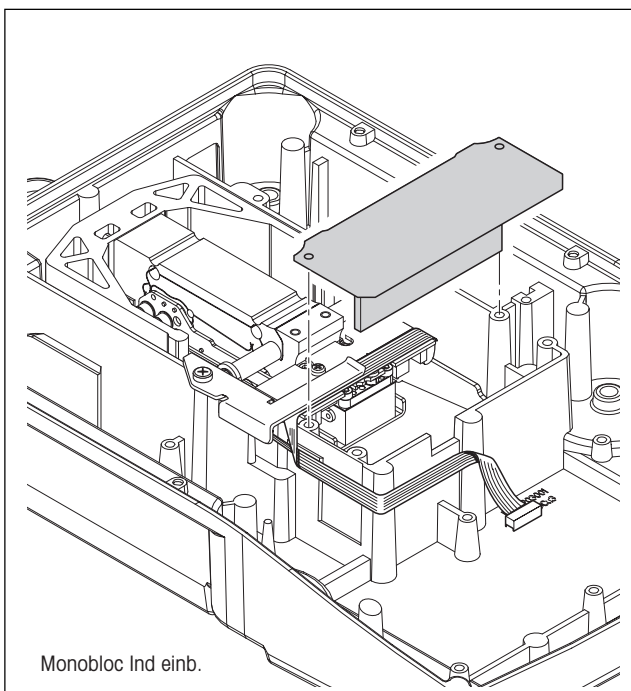
Disassembly

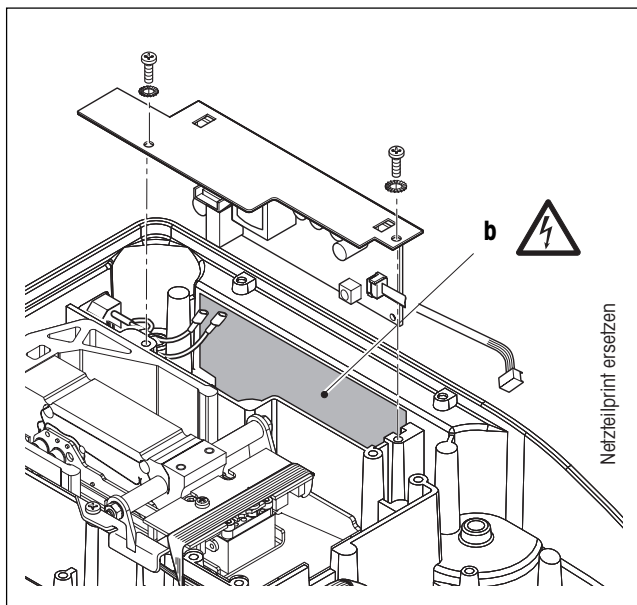
1. Open scale → section 3.3.1.
2. Remove calibration drive → section 3.3.3.
3. Remove cable holder (a).
4. Disconnect ribbon cable of the measuring cell from the scale board. Tip: Note exact routing of the measuring cell cable, this will facilitate the assembly work.
5. Turn housing base over and unscrew the four fastener screws of the measuring cell on the bottom of the scale (care: do not lose washers!). Do not unscrew the last of the four screws completely, but first turn housing on its lateral edge, hold measuring cell and then unscrew screw completely. Turn housing base to normal position and lift out measuring cell (Repairing the measuring cell → service manual "Measuring cells").

Assembly

Important: With the 8 kg measuring cell, only the new, small monobloc may be used as a replacement. As this has the same order number as the earlier version (600156), note the number stamped on the monobloc: This must be as follows: **21100234**.

1. Install new or repaired measuring cell and loosely screw in the four fastener screws on the housing base (do not tighten firmly).
2. Insert measuring cell gauge in place of the calibration drive as shown in the illustration (centers the calibration weight holder of the measuring cell). Move cell forward and backward, hold firmly at the midpoint of the distance travelled and tighten the four fastener screws. Remove gauge.
3. Lead measuring cell cable through the slot provided in the left frame piece and fix it with the cable holder (a).
4. Install scale board and interface board (only if these parts were removed).
5. Install calibration drive (note: the measuring cell cable must be led between the motor of the calibration drive and the frame piece of the housing).
6. Plug measuring cell cable, cable of the calibration drive and power supply cable into scale board. Install display board and connect ribbon cable to the scale board (only if display board has been removed).





3.3.8 Replacing power supply board

1. Open scale → section 3.3.1 (warning: disconnect scale from power supply).
2. Detach ribbon cable of the power supply board from the scale board.
3. Unscrew two screws used to fix the power supply board in the housing base.
4. Carefully raise power supply board a short distance and disconnect two connectors of the power socket from board.
5. Lift board up and out of the housing base.
6. Plug cable of the power socket and ribbon cable into new power supply board, install board in housing, fasten with the two screws and connect ribbon cable to scale board.



To protect against power line tension, the isolation plate (b) is absolutely necessary!

3.3.9 Replacing power socket

1. Open scale → section 3.3.1 (warning: disconnect scale from power supply).
2. Remove power supply board → section 3.3.8.
3. Unscrew screw of the grounding cable in the housing base.
4. Press both sides of the retaining clamps of the power socket inside the housing together and pull power socket with connection cable out of the housing.
5. Push new power socket from outside into rear wall of housing, fix grounding cable with screw in housing base and plug connection cable into power supply board. Install power supply board and plug ribbon cable into scale board.

3.3.10 Replacing the level

1. Open scale → section 3.3.1.
2. Knock faulty level out of holder from below using a punch.

4 Repairs of R and G balances

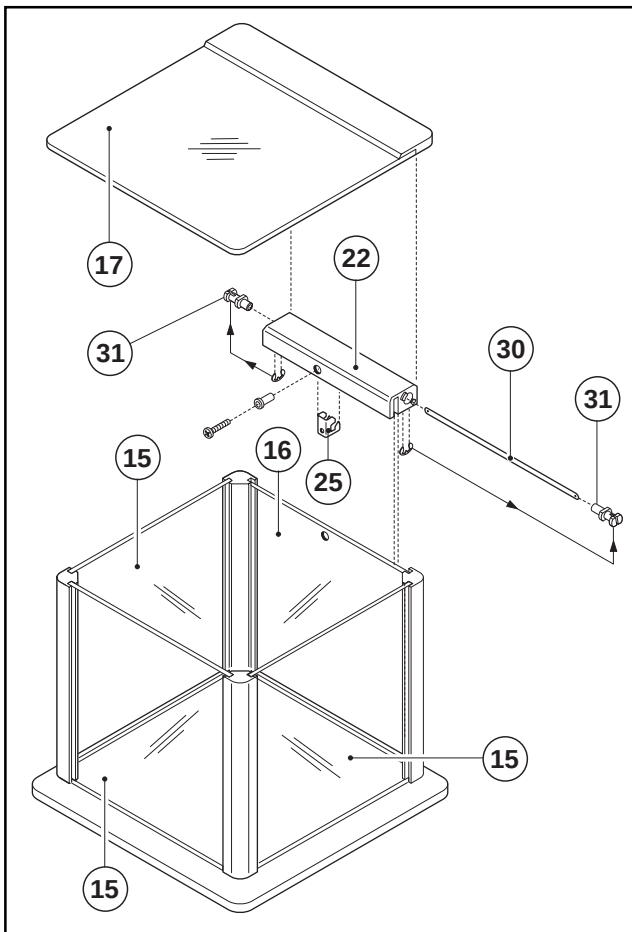
4.1 Repairs of the PR/PG balances

PR/PG balances are divided into balances with draft shield and small, square weighing pan and into balances without draft shield with large, square weighing pan.

For a better understanding and overview of the situation, it is advisable to take out the appropriate exploded view drawing in section 2. This also provides information on the spare parts available.

4.1.1 Repairs to PR/PG draft shield, low

Note: The draft shield can remain mounted on the balance during replacement of the appropriate draft shield door. The draft shield can always be inserted on the 10 mg balance.



4.1.1.1 Replacing left, right and front doors

1. The doors slot in at the side and can be lifted out.

Note

The corners of the left and right doors are rounded so that the doors do not tilt during insertion. This is not the case with the front door.

Doors supplied as spare parts always have rounded edges.

4.1.1.2 Replacing rear door

1. Lift cover (17) and rear door (16) up and out.
2. Remove fastener screw on hinged half (22).
3. As soon as the sleeve is removed from the hinged half, the rear door (16) can be replaced.

4.1.1.3 Replacing cover

1. Remove rear door (16) → 4.1.1.2.
2. The cover (17) is supplied as a spare part without hinged half. The following parts can be removed from the defective cover (17) or new ones ordered:
 1. Remove support (25) from hinged half (22).
 2. Remove the lock washers in the retaining bolts (31) at the left and right. Both retaining bolts (31), the torsion spring (30) and the hinged half (22) can now be removed.

Installation

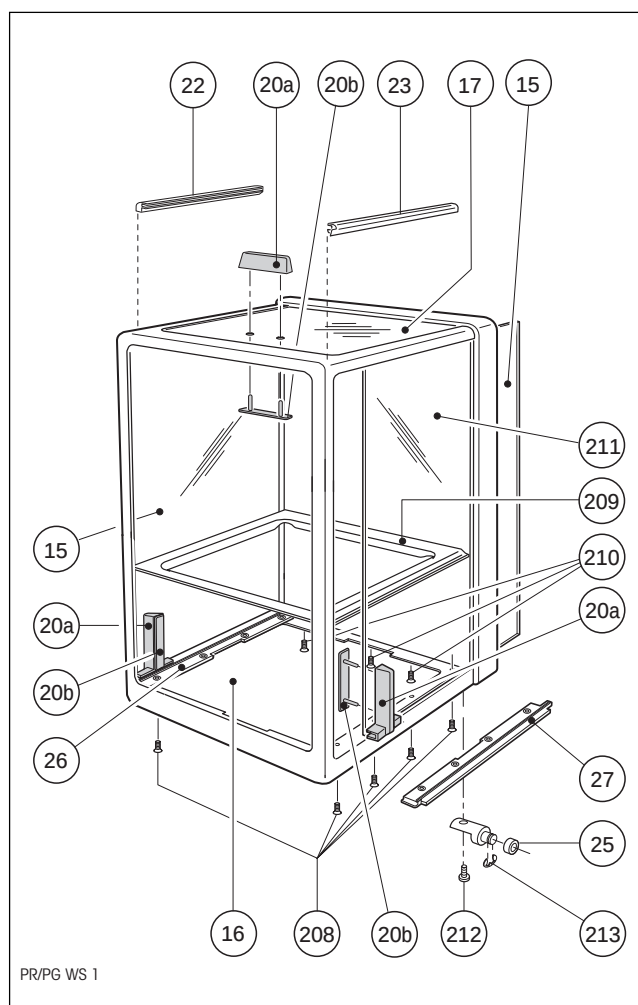
1. Place hinged half in its counterpart. The hole in the rear door (16) must be at the top.
2. Insert torsion spring (30). Push left and right retaining bolts (31) from the side into the guide.

Note: The torsion spring (30) should lie in the guide slot of the retaining bolts (31). If this is not the case, the lock washer can not be inserted.

3. Snap lock washer into retaining bolts (31).
4. Push support (25) in the middle of the hinged half (22). The torsion spring (30) should lie in the retaining slot.

5. Mount rear door (16).

4.1.2 Repairs to PR/PG draft shield, high



PR/PG WS 1

A Changing left, right and top doors

1. Detach snap-in holders (20b) from sliders (20a).
2. Remove sliders (20a).
3. Pull off doors (15, 17) backward and change.
4. Insert sliders (20a) and fasten with snap-in holders (20b).

B Removing bottom guide rails

1. Remove doors (15) at left and right → A.
2. Unscrew 4 screws (208) on each guide rail.
3. Pull guide rails at bottom left (26) and bottom right (27) together with the screening plate (209) up and off.

C Installing bottom guide rails

1. Insert guide rails at bottom left (26) and bottom right (27) laterally in screening plate (209).
2. Insert screening plate plus guide rails into draft shield and fasten on both sides with 4 screws (208) per side.
3. Install left and right doors (15) → A.

D Changing front door

1. Remove bottom guide rails → B
2. Hold front door (16) at bottom and pull off backward at an angle.
3. Change door (16).
Warning: The seal must be mounted in the door.
4. Install bottom guide rails → C.

E Removing top guide rails

1. Remove front door → D.
2. Remove top door → A.
3. Remove 3 screws (210), hold partition (211) at bottom and pull off forward.
4. Remove left (22) and right (23) guide rails.

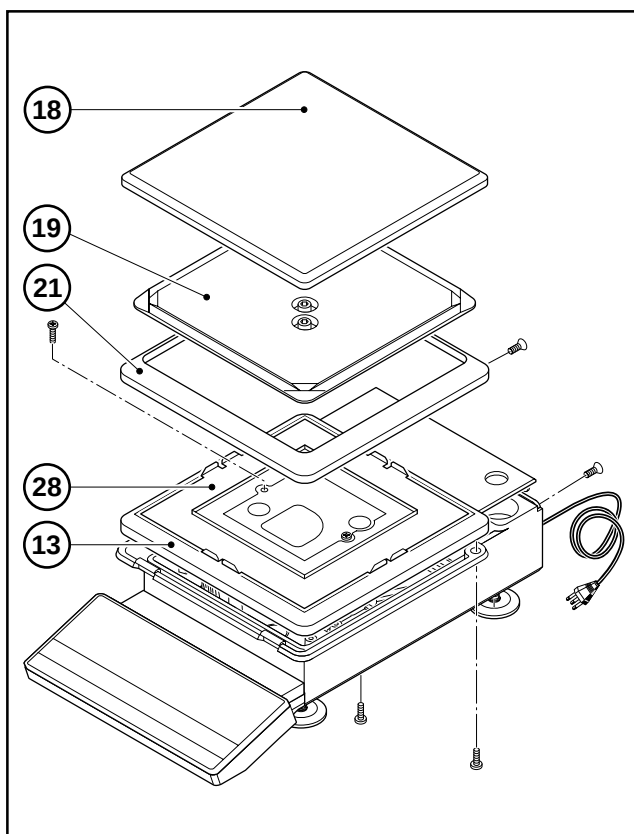
F Installing top guide rails

1. Knock left (22) and right guide rail (23) into top of draft shield right to the back, then press down on adhesive strip.
2. Insert partition (211) at top next to guide rails in the guide and push right to the top. Then push in downward and fasten with the 3 screws (210).
3. Install front door → D.
4. Install top door → A.

G Changing roller

1. Place draft shield on its back.
2. Unscrew 1 screw (212) and pull the complete roller holder out of the opening.
3. Remove circlip (213) and detach roller (25).
4. Insert new roller (25) and attach circlip (213).
5. Insert complete roller holder in the opening and fasten with screw (212).

4.1.3 Opening the PR/PG balance



1. Disconnect power plug.
- 2a. With mg balances, lift off complete draft shield.
- 2b. With 10 mg balances, lift off draft shield frame (21).
- 3a. Remove weighing pan (18) and weighing pan (19) support.

Note

The weighing pan support (19) may be firmly seated on the conical part (carefully lift up weighing pan support (19)).

If the weighing pan support (19) is at an angle to the draft shield (21), the weighing pan support (19) can be aligned after unscrewing the 2 screws.

- 3b. With 100 mg balances, lift off the weighing pan (18), the weighing pan support (19) and the 4 pan mounts (27).
4. Remove the left screw of the fastening plate (28) (the right screw fixes the fastening plate).
5. Remove the two top screws at the rear of the balance (power supply unit).
6. Tilt the balance to the left then to the right side and remove the fastening screw of the top housing (13) in each case from below.
7. Lift up top housing (13) at back approx. 45° and remove.

Note

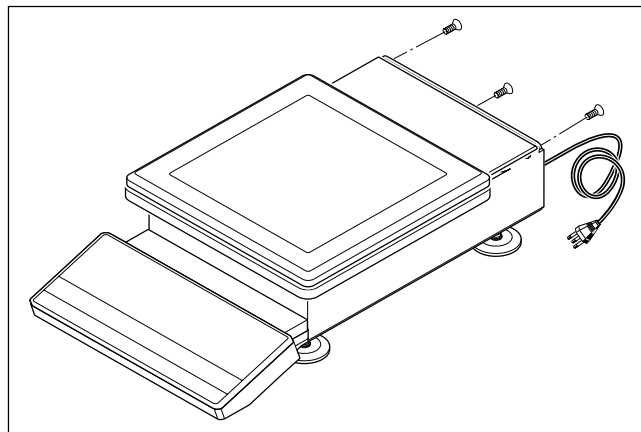
The screening plate in the top housing is engaged in the bottom housing.

4.1.4 Power supply unit repairs



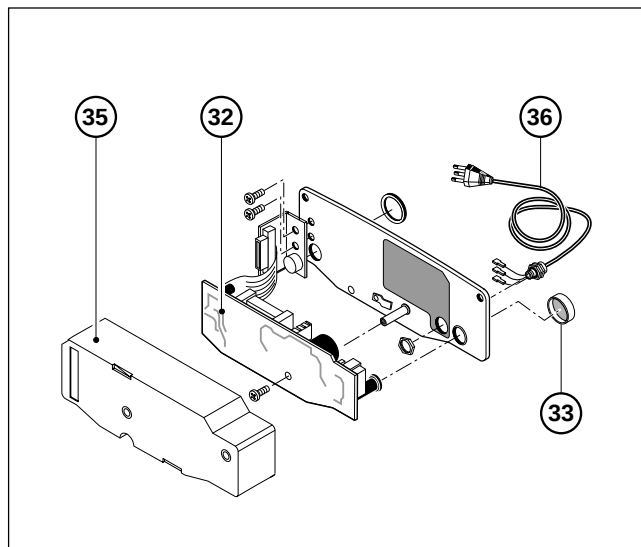
Caution 400 V, Danger!

It is essential to disconnect the balance from the power supply before changing the power supply board.



4.1.4.1 Replacing power supply board (balance with direct mains connection)

1. Disconnect power plug.
2. Remove the 3 fastener screws at the rear of the balance and pull power supply unit out of balance housing.
Note
The microfuse in the power supply unit can be changed at any time by unscrewing the fuse cover (33).
3. Remove cover (35) above power supply unit board (32).
4. Remove fastener screw on the power supply board (32). Use the CAN tool to remove the nut of the CAN socket.
5. Disconnect the two cable lugs of the power cable at the power supply board (32).

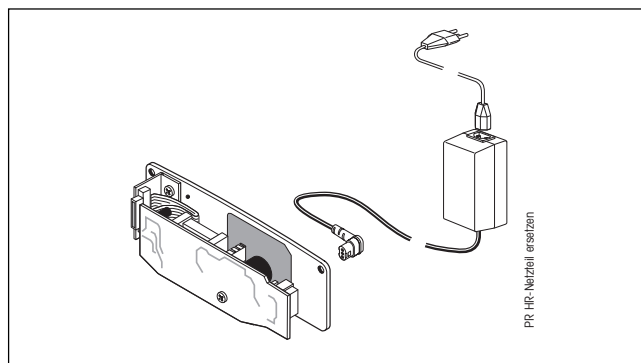


4.1.4.2 Replacing power cable

1. Remove power supply unit → 4.1.4.1.
2. Disconnect the cable lugs of the 3-core power cable (36). Remove the nut at the power cable gland (flat width 15 mm).
Note
The new power cable (36) is supplied with the cable gland mounted.

Warning!

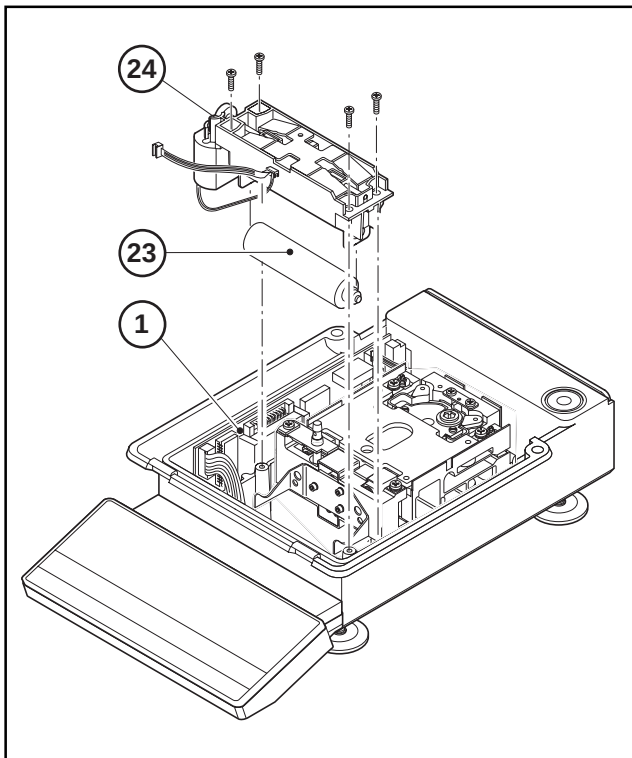
Before startup of the balance, it is essential to check the grounding conductor connection. For this, attach an ohmmeter or beeper between grounding conductor (power cable) and one of the fastener screws of the power supply module. → resistance must be low or a beep audible.



4.1.4.3 Replacing power supply unit (balance with mains connection via AC adapter)

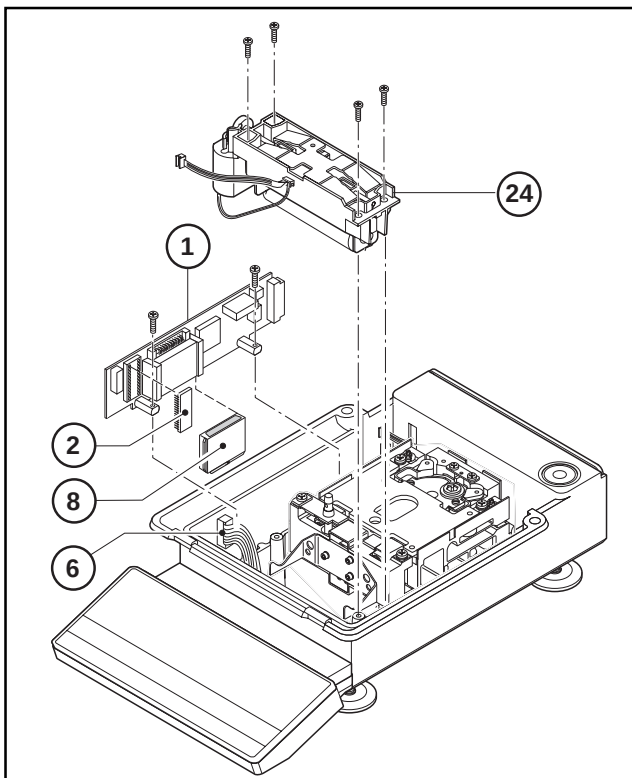
1. Disconnect power plug.
2. Unscrew the 3 fastener screws at the rear of the balance and change the entire power supply unit.

4.1.5 Replacing the calibration drive and calibration weight



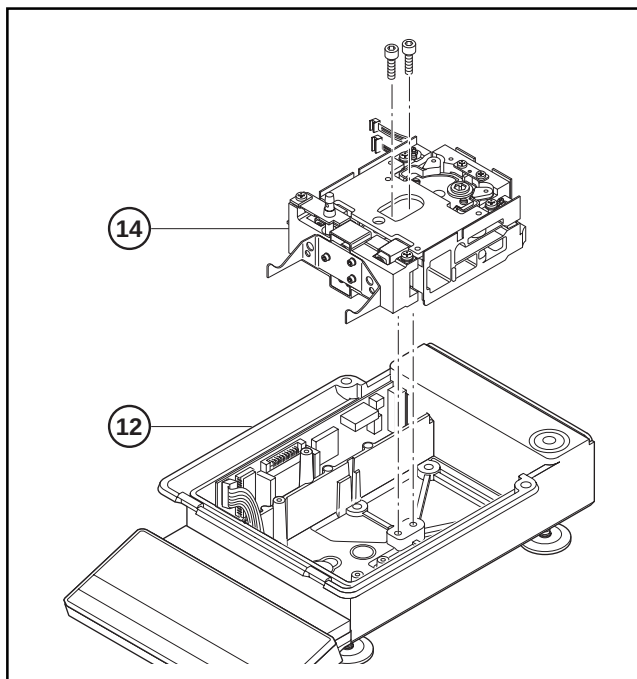
1. Open balance → 4.1.3.
2. With 100 mg PR balances, remove the overload protection (26).
3. Disconnect ribbon cable at calibration drive (24).
4. Remove the 4 fastener screws.
5. Lift calibration drive (24) out of bottom housing. Disconnect ribbon cable at balance board (1).
6. So that the calibration weight (23) can be removed, it must be in the lowest position (calibration position).
Note
Move calibration weight (23) to lowest position using the LC-PT45 (Func 41).
7. Insert the calibration weight (23) in the new calibration drive (24). Use the LC-PT45 (Func 42) to move the calibration weight to the top position (23).
Note
Clean calibration weight (23) before installation.
8. Test calibration drive (24) using Func 43.

4.1.6 Replacing the balance board



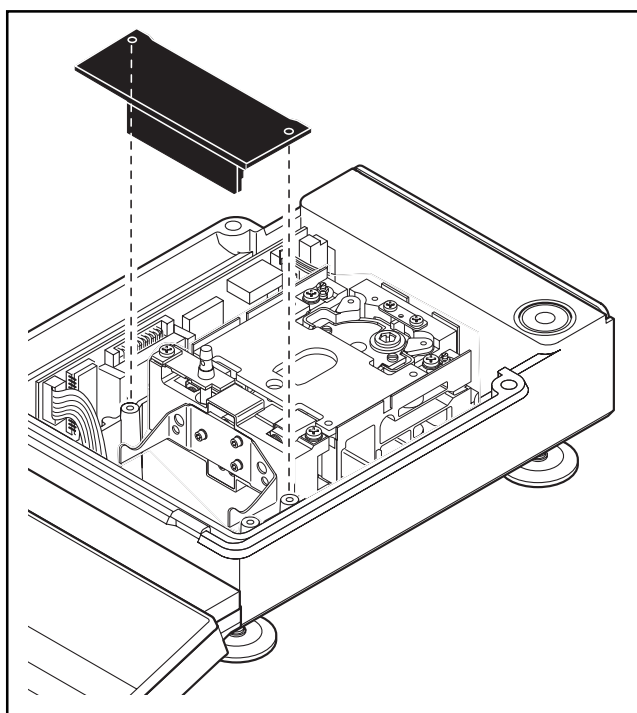
1. Remove calibration drive (24) → 4.1.5.
2. Disconnect display ribbon cable (6) at front on the balance board (1).
3. Remove 2 fastener screws of the balance board (1).
4. Lift up balance board (1) at front and pull out of the plug-in connection of the power supply unit.
Note
New balance boards (1) are not fitted with the EPROM (2) and the standard cassette (8), these must be transferred from the faulty balance board or new ones ordered.
The balance type definition must always be reloaded with the LC-PT45.
5. Disconnect ribbon cables (coil and detector) from balance board at back.
6. Test calibration drive (24) using Func 43.

4.1.7 Replacing the measuring cell



Unmount measuring cell

1. Remove calibration drive (see point 4.1.5).
2. Disconnect ribbon cables (coil and detector) from balance board (1) at back.
3. Unscrew 2 fastener screws (5 mm Allen key) of measuring cell (14) and lift measuring cell out of bottom housing (12).



Installation of measuring cell

1. Insert repaired or replaced measuring cell (14) in the bottom housing (12).
2. Connect ribbon cables at back of balance board.
3. Insert fastener screws, but do not tighten yet.
4. Place measuring cell gauge instead of calibration drive.
5. Align measuring cell with measuring cell gauge and tight the 2 fastener screws.
6. Install calibration drive (24).

Note

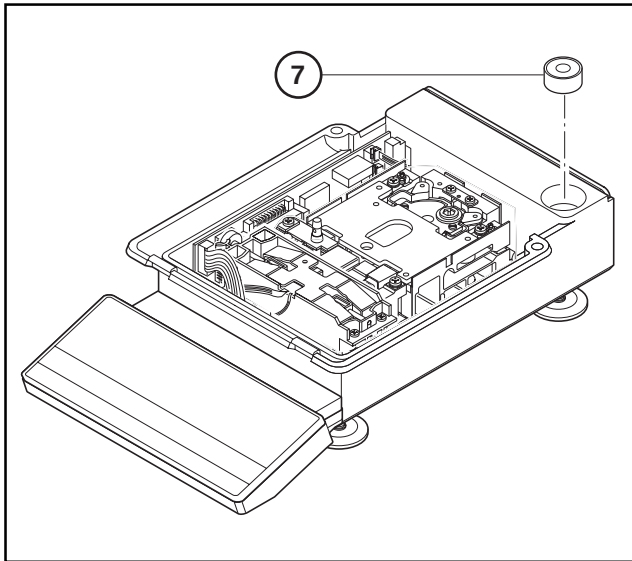
If the measuring cell is not aligned properly, the calibration weight may touch the hanger during the calibration operation (test with LC-PT45, Func 43).

Monobloc cell

Generally the same steps as above, but

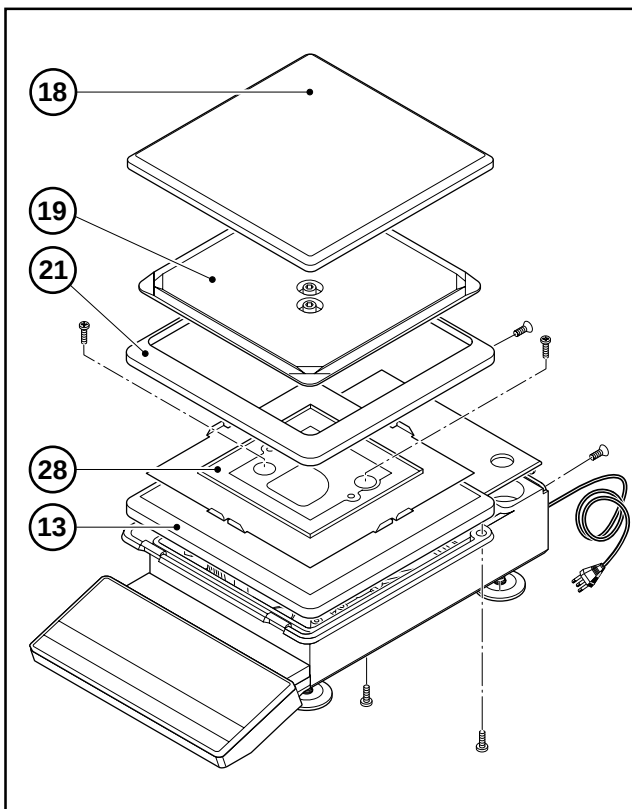
- Install measuring cell with the measuring cell gauge so that it lies parallel in the bottom housing.
- Industrial balances: pan mount must not touch upper housing → align overload protection with upper housing.

4.1.8 Replacing the level



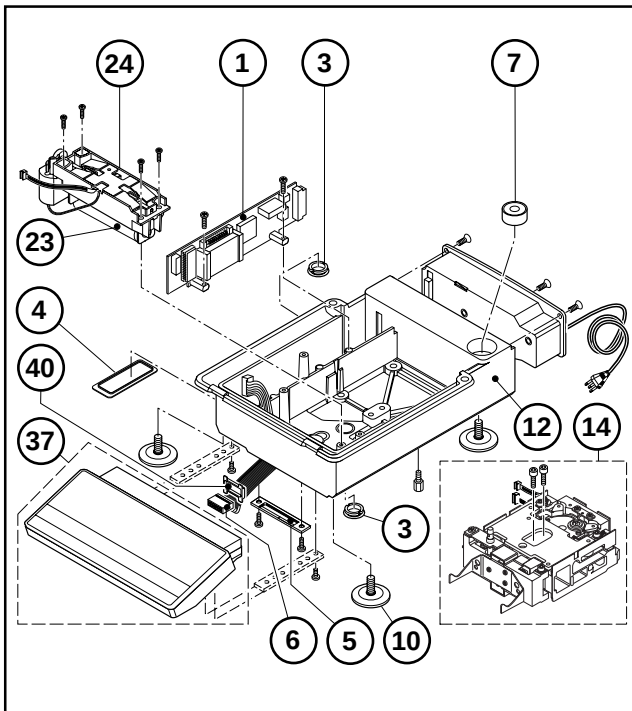
1. Open balance → 4.1.3
2. Chisel out the level (7) using a small chisel.
3. Remove residual adhesive from bottom housing, clean to remove grease.
4. Carefully place test level from tool kit on top guide or monobloc (flexible bearings are sensitive to pressure!) and level balance with the leveling feet.
5. Coat the hollow for the level with a thin layer of adhesive, insert new level and align it so that the air bubble matches that of the test level.
6. Remove test level, allow adhesive to dry.
7. Close balance → 4.1.11.

4.1.9 Replacing the top housing



1. Open balance → 4.1.3.
2. Remove fastening plate (28) from top housing.
3. Replace top housing
The following parts can be transferred from the defective top housing if they are undamaged:
 1. Fastening plate (item 28).
 2. Protective cover (operating instructions, optional accessories).
4. Close balance → 4.1.11.

4.1.10 Replacing the bottom housing

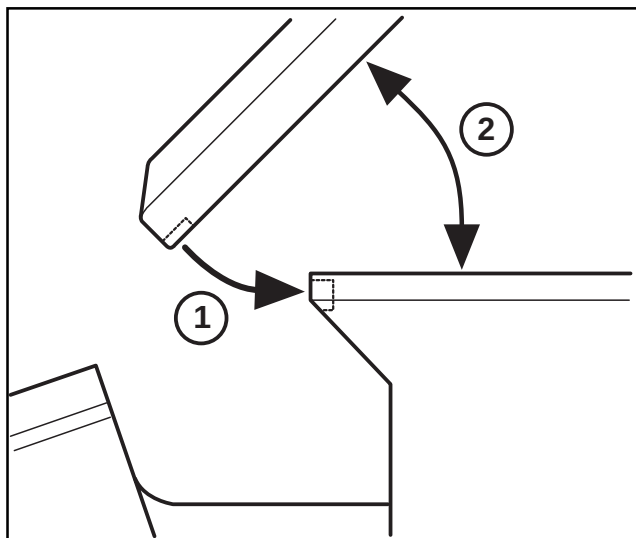


1. Open balance → point 4.1.3.
2. Remove power supply unit → 4.1.4.
3. Replace bottom housing (12).

The following parts can be transferred from the defective bottom part if they are undamaged:

1. With 100 mg PR balances, the overload protection (item 26)
 2. Calibration drive → 4.1.5 (items 23+24)
 3. Balance board → 4.1.6 (item 1)
 4. Measuring cell → 4.1.7 (item 14)
 5. Hanger and calibration cover (item 3)
 6. Leveling feet (item 10)
 7. Fixed foot
 8. Cable protection (item 5)
 9. Level → 4.1.8 (item 7)
 10. Balance terminal → 4.1.12 (item 37)
 11. Cassette cover (item 4)
 12. Connector cover (item 40)
 13. Terminal cable (item 6)
4. Close balance → 4.1.11.

4.1.11 Closing the balance

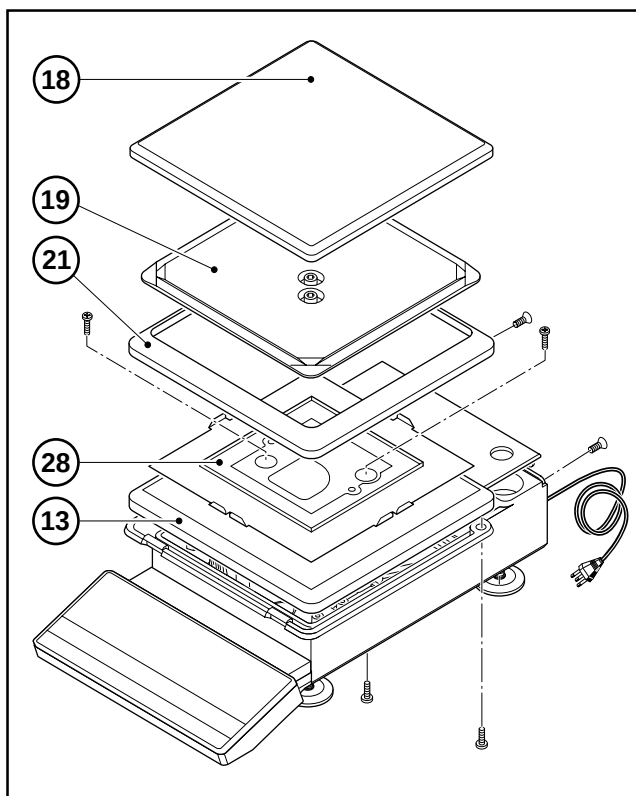


1. Mount top housing at an angle of approx. 45° on bottom housing and push backward. When the top part is aligned and can no longer be lifted up at the front, hinge down top part.

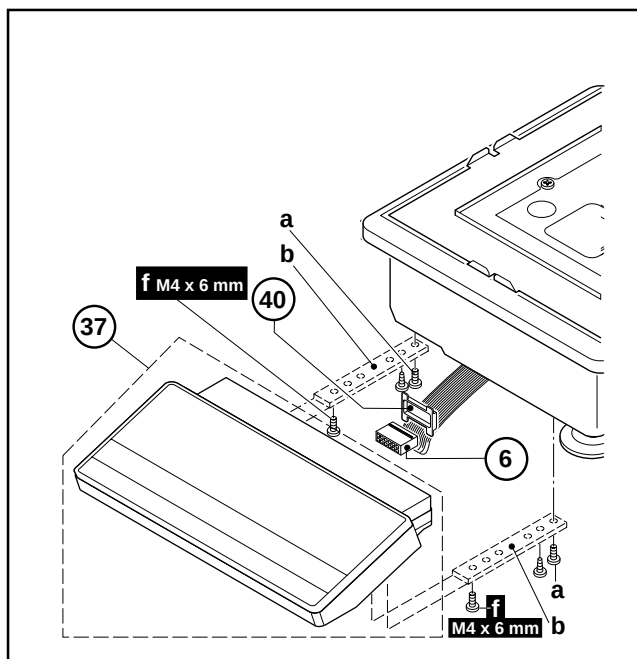
Note

The guide at the front on the inside of the top housing must enclose the edge of the bottom housing, this assures that the screening plate (electromagnetic compatibility, EMC protection) engages automatically.

2. Tighten the left screw of the fastening plate (28).
3. Tighten the two top screws at the rear of the balance (power supply unit).
4. Tilt the balance to the left and then to the right tightening the top housing (13) each time from below.
5. Mount weighing pan support (19) and weighing pan (18).
 - With mg balances, mount complete draft shield.
 - With 10 mg balances, mount draft shield frame (21).
 - With 100 mg, mount the 4 pan mounts.



4.1.12 Replacing the R terminal



A Replacing the entire terminal

1. Remove draft shield, draft shield frame, weighing pan and weighing pan support from balance.
2. Tilt balance to one side.
3. Unscrew the 2 screws (a) of the connector strips (b) at top housing.
4. Carefully remove connector cover (40).
5. Disconnect ribbon cable (6) of the terminal (37).

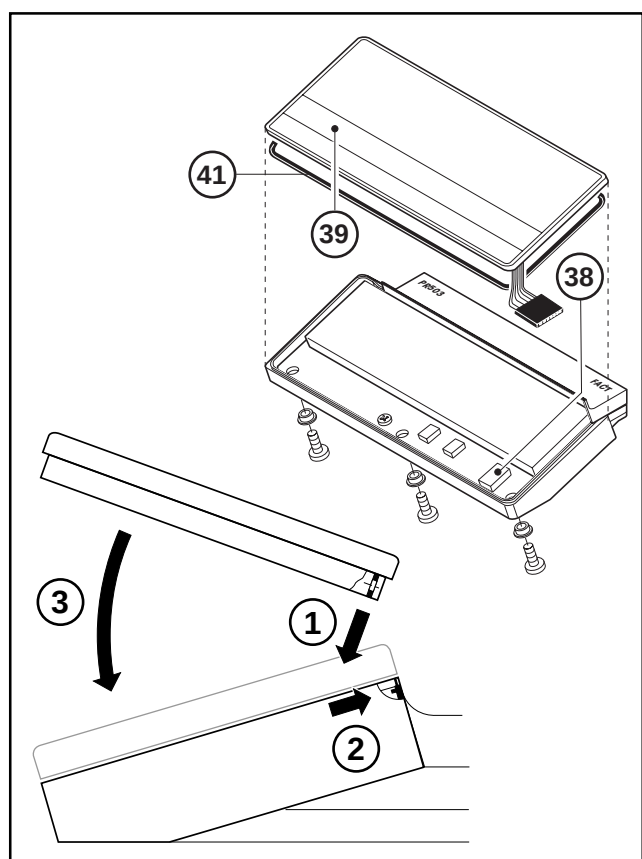
Note

The connector strips (b) must be transferred from the defective terminal (37).

As soon as the ribbon cable (6) is plugged into the terminal, snap connector cover (40) into terminal housing.

Do not mix up the short screw (f) M4x6 mm with the screws (a).

When installing the terminal (37), ensure that the ribbon cable (6) lies between the bottom housing and the terminal.



B Replacing the terminal keypad (SmartBar)

1. Remove draft shield, draft shield frame, weighing pan and weighing pan support from balance.
2. Tilt balance to one side.
3. Unscrew the 3 screws at the front on the underside of the terminal and place balance back on its feet.
4. Hold the terminal keypad (39) at the left and right and tilt up only at the front. Before the terminal keypad can be removed, disconnect the ribbon cable at the display board (38) sideways.

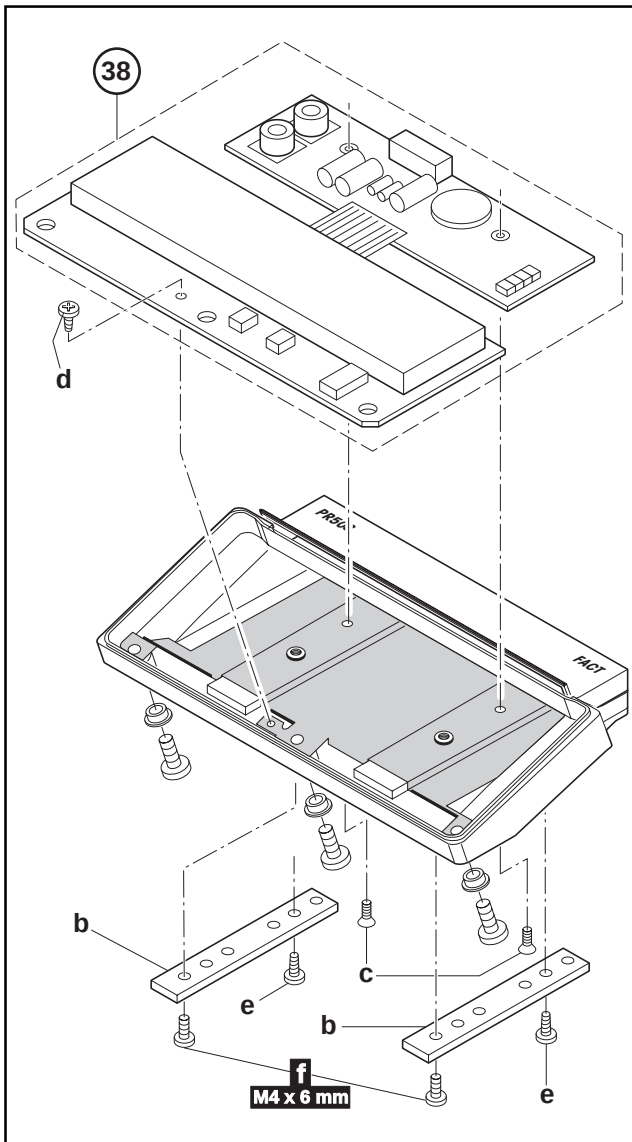
Note

When mounting the terminal keypad (39), first plug the ribbon cable into the display board (38).

The seal (41) must be inserted in the terminal keypad.

The terminal keypad has 4 lugs at the rear edge, these must first be engaged in the terminal housing (items 1+2), then push down the terminal keypad using pressure (item 3) and fasten with the 3 screws.

The terminal keypad is snugly seated in the terminal housing, this is necessary to ensure tightness.



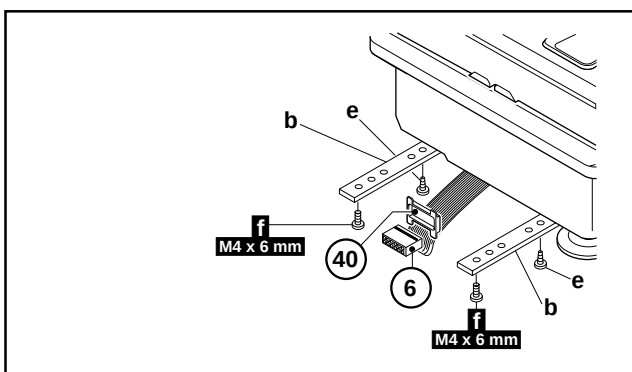
C Replacing the display board

1. Remove draft shield, draft shield frame, weighing pan and weighing pan support from balance.
2. Unscrew the 3 screws for fastening the terminal keypad (39) at the front on the underside of the terminal.
3. Hold the terminal keypad (39) at the left and right and tilt up **only at the front**. Before the terminal keypad can be removed, disconnect the ribbon cable at the display board (38) sideways → 4.1.13.
4. Remove the screws (e) and (f) of the connector strips (b) at bottom of terminal housing.
5. Carefully remove connector cover (40).
6. Disconnect ribbon cable (6) of the terminal (37).
7. Remove the two screws (c) visible on the underside of the terminal housing. Remove the fastener screw (d) at the display board from above.
8. The display board (comprising two parts) is now taken out of the terminal housing and replaced by a new one (this must also now be broken into two pieces).
9. Install the terminal in reverse order.

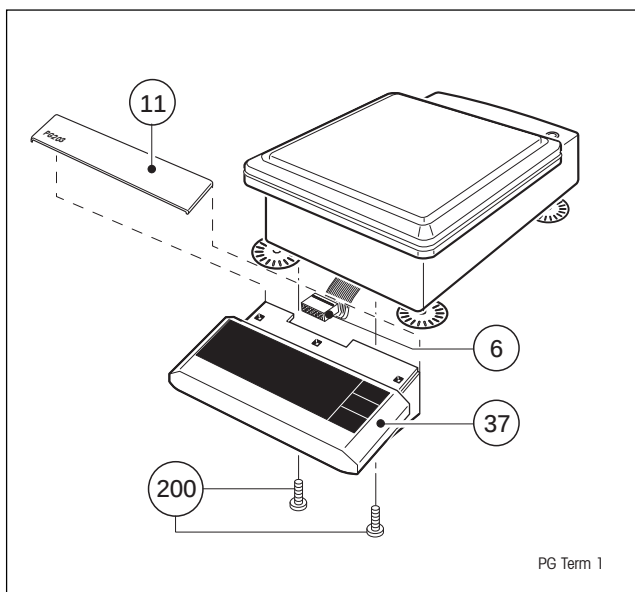
Note

When installing the terminal (37), ensure that the ribbon cable (6) lies between the bottom housing and the terminal.

Do not mix up the short screw (f) M4x6 mm with screws (a).



4.1.13 Changing the G terminal



A Changing terminal and model strip

1. Disconnect power plug.
2. Unscrew the 2 screws (200), pull out the connector (6) and detach the terminal (37).
3. Push model strip (11) backward as far as it will go and then lift up and off.

Installation of the model strip (11) and terminal (37) is in reverse order.

Note

Ensure that the cable (6) lies in the groove of the support plate (204) and is not wedged between the support plate and the lower edge of the balance housing.

B Removing top part of terminal

1. Detach terminal and model strip → A.
2. Unscrew the 4 screws (201) and raise top part of terminal (44 with 39) slightly at the front.
 - Disconnect cable of the terminal keypad (202).
 - Take off top part of terminal (44 with 39).

C Installing top part of terminal

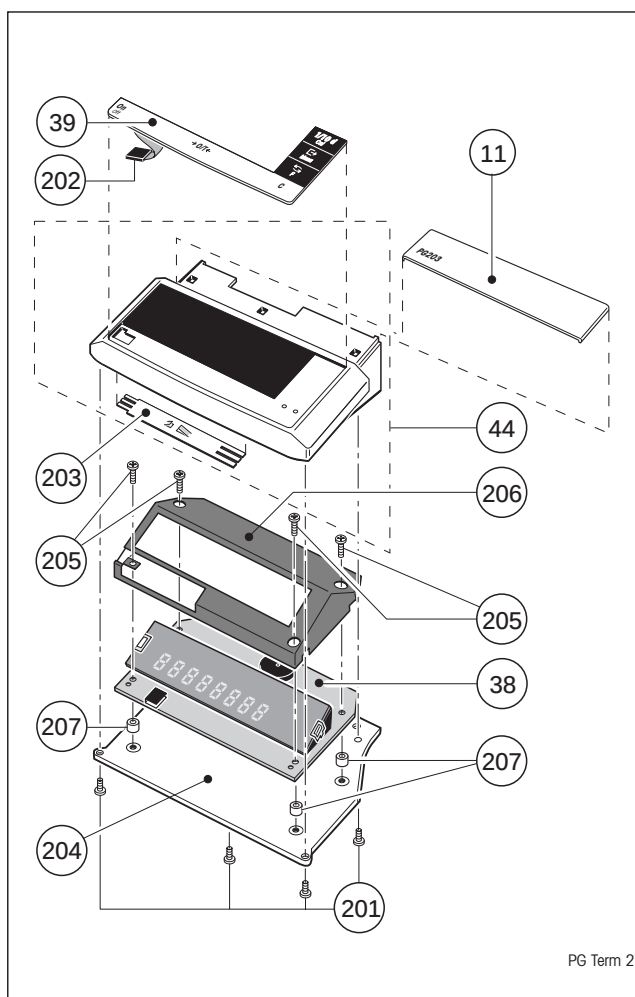
1. Plug cable of the terminal keypad (202) into display board (38).
2. Mount top part of terminal (44 with 39) on the support plate (204) and fasten with the 4 screws (201).
3. Install model strip and terminal → A.

D Removing membrane keypad

1. Remove top part of terminal → B
2. Detach contact spring (203).
3. Push membrane keypad (39) upward from below and remove.

E Installing membrane keypad

1. Pull cable (202) through the opening of the top part of the terminal, mount membrane keypad (39) on the terminal and press down.
2. Push contact spring (203) with the narrow part forward from the side under the plate of the membrane keypad and then press into housing.
3. Install top part of terminal → C.
 - Contact spring (203) must make contact with the screening plate (206)!



F Changing display board

1. Detach top part of terminal -> B.
2. Unscrew the 4 screws (205).
3. Carefully (display!) pull screening plate (206) up and off.
4. Change display board (38).

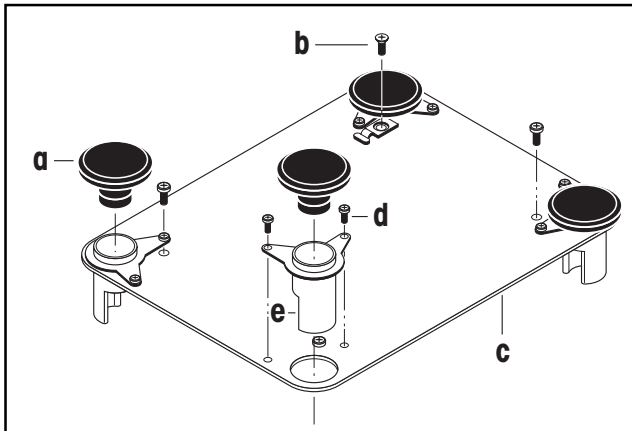
Installation is in reverse order.

Warning

It is essential to insert the 4 spacer sleeves (207) between the support plate (204) and the display board (38).

4.2 Repairs of the S/SR-/SG balances

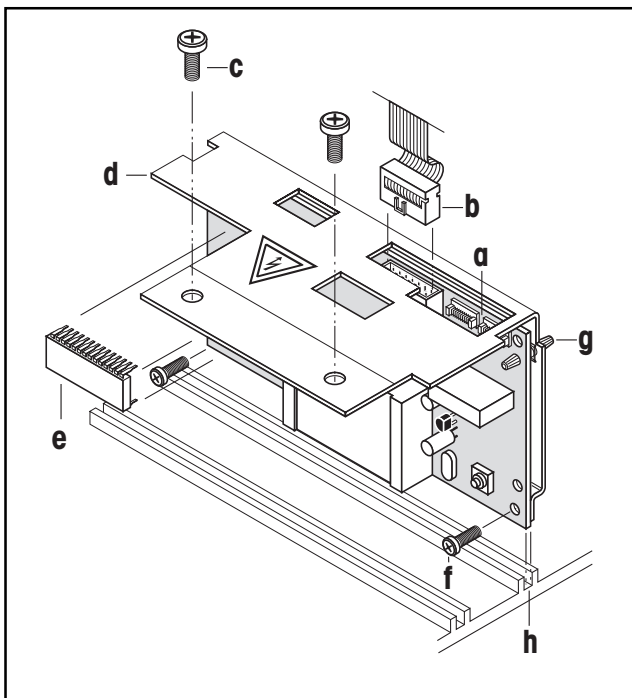
4.2.1 Opening the S/SR-SG balances



1. Disconnect power cable and remove weighing pan.
2. Remove 4 pan mounts (a).
3. Unscrew the 4 fastener screws (b) and remove (3 pan head and 1 countersunk head screw).
4. Remove housing cover (c).
5. Replace guard ring(s) if need be:
Unscrew 2 fastener screws (d) per guard ring (e).
Remove guard ring from housing cover.
Insert new guard ring and fasten with 2 fastener screws.

Close in reverse order.

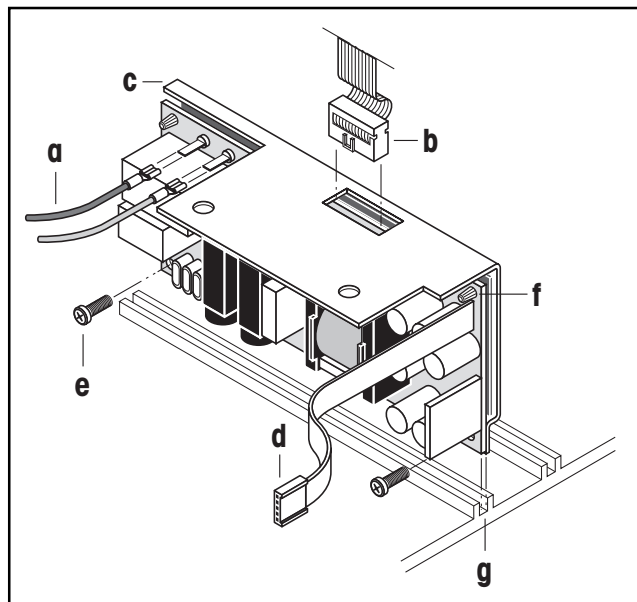
4.2.2 Replacing the EPROM and the balance board



1. Open balance (see section 4.2.1).
2. Disconnect 2 ribbon cable connectors (a) (connection weighing cell - balance board).
3. Disconnect ribbon cable connector (b) of the connection cable between balance and power supply board from balance board.
4. Remove 2 fastener screws (c) and protective plate (d) with balance board upward.
5. Replace EPROM:
If need be, carefully remove EPROM (e) from socket and replace.
6. Replace balance board:
Unscrew the 2 fastener screws (f) of the balance board and remove.
Loosen spacer (g) between protective plate and balance board on one side and remove board.

Installation in reverse order (**important**: protective plate must be inserted into the guide groove (h) on housing base).

4.2.3 Replacing the power supply board



Caution 400 V, Danger!

It is essential to disconnect the balance from the power supply before changing the power supply or CAN board.

1. Remove protective plate and balance board (see section 4.2.2).
2. Disconnect both connectors (a) of power supply from power supply board.
3. Disconnect ribbon cable connector (b) of connection cable between balance and power supply board from power supply board.
4. Carefully lift up shielding plate (c) with power supply board a short way and remove ribbon cable connector (d) from CAN board (connection cable power supply board - CAN board). Lift shielding plate with power supply board up and out of the balance.
5. Unscrew 2 fastener screws (e) of power supply board and remove.
6. Undo spacer (f) between protective plate and balance board on one side and remove board with insulating plate (replace if need be).

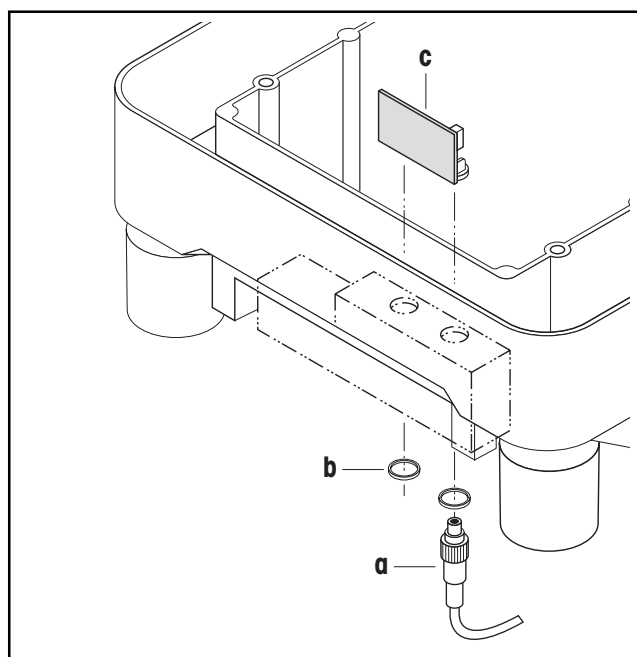
Installation in reverse order (**important:** insert shielding plate in guide groove (g) on housing base).

Warning!

Before startup of the balance, it is essential to check the grounding conductor connection. For this, attach an ohmmeter or beeper between grounding conductor (power cable) and antitheft device (Item 27).

→ resistance must be low or a beep audible.

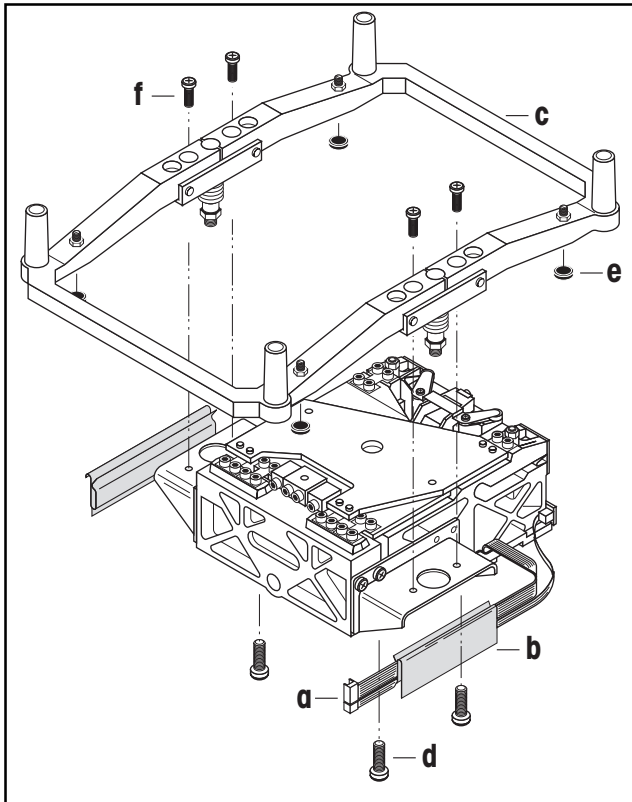
4.2.4 Replacing the CAN board



1. Remove protective and shielding plates with balance and power supply board (see sections 4.2.2 and 4.2.3).
2. Disconnect connector (a) of platform and/or CAN cable.
3. Undo locking nuts (b) of the two CAN connectors from below and remove.
4. Take CAN board (c) out of housing.

Installation in reverse order.

4.2.5 Removing the measuring cell and the overload protection



Balances with conventional measuring cell

1. Open balance (see section 4.2.1).
2. Disconnect both ribbon cable connectors (a) of measuring cell cables from balance board.
3. Remove both cable guides (b) from balance housing (one guide holds the two cables of the measuring cell, whereas the second serves only as a shield).
4. Turn balance over and carefully place on overload protection (c).
5. Unscrew the 3 Phillips screws (d) on underside of balance and remove.
6. Carefully lift up housing (if need be, replace the 4 adhesive protective bumpers (e) on housing base).
7. Turn over cell with overload protection and place on a flat, clean bench surface.
8. Unscrew 4 fastener screws (f) of overload protection. **Important:** On reinstallation, overload protection must be installed in the same position (not turned 180°), hence mark position.
9. Lift off overload protection.

Installation in reverse order.

Warning! Note tightening torques:

Fastener screws (f) of overload protection: 1,6 Nm

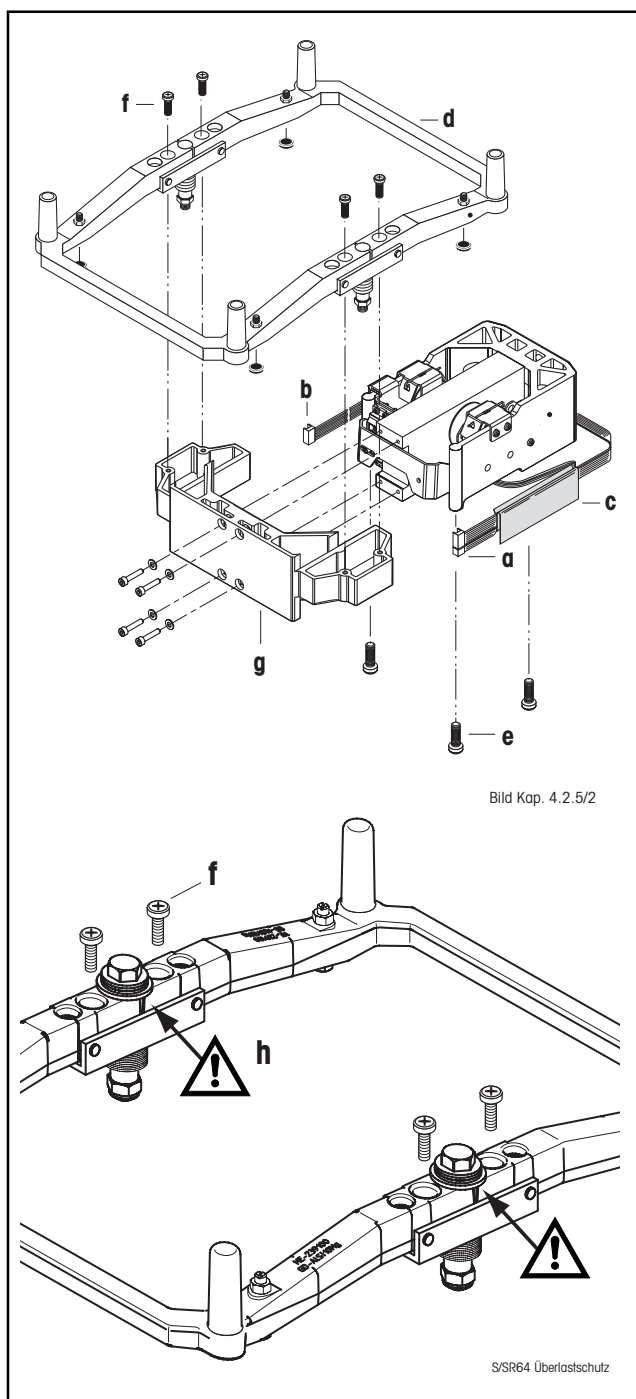
Fastener screws (d) of cell: 3,0 Nm

Notes

Screw overload protection to the measuring cell in original mounting position (not turned by 180°)!

If measuring cell, overload protection or protective bumpers have been replaced, readjust overload protection (see section 4.2.6).

Check for proper positioning and guidance of the two measuring cell cables following installation.



Balances with monobloc cell

1. Open balance (see section 4.2.1).
2. Disconnect two ribbon cable connectors (a) of the measuring cell cable from the board.
3. Disconnect ribbon cable connector (b) of the calibration drive from the board.
4. Pull cable guide (c) out of balance housing.
5. Turn balance over and carefully place on the overload protection (d).
6. Unscrew the 3 (SR64 4) Phillips screws (e) in base of balance and remove.
7. Carefully lift up housing (if need be, replace the 4 adhesive protective bumpers on housing base).
8. Turn cell with overload protection over and place on a flat and clean area of the bench.
9. Unscrew 4 fastener screws (f) of the overload protection.

⚠ S/SR64: Do not touch screws (h) !

If the overload protection is wrongly adjusted, the balance is not protected against overload or it will not reach its nominal load.

Important: During reinstallation, the overload protection must be installed in the same position (not twisted by 180°), hence mark position.

10. Lift off overload protection.
11. If necessary (e.g. for removal of the measuring cell), unscrew the 4 screws of the load receiver (g) and remove load receiver.

Installation in reverse sequence.

Warning! Note tightening torques:

Fastener screws (f) of overload protection: 1.6 Nm

Fastener screws (e) of cell: 3.0 Nm

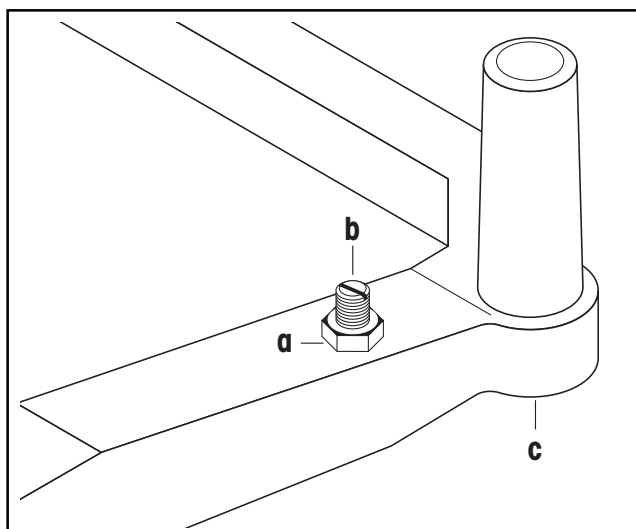
Notes

Screw overload protection to measuring cell in original mounting position (not twisted by 180°)!

If measuring cell, overload protection, protective bumpers or load receiver were replaced, readjust overload protection (see section 4.2.6).

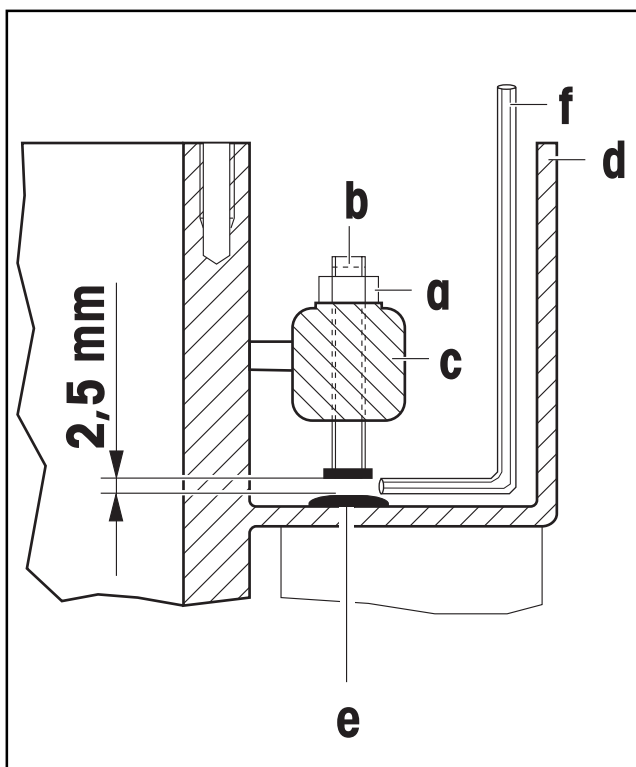
Check proper routing of the two measuring cell cables and the cable of the calibration drive after the assembly.

4.2.6 Adjusting the overload protection



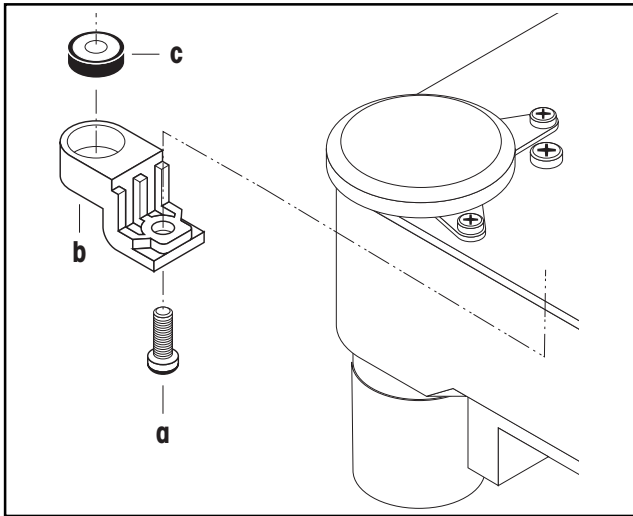
1. Install measuring cell and overload protection (section 4.2.5).
2. Undo lock nut (a) of the adjustment screw (b) on the overload protection (c).
To adjust the distance of 2.5 mm (between lower edge of adjustment screw (b) and top edge of protective bumper (e), a 2.5 mm Allen key can be used as a distance gauge.
3. Hold adjustment screw (b) with a screwdriver and tighten lock nut (a) with a torque of 4.0 Nm.
4. Repeat adjustment procedure with the 3 remaining adjustment screws of the overload protection.

Warning: If the overload protection is wrongly adjusted, the balance is not protected against overload or it will not reach its nominal load.



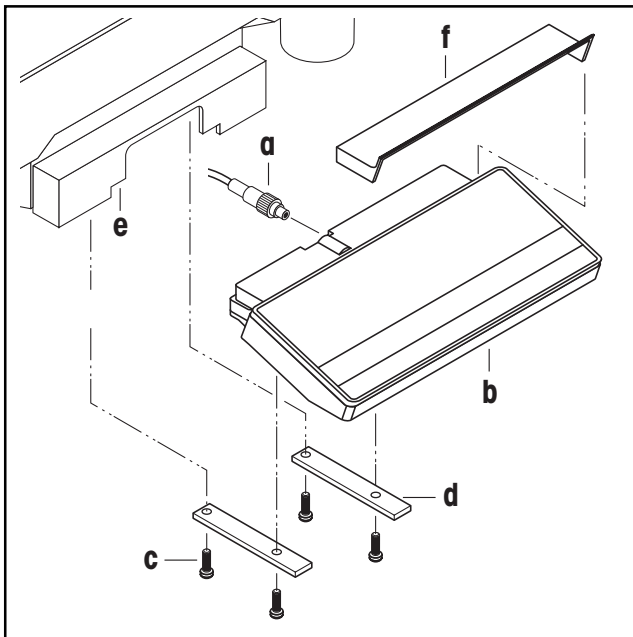
- a Locking nut
- b Threaded bolt
- c Overload protection
- d Balance housing, bottom part
- e Protective bumper
- f Allen key

4.2.7 Replacing the level



1. Unscrew fastener screw (a) of level holder (b).
2. Place level holder with level downward on a stable support.
3. Insert punch in the hole of the level holder and remove level (c).
4. Coat side of new level with acrylate adhesive and insert in level holder. Important: Immediately remove any excess adhesive!.
5. Screw level holder into balance housing.

4.2.8 Removing/installing the terminal



1. Turn balance over and place on weighing pan.
2. Disconnect connector (a) of the platform cable from terminal (b).
3. Remove 2 fastener screws (c) of connecting plates (d) at intermediate piece (e).
4. Remove terminal with connecting plates.
5. Remove 2 fastener screws of connecting plates at terminal.
6. If need be, remove model strip (f) from terminal.
7. If need be, unscrew both fastener screws of intermediate piece and remove piece from balance.

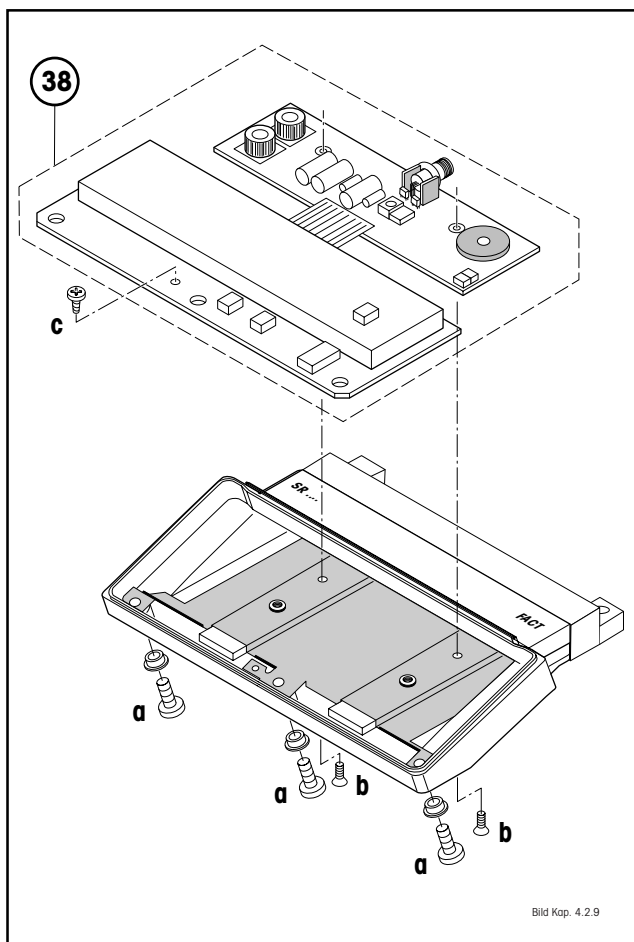
Installation in reverse order.

Notes

If the terminal is no longer mounted, install a buffer protecting strip instead of the intermediate piece (see section [4.2.10](#)).

The terminal with the intermediate piece can be mounted on all 4 sides of the balance.

4.2.9 Replacing the display board



1. Remove the 3 screws (a) for fastening the terminal keypad (39) at the front on the underside of the terminal.
2. Hold the terminal keypad on the left and right and tilt up **only at the front**. Before the terminal keypad can be removed, disconnect the ribbon cable at the display board (38) sideways (see also 4.2.8).
3. Remove the 2 screws (b) visible on the underside of the terminal housing. Remove the fastener screw (c) on the display board from above.
4. The display board (comprising 2 parts) is now taken out of the terminal housing and replaced by a new one.
5. The terminal is installed in reverse order.

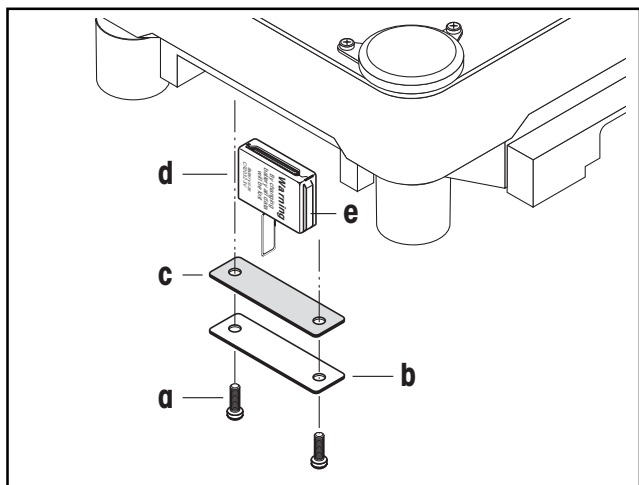
4.2.10 Removing/installing the buffer protecting strips (model plates)

1. Turn balance over and place on weighing pan.
2. Unscrew 2 fastener screws of the buffer protecting strip to be removed and remove strip.

Installation in reverse order.

Note: The intermediate piece for the terminal can be installed in place of the buffer protecting strip (see section 4.2.8).

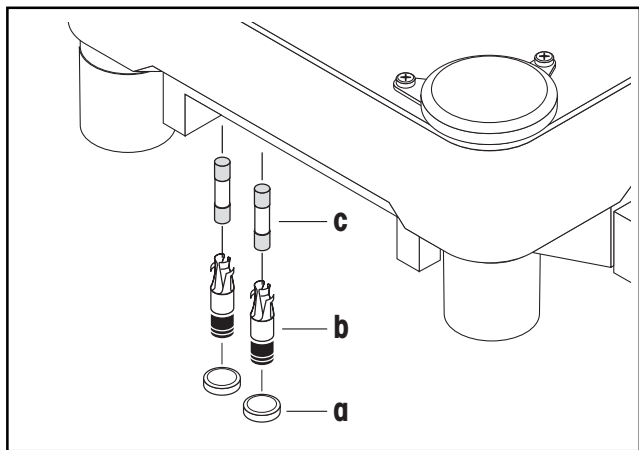
4.2.11 Installing/removing the program cassette



1. Turn balance over and place on weighing pan.
2. Unscrew two screws (a) of the cassette cover (b).
3. Remove cassette cover and cassette cover seal (c) (replace if need be).
4. Lift up clip of program cassette (d) and take out cassette.
5. If need be, take out withdrawable battery unit (e) of the cassette (marked with „BATTERY“) and change battery.
Warning: When the battery is replaced, all data are lost!

Installation in reverse order (the cassette can be pushed in only when in the correct position).

4.2.12 Changing the fuses



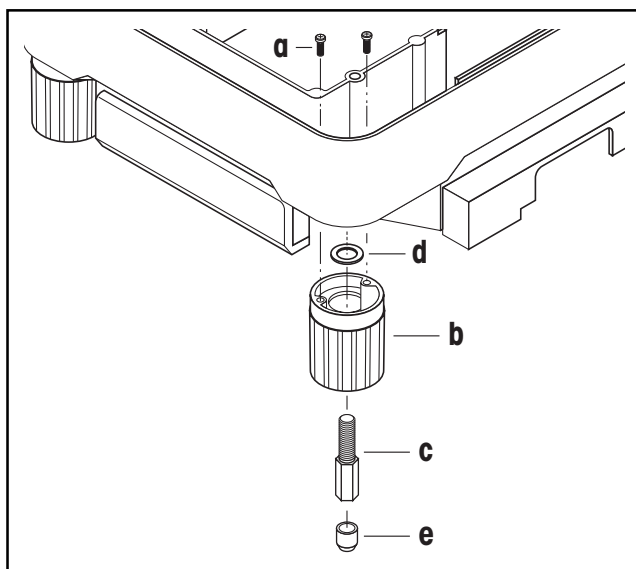
1. Turn balance over and place on weighing pan.
2. Remove dummy stoppers (a) in housing base.
3. Loosen fuse holder (b) with a screwdriver (bayonet coupling).
4. Remove fuse holder from balance using pliers.
5. Change fuse (c) (1A slow-blow, IEC 127).

Installation in reverse order.

Note

Only spare fuses of the same type and of the same rating may be used.

4.2.13 Replacing the feet



1. Open balance (see section 4.2.1).
2. Unscrew 2 fastener screws (a) of the foot to be removed and remove from balance using pliers.
3. Turn balance over and place on overload protection.
4. Turn foot (b) counterclockwise until it can be removed.
5. Remove adjustable foot (c) with lock washer (d) from plastic part (possible only in one direction).

Installation in reverse order.

Note

A rubber plug (e) is supplied loosely with the spare foot. Press the plug into the adjustable foot.

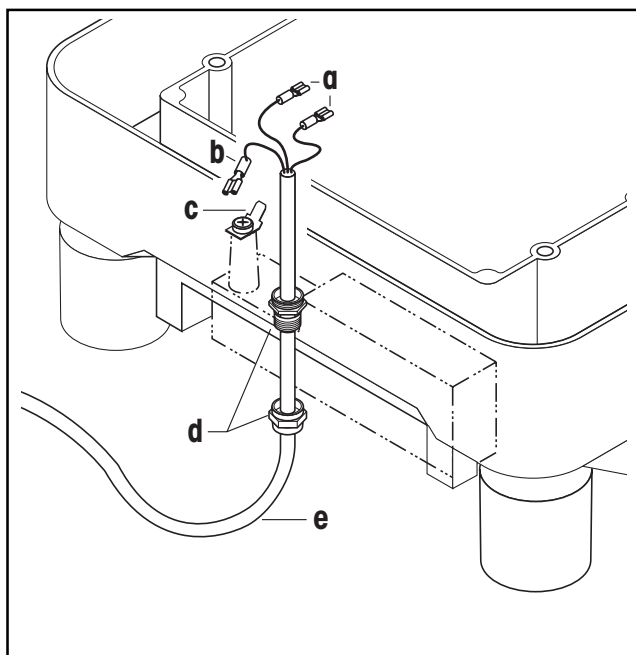
After replacement of a foot, the balance must be leveled using the level.

4.2.14 Replacing the antitheft device

1. Insert metal rod (or screwdriver) in the hole of the anti-theft device.
2. Loosen antitheft device somewhat by turning counterclockwise and screw out of the balance manually.

Installation in reverse order.

4.2.15 Replacing the power cable



1. Open balance (see section 4.2.1).
2. Disconnect both connectors (a) of power supply from power supply board.
3. Disconnect connector (b) of grounding cable from terminal (c).
4. Turn balance over and place on overload protection.
5. Remove buffer protecting strip or terminal in front of the cable bushing (see sections 4.2.8 and 4.2.10).
6. Undo gland (d) using open end wrench (flat width 14) and remove power cable (e).

Installation in reverse order.

Warning!

Before startup of the balance, it is essential to check the grounding conductor connection. For this, attach an ohmmeter or beeper between grounding conductor (power cable) and antitheft device (Item 27).

→ resistance must be low or a beep audible.

5. Repairing the HG/HR Moisture Analyzer



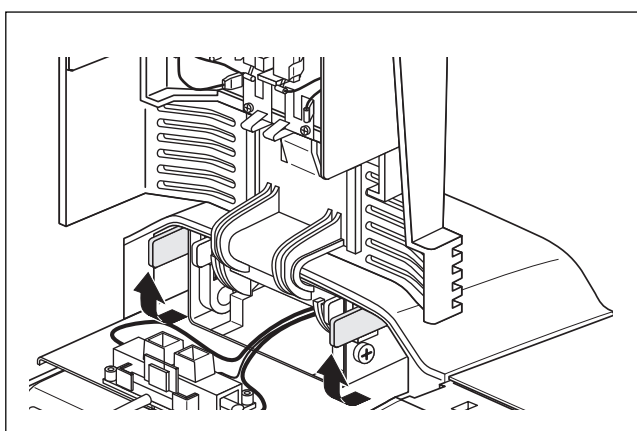
Disconnect instrument from the power supply and allow heating module to cool down!



Important information regarding protection against electrostatics during service work!

Damage caused by electrostatics is difficult to recognize as it results in faults which are not easy to trace. MOS switching transistors with electrostatic damage have appreciably higher, thermally unstable leakage currents. These cause increased drift of the balance and the display may fluctuate as in the presence of drafts.

To avoid electrostatic damage, work is performed in production with conductive floors, controlled atmospheric humidity and EMC mats. It is thus also good practice - as soon as the instrument is opened - to discharge electrostatic charges in service work by using the ESD service kit (section 11, service case, order number 11600009).



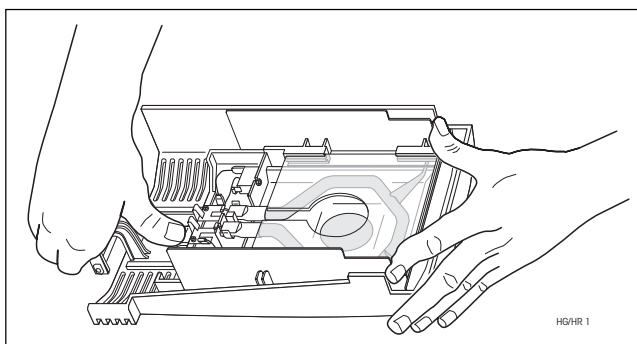
5.1 Repairing dryer unit



Before opening the dryer unit, the sample chamber must be opened (when closed, it mechanically blocks the dryer unit).

5.1.1 Dismantling dryer unit

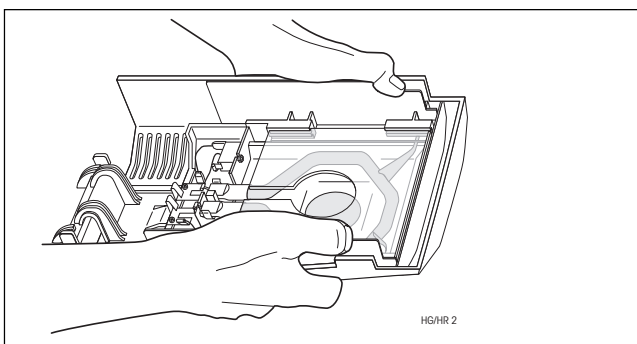
1. Open sample chamber and swing open dryer unit.
2. Disengage hinge (turn the two yellow closure levers at the left and right 90° forward).
3. Withdraw dryer unit forward.

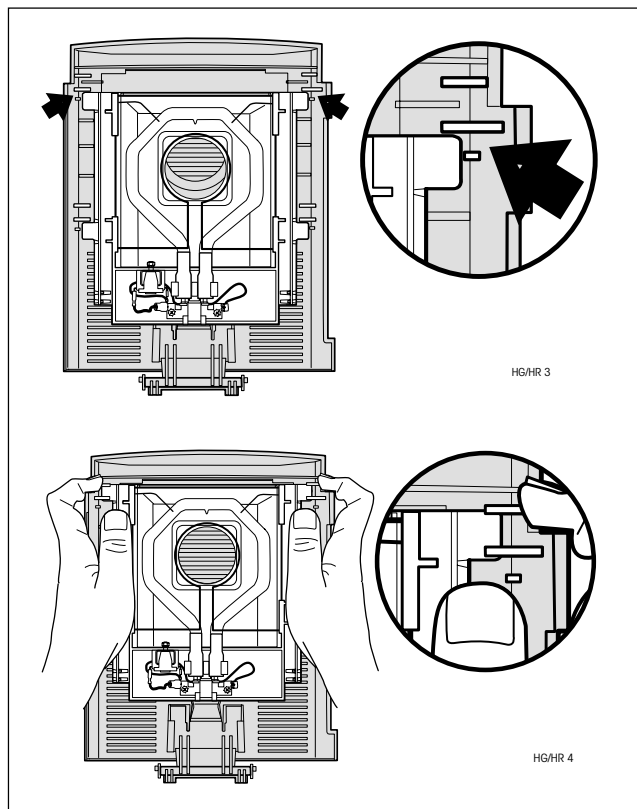


5.1.2 Replacing protective glass

5.1.2.1 Dismantling protective glass

1. Remove dryer unit -> 5.1.1
2. Remove heating module from the dryer unit as follows:
 - With your left thumb, press the black latch hard downward and at the same time use your right thumb and forefinger to push the heating module approx. 3 mm to the left over the latch.
 - Use both thumbs to pull the complete heating module over the latch until you hear it disengage. Then lift it out of the dryer unit.
 - Push protective glass with reflector to the rear and remove from the heating module.



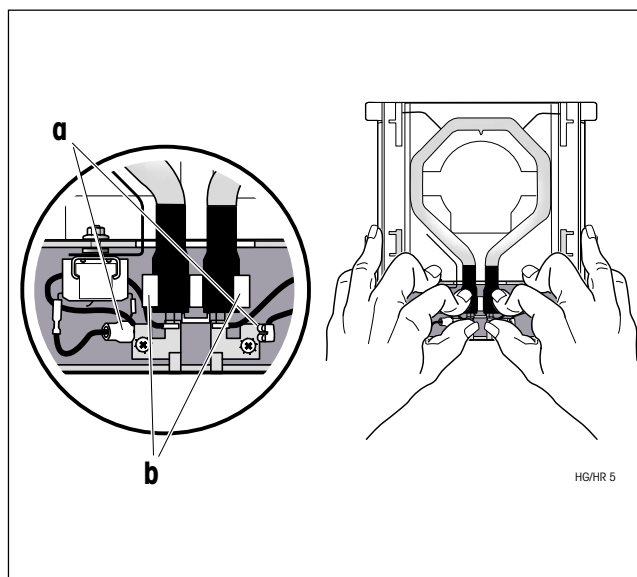


5.1.2.2 Mounting protective glass

1. Insert new protective glass; the slot in the glass must lie on the side of the contacts of the halogen radiator.
2. Insert reflector in the heating module right to the bottom.
3. Lay down dryer unit so that the hinge points to the front.
4. Insert complete heating module in the dryer unit so that it touches at the back (arrow).
5. Using the balls of the thumbs, press the heating module

down hard at the left and right while simultaneously pulling it to the back with your forefingers until you hear it engage.

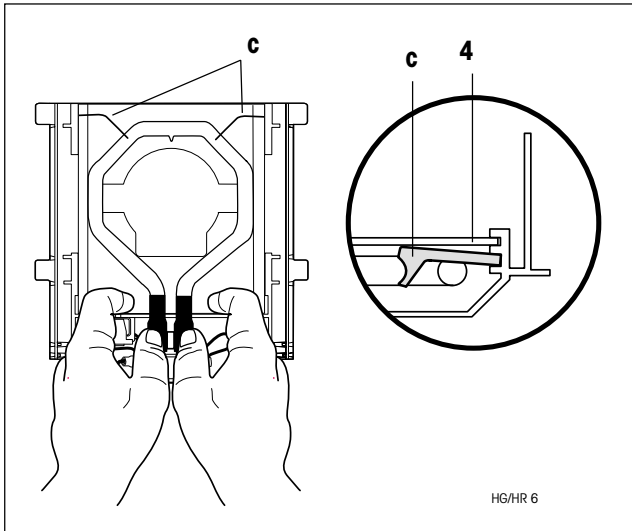
6. Install dryer unit -> [5.1.5](#)



5.1.3 Replacing halogen radiator

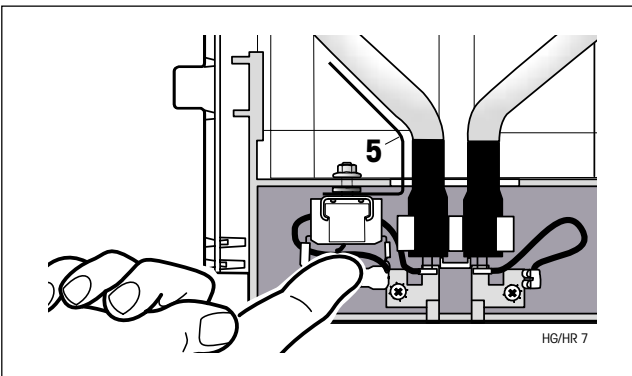
5.1.3.1 Dismantling halogen radiator

1. Dismantle protective glass -> [5.1.2.1](#)
2. Pull off the two connectors (a) of the halogen radiator using flat-nose pliers.
3. Use both forefingers to spread the retaining spring (b) to the left and right and at the same time use both thumbs to lift the halogen radiator upward out of the retaining spring (the two ends of the halogen radiator must not be bent toward each other or apart, otherwise the glass tube will break).



5.1.3.2 Mounting halogen radiator

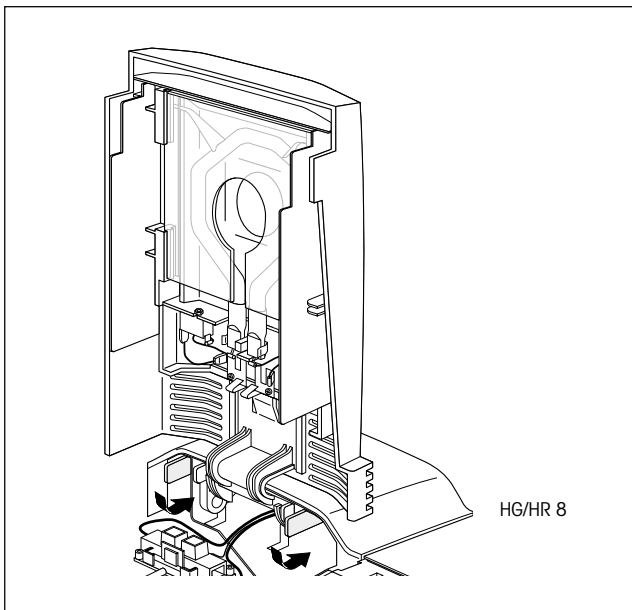
1. Hold new halogen radiator at the black ends (do not touch glass tube) and insert in the two support plates (c) at the back (if the support plates have fallen out: insert so that the broader part of the fork lies at the top; the support plates must press the halogen radiator gently against the protective glass (4)).
2. Place flat connector side of the halogen radiator on the retaining spring at the front, use both thumbs to press it approx. 2 mm to the back against the support plates and then engage it downward in the retaining spring.
3. Reinsert the two connectors of the halogen radiator.
4. Mount protective glass -> [5.1.2.2](#)



5.1.4 Replacing left and right contact or temperature controller/overtemperature switch

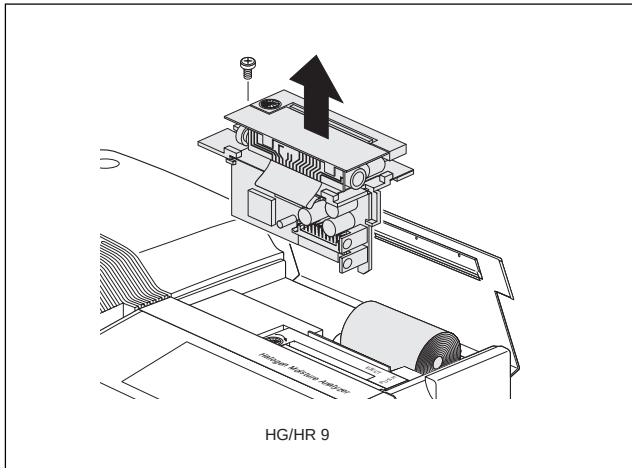
1. Pull off relevant cable connector using flat-nosed pliers.
2. Replace left or right contact or temperature controller/overtemperature switch. Do not forget spacing washer on heat conducting plate (5)! Tighten nut to 1.2 Nm. Warning: The right-hand connector of the switch and the connector of the left-hand contact plate must not touch each other!
3. After replacing the temperature controller/overtemperature switch, test functioning -> *Func 76* "Test heater".

If temperature controller has responded, reset with finger (do not push spring under edge of base!)



5.1.5 Installing dryer unit

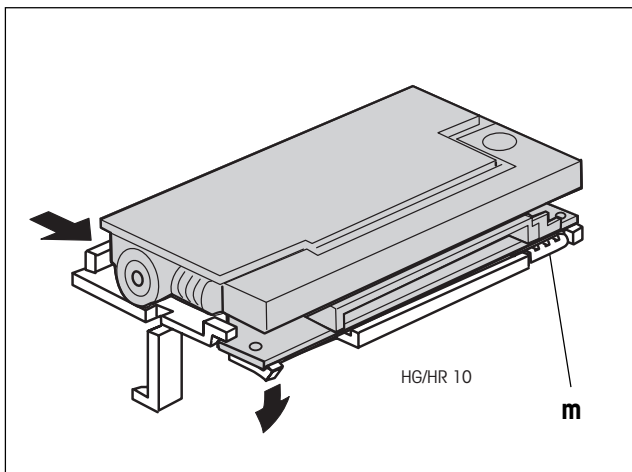
1. Insert dryer unit vertically backwards in the hinge.
2. Engage hinge (turn the two yellow closure levers at the left and right 90° downward).
3. When the sample chamber is open, close dryer unit.



5.2 Repairing built-in printer

5.2.1 Dismantling built-in printer

1. Swing open printer cover.
2. Pull paper out of printing unit.
3. Remove printer retaining screw at left.
4. Removing model strip:
 - disengage by pulling up at left
 - pull off to the left.
5. Pull built-in printer up and out of the HG/HR moving it to and fro slightly.



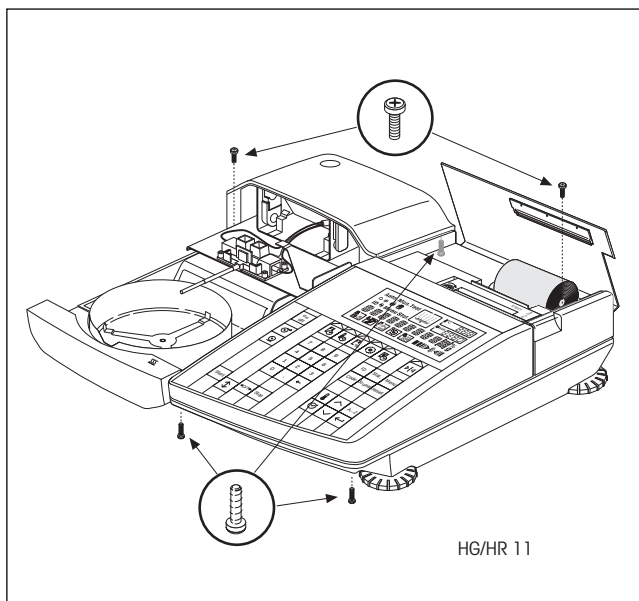
5.2.2 Replacing printing unit or printer board

1. Dismantle built-in printer -> 5.2.1
2. Remove printing unit from printer support as follows:
 - on the ribbon side, bend left retaining lug away from the metallic printing unit baseplate and at the same time press the printing unit on the board side so that the printing unit baseplate is shifted about 0.2 mm over the retaining lug.
 - in the same way, push the printing unit baseplate over the right retaining lug.
 - push the printing unit fully out of the printer support from the board side.
3. Have ready a new printing unit or new printer board, place EMC spring (m) and engage printing unit in the printer support.

5.2.3 Installing built-in printer

1. Insert built-in printer in HG/HR and carefully plug into the connector on the power supply board at the bottom. Care, never plug in at an angle; danger of bent pins!
2. Screw built-in printer in place.
3. Insert model strip.

Repairing parts in the interior of the HG/HR 5.3 Removing top housing



1. Push instrument a few cm over the edge of the bench and unscrew the 3 plastic screws in the bottom housing.
2. Dismantle dryer unit -> 5.1.1
3. In the top housing, unscrew one screw on the left and one on the right (in print compartment!).
4. Unthread paper strips of the printer.
5.  Carefully lift off top housing (attached to keypad cable).
6. Disconnect keypad cable connector.

5.4 Removing membrane keypad

1. Remove top housing -> 5.3
2. Strip off damaged membrane keypad from the cable side.
3. Remove residual adhesive (if necessary, use ligroin).



Care, readily inflammable, work only with small amounts).

5.5 Mounting membrane keypad

1. Thread in cable of the new membrane keypad.
2. Pull off cover sheet of the adhesive layer.
3. Fit membrane keypad in the recess of the top housing first only at the left, front corner and then at the left edge. Then roll into the recess to the right and press in place.

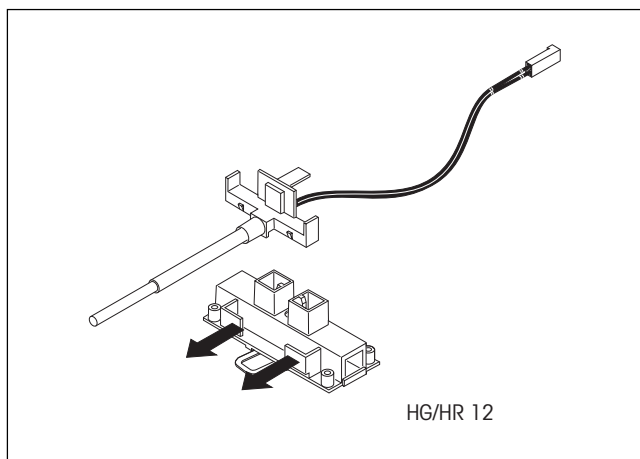
5.6 Replacing top housing

1. Remove top housing -> 5.3
2. Transfer level cover and model strip from damaged top housing to new one.

5.7 Mounting top housing

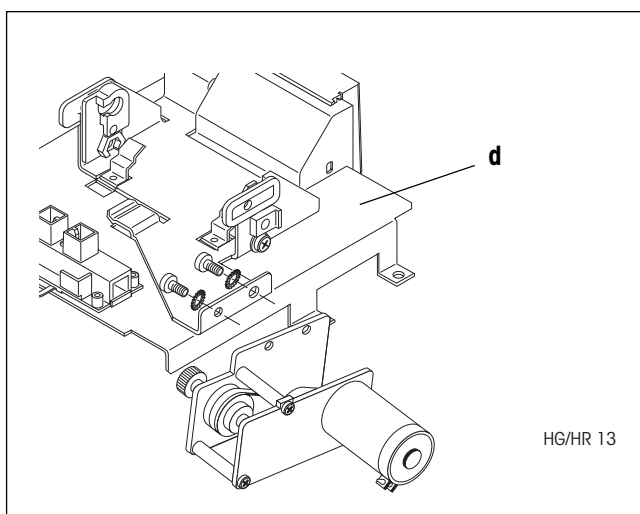
1. Plug keypad cable into CPU board (hold by connector and not the cable; if the cable becomes kinked, its conductors could break!).

2. Mount top housing horizontally from above so that the fan gasket lies precisely between the guide ribs. Fasten with the 2 normal screws from above and the 3 plastic screws from below.
3. Thread printer paper through.
4. Install dryer unit -> [5.1.5](#)



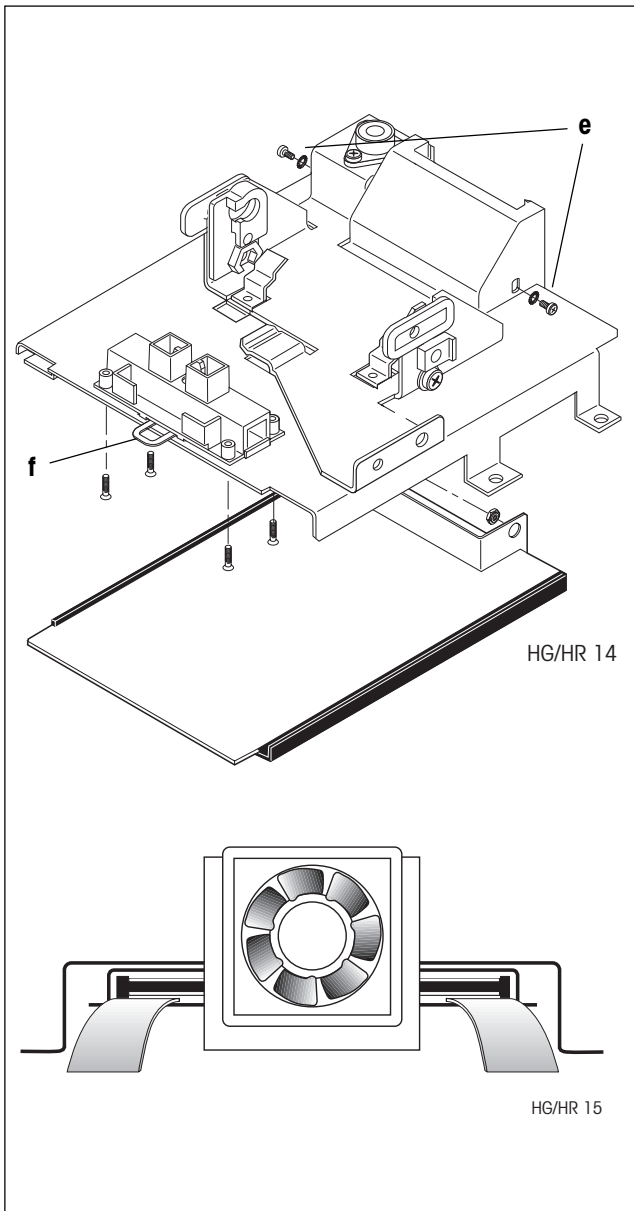
5.8 Replacing temperature sensor

1. Remove top housing -> [5.3](#)
2. Cut cable fastener of sensor cable and pull off connector.
3. Lift temperature sensor out of the contact block housing (bend out the white retaining clips forward slightly) and replace. Please note: the cable must lead in a straight line from the temperature sensor backward to the cable clip and the EMC contact spring must press against the temperature sensor.
4. Plug in connector and attach new cable fastener.
5. Mount top housing -> [5.7](#)
6. Connect instrument to the power supply.
7. Adjust temperature as described in the short-form operating instructions of the Moisture Analyzer. If the message „Error 5“ appears, use the LC-PT45 to execute *Func 71* (Clear temp.cal.data). Then adjust dryer unit again.



5.9 Dismantling dryer unit support

1. Remove top housing -> [5.3](#)
2. Unscrew sample chamber drive and carefully place on power supply board.
3. Remove sample chamber -> [5.22.4](#)
4. Unscrew dryer unit support (d), turn carefully to the right and take off.



5.10 Replacing contact block housing or contact block or rear air duct



NOTE

Check for correct ground connection after components carrying power-supply voltage have been removed and reinstalled.

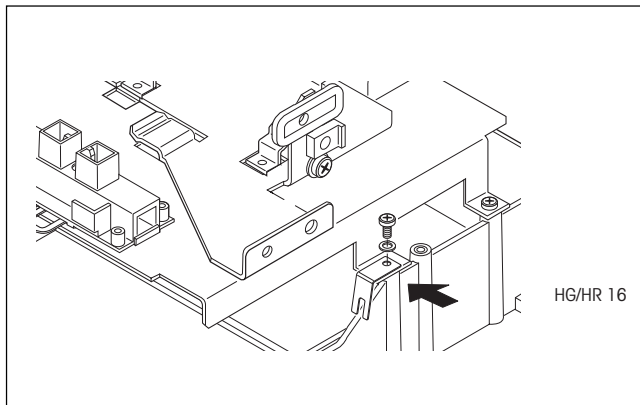
Check

Are the grounding screws tightly fastened with a toothed washer under their head?

Is there a low-resistance connection between the ground pin of the power supply plug and the grounded parts of the housing?

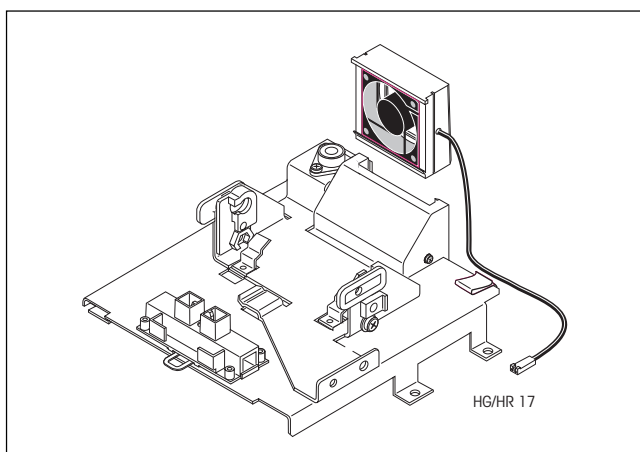
Measure the resistance from the ground pin of the power supply plug to the grounding screw on the housing.

1. Dismantle dryer unit support -> [5.9](#)
2. Pull fan up and out of the holder.
3. Unscrew the two screws (e) of the rear air duct (care: shaft nuts are loose!). The rear air duct can now be replaced or placed to one side.
4. The contact block housing screws are now also accessible. Replace contact block housing or contact block. **Please note:** Place EMC contact spring (f) under the contact block so that it presses upward against the temperature sensor.
5. Mount rear air duct with the screws and shaft nuts, but tighten screws only loosely.
6. Install dryer unit support -> [5.11](#)
7. Push in sample chamber completely.
8. Equalize horizontal play between the rear (inner) air duct and the front (outer) air duct and check by inserting a paper strip of thickness approx. 0.2 mm at the left and right of the fan under the inner air duct.
9. Screw in the two screws of the rear air duct (hold nuts).
10. Insert fan from above in its holder.
11. Mount top housing -> [5.7](#)



5.11 Installing dryer unit support

1. Loosely screw on dryer unit support using the two left screws and the right rear screw.
2. Install dryer unit -> [5.1.5](#)
3. Now move closed dryer unit together with the dryer unit support so that the dryer unit lies against the left side of the bottom housing. Then tighten the two rear screws of the dryer unit support.
4. Dismantle dryer unit -> [5.1.1](#)
5. Tighten left, front screw of the dryer unit support. With the right front screw simultaneously tighten the rear EMC contact spring (center with the rib of the bottom housing).
6. Install sample chamber -> [5.22.7](#)
7. Mount top housing -> [5.7](#)



5.12 Replacing fan

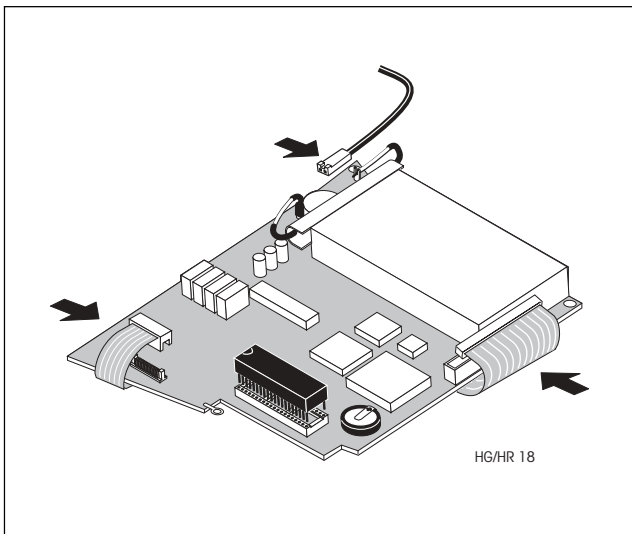
1. Remove top housing -> [5.3](#)
2. Loosen CPU screening plate until the fan connector becomes accessible.
3. Disconnect fan connector at the CPU board and remove cable from the cable clips.
4. Pull fan up and out of the holder.
5. Install new fan (ensure that the gasket exactly encircles the fan).
6. Mount top housing -> [5.7](#)

5.13 Replacing pivot bearings

1. Remove top housing -> [5.3](#)
2. Unscrew faulty pivot bearings (yellow closure levers can be taken over).
3. Screw left and right pivot bearing in lowest position.
4. Swing down dryer unit and check that it is horizontal and flush with the top housing. If need be, screw pivot bearings in a higher position.
5. Mount top housing -> [5.7](#)

5.14 Replacing level

1. Remove top housing -> [5.3](#)
2. Replace faulty level by a new one (use the 3 screws to tension slightly on the spring washers, but do not level yet).
3. Dismantle sample chamber -> [5.22.4](#)
4. Place service level under the dryer unit support in the bottom housing.
5. Adjust the three leveling screws until the air bubble of the service level is in the center.
6. Remove service level and adjust level on the dryer unit support until its air bubble is in the center.
7. Install sample chamber -> [5.22.7](#)
8. Mount top housing -> [5.7](#).



5.15 Dismantling CPU board

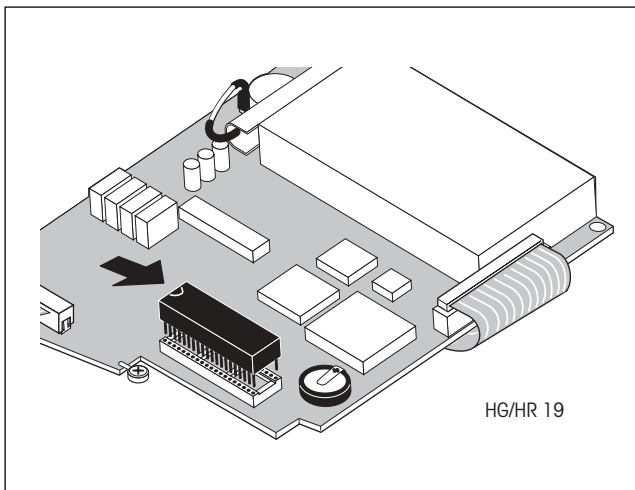
1. Switch on HG/HR and store or print out cell parameters, methods and user configuration with the aide of LARS or LC-PT45 (if necessary and possible despite fault).
2.  Disconnect instrument from the power supply again!
3. Remove top housing -> [5.3](#)
4. Unscrew CPU screening plate.
5. Unscrew CPU board.
6. Carefully disconnect the 3 connectors of the fan, weighing cell and power supply board.

5.16 Replacing CPU board

1. Dismantle CPU board -> [5.15](#)
2. Carefully remove program EPROM from the old CPU board and insert in the new one so that the casing notch points to the left.

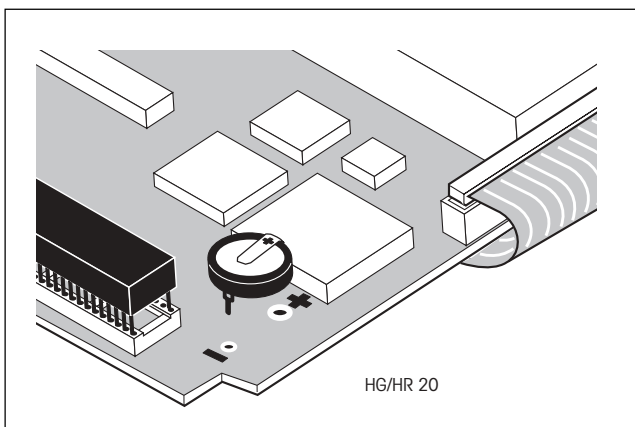
5.17 Installing CPU board

1. Screw CPU board in place (top left and in the middle at the bottom serrated lock washer beneath screw head)
2. Plug in 3 connectors of the fan, weighing cell and power supply board.
3. Screw on CPU screening plate (3 screws with washers).
4. Mount top housing -> [5.7](#)
5. Reload cell parameters, methods and user configuration in HG/HR or key in from cell parameter strip (affixed to the CPU screening plate).



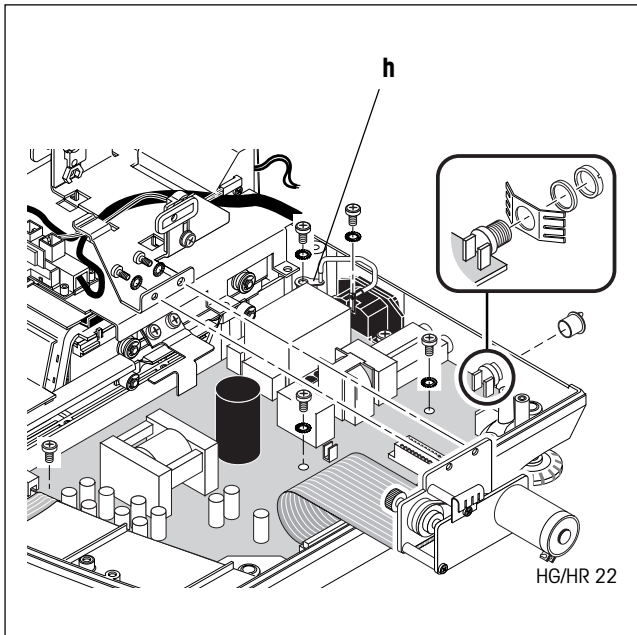
5.18 Replacing program EPROM

1. Remove top housing -> [5.3](#)
2. Unscrew CPU screening plate.
3. Carefully pull off old program EPROM.
4. Insert new program EPROM so that the casing notch points to the left.
5. Screw on CPU screening plate (3 screws with washers).
6. Mount top housing -> [5.7](#)



5.19 Replacing battery

1. Remove CPU board -> [5.15](#)
2. Carefully unsolder battery using desoldering braid
3. Solder in new battery as shown in the diagram.
4. Install CPU board -> [5.17](#)



5.21 Replacing power supply board

⚠ NOTE

Check for correct ground connection after components carrying power-supply voltage have been removed and reinstalled.

Check

Are the grounding screws tightly fastened with a toothed washer under their head?

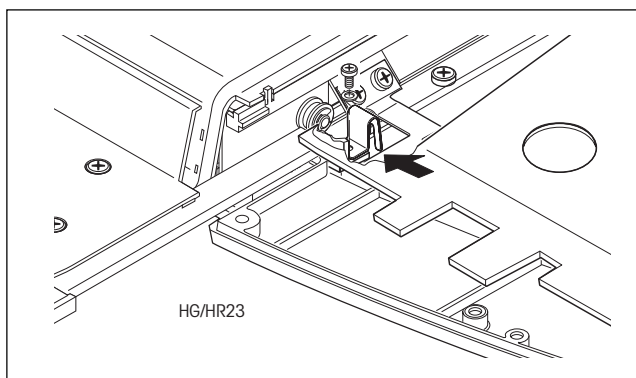
Is there a low-resistance connection between the ground pin of the power supply plug and the grounded parts of the housing?

Measure the resistance from the ground pin of the power supply plug to the grounding screw on the housing.

1. Dismantle CPU board -> [5.15](#)
2. Remove power supply screening plate -> [5.21.1](#)
3. Unscrew sample chamber drive and place to one side.
4. Unscrew eye (h) of protective ground cable of the power receptacle.
5. Unplug the 2 connectors of the sample chamber drive and the halogen radiator.
6. Unscrew power supply board.
7. Screw in new power supply board (3 screws with serrated lock washer beneath screw head, 4th screw at left front without serrated lock washer).
8. ⚠ Screw on eye (h) of the protective ground cable of the power receptacle (serrated lock washer beneath screw head).
9. Plug in the 2 connectors of the sample chamber drive and the halogen radiator.
10. Install power supply screening plate -> [5.21.2](#)
11. Install CPU board -> [5.17](#)

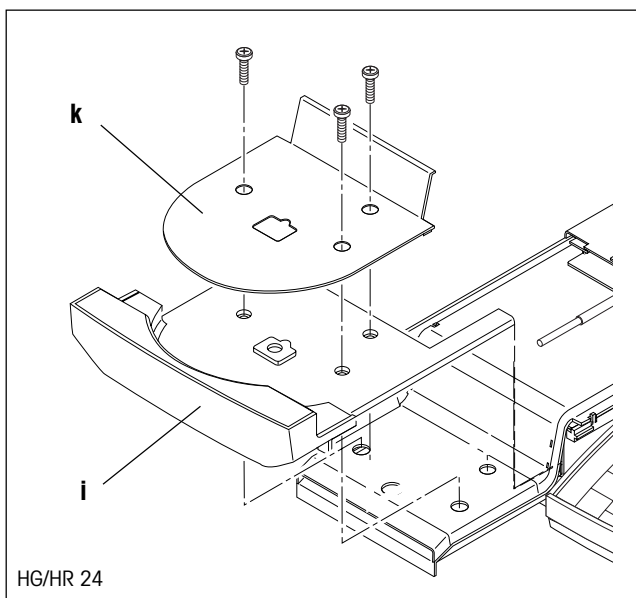
5.21.1 Dismantling power supply screening plate

1. Unscrew built-in printer retaining screw on the left and lift printer out with a slight to and fro movement.
2. Unscrew power supply screening plate and place on the left.



5.21.2 Installing power supply screening plate

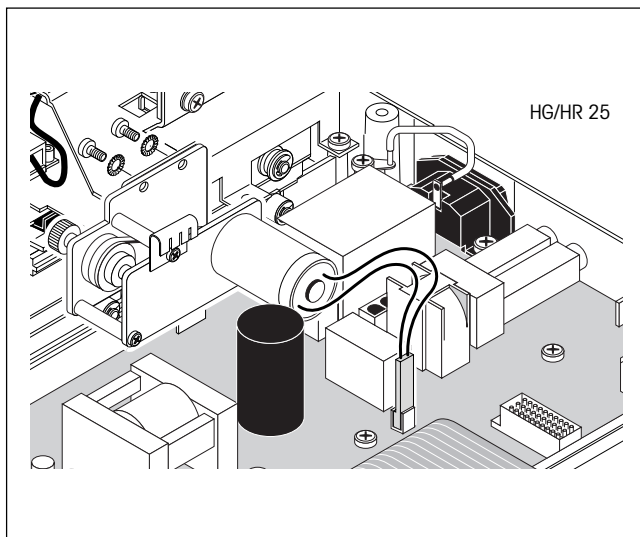
1. Screw on power supply screening plate (2 screws with washer at rear and 2 screws on right without washer).
2. At the same time, screw on the front EMC contact spring (arrow) with the 4th screw with washer (center with the rib of the bottom housing).
3. Insert built-in printer, carefully plug into the connector of the power supply board at the bottom and screw home.



5.22 Repairing sample chamber

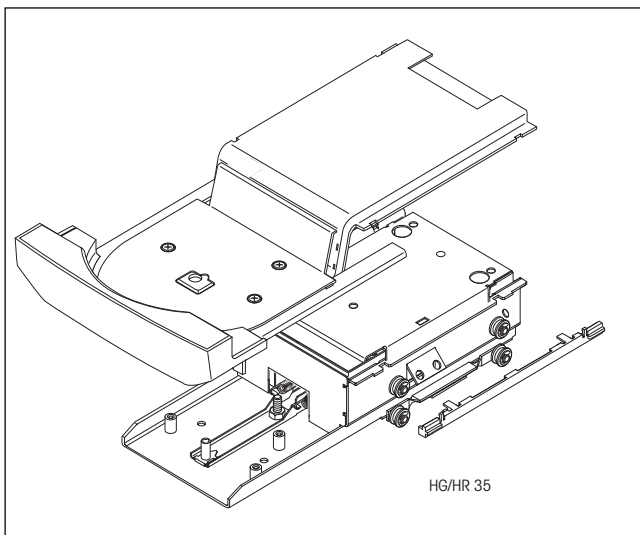
5.22.1 Replacing heat shield or sample chamber front

1. Open sample chamber.
2. Remove sample pan support with sample pan as well as sample pan holder and draft shield.
3. Unscrew sample chamber front (i).
4. Lift up heat shield (k) slightly at front and then lift up and out towards rear.
5. Replace heat shield or sample chamber front.
6. Screw on sample chamber front, mount draft shield, sample pan holder as well as sample pan support with sample pan.



5.22.2 Replacing sample chamber drive

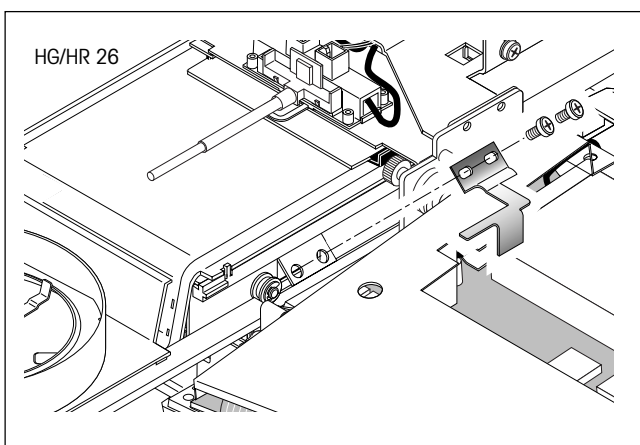
1. Dismantle CPU board -> [5.15](#)
2. Dismantle power supply screening plate -> [5.21.1](#)
3. Unplug connector of sample chamber drive and remove sample chamber drive.
4. Screw on new sample chamber drive loosely (serrated lock washer beneath screw head), then raise it so that the meshing of the pinion in the gear rack is free from play and tighten screws.
5. Plug in connector of the sample chamber drive.
6. Install power supply screening plate -> [5.21.2](#)
7. Install CPU board -> [5.17](#)
8. Insert built-in printer, carefully plug into connector on the power supply board at the bottom and tighten screw.



5.22.3 Replacing gear rack

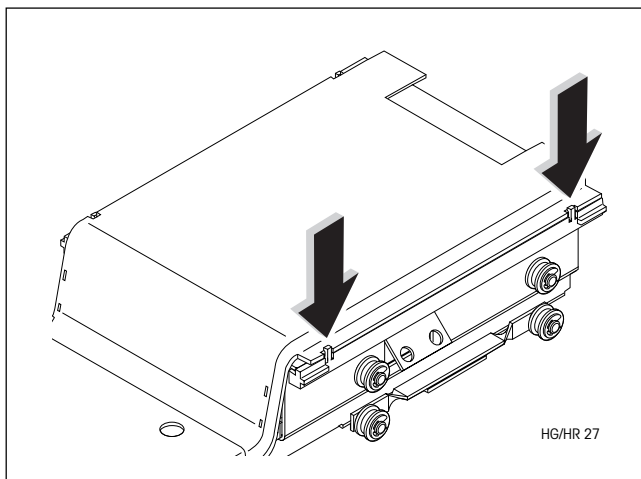
Note: If the teeth of the gear rack on the right are damaged, they can be exchanged with those on the left.

1. Remove sample pan support with sample pan as well as sample pan holder.
2. Remove top housing -> [5.3](#)
3. Dismantle sample chamber -> [5.22.4](#)
4. Dismantle front air duct -> [5.22.5](#)
5. Disengage damaged gear rack and replace.
6. Install front air duct -> [5.22.6](#)
7. Install sample chamber -> [5.22.7](#)
8. Mount top housing -> [5.7](#)
9. Insert sample pan holder and sample pan support with sample pan.



5.22.4 Dismantling sample chamber

1. Open sample chamber.
2. Unscrew switch vane.
3. Carefully withdraw sample chamber (ribbon cable connection) until the ribbon cable is visible.
4. Disconnect ribbon cable connector, withdraw sample chamber completely and place on the bench.



HG/HR 27

5.22.5 Dismantling front air duct

1. Remove sample pan support with sample pan as well as sample pan holder and draft shield.
2. Unscrew sample chamber front and remove.
3. Bend white plastic latches on left of air duct a short way to the left and at the same time lift up air duct at left and pull off to the left.

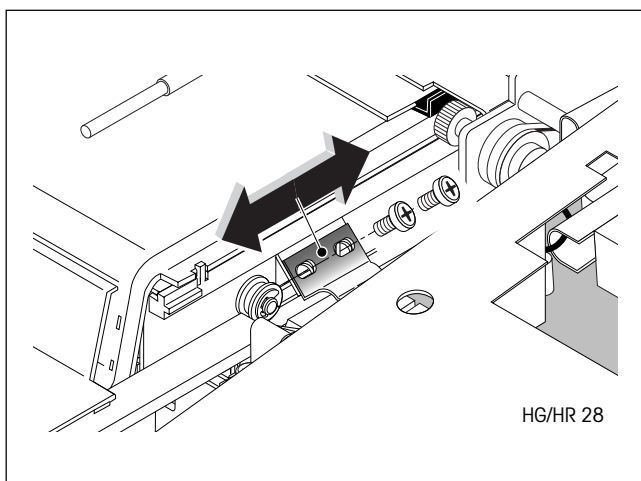
5.22.6 Installing front air duct

1. Remount air duct and engage. Do not forget the two EMC compression springs on the left and right (between air duct and sample chamber frame).
2. Mount sample chamber front with heat shield and screw in place.
3. Mount draft shield and sample pan holder as well as sample pan support with sample pan.

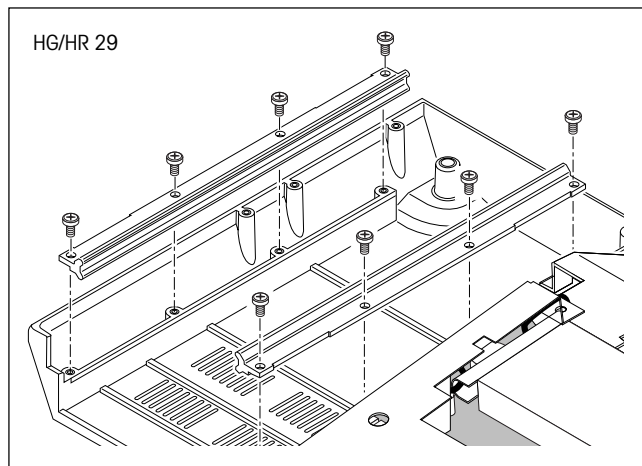
5.22.7 Installing sample chamber

Note: It may be necessary to grease the axles of the supporting and guide rollers as well as the slide rails of the rear air duct. Ensure that the roller faces and their guide rails remain free from grease. (Special grease for plastic; service case).

1. Plug in ribbon cable.
2. Then carefully push in sample chamber and insert the rear air duct in the front one.
3. Screw switch vane of the sample chamber in the middle of the long holes (if the sample chamber can be heard to contact something during motorized closure, position switch vane farther back in the long holes).
4. Lift up sample chamber drive a short way and screw in place so that the meshing of the pinion in the gear rack is free from play.

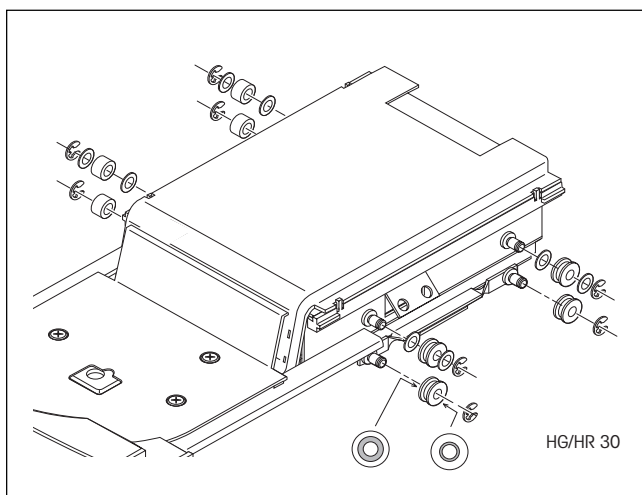


HG/HR 28



5.22.8 Replacing guide rails

1. Dismantle dryer unit support -> 5.9
2. Dismantle faulty guide rails.
3. When screwing on the new guide rails, press the left guide rail to the left, the right guide rail to the right.
4. Install dryer unit support -> 5.11



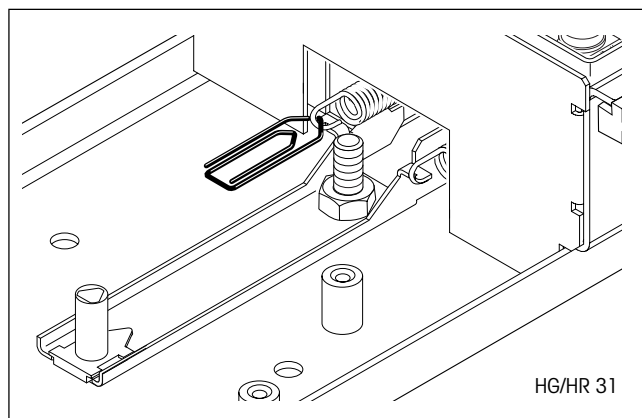
5.22.9 Replacing guide and supporting rollers

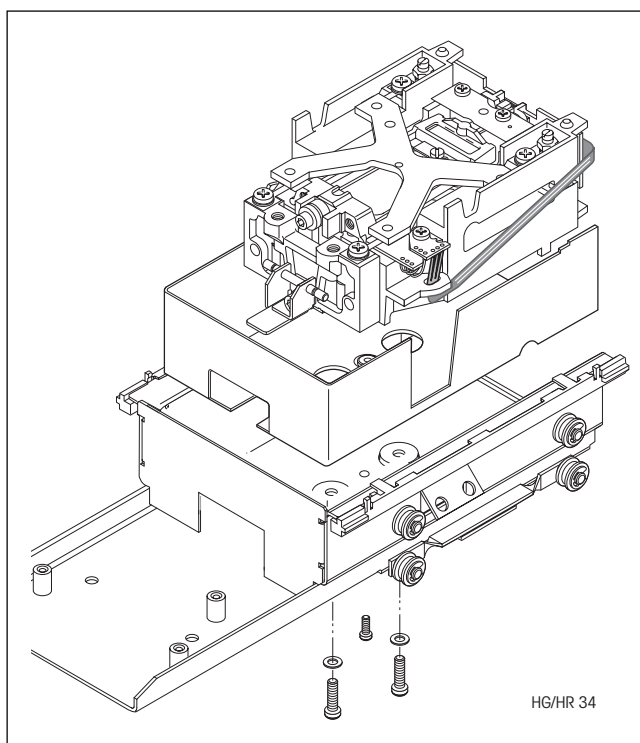
1. Remove top housing -> 5.3
2. Dismantle sample chamber -> 5.22.4
3. Replace guide and supporting rollers (only the top 2 rollers have a V-shaped groove, the others are cylindrical).
4. Install sample chamber -> 5.22.7
5. Mount top housing -> 5.7

5.22.10 Replacing weighing cell

5.22.10.1 Dismantling faulty weighing cell

1. Remove top housing -> 5.3
2. Dismantle sample chamber -> 5.22.4
3. Dismantle front air duct -> 5.22.5
4. Unplug the two connectors at the left and right on the cover of the weighing cell screening.
5. Lift off cover of the weighing cell screening and place to one side.
6. Disengage the two small tension springs at the weighing cell cantilever arm using the tip of a paper clip (or a clamp-type test probe) and remove cantilever arm. Place the tension springs to one side.
7. Place the sample chamber to the side and unscrew the small Phillips screw of the weighing cell screening as well as the two larger Phillips screws of the weighing cell.

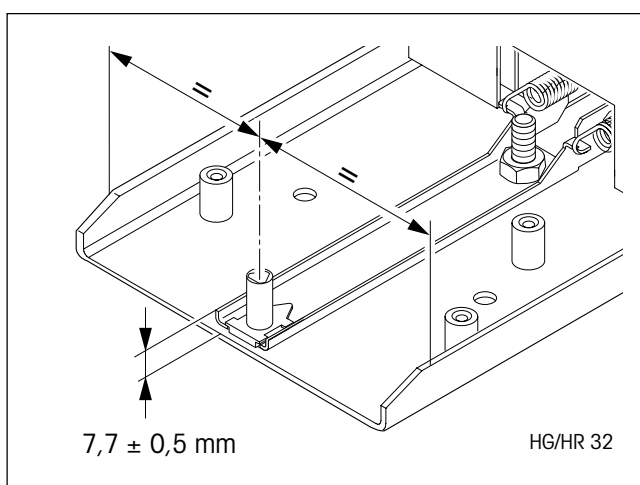


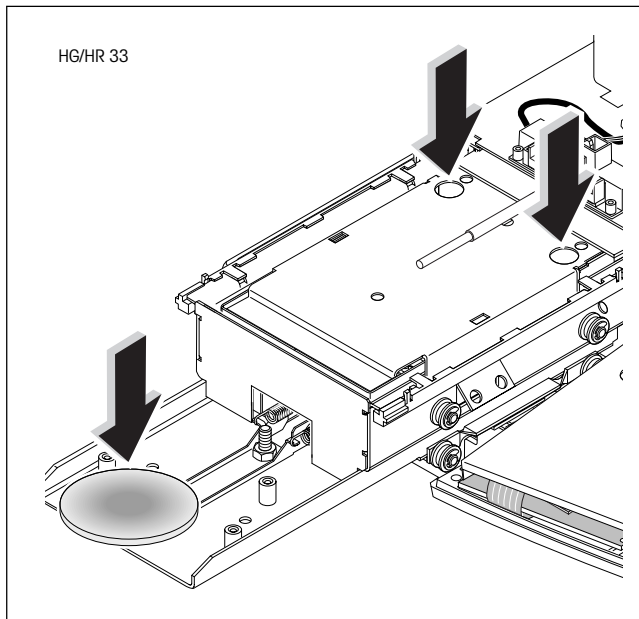


8. Lift weighing cell together with the weighing cell screening out of the sample chamber frame.
9. Lift weighing cell out of the weighing cell screening.

5.22.10.2 Installing new weighing cell

1. Place weighing cell in the weighing cell screening.
2. Place weighing cell and weighing cell screening in the sample chamber frame.
3. Screw on weighing cell screening from below using the small Phillips screw.
4. Loosely fix the weighing cell using the two larger Phillips screws (do not forget the conical spring washers).
5. Push weighing cell cantilever arm on the arm support and engage the two small tension springs using the tip of a paper clip.
6. Hold weighing cell at top by its chassis and move it so that the black bearing sleeve of the weighing cell cantilever arm is exactly in the middle of the sample chamber frame; at the same time ensure that a uniform air gap remains between the weighing cell and the weighing cell screening (to ensure no heat bridges are formed). Then tighten the two Phillips screws of the weighing cell.
7. Mount cover of the weighing cell screening and plug in the two connectors at the left and right.
8. Check the distance between the top edge of the weighing cell cantilever arm and the weighing cell chassis. It must be $7,7 \pm 0,5$ mm. If it is not, correct with the setscrew.
9. Push sample chamber onto rails and plug in ribbon cable.
10. Mount adjustment weighing pan (from the service case).
11. Switch on instrument and use the LC-PT45 to load the new cell parameters (key in from cell parameter strip enclosed with the spare part weighing cell using *Func 5* and *Func 55*). Affix cell parameter strip to the CPU screening plate using adhesive tape.





12. Test cornerload and adjust if necessary (open sample chamber until the cornerload screws in the cover of the weighing cell screening become visible. Then adjust these and push in sample chamber until the front rollers are again on the rails).
13. Check that the bearing sleeve does not touch the sample chamber front: Press adjustment weighing pan right down using your finger. It must not stick and the display must show the same value after the pan is released.
14.  After adjustment of the cornerload, disconnect instrument from the power supply again!
15. Remove adjustment weighing pan.
16. Install front air duct -> [5.22.6](#)
17. Install sample chamber -> [5.22.7](#)
18. Mount top housing -> [5.7](#)

5.22.11 Replacing sample chamber cable

1. Dismantle CPU board -> [5.15](#)
2. Dismantle power supply screening plate -> [5.21.1](#)
3. Dismantle sample chamber -> [5.22.4](#)
4. Replace sample chamber cable. Please note: Carefully fold cable so that it touches nothing when the sample chamber is closed. Position cable support clip near the left rear leveling screw so that it is not pinched between the cable board and rear panel of the bottom housing when the sample chamber is closed.
5. Install sample chamber -> [5.22.7](#)
6. Install power supply screening plate -> [5.21.2](#)
7. Install CPU board -> [5.17](#)

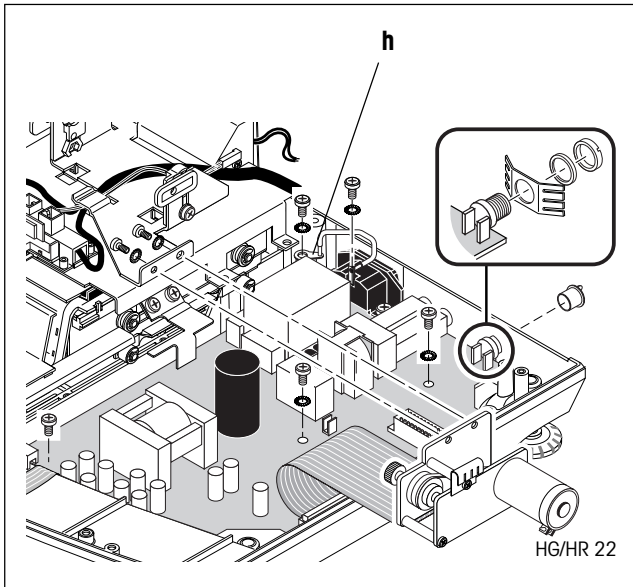
5.23 Replacing bottom housing

5.23.1 Dismantling bottom housing

1. Dismantle CPU board -> [5.15](#)
2. Dismantle power supply screening plate -> [5.21.1](#)
3. Unscrew eye of the protective ground cable of the power receptacle.
4. Unplug connector of the sample chamber drive and connector of the radiator cable.
5. Dismantle power supply board.
6. Dismantle dryer unit support -> [5.9](#)
7. Dismantle guide rails.

8. Remove leveling screws.

5.23.2 Installing bottom housing



NOTE

Check for correct ground connection after components carrying power-supply voltage have been removed and reinstalled.

Check

Are the grounding screws tightly fastened with a toothed washer under their head?

Is there a low-resistance connection between the ground pin of the power supply plug and the grounded parts of the housing?

Measure the resistance from the ground pin of the power supply plug to the grounding screw on the housing.

1. Mount the leveling screws in the new bottom housing.
2. Affix rating plate and information plate (the plates were destroyed when the old bottom housing was removed, they must therefore be reordered with details of the serial number).
3. Screw on guide rails, press the left guide rail to the left and the right guide rail to the right.
4. Install power supply board.
5.  Screw on eye (h) of the protective ground cable of the power receptacle (serrated lock washer beneath screw head).
6. Install dryer unit support -> [5.11](#)
7. Plug in connector of the sample chamber drive and the connector of the radiator cable.
8. Install power supply screening plate -> [5.21.2](#)
9. Install CPU board (do not forget: plug in the 3 connectors for the fan, weighing cell and power supply board) -> [5.17](#)

6. Repairing the HB Moisture Analyzer



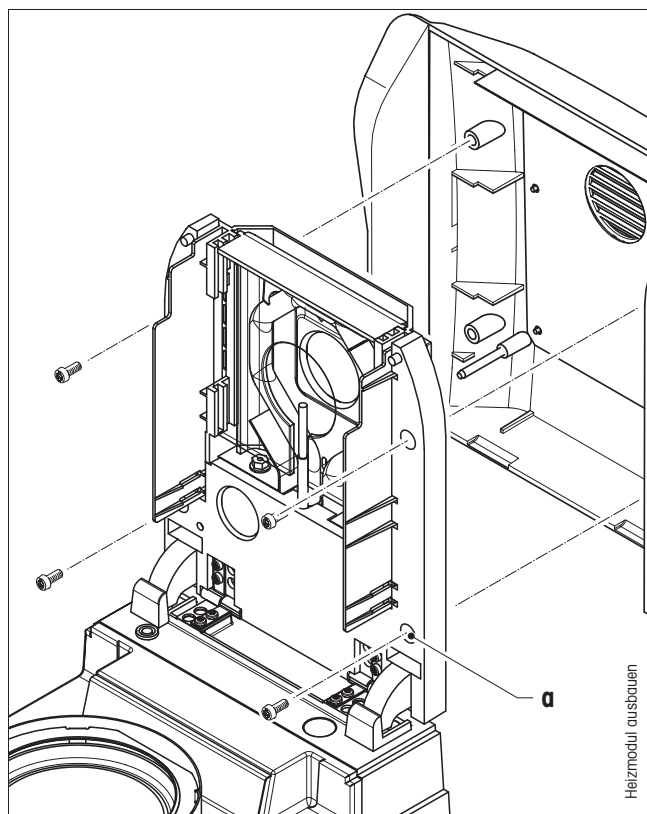
Disconnect from power supply and allow heating module to cool !



Important: Electrostatic protection when servicing !

Electrostatic damage is difficult to detect, because the faults it causes are not clear cut. MOS switching transistors with electrostatic damage have substantially higher, thermally unstable leakage currents. As a result, the balance drifts more and the display can fluctuate similar to when there is a draft.

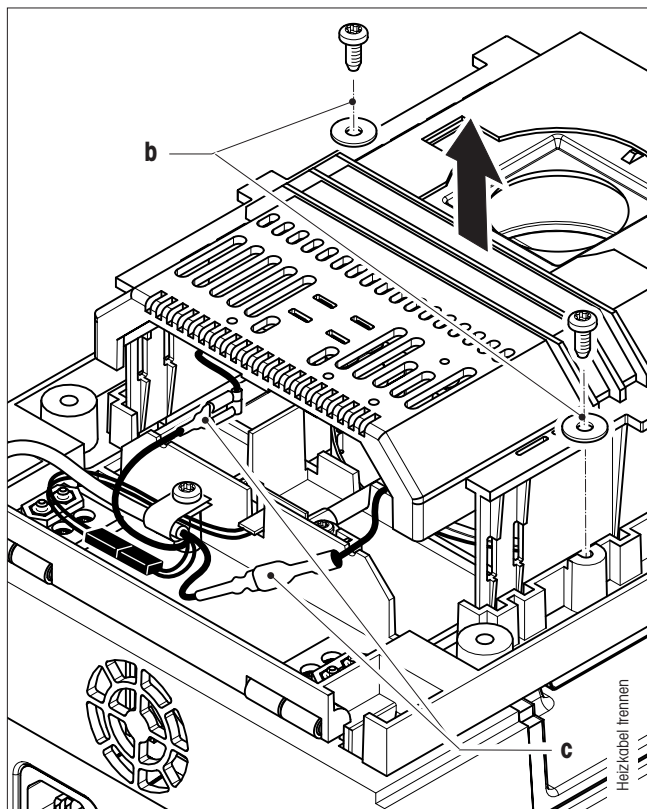
To avoid electrostatic damage during production, conducting floors, controlled air humidity, and EMC mats are used. When servicing is carried out it is therefore also advisable – as soon as the instrument is opened – to neutralize electrostatic charges by using the ESD service kit (Register 11, Service Toolbox, Order Number 11600009).



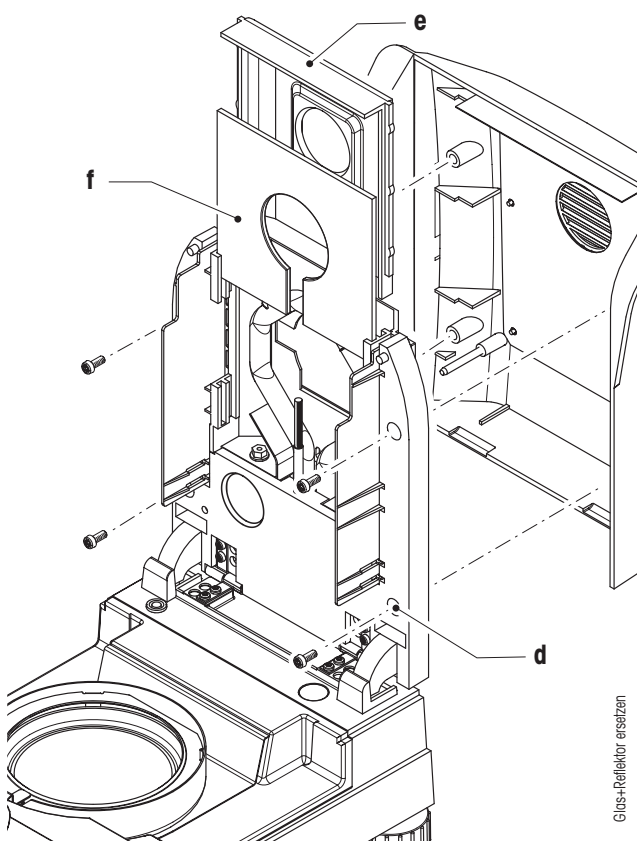
6.1 Repairing the drying unit

6.1.1 Dismantle heating module

1. Swivel drying unit upward.
2. Unscrew 4 screws (a).
3. Pull cover off toward back.



4. Unscrew 2 screws (b).
5. Lift heating module out.
6. Disconnect heater cable at 2 connectors (c).



6.1.2 Replacing the protective glass and reflector

Swivel drying unit up and unscrew cover (d).

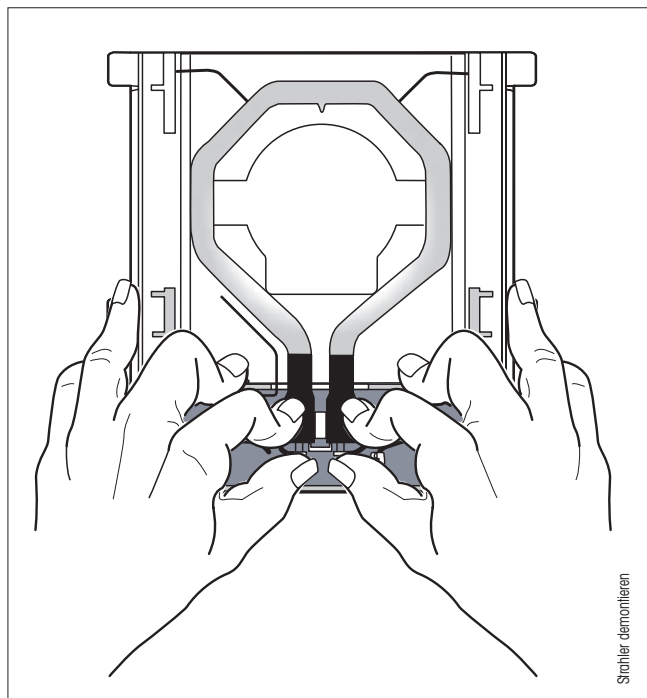
6.1.2.1 Dismantle protective glass and reflector

1. Pull reflector (e) up and out.
2. Pull protective glass (f) up and out.

6.1.2.2 Install protective glass and reflector

1. Insert protective glass with opening pointing down.
2. Insert reflector.

Screw cover on (d).



6.1.3 Replacing the halogen lamp

6.1.3.1 Dismantle halogen lamp

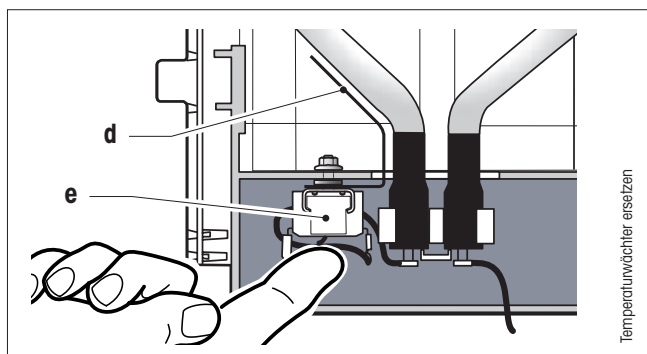
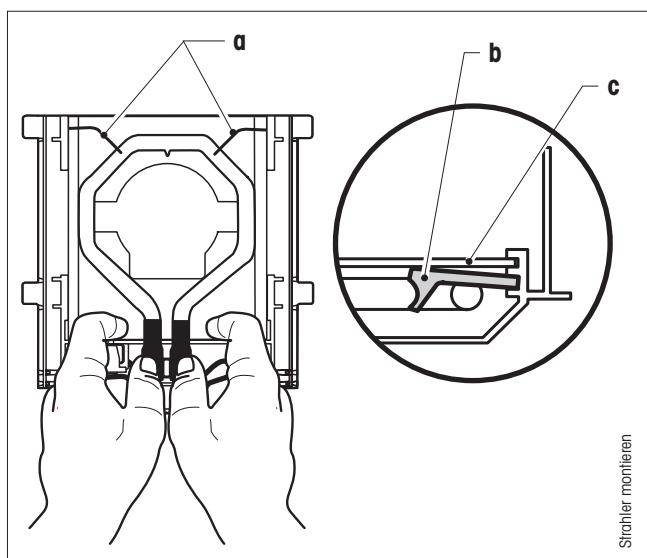
1. Dismantle heating module -> [6.1.1](#).
2. Dismantle protective glass and reflector -> [6.1.2.1](#).
3. Use both forefingers to spread the clamping springs to the left and right and at the same time use both thumbs to lift the halogen lamp carefully upward out of the clamping springs (the two ends of the halogen lamp must not be bent toward or away from each other, otherwise the glass tube will break).

6.1.3.2 Install halogen lamp



Only touch the black part of the halogen lamp! If necessary, clean with weak organic solvent.

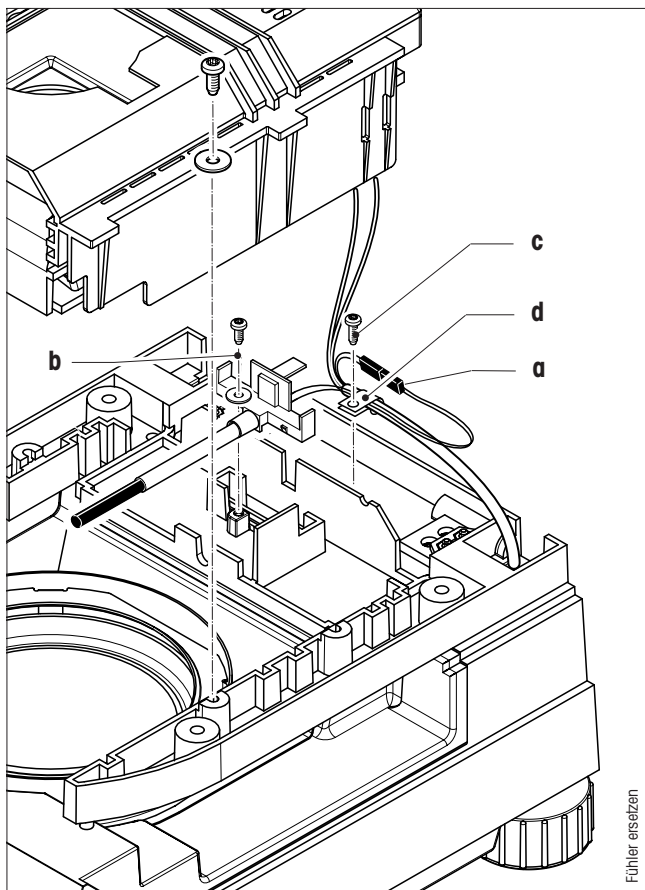
1. Hold the new halogen lamp by the black ends and insert it into the two metal supports (a) at the back. (If the metal supports have fallen out, replace them so that the wider part of the fork (b) is on top; the metal supports must press the halogen lamp gently against the protective glass (c)).
2. Lay the flat, connector side of the halogen lamp on the clamping springs at the front, use both thumbs to push it about 2 mm toward the back against the metal supports and then down to engage in the clamping springs.
3. Reconnect the 2 connectors of the halogen lamp.
4. Install the protective glass and reflector -> [6.1.2.2](#).
5. Install the heating module -> [6.1.6](#)



6.1.4 Replacing the temperature controller

1. Dismantle heating module -> [6.1.1](#)
2. Use flat-nosed pliers to pull off the two cable connectors.
3. Replace temperature controller (e). Do not forget the spacing washer on the heat-conducting plate (d)! Do not tighten the washer too tight (1.2 Nm).
4. Carry out overtemperature test either from the service menu or using LARS.
5. Tighten nut with 1.2 Nm.

If the temperature controller has responded, reset with finger (do not push spring under edge of base!).



6.1.5 Replacing the temperature sensor

1. Dismantle heating module → 6.1.1.
2. Pull off the connector (a).
3. Remove screw (b) and (c), lift temperature sensor out of its holder and replace, minding to

pull the sensor cable through the clamp (d), see also picture under 6.1.6, (below)!
4. Screw temperature sensor firmly back into place and push connector (a) on again.
5. Install heating module → 6.1.6.

6.1.6 Installing the heating module



NOTE

Check for correct ground connection after components carrying power-supply voltage have been removed and reinstalled.

Check

Are the grounding screws tightly fastened with a toothed washer under their head?

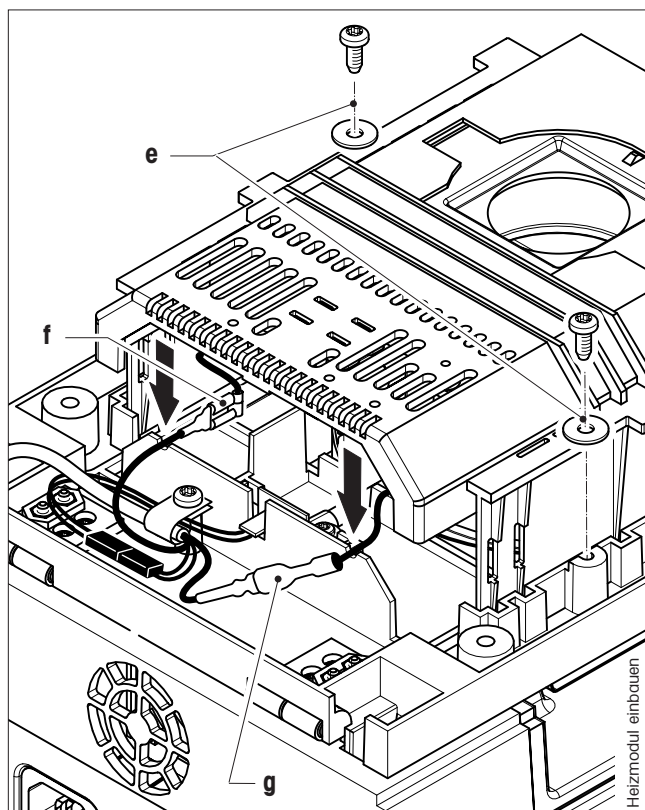
Is there a low-resistance connection between the ground pin of the power supply plug and the grounded parts of the housing?

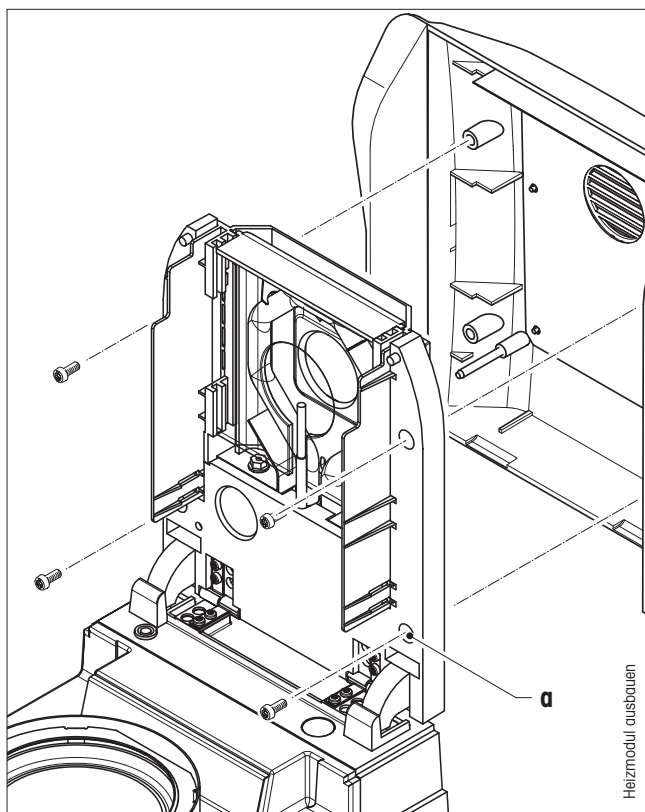
Measure the resistance from the ground pin of the power supply plug to the grounding screw on the housing.

1. Reconnect the 2 connecting cables (f) and (g) of the heater.
2. Insert the heating module into the frame and fasten with 2 screws (e).

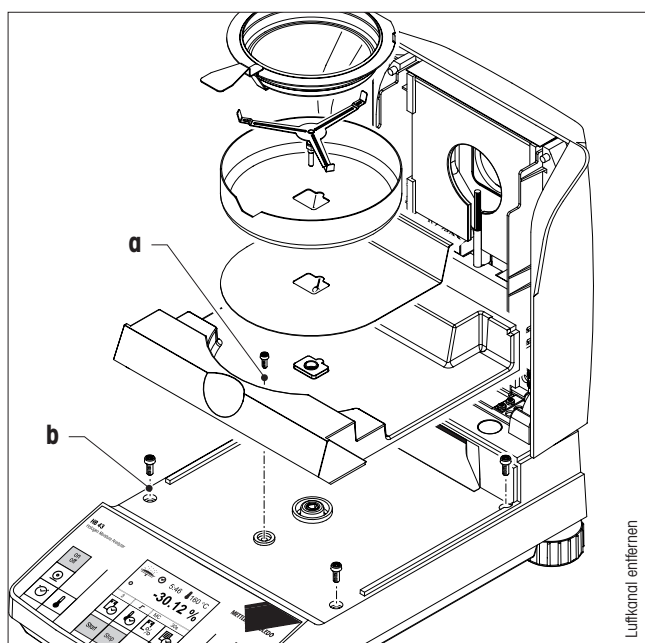


The bare connector (f) carries the 220 V power supply voltage and must therefore always be installed as shown. It must not lie outside the heating module like connector (g).



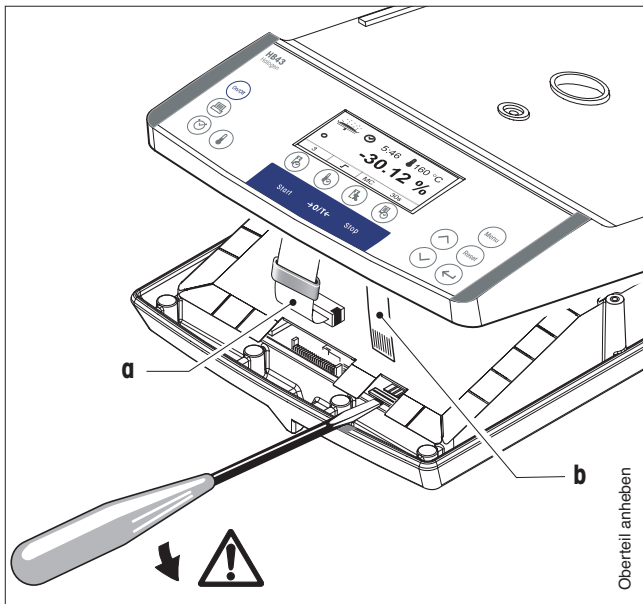


3. Replace cover and fasten with 4 screws (a).
4. Swivel drying unit closed.

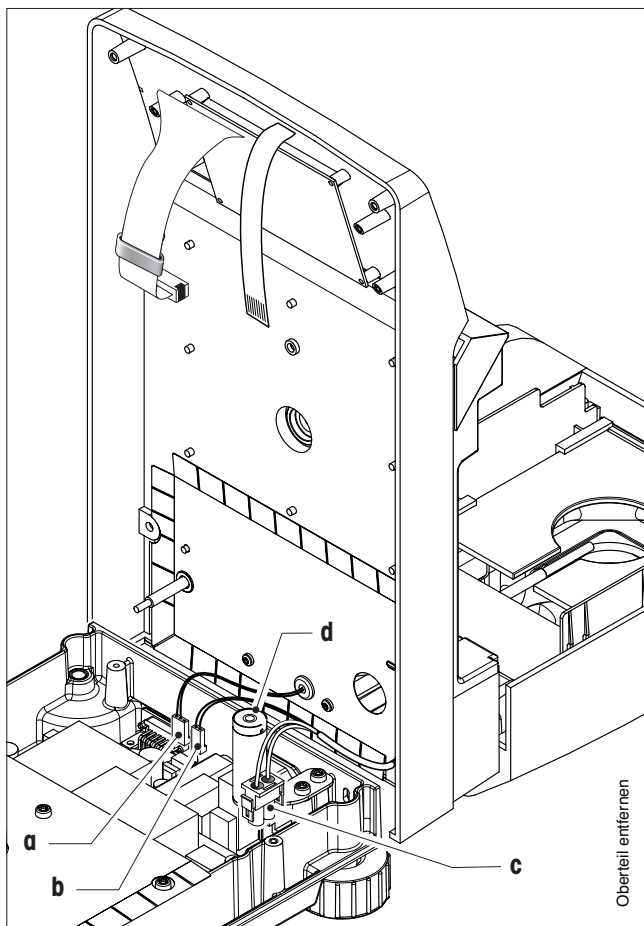


6.2 Removing housing top

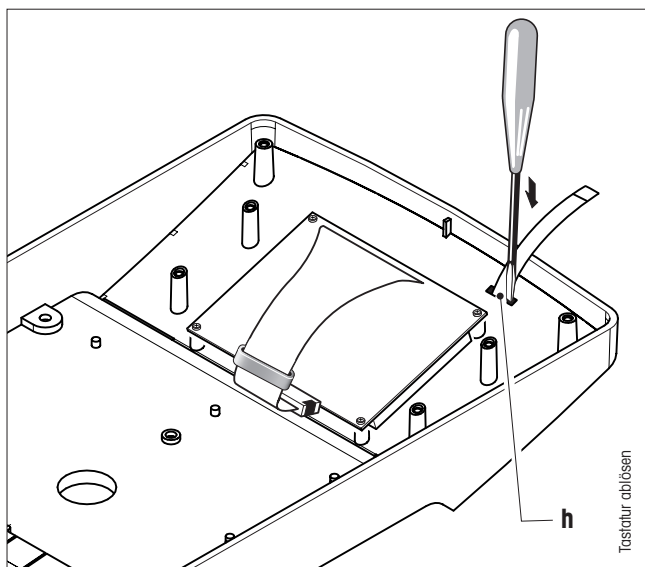
1. Remove sample pan handler, sample pan holder, and draft shield.
2. Lift heat shield off.
3. Remove screw (a) and then lift the sample chamber, first at the front and then completely.
4. Remove the 4 screws (b) from the housing top.



5. Lift the front of the housing top then, using a screwdriver, carefully unfasten the connector socket of the keyboard cable (b) and pull off the cable. Pull off the cable of the display (a).
6. Lift the housing top until the level indicator (d) is free, then ...



- ... swivel it into the vertical position toward the back to rest against the open cover of the drying unit.
7. Pull off the connectors for the fan (a), temperature sensor (b), and halogen lamp (c).
 8. Put the housing top aside out of the way.

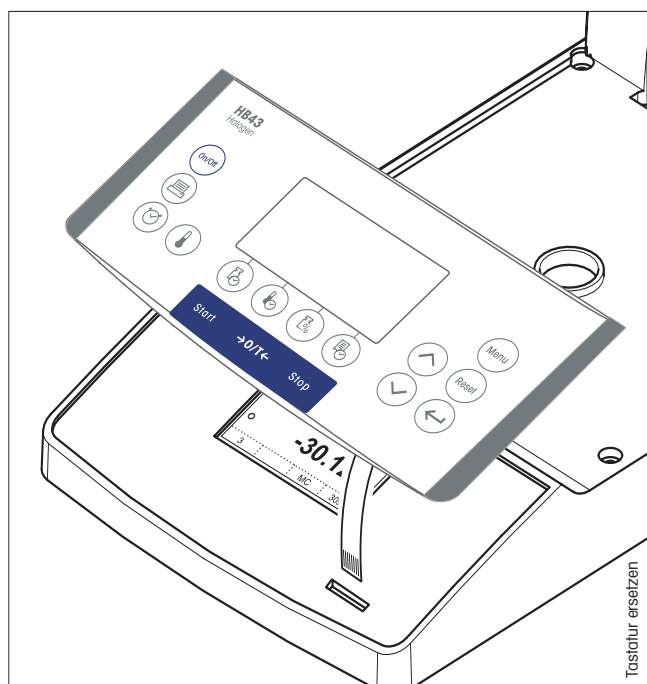


6.3 Removing the membrane keypad

1. Remove the housing top → 6.2.
2. Release the faulty membrane keypad from the cable side (h).
3. Remove any traces of adhesive (if necessary, use pure benzene).



Caution: highly inflammable, use only small quantities).

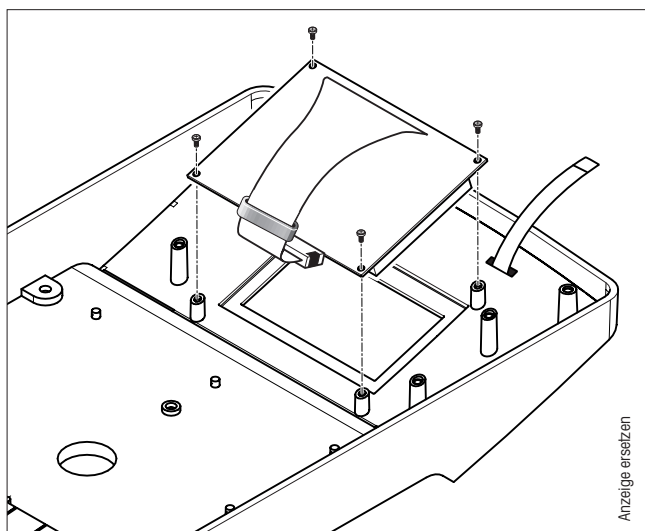


6.4 Installing the membrane keypad



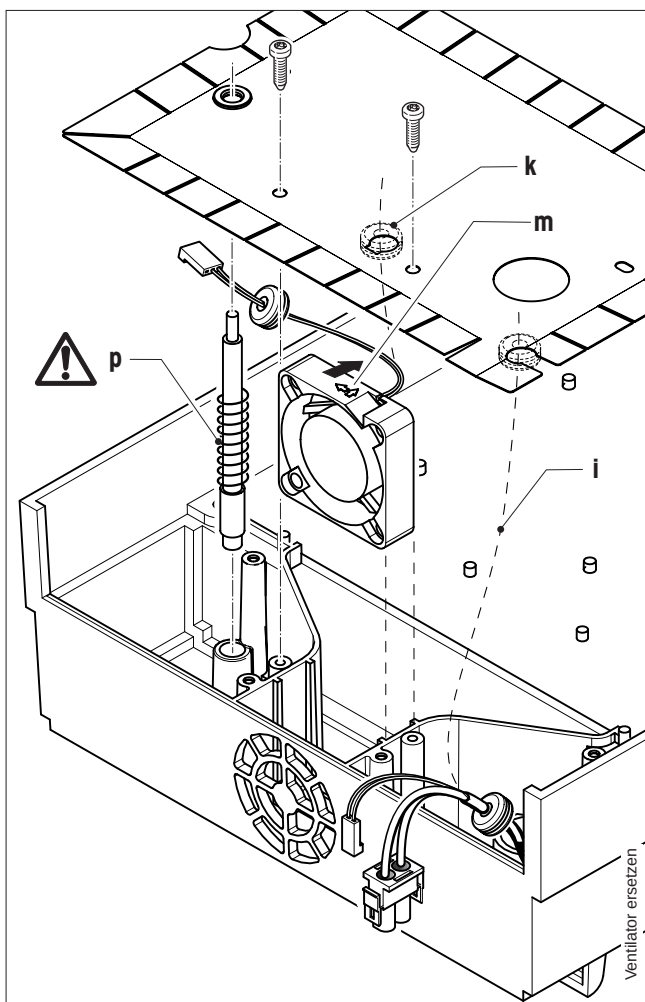
Avoid making finger marks and getting dust on the display and window of the membrane keypad!

1. Insert the cable of the new membrane keypad.
2. Pull the covering foil off the adhesive surface.
3. Insert the membrane keypad into the depression in the housing top, starting only with the front, right-hand corner and then with the right-hand edge. Then roll it toward the left into the depression and press it down.
4. Install the housing top → 6.10.



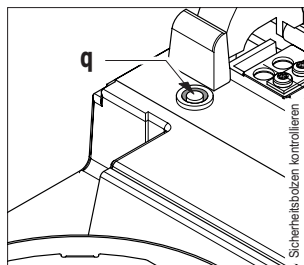
6.5 Replacing the display

1. Remove housing top → 6.2.
2. Unscrew display and remove.
3. Insert new display and fasten with screws.
4. Install housing top → 6.10.

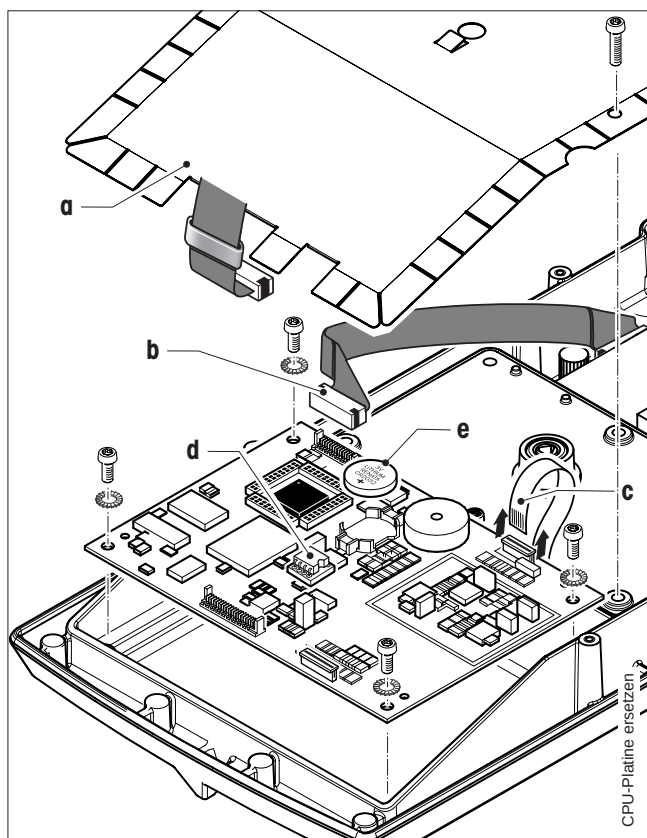


6.6 Replacing the fan

1. Remove housing top → 6.2.
2. Unscrew screening plate from housing top.
3. Slide cable (i) out through grommet (k), remove grommet (k) from screening plate together with fan connector.
4. Replace fan, taking care to **install it in the direction indicated by the arrow printed on it (m)**.
5. Assemble the housing top: **do not forget the spring (p)**! (The pin triggers the safety switchoff if the housing top is opened during operation.)
6. Install housing top → 6.10.
7. Test safety switchoff for correct functioning:
 - Start drying so the the lamp is lit.
 - Open the cover of the HB43: the lamp should switch off immediately. If it does not, check whether the spring (p) is pressing the safety pin upward (q):

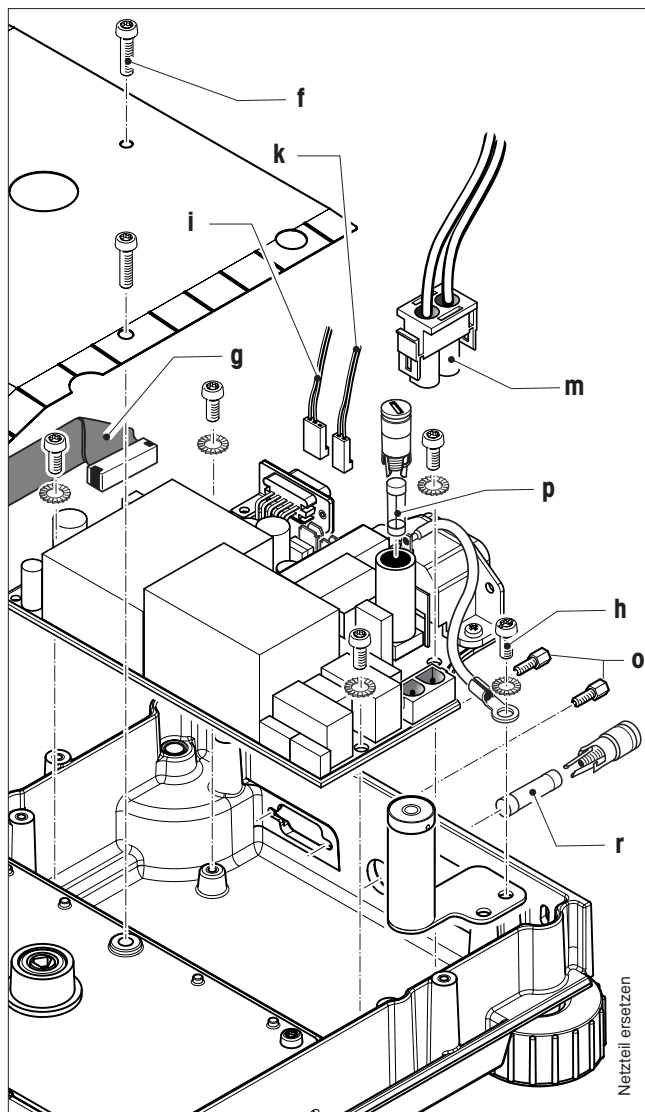


- Stop drying.



6.7 Replacing the CPU board

1. Remove housing top → 6.2.
2. Remove screening plate (a).
3. Pull off the connector to the power supply (b), carefully unfasten the socket connector of the weighing cell cable (c), and pull the cable out.
4. Unscrew the CPU board and remove.
5. Transfer the cell EEPROM (d) from the old CPU board, replacing the battery (e) with a new one if necessary (3 V, Lithium, e.g. RENATA CR 2032).
6. Install new CPU board.
7. Install screening plate (a).
8. Re-insert cables (b) and (c) and fasten.
9. Install housing top → 6.10.
10. Load type data with LARS and adjust the instrument.



6.8 Replacing the power supply board



NOTE

Check for correct ground connection after components carrying power-supply voltage have been removed and reinstalled.

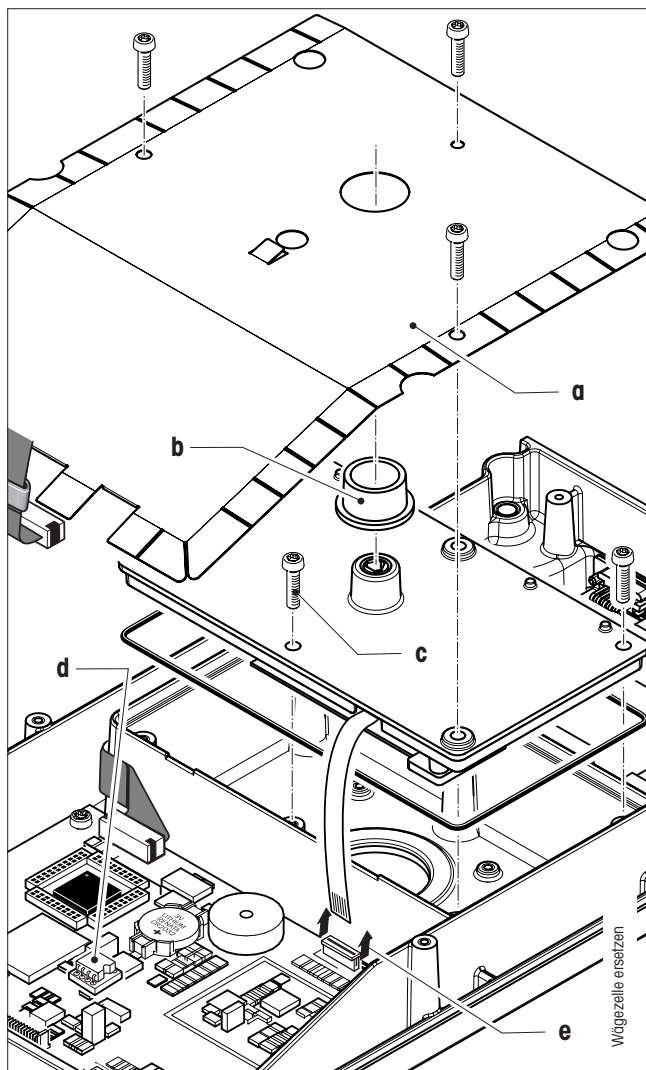
Check

Are the grounding screws tightly fastened with a toothed washer under their head?

Is there a low-resistance connection between the ground pin of the power supply plug and the grounded parts of the housing?

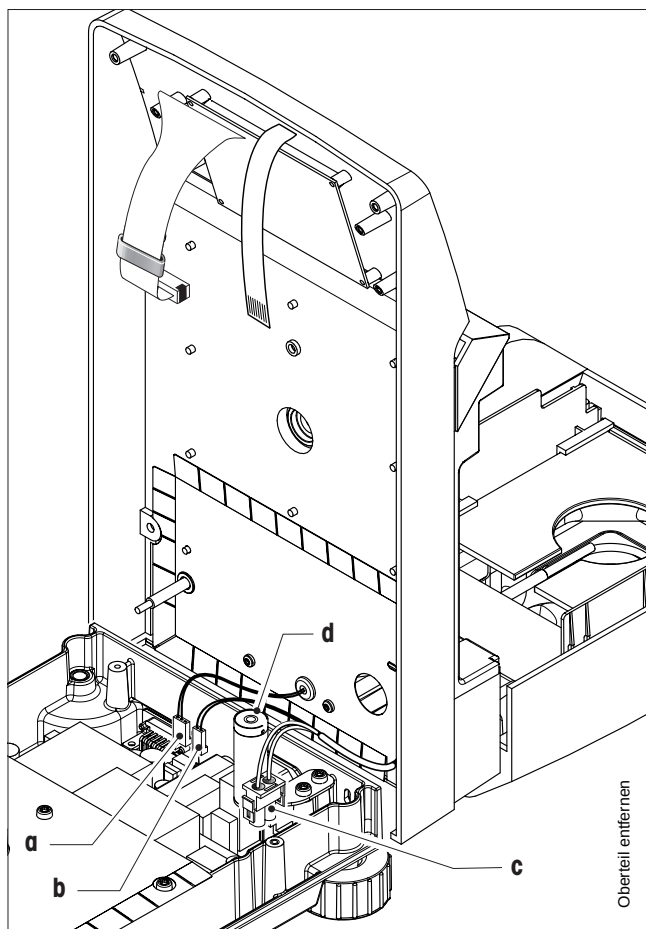
Measure the resistance from the ground pin of the power supply plug to the grounding screw on the housing.

1. Remove the screw (f) at the back of the screening plate.
2. Remove housing top → 6.2.
3. Pull off the 4 connectors for the CPU board (g), fan (i), temperature sensor (k) and lamp (m).
4. Remove screw to release ground protection cable (h).
5. Remove the 4 screws from the power supply board and the 2 screws (o) from the RS232 interface socket. Lift the power supply board at the front and remove it.
6. Install new power supply board:
 - First tighten the 2 screws (o) of the RS232 interface socket then the 4 screws with toothed washers of the power supply board.
 -  Screw the eye of the ground protection cable and the toothed washer firmly under the head of screw (h).
7. Screw in the back screw (f) of the screening plate.
8. Plug in the 4 connectors.
9. If necessary, replace the main fuse (r) T6.3 A/250 V or power supply (p) T315 mA/250 V.
10. Install the housing top → 6.10.



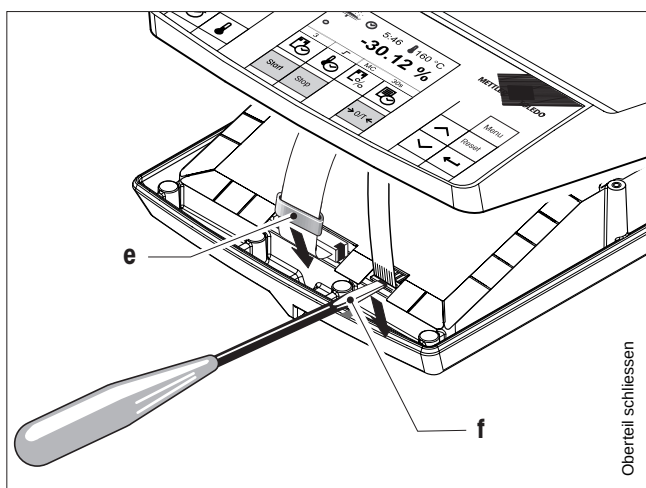
6.9 Replacing the weighing cell

1. Remove screening plate (a) and seal (b).
2. Remove housing top → 6.2.
3. Unfasten the socket connector (e) of the cell on the CPU board and pull out the cable.
4. Unscrew weighing cell (c) and remove.
5. Install new weighing cell in reverse order.
6. Replace cell EEPROM (d).
7. Install screening plate.
8. Install housing top → 6.10.
9. Load type data with LARS and adjust instrument.

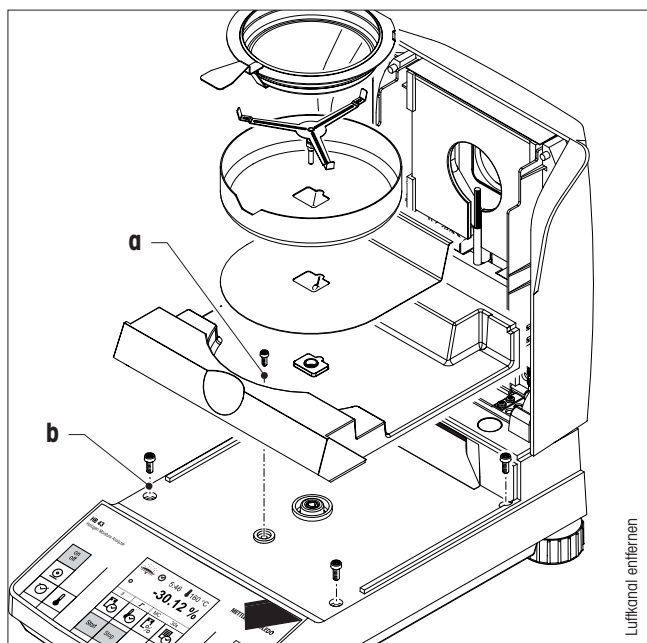


6.10 Installing the housing top

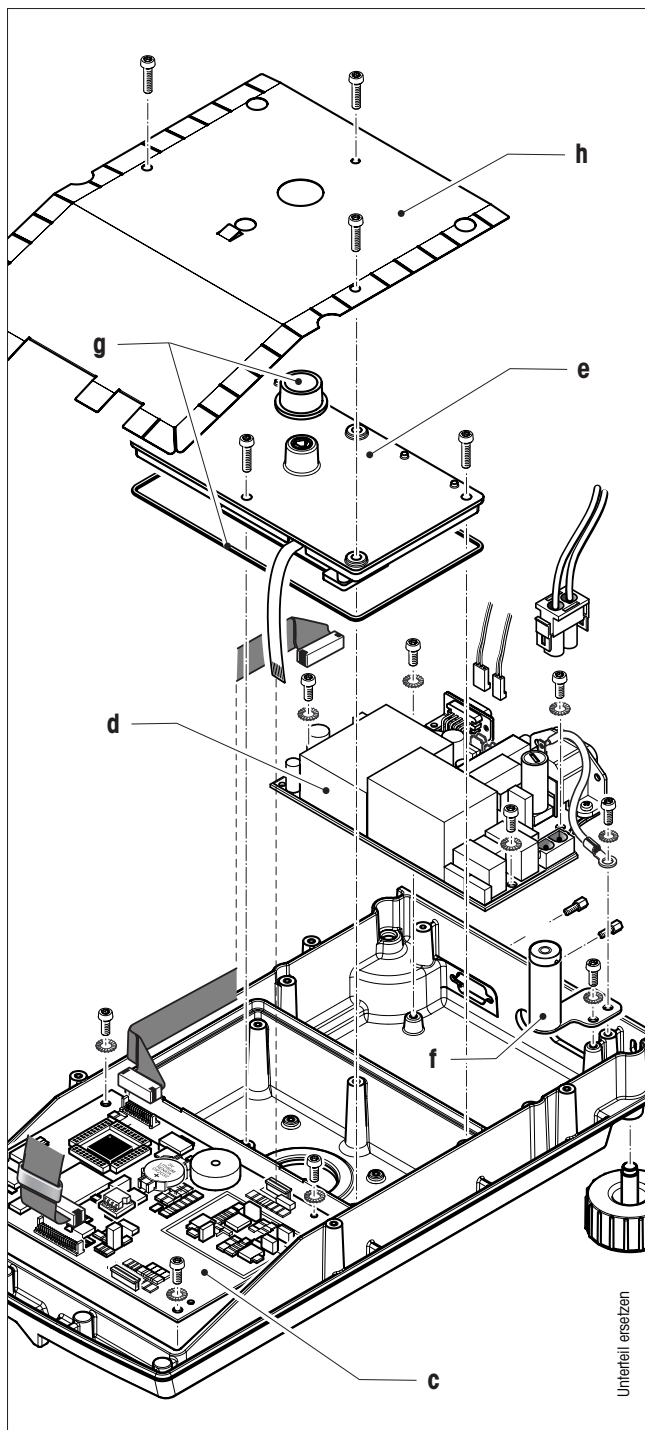
1. Lay the housing top toward the back on the opened cover of the drying unit.
2. Insert connectors for fan (a), temperature sensor (b), and halogen lamp (c).
3. Lift the housing top until it is above the level indicator (d), tilt it into the horizontal position, then over the level indicator and seal and lower it onto the housing base.



4. Plug in the cables of the display and keyboard. Position the ferrite core (e) in the opening in the screening plate. Fasten the socket connector with a screwdriver (f). Close the housing top.



5. Center the housing top on the housing base and fasten the 4 screws (b).
6. Insert the sample chamber (a) starting at rear, position at rear, then fasten with screw.
7. Place heat shield into position.
8. Insert draft shield, sample pan carrier, and sample pan handler.
9. Close cover.



6.11 Replacing the housing base



NOTE

Check for correct ground connection after components carrying power-supply voltage have been removed and reinstalled.

Check

Are the grounding screws tightly fastened with a toothed washer under their head?

Is there a low-resistance connection between the ground pin of the power supply plug and the grounded parts of the housing?

Measure the resistance from the ground pin of the power supply plug to the grounding screw on the housing.

1. Remove housing top → [6.2](#).
2. Remove the following parts from the old housing base and install them on the new one:
 - Leveling screws
 - CPU board (c) → [6.7](#).
 - Power supply board (d) → [6.8](#).
 - Weighing cell (e) → [6.9](#).
 - Level indicator (f)
 - Seals (g)
 - Screening plate (h)
3. Install housing top → [6.10](#).

Contents	Page
0. Tests and adjustments with LARS, Laboratory Repair and Service System	2
1. What are the capabilities of the service instrument, the LC-PT45 performance tester?	6-3
1.1 Comparison of ServicePac-M with LC-PT45	6-3
1.1.1 Hardware	6-3
1.1.2 Software	6-3
2. Startup procedure	6-4
2.1 Inserting batteries and paper	6-4
2.2 Preparing and attaching of balance or HG/HR Moisture Analyzer	6-4
2.3 Setting date and time	6-7
3. Operation	6-7
4.2 Changing the TDNR EPROM, program EPROM, printing unit and power line fuse	6-8
4. Maintenance	6-8
4.1 Changing the paper and ribbon	6-8
4.3 Printer test	6-10
5. Malfunctions	6-11
5.1 Interpreting the error messages	6-11
5.2 Repairing the LC-PT45	6-11
7. Technical data	6-12
6. Accessories for LC-PT45	6-12



0. Tests and adjustments with LARS LabTec Repair and Service Software

- Connect the hardlock "LARSLOCK" to the parallel port of your Laptop/PC.
- Connect the balance you have to maintain by means of a RS9–RS9 cable to the serial port of the Laptop/PC.
- Install the LARS software as follows:

Installing LARS

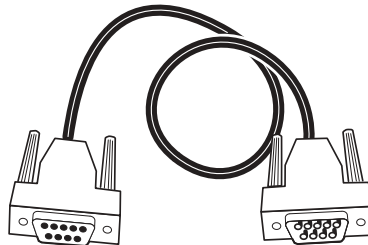
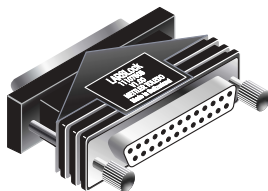


Before installing LARS from the CD ServiceExpert or the attached diskettes, check in the LMS home page <http://support.mt.com/lab> if there is a later version available.

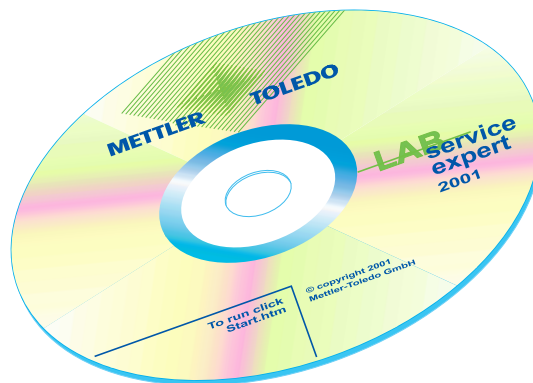
1. Insert Diskette 1 in the disk drive.
2. Under "Start" bottom choose Run... .
3. Type A:\ SETUP and click OK.
4. Follow the instructions of the installer program.



After starting LARS press F1 for Help.



Order numbers for LARS-Software, Hardlock and RS9–RS9-cable see section 11.



Remark

The test and adjustment functions of LARS are selfexplanatory. Pressing the F1-key will help you trough the program.

1. What are the capabilities of the service instrument, the LC-PT45 performance tester?

The LC-PT45 is an all-purpose service tool for use with the new balances of the B, G and R series as well as for the AM/AT/MT/BB/CM/PM/SM/J series. For the SMx balances, the old service tools will continue to be used.

When used as a simple printer, the LC-PT45 also replaces the GA45 and LC-P45.

Support of troubleshooting, e.g. by

- Printout of the date of the last service
- Information on the status of the balance board
- Status report of the adjustments performed
- Linearity test
- Cornerload test
- Testing of the temperature compensation
- Testing of the repeatability of weighings
- Testing of the mechanism of the internal calibration

Support of repairs, e.g. by

- Storage of the user configuration in the LC-PT45
- Storage of the weighing cell data in the LC-PT45
- Entry of type and measuring cell data
- Entry of serial number of the balance
- Adjustment of the temperature compensation (TC)
- 3- and 5-point linearization
- Primary calibration and calibration
- Update of the type file in the LC-PT45 from paper record, without changing the EPROM
- Control of the internal calibration weight

Documentation of the service, e.g. by

- Printout of a final report
- Printout of a report of the TC adjustment
- Printout of the measuring cell parameters

1.1 Comparison of ServicePac-M with LC-PT45

1.1.1 Hardware

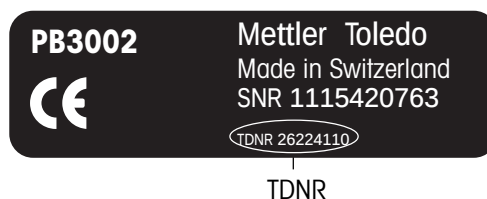
The ServicePac-M consists of the entry keypad, a type and a service cassette. The LC-PT45 comprises only the adjustment cassette (known as the service cassette) and the service interface board for the B balances. The type data are taken from the type EPROM of the LC-PT45.

1.1.2 Software

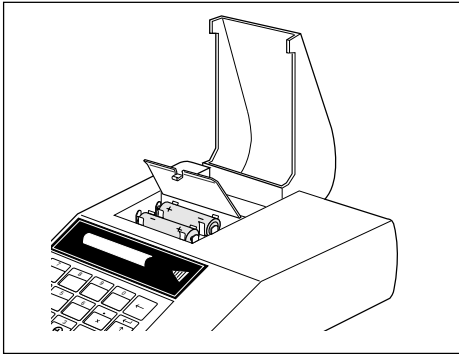
The METTLER-TOLEDO balances can be configured using software by storage of a set of type parameters. To date, this set could be stored by entry of the numeric part of the type designation, e.g. for PM4600 by the entry of 4600.

For the new balances of the B, G and R series, this configuration system has changed. There is no longer an obvious connection between type parameters and type designation.

If a balance board has to be changed, the TDNR (Type Definition Number) shown on the model plate must be entered. This loads the type parameters appropriate to the repaired balance into the EPROM.



2. Startup procedure



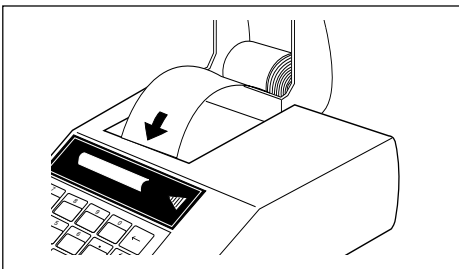
2.1 Inserting batteries and paper

Inserting batteries

Two batteries are provided and supply the clock, the memories for the variable settings and the 9 TNR supplementary arrays of the LC-PT45 when it is not connected to the power supply.

Please note: To avoid loss of any settings you may have made, attach the LC-PT45 to the power supply when changing the batteries.

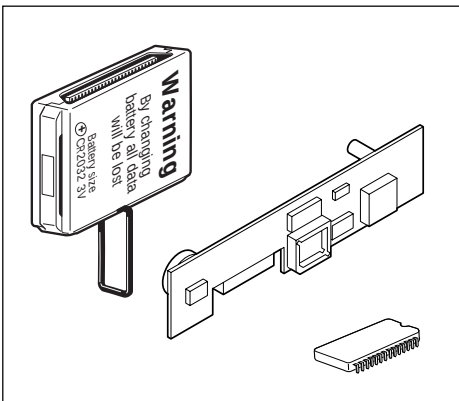
- Lift up paper cover and pull paper backward out of the printing unit
- Open battery compartment and insert batteries



Inserting paper

- Feed paper through the slot in the printing unit in the direction of the arrow
- Switch on printer (toggle switch at right rear; the number of the software version will be printed out automatically)

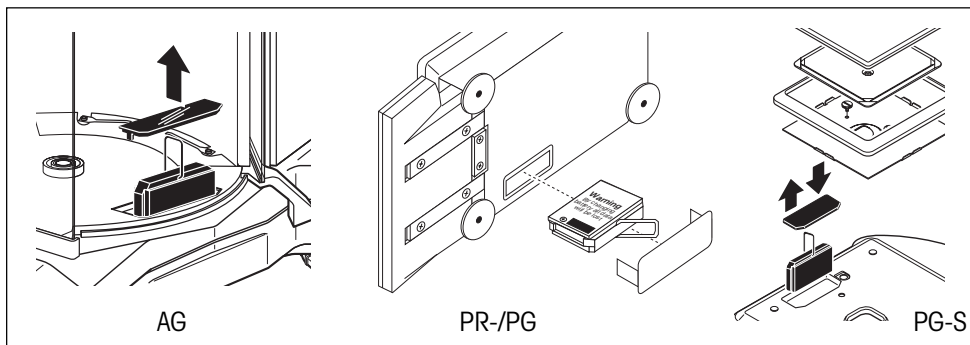
-  Press repeatedly until sufficient paper has been fed in
(  if balance already attached)



2.2 Preparing and attaching of balance or HG/HR Moisture Analyzer

Preparing the balance

- Disconnect balance from power supply
- G, R and AM/CM/PM/SM/J balances: Insertion of the appropriate service cassette in place of the program cassette of the balance.
- Balances of the B series, except B-S: Installation of the service interface board (possibly in place of the interface board "LC-B Option", if necessary installation of the LocalCAN port). B-S: possibly mounting the RS232 interface.
- AT/MT balances: Insertion of the type cassette
- BB balances: Insertion of the adjustment and type EPROM

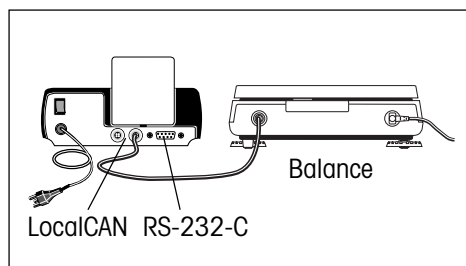


Inserting service cassette for AG-, PR-/PG- and PG-S balances.

Remark: for PG und PG-S balances the program cassette is missing, because the balance program is placed in the OS-EPROM.

Preparing HG/HR Moisture Analyzer

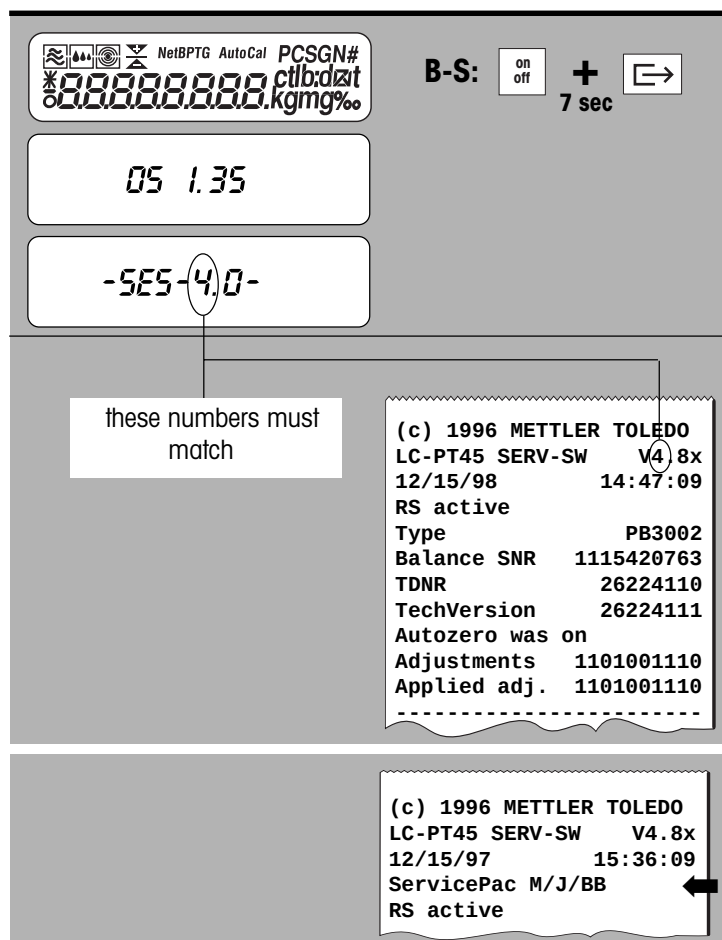
No preparation needed as the service software is integrated in the program EPROM of the HG/HR.



Attaching balance or HG/HR

- Switch off printer
- Plug the appropriate cable of those enclosed into the balance or HG/HR and the LC-PT45 (the balances of the B, G and R series communicate via the RS-232-C or LocalCAN interface, the AM/BB/AT/CM/PM/SM/J balances via the RS-232-C)
- Setting the interface parameters
 - Balances of the B, G and R series with LocalCAN and HG/HR: no settings necessary
 - Balances with RS-232-C: Set balance to factory setting! The interface parameters then match.

Establishing connection balance – LC-PT45



The screenshot shows the LC-PT45 service menu. At the top, it displays 'NetBPTG AutoCal PCSGN#', a barcode, and 'ctlb:dzt 0.00000000.kgmg%'. Below this, it shows '05 1.35' and '-SES-4.0-'. A callout box points to the '-SES-4.0-' value, stating 'these numbers must match'. The main menu lists various balance parameters: (c) 1996 METTLER TOLEDO, LC-PT45 SERV-SW V4.8x, 12/15/98 14:47:09, RS active, Type PB3002, Balance SNR 1115420763, TDNR 26224110, TechVersion 26224111, Autozero was on, Adjustments 1101001110, and Applied adj. 1101001110. A second screen at the bottom shows similar information but with a different date and time: 12/15/97 15:36:09, and a ServicePac M/J/BB option.

Connect the balance to the power supply; B-S balances: enter service mode (from "off"). The balance performs a display test,

then shows the version of its operating software (OS)

and its service software (SES).

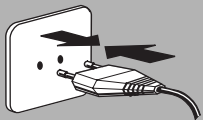
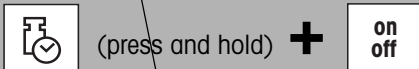
Switch on the LC-PT45.

With B/G/R balances, it prints the

- version of the LC-PT45 service software
- date and time of the LC-PT45
- status of the LocalCAN/RS interface
- balance type
- SNR and TDNR of the balance
- information from *Func 33* ➔ page 7-34:
 - status of the balance board
 - Auto Zero before service
 - executed balance adjustments
 - required balance adjustments

and with AM/BB/AT/MT/CM/PM/SM/J balances also the status message that the adjustment is controlled by the ServicePac-M software and therefore not all LC-PT45 functions are available.

Making connection HG/HR Moisture Analyzer - LC-PT45

	Disconnect HG/HR from the power supply and connect it again
	Wait until „OFF“ appears
	Switch on HG/HR
	The Moisture Analyzer shows the version of its program (OS/Application/Service)
	Switch off HG/HR
	Select service mode
 	Acknowledgement that the service mode is active
HG/HR = 1.000 -> LC-PT45 > 2.90 <pre> --- METTLER TOLEDO --- LC-PT45 SERV-SW V4.8x 12/15/97 14:47:09 CAN active ----- HG/HR SERVICE-SW V1.00 </pre>	Switch on the LC-PT45 it prints out the – version of the LC-PT45 service software – date + time of the LC-PT45 – status of the LocalCAN/RS interface – version of the HG/HR service software

2.3 Setting date and time

Setting or changing date and time to local time.

Operation of the LC-PT45 is described in detail in the following subsection 3. To enter the date and time, simply follow the instructions below.

Setting the date (US or EURO version) and time (24-hour format)

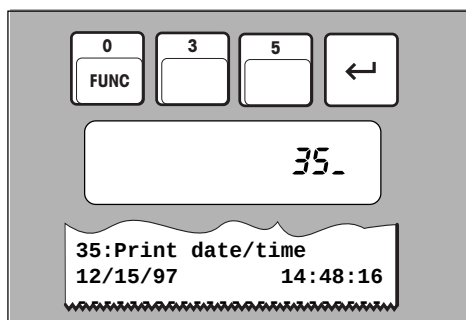
	Selection of date and time setting 1)
	Entry of the date, e.g. 12-15-97 (US format, month-day-year) 2) or 15.12.97 (EURO format, day.month.year)
	Ending the date setting
	Entry of the current time, e.g. 14.48.05 (hours.minutes.seconds)
	Ending the date and time setting (date and time are also automatically updated in the balance)

Printing out date and time

	Selection of the date and time printout
	Printout in US format (corresponding to the format of the entry)

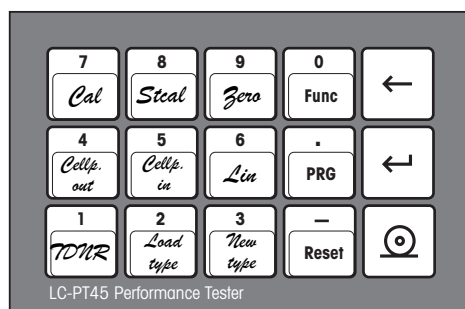
- 1) The input process can be checked in the balance display. Correction of wrong entry: 
(Function 34 can not be terminated as  is needed for the date entry)

- 2) Please note: Separation of the numbers for EURO by ".", for US by "-"** (B-S balances: only "." possible)



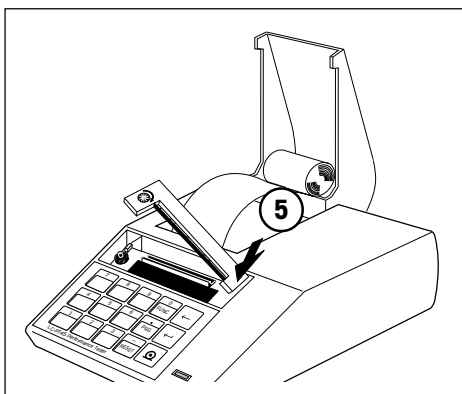
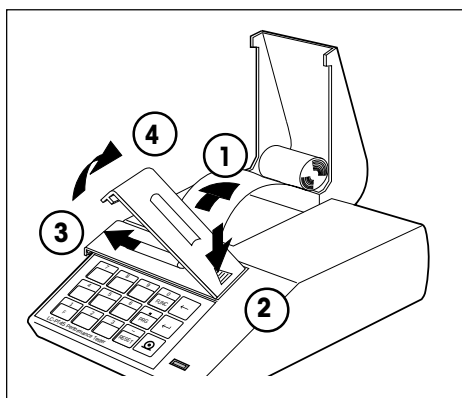
3. Operation

- Entry of the command, e.g. Func 35, using the LC-PT45 keypad
- Check on the current entry in the balance display
- Printout of result or error message on the printer



The numeric keys all have multiple assignments and are thus not inscribed with their functions. The functions most important for the user can be written in directly by hand, as the adjacent example shows.

The functions are described in more detail in the following section (→ 7. Adjustment).



4. Maintenance

4.1 Changing the paper and ribbon

Changing paper

- Inserting the new paper roll is described on page 6-4, normal commercially available paper is used. Mettler order number → page 6-12.

Changing ribbon

Mettler order number → page 6-12.

- 1 Pull paper out of printing unit
- 2..4 Remove ribbon cover
- 5 Remove ribbon cartridge
- Insert new ribbon (if need be, take up slack with tensioning wheel) and refit ribbon cover
- Insert paper and feed through slit in the printing unit as far as it will go
- Press

0
FUNC

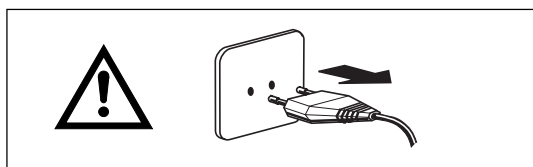
←

 repeatedly until sufficient paper has been fed in

4.2 Changing the TDNR EPROM, program EPROM, printing unit and power line fuse

The type definition number TDNR determines the balance type, i.e. weighing range, readability, DeltaRange, etc. The type definition numbers with their assigned type parameters are stored in the type EPROM of the LC-PT45. Should a new series of balances be introduced, this EPROM must be replaced.

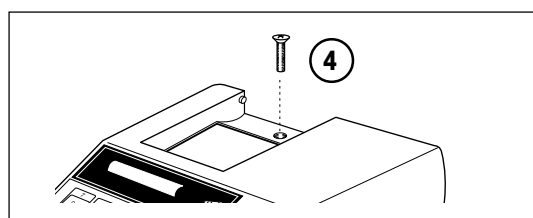
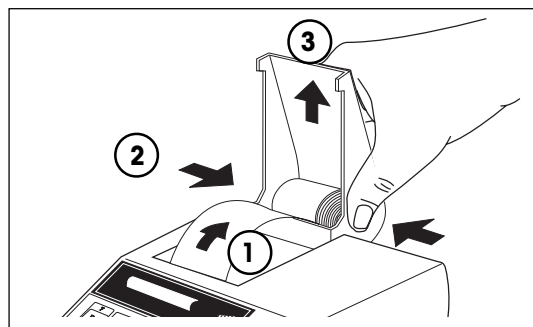
When the LC-PT45 program (operating system) is updated, the program EPROM must be replaced.



Cautionary note

To change the type EPROM, the printing unit or power line fuse, the housing must be opened.

It is essential to disconnect the power plug before opening the printing unit!

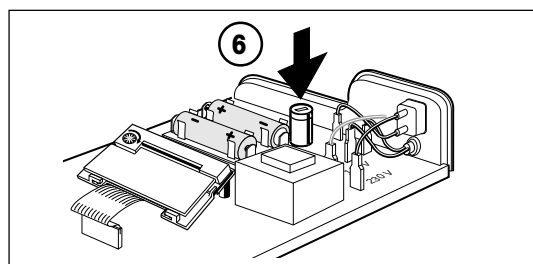
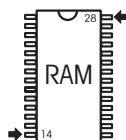
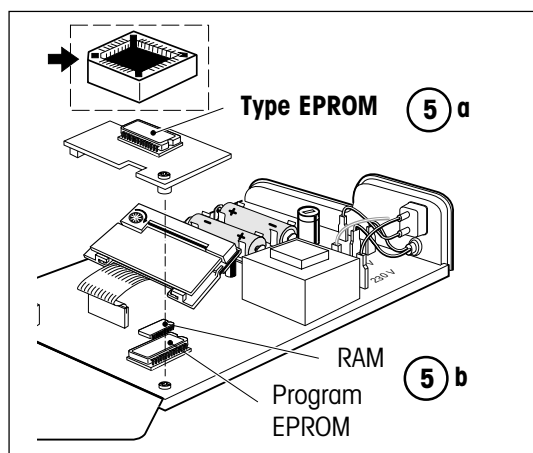


Changing the printing unit

The printing unit can be replaced. Order number ➔ page 6-12. **The instructions for replacement are enclosed with the printing unit.**

Changing the type EPROM, program EPROM or power line fuse

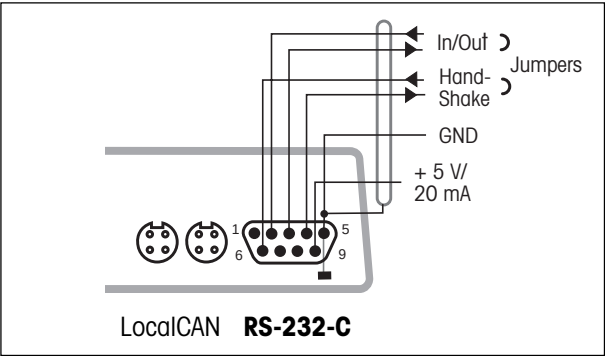
- 1 Pull paper from printing unit and take out roll
- 2 Press paper cover together gently until it disengages from the printer housing
- 3 Remove paper cover
- 4 Unscrew housing screw
- Carefully open housing (**pay attention to ribbon cable connection to bottom housing**)
- 5a Change type EPROM
- 5b Change program EPROM
 - I. Dissipate static charges: Touch LocalCAN socket (at rear of LC-PT45)!
 - II. Remove one of the two batteries
 - III. Remove program EPROM
 - IV. Short circuit **RAM** contacts 14 and 28 for 5 seconds (see illustration)
 - V. Insert new program EPROM
 - VI. Replace battery
 - VII. Reset date and time (➔ page 6-7)



- 6 Changing fuse: 230 V: slow-blow 100 mA, 250 V
115 V: slow-blow 200 mA, 250 V
- Reconnect ribbon cable (keypad) of bottom housing
- Engage top housing in bottom housing at front, close and screw tight.

4.3 Printer test

The LC-PT45 is equipped with a self-test which automatically tests the TDNR EPROM, prints out the character set and checks the RS-232 and CAN interface. This allows better identification of a possible malfunction in the printer and interfaces.



Preparing for the printer test

- Attach balance
- If the RS-232-C interface also has to be tested, a shorting socket-contact must be plugged into this interface before the start of the test. It must have 2 jumpers, one between pins 2-3 and one between pins 4-6.

		Plug shorting socket-contact into RS-232-C interface
		Selection and start of printer test
		Cyclic repetition of the test until Reset is pressed
		Activation of interface test
		Remove shorting socket-contact
		Termination of printer test: Switch off LC-PT45!

5. Malfunctions

The cause of a malfunction can lie with the balance or the LC-PT45. The following Table shows only the simplest malfunctions which could appear with the LC-PT45. Additional error messages and their interpretation ➔ Section 7, subsection 3.

5.1 Interpreting the error messages

Malfunction/Message	Possible cause	Rectification
Printout unreadable	• Ribbon worn/entangled • Service life of printing unit at an end	• Change/tension ribbon • Change printing unit
Green pilot lamp does not light up	• No power, fuse defective • Interface blocked	• Switch on power switch, change fuse • Switch off power switch for 5 seconds then switch on again
Green pilot lamp always on	• Keypad blocked (e.g. during calibration)	
Green pilot lamp flashes slowly	• Balance waiting for numeric input	
Green pilot lamp flashes rapidly	• normal operation	
---- Interruption ----	• Connection cable not attached or older balance (unidir. interface)	• Check handshake, initiate print command with print key of balance
- Transmission error -	• Interface parameters of LC-PT45 and balance do not match	• Set interface parameters (only for balances without LocalCAN)
- Battery discharged -	• Batteries for clock and settings discharged	• Change batteries; message repeated approx. every 2 hours

5.2 Repairing the LC-PT45

➔ section 9, subsection 1.5.

6. Accessories for LC-PT45

Accessory	Order number/Type	Standard equipment
Paper roll, set of 5	72456	2
Ribbon cartridge, black, minimum order quantity 2	65975	1
Batteries, 2 x UM3/AA (1.5 V)	commercially available	2
Connection cable LC-PT45-balance, LocalCAN	LC-LC1	1
Connection cable LC-PT45-balance, RS-232-C (MiniMettler)	229029	1
Spare printing unit	600133	—
Power fuse 230 V (slow-blow 100 mA, 250 V) + 115 V (slow-blow 200 mA, 250 V)	commercially available	—

7. Technical data

Printer

Printing unit	dot matrix printer 5x9 dots, 24-character line length, Epson/IBM character table No. 4
Printing speed	faster than 1 line per second
Ribbon cartridge	exchangeable, black, service life 200'000 characters
Paper roll	normal paper, 58 x Δ 51 mm, integrated in housing, commercial size
Printer functions	➔ section 7, Adjustment

Clock

date representation EURO or US format, leap year taken into account

Interfaces

Transmission parameters LocalCAN	LocalCAN and RS-232-C bidirectional fixed setting
Transmission parameters RS-232-C	transmission rate 1200, 2400*, 4800, 9600 baud parity even*, odd, no character length 7 bit*, 8 bit bidirectional handshake: off*, xon/xoff, hardware 128 characters * = factory setting

Mechanical part

Temperature range/humidity	0...40°C/15...85% rh, noncondensing
Approvals	EN 60950 (equivalent to UL 1950), CSA, SEV

Power supply

Voltage, power consumption/frequency	100 ... 120 V, 140 mA or 220 ... 240 V, 70 mA/50 ... 60 Hz
--------------------------------------	--

Dimensions/weight

w x d x h = 157 x 210 x 85 mm/net 1.5 kg (incl. paper roll)

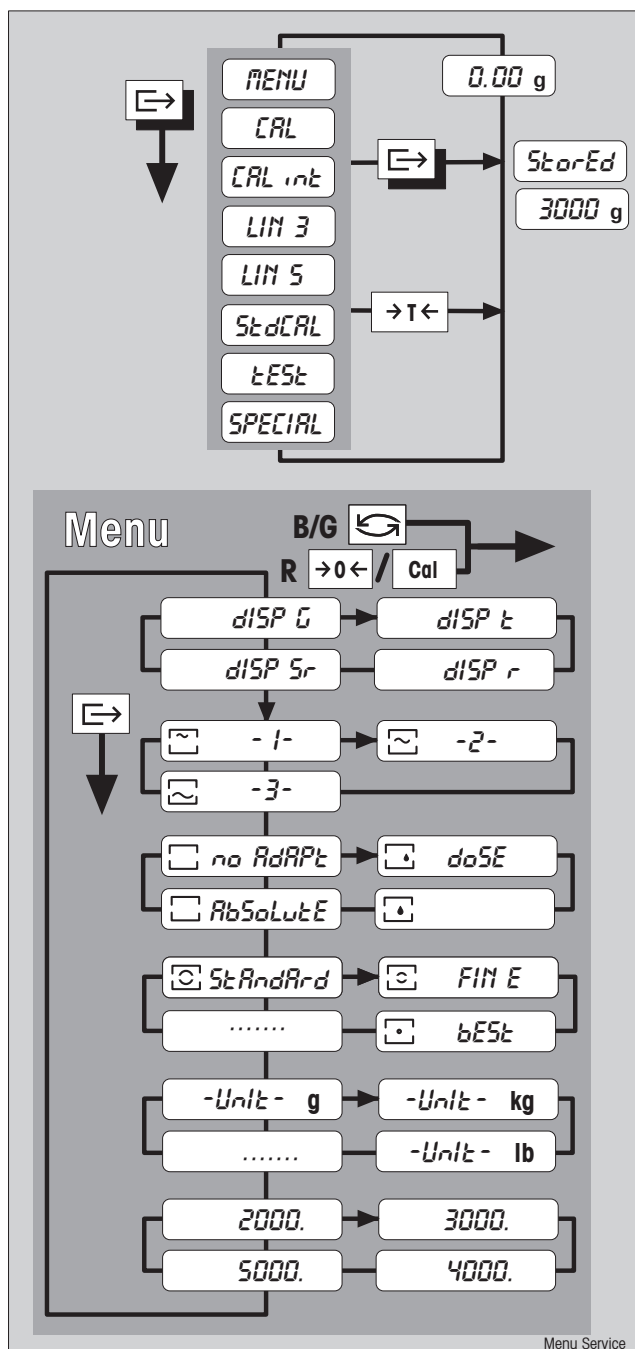
Contents	Page
1. Adjusting the balance and the HG/HR Moisture Analyzer	7-2
1.1 Preparing the balance and the HG/HR Moisture Analyzer	7-2
1.1.1 Settings in the menu of the balance	7-2
1.1.2 Settings in the menu of the Moisture Analyzer	7-3
1.2 Changing the balance board or measuring cell, updating the balance type parameters	7-4
1.2.1 Purpose of the type and cell parameters	7-4
1.2.2 Changing the balance board	7-4
1.2.3 Changing the measuring cell	7-5
1.2.4 Updating the balance type parameters	7-5
1.3 Replacement of CPU board or weighing cell in HG/HR Moisture Analyzer	7-5
2. Testing and adjusting the balance or HR/HG Moisture Analyzer using the LC-PT45	7-6
2.1 List of test and adjustment functions (balance and LC-PT45 service SW version: 4.xx)	7-7
2.1.1 General: Terminating functions or clearing entries, paper feed	7-9
2.2 Use of the test and adjustment functions	7-11
2.3 Adjustment of the AM/BB/CM/PM/SM/J balances	7-45
2.4 Adjustment of the AT/MT balances	7-46
2.5 Adjustment of the HG/HR Moisture Analyzer	7-48
	Blank pages 49-60
3. Error messages on LC-PT45 and balance/moisture analyzer	7-61
	Blank pages 65-70
4. Adjusting the HB Moisture Analyzer	7-71

1. Adjusting the balance and the HG/HR Moisture Analyzer

This section shows the **electronic** adjustment and testing of the device. It must first be checked **mechanically** and properly adjusted.

1.1 Preparing the balance and the HG/HR Moisture Analyzer

- Visual inspection of the balance and if need be troubleshooting ➔ sections 3 and 4.
- Repair and adjustment of the measuring cell, e.g. cornerload ➔ "Measuring cells" binder (service manual 705117).
- Insertion of the service cassette or the service interface board or entry into the service mode and attachment to LC-PT45 service instrument ➔ section 6, page 6-4, 2.2 of this service manual.



1.1.1 Settings in the menu of the balance

Menu ➔ see below and 7-3, specific service functions

CAL ➔ service calibration, **Func 7**, page 7-21

CAL int ➔ internal (automatic) calibration

LIN ➔ 3-point linearization, **Func 6**, 7-17

LIN ➔ 5-point linearization, page 7-20

StdCAL ➔ Standard calibration, **Func 8**, page 7-22

TEST ➔ TC test, page 7-26

SPECIAL: Entry into special functions

➔ T ➔ Return to the weighing mode without saving

Selection of the function within a menu option, with B/G balances using , with new R balances using , with older balances using 

Switch display to show

G: weight values, t: balance temperature

Sr, Service resolution, r: dead load (preload) in g.

Set vibration adapter

Set weighing process adapter

Set repeatability (with G and R balances)

Select weight unit

Change calibration weight value

Notes on use of MENU/TEST/SPECIAL

The service cassette or the service interface board contains the service program and a special balance program. In its menu, the display can also be switched to show additional data useful for the service.

It also contains the parts TEST and SPECIAL.



- Entry into MENU/TEST/SPECIAL: Press and hold key until the desired display appears.

StorEd
3000.00 g

- Storage of the selected settings: Press and hold key. StorEd appears as acknowledgement and then the value of the calibration weight currently set is shown shortly, e.g. 3000 g.



or



Return to the weighing mode without saving



Switching in the MENU from one menu option to the next by briefly pressing the key

Switching the display

disp G

Switches the display to show weight values

disp t

Switches the display to show the balance temperature in °C (if temperature prescaled; test with Func 33)

disp r

Switches the display to show the dead load (preload r "ramp") in g;

Example of display (PB3002DR)

Balance unloaded: 500.37 g, loading up to stop +: 4000.19 g, underload down to stop -: 6.28 g

disp Sr

Switches the display to show the weight value with 2x better resolution Sr (Service resolution; the calibration weight value is set to the maximum!

Balances with 3 or more decimal places: the weight value is shown in mg!

AG balances: Sr must be selected for the cornerload adjustment.

Changing calibration weight value

If desired, the value of the calibration weight can be changed. However, on completion of the service work the original calibration weight for the balance in question must be set (*Func 10/11*) unless it is intended to use the changed calibration weight value in normal operation.

1.1.2 Settings in the menu of the Moisture Analyzer

In the service mode, the menu is not accessible (only the 4 keys  ,  ,  and  are effective).

1.2 Changing the balance board or measuring cell, updating the balance type parameters

With the following basic knowledge, it is later possible to discern the required service steps solely by means of the adjustment diagram ➡ page [7-6](#) and the list of the test and adjustment functions ➡ page [7-7](#)

Func XX is used to indicate the appropriate test or adjustment function of the LC-PT45, which is described in detail later ➡ page [7-7](#) ff.

1.2.1 Purpose of the type and cell parameters

The hardware of these METTLER TOLEDO balances is virtually the same. The balances are configured by software in production to produce the desired types. For example, a balance with a weighing range of 3100 g and 10 mg resolution. In the configuration, a set of type and a set of cell parameters is loaded in the EAROM of the balance board (B-S balances: the cell parameters are located in a plug-in EAROM).

The type parameters define the type of the balance, weighing range, readability and fine range. The cell parameters are obtained in the temperature adjustment of the balance in the factory and define temperature compensation and prescaling of the weighing signal.

1.2.2 Changing the balance board

Important information before changing the balance board

If it is not certain whether the balance board is really faulty, it can be replaced by a new spare part board by way of a trial. On the original balance board installed in the factory, the TDNR could until end of 1998 not be overwritten. This is thus an exception to the rule that original and spare parts are identical and the spare part board has been so designed that here the TDNR can be overwritten at any time.

If the balance board is faulty and has to be changed, the type and cell parameters appropriate to the balance have to be reloaded following board replacement.

Changing the balance board and loading the cell parameters

B-S balances: the cell data EAROM must be transferred from the faulty balance board. **Other balances:** If only part of the balance board is faulty, before it is replaced the cell parameters can be stored in the LC-PT45 with *Func 24* and then reloaded with *Func 25* after the balance board has been changed. (As a check, the cell data should be printed out after reloading using *Func 4* and compared with the cell parameter strip. With B balances this can be found in the housing below the display, with G and R balances next to the program cassette. The ****Temp Comp**** data must be identical.)

If the entire balance board is defective, after it has been replaced the parameters must be keyed into the LC-PT45 from the cell parameter strip by hand using *Func 5* and *55* or possibly *Func 27*.

Loading the type parameters

After replacement of the balance board, the type parameters must be reloaded. However, before replacement their version must be determined, whether, e.g. they have been updated after a software change. If the fault of the balance board allows, the TDNR can be determined by means of *Func 33*.

If *Func 33* can not be executed, the cell parameter strip must be checked (the B-S balances do no more have a cell parameter strip). If the TDNR has changed compared with the model plate, it has been entered here by hand. In the absence of an entry, the TDNR can be taken directly from the model plate. If the model plate is missed or for AM/BB/CM/PM/SM/J balances, the TDNR can be taken from a list ➡ page [1-39](#).

The TDNR must now be entered using *Func 1* after replacement of the balance board and the associated type data loaded from the LC-PT45 in the EAROM of the balance board by means of *Func 2*.

1.2.3 Changing the measuring cell

New spare part measuring cell

A new spare part measuring cell is supplied with the parameter strip, B-S balances with the cell data EAROM. If these data are keyed in using *Func 5* and *Func 55*, respectively plugged in the cell data EAROM with B-S balances, a TC adjustment of the balance is not needed. Only a linearization using *Func 6* or *62* (only the function corresponding to the balance type is possible) and the

normal calibration in service with Func 7 (with balances with internal calibration weight first the primary calibration with Func 8) are necessary.

Repaired measuring cells

The temperature compensation system of the balance will probably have to be adjusted to match the measuring cell. However, the TC adjustment is very time consuming. The approximate temperature coefficient of the balance can be determined using the TEST function in the menu of the service cassette (➡ page 7-2) and the necessity of a TC adjustment judged within a short space of time.

1.2.4 Updating the balance type parameters

Important information before updating the type parameters

If a technical improvement has been made, METTLER TOLEDO can change the type parameters. This also changes the associated TDNR (usually only its 8th digit).

Upgrades of balances (downloading type parameters of a high resolution balance to a low resolution balance) were generally impossible until the end of 1998. To simplify service work, temporary upgrades – during service work – are now possible: the LC-PT45 prints before downloading the type parameters "CAUTION: Illegal action!" When service work is completed, the balance must be delivered again with its original type parameters. Otherwise METTLER TOLEDO will take legal steps in account. Note: the configuration of each delivered balance is stored in a data bank.

Before new type parameters are loaded, it is often necessary to establish what the old ones were. The type parameters can be identified by the allocated TDNR. Normally, this is the TDNR on the model plate. But as a consequence of updates, other type parameters can be loaded. Func 33 "Balance Info" can be used to print out the TDNR corresponding to the type parameters.

What is the version of the type parameters in the EAROM of the balance? Determination of the valid TDNR

Func 33 prints out one of 3 status messages of the balance board, depending on the circumstances.

"Techversion26424113", for example, means that the type parameters under TDNR 26424110 have been overwritten by the type parameters of technical version 3 (8th digit of the TDNR). The valid TDNR is thus here 26424113.

"Spareboard" means that the original balance board has been replaced by a spare part balance board.

"CAUTION: Typedef modified" means that METTLER TOLEDO has changed the type parameters, and that the type parameters of the balance board are no more up to date. They have to be updated by means of Func 1 and Func 2.

Loading the type parameters of the new technical version

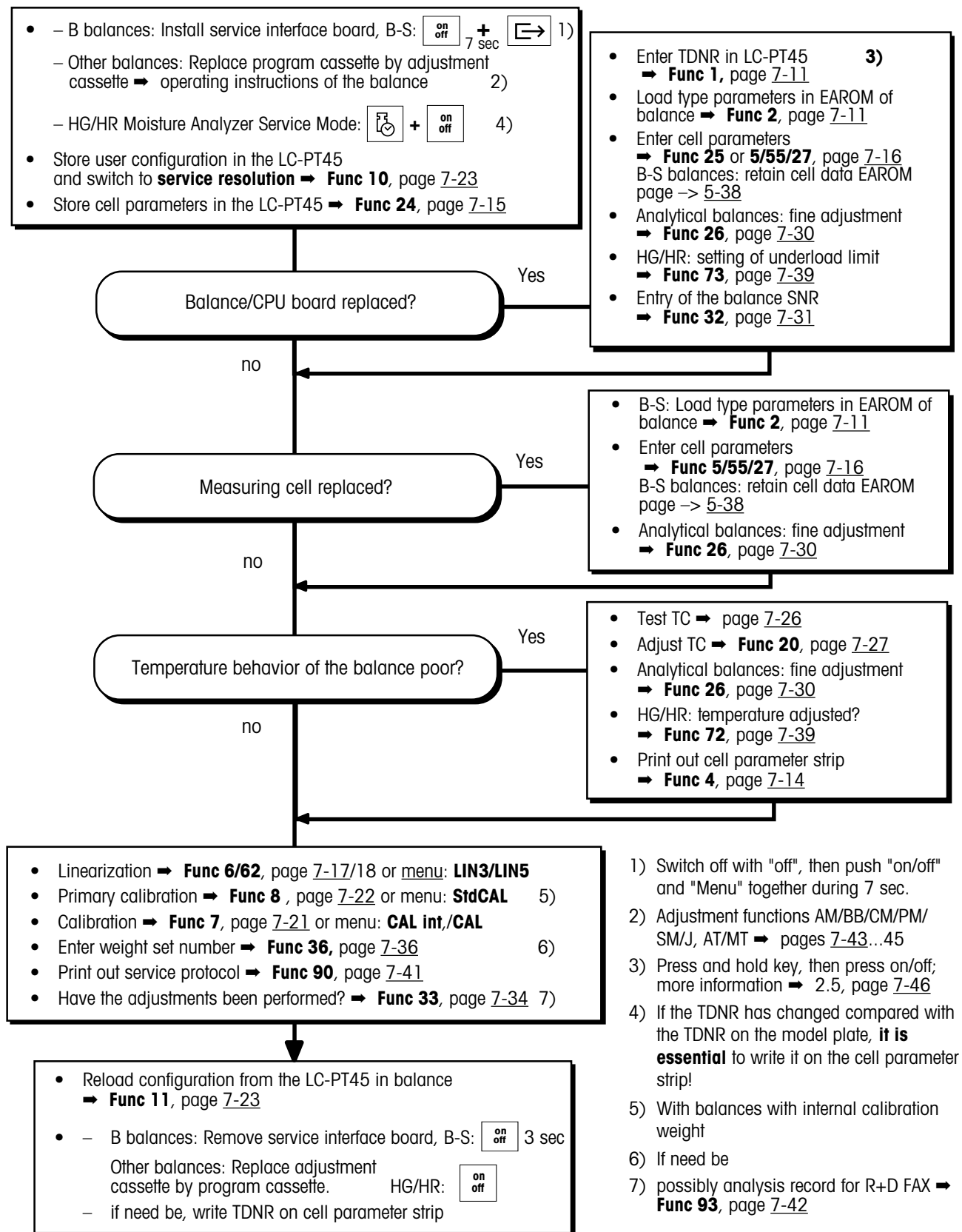
The valid TDNR determined beforehand must be entered using Func 1 and the associated type data loaded from the LC-PT45 in the EAROM of the balance board by means of Func 2.

1.3 Replacement of CPU board or weighing cell in HG/HR Moisture Analyzer

The type parameters are located in the program EPROM, the cell parameters in the EAROM on the CPU board. On replacement of the CPU board, the program EPROM must be transferred from the old CPU board. The cell parameters must be typed in from the parameter strip (affixed to the CPU screening plate).

After replacement of the weighing cell, the new cell parameters must be typed in from the enclosed cell parameter strip.

2. Testing and adjusting the balance using the LC-PT45 (detailed information → page 7-4)



2.1 List of test and adjustment functions (balance and LC-PT45 service SW version: 4.89)

SH*	1: Input TDNR , entry of type definition number in the LC-PT45), for selection of the type parameters	7-10
SH*	2: Load typedef , loading of the type parameters in the EAROM of the balance	7-11
	3: Input new typedef , supplementing the TDNR file by keying new type parameter sets from update list into supplementary array	7-13
	40: Check typedef-array , check on the supplementary array added to the TDNR EPROM	7-14
H*	4: Output cellparameters , printout of the parameters of the measuring cell after performing a TC adjustment	7-14
H	24: Save cellparameters , copying the cell parameters to LC-PT45	7-15
H	25: Load cellparameters , retrieve cell parameters from LC-PT45 and reload in balance	7-15
H*	55: Input TC-cellpars , entry of the TC measuring cell parameters from cell parameter strip	7-16
H	5: Inp presc.cellpars , entry of the prescaling measuring cell parameters from cell parameter strip	7-16
	27: Input FA/Add.cellpars , entry of the fine adjustment/additional measuring cell param. from cell parameter strip	7-16
SH*	6: Linearization , 3-point linearization	7-17
	62: Linearization 5-point , 5-point linearization	7-18
	LIN 5 , 5-point linearization (selection of the function LIN 5 in the menu)	7-20
H*	7: Service calibration , service calibration; adjustment of weighing range	7-21
S*	8: Standard calibration , primary calibration of the balance; the internal calibration weight is calibrated	7-22
H	10: Save user-config. , saving the user configuration of the balance in the LC-PT45 before adjustment	7-23
SH*	9: Zero , new determination of the switch-on zero.	7-23
H	11: Re-load user-config. , configuring the balance to configuration before adjustment	7-23
SH*	13: Repro / statistics , test of reproducibility of the weighing result	7-24
SH*	15: Linearity-test , check on the linearity deviation of the balance	7-25
SH*	14: Cornerload-test , check on the change in the balance display when the load is moved	7-25
	TC-Adjustment-Test , measurement of the temperature coefficient of the balance (select TEST in the menu)	7-26
*	20: TC-Adjustment , adjustment of the temperature compensation system of the balance	7-27
	26: Fine adjustment , fine adjustment of analytical balances	7-30
SH*	32: Input SNR , entry of the balance serial number SNR after replacement of the balance/CPU board	7-31
SH*	30: Print function list , printout of a list of available functions of the LC-PT45	7-31
H*	33: Balance info , printout of balance type, SNR, TDNR (factory type definition), HW and adjustment status	7-34
SH*	34: Date/time-adjustment , setting or changing the date/time to local time	6-7
SH*	35: Print date/time , print out date and time	6-7
SH*	37: Print balance temp. , printout of the balance temperature	7-36
SH	39: Write servicedate , overwrite old service date after service calibration, without performing Func 90/91	7-36
*	41: Calibr. weight down , lower internal calibration weight	7-37
SH*	36: Input weight set no. , entry of the weight set number for the printout in the service report	7-36
*	42: Calibr. weight up , raise internal calibration weight	7-37
H	70: Print auxiliary funcs , printout of auxiliary functions	7-38
	43: Calibr. drive-test , test of the mechanism of the internal calibration	7-37
*	60: Printer selftest , test of the printer and the interfaces.	6-10
SH	90: Service Protocol , printout of a report on completion of the service work	7-43
SH	91: Misc. informations , printout of the header of the service protocol	7-44
H*	93: Balance analyzer , printout of a coded analysis record for FAX help from R+D	7-44

S also usable with B-S-balances, H also with Halogen Moisture Analyzers

* also usable with AM/BB/CM/PM/SM/J and AT/MT balances (Func 1,2,6,15,37 and 93 not for AT/MT)

Continuation (AM/BB/CM/PM/SM/J, AT/MT balances and moisture analyzers) over-leaf ➔

Adjustment AM/BB/CM/PM/SM/J balances

21:	TC-adj.: lower temp , replacement key function ServicePac-M	7-45
22:	TC-adj.: medium temp , replacement key function ServicePac-M	7-45
23:	TC-adj.: higher temp , replacement key function ServicePac-M	7-45
50:	Calibr. resistor , replacement key function ServicePac-M (test calibration resistor)	7-45

Adjustment AT/MT balances

38:	Extended Identific. , input of balance ID (= IDX via interface)	7-33
50:	Calibr. resistor , replacement key function ServicePac-M (start fine adjustment)	7-46
51:	Door , replacement key function ServicePac-M	7-46
52:	EAROM check , replacement key function ServicePac-M	7-46
53:	Type entry , replacement key function ServicePac-M	7-46
54:	Family select , replacement key function ServicePac-M	7-46

Functions for AM/BB/CM/PM/SM/J- balances

19:	Clear EAROM , Clear copy of balance EAROM in the LC-PT45	7-47
31:	List mode , printout of balance settings in the menu setting "List"	7-47

Functions for HG/HR Moisture Analyzers

71:	Clear temp.cal. data , clearing the temperature adjustment data	7-38
72:	Temp. calibration test , output of date and time of the last temperature adjustment of the dryer unit.	7-38
73:	Set underload limit , define the underload limit of the weighing cell	7-39
74:	Clear temp.cal.cnt. , Clearing the counter for the number of temperature adjustments	7-39
75:	Clear wgt.cal.cnt. , Clearing the counter for the number of weight adjustments	7-39
76:	Test Heater , test function of <u>manually</u> resettable temperature controller	7-40
79:	Statistics , printout of a list of typical operating data	7-42

2.1.1 General

Termination of functions or clearing of entries



- Termination of a function *in the LC-PT45*
- Manual unblocking of the LC-PT45 on completion of an adjustment (during the balance adjustments, the keypad is blocked, recognizable by the LC-PT45 status display being continuously lit up. Some older balances do not report the completion of certain adjustments and thus do not enable the keypad.)



- Termination of a function in the HG/HR moisture analyzer (**Reset key of HG/HR!**)



Termination of a function *in the balance* (e.g. linearization)
(Confirmation of the termination within 5 seconds following "Stop")



oder Termination of a function in the balance



Clearing of keypad entries in the LC-PT45 character by character backward

Paper feed

On completion of a function, the paper is advanced automatically. If need be, it can also be advanced manually.



Advance paper one line (effective only if balance attached)



Advance paper three lines (effective only if balance not attached)

The LC-PT45 no longer "responds", what next?

Switch power switch at rear of LC-PT45 off, wait approx. 5 seconds and then switch on again.

Printing out weight value of balance

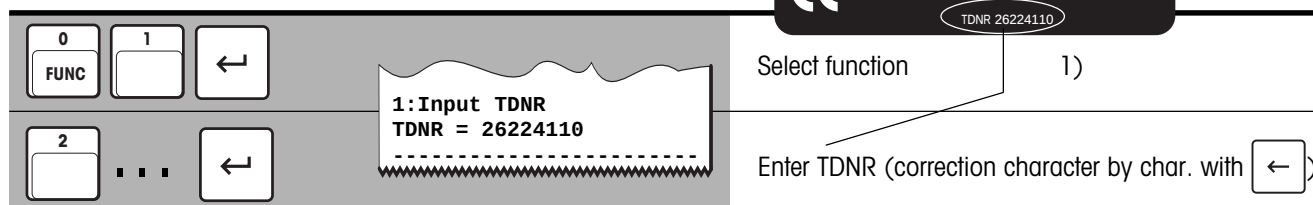


The LC-PT45 prints out the current weighing result.

2.2 Use of the test and adjustment functions

SH * 1: Input TDNR

Entry of type definition number in the LC-PT45,
for selection of the type parameters for function 2



1) Note

After replacement of the balance board or following an update of a type parameter set, the type data must be reloaded. The according TDNR must then before be entered. While it can usually be read from the model plate, it is possible that it does not match the loaded type parameters. In the latter case, the valid TDNR is then given by the manual entry on the cell parameter strip. See also ➔ page 7-4. If the model plate is missing or for AM/BB/CM/PM/SM/J balances the TDNR can be taken from a list ➔ page 1-39.

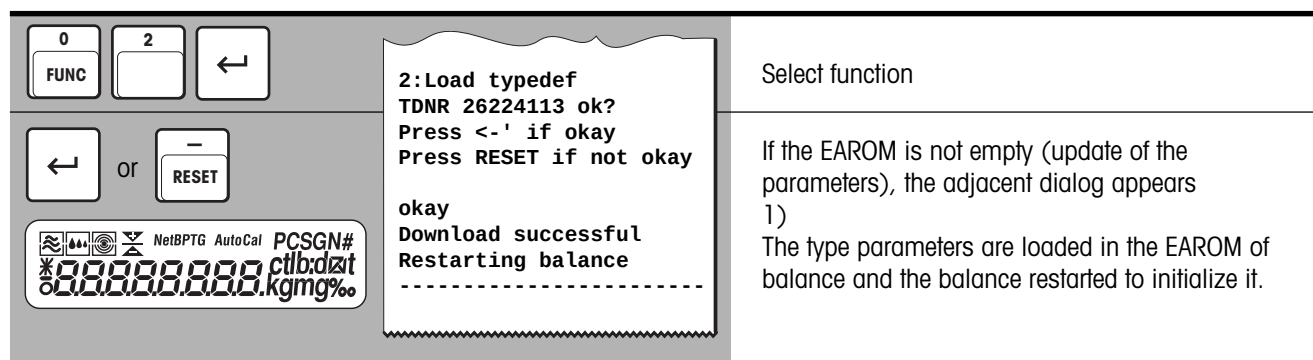
SH * 2: Load typedef

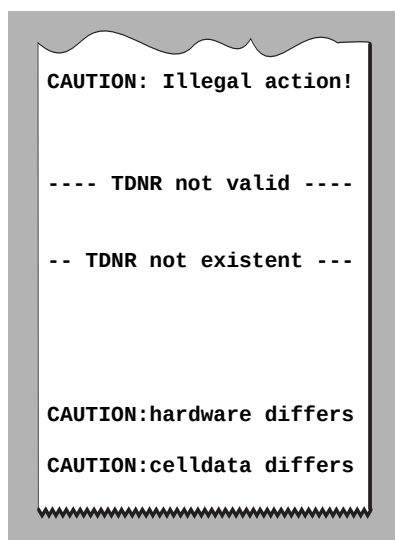
Loading of the type parameters in the EARM of the balance (the TDNR has first to be entered using Function 1)

2 cases are possible:

- **Case 1:** Update of the type parameters (new technical version) or overwriting of the type parameters in an old original balance board
- **Case 2:** Loading of the type parameters in a new spare part balance board

Case 1





1) If one of the following messages appears instead of okay, this means:

- When switched on, the LC-PT45 reads automatically the TDNR from the EAROM of the balance. The TDNR now to be loaded corresponds to a balance with a higher resolution (upgrade) and **must not be** loaded.
- The TDNR is not in the admissible range and can thus not be used.
- The TDNR does not exist in the type EPROM (the TDNR EPROM must then be replaced by the latest version ➔ section 6, page 6-9 or the missing type parameter sets must be keyed in from the update list using Function 3 "Input new typedefinition").
- Balance board or weighing cell replaced. Load type parameters with <-'.
- Key-in error when entering the TDNR, or balance with old cell data. Terminate with RESET. Get infos concerning updates via technical market support TMS.

Note: for new technical balance versions (last place of the TDNR > 0) frequently the balance OS-EPROM has also to be replaced by the corresponding version.

Case 2

	Display that EAROM is unreadable or empty after replacement of the balance board and switching on the LC-PT45
	Select function
	If a new balance board has been installed or if the EAROM can not be read (or is empty), it must be cleared. Care: All TC parameters will be cleared!
	The type parameters are loaded in the EAROM of the balance and the balance restarted to initialize it.

40: Check typedef-array

Check on the supplementary array added to the type EPROM.

0 FUNC 4 0 ←	<pre> 40:Check typedef-array Array 1 occupied Array 2 empty : Array 9 empty Press RESET to break or key in array no.to print Array 1 TDNR: 26224110 255 --243 --125 -- 7 146 --188 --142 --179 : : : 9 -- 73 --211 -- 34 ----- </pre>	Start check on typedef supplementary array
1 ←		Printout of the selected supplementary array

H* 4: Output cellparameters

Printout of the parameters of the measuring cell following a TC adjustment. The parameters determine the scaling of the weight signal, the setting of the temperature compensation, of the fine adjustment and of additional compensations.

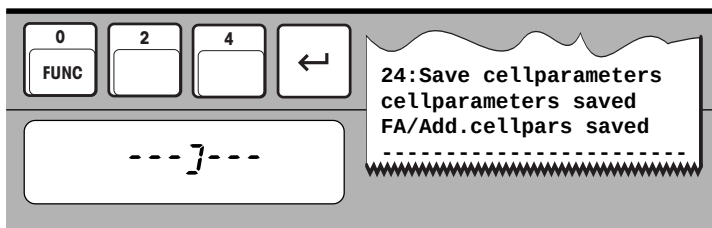
0 FUNC 4 ←	<pre> 4:Output cellparameters Balance SNR 1115420763 12/15/97 14:49:13 Prescaler 0> 722203 1> 548337 2> 111394 3> 787688 4> 392719 5> 655360 6> 676352 <CHS> 199 Temp-Comp 0> 685753 1> 700682 2> 30283 3> 155915 : 28> 753664 29> 679425 <CHS> 101 FA/Add.cell-parameters 0> 458752 1> 851968 2> 589824 3> 131072 : 16> 196608 17> 853760 <CHS> 21 </pre>	Start output of the measuring cell parameters
---}---		Printout of the prescaling data of the weight signal
		Printout of the adjustment data of the temperature compensation
		Depending on case, printout of fine adjustment / the additional cell-parameters data

Please note:

- While the linearization and the calibration change individual data in the prescaler block, the effective cell parameters remain unchanged.

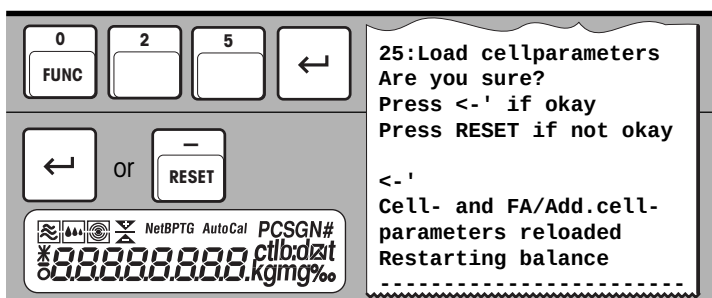
H 24: Save cellparameters

Copying of the prescaler, TC, fine adjustment and additional cellparameters to the LC-PT45.

	Storage of the cell parameters in the LC-PT45 Transfer cell parameters balance --->--- LC-PT45
---	---

H 25: Load cellparameters

Retrieve prescaler, TC, fine adjustment and additional cellparameters from LC-PT45 and reload in the balance.

	Reload cell parameters in the balance Caution: Func 24 must be executed before Func 25! The cell parameters are loaded in the EARM and the balance restarted to initialize it.
--	---

Note

The former function 28 "Load fine adj. paramt." has been integrated in function 25.

H 5: Inp presc.cellpars

Entry of the measuring cell parameters which determine the scaling of the weight signal from cell parameter strip.

	<pre> 5:Inp presc.cellpars Input Prescaler < 0> 722203 < 1> 548337 < 2> 111394 : <6> 676352 ----- </pre>	Select function
		Key in parameter set line by line 1)
		The cell parameters are loaded in the EAROM and the balance restarted to initialize it

Note

HG/HR: display "TK Error" means, that *Func 55* remains to execute

H * 55: Inp TC-cellpars

Entry of the measuring cell parameters which determine the setting of the temperature compensation from the cell parameter strip.

	<pre> 55:Inp TC-cellpars Input TC < 0> 685753 < 1> 448768 < 2> 30283 : <29> 679425 ----- </pre>	Select function
		Key in parameter set line by line 1)
		the cell parameters are loaded in the EAROM and the balance restarted to initialize it

27: Input FA-/Add.cellpars

Entry of the fine adjustment and additional measuring cell parameters from the cell parameter strip.

	<pre> 27:Input FA-Add.cellpars < 0> 458752 < 1> 851968 < 2> 589824 : <17> 853760 ----- </pre>	Select function
		Key in parameter set line by line 1)
		the cell parameters are loaded in the EAROM and the balance restarted to initialize it

1) Note

In the case of a wrong entry, the LC-PT45 automatically repeats the line number and waits for a new, correct entry. If it then repeats the line number again despite a correct entry, the function must be terminated with RESET and a fresh start made from the beginning.

SH* 6: Linearization 3-point

3-point linearization of the balance (LIN 3 can also be selected in the menu).

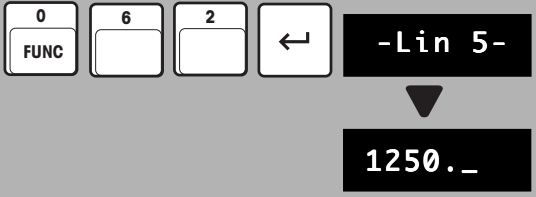
 - Lin - ▼ - PUSH - 	Start of the linearization Wait Place full load briefly on pan
- Put Ld 1 - - 1000.00 - 	Information: Next place 1st half load on pan Place requested load on pan
- Add Ld2 - - 2000.00 - 	Information: Next place 2nd half load on pan Supplement weight up to requested value
- OFF Ld 1 - - 1000.00 - 	Information: Next remove 1st half load so that only the 2nd half load remains on pan Remove 1st half load
- OFF Ld2 - 0.00 0.00 g	Information: Next remove 2nd half load Remove 2nd half load Linearization finished
Balances <i>with internal</i> calibration weight: Primary calibration ⇒ Func 8/Menu: StdCal, page 7-22 Calibration ⇒ Menu: CAL int Balances <i>without internal</i> calibration weight: Calibration ⇒ Func 7/Menu: CAL, page 7-21	Lin successful Please calibrate the balance(Func 8 + Func 7) Following linearization, a calibration is mandatory as linearization clears the old calibration

Comments

- Exact compliance with the sequence of loading of the weight also allows calibration weights which differ slightly to be used.
- On selection of the 3-point linearization with a 5-point linearized balance, "Caution! 5pt-LIN applied" is printed out, but the 3-point linearisation is possible (balance SW > 1.00).

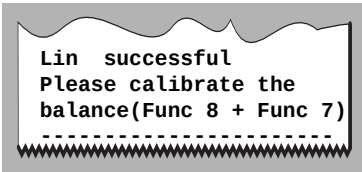
62: Linearization 5-point

5-point linearization of the balance.

	Start of the 5-point linearization Wait Min 4527 Max 5030 Key in value weight 1 1)
	If necessary, clearing of the weight value suggested by the balance (1/4 full load) and input of the appropriate value
	Key in value weight 2 1000.000 Key in value weight 3 1000.000 Key in value weight 4 2000.000
	
	
	Selection of the 4th weight value, e.g. so that full load is reached
	Place full load briefly on pan
	Place requested weight value on pan
	Supplement weight up to requested value
	Supplement weight again up to requested value
	Supplement weight up to requested maximum capacity 1) Within the limits Min...Max = 90 % full load
	Remove all weights Wait

Balances *with internal* calibration weight:
Primary calibration → **Func 8**/Menu: **StdCal**, page [7-22](#)
Calibration → Menu: **CAL int**

Balances *without internal* calibration weight:
Calibration → **Func 7**/Menu: **CAL**, page [7-21](#)



Lin successful
Please calibrate the
balance(Func 8 + Func 7)

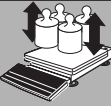
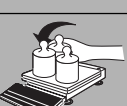
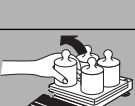
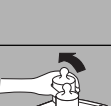
Following linearization, a calibration is mandatory as linearization clears the old calibration

Comment

On wrong selection of the 5-point linearization with a 3-point linearized balance, "Adjustment not applied" is printed out and the linearization terminated!

LIN 5

5-point linearization of the balance (selection of the function LIN 5 in the menu ➔ page 7-2)

	LIN 5 375		Entry in the 5-point linearization. Info: prepare 4 times the displayed 1/4 full load, e.g. 375 g. (Tolerances: 1/4 full load: +0/-20%, e.g. 300 g; between 1/4 full loads: $\pm 1\%$)
	-Push- 0.00		Place full load briefly on pan (pan has to be empty)
	Put Ld 1 1		Place load 1 on pan (1/4 full load) ⚠ Observe sequence of placing and lifting off !
	Add Ld 2 1 2		Add load 2 (loads 1 and 2 have to be placed)
	Add Ld 3 1 2 3		Add load 3 (loads 1,2 and 3 have to be placed)
	Add Ld 4 1 2 3 4		Add load 4 (loads 1,2,3 and 4 have to be placed)
	Off Ld 1 2 3 4		Lift off load 1 (loads 2,3, and 4 have to remain)
	Off Ld 4 2 3		Lift off load 4 (loads 2 and 3 have to remain)
	Off Ld 3 2		Lift off load 3 (load 2 has to remain)
	0.00 0.00g		Lift off last load Linearization finished

Balances *with internal* calibration weight:
Primary calibration → **Func 8**/Menu: **StdCal**, page 7-22
Calibration → Menu: **CAL int**

Balances *without internal* calibration weight:
Calibration → **Func 7**/Menu: **CAL**, page 7-21

Lin successful
Please calibrate the
balance(Func 8 + Func 7)

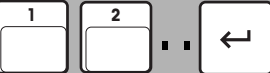
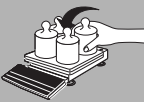
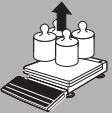
Following linearization, a calibration is mandatory as linearization clears the old calibration

Comment

On wrong selection of the 5-point linearization with a 3-point linearized balance, "Adjustment not applied" is printed out and the linearization terminated!

SH* 7: Calibration

Service calibration of the balance (CAL can also be selected in the menu; adjustment of deviations of the weight signal up to +/- 10%).

	-----	Start calibration.
	-3000.00_	Display of requested nominal weight.
	3000.12	B-S balances: if needed, enter real weight value and confirm.
	 	Place requested weight on pan,
	-----	wait,
	 	remove calibration weight,
	-----	wait,
	0.00 g	calibration finished.

S* 8: Standard calibration

Primary calibration of the balance; the internal calibration weight is calibrated (StdCAL can also be selected in the menu)

	StdCal 3000.000	Start of primary calibration The balance suggests the value of the reference weight (full load)
	3000.023	1) The value of the available reference weight can be entered (3 decimal places, AG: 5!)
	motor down : 0.00	2) Confirmation of the weight value; the motor moves the internal calibration weight up and down 1..3 times to center it mechanically. Its weight value is then determined as a check.. 2) Start of StdCAL if selected in the menu
	3000.02 	Place requested reference weight on pan
	0.00 	Lift off reference weight
	motor down 774.64 motor up	The motor lowers the internal calibration weight The weight value is determined and compared with the control value measured previously as a check The weight is raised again
	3000.02- ----- 	Place requested reference weight on pan Wait
	-0.00- ----- 0.00 g 	Lift off reference weight Wait Primary calibration finished
	Calibration → Menu: CAL int	Internal calibration (for a check)

1) B-S balances: Start of StdCAL when selected in menu.

Adjust the suggested reference weight with  and .

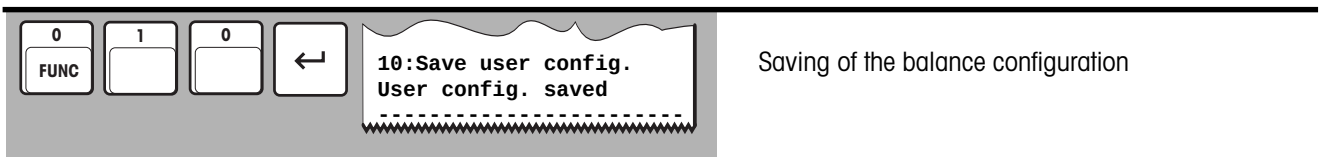
SH* 9: Zero

New determination of the switch-on zero



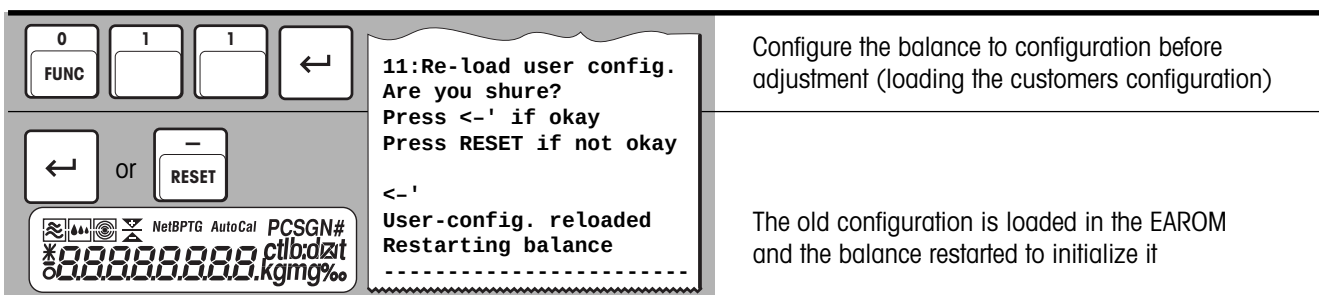
H 10: Save user config.

Saving the user configuration of the balance in the LC-PT45 before adjustment, and switching to "service resolution"



H 11: Re-load user config.

Configuring the balance to configuration before adjustment (reloading configuration from the LC-PT45 in the balance).

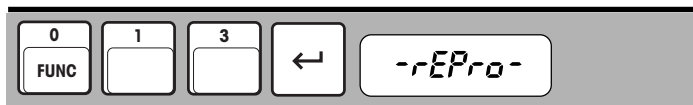
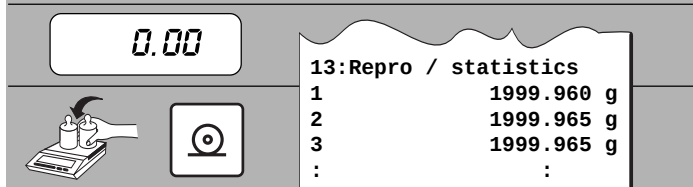
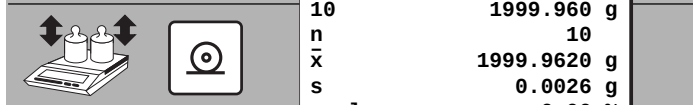
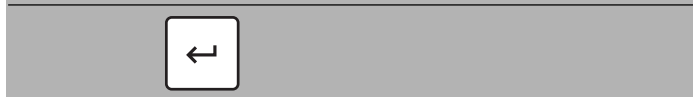


Note

The balance display is switched back to the display of weight values.

SH * 13:Repro / statistics

Test reproducibility of the weighing result.

	Start Repro/statistics
	Place the desired weight on pan and transfer of the value to the statistics 1)
	Brief raising then lowering of the weight, transfer of the value to the statistics
	Brief raising then lowering of the weight, transfer of the value to the statistics
	etc. :
	Completion and printout of the statistics

- 1) • The weight should be loaded and raised at least 5 times to obtain a meaningful result.
• Do not tare!

Calculation fundamentals

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

$$s = \sqrt{\frac{1}{n-1} \sum (x_i - \bar{x})^2}$$

$$s_{rel} = \frac{s}{\bar{x}} \cdot 100\%$$

min. = minimum value

max. = maximum value

dif. = maximum - minimum value

max. No. samples = 999

SH* 14: Cornerload-test

Check on the change in the balance display when the load is moved from the center of the weighing pan to the corners.

0 FUNC	1	4	←	Start cornerload test	1)
Center				Position load in the center and print out value (Size of load → section 8, cornerload)	2)
Left				14:Cornerload-test ===== rear left center right front ===== Testweight: 2000.00 g ZA (Zero) 1.left: -0.005 g 2.rear: -0.010 g 3.right: 0.005 g 4.front: 0.025 g 5.center: 0.000 g -----	
rear					
right					
front					
Center					

1) **AG balances:** *disp 5r* must be selected (display in mg) in the service menu → page 7-2

2) Do not tare!

SH* 15: Linearity-test (not suitable for analytical and micro balances)

Check on the linearity deviation of the balance at any load with simultaneous printout of a report.

0 FUNC	1	5	←	Start linearity test	
0.00				Print out zero point	
				Place desired load on pan, e.g. 1/4 full load, and print out value	
				Increase load, e.g. to 1/2 full load, and print out value	
⋮				Increase load, e.g. to 3/4 full load, and print out value. Increase load, e.g. to full load, and print out value.	
←				Completion of the linearity test	

```

14:Linearity-test
ZA (Zero)
0.00 g 0.005 g
1000.00 g -0.000 g
2000.00 g -0.005 g
3000.00 g -0.015 g
4000.00 g -0.030 g
3000.00 g -0.020 g
2000.00 g -0.010 g
1000.00 g -0.005 g
0.00 g 0.000 g
-----

```


TC-Adjustment-Test

Rapid measurement of the temperature coefficient of the balance (selection of the TEST function in the menu → page 7-2)

		Warming or cooling the balance by at least 2°C, e.g. by allowing to stand for 3 hours in a warmer room.
		Return balance to its usual workplace. Switch on and allow to warm up for 20 minutes (AG: 40 minutes).
	TEST -PUSH-	 Entry into the TC test by pressing and holding the menu key until TEST appears and then releasing. Place full load briefly on pan
	3000	 Place requested weight on pan
	00	 Lift off load
	-PUSH-	Wait until the balance has again reached room temperature or thereabouts.
		Place full load briefly on pan. 1)
	3000	 Place requested weight on pan
	00	 Lift off load
	0.00 tc-compensation-check ----- DiffSpan= 0.013 g DiffTemp= 2.0274 °C CompCoeff= 0.64 d/°C -----	The test is finished. The results are printed out automatically: - display change range (span) - temperature change - temperature coefficient range in d/°C, for resolution = 0.01 2) CompCoeff [d/°C] = DiffSpan: DiffTemp: resolution

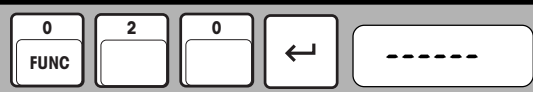
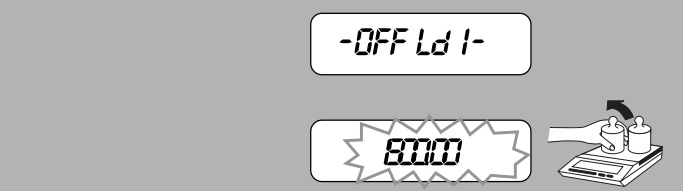
1) If the LC-PT45 prints out "Temp diff too small", the temperature difference was < 0.5°C

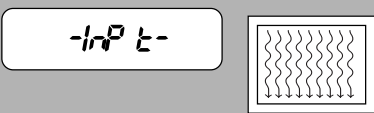
2) If the temperature coefficient of the balance is too large, a TC adjustment must be considered:

"CompCoeff" is normally < 3. Values between 4 ... 8 show that possibly the cell parameters of a different, adjusted balance have been loaded. Values around 30 ... 200 indicate that the balance is not compensated and the TC of the measuring cell magnet has a direct influence on the weighing result.

* 20: TC-adjustment

Adjustment of the temperature compensation system of the balance.

	Start of the TC adjustment
	Start scaling of the weight signal,, remove load from pan
	Confirm unloading, place requested weight on pan
	Confirm loading, remove load
	End scaling, start TC adjustment
	Cool balance down to the lowest temperature used in operations, e.g. 12°C (if need be, disconnect from LC-PT45); wait until the temperature is stable, at least 2 hours
	Start scaling of the temperature, 1st value
B/G: ... / R: 0 ... 0 / 0	Setting the measured balance temperature in steps of 1°C or 10°C by brief pressing/pressing and holding (correction by increasing to maximum value and restart at 0)
	Start load adjustment at temp. 1 ; place full load briefly on pan
	Information: Next place 1st half load on pan Place requested load on pan
	Information: Next place 2nd half load on pan Supplement load up to the requested value
	Information: Next remove 1st half load so that only the 2nd half load remains on the pan Remove 1st half load
	Remove 2nd half load

	Warm up balance to usual operating temperature, e.g. 22°C; wait until the temperature is stable, at least 2 hours
	scaling of the temperature, 2nd value
	Setting the measured balance temperature
	Conclusion of temperature scaling. Start load adjustment at temp. 2 ; place full load briefly on pan
	Information: Next place 1st half load on pan Place requested load on pan
	Information: Next place 2nd half load on pan Supplement load up to the requested value
	Information: Next remove 1st half load so that only the 2nd half load remains on the pan Remove 1st half load
	Remove 2nd half load
	Information: TC of balance = 4.26 ppm Warm up balance to maximum temperature used in operations, e.g. 32°C; wait until the temperature is stable, at least 2 hours
	Start load adjustment at temp. 3 ; place full load briefly on pan
	Information: Next place 1st half load on pan Place requested load on pan
	Information: Next place 2nd half load on pan Supplement load up to the requested value

-OFF Ld 1-

8.00

0.00

20:TC-Adjustment: start
TempKoeff 4.26 ppm

	Temp 1	Temp 2	Temp 3
Amb	12	22	
Int	12.12	22.15	30.17

Differences

Null=	-0.0108	0	-0.0054
Half=	-0.0234	0	-0.0218
Full=	-0.03	0	-0.0399

Information: Next remove 1st half load so that only the 2nd half load remains on the pan

Remove 1st half load

Remove 2nd half load

Wait; the report will be printed out automatically

Results of the adjustment
 Temperature coefficient range in ppm/°C

Set balance temperatures
 Temperatures measured by the balance

Change in the display compared with the display at temperature 2 (ramp-values, i.e. g, included dead load)

at temperature 3

at temperature 1

26: Fine adjustment

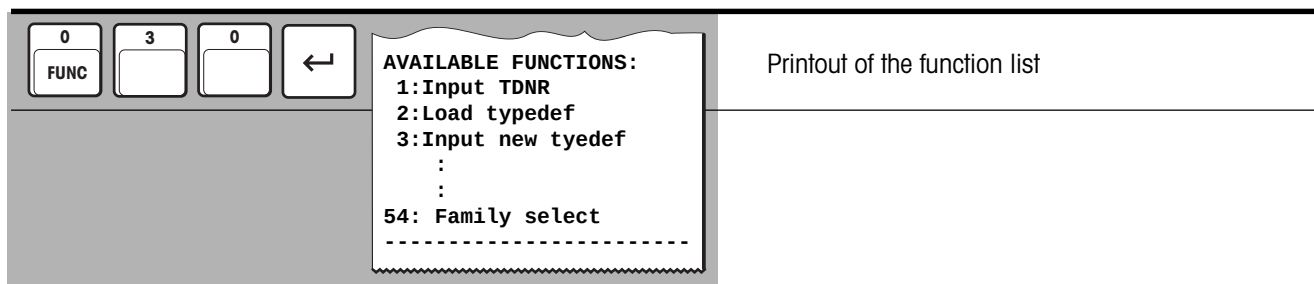
Fine adjustment of analytical balances

Check fine adjustment at full and zero load.; if o.k. -> do not execute Func 26	Observe the change in the display for 2 minutes at full load and then for 2 minutes at zero load: it must not be larger than ± 2 analytical digits ($\pm 0,2$ mg).
0 2 6 FUNC ← FR ▼ - 897 -	Start fine adjustment. 1) Unload balance and close draft shield doors. If necessary, allow a warm-up time of 15 minutes. The time remaining appears in the display in seconds.
MoT dn ---2240 MoT UP ---120 SUCC ▼ 000	The internal calibration weight is lowered. The approx. 23 minute determination of the fine adjustment parameters at full load starts. The balance must be in a position free from vibrations and no longer touched. The display shows the time remaining in s. The internal calibration weight is raised. The 23 minute measurement of the fine adjustment parameters at zero load starts. The fine adjustment was successful.
Check fine adjustment at full and zero load; if o.k. -> Func 26 completed	Check as above. If tolerances are exceeded, repeat adjustment, or continue below.
0 2 6 FUNC ← FR ▼ LoAd=CAL rEst=0/t	Enter the fine adjustment again. The inquiry whether the loaded fine adjustment parameters should remain loaded or whether they should be replaced by the old then appears alternately.
Cal ACCEPT or → 0/T ← 000	Leave loaded fine adjustment parameters or - with a poor result of the fine adjustment - replace by the old ones.

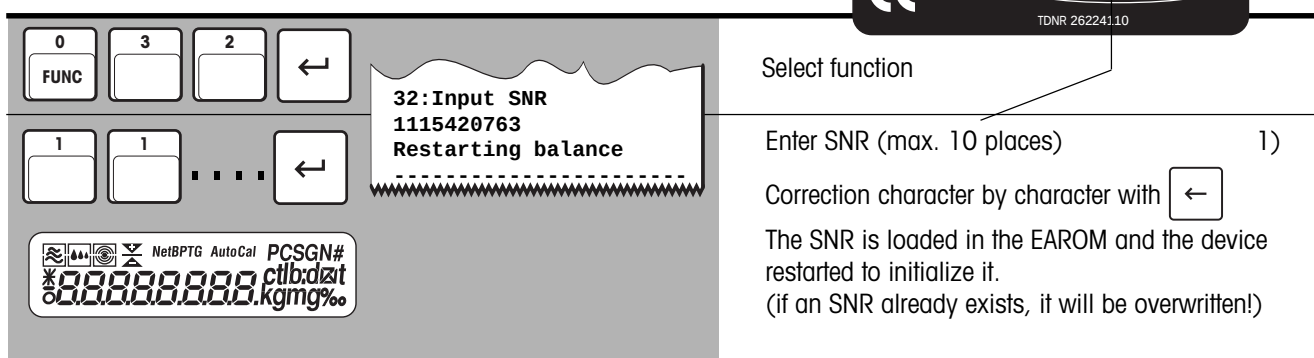
- 1) • With LC-PT45 with SW < V 3.0, the function must be started by entering the menu (SPECIAL).
• With balances without the possibility of the fine adjustment, the message „not poss“ appears.

SH* 30: Print function list

Printout of a list of the available functions of the LC-PT45.

SH* **32: Input SNR** (AT/MT with version of Standard Memory Cassette $\geq 10.1.23$ see next page)

Entry of the device serial number SNR from model plate after replacement of the balance/CPU board (the SNR is printed out in the service report)



Error messages:

- ES: **AT/MT** with service cassette inserted in place of standard cassette; see next page „Entry of SNR and balance ID“
- Wrong format-try again!/: shows that the value range has been exceeded. The LC-PT45 then waits for entry of the correct SNR.

1) For the B/G/R balances both 8- and 10-digit SNRs exist.

Value range 8-digit SNR: 0...16'777'215.

Value range 10-digit SNR: XX'YYY'YYY

10...99 — 13'000'000...29'777'215

Meaning of the number blocks: 11 15 42 0763

PO-Code ———— current number in this week
year (15 => 1996) ———— week

Entry of the **AM/BB/AT/MT/PM/SM/J balances** SNR see next page!

The SNRs of the AM/BB/AT/MT/PM/SM/J balances started with a letter, e.g. PM2000 -> N49958. As the LC-PT45 has no letter-keys, the letter must be entered as a number (ASCII format decimal)

space	A	B	C	D	E	F	G	H	I	J	K	L	M
32	65	66	67	68	69	70	71	72	73	74	75	76	77
N	O	P	Q	R	S	T	U	V	W	X	Y	Z	
78	79	80	81	82	83	84	85	86	87	88	89	90	

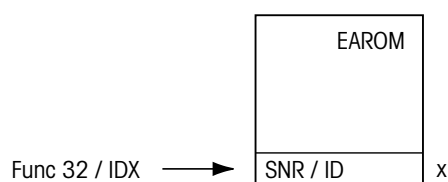
Example: SNR = N49958 -> Entry: 78049958. The SNR must be expanded to 8 digits by preceding 0's!

The newer AM/AT/MT/PM/SM/J SNRs do not start with a letter and have 10 digits. In the entry, the missing letter must be replaced by a space (▲ for AT/MT by any letter) and the first 4 digits omitted.

E.g. with SNR = 1234567890 -> Entry = 32567890.

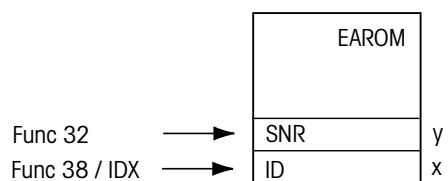
AT/MT balances with version $\geq 10.1.23$ of the standard memory cassette: entry of SNR and balance ID

Overview



Od: (AT/MT service cassette)

The SNR had been stored under EAROM address x using *Func 32*. However, the balance identification ID could also be stored under the same address using the interface command *IDX*.



New: (AT/MT standard memory cassette version $\geq 10.1.23$)

The SNR now has its own EAROM address y. The balance identification ID is stored under EAROM address x using *Func 38* or interface command *IDX*.

Entry of SNR and balance ID

1. Switch off balance and LC-PT45.
2. For once, insert *standard memory cassette*, instead of service cassette.
3. Switch on balance and wait until weight is displayed.
4. Switch on LC-PT45.
5. Execute *Func 31* (no listing; informs LC-PT45 only indirectly that no service cassette is inserted).
6. Entry of SNR using *Func 32*, 8- or 10-digit as described below.
7. If necessary, entry of ID using *Func 38*.
8. Check whether entry is correct using *Func 33*.

The 8-digit SNR of the AT/MT balances started with a letter, e.g. AT250 -> N75434. As the LC-PT45 has no letter keys, the letter must be entered as a number (ASCII format decimal)

A	B	C	D	E	F	G	H	I	J	K	L	M
65	66	67	68	69	70	71	72	73	74	75	76	77
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
78	79	80	81	82	83	84	85	86	87	88	89	90

Example: SNR = N75434 -> Entry = 78075434. The SNR must be expanded to 8 digits by preceding 0's!

The newer, 10-digit AT/MT SNRs do not start with a letter. The number can be entered directly.

38: Extended Identific.

AT/MT balances: entry of balance ID (by means of LC-PT45, instead of IDX-command via interface)

0 FUNC	3	8	←	38:Extended Identific. 66123456	Select function
6	6	...	←		Enter ID (1 letter – as an ASCII-number, see table page 7-32 below – and exactly 6 numbers).

Example: Entry and check of SNR and ID

```

32:Input SNR
78075434
-----
38:Extended Identific.
66000928
-----
33:Balance Info

STD 10.1.23
TYPE : AT 250
2.00.00
SNR : N075434
B000928
  
```

- Entry of serial number SNR
N75434 using Func 32
- Entry of balance ID,
e.g. balance location business office *B928* using Func 38
- Check on entries using Func 33:
 - Version of the standard memory cassette
 - Balance type
 - Software index
 - *Serial number*
 - *Balance ID*

SH* 33: Balance info

Printout of SNR, TDNR (factory type definition), status of the balance/CPU board and the adjustments

0 FUNC	3	3	←	33:Balance info Type PB3002 Balance SNR 1115420763 TDNR 26224110 Spare board Autozero was on Adjustments 1101001010 Applied adj. 1101101011 -----	Start printout of the balance information.
				Notes on printout see below!	

```

33 Balance Info
SNR          1115100848
TDNR         0.1.7.10.1
Type         PB3001-S
Last service 14 12 1998
-----

```

Printout with B-S balances
(no adjustment infos)

Notes on printout

- Type:** With older balances, the type designation can not be printed out.
- Balance SNR:** With AM/AT/MT/PM/SM/J balances with 10-digit SNR only the last 6 digits are printed out.
- TDNR:** Printout of the factory type definition number. It does not correspond always to the loaded type parameters.

Spare board: Information on the status of the balance board. 1 or 2 of the 3 messages below are printed out.

```

TechVersion 26224113

Spareboard

CAUTION:Typedef modified
-----

```

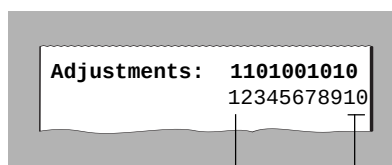
- Means, for instance, that the type parameters under TDNR 26224110 have been overwritten by the type parameters of technical version 3 (last digit of the TDNR). The valid TDNR here is thus 26224113. From version 4.8x of the LC-PT45 this TDNR can be entered by means of *Func1* and *Func2* and so be updated.
- Means that the balance board has been replaced by a spare part balance board.
- Means that METTLER TOLEDO has modified the type parameters and that the type parameters of the balance board are no more actual. They have to be updated by means of *Func1* and *Func2*.

Autozero was on: Status of the automatical zero point correction (on/off) before service



Adjustments: Printout of the status of the balance adjustments made (Halogen Moisture Analyzer, see below!)

Applied adj.: For this balance type required adjustments

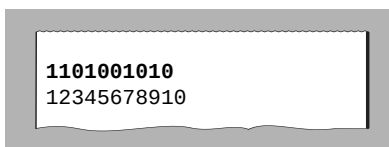


Meaning of flags 1...10

Status "1" means that the adjustments have been performed successfully and activated by the OS of the balance.

- 1 Load prescaling ➔ *Func 5*, or TC Compensation (*Func 20*)
- 2 Temperature prescaling ➔ *Func 5*, or *Func 20*
- 3 Analytical balances: Fine adjustment ➔ *Func 26/27*
- 4 TC adjustment static ➔ *Func 55* or *Func 20* 1)
- 5 Additional adjustment (= 0 or 1) ➔ *Func 27*
- 6 Additional adjustment (= 0 or 1) ➔ *Func 27*
- 7 Fine Linearization ➔ linearization, *Func 6/62*
- 8 Primary calibration ➔ *Func 8*
- 9 Calibration ➔ *Func 7*
- 10 Production calibration (= 0 or 1, for service don't care)

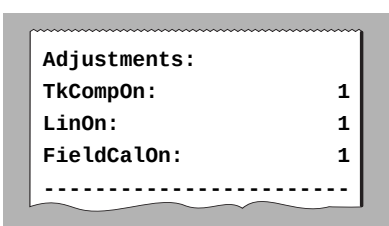
1) TC adjustment includes coarse linearization



Example

With this balance the TC was adjusted, it was linearized and calibrated. However, the balance has no internal calibration or a primary calibration has not been performed.

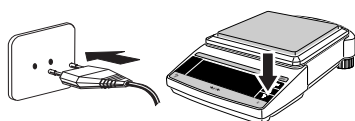
Adjustments: Printout of Halogen Moisture Analyzer adjustments made



- TC adjustment weighing cell ➔ *Func 5+55* or *25* performed and TC activated
- linearization weighing cell ➔ *Func 6* performed and activated
- weight adjustment ➔ *Func 7* performed and activated

Note:

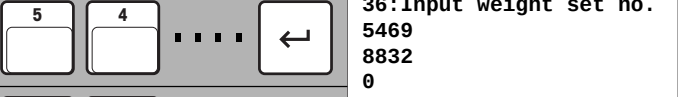
Func 33 can also be executed without LC-PT45: After switching on, during "OS 1-72" push  and hold until "SES 4.00". The following sequences will be displayed automatically:



OS 1-72 Version of operating system
 SES 4.00 Version of service software
 26272110 TDNR
 1101001 first 7 flags
 SP 010 Spareboard / last 3 flags
 010 or TD-TDNR Difference / last 3 flags

SH* 36: Input weight set no.

Entry of the weight set number for the printout in the service report.

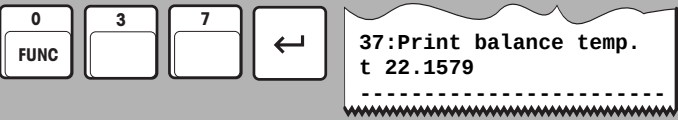
	Select function
	Entry of the number of the 1st weight set , max. 8 digits
	Entry of the number of the 2nd weight set (0 if only one weight set)
	Entry of the number of the 3rd weight set (0 if only one weight set)

Note:

The weight set number is battery-backed. The old number will be overwritten during the input of the new one.

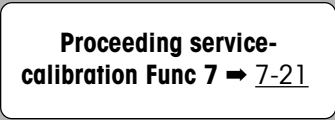
SH* 37: Print balance temp.

Printout of the balance temperature (value is correct only if the temperature has first been adjusted in the TC adjustment → page 7-27).

	Printout of balance temperature in °C
---	---------------------------------------

SH* 39: Write servicedate

After service calibration overwriting the old service date, without performing Func 90/91

	Select function.
	Automatic start of service calibration.
	
	Calibration completed, service date updated.

* 41: Calibration weight down

With balances with internal calibration, the calibration weight is lowered onto the lever.

0 FUNC	4	1	←	motor down	Lower internal calibration weight Display of the weight value of the internal calibration weight	
				777.81 weight loaded		



Care, the internal calibration weight remains lowered until it is raised by means of [Function 42](#)!

S * 42: Calibration weight up

With balances with internal calibration, the calibration weight is lifted off lever.

0 FUNC	4	2	←	motor up	Raise calibration weight Display of the weight value with raised internal calibration weight
				0.00 weight unloaded	

43: Calibr. drive-test

Test of the mechanism of the internal calibration.

0 FUNC	4	3	←	43:Calibr.drive-test Key in number of cycles 10 1: 777.8136 2: 777.8132 -0.48 3: 777.8137 0.04 4: 777.8140 0.38 : : : : : : 10: 777.8135 -0.12 	Start test of calibration mechanism
1	0	←			Entry of the desired number of test cycles (3...65535)

Printout of the test results
 Weight value of the internal calibration weight with deviation compared with value 1 in mg

Error messages:

- Printout "not allowed": Primary calibration
 ➔ *Func 8* missing
- Balance display "timeout": Balance without internal calibration/calibration motor faulty

H 70: Print auxiliary funcs

Printout of additional functions for the Halogen Moisture Analyzer

0 FUNC	7	0	←	70:Print auxiliary funcs 71:Clear temp.cal. data 72:Temp. Cal. test 73:Set underload limit 74:Clear temp.cal.cnt. 75:Clear wgt.cal.cnt. 76:- 77:- 78:- 79:Statistics -----	Start printout of auxiliary functions
				Error message: ES: Error syntax, i.e. in this device no auxiliary functions have been applied!	

H 71: Clear temp.cal. data

Halogen Moisture Analyzer: Clearing the temperature adjustment data (possibly required before the first temperature adjustment after replacement of the temperature sensor)

0 FUNC	7	1	←	71:Clear temp.cal. data Temp.cal. data cleared -----	Clearing the temperature adjustment data
-----------	---	---	---	--	--

Note

After the first temperature adjustment of the dryer unit, the instrument automatically determines a tolerance range for the next temperature adjustment. If the temperature sensor is now changed, it may lie outside the tolerance range and make the temperature adjustment impossible (error message „ERROR: 5“). In this case, the temperature adjustment data and tolerance range must be cleared with Func 71.

H 72: Temp. calibration test

Halogen Moisture Analyzer: Output of date and time of the last temperature adjustment of the dryer unit.

0 FUNC	7	2	←	72:Temp.calibration test Calibrated ----15.12.95---13:48---- -----	Start temperature adjustment test
				If the instrument has not been adjusted, the LC-PT45 prints „Adjustment missing“. -> Adjustment as described in the operating instructions.	

H 73: Set underload limit

Halogen Moisture Analyzer: Define the underload limit of the weighing cell (after loading of new prescaling cell parameters or following replacement of the CPU board)

• Open sample chamber • Remove sample pan holder, sample pan and pan holder				Produce underload	
0 FUNC	7	3	←	73:Set underload limit Underload limit set -----	Store the underload limit of the weighing cell

Note

In the factory, the underload limit of the built-in weighing cell is determined and stored in the EAROM of the CPU board. On replacement of this board or following loading of new prescaling cell parameters (*Func 5*) after replacement of the weighing cell, the underload limit must be stored again.

H 74: Clear temp.cal. cnt.

Clearing the counter for the number of temperature adjustments (T.Cal in *Func 79*)

0 FUNC	7	4	←	74:Clear temp.cal.cnt. Temp.cal.cnt. cleared -----	Clearing the T.Cal. counter
-----------	---	---	---	--	-----------------------------

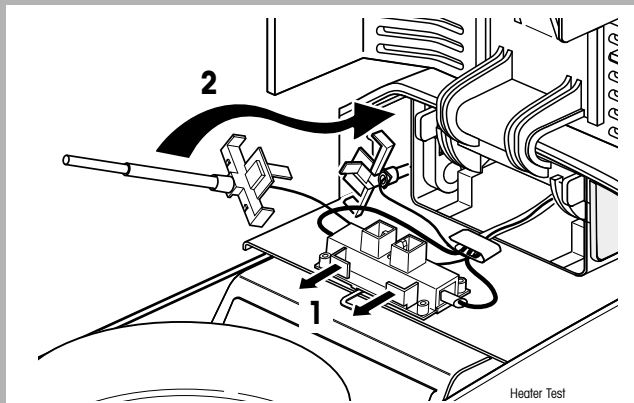
H 75: Clear wgt.cal. cnt.

Clearing the counter for the number of weight adjustments (W.Cal in *Func 79*)

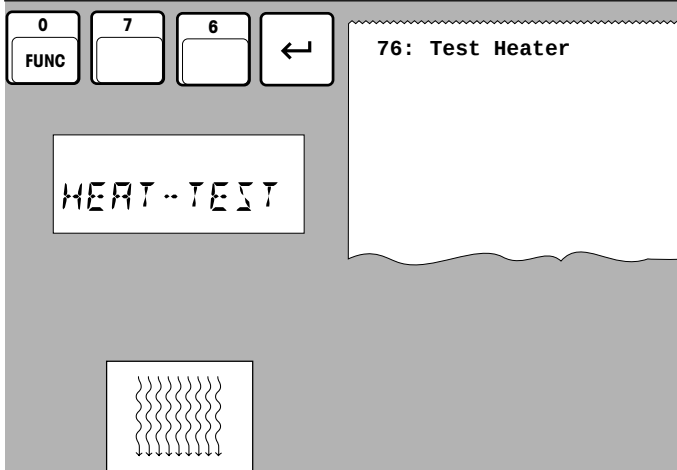
0 FUNC	7	5	←	75:Clear wgt.cal.cnt. Wgt.cal.cnt. cleared -----	Clearing the W.Cal. counter
-----------	---	---	---	--	-----------------------------

H 76: Test Heater

Halogen moisture analyzers (as from program version 1.1): test function of manually resettable temperature controller. With the temperature sensor removed, the halogen radiator heats at full power until it is switched off after approx. 2...3 minutes by the temperature controller.



- Open the dryer unit.
- If necessary, clean the protective glass and reflector (otherwise too much heat will be absorbed, which can damage the parts).
- Bend the white holder (1) slightly forward and remove the temperature sensor.
- Turn the temperature sensor around and push it to the back (2) so it does not become trapped when the dryer unit is closed.
- Close the dryer unit.
- **Place aluminum sample pan in position!**



Start "Test Heater" and observe progress.

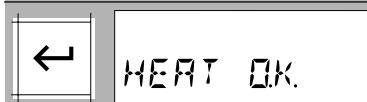
Note:

- The halogen radiator heats at full power.
- To avoid damage to the eyes do not look directly into the light!
- During the first minute there may be a small amount of smoke.

Reset

The test can be terminated at any time by resetting the HR/HG.

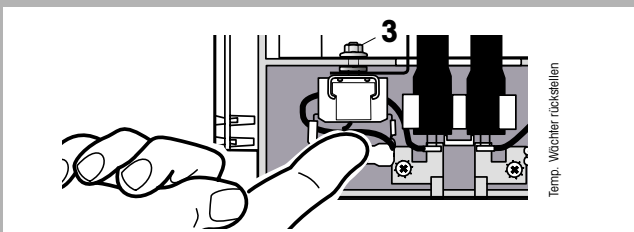
The HR/HG now heats for 2 to 3 minutes. The temperature controller then switches off the halogen radiator with an audible click.



Confirm test (HR/HG key).



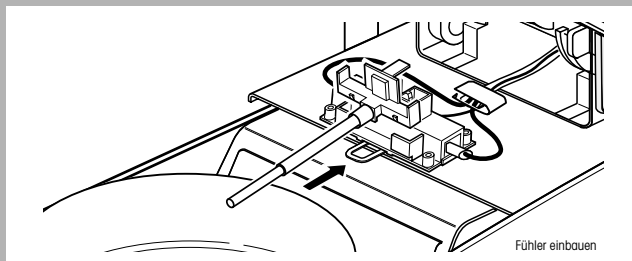
Print out confirmation.



Allow dryer unit to cool.

- Reset temperature controller (do not push the spring under edge of base!).
- Tighten nut (3) to 1.2 Nm.





Re-install the temperature sensor. The EMC spring (arrow) must touch the sensor.

Final check: standard drying at 100 °C for 2 minutes using a coin as sample.

Observe temperature: it must reach 95 to 100 °C within 90 seconds.

Error messages

- "Heat lamp?" and beep after 4.5 minutes: has the radiator switched off?

If so, confirm test with ; if not, the temperature controller is faulty. Switch off the moisture analyzer with , allow it to cool, then replace the temperature controller. Repeat test and observe, to check that the temperature controller functions.

- "Heat Timer": the test was not confirmed after 6 minutes and the radiator may still be illuminated. The test has therefore been terminated for safety. Repeat the test. If the radiator remains illuminated until the beep sounds, the temperature controller must be replaced.
- "Heat Temp": the temperature sensor has not been removed (as shown in the first diagram) or the sample chamber has not been inserted. The test has been terminated and must be repeated.

H 79: Statistics

Halogen Moisture Analyzer: Printout of a list of typical operating data

0	7	9	←
FUNC			

79:Statistics	
Type:	HR53
SNR:	1115490263
EaLayout:	13
W.Cal:	4
T.Cal:	9
PressedKeys:	593
EaRomWrites:	1
TruckMoves:	986
PrtLines:	1788
Series:	4205
SerieTimes (h):	71.3
Cell cable fail W	13
Cell cable fail T	5

Start printout of operating data list

- Current EAROM layout number 1)
- Number of all weight adjustments
- Number of all temperature adjustments
- Number of all keys pressed
- Number of all EAROM write operations (e.g. *Func 7*)
- Number of all sample chamber movements
- Number of all printed record lines
- Number of all dryings
- Number of all drying times in hours
e.g. 71.3 hours = 71 hours 18 minutes
- Test for break in sample chamber cable (as from HG/HR program version 1.10): standard drying with coin as sample, switch-off criterion „M“, 80 °C. Insert and withdraw sample chamber 10 times. A broken cable may be indicated if the values of W or T increase
(W/T = number of weight/temperature values outside range).

- 1) If the EAROM layout number has changed, e.g. on replacement of the program EPROM, the HR/HG may show a value between 0 and 1 instead of 25.000 g. In this case, the cell parameters must be reloaded using *Func 25* or *Func 5* + *Func 55*

SH 90: Service Protocol

Printout of a report on completion of the service work

	0 9 0 ← <pre> ----- METTLER TOLEDO ----- LC-PT45 SERV-SW V4.8x BAL R+G SERV-SW V4.00 TYPROM-M V4.8x ----- TEST PROTOCOL ----- 12/14/98 15:23:25 1.Weightset no. 5469 2.Weightset no. 8832 3.Weightset no. Type PB3002 Balance SNR 1115420763 TDNR 26224110 MaxLoad 3100 g Readability 0.1 g Fine Range 1 600 g Readability 0.01 g Fine Range 2 0 g Readability 0 g - Autozero off - Last service 02/24/97 Last user-CAL 12/14/98 CalWeight 3000.00 g Service-CAL 08/14/97 Serv. calibration ok ----- Cornerload-test ----- ===== Π rear Π Π left center right Π Π front Π ===== ZA (Zero) Testweight: 2000.00 g 1.left: 1999.98 g 2.rear: 1999.96 g 3.right: 2000.01 g 4.front: 2000.02 g 5.center: 1999.99 g </pre>	Start of report printout (Version of – LC-PT45 service software – balance service software – Type EPROM) date format for B-S balances: 14 12 1998 -> for older balances the type designation will not be printed out (directly following the loading of new type parameters: "Last service unknown")
	<pre> Service-CAL 08/14/97 Serv. calibration ok ----- Cornerload-test ----- ===== Π rear Π Π left center right Π Π front Π ===== ZA (Zero) Testweight: 2000.00 g 1.left: 1999.98 g 2.rear: 1999.96 g 3.right: 2000.01 g 4.front: 2000.02 g 5.center: 1999.99 g </pre>	Calibration ➔ page 7-21 if need be, abort of the service report with  oder ; bei HG/HR  (the date "Last service") is not yet overwritten!)
 -unLoad-	<pre> ----- Cornerload-test ----- ===== Π rear Π Π left center right Π Π front Π ===== ZA (Zero) Testweight: 2000.00 g 1.left: 1999.98 g 2.rear: 1999.96 g 3.right: 2000.01 g 4.front: 2000.02 g 5.center: 1999.99 g </pre>	Cornerload test ➔ page 7-25 Lift off load (automatic taring follows)
 -unLoad-	<pre> ----- Linearity-test ----- ZA (Zero) 0.00 g 0.00 g 1000.00 g 1000.02 g 2000.00 g 2000.03 g 3000.00 g 3000.05 g 4000.00 g 4000.06 g 3000.00 g 3000.04 g 2000.00 g 2000.02 g 1000.00 g 999.99 g 0.00 g -0.02 g </pre>	Linearity test ➔ page 7-25 Remark: Use certified weights Lift off load (automatic taring follows) Continuation ➔ next page!




:
:
:
:



----- Reproducibility

1	2000.00 g
2	1999.99 g
3	1999.99 g
:	:
5	1999.99 g
n	5
$\bar{x}$	1999.992 g
s	0.004 g
srel	0.00 %
min.	1999.99 g
max.	2000.00 g
dif.	0.01 g

Technician signature:
Robert Green

 -- END OF PROTOCOL --

-SduPd-

Test of the reproducibility of the weighing result
 ➡ Page 7-24

Service **date** "Last service" **updated!**

 Conclusion of the service report

SH 91: Misc. informations

Printout of service protocol header

The image shows a control panel on the left with four buttons labeled 0, 9, 1, and a left arrow. The main display area shows the following text:

```
---- METTLER TOLEDO ----
LC-PT45 SERV-SW V4.8x
BAL R+G SERV-SW V4.00
TYPROM-M V4.8x
1.Weightset no. 5469
2.Weightset no. 8832
3.Weightset no.
MaxLoad          3100 g
Readability       0.1 g
Fine Range 1     600 g
Readability       0.01 g
Fine Range 2      0 g
Readability       0 g
Last service      02/24/97
Last user-CAL     12/14/98
CalWeight         3000.00 g
```

To the right of the display, the text "Start printout of service protocol header" is visible.

H* 93: Balance analyzer

Printout of a coded analysis protocol for FAX aid from R+D

The diagram shows a printer control panel with four buttons: '0', '9', '3', and a left arrow. The '0' button is labeled 'FUNC'. Below the buttons is a large rectangular area representing the paper output. The paper displays the following text:

```

93:Balance analyzer
00A04A000100000000000000
000000A31131222640E2014D
BED6B2000AE0970000000000
:
:
:

```

To the right of the paper output, the text 'Start printout of analysis protocol' is displayed.

2.3 Adjustment of the AM/BB/CM/PM/SM/J balances

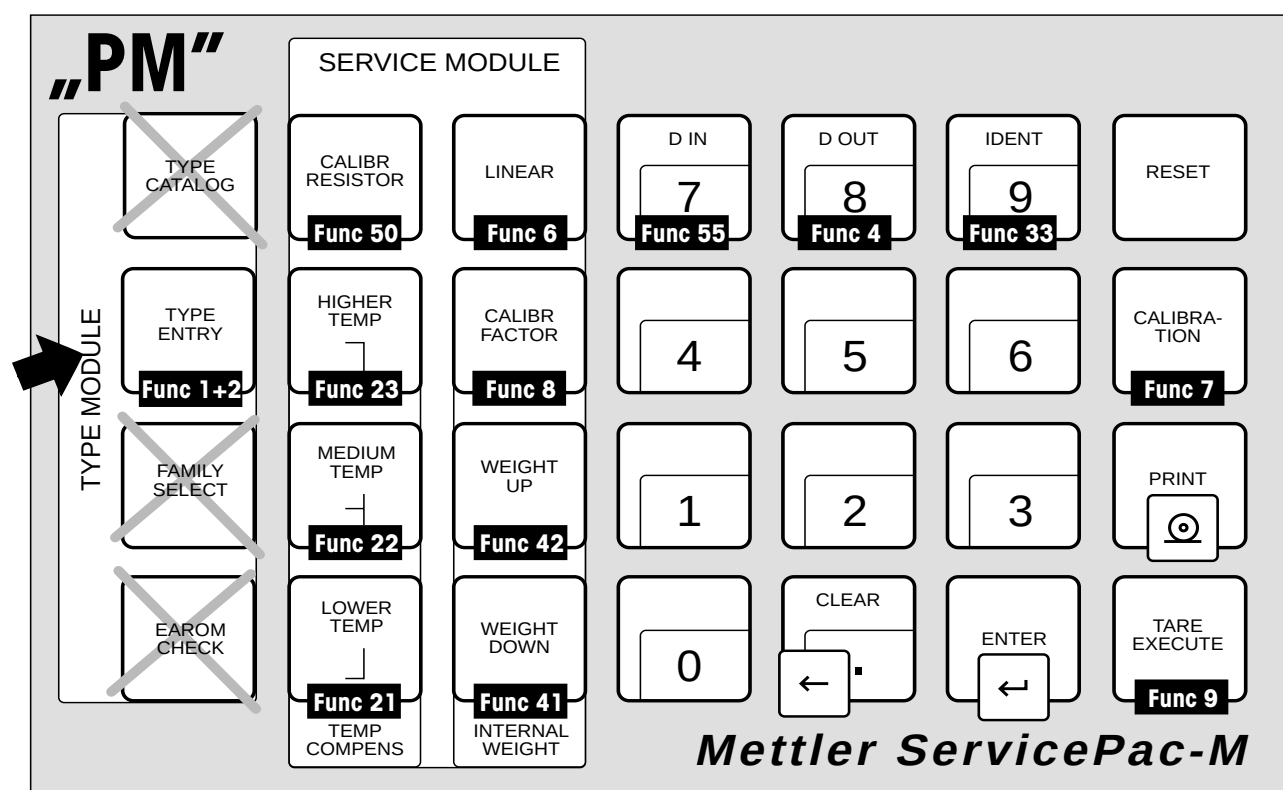
ServicePac-M keypad and *type cassette* no longer needed. However, the *adjustment cassette* (BB: the adjustment and type EPROM) must continue to be used.

The adjustment procedure remains exactly the same as before except that the functions of the *ServicePac-M* are initiated using the keypad of the LC-PT45 and the type parameters are taken from the type EPROM of the LC-PT45. (The TYPE MODULE functions are an exception: none apply. Printing of TYPE ENTRY is replaced by the execution of Func 1 and Func 2.)

Please consult the appropriate service manual for the adjustment procedure and explanations of the messages on the balance display. (Exceptions BB: Shorting plug of EPROM must be plugged in at the left.

LC-PT45 can be plugged into the data I/O connection directly without an adapter cable) 

ServicePac-M and LC-PT45, allocation of the functions for the AM/BB/CM/PM/SM/J balances



ServicePac PM Tast.

➔ Loading type parameters

- Switch off balance and LC-PT45
- Insert adjustment cassette (BB: adjustment EPROM)
- Switch on balance and then the LC-PT45 ➔ page 6-5, printout „ServicePac M/J/BB, RS active“
- Determine the TDNR number allocated to the balance (list in section 1, page 1-37, e.g. for AJ100.00 10051010).
- Load type parameters into EAROM of the balance using Func 1 and Func 2.

Adjustment functions of the ServicePac-M

Example: Instead of pressing the LINEAR key, execute Func 6 using the LC-PT45.

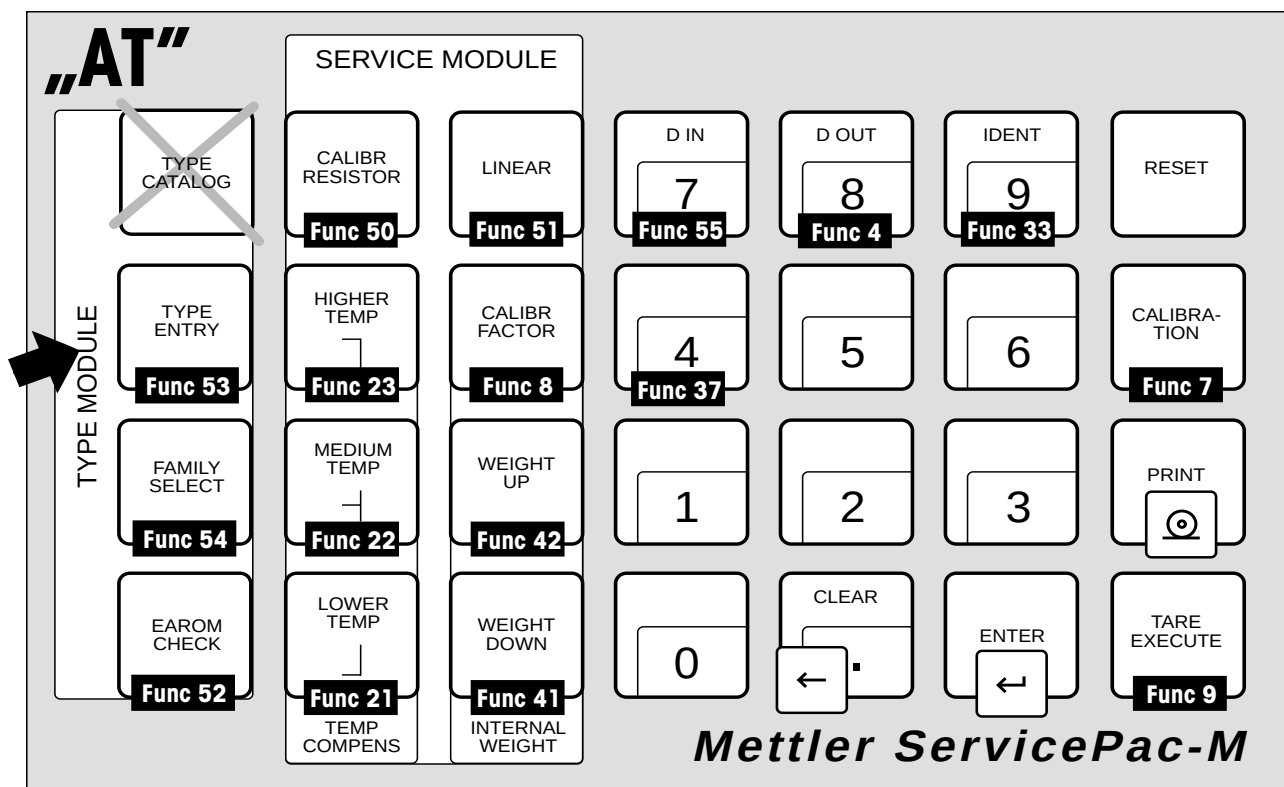
2.4 Adjustment of the AT/MT balances

The *ServicePac-M* keypad is not needed. However, *type cassette* and *adjustment cassette* must continue to be used.

The adjustment procedure remains exactly the same as before except that the functions of the *ServicePac-M* are initiated using the keypad of the LC-PT45.

Please consult the appropriate service manual for the adjustment procedure and explanations of the messages on the balance display.

ServicePac-AT and LC-PT45, allocation of the functions for the AT/MT balances



ServicePac AT Tast.

➡ Loading type parameters

- Switch off balance and LC-PT45
- Insert type cassette
- Switch on balance and then the LC-PT45 ➡ page 6-5, wait for printout „ServicePac AT, RS active“
- Enter the type designation using *Func 54* (if need be) and *Func 53* as described in the AT/MT service manual

Adjustment functions of the ServicePac-M

- Switch off balance and LC-PT45
- Insert adjustment cassette in place of type cassette
- Switch on balance and then the LC-PT45, wait for printout „ServicePac AT, RS active“.
- Use adjustment function. Example: Instead of pressing the LINEAR key (door function), execute *Func 51* using LC-PT45.

Functions for AM/BB/CM/PM/SM/J balances

19: Clear EARM; Clear map of balance EPROM in LC-PT45

0 FUNC 1 9 ← 19:Clear EARM	Clear map of balance EPROM in LC-PT45
Input TDNR → Func 1, Seite 7-11	Enter TDNR of the attached balance
load typedef → Func 2, Seite 7-12	Answer „Clear EPROM?“ with „<-“

31: List mode, printout of balance specifications and actual configuration in configuration position "list"

0 FUNC 3 1 ←	Prepare printout of the balance settings in the balance configuration „List“ 1)	
Raise control bar	off	Switch off balance
Press and hold control bar	conf	Enter the configuration mode
Release control bar	rESEt	and ...
Press and hold control bar	YES	
Press control bar briefly	no	
Press and hold control bar	LISt	select „List“
STANDARD V10.40.00 TYPE : PM2000 INR : 5534487 FULL : 2100.90 g d : 0.01 g CAL : 2000 g ASD : 2 : : : : : : : : :		

1) In the List mode, the LC-PT45 ignores the message at its RS232 interface which identifies the attached device on startup.

2.5 Adjustment of the HG/HR Moisture Analyzer

Service Mode

The service software is located in the normal program EPROM on the CPU board. Use the key combination



(press and hold) +



to enter the service mode → chapter 6, section 2.2.

In the service mode, only the keys , ,  und  are active. The menu is blocked.

The adjustments must be performed when the instrument is at room temperature. *Func 71, 72, 73, 74, 75* and *79* are specially designed for the Moisture Analyzer. Of the other functions, all marked with „H“ can also be used for the Halogen Moisture Analyzer.

With the HG/HR functions are aborted with  (*Func 90* too), and **not** with , as usual with balances.

General Reset (all methods will be lost!!)

- Plug off mains.
- Press and hold  while plug in mains.

3. Error messages on LC-PT45 and balance/Moisture Analyzer

➡ See also the error messages in the operating instructions!

Display/Printout	Output	Meaning	Rectification/Remark
Array 1 occupied	LC-PT45	Memory 1 already written to	Memory can be overwritten with new type parameters
Arraynumber not valid	LC-PT45	As there are 9 type definition memories available in LC-PT45, one of these must be selected	Select a number (1,2 ...9)
bad data	Balance/ LC-PT45	Fine adjustment data unusable, e.g. due to vibrations during the adjustment	Repeat adjustment
CAN not active Program terminated	LC-PT45	Missing TYPROM in LC-PT45 or LC-PT45 attached to wrong balance	Check TYPROM or balance type
CAUTION: Illegal action!	LC-PT45	The TDNR now to be loaded corresponds to a balance with a higher resolution (upgrade) and must not be loaded.	
CAUTION:TypeDef modified	LC-PT45	Means that METTLER TOLEDO has modified the type parameters and that the type parameters of the balance board are no more actual. They have to be updated by means of <i>Func1</i> and <i>Func2</i> .	
Connection failed	LC-PT45	No data transfer between LC-PT45 and balance	Check cable connection
CSError TechTypeDef CSError UserConf&Appl CSError PerfTypeDef CSError HardwTypeDef	LC-PT45	Checksum error Message provides detailed information on what part of type definition data is incorrect. This message is normal when balance is initialized.	
Data failed	LC-PT45	Error in checksum during loading of prescaler and TC data	Repeat, possible input error
EA FAULT	Balance	The EAROM contents can not be read or it contains nothing	Load type definition

➡..

Display/Printout	Output	Meaning	Rectification/Remark
ERR 1	LC-PT45	Control number error	Used in linearization and TC adjustments
ERR 2	LC-PT45	Method error	
ERR 4	LC-PT45	Preceding adjustment is missing	
ERR 8	LC-PT45	Number error	
ERR 16	LC-PT45	Operation not executable	
ERR 24	LC-PT45	Combination of ERR 8 + ERR 16	
ERR 126	LC-PT45	Checksum error	
ERR 127	LC-PT45	Transmission error	
ES	LC-PT45	Error syntax, command unknown Error in data command	Software version
Highest SNR: 16777215	LC-PT45	Upper limit of SNR range reached or exceeded	
Input error	LC-PT45	Wrong entry	
Interruption	LC-PT45	No data transfer between LC-PT45 and balance	Check cable connection
Ld fAiL	Balance	Load failure. Data from printer not transferred correctly or faulty	Check connections
No data	LC-PT45	Prescaler and TC data not available and hence no printout possible	Write prescaler and TC data into balance
no internal cal	LC-PT45	No internal calibration found	
no motor	LC-PT45	No calibration drive found or not attached	Balance has no internal calibration weight, check drive
not allowed	LC-PT45	Wrong entry, not accepted TDNR	Check entry
not confirmed	LC-PT45	The adjustment values could be processed, but were not confirmed by the operating-system (for various reasons)	
not ok	LC-PT45	Manual abort of a balance function (e.g. cal)	
not okay	LC-PT45	Executed function not accepted	Initiate function again
not poss	Balance/ LC-PT45	Adjustment, not possible as precondition not met (e.g. preceding adjustment not done or relevant function not present in this balance).	Determine the adjustments made with <i>FUNC 33</i> : TC adjustment <i>Func 20</i> must always be done.



Display/Printout	Output	Meaning	Rectification/Remark
not started	LC-PT45	The adjustment-values could be processed and confirmed but not started (for various reasons)	
not succ	Balance/ LC-PT45	Adjustment not successful (AG)	Repeat adjustment
Old OS-version	LC-PT45	The OS is older than version V0.9x, , update software to current version	Replace OS EPROM
Prescale parameters not valid, try again	LC-PT45	Weight value not accepted	Repeat adjustment
RAM Rd/Wr-ERR 88-101	LC-PT45	Read/write error RAM in LC-PT45 faulty	Change printer board
RS232 Handshake error	LC-PT45	No data transfer between LC-PT45 and balance	Adapt interface in balance menu
RS232 RxTx error	LC-PT45	RS232 output at LC-PT45 faulty or printer test not performed properly (section 6)	Change printer board or repeat printer test
Sd uPd	Balance	Servicedate updated on completion of a servicereport	
stopped	Balance/ LC-PT45	Fine adjustment aborted by user	
SysErr.106	HG/HR	Software blocked	Reset HG/HR → 2.5 (General Reset, all methods will be lost!), or replace CPU board.
tc 45,23 ppm	Balance	In TC adjustment, the temp. coefficient is shown on the balance (and printer) after the second temp. measurement to provide information on the quality of the built-in permanent magnet. A value less than 400 is OK.	
TDNR different	LC-PT45	If LC-PT45 attached to different balance without being switched off, TDNR is interpreted as wrong	Switch off LC-PT45 and restart or enter new TDNR
TDNR does not exist	LC-PT45	TDNR not available in TYPROM	TYPROM is not current. Copy TDNR from MT fax with Func 3
TDNR not allowed	LC-PT45	Cell quality too low for type to be loaded	Enter correct TDNR
TDNR not valid	LC-PT45	TDNR not available	Enter correct TDNR



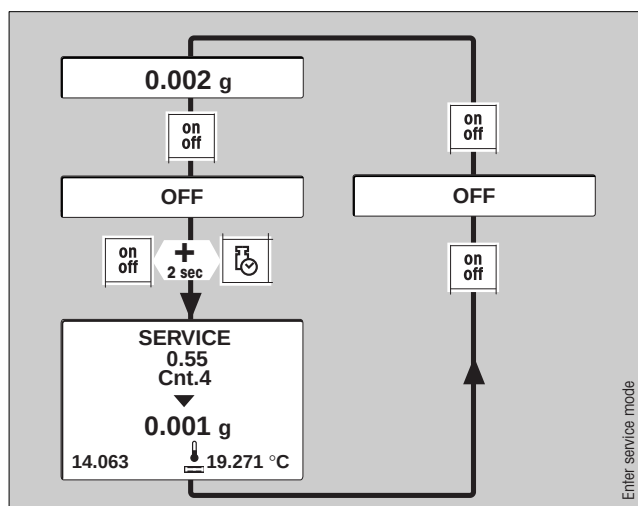
Display/Printout	Output	Meaning	Rectification/Remark
timeout	Balance	Calibration drive is missed or defective	
Transmission error	LC-PT45	Connection interrupted	Check cable connection
TYPROM not readable	LC-PT45	TYPROM not readable	Check TYPROM version
unstable	LC-PT45	Balance not stable	Match balance to surroundings
weight out of range +	LC-PT45	Wrong calibration weight (too heavy)	Load correct weight
weight out of range –	LC-PT45	Wrong calibration weight (too light)	Load correct weight
ZA	LC-PT45	Zero. Balance has been tared.	
Z I	LC-PT45	Zero Interrupt. Information from OS, re-zero was not possible	Check weighing range

4 Adjusting the HB Moisture Analyzer

4.1 Preparing the HB

- Visual check and troubleshooting if necessary → Sections 3, 3. and 4, 8.
- Repairing and adjusting the HB → Section 5, 6.
- Entering service mode, for example for linearization. Or connection to Laptop/PC with LARS installed for further repair functions or to load a new application.

4.2 Adjusting in service mode

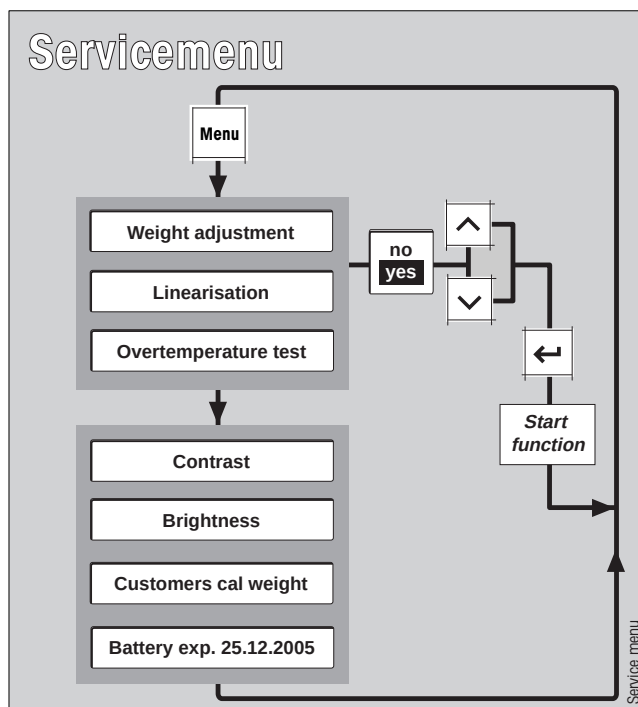


4.2.1 Entering service mode

Switch off HB by pressing .

Press  +  simultaneously for 4 s.

The HB is now in service mode. It briefly displays its software version and the sum of the number of weight and temperature adjustments. It then displays the weighing result in service resolution (steps of 0.001 g) and at the bottom the dead load in g and the cell temperature.



4.2.2 Select menu item

Press  repeatedly until the desired display appears.

Press  for decision to carry out the function, then

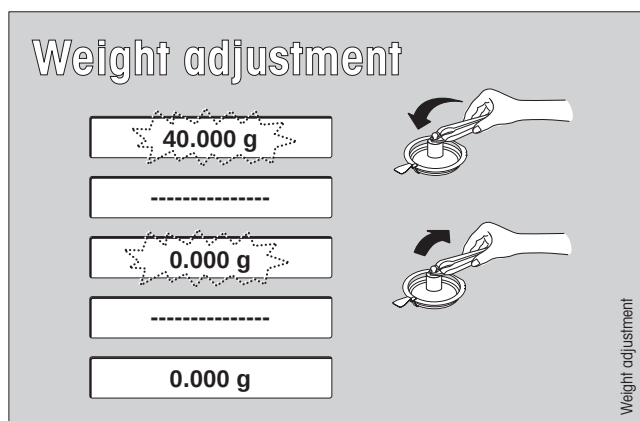
 to start the function (weight adjustment → 4.2.3, linearization → 4.2.4, overtemperature test → 4.2.5).

To adjust display contrast → 4.2.6,

or brightness → 4.2.7,

or change the value of the adjustment weight → 4.2.8.

The expiry date of the buffer battery (for clock and menu settings) is displayed in Euro format (dd.mm.yyyy) or, depending on the language selected, in US format (mm/dd/yyyy). When the battery is replaced the expiry date must be input with LARS.



4.2.3 Weight adjustment

Purpose:

To adjust deviations in the weight signal of up to $\pm 10\%$.

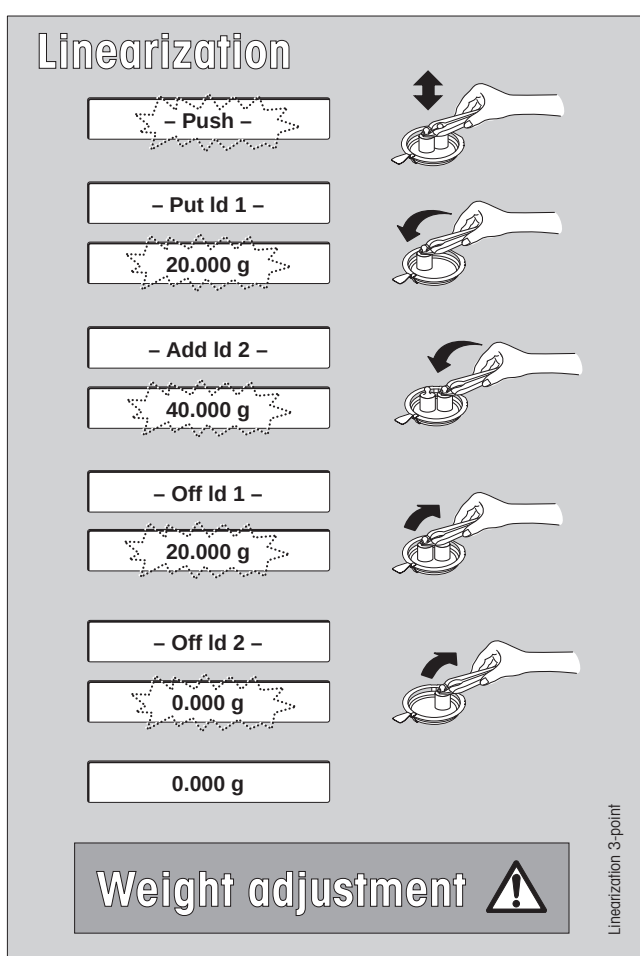
Place the requested weight on the pan,

wait,

remove weight,

wait,

weight adjustment is complete.



4.2.4 3-point linearization

Briefly place full load on the pan.

Info: Next place 1st half load on pan.

Place requested load on pan.

Info: Next place 2nd half load on pan.

Add weights to make up requested load.

Info: Next remove 1st half load so only the 2nd half load is still on the pan. 1)

Remove 1st half load.

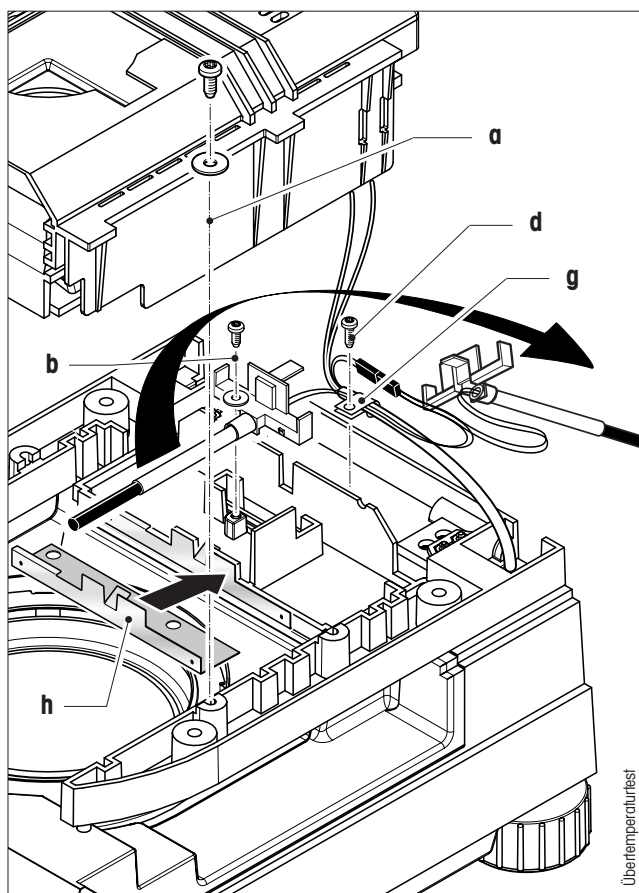
Info: Next remove 2nd half load.

Remove 2nd half load.

Linearization complete.

After linearization a weight adjustment must always be done, because linearization deletes the old weight adjustment.

- 1) Precisely following the sequence of loading and removing weights makes it possible even to use adjustment weights which are slightly different from each other.



4.2.5 Overtemperature test

Purpose: Functional test of the resettable temperature controller. With the temperature sensor removed, the halogen lamp heats at full power until it is switched off after 2....3 minutes by the temperature controller.

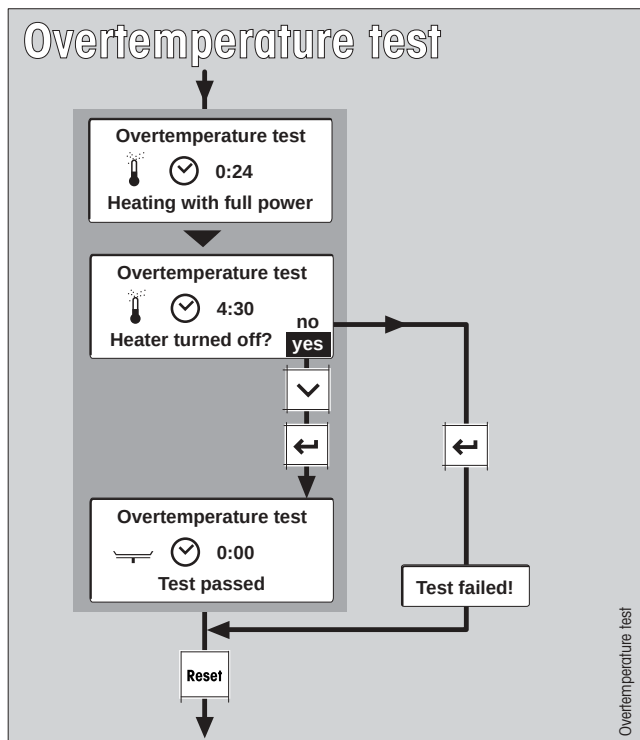
- Dismantle heating module (a), the two radiator cables → Section 5, 6.1.1 (c) do not have to be disconnected).
- If necessary, clean the protective glass and reflector (otherwise too much heat is absorbed and the parts can be damaged).
- Remove screws (b) and (d), lift the temperature sensor out of its housing and lay it outside the HB43 at the back, but do not unplug it.
- Place heat protection plate (h) in direction of arrow.
- Install the heating module → Section 5, 6.1.6 (do not screw tight and do not put the cover on).



The bare connector (f) must be placed inside the heating module as shown in Section 5, 6.1.6!

- Close drying unit.

- **Put aluminum sample pan in place!**



Start overtemperature test and observe its progress.

Note:

- The halogen lamp heats at full power. To protect your eyes do not look directly into the light!
- During the first minute a small amount of smoke may be given off.
- The test can be terminated at any time with

The HB43 heats for 2 to 3 minutes. The temperature controller then switches the halogen lamp off with an audible "Click". 4 minutes and 30 seconds after it has

switched off, either confirm with , or reject with



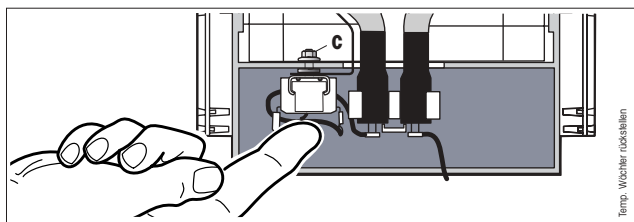
and then

return to the menu with .



Error messages

- **Timeout:** No confirmation 6 minutes after switching off.
- **Remove sensor:** Temperature sensor not unplugged or not laid at the back.



Final check: standard drying with coin as sample at 100 °C for 2 minutes.



Allow drying unit to cool down.

- Reset temperature controller (do not press spring under edge of base!).
- Tighten nut (c), but not too tightly (1.2 Nm).
- Remove heat protection plate and install temperature sensor, minding to

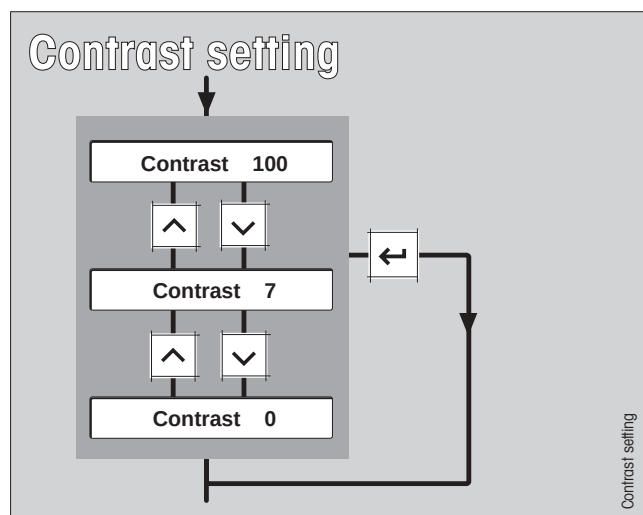


pull the sensor cable through the clamp
→ 4.2.5, (g), mount heating module and cover → Section 5, 6.1.6.

Observe the temperature: within 90 seconds it must reach 95 to 100 °C.

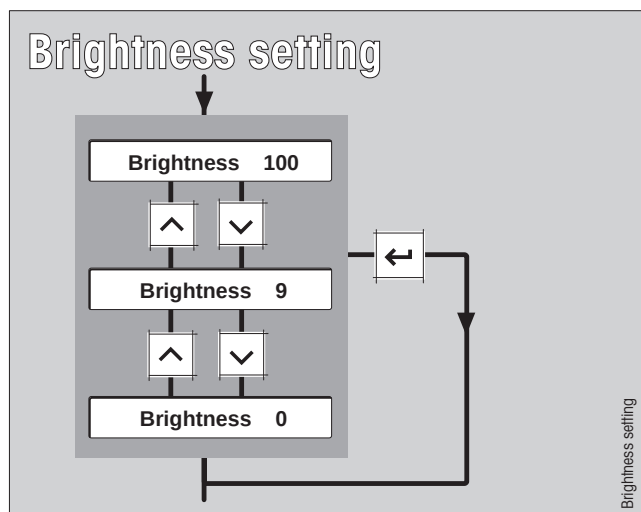
Error messages:

- "Radiator switched off?" and beep after 4.5 minutes: has the lamp switched off? If so, confirm with ; if not, the temperature controller is faulty. Switch off the HB43 with , allow to cool down and replace the temperature controller. Repeat the test and observe whether the temperature controller functions.
- "Time out": After 6 minutes the test was not confirmed and therefore had to be terminated for safety reasons. Repeat test. If the lamp stays lit until the beep, the temperature controller must be replaced.
- "Remove sensor!": The temperature sensor has not been dismantled (as shown in the first illustration to 4.2.5). The test has been terminated and must be repeated.



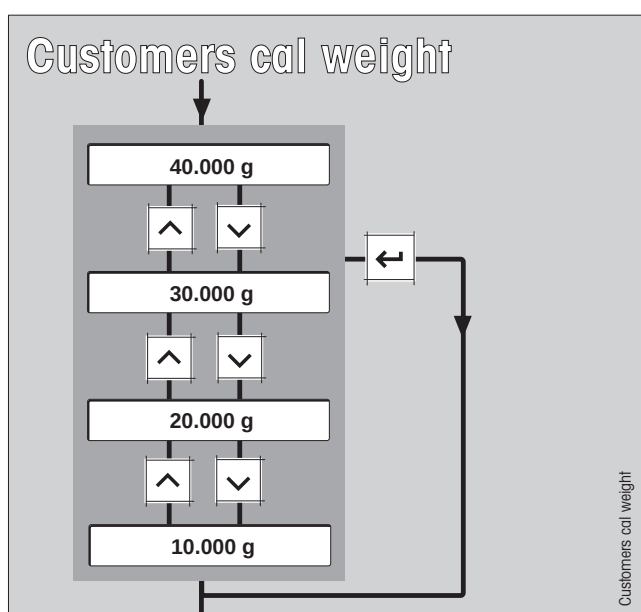
4.2.6 Adjusting the contrast

Use  and  to adjust the contrast and confirm the setting with  or .



4.2.7 Adjusting the brightness of the display

Use  and  to set the brightness and confirm with  or .



4.2.8 Changing the adjustment weight

If desired, the value of the adjustment weight can be changed. However, when servicing is complete, the adjustment weight must be reset to the original value corresponding to the balance, unless the changed adjustment weight should also be used for normal operation.

Use  and  to select the adjustment weight and confirm the selection with  or .

Contents		Page
1.	Technical data and adjustment tolerances	2
1.1	B Balances	2
1.1.1	AB, CB, PB, B, GB laboratory balances	2
	B-S Balances	5
1.1.2	GB, PB, SB industrial balances	7
1.1.3	HG/HR Moisture Analyzer	9
1.1.4	HB Moisture Analyzer	10
1.2	G balances	12
1.2.1	AG, SAG, PG-S laboratory balances (PG, SG see 1.3)	12
	Blank pages	17-18
1.3	R and G balances	20
1.3.1	Laboratory balances: PR/PG	20
	Blank pages	23-24
1.3.2	PR/PG, S/SR/SG Industrial balances	26
	Blank pages	29-30
2.	Technical data and adjustment tolerances of the special types	31
2.1	Lab balances	31
	Blank pages	33-34
2.2	Industrial balances, technical data and adjustment tolerances of special types	35
	Blank pages	37-38
3.	Information on certified balances	39
3.1	Certified (AB), CB, GB and PB balances: calibration procedure and unit selection	39
3.2	Certified GB and SB balances: calibration procedure and unit selection	40
3.3	Certified PR and PG balances: external calibration and unit selection	41
3.4	Certified SR and SG balances: external calibration and unit selection	42
3.5	Certified PG-S balances: external calibration and unit selection	43
3.6	Certified B-S balances: external calibration and selection of units	44
3.7	Certification sticker "M"	44

1. Technical data and adjustment tolerances

1.1 B Balances

1.1.1 Laboratory balances (Exceptions: (Ind) = Industrial balance)



Type	Weighing range		Readability				Repeatability
	Normal	Fine range	Normal	Fine range	Service mode	Factor	
AB54	51 g	–	0,1 mg	–	0,05 mg	2	0,1 mg
AB104	101 g	–	0,1 mg	–	0,05 mg	2	0,1 mg
AB204	210 g	–	0,1 mg	–	0,05 mg	2	0,1 mg
CB203	610 ct	210 ct	10 mct	1 mct	0,1 mg	2(20)	0,02 mg
CB603	610 ct	–	1 mct	–	0,1 mg	2	0,02 mg
CB1503DR	1600 ct	100 ct	10 mct	1 mct	0,1 mg	2(20)	0,02 mg
PB153	151 g	–	1 mg	–	0,5 mg	2	1 mg
PB303	310 g	–	1 mg	–	0,5 mg	2	1 mg
PB303DR	310 g	60 g	10 mg	1 mg	0,5 mg	2(20)	1 mg
PB302	310 g	–	10 mg	–	5 mg	2	5 mg
PB602	610 g	–	10 mg	–	5 mg	2	5 mg
PB1502	1510 g	–	10 mg	–	5 mg	2	10 mg
PB3002	3100 g	–	10 mg	–	5 mg	2	10 mg
PB3002DR	3100 g	600 g	0,1 g	10 mg	5 mg	2(20)	10 mg
PB801 (Ind)	810 g	–	0,1 g	–	50 mg	2	0 mg
PB1501 (Ind)	1510 g	–	0,1 g	–	50 mg	2	50 mg
PB3001 (Ind)	3100 g	–	0,1 g	–	50 mg	2	50 mg
B154	151 g	–	0,1 mg	–	0,05 mg	2	0,1 mg
B303	310 g	–	1 mg	–	0,5 mg	2	1 mg
B502	510 g	–	10 mg	–	5 mg	2	5 mg
B1302	1310 g	–	10 mg	–	5 mg	2	10 mg
B3002DR	3100 g	600 g	0,1 g	10 mg	5 mg	2(20)	10 mg
B3001	3100 g	–	0,1 g	–	50 mg	2	50 mg
GB1302	1310 g	–	10 mg	–	5 mg	2	10 mg
GB2002	2100 g	–	10 mg	–	5 mg	2	10 mg
GB3002	3100 g	–	10 mg	–	5 mg	2	10 mg
GB3002DR	3100 g	600 g	0,1 g	10 mg	5 mg	2(20)	10 mg
GB1501	1510 g	–	0,1 g	–	50 mg	2	50 mg
GB3001	3100 g	–	0,1 g	–	50 mg	2	50 mg

Type	Linearity		Cornerload		Temperature behavior	
	Tolerance Up	Tolerance Down	Test- weight	Tolerance	Tol. zero /10 °C	Tol. sensitivity /10 °C
AB54	0,2 mg	0,4 mg	50 g	0,2 mg	5 mg	0,5 mg 1)
AB104	0,2 mg	0,4 mg	100 g	0,3 mg	5 mg	0,5 mg 1)
AB204	0,2 mg	0,4 mg	100 g	0,3 mg	5 mg	0,75 mg 1)
CB203	0,4 mg	0,8 mg	50 g	0,5 mg	5 mg	0,5 mg 1)
CB603	0,4 mg	0,8 mg	50 g	0,5 mg	5 mg	0,5 mg 1)
CB1503DR	0,6 mg	0,8 mg	100 g	1 mg	7 mg	0,75 mg 1)
PB153	2 mg	4 mg	100 g	1,5 mg	15 mg	9 mg
PB303	2 mg	4 mg	200 g	2,5 mg	20 mg	12,5 mg
PB303DR	2 mg	4 mg	200 g	2,5 mg	20 mg	12,5 mg
PB302	10 mg	15 mg	200 g	10 mg	20 mg	10 mg
PB602	10 mg	15 mg	500 g	15 mg	20 mg	10 mg
PB1502	20 mg	40 mg	1000 g	25 mg	150 mg	90 mg
PB3002	30 mg	40 mg	1500 g	40 mg	200 mg	125 mg
PB3002DR	30 mg	40 mg	1500 g	40 mg	200 mg	125 mg
PB801	50 mg	50 mg	500 g	50 mg	200 mg	100 mg
PB1501	100 mg	150 mg	1000 g	50 mg	200 mg	100 mg
PB3001	100 mg	150 mg	2000 g	100 mg	300 mg	150 mg
B154	0,2 mg	0,4 mg	100 g	0,3 mg	5 mg	1,5 mg
B303	2 mg	4 mg	200 g	2,5 mg	20 mg	12,5 mg
B502	10 mg	15 mg	500 g	15 mg	20 mg	10 mg
B1302	20 mg	40 mg	1000 g	25 mg	150 mg	90 mg
B3002DR	30 mg	40 mg	1500 g	40 mg	200 mg	125 mg
B3001	100 mg	150 mg	2000 g	100 mg	300 mg	150 mg
GB1302	20 mg	40 mg	1000 g	25 mg	150 mg	90 mg
GB2002	30 mg	40 mg	1500 g	40 mg	200 mg	125 mg
GB3002	30 mg	40 mg	1500 g	40 mg	200 mg	125 mg
GB3002DR	20 mg	40 mg	1500 g	40 mg	200 mg	125 mg
GB1501	100 mg	150 mg	1000 g	50 mg	300 mg	150 mg
GB3001	100 mg	150 mg	2000 g	100 mg	300 mg	150 mg

1) Limited temperature range (/2,5 °C)

Type	Calibration tolerances	Calibration weight			
		Normal balances	Certified balances	Service mode	Accuracy class
AB54	0,2 mg	50 g	50 g	50 g	E2
AB104	0,3 mg	100 g	100 g	100 g	E2
AB204	0,4 mg	200 g	200 g	200 g	E2
CB203	2 mg	100 g	100 g	100 g	E2
CB603	0,4 mg	100 g	100 g	100 g	E2
CB1503DR	2 mg	200 g	200 g	200 g	E2
PB153	2 mg	100 g	150 g	150 g	F1
PB303	2 mg	200 g	300 g	300 g	F1
PB303DR	10 mg	200 g	300 g	300 g	F1
PB302	10 mg	200 g	–	–	
PB602	10 mg	500 g	600 g	600 g	F1
PB1502	20 mg	1000 g	1500 g	1500 g	F1
PB3002	40 mg	2000 g	3000 g	3000 g	F1
PB3002DR	100 mg	2000 g	3000 g	3000 g	F1
PB801 (Ind)	100 mg	500 g	800 g	800 g	F1
PB1501 (Ind)	100 mg	1000 g	1500 g	1500 g	F1
PB3001 (Ind)	100 mg	2000 g	3000 g	3000 g	F1
B154	0,3 mg	100 g	–	150 g	E2
B303	2 mg	200 g	–	300 g	F1
B502	10 mg	500 g	–	500 g	F1
B1302	20 mg	1000 g	–	1300 g	F1
B3002DR	100 mg	2000 g	–	3000 g	F1
B3001	100 mg	2000 g	–	–	
GB1302	30 mg	1000 g	1300 g	1300 g	F1
GB2002	30 mg	1000 g	2000 g	2000 g	F1
GB3002	20 mg	2000 g	3000 g	3000 g	F1
GB3002DR	100 mg	2000 g	3000 g	3000 g	F1
GB1501	100 mg	1000 g	1500 g	1500 g	F1
GB3001	100 mg	2000 g	3000 g	3000 g	F1



B-S Balances	Technical Information				Eccentricity		Repeatability	
	DR Range	Weighing Range g	Readability normal mg	Readability Servicemode mg	Weight g	Tolerance +/- mg	Weight g	s ≤ mg
AB54-S	–	51	0.1	0.05	50	0.2	50	0.1
AB104-S	–	110	0.1	0.05	100	0.3	100	0.1
AB135-S	normal feine	120	0.1	0.005	100	0.4	50	0.1
		31	0.01	0.005	100	0.4	10	0.03
AB184-S-A	–	181	0.1	0.05	100	0.3	100	0.1
AB204-S	–	220	0.1	0.05	200	0.4	100	0.1
AB304-S	–	320	0.1	0.05	200	0.4	100	0.1
B154-S	–	151	0.1	0.05	100	0.3	100	0.1
B203-S	–	210	1	0.5	200	4	200	1
AB265-S	normal feine	220	0.1	0.005	100	0.4	100	0.1
		61	0.01	0.005	100	0.4	10	0.05
B502-S	–	510	10	5	500	15	500	5
B2002-S	–	2100	10	5	2000	40	2000	10
B3001-S	–	3100	100	50	2000	100	2000	50
GB802-S	–	810	10	5	500	15	500	10
GB6001-S	–	6100	100	50	4000	300	4000	100
PB153-S	–	151	1	0.5	100	3	100	1
PB303-S	–	310	1	0.5	200	4	200	1
PB303-SDR	normal feine	310	10	0.5	200	4	200	1
		60	1	0.5	–	–	–	–
PB403-S		410	1	0.5	200	3	200	1
PB602-S	–	610	10	5	500	15	500	5
PB1501-S	–	1510	100	50	1000	100	1000	50
PB1502-S	–	1510	10	5	1000	25	1000	10
PB3001-S	–	3100	100	50	2000	100	2000	50
PB3002-S	–	3100	10	5	2000	40	2000	10
PB3002-SDR	normal feine	3100	100	5	2000	40	500	10
		600	10	5	–	–	–	–
PB4002-S		4100	10	5	2000	25	2000	10
PB5001-S	–	5100	100	50	4000	300	4000	100
PB8000-S	–	8100	1000	100	4000	300	4000	500
PB8001-S	–	8100	100	50	4000	300	4000	100



	Linearity				Sensitivity		
	Weights class OIML	Preload or Testweights g	Tolerance +/- mg	Hysteresis +/- mg	Weights class OIML	Weight g	Tolerance +/- mg
AB54-S	1)	10/20/30/40/50	0.2	0.2	E2	50	0.2
AB104-S	1)	50/100	0.2	0.2	E2	100	0.3
AB135-S	1)	20/40/60	0.2	0.2	E2	50	0.4
AB184-S-A	1)	50/100/150	0.2	0.2	E2	100	0.3
AB204-S	1)	50/100/150/200	0.2	0.2	E2	200	0.4
AB304-S	1)	100/200/300	0.4	0.2	E2	200	0.5
B154-S	1)	50/100/150	0.2	0.2	E2	100	0.3
B203-S	1)	50/100/150/200	2	2	E2	200	2
AB265-S	1)	50/100/150/200	0.2	0.2	E2	200	0.4
B502-S	F1	100/200/300/400/500	20	20	F1	500	10
B2002-S	F1	500/1000/1500/2000	30	20	F1	1000	10
B3001-S	F1	1000/2000/3000	100	100	F1	2000	100
GB802-S	F1	200/400/600/800	20	10	F1	800	20
GB6001-S	F1	1500/3000/4500/6000	100	50	F1	4000	100
PB153-S	E2	40/80/120/150	2	2	E2	100	1
PB303-S	E2	100/200/300	2	2	E2	200	1
PB303-SDR	F1	100/200/300	2	2	F1	200	10
PB403-S	1)	100/200/300/400	2	1	E2	400	2
PB602-S	F1	200/400/600	10	5	F1	500	10
PB1501-S	F1	400/800/1200/1500	100	50	F1	1000	100
PB1502-S	F1	400/800/1200/1500	20	20	F1	1000	10
PB3001-S	F1	800/1600/2400/3000	100	50	F1	2000	100
PB3002-S	1)	1000/2000/3000	30	10	F1	2000	10
PB3002-SDR	F1	1000/2000/3000	30	10	F1	2000	100
PB4002-S	1)	1000/2000/3000/4000	20mg	10mg	F1	4000	20
PB5001-S	F1	1200/2400/3600/4800	100	50	F1	4000	100
PB8000-S	F1	2000/4000/6000/8000	500	250	F1	4000	100
PB8001-S	F1	2000/4000/6000/8000	100	50	F1	4000	100

1) With this test work is performed with differential measurements. For that reason it is possible to use cheap, not classified weights. A constantly increasing preload is loaded, but at every point taring is performed and then the deviation measured after loading the same weight.

1. Tare and print out the display value.
2. Tare and load the first weight; print out the display value.
3. Remove the first weight, load the load of the next preload stage (e.g. 20 g) and tare.
4. Reload the same first weight and print out the display value.
5. Repeat points 3 and 4 until the highest preload stage.
6. (Largest minus smallest display value)/2 must not be larger than the specified tolerance value.

1.1.2 Industrial balances (Exceptions: (Lab) = Laboratory balances)


Type	Weighing range		Readability				Repeatability
	Normal	Fine range	Normal	Fine range	Service mode	Factor	
PB5001	5100 g	–	0,1 g	–	50 mg	2	50 mg
PB8001	8100 g	–	0,1 g	–	50 mg	2	100 mg
PB8000	8100 g	–	1 g	–	500 mg	2	500 mg
GB6001 (Lab)	6100 g	–	0.1 g	–	50 mg	2	50 mg
GB16001 (Lab)	16100 g	–	0,1 g	–	50 mg	2	100 mg
SB8001	8100 g	–	0.1 g	–	50 mg	2	100 mg
SB8001DR	8100 g	1600 g	1 g	0.1 g	50 mg	2 (20)	500 mg
SB8000	8100 g	–	1 g	–	500 mg	2	500 mg
SB12001	12100 g	–	0.1 g	–	50 mg	2	100 mg
SB16001	16100 g	–	0.1 g	–	50 mg	2	100 mg
SB16001DR	16100 g	3200 g	1 g	0.1 g	50 mg	2 (20)	500 mg
SB16000	16100 g	–	1 g	–	500 mg	2	500 mg
SB24001DR	24100 g	4800 g	1 g	0.1 g	50 mg	2 (20)	500 mg
SB32001DR	32100 g	6400 g	1 g	0.1 g	50 mg	2 (20)	500 mg
SB32000	32100 g	–	1 g	–	500 mg	2	500 mg

Type	Linearity		Cornerload		Temperature behavior	
	Tolerance Up	Tolerance Down	Test-weight	Tolerance	Tol. zero /10 °C	Tol. sensitivity /10 °C
PB5001	100 mg	150 mg	4000 g	200 mg	1000 mg	500 mg
PB8001	100 mg	150 mg	4000 g	200 mg	1000 mg	500 mg
PB8000	500 mg	500 mg	4000 g	500 mg	1000 mg	500 mg
GB6001 (Lab)	100 mg	150 mg	4000 g	200 mg	1000 mg	500 mg
GB16001 (Lab)	300 mg	400 mg	6000 g	500 mg	2000 mg	1000 mg
SB8001	200 mg	300 mg	6000 g	300 mg	2000 mg	1000 mg
SB8001DR	500 mg	500 mg	6000 g	500 mg	2000 mg	1000 mg
SB8000	500 mg	500 mg	6000 g	500 mg	2000 mg	1000 mg
SB12001	200 mg	300 mg	6000 g	300 mg	2000 mg	1000 mg
SB16001	300 mg	400 mg	6000 g	500 mg	2000 mg	1000 mg
SB16001DR	500 mg	500 mg	6000 g	500 mg	2000 mg	1000 mg
SB16000	500 mg	500 mg	6000 g	500 mg	2000 mg	1000 mg
SB24001DR	500 mg	500 mg	10000 g	500 mg	2000 mg	1500 mg
SB32001DR	500 mg	500 mg	10000 g	500 mg	2000 mg	1500 mg
SB32000	500 mg	500 mg	10000 g	500 mg	2000 mg	1500 mg



Type	Calibration tolerances	Calibration weight			
		Normal balances	Certified balances	Service mode	Accuracy class
PB5001	100 mg	2000 g	5000 g	5000 g	F1
PB8001	100 mg	4000 g	8000 g	8000 g	F1
PB8000	300 mg	2000 g	8000 g	8000 g	F1
GB6001 (Lab)	100 mg	2000 g	6000 g	6000 g	F1
GB16001 (Lab)	300 mg	4000 g *	16000 g	16000 g	F1
SB8001	300 mg	4000 g	8000 g	8000 g	F1
SB8001DR	500 mg	4000 g	8000 g	8000 g	F1
SB8000	500 mg	4000 g	8000 g	8000 g	F1
SB12001	300 mg	4000 g	12000 g	12000 g	F1
SB16001	300 mg	4000 g *	16000 g	16000 g	F1
SB16001DR	500 mg	4000 g	16000 g	16000 g	F1
SB16000	500 mg	4000 g	16000 g	16000 g	F1
SB24001DR	500 mg	4000 g *	24000 g	24000 g	F1
SB32001DR	500 mg	4000 g *	32000 g	32000 g	F1
SB32000	500 mg	4000 g *	32000 g	32000 g	F1

*) up to mid-September 1994 = 8000 g

1.1.3 HG/HR Moisture Analyzer

Type	Weighing range	Readability	Balance adjustment	Linearity		Cornerload	Level zero point
	g	mg	50 g adjustment weight $\pm$ mg	Tolerance up mg	down mg	Test - weight 50 g Tolerance $\pm$ mg	front/rear 2‰ $\pm$ mg 1)
HG53	51	1	0.4	0.4	0.4	1	2
HG63	61	1	0.4	0.4	0.4	1	2
HR73	71	1	0.4	0.4	0.4	1	2
HR83	81	1	0.4	0.4	0.4	1	2

Typ	Sample chamber	Repeatability		Dryer unit adjustment
	Display change closed/open $\pm$ mg	Weight 50 g sample $S \leq$ mg	Result moisture content with 2 g sample $S \leq$ mg 2)	with adjustment disc at 50, 100 and 160 °C $\pm$ °C 3)
HG53	2	0.1	2	3
HG63	2	0.1	2	3
HR73	2	0.1	2	3
HR83	2	0.1	2	3

Typ	Temperature behavior
	Drying 160 °C, 1 h result after each 10 min. deviation $\pm$ mg 4)
HG53	5
HG63	5
HR73	5
HR83	5

- 1) The HG/HR has to be lifted up front/rear by 0.5 mm. In practice, this level error is generated by placing a metal ruler under the device. (The Zero point deviation left/right can not be adjusted.)
- 2)
 - Switch on device and wait for 30 minutes. Perform a drying at 160 °C with a coin as a sample.
 - Wait again 30 minutes and perform the second drying.
- 3) When reading the thermometer please be aware: 1 graduation mark = 2 °C!
- 4) Perform a drying at 160 °C during 1 hour with a coin as a sample. Set the printer to a print interval of 10 minutes and protocol the drying.

1.1.4 HB Moisture Analyzer

Type	Weighing range	Readability	Balance adjustment	Linearity Adjust.wgts g	Cornerload
	g	mg	40 g adjustment-weight ± mg	0/10/20/30/40 Tolerance ± mg	Adjustment-weight 20 g Tolerance ± mg
HB43	41	1	2	2	4

Type	Repeatability			Dryer unit adjustment		Temperature behavior	
	Weight 40 g sample	Result MC with 2 g sample		with adjustment disc at 100 and at 160 °C		Drying 160 °C, 1 h Result after each 10 min.	
	± mg	± mg	2)	± °C	3)	deviation ± mg	4)
HB43	2	6		3		8	

- 2) • Switch on device and wait for 30 minutes. Perform a drying at 160 °C with a coin as a sample.
• Wait again 30 minutes and perform the second drying.
- 3) When reading the thermometer please be aware: 1 graduation mark = **2 °C**!
- 4) Perform a drying at 160 °C during 1 hour with a coin as a sample. Set the printer to a print interval of 10 minutes and protocol the drying.

1.2 G balances

1.2.1 AG, SAG, PG-S laboratory balances (PG, SG see 1.3)



Type	Weighing range		Readability				Repeatability	
	Normal g	Fine range g	Normal mg	Fine range mg	Service mode mg	Factor	Normal ± mg	Fine range ± mg
AG64	61	–	0.1	–	0.1	1	0.1	–
AG104	101	–	0.1	–	0.1	1	0.1	–
AG135	101	31	0.1	0.01	0.01	1(10)	0.1	0.02
AG204, SAG204	210	–	0.1	–	0.1	1	0.1	–
AG204DR	210	61	1	0.1	0.1	1(10)	0.5	0.1
AG245, SAG245/P	210	41	0.1	0.01	0.01	1(10)	0.1	0.02
AG285, SAG285	210	81(41)	0.1	0.01	0.01	1(10)	0.1	0.05 (0.02)
SAG105	101	–	0.01	–	0.01	1	0.05	–
SAG125P	101	21	0.1	0.01	0.01	1(10)	0.1	0.02
SAG203F	210	–	1	–	1	1	0.5	–

Type	Linearity 1)				Cornerload		Dead load 3)
	Coarse range Preload [g]	± mg	Fine range Preload [g]	2) mg	Test weight g	± mg	g ± 4 g
AG64	0/20/40	0.2	–		50	0.3	12
AG104	0/50	0.2	–		100	0.4	12
AG135	0/50	0.2	0/10/20	0.03	100	0.4	12
AG204, SAG204	0/50/100/150	0.2	–		100	0.4	12
AG204DR	0/50/100/150	1	0/10/20/30/40/50/60	0.4	100	0.4	12
AG245, SAG245/P	0/50/100/150	0.2	0/10/20/30/40	0.06	100	0.4	12
AG285, SAG285	0/50/100/150	0.2	0/20/40/60	0.1(0.03)	100	0.4	12
SAG105	0/50	0.15	–	–	100	0.4	12
SAG125P	0/50	0.2	0/10/20	0.06	100	0.4	12
SAG203F	0/50/100/150	1	–		100	4	12

1) The specified deviations are mean values from 10 weighings. The deviation of the individual weighing is around 2.5 times greater.

2) See 2) "Linearity test for the fine range of AG balances" on [page 8-14](#).

3) Select "disp r" in the menu



Type	Calibration tolerances		Calibration weights				
	Normal range mg	Fine range mg	Normal balance g	Fine range g	Certified balance g	Service mode g	Accuracy class 4)
AG64	0.4	–	50	–	50	100	E2
AG104	0.4	–	100	–	100	100	E2
AG135	0.4	–	100	20	100	100	E2
AG204, SAG204	0.4	–	200	–	200	200	E2
AG204DR	0.4	–	200	–	200	200	E2
AG245, SAG245/P	0.4	–	200	40	200	200	E2
AG285, SAG285	0.4	–	200	40	200	200	E2
SAG105	0.4	–	100	–	100	100	E2
SAG125P	0.4	–	100	20	100	100	E2
SAG203F	0.4	–	200	–	200	200	E2

4) For standard calibration the value of the available reference weight can be entered at the LC-PT45. For a nominal value of 200 g for example 200.003 g

Type	Level error: 5) Zero point deviation		Level error: 5) Sensitivity deviation			Temperature behavior	
	front/rear ± mg	left/right 6) ± mg	Test weight g	fr/re – mg	le/ri – mg	Zero point ± mg/10 °C	Sensitivity ± mg/10 °C
AG64	0.4	2	50	0.3	0.6	4	2
AG104	0.4	2	100	0.6	1.2	4	2
AG135	0.4	2	100	0.6	1.2	4	2
AG204	0.4	2	100	0.6	1.2	4	4
AG204DR	0.4	2	100	0.6	1.2	4	4
AG245, SAG245P	0.4	2	100	0.6	1.2	4	4
AG285	0.4	2	100	0.6	1.2	4	4
SAG105	0.4	2	100	0.6	2	4	2
SAG125P	0.4	2	100	0.6	1.2	4	2
SAG203F	0.4	2	–	–	–	4	4
SAG204	0.4	2	–	–	–	4	4
SAG245	0.4	2	–	–	–	4	4
SAG285	0.4	2	–	–	–	4	4

5) In practice, the level error is generated by placing a ruler of thickness 0.5 mm under the balance (this results in an inclination of 2‰ when placed under the front/rear ends and one of 3‰ when placed under the left/right sides).

6) The Zero point deviation left/right can not be adjusted.

PG-S

2) Linearity test for the fine range of AG balances:

With this test work is performed with differential measurements. A constantly increasing preload is loaded, but at every point taring is performed and then the deviation measured after loading the same 10 g weight.

- Tare and print out the display value.
- Tare and load an E2 weight of 10 g; print out the display value.
- Remove the 10 g weight, load the load of the next preload stage (e.g. 20 g) and tare.
- Reload the same 10 g weight and print out the display value.
- Repeat pints 3 and 4 until the next highest preload stage.
- Largest minus smallest display value must not be larger than the specified tolerance value.

Note: The preload weights must correspond to accuracy class E2.



Type	Weighing range		Readability				Repeatability
	Normal	Fine - range	Normal	Fine - range	Service-mode	Factor	
	g	g	g	g	mg		mg
PG203-S	210		0.001		0.5	2	0.8
PG403-S	410		0.001		0.5	2	0.8
PG403-SDR	410	80	0.01	0.001	0.5	2(20)	0.8
PG503-S	510		0.001		0.5	2	0.8
PG503-SDR	510	100	0.01	0.001	0.5	2(20)	0.8
PG603-S	610		0.001		0.5	2	1
PG603-SDR	610	120	0.01	0.001	0.5	2(20)	1
PG802-S	810		0.01		5	2	8
PG1003-S	1010		0.001		0.5	2	1.5
PG2002-S	2100		0.01		5	2	8
PG2002-SDR	2100	400	0.1	0.01	5	2(20)	8
PG3001-S/E	3100		0.1		50	2	50
PG4002-S	4100		0.01		5	2	8
PG4002-SDR	4100	800	0.1	0.01	5	2(20)	8
PG5002-S	5100		0.01		5	2	8
PG5002-SDR	5100	1000	0.1	0.01	5	2(20)	8
PG6002-S	6100		0.01		5	2	8
PG6002-SDR	6100	1200	0.1	0.01	5	2(20)	8

Type	Linearity ¹⁾				Hysteresis	Cornerload	
	Testload or preload g	Testload classe	Δ g	Tolerance $\pm$ mg	Tolerance $\pm$ mg	Weight g	Tolerance $\pm$ mg
PG203-S	50/100/150/200	E2		2	1	200	2
PG403-S	100/200/300/400	E2		2	1	200	2
PG403-SDR	0/100/200/300		50	2	1	200	2
PG503-S	100/200/300/400/500	E2		2	1	200	2
PG503-SDR	0/100/200/300/400		50	2	1	200	2
PG603-S	0/200/400		200	2	2	200	3
PG603-SDR	0/200/400		100	2	2	200	3
PG802-S	0/200/400/600		200	10	10	500	20
PG1003-S	0/200/400/600/800		200	3	2	500	20
PG2002-S	0/500/1000/1500		500	20	10	1000	20
PG2002-SDR	0/500/1000/1500		200	20	10	1000	20
PG3001-S/E	1000/2000/3000	F1		100	100	2000	50
PG4002-S	0/1000/2000/3000		1000	20	10	2000	20
PG4002-SDR	0/1000/2000/3000		500	20	10	2000	20
PG5002-S	0/1000/2000/3000/4000		1000	20	10	2000	20
PG5002-SDR	0/1000/2000/3000/4000		500	20	10	2000	20
PG6002-S	0/2000/4000		2000	20	10	2000	40
PG6002-SDR	0/2000/4000		1000	20	10	2000	40

1) Measure in absolute mode:

- Put E2- or F1-weight as test load, and determine the deviation of linearity,

or differential mode:

- Put preload, tare, put reference load Δ and determine the deviation of linearity.



Type	Calibration tolerances	Calibration weight			
	Repeatability with internal calibration weight ¹⁾ ± mg	Normal balances	Certified balances	Servicemode (StdCa) g	Accuracy class 2)
PG203-S	2	VariCal	intern	200	E2
PG403-S	3	VariCal	intern	400	E2
PG403-SDR	10	VariCal	intern	400	E2
PG503-S	3	VariCal	intern	500	E2
PG503-SDR	10	VariCal	intern	500	E2
PG603-S	4	VariCal	intern	600	E2
PG603-SDR	10	VariCal	intern	600	E2
PG802-S	20	VariCal	intern	800	F1
PG1003-S	6	VariCal	intern	1000	E2
PG2002-S	50	VariCal	intern	2000	E2
PG2002-SDR	100	VariCal	intern	2000	E2
PG3001-S/E	50	VariCal	intern	3000	F1
PG4002-S	70	VariCal	intern	4000	F1
PG4002-SDR	100	VariCal	intern	4000	F1
PG5002-S	70	VariCal	intern	5000	E2
PG5002-SDR	100	VariCal	intern	5000	E2
PG6002-S	70	VariCal	intern	6000	E2
PG6002-SDR	100	VariCal	intern	6000	E2

1) under good ambient conditions (mg balances with draft shield)

2) Use of F1 certified weights instead of E2 weights is also possible (the exact value has to be entered by LARS or LC-PT45).

1.3 R and G balances

1.3.1 Laboratory balances: PR/PG (Exceptions: (Ind) = Industrial balance)



Type	Weighing range		Readability				Repeatability (standard of 10)
	Normal	Fine range	Normal	Fine range	Service mode	Factor	
PR/PG203	210 g	–	0.001 g	–	0.5 mg	2	0.5 mg
PR/PG503	510 g	–	0.001 g	–	0.5 mg	2	0.5 mg
PR/PG503DR	510 g	100 g	0.01 g	0.001 g	0.5 mg	2 (20)	0.5 mg
PR/PG803	810 g	–	0.001 g	–	0.5 mg	2	1 mg
PR1203	1210 g	–	0.001 g	–	0.5 mg	2	1 mg
PR/PG502	510 g	–	0.01 g	–	5 mg	2	5 mg
PR/PG802	810 g	–	0.01 g	–	5 mg	2	5 mg
PR2003(MC)	2100 g	–	0.001 g	–	0.5 mg	2	1 mg
PR2003DR	2100 g	500 g 1)	0.001 g	–	0.5 mg	2	1 mg/3 mg
PR2004(MC)	2300 g	–	0.0001 g	–	0.1 mg	1	0.3 mg
PR/PG2002	2100 g	–	0.01 g	–	5 mg	2	5 mg
PR/PG3001/E(Ind)	3100 g	–	0.1 g	–	50 mg	2	50 mg
PR5003(MC)	5100 g	–	0.001 g	–	0.5 mg	2	1.5 mg
PR5003DU	5100 g	1010 g	0.01 g	0.001 g	0.5 mg	2	5 mg
PR/PG5002	5100 g	–	0.01 g	–	5 mg	2	5 mg
PR/PG5002DR	5100 g	1000 g	0.1 g	0.01 g	5 mg	2 (20)	5 mg
PR8002	8100 g	–	0.01 g	–	5 mg	2	10 mg
PR8002/DR	8100 g	1600 g	0.1 g	0.01 g	5 mg	2 (20)	10 mg
PR10003(MC)	10100 g	–	0.001 g	–	0.5 mg	2	2 mg

1) before july 96 400 g

Type	Linearity		Cornerload		Temperature behavior	
	Tolerance Up	Tolerance Down	Test- weight	Tolerance	Tol. zero /10 °C	Tol. sensitivity /10 °C
PR/PG203	2 mg	3 mg	200 g	2 mg	30 mg	10 mg
PR/PG503	2 mg	3 mg	200 g	2 mg	30 mg	15 mg
PR/PG503DR	2 mg	3 mg	200 g	2 mg	30 mg	15 mg
PR/PG803	2 mg	3 mg	500 g	2 mg	50 mg	15 mg
PR1203	2 mg	3 mg	500 g	2 mg	50 mg	25 mg
PR/PG502	15 mg	20 mg	500 g	20 mg	200 mg	50 mg
PR/PG802	15 mg	20 mg	500 g	20 mg	200 mg	50 mg



Type	Linearity		Cornerload		Temperature behavior	
	Tolerance Up	Tolerance Down	Test- weight	Tolerance	Tol. zero /10 °C	Tol. sensitivity /10 °C
PR2003(MC)	2 mg	5 mg	1000 g	3 mg	60 mg	50 mg
PR2003DR	2 mg	5 mg	1000 g	3 mg	60 mg	50 mg
PR2004(MC)	1 mg	2 mg	1500 g	4 mg	60 mg	20 mg
PR/PG2002	20 mg	30 mg	1000 g	20 mg	200 mg	100 mg
PR/PG3001/E(Ind)	50 mg	50 mg	2000 g	50 mg	200 mg	150 mg
PR/PG5002	20 mg	30 mg	2000 g	20 mg	200 mg	150 mg
PR/PG5002DR	20 mg	30 mg	2000 g	20 mg	200 mg	150 mg
PR5003(MC)	5 mg	10 mg	4000 g	20 mg	60 mg	50 mg
PR5003DU	10/3 mg	20/10 mg	1000 g	3 mg	60 mg	50 mg
PR8002	20 mg	30 mg	4000 g	40 mg	300 mg	150 mg
PR8002/DR	20 mg	30 mg	4000 g	40 mg	300 mg	150 mg
PR10003(MC)	10 mg	20 mg	10000 g	40 mg	60 mg	100 mg

Type	Span 1)		
	Weight class OIML 2)	Weight	Tolerance
PR/PG203	E2	200 g	±2 mg
PR/PG503	E2	500 g	±3 mg
PR/PG503DR	F1	500 g	±10 mg
PR/PG803	F1*	800 g	±4 mg
PR1203	F1*	1200 g	±6 mg
PR/PG502	F1	500 g	±20 mg
PR/PG802	F1	800 g	±20 mg
PR2003(MC)	F1*	2000 g	±5 mg
PR2003DR	F1*	2000 g	±10 mg
PR2004(MC)	E2*	2000 g	±3 mg
PR/PG2002	F1*	2000 g	±20 mg
PR/PG3001/E(Ind)	F1	3000 g	±100 mg
PR/PG5002	F1	5000 g	±30 mg
PR5003(MC)	F1*	5000 g	±15 mg
PR5003DU	F1*	1000 g	±5 mg
PR/PG5002DR	F1	5000 g	±100 mg
PR8002	E2	8000 g	±40 mg
PR8002/DR	E2	8000 g	±50 mg
PR10003(MC)	E2	10000 g	±20 mg

1) Balance warmed-up and under good ambient conditions (mg balances with draft shield).

2) F1*/E2*: use the conventional mass value from the calibration certificat of the weight set.

1.3.2 Industrial balances



Type	Weighing range		Readability				Repeatability (standard of 10)
	Normal	Fine range	Normal	Fine range	Service mode	Factor	
PG3001-S*	3100 g	–	0,1 g	–	0,05 g	2	0,05 g
PG5001-S	5100 g	–	0,1 g	–	0,05 g	2	0,05 g
PG8001-S	8100 g	–	0,1 g	–	0,05 g	2	0,05 g
PG8000-S	8100 g	–	1 g	–	0,05 g	2	0,3 g
PG12001-S	12100 g	–	0,1 g	–	0,05 g	2	0,05 g
PG12001-S DR	12100 g	2400 g	1 g	0,1 g	0,05 g	2 (20)	0,3 g/0,05 g
PR/PG3001*	3100 g	–	0,1 g	–	0,05 g	2	0,1 g
PR/PG5001	5100 g	–	0,1 g	–	0,05 g	2	0,1 g
PR/PG8000	8100 g	–	1 g	–	0,5 g	2	0,1 g
PR/PG8001	8100 g	–	0,1 g	–	0,05 g	2	0,1 g
S/SR/SG8001	8100 g	–	0,1 g	–	0,05 g	2	0,1 g
S/SR/SG16000	16100 g	–	1 g	–	0,5 g	2	0,5 g
S/SR/SG16001	16100 g	–	0,1 g	–	0,05 g	2	0,1 g
S/SR/SG16001DR	16100 g	3200 g	1 g	0,1 g	0,05 g	2 (20)	0,5 g
S/SR/SG32000	32100 g	–	1 g	–	0,5 g	2	0,5 g
S/SR/SG32001	32100 g	–	0,1 g	–	0,05 g	2	0,1 g
S/SR/SG32001DR	32100 g	6400 g	1 g	0,1 g	0,05 g	2 (20)	0,5 g
S/SR64000	64100 g	–	1 g	–	0,05 g	2	0,5 g
S/SR64001	64100 g	–	0,1 g	–	0,05 g	2	0,1 g
S/SR64001DR	64100 g	12800 g	1 g	0,1 g	0,05 g	2(20)	0,5 g

Type	Linearity		Cornerload		Temperature behavior	
	Tolerance Up	Tolerance Down	Test- weight	Tolerance	Tol. zero /10 °C	Tol. sensitivity /10 °C
PG3001-S*	0,1 g	0,2 g	2 kg	0,2 g	1,3 g	0,8 g
PG5001-S	0,1 g	0,2 g	4 kg	0,2 g	1,3 g	0,8 g
PG8001-S	0,1 g	0,2 g	4 kg	0,2 g	1,3 g	0,8 g
PG8000-S	0,1 g	0,2 g	4 kg	0,2 g	1,3 g	0,8 g
PG12001-S	0,1 g	0,2 g	6 kg	0,2 g	1,3 g	0,8 g
PG12001-S DR	0,1 g	0,2 g	6 kg	0,2 g	1,3 g	0,8 g
PR/PG3001*	0,1 g	0,2 g	2 kg	0,2 g	1,3 g	0,8 g
PR/PG5001	0,1 g	0,2 g	4 kg	0,2 g	1,3 g	0,8 g
PR/PG8000	0,1 g	0,2 g	4 kg	0,2 g	1,3 g	0,8 g
PR/PG8001	0,1 g	0,2 g	4 kg	0,2 g	1,3 g	0,8 g
S/SR/SG8001	0,2 g	0,3 g	3 kg	0,3 g	2,0 g	1,0 g
S/SR/SG16000	0,4 g	0,5 g	6 kg	0,5 g	2,0 g	1,0 g
S/SR/SG16001	0,3 g	0,4 g	6 kg	0,5 g	2,0 g	1,0 g
S/SR/SG16001DR	0,4 g	0,5 g	6 kg	0,5 g	2,0 g	1,0 g
S/SR/SG32000	0,5 g	0,5 g	10 kg	0,5 g	2,0 g	1,5 g
S/SR/SG32001	0,3 g	0,4 g	10 kg	0,5 g	2,0 g	1,5 g
S/SR/SG32001DR	0,5 g	0,5 g	10 kg	0,5 g	2,0 g	1,5 g
S/SR64000	0,5 g	0,5 g	20 kg	0,6 g	2,0 g	1,5 g
S/SR64001	0,4 g	0,5 g	20 kg	0,6 g	2,0 g	1,5 g
S/SR64001DR	0,5 g	0,5 g	20 kg	0,6 g	2,0 g	1,5 g

*) Non certified

Type	Calibration tolerances	Calibration weight			
		Normal balances	Certified balances	Servicemode (UrCal)	Accuracy class
PG3001-S*	0,2 g	VariCal	Intern	3 kg	F1
PG5001-S	0,2 g	VariCal	Intern	5 kg	F1
PG8001-S	0,2 g	VariCal	Intern	8 kg	F1
PG8000-S	0,2 g	VariCal	Intern	8 kg	F1
PG12001-S	0,2 g	VariCal	Intern	12 kg	F1
PG12001-S DR	0,2 g	VariCal	Intern	12 kg	F1
PR/PG3001*	0,2 g	VariCal	Intern	3 kg	F1
PR/PG5001	0,2 g	VariCal	Intern	5 kg	F1
PR/PG8001	0,2 g	VariCal	Intern	8 kg	F1
PR/PG8000	0,2 g	VariCal	Intern	8 kg	F1
S/SR/SG8001	0,4 g	VariCal	Intern	8 kg	F1
S/SR/SG16000	0,4 g	VariCal	Intern	16 kg	F1
S/SR/SG16001	0,4 g	VariCal	Intern	16 kg	F1
S/SR/SG16001DR	0,4 g	VariCal	Intern	16 kg	F1
S/SR/SG32000	0,4 g	VariCal	Intern	32 kg	F1
S/SR/SG32001	0,4 g	VariCal	Intern	32 kg	F1
S/SR/SG32001 DR	0,4 g	VariCal	Intern	32 kg	F1
S/SR64000	0,4 g	VariCal	Intern	64 kg	F1
S/SR64001	0,4 g	VariCal	Intern	64 kg	F1
S/SR64001DR	0,4 g	VariCal	Intern	64 kg	F1

*) Non certified

2. Technical data and adjustment tolerances of the special types

Special types which have the same technical data and adjustment tolerances as the basic types are **not** listed here.

2.1 Lab balances

There are no special types with data which differ from those of the basic types.

2.2 Industrial balances, technical data and adjustment tolerances of special types

Special types which do have the same technical data and adjustment tolerances as the according basic types are **not** listed here.

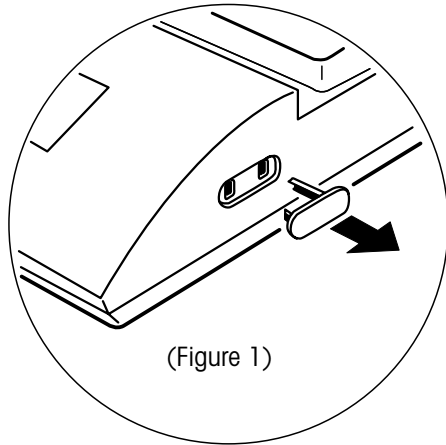
Type	Weighing range		Readability		Repeatability
	Normal	Fine range	Normal	Fine range	
PB7001-F	7100 g	–	0.1 g	–	100 mg
PZ7001-F	7100 g	–	0.1 g	–	100 mg
GL3DR	3100 g	600 g	1 g	100 mg	500 mg
GL8R	8100 g	–	1 g	–	500 mg

Type	Linearity		Cornerload		Temperature behavior	
	Tolerance Up	Tolerance Down	Test-weight	Tolerance	Tol. zero /10 °C	Tol. sensitivity /10 °C
PB7001-F	100 mg	100 mg	4000 g	300 mg	1000 mg	500 mg
PZ7001-F	100 mg	100 mg	4000 g	300 mg	1000 mg	500 mg
GL3DR	500 mg	500 mg	2000 g	300 mg	1000 mg	500 mg
GL8R	500 mg	500 mg	4000 g	300 mg	1000 mg	500 mg

Type	Calibration tolerances	Calibration weight		
		Normal balances	Certified balances	Service mode
PB7001-F	100 mg	4000 g	7000 g	7000 g
PZ7001-F	100 mg	4000 g	–	7000 g
GL3DR	100 mg	2000 g	3000 g	3000 g
GL8R	100 mg	2000 g	8000 g	8000 g

3. Information on certified balances

3.1 Calibration procedure and unit selection for certified (AB), CB, GB and PB balances

**Unblocking calibration and unit selection**

- Disconnect balance from power supply as preparation for the 3rd point below.
- Remove calibration cover from housing as shown (Figure 1).
- Turn calibration cover by 180° (Figure 2), push in and hold. Reconnect balance to power supply and then release calibration cover.

The balance now behaves like a noncertified standard balance.

Calibrating balance or selecting a different unit

- Calibrate or select another unit in the menu as described in the operating instructions.

Warning!

When selecting the units, check whether these are allowed in the country in question. In EC countries, the SI, ct and the British units are officially allowed.

Other units can be selected if a plate in the vicinity of the display indicates that these units are not certified.

- On completion of the calibration and unit selection, pull off calibration cover and reinsert in its original position (Figure 3).
- Secure calibration cover against unauthorized access with a securing sticker (attempts to remove the sticker will destroy it).
- Disconnect balance from power supply.

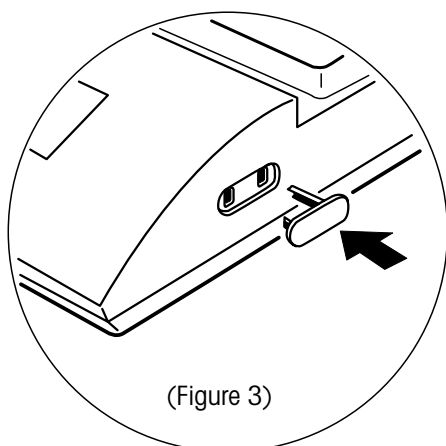
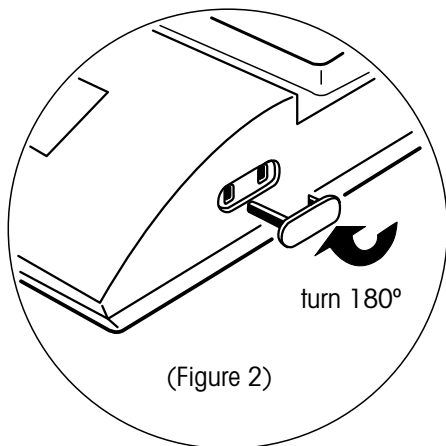
Putting balance back into operation as certified balance

- Attach balance to power supply.

The calibration and the unit selection are again blocked, the balance is ready for operation.

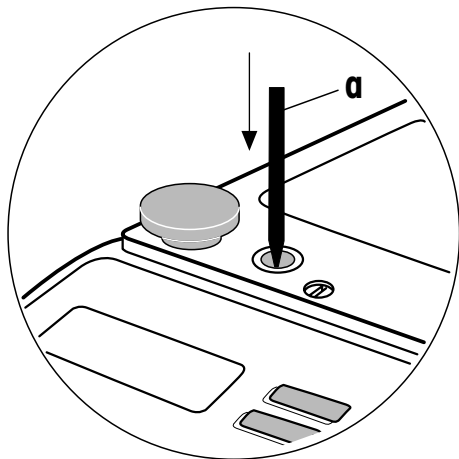
Note

Unit 1 must match the unit marked above the display. This is the factory setting.



705114 Eich SB

3.2 Calibration procedure and unit selection for certified GB and SB balances



Unblocking calibration and unit selection

- Disconnect balance from power supply as preparation for the 5th point below.
- Lift off load plate.
- Remove protective cover.
- If present, remove securing sticker covering the calibration switch.
- Press and hold down calibration switch using a ballpoint pen tip (a)
Reattach balance to power supply and then release calibration switch.
The balance now behaves like a noncertified standard balance.
- Mount load plate.

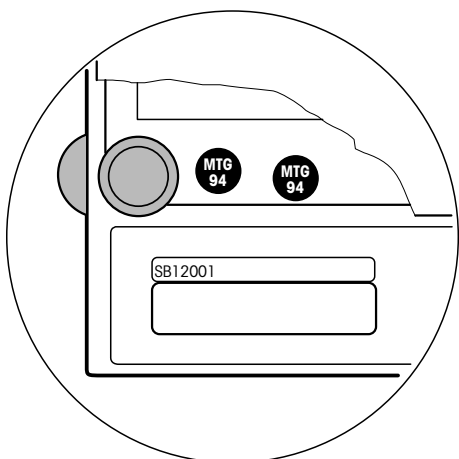
Calibrating balance or selecting a different unit

- Calibrate or select another unit in the menu as described in the operating instructions.

Warning!

When selecting the units, check whether these are allowed in the country in question. In EC countries, the SI, ct and the British units are officially allowed. Other units can be selected if a plate in the vicinity of the display indicates that these units are not certified.

- On completion of the calibration, remove load plate and stick securing sticker over the round hole of the calibration switch and the countersunk screw.
- Install protective cover and mount load plate.
- Disconnect balance from power supply.



705114 Eich GB/SB

Putting balance back into operation as certified balance

- Attach balance to power supply.

The calibration and the unit selection are again blocked, the balance is ready for operation.

Note

Unit 1 must match the unit marked above the display. This is the factory setting.

3.3 External calibration and unit selection with certified PR and PG balances

Figure 1

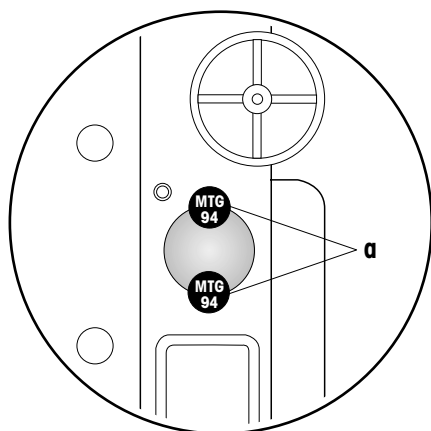


Figure 2

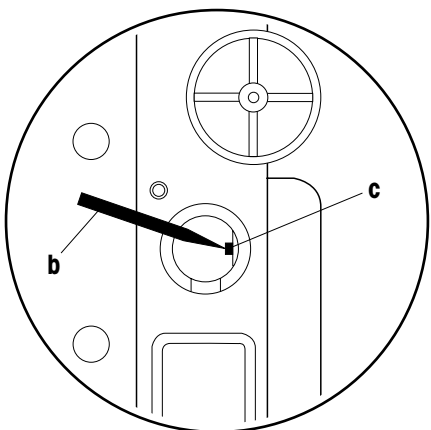
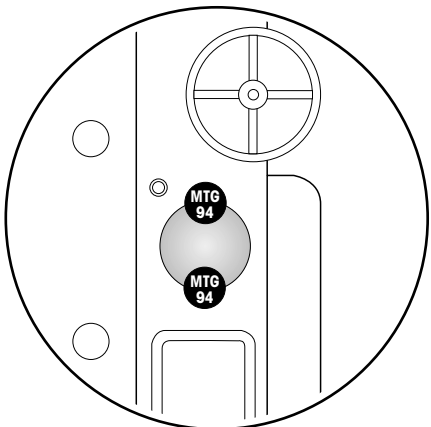


Figure 3



Unblocking external calibration and unit selection

- Disconnect balance from power supply and place on its side or upside down.
- If securing stickers (a) present, detach and remove cover (Fig. 1).
- Press in the calibration switch (c) using a suitable pointed object (b) and hold down (Fig. 2).
- Reconnect balance to the power supply and then release calibration switch (c).
- The balance now behaves like a noncertified standard balance.
- Return balance to the working position.

Calibrating balance externally or selecting a different unit

- Select calibration or, in the menu, a different unit as described in the operating instructions.

Warning!

Before selecting the unit, check that this is allowed in the country in question. In EEA countries, the SI, ct and British units are officially allowed. Other units can be selected if a sticker in the vicinity of the display indicates that these units are not certified.

- On completion of an external calibration or unit selection, turn balance onto its side again, mount cover over the switch and attach securing stickers (Fig. 3).
- Disconnect balance from power supply again.

Putting balance back into operation as certified balance

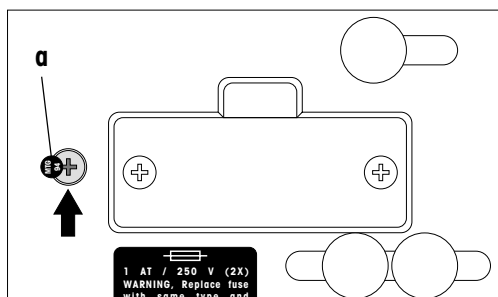
- Attach balance to power supply. External calibration and unit selection are now again blocked, the balance is ready for operation.

Note

Unit 1 must match the unit marked above the display. This is the factory setting.

3.4 External calibration and unit selection with certified SR and SG balances

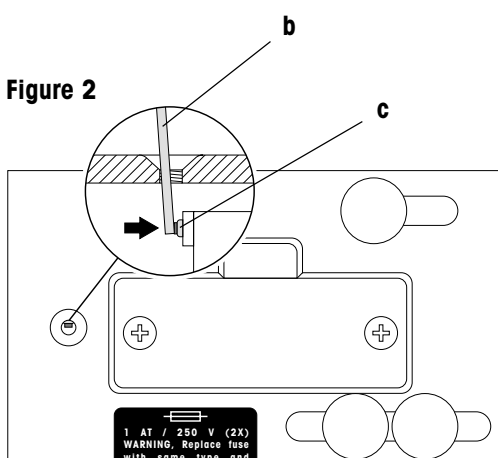
Figure 1



Unblocking external calibration and unit selection

- Disconnect balance from power supply and place on its side or upside down.
- If securing sticker (a) present, detach and remove screw (Fig. 1).
- Press in the calibration switch (c) using a suitable pointed object (b) and hold down (Fig. 2).
- Reconnect balance to the power supply and then release calibration switch (c).
- The balance now behaves like a noncertified standard balance.
- Return balance to the working position.

Figure 2



Calibrating balance externally or selecting a different unit

- Select calibration or, in the menu, a different unit as described in the operating instructions.

Warning!

Before selecting the unit, check that this is allowed in the country in question. In EEA countries, the SI, ct and British units are officially allowed. Other units can be selected if a sticker in the vicinity of the display indicates that these units are not certified.

- On completion of an external calibration or unit selection, turn balance onto its side again, mount screw over the switch and attach securing sticker (Fig. 3).
- Disconnect balance from power supply again.

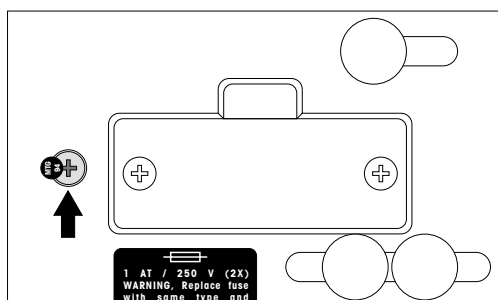
Putting balance back into operation as certified balance

- Attach balance to power supply. External calibration and unit selection are now again blocked, the balance is ready for operation.

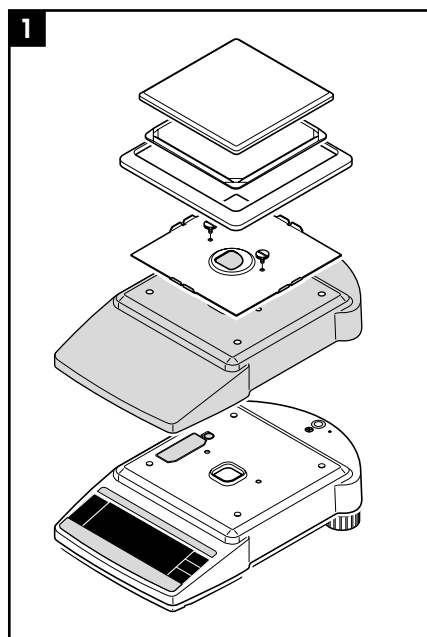
Note

Unit 1 must match the unit marked above the display. This is the factory setting.

Figure 3



3.5 External calibration and unit selection with certified PG-S balances



Unblocking external calibration and unit selection

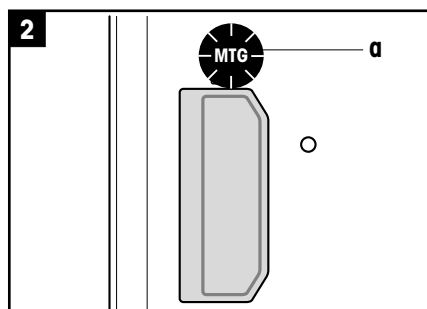
- Disconnect balance from power supply and remove mounting parts (Fig. 1).
 - If a securing sticker (a) is used, detach and remove cover (Fig. 2).
 - Use a suitable pin (b) to press and hold the calibration switch down (Fig. 3).
- Reattach balance to power supply and then release the calibration switch by removing the pin (b) from the depressed calibration switch.
- Re-establish the original balance setup (Fig. 1).
 - The balance now behaves like a noncertified standard balance.

Calibrating balance externally or selecting a different unit

- Calibrate or select a different unit in the menu as described in the operating instructions.

Warning

When selecting the unit, check that this is allowed in the country in question. In EEA countries, the SI, ct and British units are officially allowed. Other units can be selected if a plate in the vicinity of the display indicates that these units are not certified.



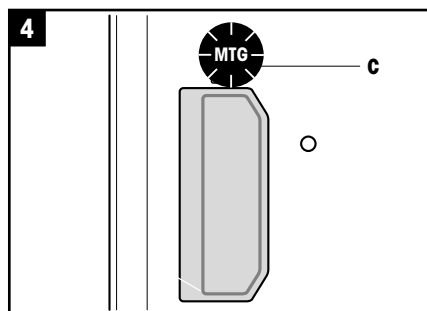
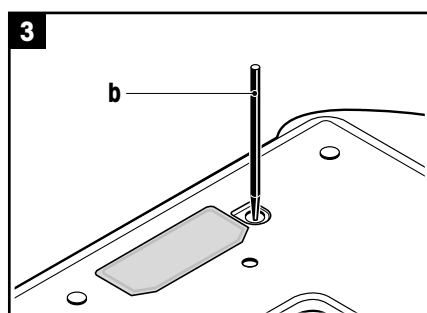
- On completion of the external calibration or unit selection, remove the mounting parts of the balance (Fig. 1) and install the cover, then affix the securing sticker (Fig. 4).
- Disconnect balance from power supply again.

Putting back into operation as a certified balance

- Attach balance to power supply. External calibration and unit selection are now again blocked, the balance is ready for operation!

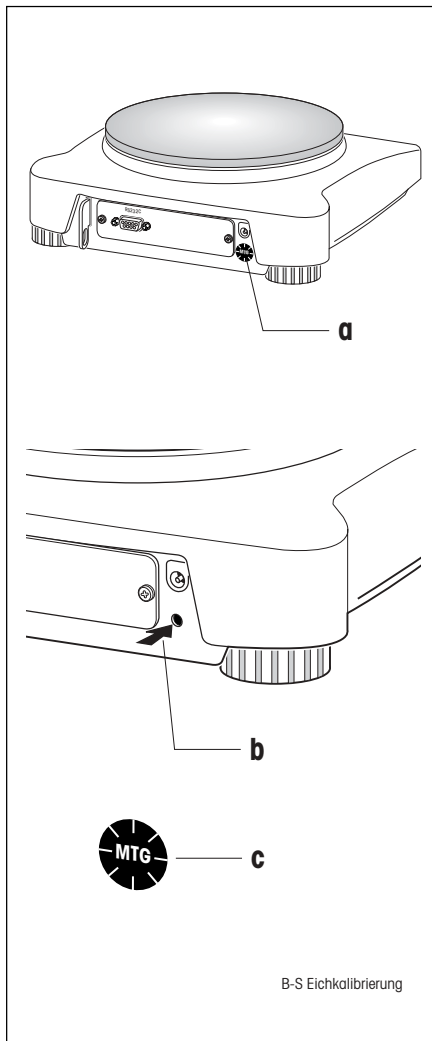
Note

Unit 1 must match the unit marked above the display. This is the factory setting.



PG-S/E

3.6 Certified B-S balances: external calibration and selection of units



Unblocking external calibration and unit selection

- Press **Off** key.
- Remove the securing sticker (a).
- Press the certification switch (b) in until **SERVICE** will be displayed.

The balance is now in service mode and has the same characteristics as a noncertified standard balance.

Calibrating balance externally or selecting a different unit

- Select calibration or, in the menu, a different unit as described in the operating instructions.

Warning!

Before selecting the unit, check that this is allowed in the country in question. In EEA countries, the SI, ct and British units are officially allowed. Other units can be selected if a sticker in the vicinity of the display indicates that these units are not certified.

- On completion of an external calibration or unit selection, attach securing sticker (c).

Putting balance back into operation as certified balance

- Quit service mode by holding down the **Off** key for 3 seconds.

External calibration and unit selection are now again blocked, the balance is ready for operation.

Note

Unit 1 must match the unit marked above the display. This is the factory setting.

3.7 Certification sticker "M"

The successful certification of the balance is confirmed by the placement of the green certification sticker "M".

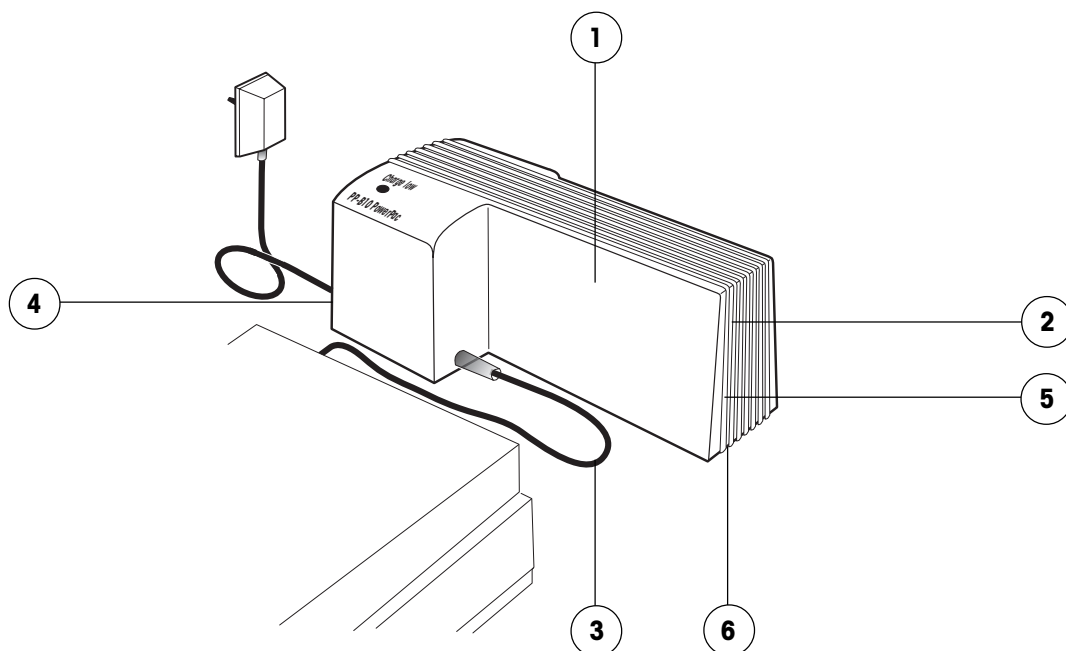


Certification sticker "M", order no. 220 726

Contents	Page
1. Accessories	3
1.1 PowerPack, Spare parts list	3
1.2 Auxiliary display, Spare parts list	4
1.3 Density determination kit, Spare parts list	5
1.4 Power Supply, Typ PS-EX2	6
1.5 Service of printers GA45/LC-P45/LC-P43/GA42, Performance Tester LC-PT45 and SQC14	9
1.5.1 Spare parts	10
1.5.5 Replacing the printing unit	13
1.5.6 Replacing the keypad	14
1.5.7 Replacing the board	14
	Blank pages 15-16
1.6 Automatic feeder LV11, service	17
1.7 Pipette Calibration Set: Moisture trap for AT/SAG, Spare parts list	23
1.8 Weight sets: Boxes and accessories	24
	Blank pages 25-38
1.20 Accessories in frequent use (without spare parts, extract from the AG, PR, PG and B operating instructions) ...	39
1.20.1 Protective covers	39
1.20.2 Draft shields, complete	39
1.20.3 AC adapters	39
1.20.4 Cables B/G/R balances	40
1.20.5 Interfaces	40
1.20.6 HR/HG temperature calibration kits	40
1.20.7 Weighing pans	40

1. LC accessories

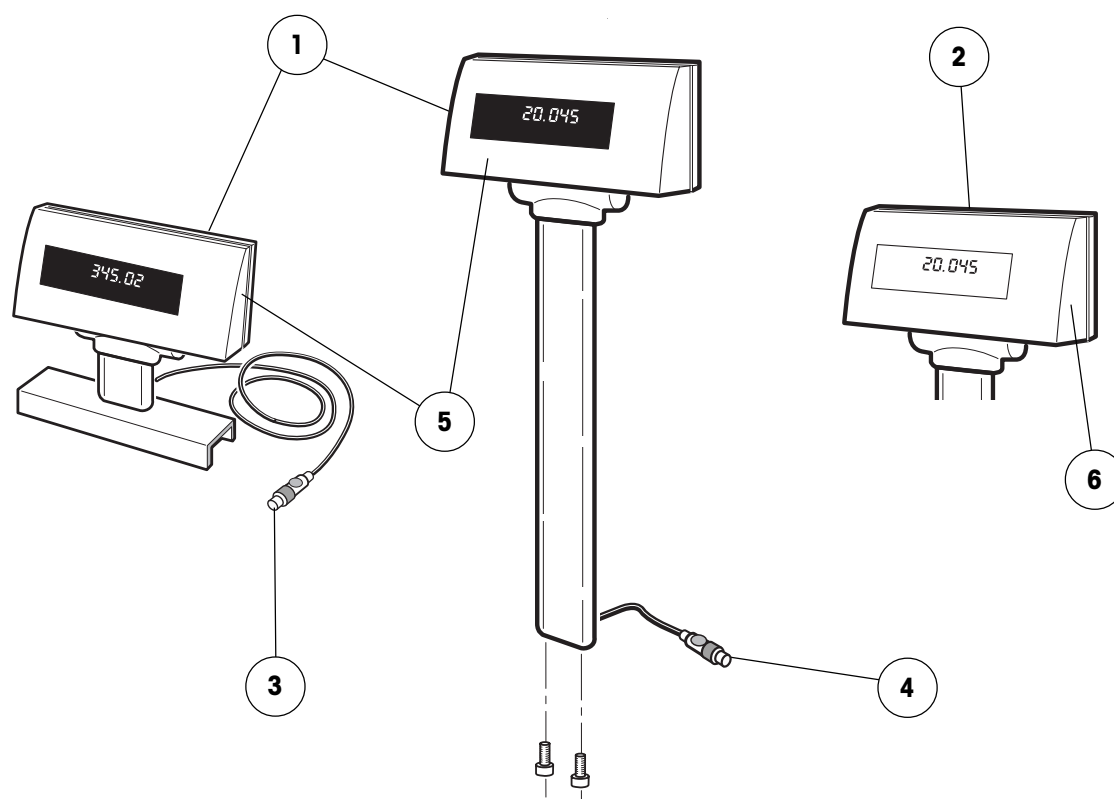
1.1 PowerPack Spare parts list



Item	Designation	Order No.
1	Top housing	224515
2	AccuPack board	224507
3	Power cable	224508
4	Charging socket	224509
5	Pb battery 12 V, 2.2 Ah	86323
6	Rubber foot	70776

1.2 Auxiliary display

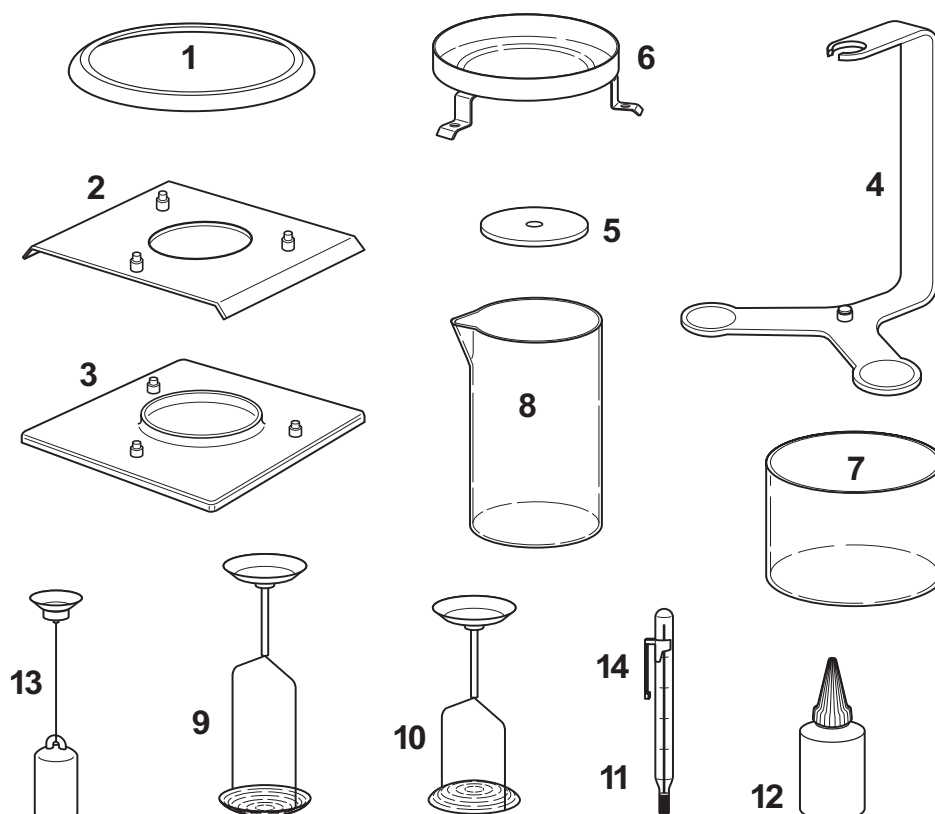
Spare parts list



Item	Designation		Order No.
1	Board	LC-AD/LC-ADS	229075
2	Board	LC-PD/LC-PDS	228118
3	Cable	LC-AD/LC-PD	229105
4	Cable	LC-ADS/LC-PDS	229141
5	Housing compl.	LC-AD/LC-ADS	21300858
6	Housing compl.	LC-PD/LC-PDS	21300857

1.3 Density determination kit

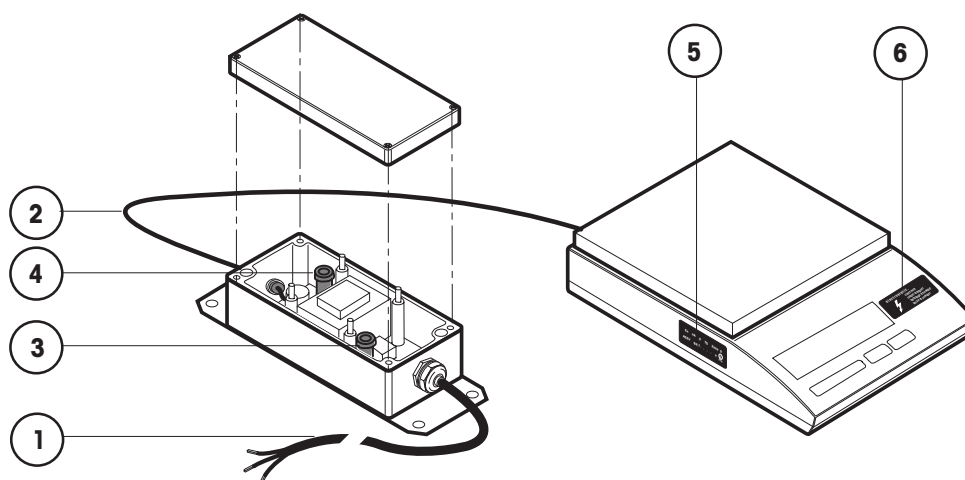
Spare parts list



Item	Designation	Order No.
1	Draft shield element for AG balances	238362
2	Draft shield element for AT balances	210480
3	Draft shield element for PG/PG-S/PR balances	225601
4	Bracket AT/AG PR/PG-S	210484 225888
5	Equalizing washer AG AT	238176 210263
6	Platform	238165
7	Glass beaker $\varnothing$ 80 mm	238167
8	Glass beaker $\varnothing$ 60 mm	238166
9	Holder for nonfloating solids	238180
10	Holder for floating solids	238181
11	Precision thermometer	238185 certified, 238767 not certified
12	Wetting agent	72409
13	Sinker 10 ml	210260
14	Clip	238177

1.4 Power Supply, Typ PS-EX2

Spare parts list



Item	Designation	Order No
1	Primary cable	21200102
2	Supply cable Ex2	21200103
3	Fuse (primary) 250 V, 125mA	87424
4	Fuse (secondary) 250 V, 400mA	87287
5	Ex2 label for scale	21200007
6	Warning label cleaning (for balance)	21200096

A Good Working Practice in Hazardous Areas Classified Zone 2

A 1 Recognition of the hazard:

How to find out whether an AB, PB, SB or PZ balance is used in a hazardous area?

- Look for the label on the left side of the balance, reading: Ex nA II T5 Zone 2.
- Use of the PS-EX2 instead of the normal plug-in power supply.
- If you find an ordinary mains plug on the line cord of the PS-EX2: this indicates that the PS-EX2 is installed in a safe place, but the balance is used in a hazardous area.



A 2 Follow the instructions of the plant safety engineer:

- Generic instructions: no smoking, safeguards against aggressive chemicals, prevention of electrostatic discharge.
- If the plant safety engineer declares the area as safe for the time of your visit: all repair and maintenance works can be performed without restrictions as defined in the service manual.
- If the area is not declared safe during your visit: the replacement of parts and assemblies must be made only on a voltless unit.
- Repairs on the balance: unplug the power supply line first on the back of the balance.
- Repair of the PS-EX2: before opening of the unit, interrupt the mains. If the leads of the mains cord are mounted inside a connector box, then it is the duty of the plant engineer to interrupt the mains supply.



B Visual and Functional Inspection of the PS-EX2

B 1 Visual Inspection

Check condition of mains and secondary cable and of the enclosure.
It is mandatory to exchange the mains cable in case of damage of the jacket, see section C 2.

B 2 Functional check

Condition: voltage applied to PS-EX2, balance is disconnected.

Measure the voltage between the two outer pins of the feeder connector with a DMM (polarity is irrelevant):

- Expected voltage: 12,7...13,0 V DC → power supply is ok.
- Voltage 0 V → fuse blown or gross failure on print. Repair: see section C.
- Voltage > 13 V → IC1 on print defective:
 - replace entire power supply
- Voltage 12,5...12,7 V → adjust voltage to nominal by cutting out trimming resistor.
(82 kΩ, located in front of voltage regulator).

C Repair

C 1 Replacement of fuses

- Disconnect power supply from the mains and open it.
- Check the two fuses and replace the one that has blown:
 - SI1 250 V, 125 mA
 - SI2 250 V, 400 mA
- Fix the top of the enclosure and re-connect the PS-EX2 to the mains.

C 2 Replacement of the mains cord and of the supply cable

- Disconnect power supply from the mains and open it
- Open screws on terminals, open ground screw and cable gland, then replace cable.
- Check ground continuity between the yellow/green lead of the mains cord and the enclosure (bottom plates). Use DMM, resistance should be lower than 0,2Ω.

C 3 Replacement of the labels on the balance housing

The two labels "Ex2" and "Warning cleaning" must be back-fitted to a replacement balance housing.

D Special Executions of the PS-EX2

D 1 Adapted to 115 V mains

Can be made on special customer demand.

- Disconnect unit from the mains and open cover.
- Connect blue cable lead on mid screw connector, marked "N1 120 V".
- Replace fuse S1 by a value of 250 V, 200 mA.
- Use an adhesive label with marking "Primary 115 V" on the outside of the enclosure.

D 2 Use of a special mains cord

In some countries, a specific type of mains cord might be required for use in Ex Zone 2. Such a cable might be installed instead of the ordinary supplied one, see sect. C 2.

1.5 Service of printers GA45/LC-P45/LC-P43/GA42, Performance Tester LC-PT45 and SQC14

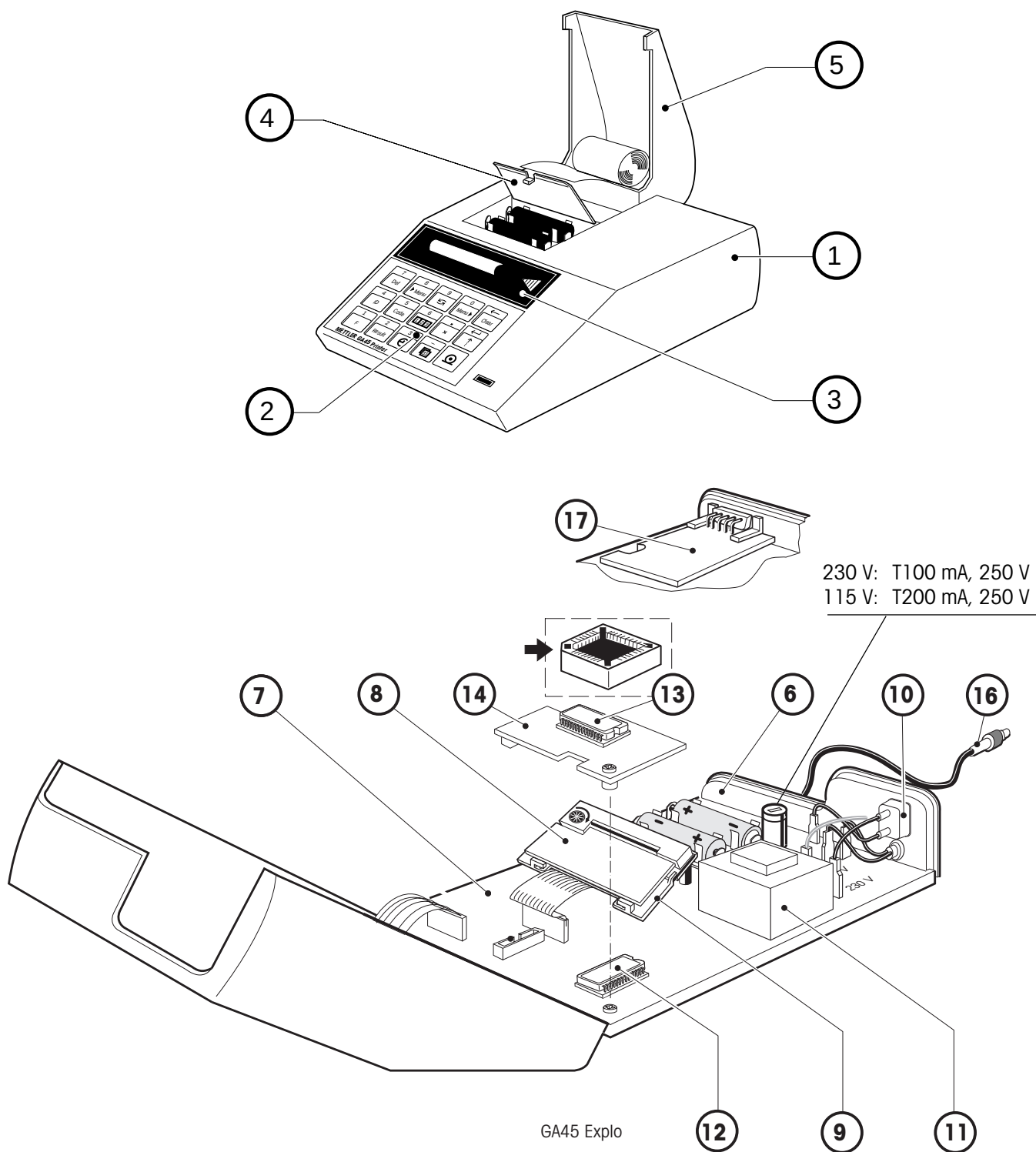
Inhalt

1.5.1	Spare parts	10
1.5.2	Power cables	12
1.5.3	Packaging	12
1.5.4	Tools	12
1.5.5	Replacing the printing unit	13
1.5.6	Replacing the keypad	14
1.5.7	Replacing the board	14



1.5.1 Spare parts

Exploded view diagram



Spare parts list with order numbers

Item	Designation	GA45	LC-P45	LC-P43	RS-P42
1	Top housing with light guide for LED, without membrane keypad	229002	229002	229002	229002
2	Membrane keypad, adhesive	229007	229068	229042	229253
3	Ribbon cover	229004	229004	229004	229004
4	Battery compartment cover	229003	229003	229003	229003
5	Paper roll holder	229005	229005	229005	229005
6	Bottom housing	229001	229001	229063	229063
7	Board with EPROM	229010	229010	229040 229244	229252
	Board with EPROM E/G/F/I (Italy, Switzerland)	229240	229240		
	Board with EPROM E/G/F/S (rest of world)	229241	229241		
8	Printing unit	600133	600133	600133	600133
9	Printing unit holder with rubber pads	600131	600131	600131	600131
10	Power switch with connection cables	229014	229014	229014	229014
11	Power transformer	229012	229012	229012	229012
12	Program EPROM from SNR 1119060000 E/D/F/I E/D/F/S	62030	229236 229237	62073	
16	Interface cable LC	—	—	229066	
16	Interface cable PCB				229260

Item	Designation	LC-PT45	GA42	SQC14 LC-P...	LCP- Density
1	Top housing with light guide for LED, without membrane keypad	229002	229002	229002	229002
2	Membrane keypad, adhesive	229163	229171	1)	229229
3	Ribbon cover	229004	229004	229004	229004
4	Battery compartment cover	229003	229003	229003	229003
5	Paper roll holder	229005	229005	229005	229005
6	Bottom housing	229001	229001	229001	229001
7	Board	229162 2)	229172 229243	229010 229245	229010 229242
8	Printing unit	600133	600133	600133	600133
9	Printing unit holder with rubber pads	600131	600131	600131	600131
10	Power switch with connection cables	229014	229014	229014	229014
11	Power transformer	229012	229012	229012	229012
12	Program EPROM	600193	62073	1)	229228
13	Type EPROM	229191	–	–	–
14	Type board	229144	–	–	–
17	RS Interface board	–	229173	–	–

1) Has to be ordered at Marketing support BASY, Nänikon (FAX: CH-1 944 34 30).

2) LC-PT45 has been replaced by LARS

1.5.2 Power cables

Type	Order No.
Europe	229015
USA	229016
GB	229017
Australia	229018

1.5.3 Packaging

Part	Order No.
Top and bottom foam cushioning	229023
Slipcase	229026

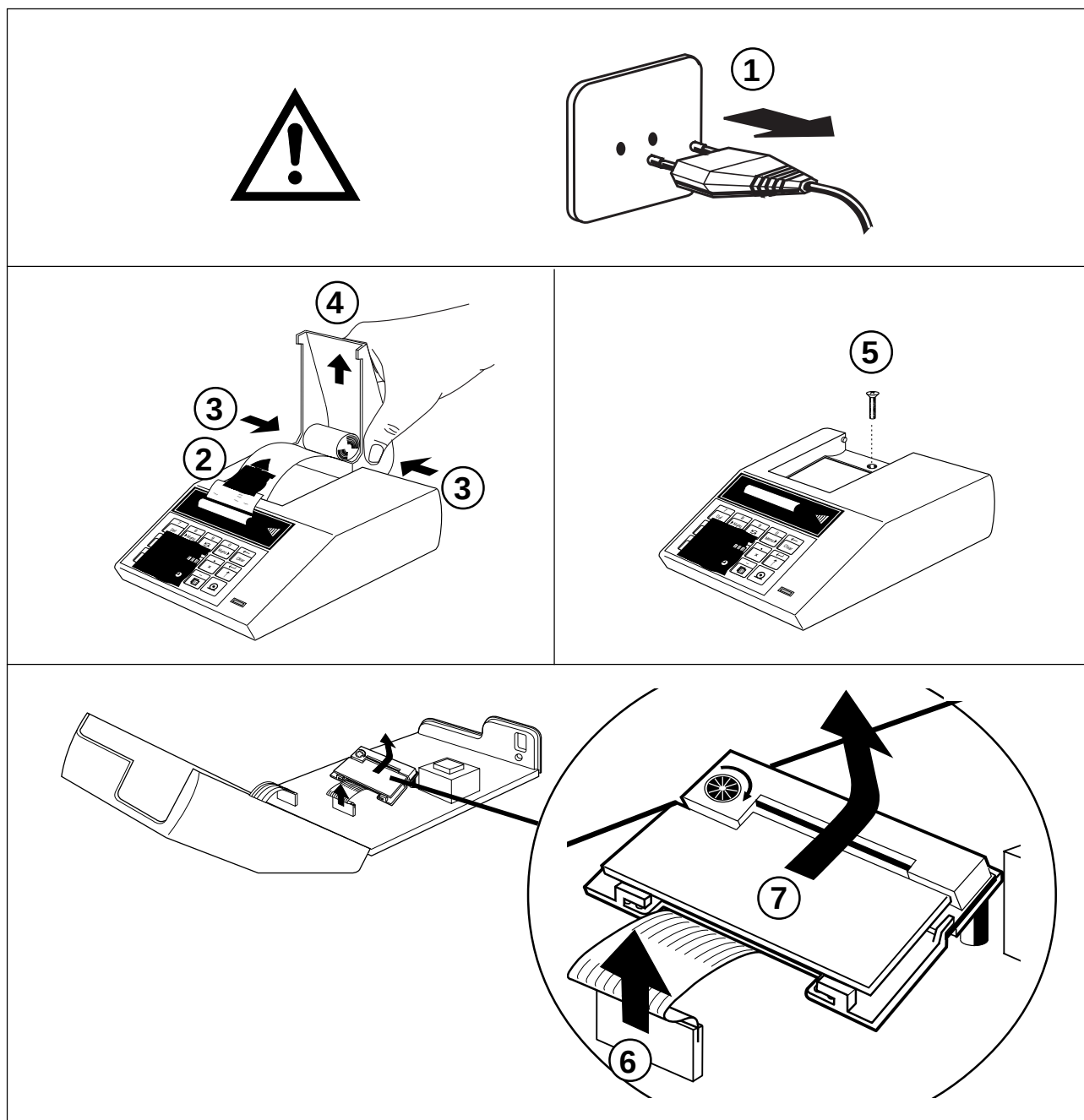
1.5.4 Tools

Number	Designation	Order No.
1	Wrench for round I/O sockets	73692

1.5.5 Replacing the printing unit

The device is so constructed that the user can replace the printing unit personally. The installation instructions (705001) pictured below are enclosed with the replacement printing unit. No special tools are needed as the work simply involves opening the housing and disengaging the printing unit by hand.

When the board is replaced, the printing unit also has to be removed in the sequence illustrated below and then reinstalled.



1.5.6 Replacing the keypad

The membrane keypad is a unit comprising contacts and a membrane. It can be removed but not reused.

Removing the defective keypad

- Use a knife to prise up the top right corner of the keypad and slowly pull it off. (Do **not** heat the keypad, e.g. with hot air as the individual layers of the sandwich construction could come apart.)
- Remove any residual adhesive (use acetone if need be).

Mounting the new keypad

- Insert ribbon cable in top housing.
- Remove cover film of adhesive surface.
- First simply line up the keypad with the edge of the bottom rim of the depression in the top housing.
- Now lay keypad in the depression and press down.

1.5.7 Replacing the board

Signs that the board needs to be replaced

- The LED pilot lamp does not light up although the power switch is on, the line voltage is in order and the fuse is not blown.
-  does not print out a weight value when a balance is attached although the interface parameters match (factory setting), the I/O cable is properly attached and the balance is not an older model with a unidirectional interface (see LC-P45 operating instructions, page 24, Attachment to METTLER Instruments).

Removing the defective board

- Disconnect power plug and open GA45 as shown in illustrations 1 ... 5 on previous page.
- Disconnect ribbon cable connectors of keypad and printing unit and the flat connectors of the power supply input.
- Unscrew I/O sockets at rear of housing.
- Unscrew screws of transformer and printing unit at housing base, place printing unit to one side.
- Unscrew board screws and remove screening plate, lift out board.

Compatibility chart

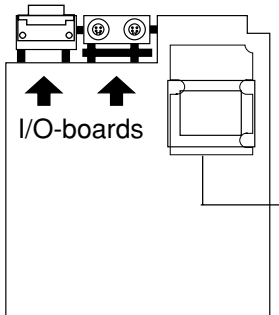
EPROM and PCB after the change data are not compatible to versions.

	LC-P45 E/G/F/I	LCP-45 E/G/F/S	LC-P Density	GA42	LC-P43	SQC14
PCB	TS $\leq$ 14	TS $\leq$ 14	TS $\leq$ 14	TS $\leq$ 06	TS $\leq$ 06	TS $\leq$ 14
EPROM	SW $\leq$ 2.41	SW $\leq$ 2.41	SW $\leq$ 1.05	SW $\leq$ 1.30	SW $\leq$ 1.30	SW $\leq$ 2.21
Change Date	8.2002	8.2002	8.2002	8.2002	8.2002	8.2002
PCB	TS $\geq$ 15	TS $\geq$ 15	TS $\geq$ 15	TS $\geq$ 07	TS $\geq$ 07	TS $\geq$ 15
EPROM	SW $\geq$ 3.00	SW $\geq$ 3.00	SW $\geq$ 2.00	SW $\geq$ 2.00	SW $\geq$ 2.00	SW $\geq$ 3.00

TS = Technical Version, SW = Software Version

Installing a new board

Special attention must be paid to the following during installation:



- Before installation, break off the two I/O boards from the large board (weakened points).
- It is essential to insert the layer of insulating material below the power transformer in the bottom housing.
- Plug in flat connectors of power input as shown in the diagram on page 9-10.
- Insert the EPROM from the replaced board

Service Manual

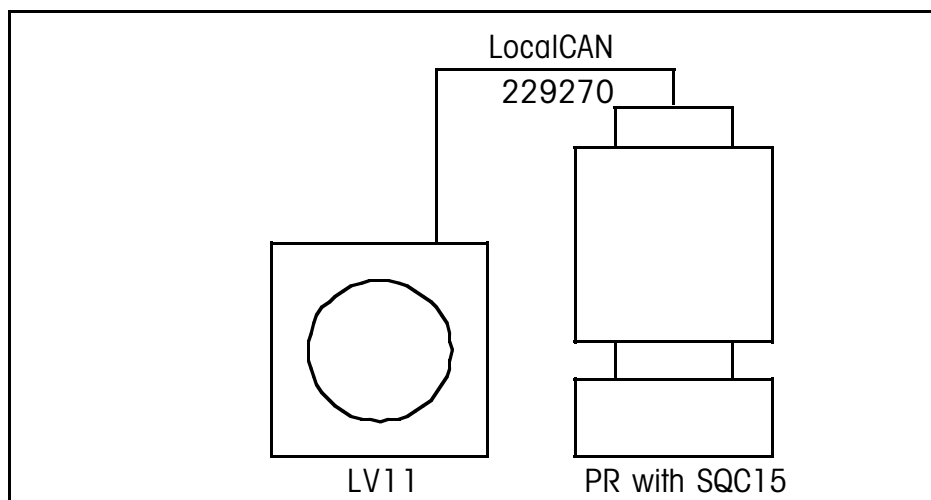
1.6 LV11 Automatic Feeder

	page
1.6.1 Technical Information	18
1.6.1.1 PR balance with SQC15	18
1.6.1.2 AG balance with SQC14	18
1.6.1.3 FreeWeigh, MTCom Bus	19
1.6.1.4 Direct connection to PC	19
1.6.1.5 Test mode.....	19
1.6.1.6 Meaning of the displays and keys, error messages	20
1.6.2 Repairs	20
1.6.2.1 Replacing control PCB.....	20
1.6.2.2 Setting feed rate.....	20
1.6.2.3 Light barrier PCB replacement	20
1.6.3 Opening the LV11.....	21
1.6.3.1 Settings	21
1.6.3.2 Changing the power line fuse	22
1.6.4 Technical inquiries	22
1.6.5 Spare parts	22

1.6.1 Technical Information

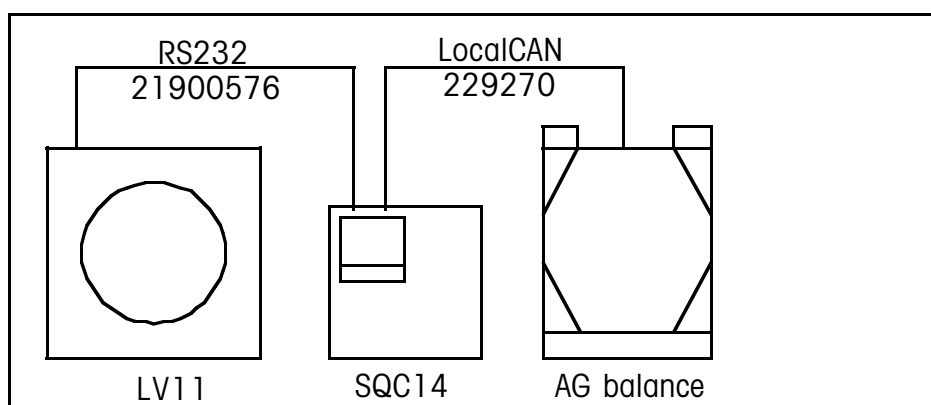
The following combinations are possible for operation of the LV11:

1.6.1.1 PR balance with SQC15



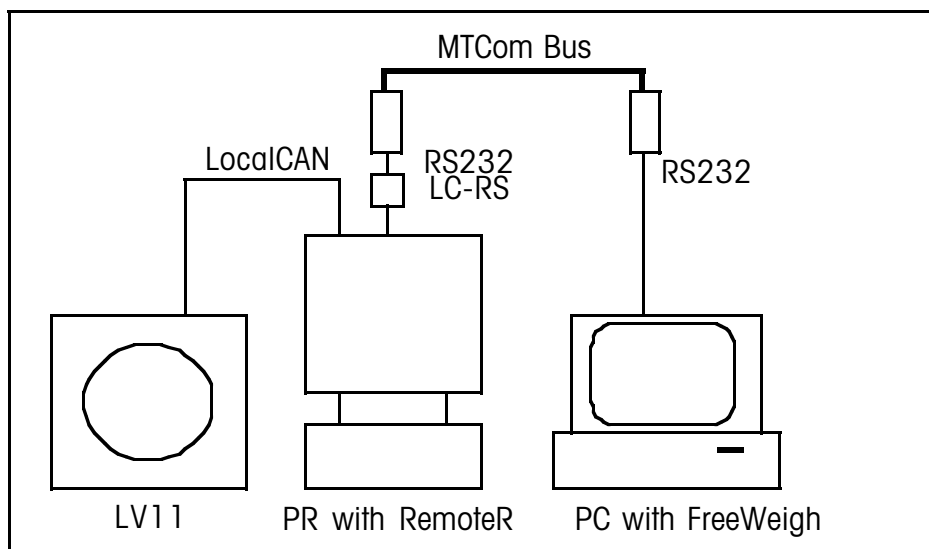
The LV11 is connected via LocalCAN. Control of the LV11 is effected by the SQC15.

1.6.1.2 AG balance with SQC14



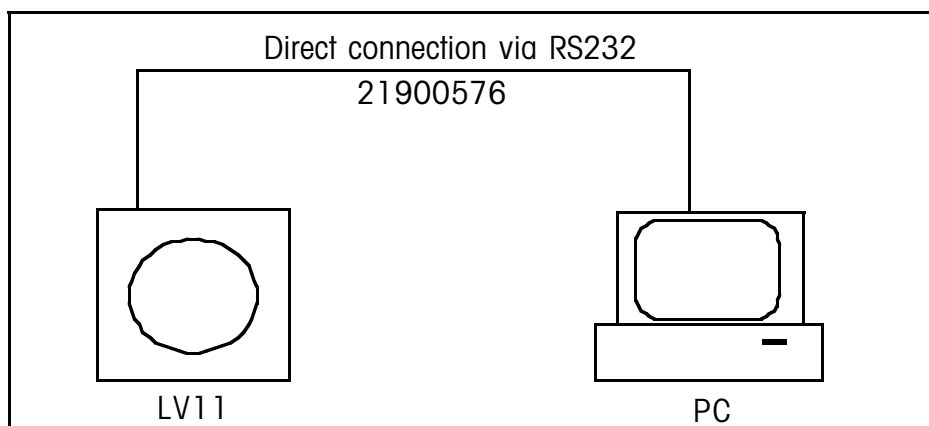
The LV11 is connected to SQC14 via RS232. Control of the LV11 is effected by the SQC14. The balance (e.g. AG) is connected to SQC14 via LocalCAN.

1.6.1.3 FreeWeigh, MTCom Bus



The LV11 is connected to the PR balance via LocalCAN. Control of the LV11 is effected by FreeWeigh.

1.6.1.4 Direct connection to PC

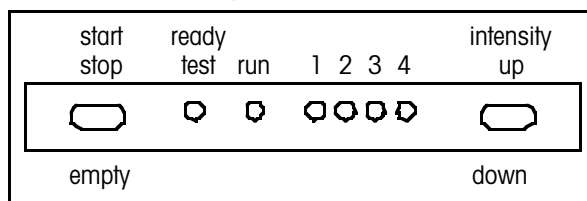


The LV11 is connected directly to the PC via RS232. Control is effected by the PC (SICS command set of the LV11).

1.6.1.5 Test mode

A test mode is available to adjust the feeding of parts singly to the balance. To enter this mode, press and hold the left key when switching on until the display appears. The LV11 commences delivery until a part passes through the light barrier. It then stops for one second and then continues delivery until the next passage through the light barrier. By briefly pressing the right key, you can now select the rate so that the parts fall onto the balance singly. To quit the test mode, press the left key briefly.

1.6.1.6 Meaning of the displays and keys, error messages



When the LV11 is switched on, an initialization and test runs for approx. 2 seconds. During this time, all LEDs light up. The instrument is then in the normal mode with preselected intensity level 2.

start/stop/empty	Press briefly --> Switch vibratory action on/off Press and hold until all red LEDs light up --> switch on discharge
ready/test	Green LED lit up --> Instrument is switched on and ready for operation Green LED flashes --> Instrument is in test mode
run	Yellow LED lit up --> Vibratory action is switched on and the feeder plate vibrates Yellow LED flashes --> Light barrier is interrupted, dirty or faulty
1	Red LED lit up --> Lowest feed rate Red LED flashes --> Short circuit at start/stop/empty key
2	Red LED lit up --> Lower intermediate feed rate, default after switching on Red LED flashes --> Short circuit at intensity key
3	Red LED flashes --> Upper intermediate feed rate Red LED flashes --> Short circuit at contact socket
4	Red LED lit up --> Highest feed rate
intensity up/down	Press briefly --> Increase vibratory intensity by one level Press and hold --> Lower vibratory intensity by one level

1.6.2 Repairs

1.6.2.1 Replacing control PCB

The control PCB must be replaced, if

- the LEDs do not light up on switching on even though the power switch is switched on, a power line voltage is available and the fuse is not blown.
- the LEDs are permanently lit up on switching on.
- a red LED flashes.
- the LV11 does not deliver parts even though there is no fault in the magnet coil ($R \sim 1\Omega$).
- the LV11 does not react to interface commands.

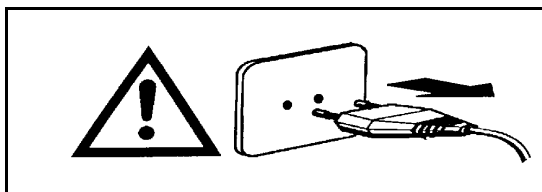
1.6.2.2 Setting feed rate

- Press and hold left key and switch on.
- Place small tablets (e.g. artificial sweeteners) on the inner chute.
- Turn potentiometer completely to the right.
- Turn potentiometer on the control board slowly to the left until the part executes approx. $1\frac{1}{4}$ revolutions on the feeder plate in 60 seconds.

1.6.2.3 Light barrier PCB replacement

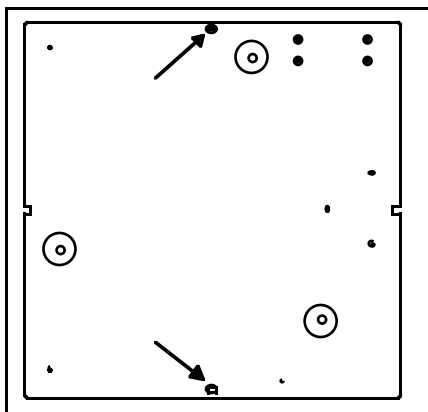
- If the yellow LED flashes, the light barrier is interrupted and must be cleaned or replaced.
- The light barrier can be adjusted by placing any number, from 0 to 3 support pads between board and matching surface. Perform the adjustment so that small particles are falling through the middle of the light beam.

1.6.3 Opening the LV11



Cautionary note:

Before opening the instrument it is essential to disconnect the power plug!

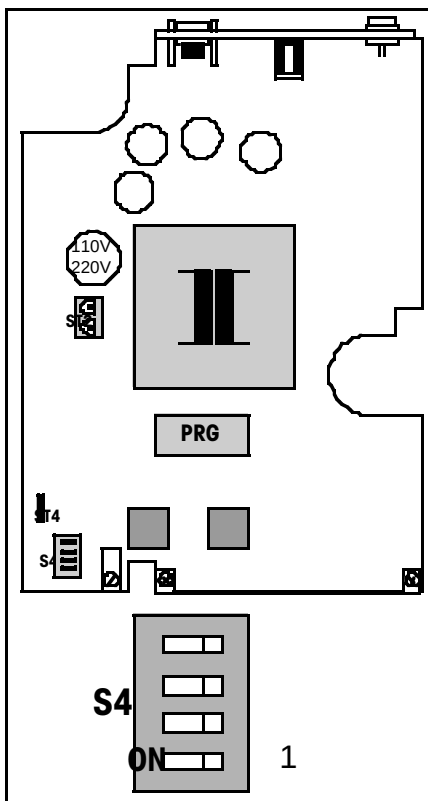


Press side walls together a short way at the side and at the same time lift off the plastic cover.

Unscrew two screws (→) on the underside of the LV11.

Take out side walls. The side walls can be removed only if the **power plug is disconnected at the LV11!** The two side walls are fitted into each other and are easy to separate.

1.6.3.1 Settings



Vibration levels

The LV11 basically recognizes 16 intensity values (0 to 15), which are assigned to the vibration levels (1 to 4). This assignment can be set through the switch setting of the DIP switches (S4/1 and S4/2) on the printed circuit.

		Vibration level				Discharge	
S4/1	S4/2	1	2	3	4		
0	0	1	4	8	13	15	Factory setting
1	0	0	2	4	6	10	Small parts
0	1	9	11	13	14	15	Large parts
1	1	2	5	7	10	12	Midsized parts

RS-232 interface

S4/3		RS protocol			
0	Hardware handshake DTR/DSR on			Factory setting	
1	Software Handshake Xon/Xoff on				
S4/4		Interface parameters			
0	2400 baud	even parity	7 bits	Factory setting	
1	9600 baud	no parity	8 bits		

1.6.3.2 Changing the power line fuse

The fuse is located in the power switch combination.

For 230 V	160 L, 250 V
For 110 V	315 L, 250 V

1.6.4 Technical inquiries

Your partner for technical inquiries:

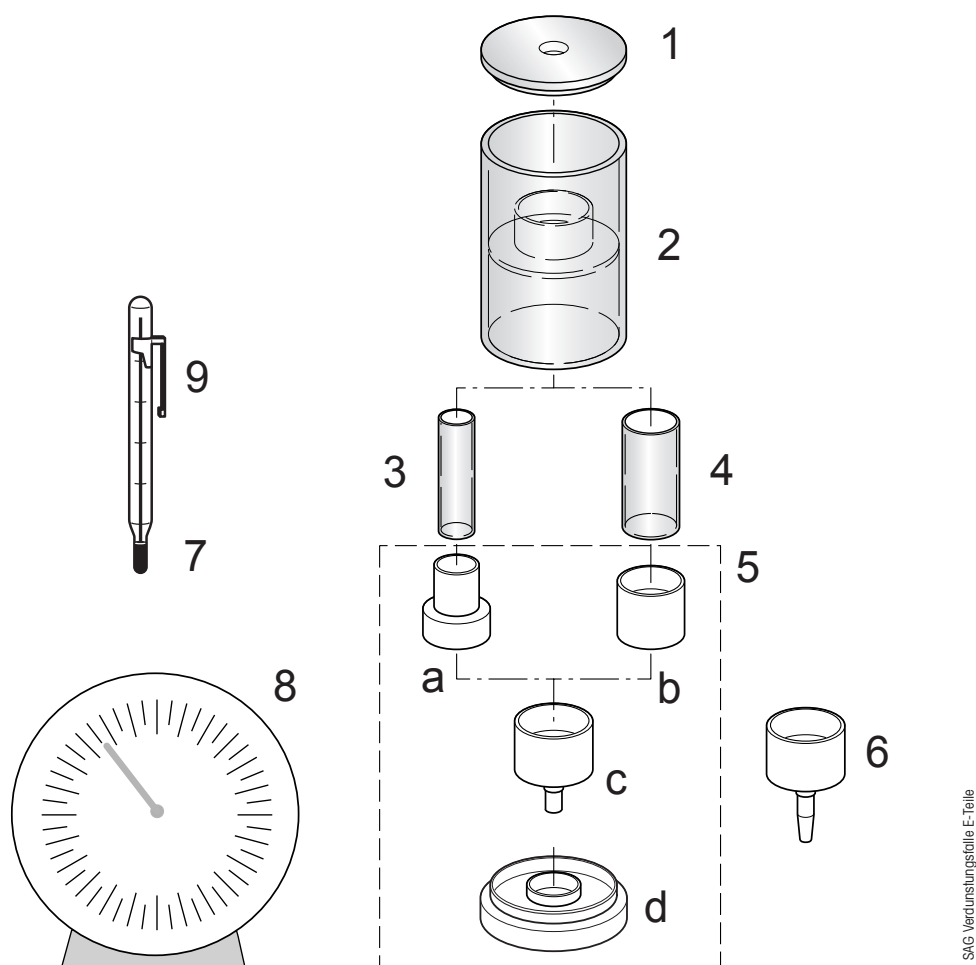
Mettler-Toledo AG
Technical Market Support BASY
Heuwinkelstr.
CH-8606 Nänikon
Fax: CH-1 944 34 30

1.6.5 Spare parts

Control PCB	21900383
Software E-Prom	21900624
Light barrier PCB	21900384
Chute	38460
Magnet coil	38466
Vibrating element	89381

1.7 Pipette Calibration Set: Moisture trap for AT/SAG

Spare parts list



SAG Verdunstungsfalle E-Teile

Item	Designation	Order No.
1	Cover	210863
2	Glass cylinder	210862
3	Glass beaker small	210864
4	Glass beaker large	210865
5	Bottom parts, set for AT, containing a) 1 Adapter small b) 1 Adapter large c) 1 Weighing pan AT d) 1 Centering ring	210876
6	Weighing pan SAG	238861
7	Precision thermometer	238185 certified, 238767 not certified
8	Barometer	11600086
9	Clip	238177

1.8 Weight sets: Boxes and accessories



Single weights	E2	F1	F2	Order number box
1 mg to 500 mg				15780
1 g to 5 g				15781
10 g				15782
20 g	216500			15783
50 g	216502			15784
100 g	216504	216512	216530	15785
200 g	216506	216514	216522	15786
500 g	216508	216516	216524	15787
1 kg	216510	216518	216526	15788
2 kg		216520	216528	15789
5 kg				15790
10 kg				15791
20 kg				15792

Order no. 72001
Gloves, size 9,5
Tweezers, 200 mm straight
Order no. 15901
Tweezers, 115 mm curved
Order no. 15900
Hair brush
Order no. 70114
Polishing cloth 12 x 17 cm
Order no. 72442
Weight table
Order no. 705086
Plastic cover large
Order no. 15812
Plastic Cover small
Order no. 15813

Weight sets	Accuracy class	Order number box	.	.Contents	.	.
1 mg to 500 mg	E2 (No. 15880x)	15795	.	X X X	X	-
1 g to 50 g	E2 (No. 15881x)	15796	.	X X X	X	-
1 g to 500 g	E2 (No. 15882x)	15797	.	X X X	X	-
1 kg to 5 kg	E2 (No. 15883x)	15798	.	X X X	X	-
1 mg to 200 g	E2 (No. 15884x)	15799	.	X X X	X X X	X
1 mg to 1 kg	E2 (No. 15885x)	15800	.	X X X	X X X	X
1 mg to 1 kg	E2 (No. 15886x)	15801	.	X X X	X	-
1 g to 50 g	F1 (No. 15887x)	15796	.	X X X	X	-
1 g to 500 g	F1 (No. 15888x)	15797	.	X X X	X	-
1 kg to 5 kg	F1 (No. 15889x)	15798	.	X X X	X	-
1 mg to 200 g	F1 (No. 15890x)	15799	.	X X X	X X X	X
1 mg to 1 kg	F1 (No. 15891x)	15800	.	X X X	X X X	X

Service weight sets	Order number box	.	.Contents	.	.
100 mg to 200 mg	(No. 15892x)	15799	X X X	X X X	X
1 g to 2 kg	(No. 15893x)	15802	X X	X	-
1 kg to 5 kg	(No. 15894x)	15803	X	X	-

1.20 Accessories in frequent use

(Extract from the AG, PR, PG and B operating instructions)

1.20.1 Protective covers

AG balances	Order No.
For keypad and display	238470
B balances	
For entire balance	
AB54-204	228183
PB153-303	224007
PB302-3001	224008
PB5001-8000	228182
SB8000-16000/	
SB24001-32000 Monobloc (set of 2)	230018
SB24001-32000 (set of 2)	230019
B-S balances	
For entire balance Monobloc	11103681
For entire balance Conv. cell	11135480
PR/PG/SR/SG balances	
Laboratory balance PG-S (set of 2)	11101338
Industry balance PG-S (set of 2)	11101643
Keypad and display PG (set of 2)	225670
Keypad and display PR (set of 2)	225266
Keypad and display SR/SG (set of 2)	239305
Balance housing PR/PG 1 mg/10 mg (set of 2)	225267
Balance housing PR/PG 0.1 g/1 g (set of 2)	225268
PZ balance	
Balance	472036
Display	472037
Moisture Analyzers	
HR/HG (set of 2)	HA-COVER 214533
HB43 (set of 2)	11113363

1.20.2 Draft shields, complete

(Spare parts, see section 2 of this manual)

B balances	Order No.
AB54	224371
AB104, AB204	224370
PB153, PB303, PB303DR	224372
Note: AB54 and AB104 draft shields can also be used for PBxx3 models	
B-S balances	
Draft shield low, e.g. for PB1502-S 1)	11103683
Draft shield high, e.g. for AB104-S Monobloc	11103682
Draft shield high, e.g. for AB104-S Conv.Cell	11135403
1) Weighing pan Ø 175 mm necessary	11103680

Draft shield PR/PG/PG-S balances

All-purpose draft shield, height 135 mm	225269
Draft shield, high, height 265 mm	225500

1.20.3 AC adapters

B balances		Order No.
Euro	230 V	228063
Euro (grounding plug)	230 V	228198
UK	240 V	228066
US	120 V	228064
Japan	100 V	228065
Australia, bench version	240 V	228190
South Africa	220 V	228193

B-S balances plug-in AC adapter		Order No.
Euro	230 V	11103740
Euro (Schuko)	230 V	11103744
UK	240 V	11103742
USA	120 V	11103741
Japan	100 V	11103743

B-S balances universal AC adapter		Order No.
AC adapter neutral version	220-240 V	11103745
Matching line cable	DK	87452
	GB	89405
	USA	88668
	AUS	88751
	SA	89728
	EU (Schuko)	87925
	CH	87920
	I	87457
DC adapter	100-240V	1106930

AC adapters AG/PR/PG/PG-S balances		Order No.
(see also section 2, 3.1.1 of this manual)		
115 V		238621
230 V		238620
Cable balance – adapter		228061

PowerPack PB/AG

Line-independent, rechargeable external power source	PB-B10	224500
--	--------	--------



Power supply unit for Ex zone 2

for all models

PS-EX 2 21200182

1.20.8 Hook for weighing below**Balances**

S/SR/SG/SB/PM/SM

Order No.

21301097

1.20.4 Cables B/G/R balances**Extension cables RS232C**

		Order No.
1 m (m/f)	RS9-RS9	11101051
1 m (m/m)	RS9-RS9	21250066

Extension cables LocalCAN

		Order No.
0.3 m	LC-LC03	239270
1 m	LC-LC1	229161
2 m	LC-LC2	229115
5 m	LC-LC5	229116
T-piece	LC-LCT	229118

Attachment of a printer or computer with RS232C, 25-pin (m/f), such as IBM-XT and compatibles	LC-RS25 RS9-RS25	229050 11101052
--	---------------------	--------------------

Attachment of a computer with RS232C, 9-pin such as IBM-AT and compatibles	LC-RS9	229065
---	--------	--------

Attachment of a device with METTLER CL interface (5-pin)	LC-CL	229130
---	-------	--------

1.20.5 Interfaces**LC-Option**

		Order No.
LocalCAN-interface B-balances	LC-B	228110
LocalCAN-interface G-balances	LC-G	11101055

B-S balances

	Order No.
RS232C-interface	11103678

1.20.6 HR/HG temperature calibration kits

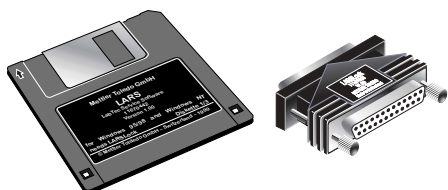
Version		Order No.
Box with thermometer	HA-TC	214455
Box with certified thermometer	HA-TCC	214528

1.20.7 Weighing pans**Moisture Analyzer**

		Order No.
Textile sample pan for HR/HG/HB, for bulky samples	HA-CAGE	214695
AG, ABXX5-S		
Weighing pan		238472

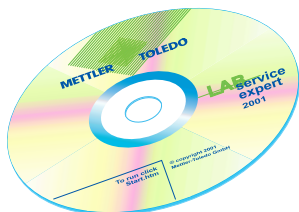
1. Service working aids

Order No.



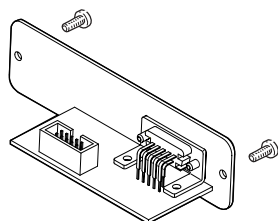
LARS Disks and 1 LARSLock

11107505



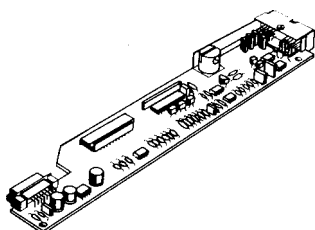
CD ServiceExpert

11780410



B-S Interface RS232C

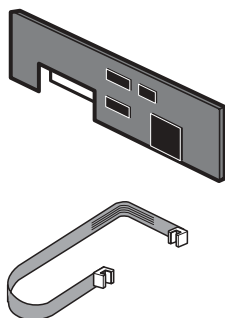
11103678



PJ Interface

600355

B Service interface, set including:

228233

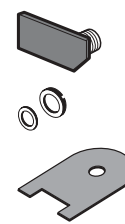
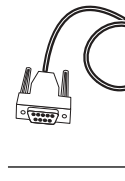
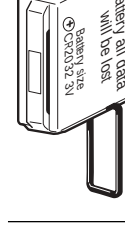
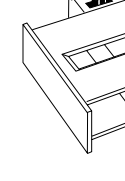
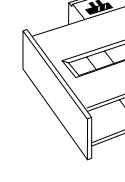
- 1 Service board B and
- 1 EPROM with service software

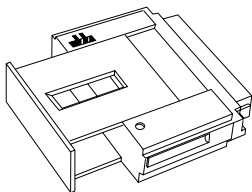
228004

228216

- 1 Cable

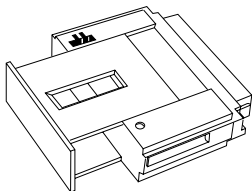
228111

	1 Filter board 2 Nuts 1 CAN key	228128 225028 73692
	RS232 cable 15/9 pin for PM/PJ	210493
	RS9-RS9 extension cable, (1 m m/f)	11101051
	LC-RS9 cable	229065
	Service cassette AG/PR/PG/SR/SG	238632
	Adjustment cassette PM	600254
	Adjustment cassette PJ	600242



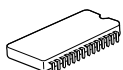
Adjustment cassette AT

600340



Type cassette AT

600339

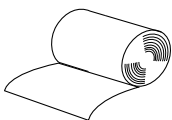


Adjustment/Type EPROM BB

215282

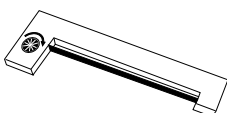


LC-PT45 spare parts, type and program EPROM ➔ section 9, 1.5



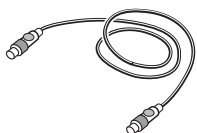
Roll of paper

72456



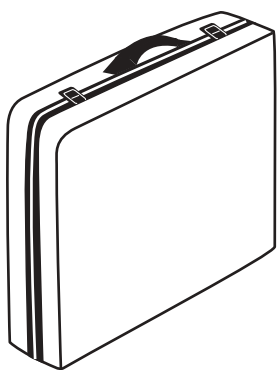
Ribbon cassette

65975



LC-LC1 extension

229161



Service case, empty

229166



ESD-Servicekit

11600009



File

299017



File for B monobloc ○

11600083



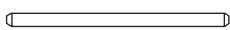
Cornerload wrench (6 mm)

299016



Cornerload wrench AG balances (3,5 mm)

11600004

Service gauges monobloc, set including:
217411

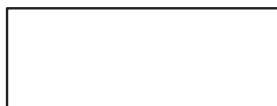
2 Centering pins Ø 2,97 mm (S balances)

217211



2 Centering pins Ø 3,47 mm (B/G/R balances)

217270



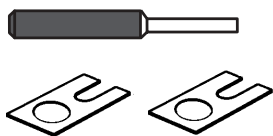
1 Distance gauge 0,5 mm

217225



1 Distance gauge 6,5 mm

217378

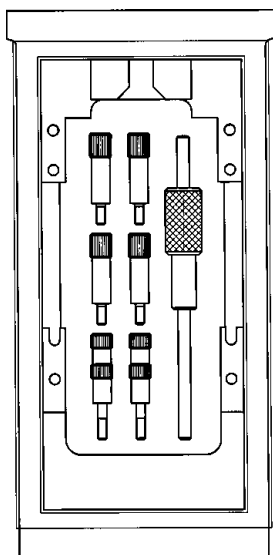
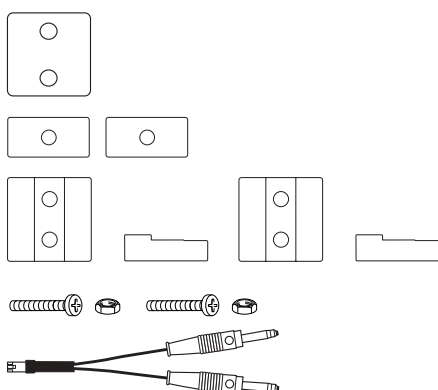

Service gauges AB cells, set including:
228234

1 Lateral stop gauge

228188

2 Hanger shims

73571


Service gauges AG cell, set
238200
Service gauges PB conventional cells up to 5 kg including:
224182

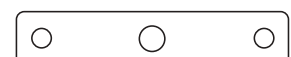
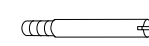
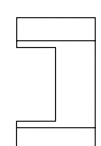
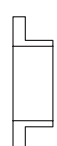
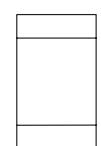
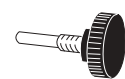
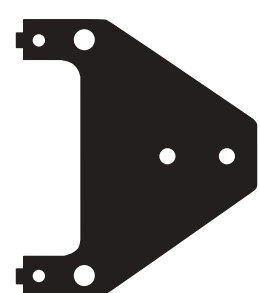
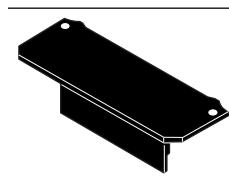
1 Lever gauge

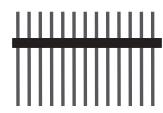
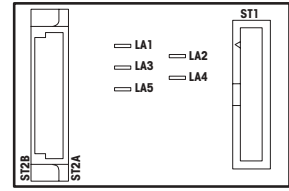
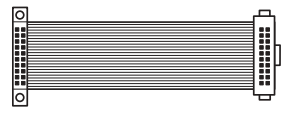
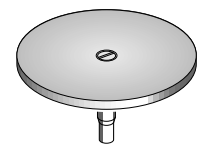
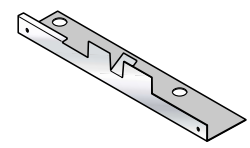
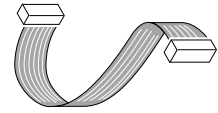
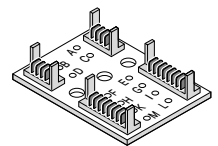
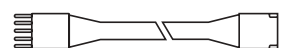
2 Hanger distance gauges

2 Hanger shims

2 Screws M4x25 mm and 2 nuts M4

1 Service cable

             	Service gauges PR electromagnetic compensation cell, set including:	225891
	1 Mandrel	225302
	1 Spring clip	225301
	1 Lower support PR	225303
	1 Upper support PR	225304
	1 Centering device PR	225305
	2 Setscrews M3x20 mm	299003
	1 Knurled nut	299004
	1 Hanger distance gauge, left	225312
	1 Hanger distance gauge, right	225313
	2 Distance bolts	225319
	1 Plate	225314
	2 Service screws M4x40 mm	76704
	PR/PG-S Measuring cell gauge	225309

	Pin connector	88913
	PR/PG connection board power supply	225316
	PR/PG extension cable power supply	225318
	Adjustment pan HG/HR	214674
	HB Heat protection plate	11 113 559
	Detector cable (8 poles)	225635
	Coil cable (4 poles)	224414
	Connection board for measuring cells	225306
	PG-S/PB-S extension cable display	11101880

Is my service manual really up to date?

At the bottom right of the title page you will find the date of issue. On the intranet http://cwww.mt.mtinet/products/labtec/serv_man/serv_man.asp is the english most up to date version of the service manual R/G/B Balances located.

The reference list at the end of section 12 shows the updated status of all pages (they have the latest date of issue at the bottom of the page, e.g. 12/01 for december 2001). New pages can be printed out directly from the intranet, or from the yearly forwarded CD „Mettler Toledo LabServiceExpert“.

Important supplements will be immediatly forwarded by e-mail as "Service Info", and than integrated in the next issue of the service manual.

First edition of the service manual "METTLER TOLEDO Balances": november 1993 (11/93)

Contents section 12

Date of issue
page

- | | |
|---|--------------|
| 1. Service Bulletin 11 780 001 | 02/94 |
| Supplementation of the service manual by balances of the R series. | |
| 2. Service Bulletin 11 780 029 | 05/94 |
| Revised version of the «Balances» service manual and supplementation by balances of the G series. | |
| 3. Service Bulletin 11 780 062 | 06/95 |
| Integration of new balances of the G series. Improvement of the LC-PT45 commands. | |
| Division of the service manual into the sections lab and industry. Reference list for the current status of all pages. | |
| The service manual has index B and replaces the earlier version in its entirety. | |
| 4. Service Bulletin 11780148 | 02/96 |
| Integration of HG/HR Moisture Analyzers, PR2003 und PR5003 comparator balances, PR5001-C and automatic feeder LV11. Integration of GA45/LC-P45... service manual in section 9 (accessories). | |
| Update of the whole service manual. It has index C and replaces the earlier version in its entirety. | |
| 5. Service Bulletin 11780264 | 08/97 |
| Supplement to the service manual with monobloc types for virtually all B, G and R balances except AG and HR/HG and with AG, CG, PB, PG, SB and SR special types. Supplement to the PG series with the PG-S balances. New LC-PT45 commands. TDNR list divided into M and B/G/R balances and updated. | |
| Updating of the entire service manual. Given the index D and completely replaced. | |
| 6. Service Bulletin 11780310 | 11/98 |
| Supplement to the service manual with the B-S and PG-S industrial lines of balances. Adoption of the new balances PR2004MC, PR10003MC and S/SR64. Supplement the AG balances with backlighting. Preparation for future test and calibration of the balances apart from LC-PT45 also by using a laptop. Updating TDNR list and supplementing it with newly structured TDNR for B-S balances. | |
| Updating the entire service manual. Given the index E and completely replaced. | |



7. Service Bulletin 11780401	11/99
New special types: SAG balances for pipette calibration, College-, Gold- and LabStyle-balances. LARS: LabTec Repair and Service Software, installation instructions and order numbers. TDNR list updated to V.90. Manually resettable overtemperature switch for HR/HG, with test function Func 76. Larger calibration tolerances for B-balances. The service manual has index F and replaces the earlier version in its entirety.	12-15
8. Service Bulletin 11780425	10/00
Supplement to the service manual with the HB43 Moisture Analyzer. Analytical Balances Initiative ABI-balances added: AG64/135/285, SAG105/285, AB54-S-TEX, AB304-S, College B204-S, College B303-S, PB8000-S. New special types: AB54-S-TEX balance for yarn count determination, College-balances B204-S and B303-S, PG3000-SRE and PG5000SRE/W for restaurants, SAG105 and SAG285 balances for pipette calibration. Type definitions in LARS: TDNR-lists with old TDNR-structure for R/G/B-balances, and TDNR-lists with new TDNR-structure for all balances. Type definitions in LC-PT45: error corrections in TDNR lists for R/G/B-balances. The service manual has index G and replaces the earlier version in its entirety.	12-17
9. Update	12/01
Supplement to the service manual with the balances of the Precision Balances Initiative PBI: PB403-S, PB403-S/E, PB4002-S, PB4002-S/E, PG403-S, PG403-SDR, PG603-S, PG603-SDR PG1003-S, PG2002-SDR, PG4002-S, PG4002-SDR, PG6002-S, PG4002-SDR. Supplement to the service manual with the balance GB802. New special types: Moisture Analyzer HR73-P/OPW, balances GG6002-S and UAS-4. Update of all type definitions in LARS to version 714. Update of the entire service manual: all changed pages have the date 12/01 and the index H.	12-19
Reference list	12/01
Reference list of the current status of all pages.	12-21

Address **Mettler-Toledo AG, CH-8606 Greifensee**
 Phone **01-944 23 26**
 Telefax **01-944 31 90**
 Telex **826150 mig ch**
 Mail address **Mettler-Toledo AG, Postfach LAB-300, CH-8606 Greifensee**


METTLER TOLEDO

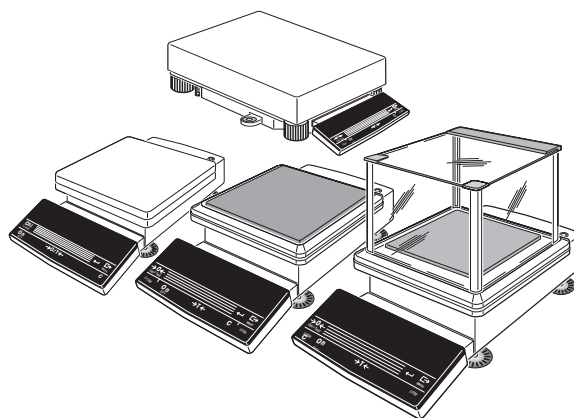
Service Bulletin

METTLER TOLEDO balances

Supplements to the service manual ME-705116

Purpose of this service bulletin

Supplementation of the service manual by balances of the R series.



Filing recommendation

Please fill in this service bulletin as follows:

Section	Replace pages	Add pages
–	Title page service manual	–
1 ... 4	all	none
5	1/2	13 ... 29
6+7	all	none
8, 9, 11	all	none
12	1	this page



P11780001

Adresse **Mettler-Toledo AG, CH-8606 Greifensee**
Telefon **01-944 22 11**
Telefax **01-944 30 60**
Telex **826150 mig ch**
Briefadresse **Mettler-Toledo AG, Postfach LAB-300, CH-8606 Greifensee**

Service Bulletin

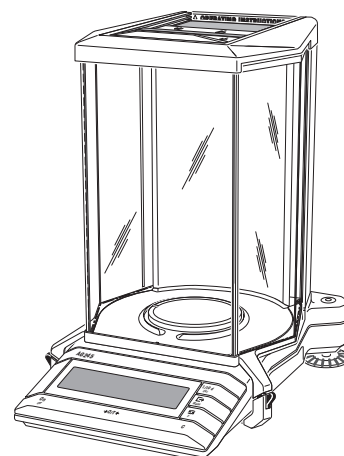
METTLER-TOLEDO balances

Supplements to the service manual ME-705116

Aim of this service bulletin

This service bulletin contains the current status of the «Balances» service manual at the time of going to print with up-to-date specifications of the balance models of the B and R series. Supplementation by the G balances is new.

This revised and supplemented Balances service manual 705116 has the index A.



Filing recommendation

Exchange the entire «Balances» service manual 705116 by the enclosed, which carries the index A.



P11780029

Address **Mettler-Toledo AG, Postfach LAB-300, CH-8606 Greifensee**
Phone **01-944 23 26**
Fax **01-944 31 90**

**METTLER TOLEDO**

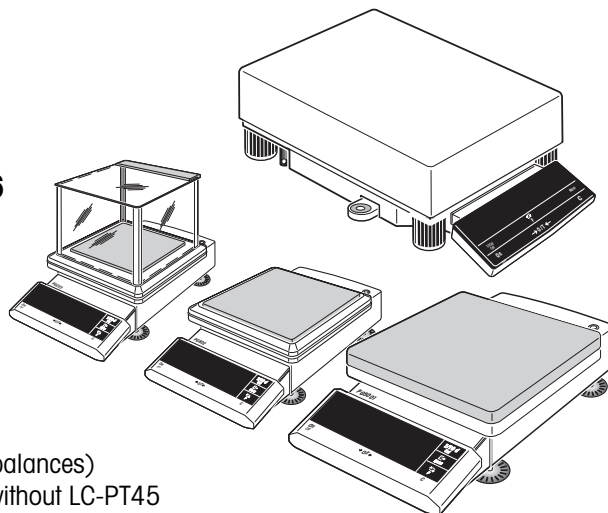
Service Bulletin

METTLER TOLEDO balances

Supplements to the service manual ME-705116

Purpose of this service bulletin

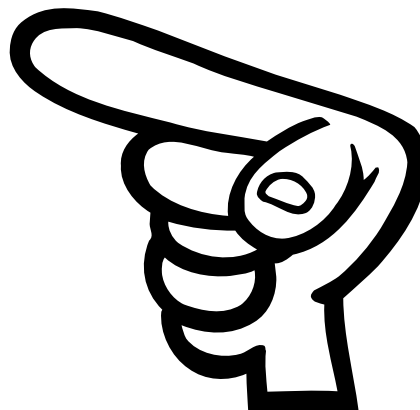
- Integration of the new balances of the G series.
- Improvement in the LC-PT45 commands:
 - Integration of the ServicePac-M functions (AM/PM...balances)
 - LIN and CAL executable only with service cassette, without LC-PT45
 - Func 33 is now called Balance Info and prints out balance type, SNR, TDNR, HW and SW status
 - Func 38, Print last service is integrated in Func 90
 - Func 80 and 81 are no longer used.
- Division of the service manual, where appropriate, into the sections lab and industry, corresponding to the administrative division already undertaken by METTLER-TOLEDO. As a result, the lab and industry divisions can now edit the service manual independently of each other.
- Reference list of the current status of all pages at the end of section 12.



Industry
Laboratory

Filing recommendation

Please replace the complete service manual by the enclosed new version with index B.



P11780062

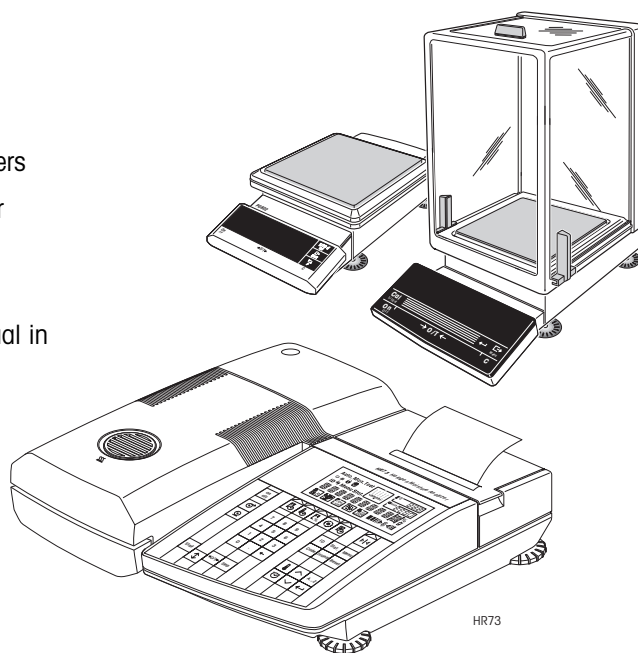
Service Bulletin

METTLER-TOLEDO balances

Supplements to the service manual 705116

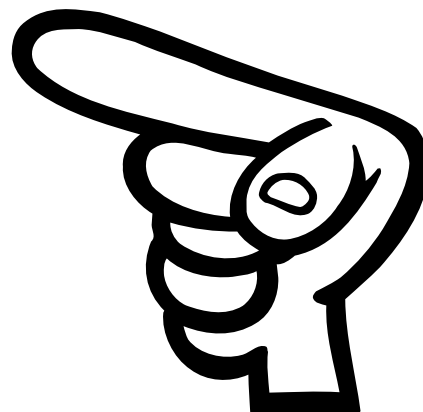
Purpose of this service bulletin

- Integration of HG53 and HR73 Moisture Analyzers
- Integration of PR2003 and PR5003 comparator balances and of PR5001-C (Ind).
- Update of the whole service manual.
- Integration of the GA45/LC-P45... service manual in section 9 (accessories) of this manual.
- Integration of automatic feeder LV11 in section 9.



Filing recommendation

Please replace the complete service manual by the enclosed new version with index C.



P11780148

Address **Mettler-Toledo GmbH, Postfach LAB-300, CH-8606 Greifensee**
Phone **01-944 23 26**
Fax **01-944 31 90**

METTLER TOLEDO

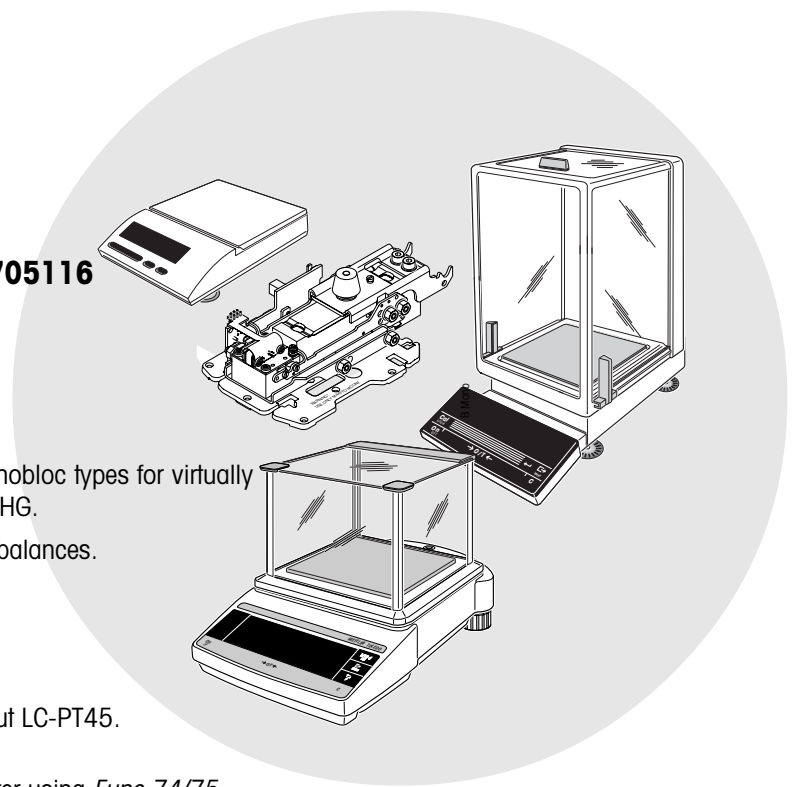
Service Bulletin

METTLER TOLEDO balances

Supplements to the service manual 705116

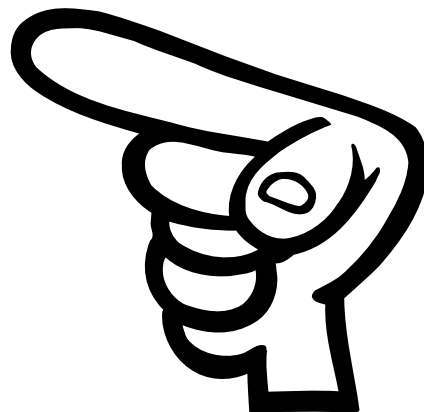
Purpose of this service bulletin

- Supplement to the service manual with monobloc types for virtually all B, G and R balances except AG and HR/HG.
- Supplement to the PG series with the PG-S balances.
- AG, CG, PB, PG, SB and SR special types.
- New LC-PT45 commands:
 - CALint, LIN5, StdCAL,
Balance Info (*Func 33*) selectable without LC-PT45.
 - Short-form record using *Func 91*.
 - Zero setting of the HR/HG statistics counter using *Func 74/75*.
 - *Func 4* replaces *Func 44*.
 - AT/MT: own EARM address for SNR (*Func 32/38*).
- TDNR list updated and divided into M and B/G/R balances.
- Position of the page number in the service manual: now at top instead of bottom (easier to read in screen work/CD-ROM).



Filing recommendation

Please replace the complete service manual by the enclosed new version with index D.



P11780265

Address **Mettler-Toledo GmbH, Laboratory and Weighing Technologies**
Marketing Support LabTec
Postfach LabTec
CH-8606 Greifensee, Schweiz
Phone **+41-1-944 23 26**
Fax **+41-1-944 3190**
Internet **<http://www.mt.com>**

METTLER TOLEDO

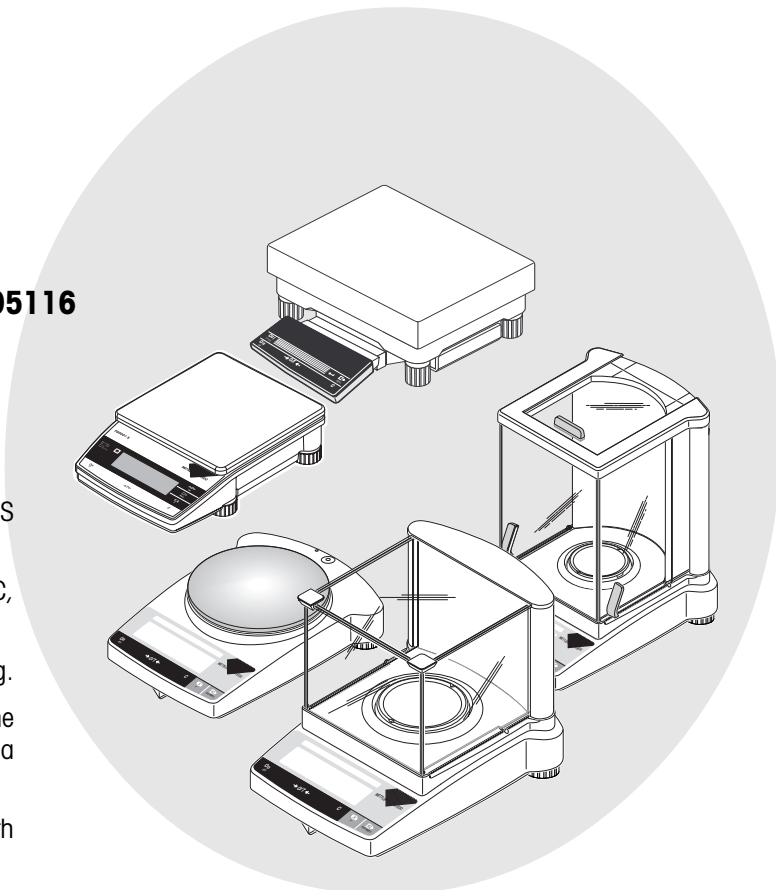
Service Bulletin

METTLER TOLEDO Balances

Supplements to the service manual 705116

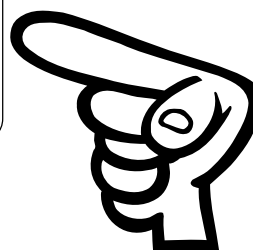
Purpose of this service bulletin

- Supplement to the service manual with the B-S and PG-S industrial lines of balances.
- Adoption of the new balances PR2004MC, PR10003MC and S/SR64.
- Supplement the AG balances with backlighting.
- Preparation for future test and calibration of the balances apart from LC-PT45 also by using a laptop.
- Updating TDNR list and supplementing it with newly structured TDNR for B-S balances.
- Updating the entire service manual.



Filing recommendation

Please replace the complete service manual by the enclosed new version with index E.



P11780310

Address **Mettler-Toledo GmbH, Laboratory & Weighing Technologies**
Marketing Support LabTec
Postfach LabTec
CH-8606 Greifensee, Schweiz
Phone **+41-1-944 23 26**
Fax **+41-1-944 3190**
Internet **http://www.mt.com**

METTLER TOLEDO

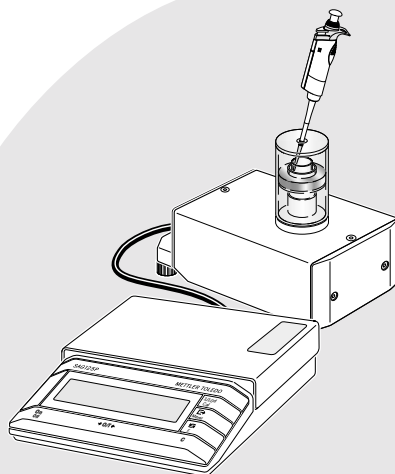
Service Bulletin

METTLER TOLEDO Balances

Supplements to the service manual 705116

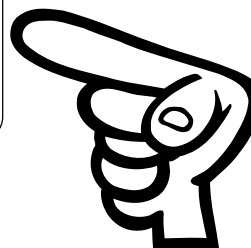
Purpose of this service bulletin

- New special types: SAG balances for pipette calibration, College-, Gold- and LabStyle-balances.
- LARS: LabTec Repair and Service Software, installation instructions and order numbers.
- TDNR list updated to V.90.
- Manually resettable overtemperature switch for HR/HG, with test function *Func 76*.
- Larger calibration tolerances for B-balances.
- The service manual has index F and replaces the earlier version in its entirety.



Filing recommendation

Please replace the complete service manual by the enclosed new version with index F.



11780401

Address **Mettler-Toledo GmbH, Laboratory & Weighing Technologies**
Marketing Support LabTec
Postfach LabTec
CH-8606 Greifensee, Schweiz
 Phone **+41-1-944 23 26**
 Fax **+41-1-944 3190**
 Internet **http://www.mt.com**

METTLER TOLEDO

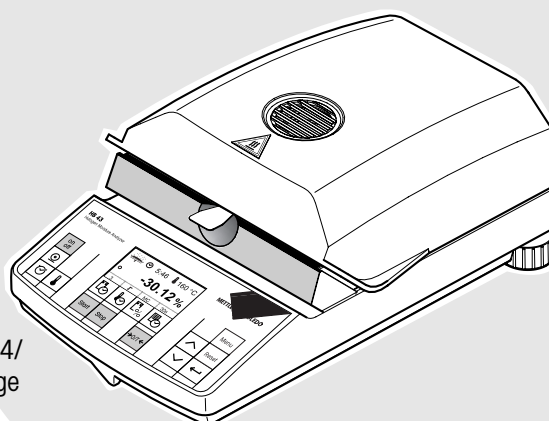
Service Bulletin

METTLER TOLEDO Balances

Supplements to the service manual 705116

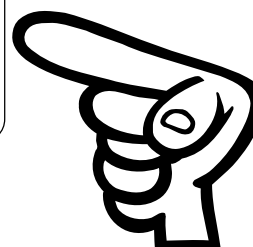
Purpose of this service bulletin

- Supplement to the service manual with the HB43 Moisture Analyzer.
- Analytical Balances Initiative ABI-balances added: AG64/135/285, SAG105/285, AB54-S-TEX, AB304-S, College B204-S, College B303-S, PB8000-S.
- New special types: AB54-S-TEX balance for yarn count determination, College-balances B204-S and B303-S, PG3000-SRE and PG5000SRE/W for restaurants, SAG105 and SAG285 balances for pipette calibration.
- Type definitions in LARS: TDNR-lists with old TDNR-structure for R/G/B-balances, and TDNR-lists with new TDNR-structure for all balances.
- Type definitions in LC-PT45: error corrections in TDNR lists for R/G/B-balances.
- The service manual has index G and replaces the earlier version in its entirety.



Filing recommendation

Please replace the complete service manual by the enclosed new version with index G.



P11780425

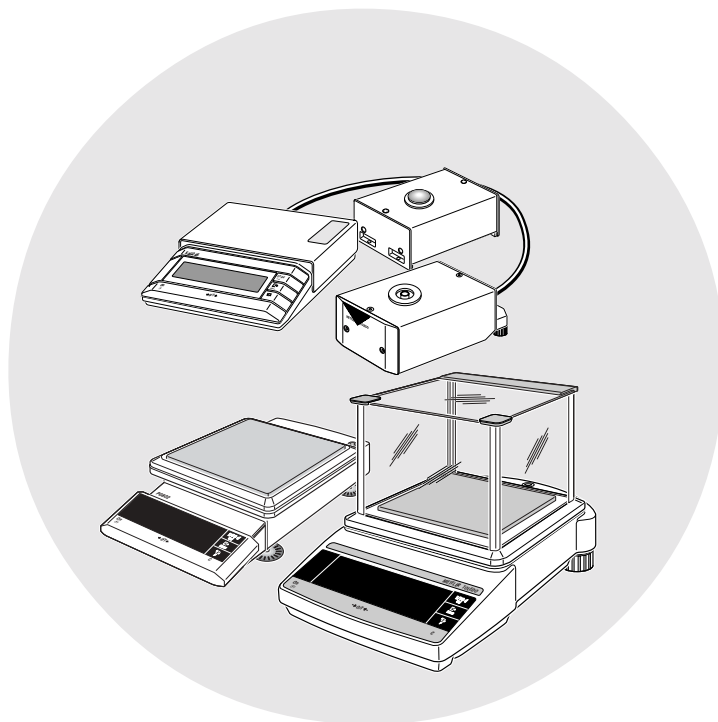
9th Update

METTLER TOLEDO Balances

Supplements to the service manual 705116

Purpose of this update

- Supplement to the service manual with the balances of the Precision Balances Initiative PBI:
PB403-S, PB403-S/E, PB4002-S, PB4002-S/E,
PG403-S, PG403-SDR, PG603-S, PG603-SDR
PG1003-S, PG2002-SDR, PG4002-S, PG4002-SDR,
PG6002-S, PG4002-SDR
- Supplement to the service manual with the balance GB802.
- New special types: Moisture Analyzer HR73-P/OPW, balances GG6002-S and UAS-4.
- Update of all type definitions in LARS to version 714.
- Update of the entire service manual.



Update recommendation

Please replace the old CD „Mettler Toledo LabServiceExpert 2001“ by the new „Mettler Toledo LabServiceExpert 2002“.

Print out all altered pages if needed. These are in the reference list at the end of this section all pages with the date 12/01 and the index H.

Reference list

Reference list of the current status of all printed pages.

Page	Edition	Page	Edition	Page	Edition	Page	Edition	Page	Edition
Title page		16 -----	11/98	Section 4		166...168 ----	11/98	31,32 -----	11/98
1 ---	September09/03	17 -----	10/00	1 -----	10/00	170 -----	09/03	33,34 --	Blank pages
Sections overview		18...27 -----	09/03	2...6 -----	11/98	171...180	Blank pages	35,36 -----	11/98
1 -----	09/03	28 -----	12/01	7,8 -----	11/99	181,182 ----	09/03	37,38 --	Blank pages
Section 1		29 -----	09/03	9 -----	10/00	183 -----	06/00	39...43 -----	11/98
1 -----	09/03	30 -----	12/01	10...23 -----	11/98	184...187 ----	09/03	44 -----	12/01
2 -----	11/98	31...34	Blank pages	24...28 -----	08/97	190,194 ----	09/03	Section 9	
3 -----	11/98	35,36 -----	12/01	29...32 -----	11/98	Section 6		1 -----	12/01
4 -----	11/99	37 -----	09/03	33...40	Blank pages	1 -----	11/99	2...4 -----	11/98
5 -----	11/98	38...48 -----	12/01	41...43 -----	06/00	2 -----	12/01	5 -----	09/03
6 -----	10/00	49 -----	09/03	44 -----	12/01	3...12 -----	11/98	6...10 -----	11/98
7 -----	09/03	50...56 -----	12/01	Section 5		Section 7		11...16 -----	09/03
8 -----	12/01	57...62	Blank pages	1 -----	11/98	1 -----	12/01	17...22 -----	08/97
9 -----	09/03	63,64 -----	12/01	2 -----	09/03	2...4 -----	11/98	23 -----	09/03
10 -----	11/99	65 -----	09/03	3,4 -----	11/99	5...8 -----	11/99	24 -----	09/03
11,12 -----	11/98	66 -----	12/01	5 -----	11/98	9...39 -----	11/98	25...38	Blank pages
13...15 -----	09/03	67...70	Blank pages	6 -----	04/00	40...48 -----	11/99	39 -----	09/03
16 -----	11/99	71...90 -----	12/01	7...14 -----	11/98	49...60	Blank pages	40 -----	09/03
17...22	Blank pages	91 -----	09/03	15...20	Blank pages	61 -----	10/00	Section 10	
23 -----	11/98	92...96 -----	12/01	21 -----	10/00	62 -----	11/98	Empty	
24 -----	04/00	97...98	Blank pages	22...26 -----	08/97	63,64 -----	11/99	Section 11	
25,26 -----	11/98	99...103 ----	12/01	27...30	Blank pages	65...70	Blank pages	1,2 -----	09/03
27...34	Blank pages	104,105 ----	09/03	31,32 -----	11/99	71...72 -----	06/00	3...7 -----	12/01
35 -----	11/98	106...109 ----	12/01	33...37 -----	11/98	73...74 -----	12/01	8 -----	11/99
36 -----	09/03	110,111 ----	09/03	38 -----	10/00	75...76 -----	06/00	Section 12	
37...38 -----	11/98	112,113 ----	12/01	39...47 -----	09/03	Section 8		1,2 -----	12/01
39 -----	10/00	114,115 ----	09/03	38...50	Blank pages	1 -----	12/01	3 -----	9402
40 -----	11/99	116 -----	12/01	51...53 -----	11/98	2 -----	11/98	4 -----	11/98
41...54 -----	10/00	117...118	Blank pages	54 -----	11/99	3,4 -----	11/99	5 -----	9405
55...96 -----	09/03	119 -----	11/98	55...60 -----	11/98	5,6 -----	09/03	6 -----	11/98
97...100	Blank pages	120 -----	11/99	61...64	Blank pages	7,8 -----	11/98	7 -----	9506
101...104 ----	12/01	121...123 ----	09/03	65...76 -----	11/98	9 -----	09/03	8 -----	11/98
Section 2		124 -----	11/99	77...90	Blank pages	10 -----	04/00	9 -----	9602
1 -----	12/01	125 -----	09/03	91...104 ----	11/98	11 -----	11/98	10 -----	11/98
2 -----	09/03	126 -----	11/98	105...110	Blank pages	12...13 -----	10/00	11 -----	9708
3...6 -----	11/98	127,128 ----	04/00	111...120 ----	11/98	14...16 -----	12/01	12 -----	11/98
7 -----	09/03	129 -----	09/03	121...150	Blank pages	17,18 --	Blank pages	13 -----	9811
8 -----	11/98	130,131 ----	04/00	151 -----	11/98	19,20 -----	11/98	14 -----	11/98
9 -----	09/03	132,133 ----	09/03	152,153 ----	11/99	21,22 -----	12/01	15 -----	9911
10 -----	11/98	134 -----	04/00	154...156 ----	11/98	23,24 --	Blank pages	16 -----	11/99
11 -----	09/03	135...148	Blank pages	157 -----	09/03	25 -----	11/98	17 -----	0010
12 -----	11/98	149...154 ----	09/03	158 -----	11/98	26 -----	11/99	18 -----	10/00
13 -----	09/03	Section 3		159,160 ----	12/01	27 -----	11/98	19...20 -----	12/01
14 -----	11/98	1 -----	10/00	161 -----	11/98	28 -----	11/99	21 -----	09/03
15 -----	12/01	2...6 -----	11/98	162 -----	09/03	29,30 --	Blank pages		
		7,8 -----	04/00	163,164 ----	11/98				
				165 -----	09/03				

