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Service Manual

METTLER TOLEDO
XS XP Precision Balances

Edition 08/2006

Overview of chapters

Index

Overview of Chapters

1 Introduction
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4 Checks
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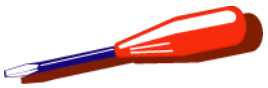

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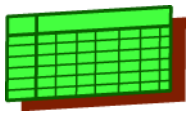

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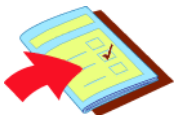


12 SOPs and Forms

1 Introduction

List of Contents

1 Service Manual

1.1 Purpose of the Service Manual

The Service Manual provides support to service personnel of Mettler-Toledo, or other persons authorized by Mettler-Toledo, when performing maintenance and repairs on the balances described in this Service Manual.

1.2 Previous Knowledge Required

Persons using the Service Manual must fulfill the following basic knowledge requirements regarding the handling of Mettler-Toledo products and associated software:

- Understanding of the Operating Instructions of the respective balance (see CD LabTec service expert or http://extranet.mt.com LabTec Market Support).
- Experience with LARS (LabTec Repair and Service Software).
- Ability to load new software onto the balance from the Internet using LARS or e-loader (see CD LabTec service expert or http://extranet.mt.com LabTec Market Support).
- Basic knowledge of using Adobe Acrobat Reader®

Mettler-Toledo offers service courses which include this basic knowledge.

1.3 Structure of the Service Manual

The Service Manual is divided into 12 chapters.

The sequence of the chapters largely corresponds to the sequence of the operations for repairing a balance: checking, troubleshooting, repair, and adjustment.

The Service Manual is designed mainly for display on a desktop or laptop computer screen.

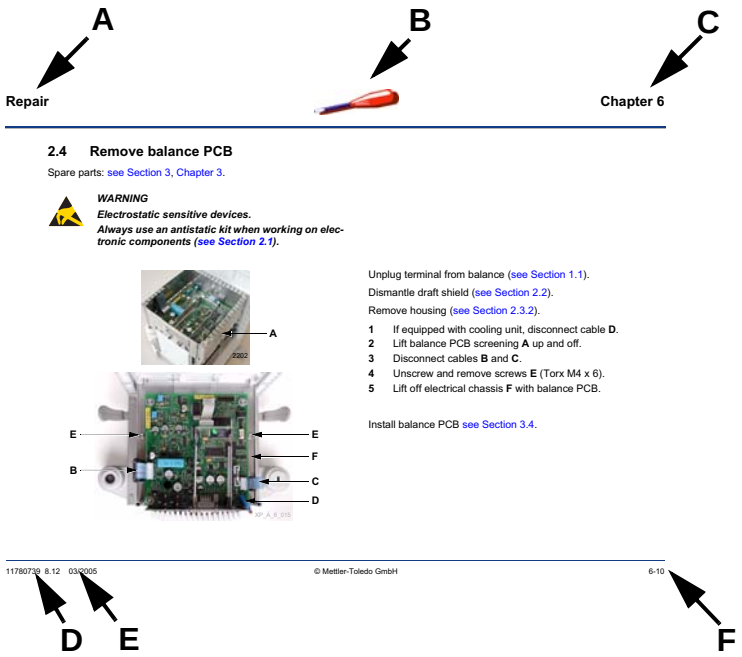
1.3.1 Tables of Contents / Index

For rapid location of the required information, the Service Manual has:

- an overview of the chapters
- an index
- a table of contents for each chapter.

Instructions for using the tables of contents and the index are given in Section 1.4.3 of this chapter.

1.3.2 Page Structure



Header

- **A** Title of the respective chapter
- **B** Icon for the respective chapter
- **C** Chapter number

Text field

Information containing text and illustrations

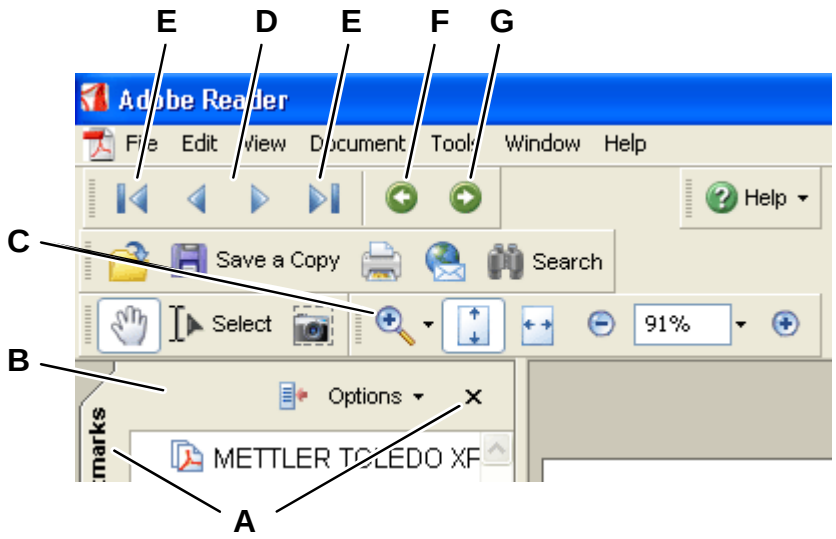
Footer

- **D** Number of the Service Manual
- **E** Issue date (month/year)
- **F** Page number «6-64»
  6 = chapter number
  64 = page number within this chapter

1.4 Navigating on the Screen

For navigation in the Service Manual either the functions of Adobe Acrobat Reader® or hyperlinks located in the document can be used. The two means of navigation can also be used together.

1.4.1 Navigation with Adobe Acrobat Reader®



Navigating in the Service Manual using the Adobe Acrobat Reader® toolbar:

A Open/close the navigation window **B**

C Zoom

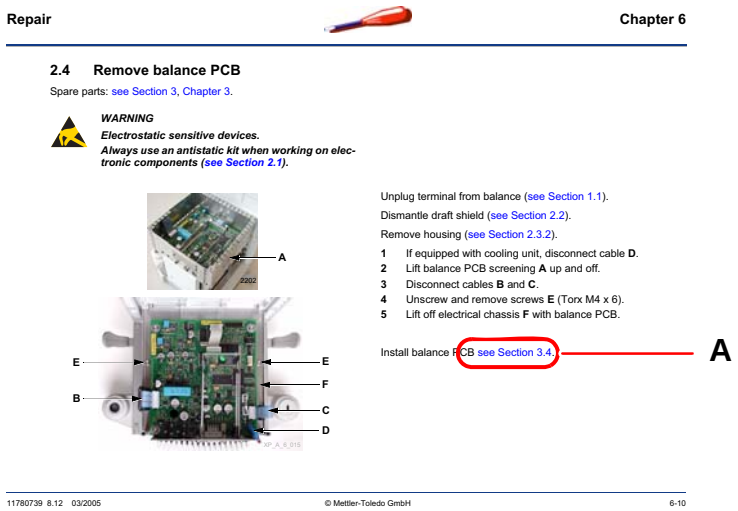
D Page forward/backward

E Go to start/end of document

F Go to Previous View
(e.g. return to the page with the «link origin»)

G Go to Next View
(e.g. from the page with the «link origin»
back to the «linked page»).

1.4.2 Display on a Small Screen



Repair Chapter 6

2.4 Remove balance PCB

Spare parts: see Section 3, Chapter 3.

WARNING
Electrostatic sensitive devices.
Always use an antistatic kit when working on electronic components (see Section 2.1).

Unplug terminal from balance (see Section 1.1).
Dismantle draft shield (see Section 2.2).
Remove housing (see Section 2.3.2).

1 If equipped with cooling unit, disconnect cable D.
2 Lift balance PCB screening A up and off.
3 Disconnect cables B and C.
4 Unscrew and remove screws E (Torx M4 x 6).
5 Lift off electrical chassis F with balance PCB.

Install balance PCB see Section 3.4.

A

B C D E E F

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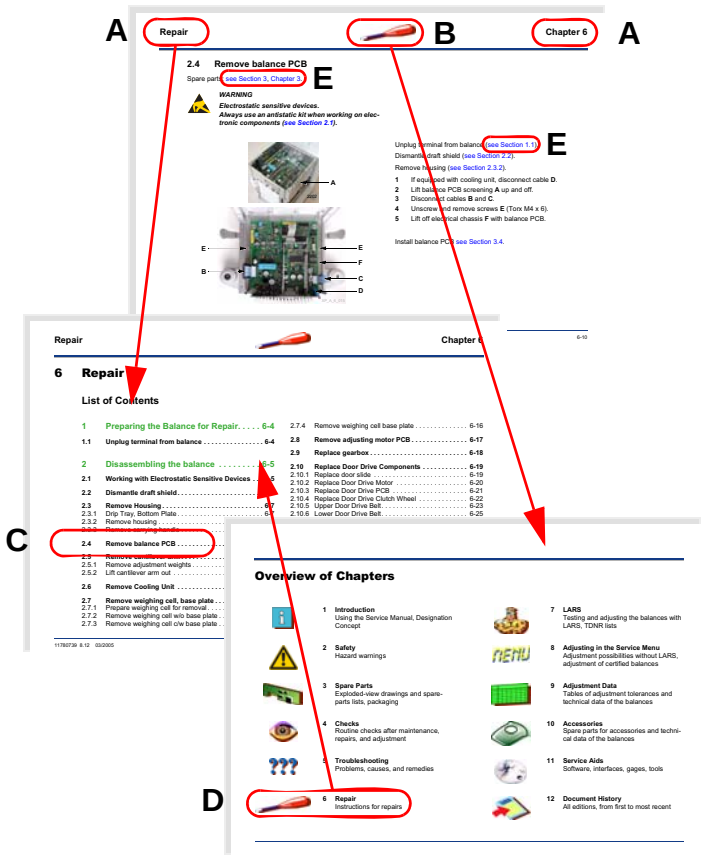
Note: Full-screen mode is functioning only when the document has been downloaded. It does not work when opening the document on the Service-CD!

In full-screen mode, the document is displayed without the toolbar.

Ctrl+L	Switch to full-screen
Esc	Reset to normal view
Ctrl++	Zoom in
Ctrl+-	Zoom out
←→	Page forward/backward
Alt+←	Return to selected hyperlink **A**

1.4.3 Navigation within the Manual



The Service Manual contains hyperlinks which make direct navigation possible. They can also be used when navigating with the toolbar of Adobe Acrobat Reader® see Section 1.4.1.

Click on **A**
The table of contents of the respective chapter is displayed.

Click on **B**
The Overview of Chapters is displayed.

Click on **C**
The respective section in the chapter is displayed.

Click on **D**
The table of contents of the respective chapter is displayed.

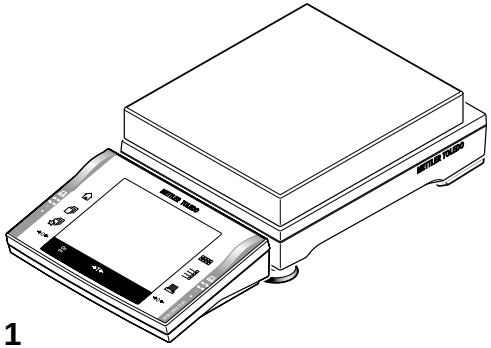
Click on **E**
(blue) hyperlinks, to jump to the respective place in the document.

1.5 Paper Printout

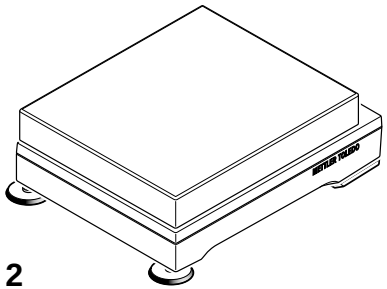
You can print the Service Manual either on US Letter or DIN A4 paper. Scale down to 85% to get sufficient margins for punching.

2 Designation Concept

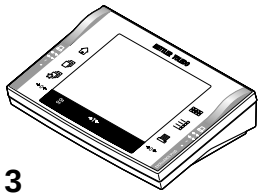
2.1 Terminology



1



2



3

1 Balance

A system comprising platform and terminal.

2 Platform

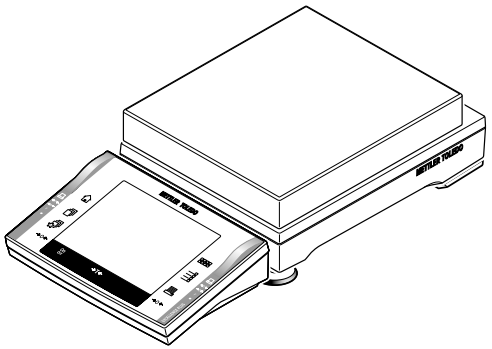
The name for a «balance» when no terminal is mounted or set up next to it. For example, the platform is controlled by a PC with appropriate software.

3 Terminal

The name for the control unit of a balance. A terminal can be mounted onto the platform or set up next to it.

2.2 Designation definition

2.2.1 Balance

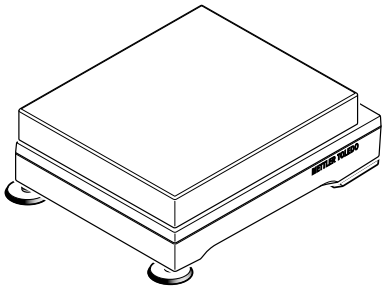


X P 203 S DR / M 21

- Speciality (00...99)
- Certified Balance
- Extension
- Dimension *
- Capacity/Readability
- Type
  consisting of:
  X203S Platform
  P Terminal

*S - small, M - medium, L - Large

2.2.2 Platform

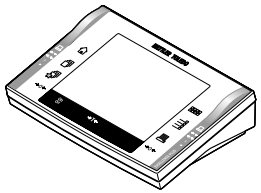


X 203 S DR / M 21

- Speciality (00...99)
- Cert. Platform
- Extension
- Dimension *
- Capacity/Readability
- Type

*S - small, M - medium, L - Large

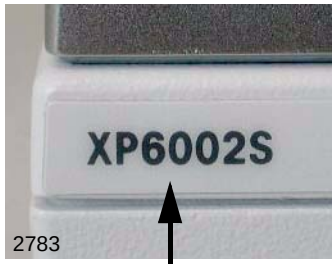
2.2.3 Terminal

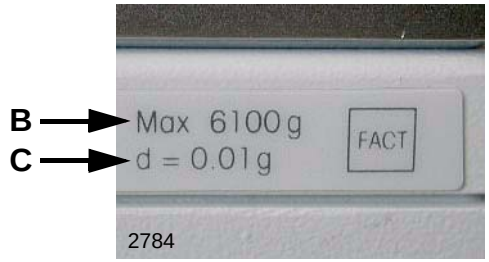


PPT
- Precision Balances
- Line *

*P = Professional, S = Standard

2.3 Model Plate





A Type designation

B Maximum capacity

C Readability

2.4 Type plate

1

2

Fig. 1: Type plate of Balance

Fig. 2: Type plate of Terminal

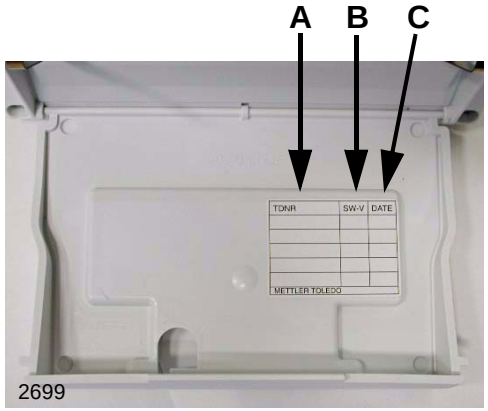
A Serial number (SNR).

B Type definition number (TDNR) of Platform/Terminal when leaving the factory.

Note

If a new TDNR is loaded when servicing is performed, the new number must be entered on the service data plate (Platform and/or Terminal) (see Section 2.5).

2.5 Service Data Plate



A Column for new TDNR.

B Column for new firmware version.

C Column for date of update.

Service Data Plate see Chapter 11

2.6 Serial number decoding

as of 2004 - example with SNR 1125010001:

11 25 01 0001

- 0001 = consecutive number within a production week
- 01 = production week (01 - 52)
- 25 = production year 2004. Offset = 21 (26 = 2005) etc.
- 11 = production site Switzerland

up to 31.12.2003 production site Switzerland, example with SNR 1118420763:

11 18 42 0763

- 0763 = consecutive number within a production week
- 42 = production week (01 - 52)
- 18 = production year 1999. Offset = 19 (24 = 2005)
- 11 = MTLabTec (Switzerland)

up to 31.12.2003 production site China, example with SNR 1202440020:

12 02 44 0020

- 0020 = consecutive number within a production week
- 44 = production week (01 - 52)
- 02 = production year (05 = 2005)
- 12 = MTCS (China)

3 Type Overview

3.1 XP Balances

3.1.1 XP Balances, Type S (with Draft Shield)

Type	Type (Certif. Balance)		Weighing cell	Terminal PPT	Draft shield
XP204S XP404S XP404SDR	XP204S/A M XP404S/A M XP404SDR/A M		11133013 see Section 5.4, Chapter 3	see Section 2.1, Chapter 3	see Section 3.2, Chapter 3

Spare parts: see Section 4.1, Chapter 3

Type	Type (Certif. Balance)	Weighing cell	Terminal PPT	Draft shield
XP203S	XP203S/A M	11133010 see Section 5.5, Chapter 3	see Section 2.1, Chapter 3	see Section 3.2, Chapter 3
XP603S	XP603S/A M	11133010 see Section 5.5, Chapter 3		
XP603SDR	XP603SDR/A M	11133010 see Section 5.5, Chapter 3		
XP1203S	XP1203S/A M	11133010 see Section 5.5, Chapter 3		
XP2003SDR	XP2003SDR/A M	11133014 see Section 5.4, Chapter 3		
XP5003SDR	XP5003SDR/A M	11133015 see Section 5.5, Chapter 3		

Spare parts: see Section 4.1, Chapter 3

3.1.2 XP Balances, Type S (with Draft Shield Element)

Type	Type (Certif. Balance)	Weighing cell	Terminal PPT
XP802S	XP802S/A M	11133011 see Section 5.6, Chapter 3	
XP1202S	XP1202S/A M	11133011 see Section 5.6, Chapter 3	
XP2002S	XP2002S/A M	11133011 see Section 5.6, Chapter 3	
XP4002S	XP4002S/A M	11133011 see Section 5.6, Chapter 3	
XP4002SDR	XP4002SDR/A M	11133011 see Section 5.6, Chapter 3	
XP6002S	XP6002S/A M	11133011 see Section 5.6, Chapter 3	see Section 2.1, Chapter 3
XP6002SDR	XP6002SDR/A M	11133011 see Section 5.6, Chapter 3	
XP8002S	XP8002S/A M	11133012 see Section 5.8, Chapter 3	
XP10002S	XP10002S/A M	11133012 see Section 5.8, Chapter 3	
XP10002SDR	XP10002SDR/A M	11133012 see Section 5.8, Chapter 3	

Spare parts: see Section 4.1, Chapter 3

3.1.3 XP Balances, Type S (without Draft Shield Element)

Type	Type (Certif. Balance)	Weighing cell	Terminal PPT
XP2001S	XP2001S/A M	11133011 see Section 5.6, Chapter 3	
XP4001S	XP4001S/A M	11133011 see Section 5.6, Chapter 3	
XP6001S	XP6001S/A M	11133011 see Section 5.6, Chapter 3	see Section 2.1, Chapter 3
XP8001S	XP8001S/A M	11133012 see Section 5.8, Chapter 3	
XP10001S	XP10001S/A M	11133012 see Section 5.8, Chapter 3	

Spare parts: see Section 4.1, Chapter 3

3.1.4 XP Balances, Type M

Type	Type (Certif. Balance)	Weighing cell	Terminal PPT
XP6002MDR	XP6002MDR/A M	11133011 see Section 5.7, Chapter 3	
XP12002MDR	XP12002MDR/A M	11133012 see Section 5.9, Chapter 3	
XP8001M	XP8001M/A M	11133012 see Section 5.9, Chapter 3	
XP8001MDR	XP8001MDR/A M	11133012 see Section 5.9, Chapter 3	
XP12001M	XP12001M/A M	11133012 see Section 5.9, Chapter 3	see Section 2.1, Chapter 3
XP16001M	XP16001M/A M	11133017 see Section 5.10, Chapter 3	
XP16001MDR	XP16001MDR/A M	11133017 see Section 5.10, Chapter 3	
XP20001M	XP20001M/A M	11133017 see Section 5.10, Chapter 3	
XP12000M		11133012 see Section 5.9, Chapter 3	
XP20000M		11133017 see Section 5.10, Chapter 3	

Spare parts: see Section 4.2, Chapter 3

3.1.5 XP Balances, Type L

Type	Type (Certif. Balance)	Weighing cell	Terminal PPT
XP8001L	XP8001L/A M	11133017 see Section 5.11, Chapter 3	
XP16001L	XP16001L/A M	11133017 see Section 5.11, Chapter 3	
XP32001L	XP32001L/A M	11133017 see Section 5.11, Chapter 3	
XP32001LDR	XP32001LDR/A M	11133017 see Section 5.11, Chapter 3	
XP64001L	XP64001L/A M	11133018 see Section 5.12, Chapter 3	see Section 2.1, Chapter 3
XP16000L	XP16000L/A M	11133017 see Section 5.11, Chapter 3	
XP32000L	XP32000L/A M	11133017 see Section 5.11, Chapter 3	
XP64000L	XP64000L/A M	11133018 see Section 5.12, Chapter 3	

Spare parts: see Section 4.3, Chapter 3

3.2 XS Balances

3.2.1 XS Balances, Type S (with Draft Shield)

Type	Type (Certif. Balance)	Weighing cell	Terminal SPT	Draft shield
XS203S	XS203S/A M	11133010 see Section 5.5, Chapter 3	see Section 2.2, Chapter 3	see Section 3.1, Chapter 3
XS403S	XS403S/A M			
XS603S	XS603S/A M			
XS603SDR	XS603SDR/A M			
XS1003S	XS1003S/A M			

Spare parts: see Section 4.4, Chapter 3

3.2.2 XS Balances, Type S (with Draft Shield Element)

Type	Type (Certif. Balance)	Weighing cell	Terminal SPT
XS802S	XS802S/A M	11133011 see Section 5.6, Chapter 3	see Section 2.2, Chapter 3
XS2002S	XS2002S/A M		
XS4002S	XS4002S/A M		
XS4002SDR	XS4002SDR/A M		
XS6002S	XS6002S/A M		
XS6002SDR	XS6002SDR/A M		

Spare parts: see Section 4.4, Chapter 3

3.2.3 XS Balances, Type S (without Draft Shield Element)

Type	Type (Certif. Balance)	Weighing cell	Terminal SPT
XS4001S	XS4001S/A M	11133011 see Section 5.6, Chapter 3	see Section 2.2, Chapter 3
XS6001S	XS6001S/A M	11133011 see Section 5.6, Chapter 3	
XS8001S	XS8001S/A M	11133012 see Section 5.8, Chapter 3	

Spare parts: see Section 4.4, Chapter 3

3.2.4 XS Balances, Type M

Type	Type (Certif. Balance)	Weighing cell	Terminal SPT
XS6001M	XS6001M/A M	11133011 see Section 5.7, Chapter 3	
XS6001MDR	XS6001MDR/A M	11133011 see Section 5.7, Chapter 3	
XS10001M	XS10001M/A M	11133012 see Section 5.9, Chapter 3	
XS12001MDR	XS12001MDR/A M	11133012 see Section 5.9, Chapter 3	
XS16001M	XS16001M/A M	11133017 see Section 5.10, Chapter 3	see Section 2.2, Chapter 3
XS10000M		11133012 see Section 5.9, Chapter 3	
XS16000M		11133017 see Section 5.10, Chapter 3	

Spare parts: see Section 4.5, Chapter 3

3.2.5 XS Balances, Type L

Type	Type (Certif. Balance)	Weighing cell	Terminal SPT
XS8001L	XS8001L/A M		
XS16001L	XS16001L/A M		
XS32001L	XS32001L/A M		
XS32001LDR	XS32001LDR/A M	11133017 see Section 5.11, Chapter 3	see Section 2.2, Chapter 3
XS16000L	XS16000L/A M		
XS32000L	XS32000L/A M		

Spare parts: see Section 4.6, Chapter 3

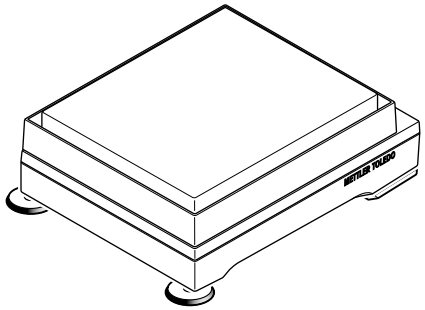
3.3 X Platforms

3.3.1 X Platforms Type S with Draft Shield

Type	Type (Certif. Balance)		Weighing cell	Draft shield	Spare parts
X204S	X204S/A M		11133013 see Section 5.4, Chapter 3	see Section 3.2, Chapter 3	see Section 4.7, Chapter 3
X404S	X404S/A M		11133013 see Section 5.4, Chapter 3		
X404SDR	X404SDR/A M		11133013 see Section 5.4, Chapter 3		
X203S	X203S/A M		11133010 see Section 5.5, Chapter 3	see Section 3.1, Chapter 3	see Section 4.7, Chapter 3
X603S	X603S/A M		11133010 see Section 5.5, Chapter 3		
X603SDR	X603SDR/A M		11133010 see Section 5.5, Chapter 3		
X1203S	X1203S/A M		11133010 see Section 5.5, Chapter 3		
X2003SDR	X2003SDR/A M		11133014 see Section 5.4, Chapter 3		
X5003SDR	X5003SDR/A M		11133015 see Section 5.4, Chapter 3		

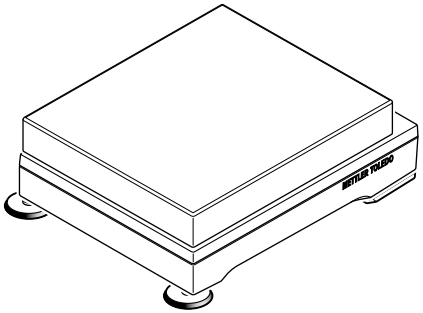
3.3.2 X Platforms Type S with Draft Shield Element

Type	Type (Certif. Balance)	Weighing cell	Spare parts
X1202S	X1202S/A M		
X2002S	X2002S/A M		
X4002S	X4002S/A M	11133011 see Section 5.6, Chapter 3	
X6002S	X6002S/A M		
X6002SDR	X6002SDR/A M		see Section 4.7, Chapter 3
----------	----------	----------	
X8002S	X8002S/A M		
X10002S	X10002S/A M	11133012 see Section 5.8, Chapter 3	
X10002SDR	X10002SDR/A M		



3.3.3 X Platforms Type S without Draft Shield Element

Type	Type (Certif. Balance)	Weighing cell	Spare parts
X4001S	X4001S/A M		
X6001S	X6001S/A M	11133011 see Section 5.6, Chapter 3	
----------	----------	----------	see Section 4.7, Chapter 3
X8001S	X8001S/A M		
X10001S	X10001S/A M	11133012 see Section 5.8, Chapter 3	

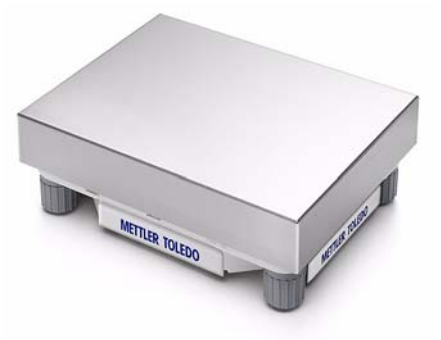


3.3.4 X Platforms Type M

Type	Type (Certif. Balance)	Weighing cell	Spare parts
X12002MDR	X12002MDR/A M	11133012 see Section 5.9, Chapter 3	
X8001M	X8001M/A M	11133012 see Section 5.9, Chapter 3	
X12001M	X12001M/A M	11133012 see Section 5.9, Chapter 3	see Section 4.8, Chapter 3
X20001M	X20001M/A M	11133017 see Section 5.10, Chapter 3	
X12000M		11133012 see Section 5.9, Chapter 3	
X20000M		11133017 see Section 5.10, Chapter 3	

3.3.5 X Platforms Type L

Type	Type (Certif. Balance)	Weighing cell	Spare parts
X16001L	X16001L/A M	11133017 see Section 5.11, Chapter 3	
X32001L	X32001L/A M	11133017 see Section 5.11, Chapter 3	
X64001L	X64001L/A M	11133018 see Section 5.12, Chapter 3	see Section 4.9, Chapter 3
X32000L		11133017 see Section 5.11, Chapter 3	



4 Special Types

Special type	Basic type	Comments	Adjustment tolerances
XJ15002SC JST Terminal	X5003SDR SPT Terminal	Jewelry balance mainly for South Africa and Russia / plastic draft shield / main unit: carat and kg, g, mg SPT Terminal with special jewelry overlay (Spare parts: lms.hotline@mt.com)	see Chapter 9
XJ10002SG XJ10002SG/A /M	X10002S	Keypad Overlay p/n 11130716	

5 Abbreviations

/A	Certified balance country-specific
c/w	complete with
CW	Clockwise
CCW	Counter clockwise
LARS	LabTec Repair and Service Software
/M	Certified balance EU
PPT	Professional Precision Terminal
SMA	Service Manual
SNR	Serial number
SPT	Standard Precision Terminal
SW	Software
TDNR	Type Definition Number
w/o	without
>= or ≥	greater than or equal to
<= or ≤	less than or equal to

6 Document Status

Document number	Date of change	Changed pages	Short description of change
11780586 8.12	05/2004	Entire document	First version
11780586A 8.12	09/2004	Entire document	New types (balances, platforms, terminals) added. New components (draft shield, weighing cells) added.
11780586B 8.12	10/2005	in all chapters	Miscellaneous small changes, corrections, amendments
		Chapter 1	- New sections: *2.6 Serial number decoding, 3.3 X Platforms, 4 Abbreviations* - New types (L, some M) added
		Chapter 3	- numerous corrections, changes to spare parts lists - X-Platforms, L types, some M types added - new weighing cells added (sections 5.8 to 5.10)
		Chapter 5	Error Messages with appropriate remedy added (section 5.1)
		Chapter 9	New types (L, some M) added
11780586C 8.12	07/2006	in most chapters	Miscellaneous changes, corrections, amendments
		Chapter 1	New types added: XP802S, XP2002S, XP4002SDR + /A M XP2001S + /A M XP16001SDR + /A M XP16000L/A M, XP32000L/A M, XP64000L/A M XS12001MDR + /A M XS16000L/A M, XS32000L/A M New section: *4 Special Types*
		Chapter 3	Numerous corrections, changes to spare parts lists
		Chapter 5	Error Messages added
		Chapter 6	Numerous descriptions of how to replace spare parts added, corrected
		Chapter 12	- SOP 11793001 *Preventive Maintenance* added - Preventive Maintenance Report (checklist) 11793002 added

2 Safety

List of contents

1 Safety

1.1 Before starting service work

- Obtain written confirmation that the balance is not contaminated, or that it has been expertly cleaned before service work is started.
- Read the Operating Instructions to familiarize yourself with the functions of the balance.
- Observe all safety instructions in this Service Manual.
- Observe any safety instructions received from the customer. Be especially sure to observe safety instructions which are closely related to your service work.

1.2 Pictograms used in this manual

General warning

Electrical shock hazard

Electrostatic sensitive devices

General attention

1.3 Text markers used

Warning, Note	Important information regarding handling

1.4 Disposal of service materials and replaced parts

Service materials (cleaning cloths, cleaning agents, etc.) and replaced parts must be disposed of:

- in accordance with the specific customer's regulations
- in accordance with the specific regulations of the respective country.

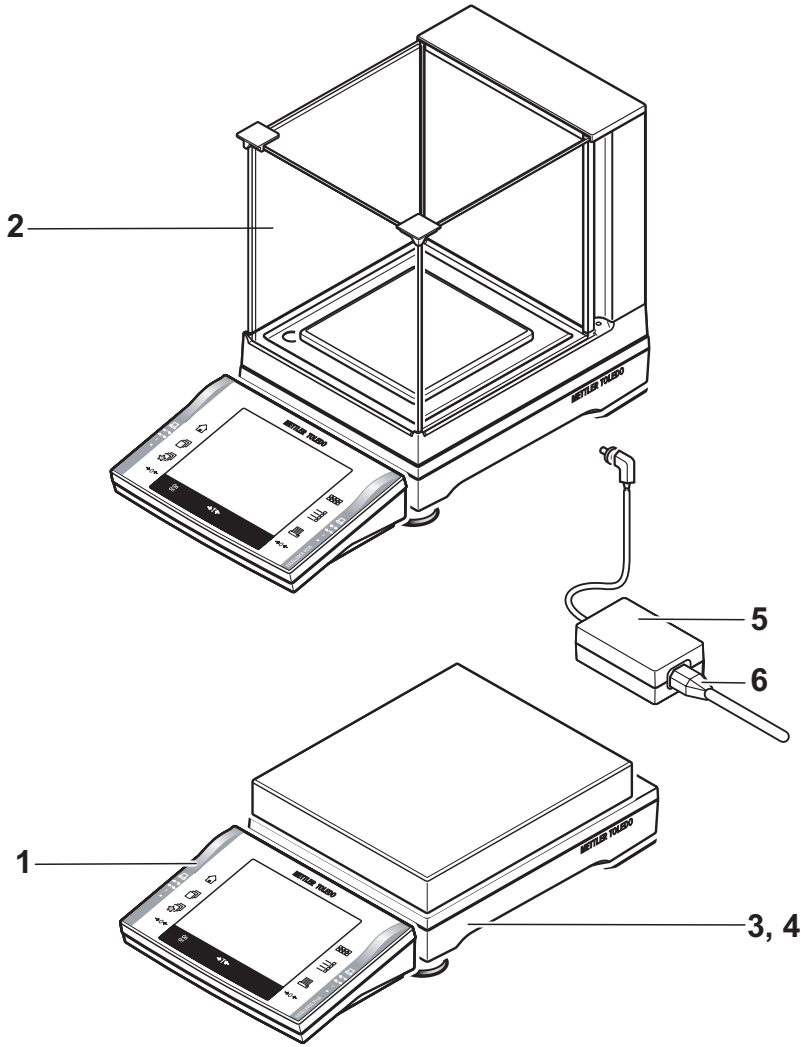
1.5 State of the art

This Service Manual corresponds to the state of the art at the date of issue (e.g. 08/2006).

3 Spare Parts

List of Contents

1 Balance Overview



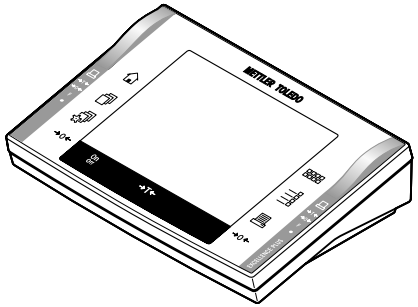
Item	Designation	see
1	Terminal Overview	see Section 2
2	Draft shield Overview	see Section 3
3	Platform overview	see Section 4
4	Weighing cell «MonoBloc» Overview	see Section 5

Item	Designation	Note	Part No.
5	Power supply	for S and M platforms	11132070
6	Line cable S and M platforms	DK	87452
		GB	89405
		USA	88668
		AUS	88751
		SA	89728
		EU (Schuko)	87925
		CH	87920
		IT	87457

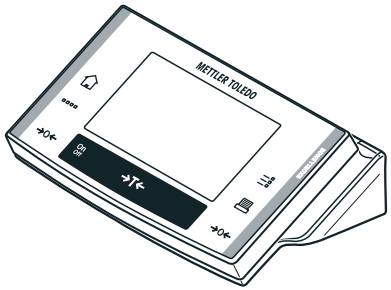
Power supply and Line Cables for L-type balances see parts lists in Section 4.

2 Terminal Overview

1

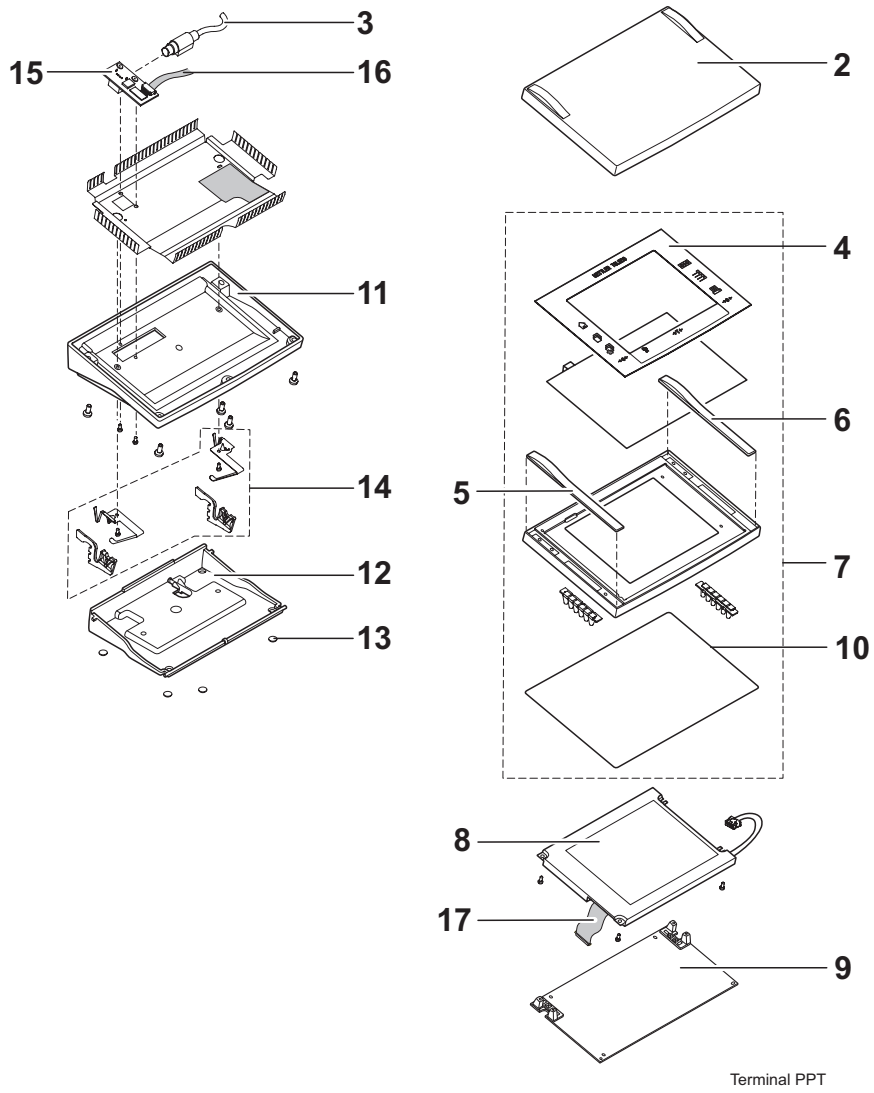


2



Item	Designation	Note	see
1	Terminal PPT	for XP precision balances	Section 2.1
2	Terminal SPT	for XS precision balances	Section 2.2

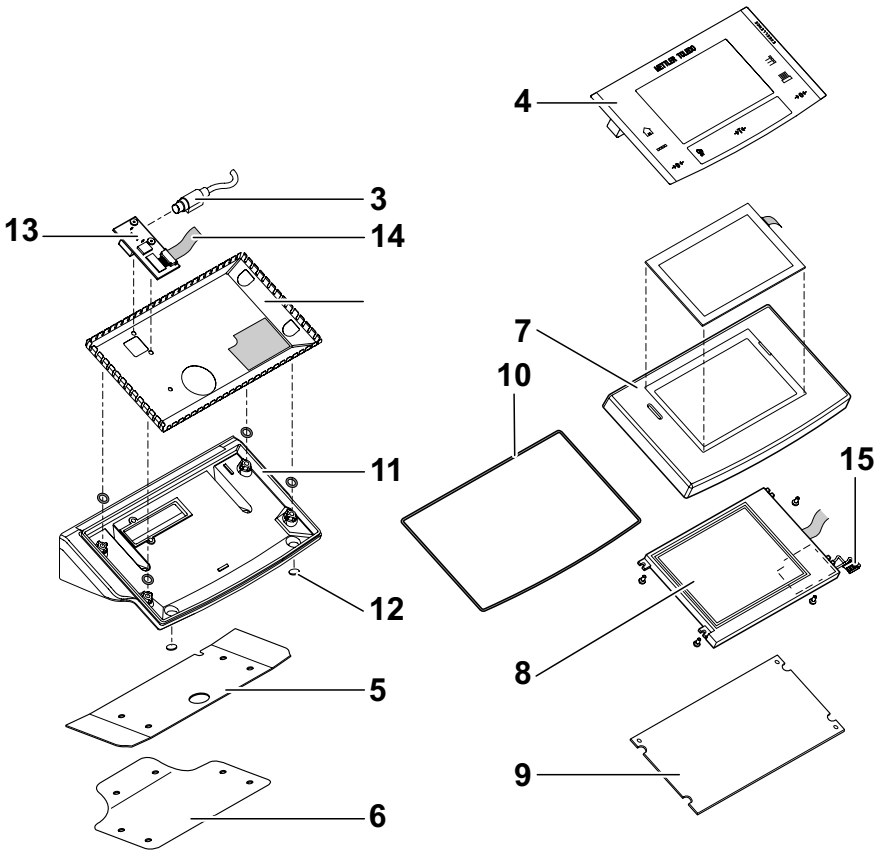
2.1 Terminal PPT



Terminal PPT

Item	Designation	Note	Part No.
1	Terminal complete		11130820
2	Protective Cover Terminal		11132570
3	Cable Terminal	see Platform parts list	
4	Keypad Overlay		11130817
5	Cover left		11130803
6	Cover right		11130804
7	Top Housing	without Item 8, 9, 17	11134040
8	Display Terminal		11600461
9	Terminal PCB		11133071
10	Seal Terminal		11130831
11	Terminal Lower Part		11130811
12	Adj. Foot Plate Terminal		11130812
13	Rubber Feet Terminal		11600356
14	Adjusting lever Terminal		11134041
15	Connect. Terminal		11106918
16	Cable Connect. – Terminal PCB		11600463
17	Cable Display – Terminal PCB		11134542

2.2 Terminal SPT



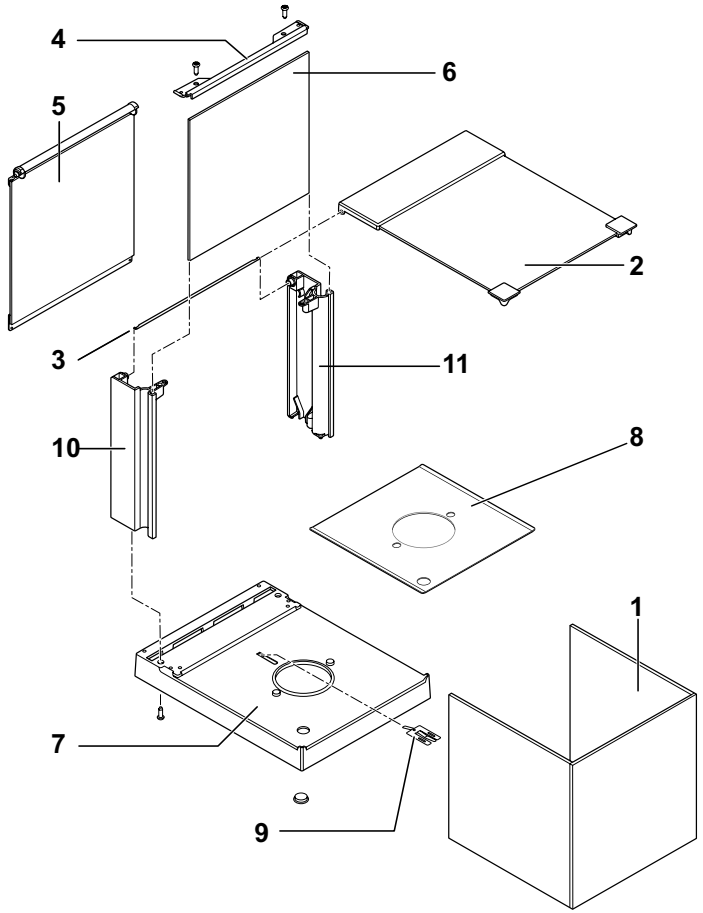
Item	Designation	Note	Part No.
1	Terminal complete		11130710
2	Protective Cover Terminal		11106870
3	Cable Terminal	see Platform parts list	
4	Keypad Overlay		11106564
5	Cover Plate		11130704
6	Connecting Piece		11131089
7	Top Housing	without Item 8, 9, 17	11106831
8	Display Terminal		11100826
9	Terminal PCB		11106830
10	Seal Terminal		11130703
11	Terminal Lower Part		11130701
12	Rubber Feet Terminal		11600356
13	Connect. Terminal		11106918
14	Cable Connect. – Terminal PCB		11600463
15	Cable Display – Terminal PCB		11600226

3 Draft shield Overview

Draft shield «Magic Cube» see Section 3.1

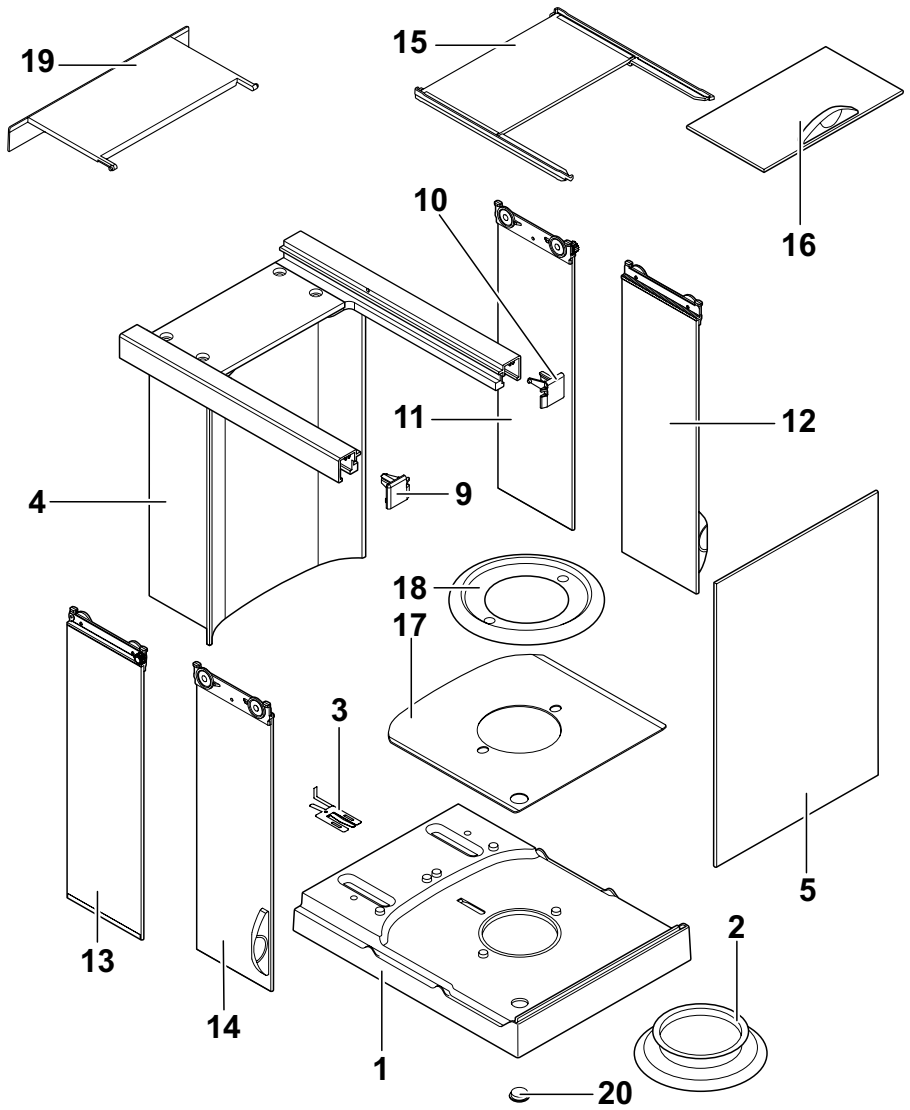
Draft shield with sliding doors see Section 3.2

3.1 Draft shield «Magic Cube»



Item	Designation	Note	Part No.
1	U-Glass MagicCube		11133035
2	Door Top MagicCube		11133036
3	Torsion spring MagicCube		11131633
4	Holder Side-Door MagicCube		11131615
5	Side-Door MagicCube		11133037
6	Rear Panel MagicCube		11131645
7	Bottom MagicCube		11131611
8	Base plate MagicCube		11131631
9	Contact spring MagicCube		11131632
10	Column left MagicCube		11131613
11	Column right MagicCube		11131612

3.2 Draft shield with sliding doors



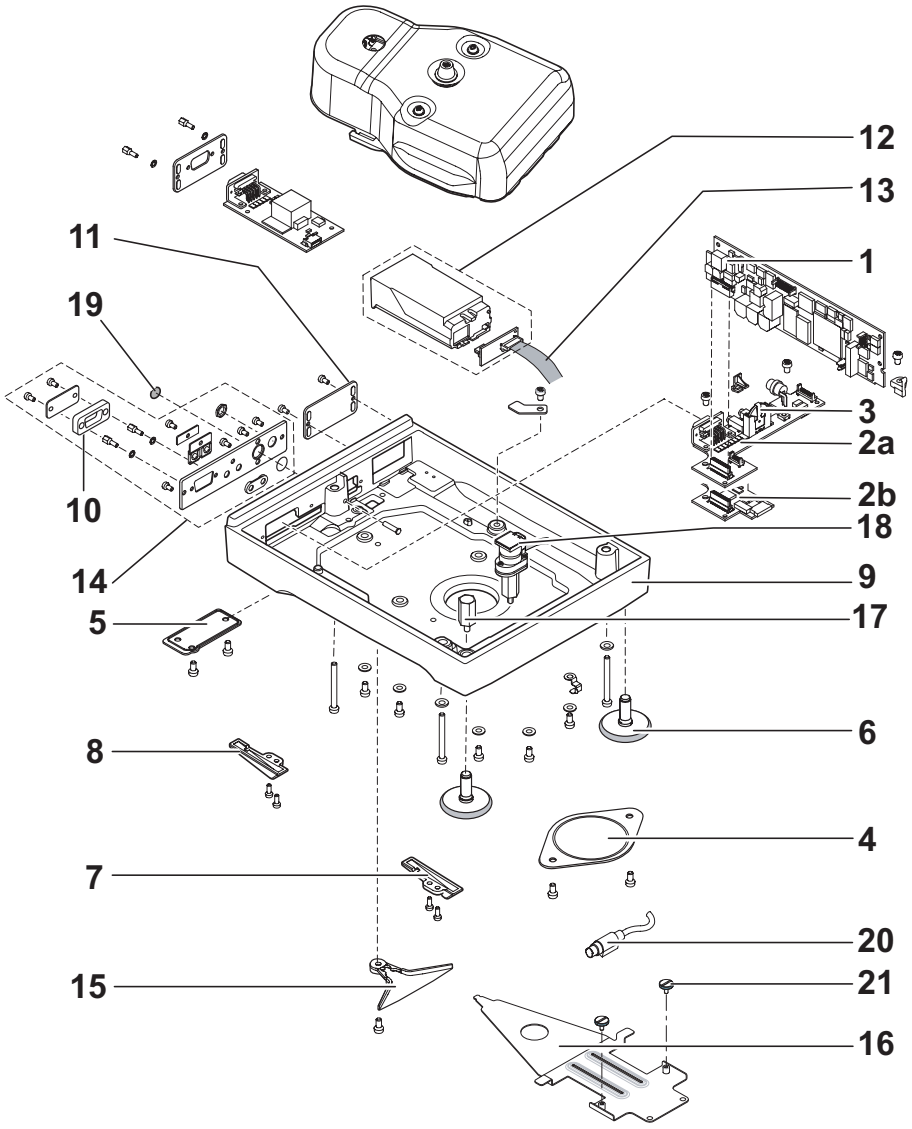
Item	Designation	Note	Part No.
1	Bottom complete		11131525
2	Seal Draftshield only for: XPxx4S, XPxx4SDR		11131551
3	Contact spring		11131556
4	Backplane		11131511
5	Front Glass		11131532
9	Cover right		11131548
10	Cover left		11131549
11	Door back right		11133077
12	Door front right		11133078
13	Door back left		11133079
14	Door front left		11133080
15	Door top back		11133081
16	Door top front		11133082
17	Bottom plate		11131539
18	Draft ring 90 mm		11131531
19	Flap top		11131527
20	Level Window		11131046

4 Platform overview

4.1 XP Platform Type «S»

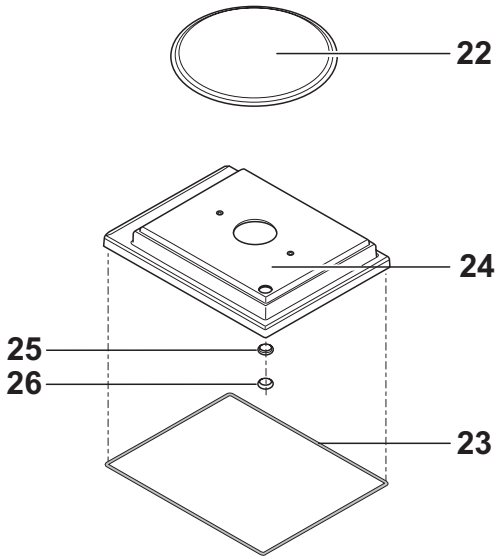
Platform Type	see
XP204S, XP404S, XP404SDR	see Section 4.1.1
XP203S, XP603S, XP603SDR, XP1203S, XP2003SDR, XP5003SDR	see Section 4.1.2
XP802S, XP1202S, XP2002S, XP4002S, XP4002SDR, XP6002S, XP6002SDR, XP8002S, XP10002S, XP10002SDR	see Section 4.1.3
XP2001S, XP4001S, XP6001S, XP8001S, XP10001S	see Section 4.1.4

4.1.1 Platform for XPxx4S, XPxx4SDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2a	Backplane PCB	serial no. < 1126139999	11132152
2b	Backplane Level Control	serial no. > 1126140000	11132150
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11131055
8	Auxiliary Foot left		11131056
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15	Coupling Term. Holder		11131019
16	Terminal Holder		11131020
17	Level Holder high		11131045
18	Level Control	serial no. > 1126140000	11133065
19	Cover Service Switch		11131069
20	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133041 11132039
21	Knurled screw		11101329

Item 22 - 26



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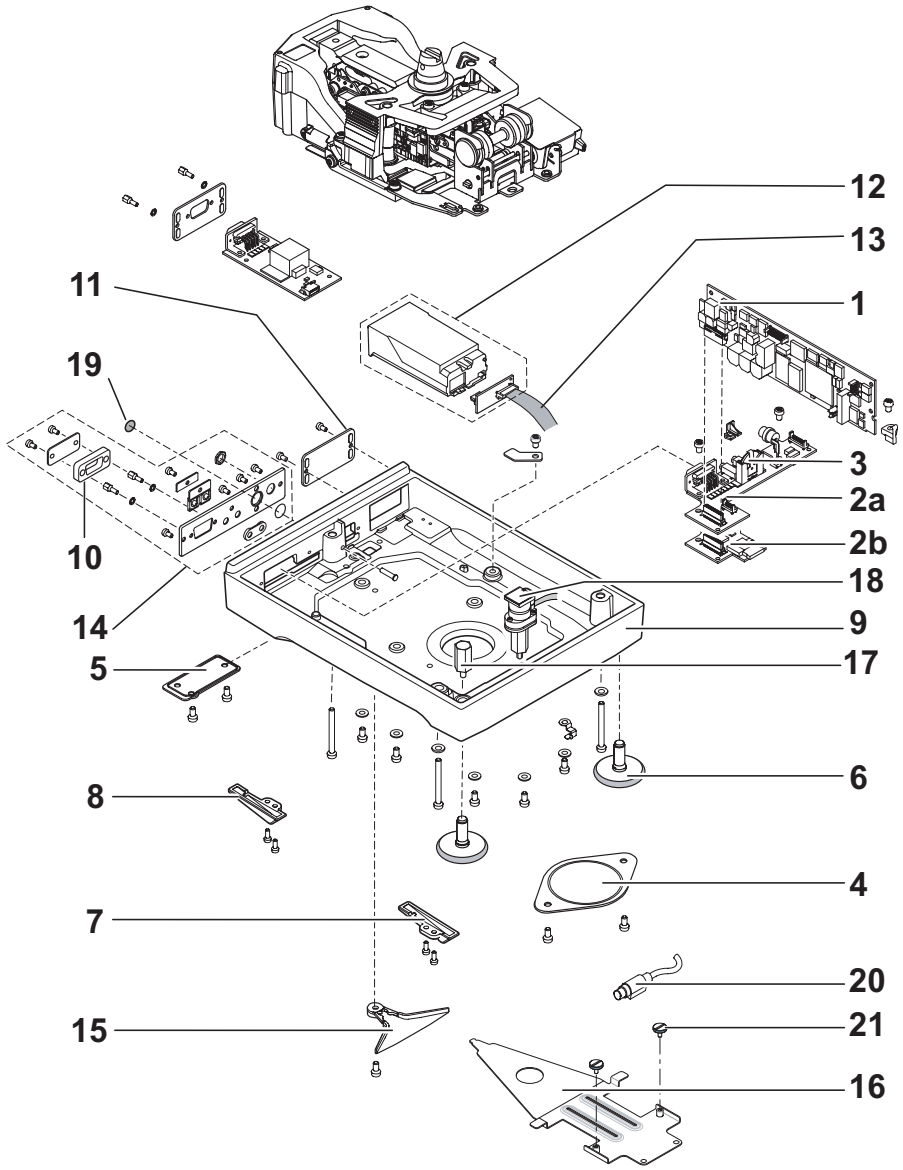
Item	Designation	Note	Part No.
22	Weighing Pan ∅ 90 mm		11133064
23	Seal Housing		11131028
24	Top Housing		11133042
25	Level Window		11131046
26	Level	serial no. < 1126139999	11101335

4.1.2 Platform for XPxx3S, XPxx3SDR, XPxxx3S, XPxxx3SDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2a	Backplane PCB	serial no. < 1126139999	11132152
2b	Backplane Level Control	serial no. > 1126140000	11132150
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot left		11131055
8	Auxiliary Foot right		11131056
9	Bottom Housing small		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15	Coupling Term. Holder		11131019
16	Terminal Holder		11131020
17	Level Holder high		11131045
18	Level Control	serial no. > 1126140000	11133065
19	Cover Service Switch		11131069
20	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133041 11132039
21	Knurled Screw		11101329

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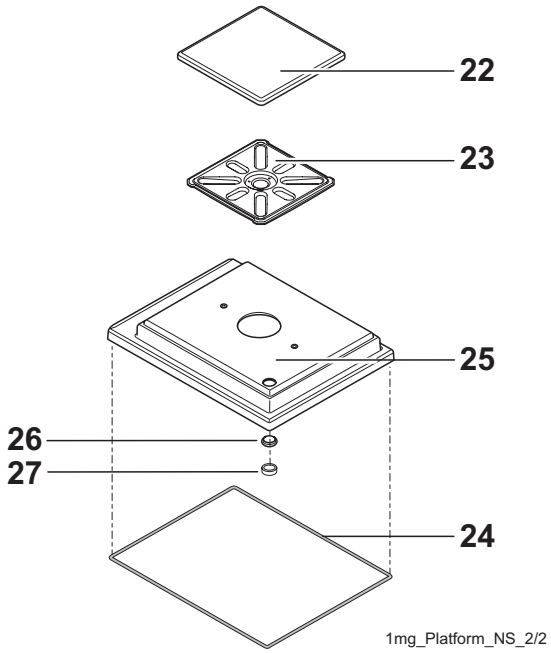

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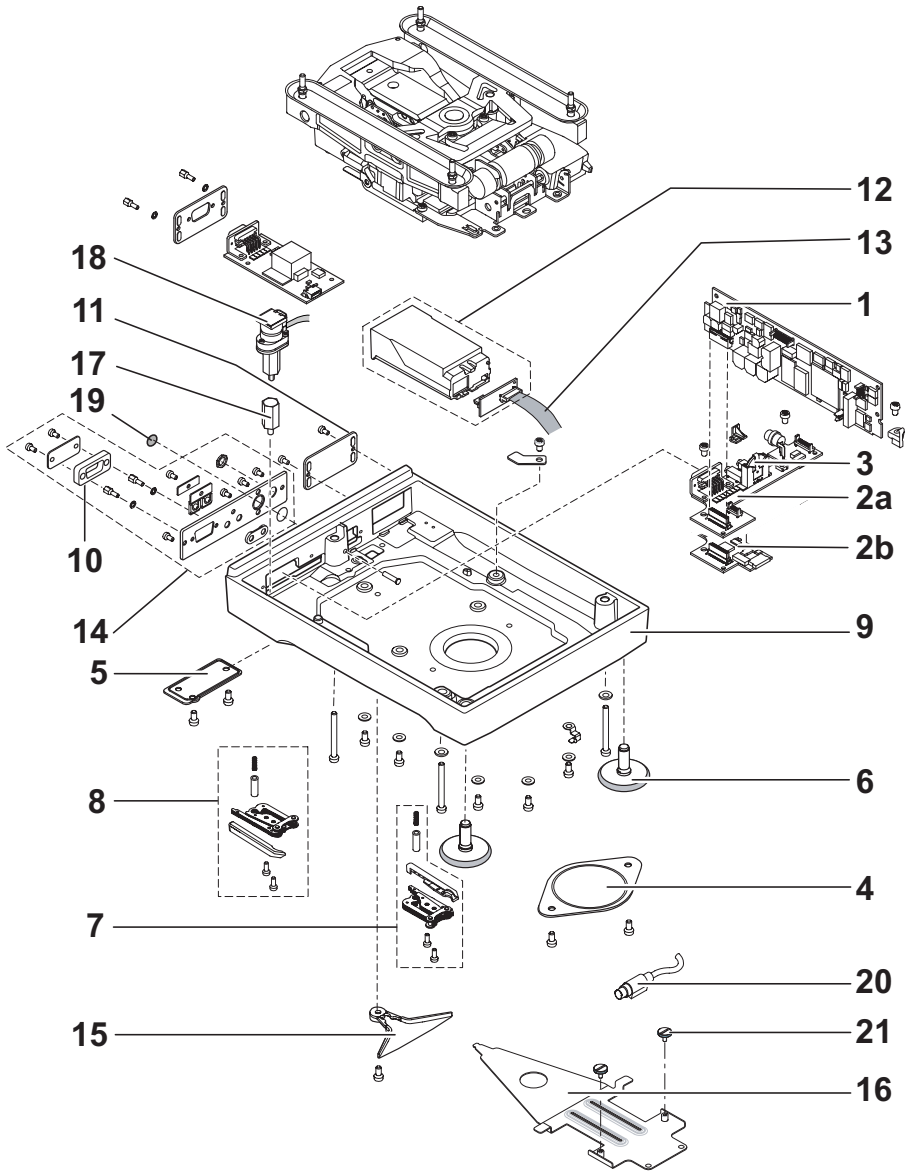
Item	Designation	Note	Part No.
22	Weighing Pan 127 x 127mm		11131022
23	Pan Support 1mg		11133040
24	Seal Housing		11131028
25	Top Housing		11133042
26	Level Window		11131046
27	Level	serial no. < 1126139999	11101335

4.1.3 Platform for XPxx2S, XPxxx2S, XPxxx2SDR, XPxxxx2S, XPxxxx2SDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2a	Backplane PCB	serial no. < 1126139999	11132152
2b	Backplane Level Control	serial no. > 1126140000	11132150
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Support Foot right		11133030
8	Support Foot left		11133031
9	Bottom Housing small		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15	Coupling Term. Holder		11131019
16	Terminal Holder		11131020
17	Level Holder small		11131044
18	Level Control	serial no. > 1126140000	11133065
19	Cover Service Switch		11131069
20	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133041 11132039
21	Knurled Screw		11101329

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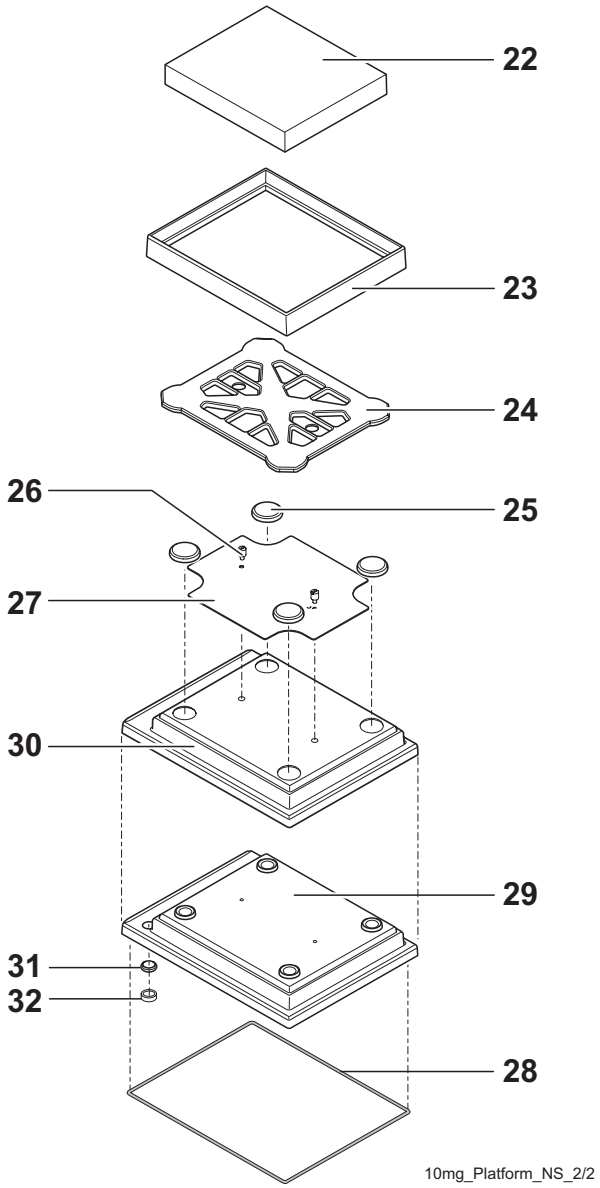
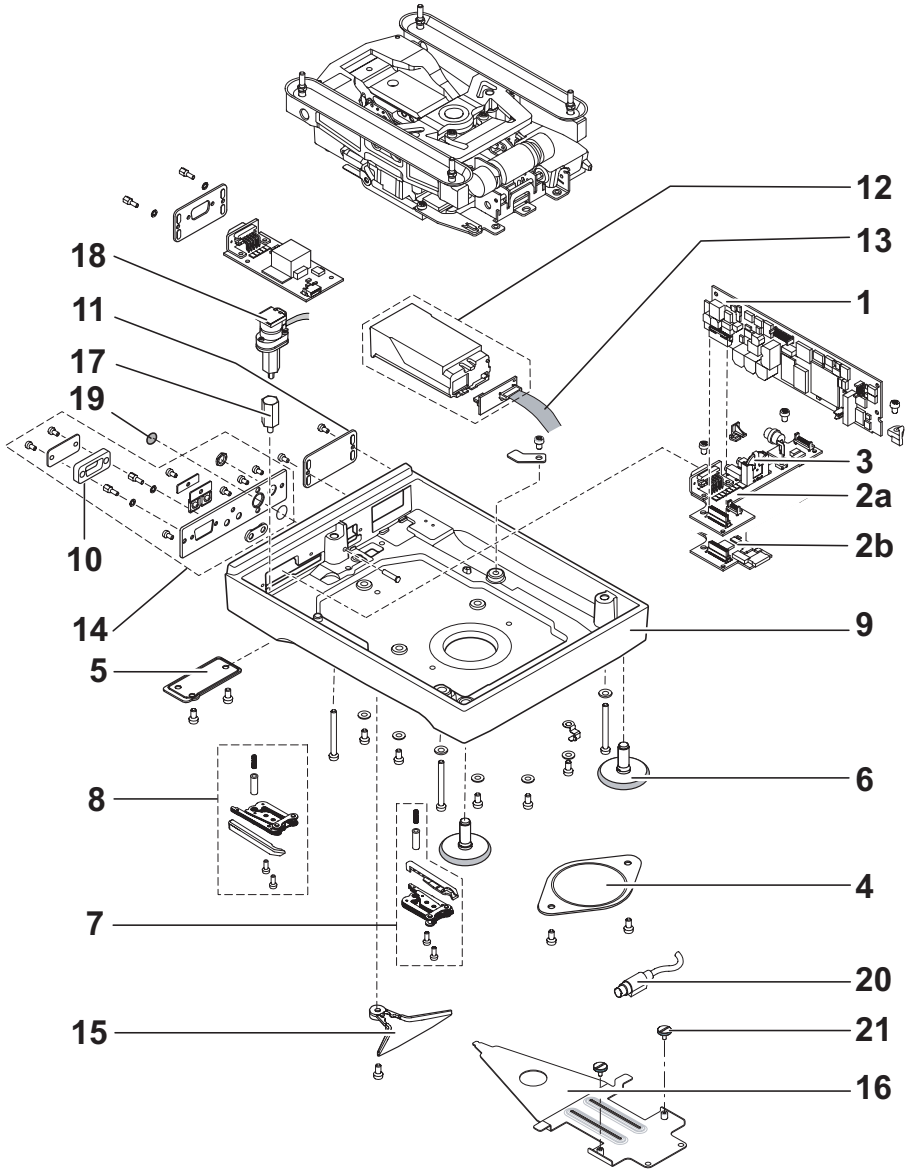


Item 1 - 21

Item	Designation	Note	Part No.
22	Weighing Pan 170 x 205mm		11131030
23	Draft shield element		11131040
24	Pan Support 10mg		11131034
25	Pan Support		11131029
26	Stop Screw		11131073
27	Fastening Plate		11131067
28	Seal Housing		11131028
29	Top Housing		11133043
30	Protective Cover		11133034
31	Level Window		11131046
32	Level	serial no. < 1126139999	11101335

4.1.4 Platform for XPxxx1S



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2a	Backplane PCB	serial no. < 1126139999	11132152
2b	Backplane Level Control	serial no. > 1126140000	11132150
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Support Foot right		11133030
8	Support Foot left		11133031
9	Bottom Housing small		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15	Coupling Term. Holder		11131019
16	Terminal Holder		11131020
17	Level Holder small		11131044
18	Level Control	serial no. > 1126140000	11133065
19	Cover Service Switch		11131069
20	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133041 11132039
21	Knurled Screw		11101329

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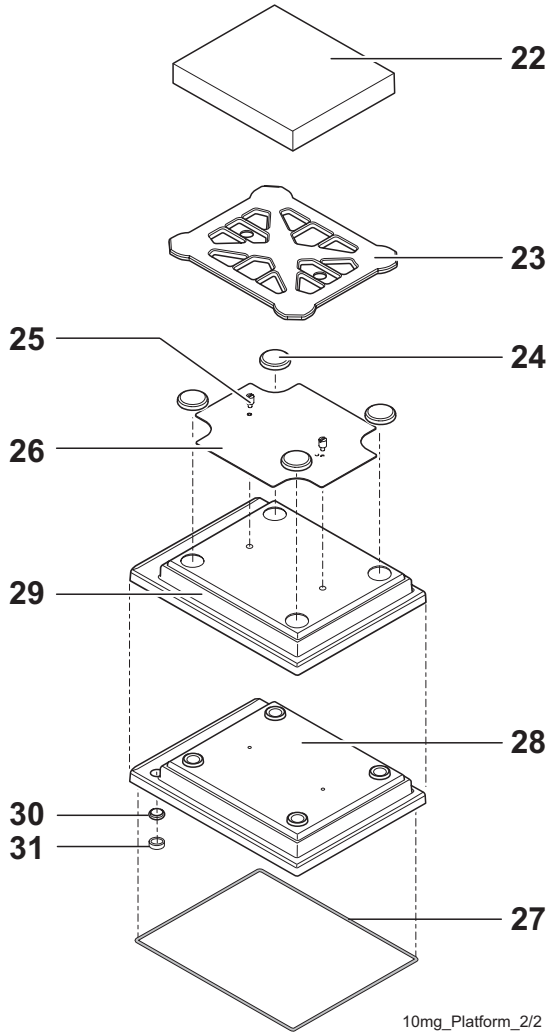


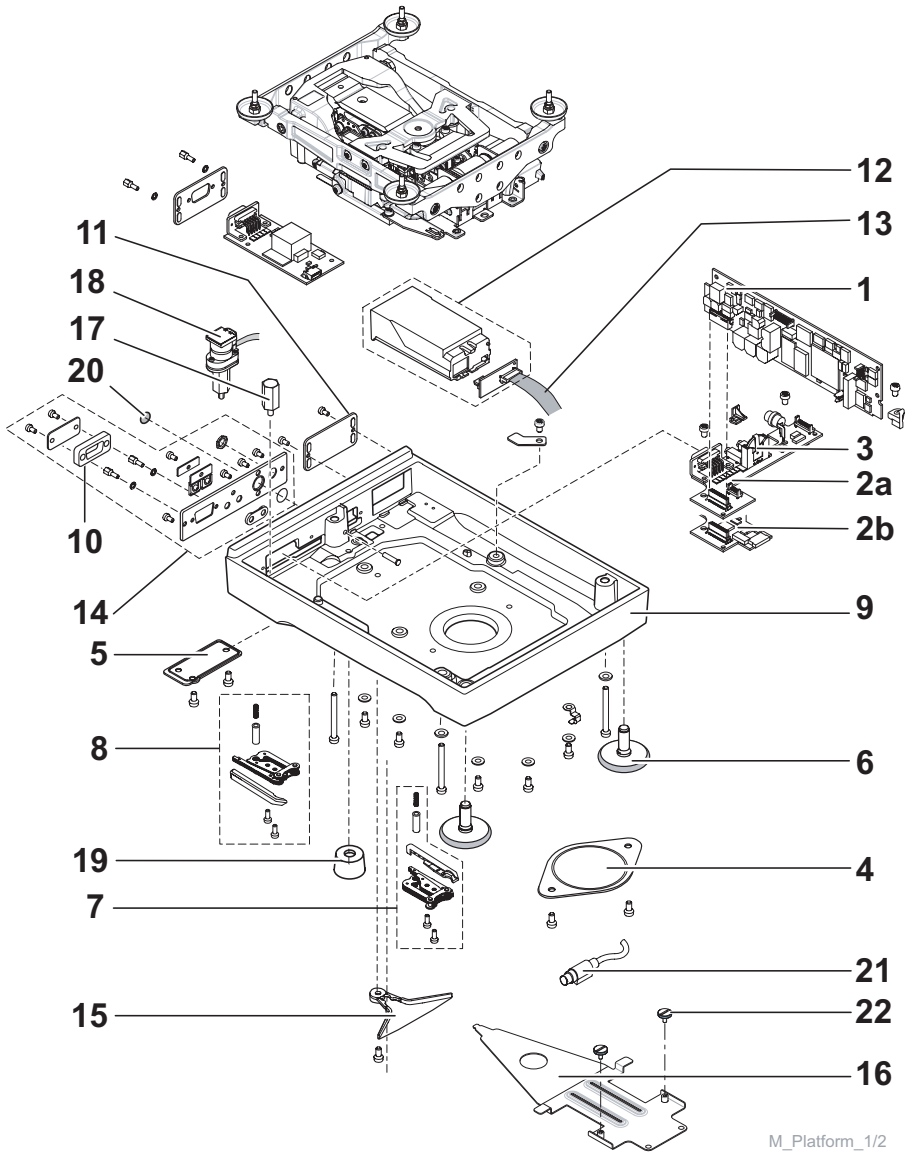
Item 1 - 21

Item	Designation	Note	Part No.
22	Weighing Pan 190 x 223 mm		11131031
23	Pan Support 0.1g		11131037
24	Pan Support		11131029
25	Stop Screw		11131073
26	Fastening Plate		11131067
27	Seal Housing		11131028
28	Top Housing		11133043
29	Protective Cover		11133034
30	Level Window		11131046
31	Level	serial no. < 1126139999	11101335

4.2 XP Platform Type «M»

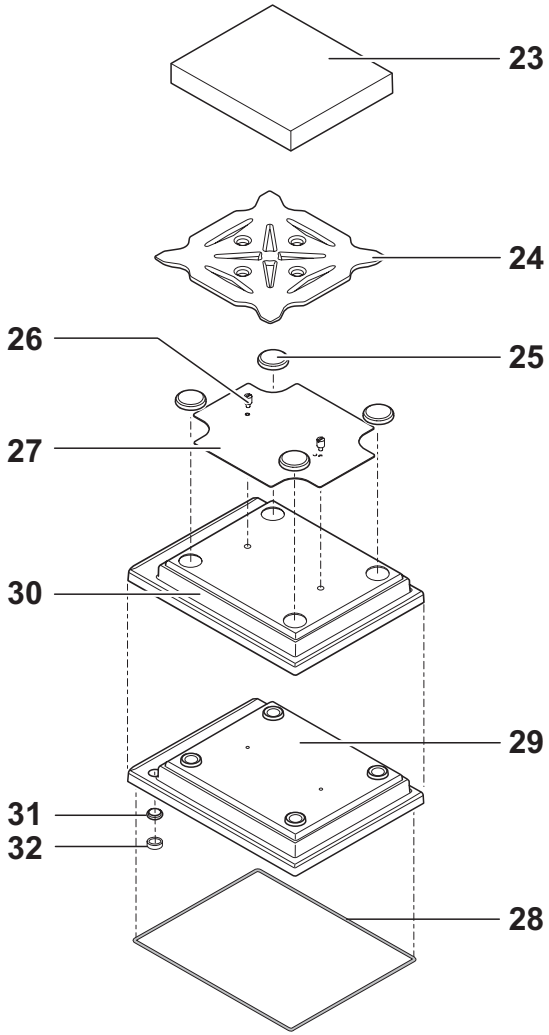
Platform Type	see
XP6002MDR, XP12002MDR XP8001M, XP8001MDR, XP12001M XP12000M	see Section 4.2.1
XP16001M, XP16001MDR, XP20001M XP20000M	see Section 4.2.2

4.2.1 Platform for XPxxxx0M, XPxxx1M/MDR, XPxxxx1M, XPxxx2MDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2a	Backplane PCB	serial no. < 1126139999	11132157
2b	Backplane Level Control	serial no. > 1126140000	11132155
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131170
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15	Coupling Term. Holder		11131019
16	Terminal Holder		11131184
17	Level Holder small		11131044
18	Level Sensor	serial no. > 1126140000	11133065
19	Foot		11106537
20	Cover Service Switch		11131069
21	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133029 11132052
22	Knurled Screw		11101329

Item 23 - 32



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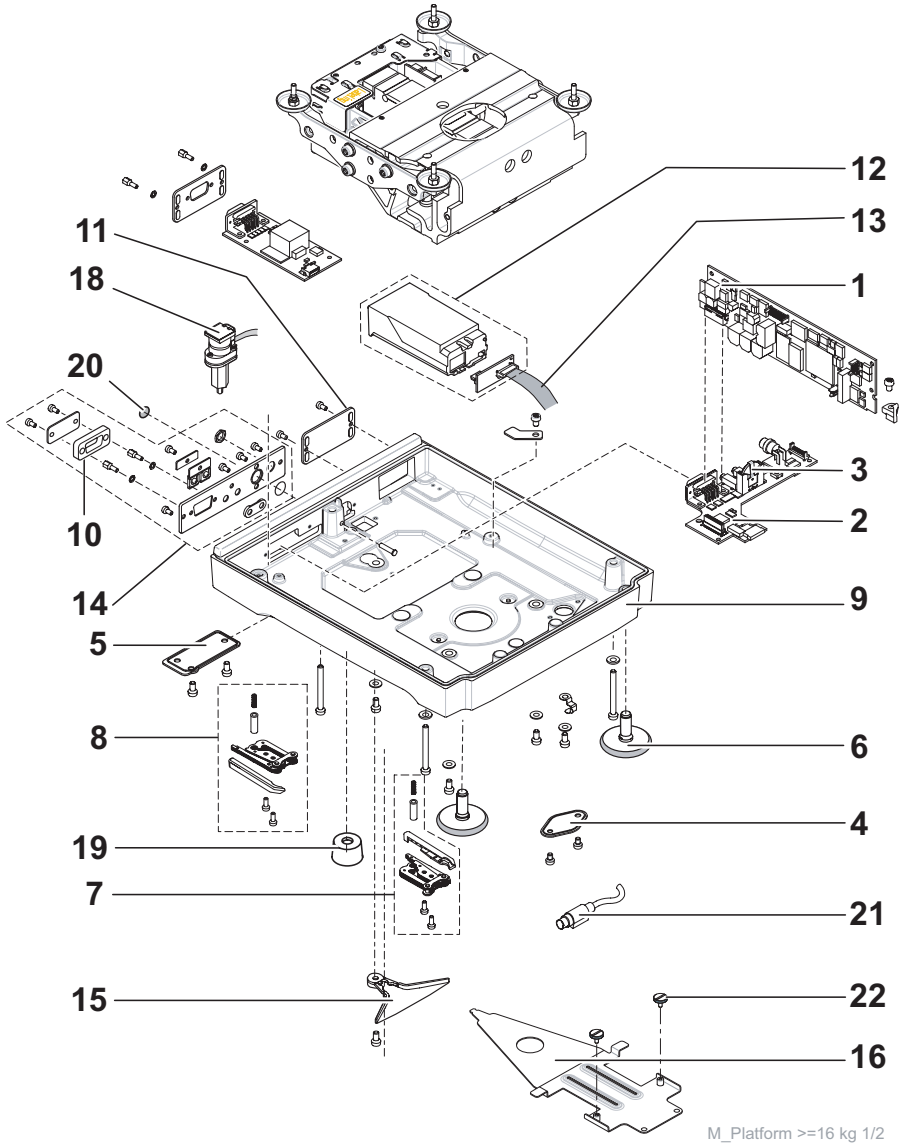
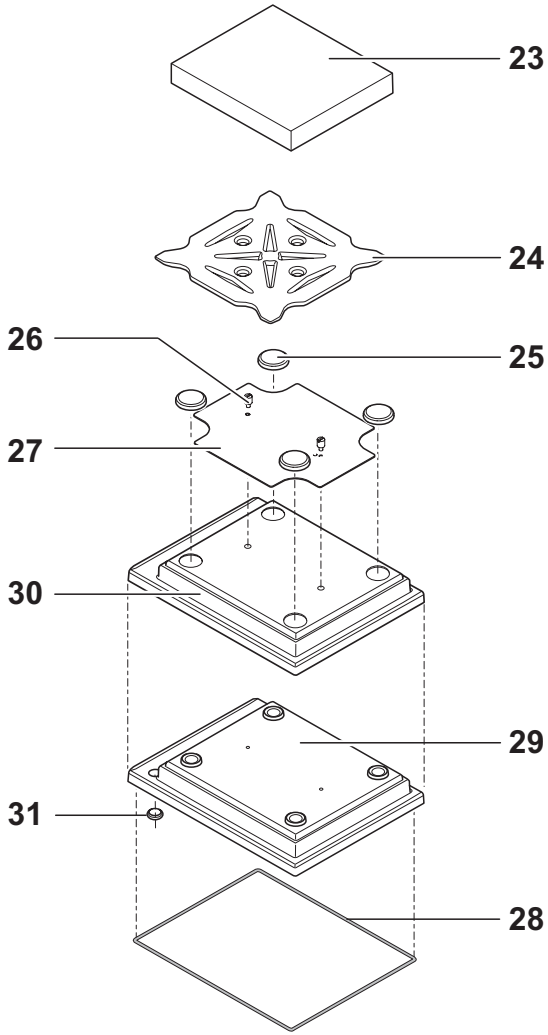
Item	Designation	Note	Part No.
23	Weighing Pan 240 x 240mm		11131173
24	Pan Support		11131172
25	Pan Support		11131029
26	Stop Screw		11131073
27	Fastening Plate		11131182
28	Seal Housing		11131185
29	Top Housing		11133044
30	Protective Cover	Platform only	11132574
31	Level Window		11131046
32	Level	serial no. < 1126139999	11101335

4.2.2 Platform for XP20000M, XP16001M, XP20001M



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane Level Control		11132155
3	Battery		11106880
4	Hanger Cover		11131186
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131167
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15	Coupling Term. Holder		11131019
16	Terminal Holder		11131184
17			
18	Level Sensor		11133065
19	Foot		11106537
20	Cover Service Switch		11131069
21	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133029 11132052
22	Knurled Screw		11101329

Item 23 - 32



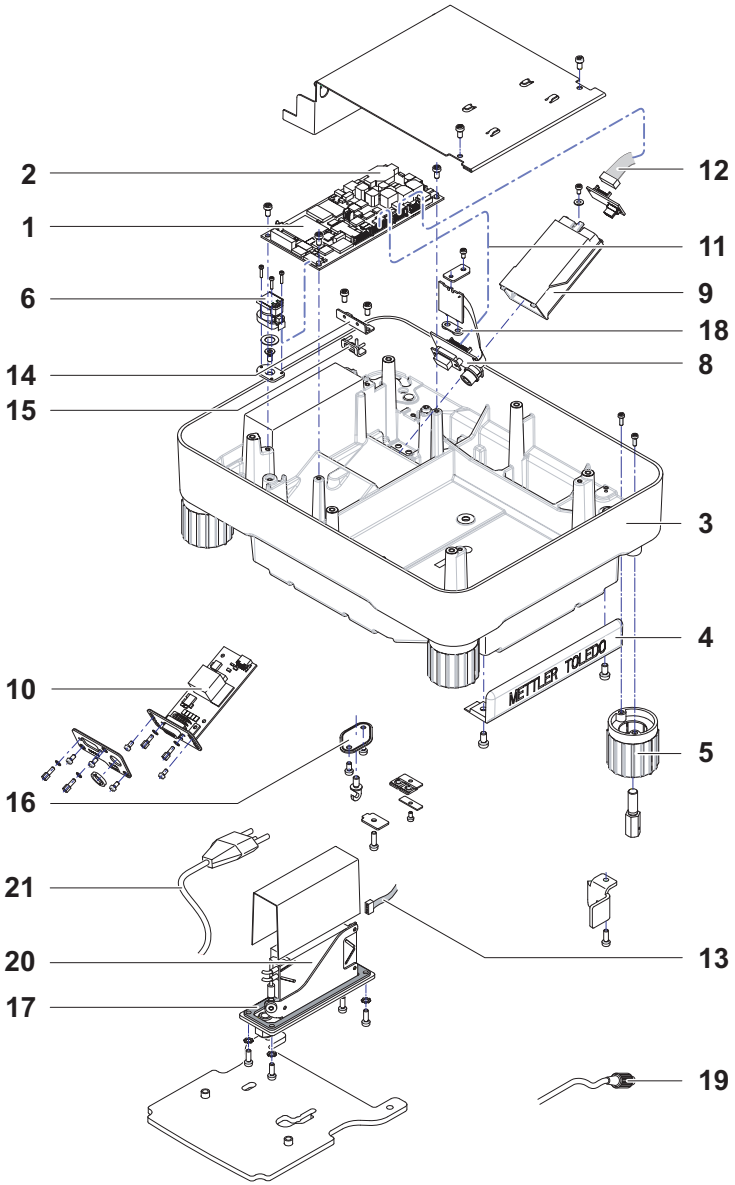
Item 1 - 22

Item	Designation	Note	Part No.
23	Weighing Pan 240 x 240mm		11131173
24	Pan Support		11131172
25	Pan Support		11131029
26	Stop Screw		11131073
27	Fastening Plate		11131182
28	Seal Housing		11131185
29	Top Housing	c/w packaging	11133044
30	Protective Cover	Platform only	11132574
31	Level Window		11131046

4.3 XP Platform Type «L»

Platform Type	see
XP8001L, XP16001L, XP32001L, XP32001LDR, XP64001L XP16000L, XP32000L, XP64000L	see Section 4.3.1

4.3.1 Platform for XPxxxx0L, XPxxx1L, XPxxxx1L, XPxxxx1LDR



Item	Designation	Note	64 kg
1	Platform L PCB level control		11133074
2	Battery		11106880
3	Bottom Housing		11133101
4	Buffer Protecting Strip		11131215
5	Foot L-Platform		11131235
6	Level Control	with cable	11133065
8	Connection PCB L		11132120
9	Interface Holder compl.		11133033
10	Interface RS, BlueTooth, PS/2 (options)	see Operating Instructions	-
11	Cable 16 pin		11132102
12	Cable Option		11132029
13	Cable 4 pin		11132103
14	Cable Clip		11131222
15	Seal Cable		11131217
16	Hanger Cover		11131186
17	Seal Power Supply		11131230
18	Seal Aux Connector		11131117
19	Cable Terminal		11132124

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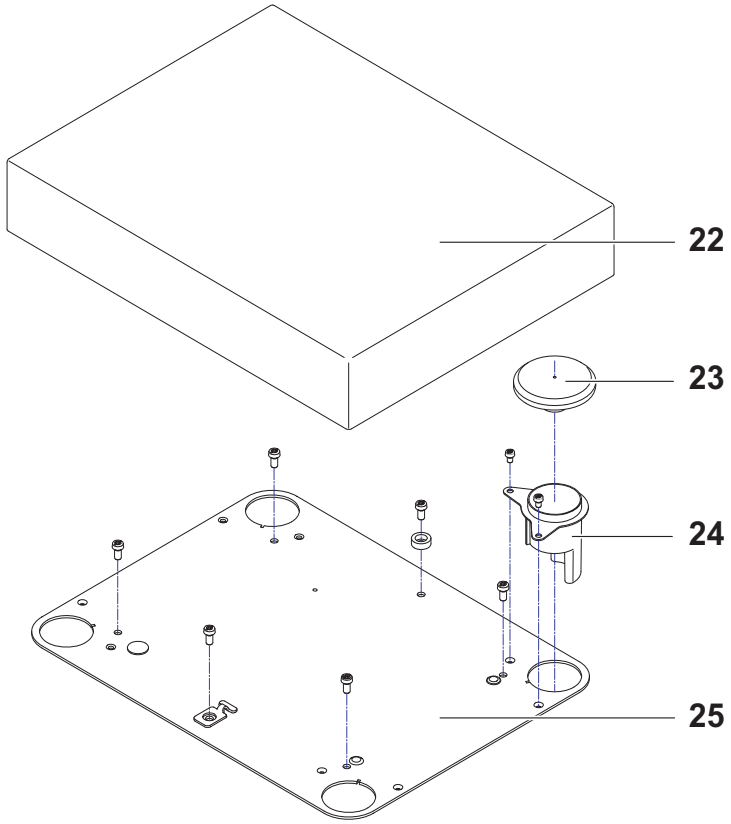

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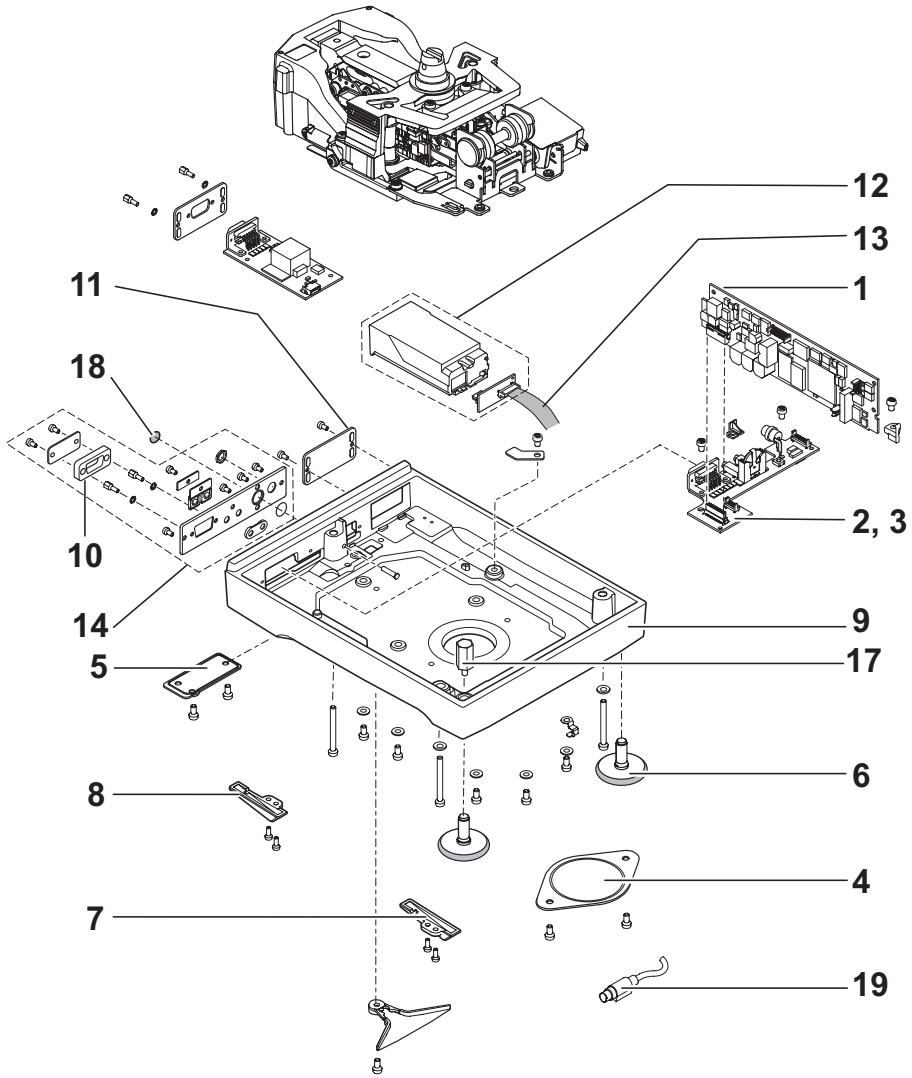
Item	Designation	Note	Part No.
20	Power Supply with Cable Line	CH EU USA IT DK GB AUS ZA IL BR, TH IN	11133110 11133111 11133112 11133113 11133114 11133115 11133116 11133117 11133118 11133119 11133120
21	Cable Line	CH EU USA IT DK GB AUS ZA IL	11132110 11132111 11132112 11132113 11132114 11132115 11132116 11132117 11132118
22	Weighing Pan L 32 kg Weighing Pan L 64 kg		239105 11102124
23	Pan Support		239104
24	Guard Ring		239036
25	Housing Cover L		11131232

4.4 XS Platform Type «S»

Platform Type	see
XS203S, XS403S, XS603S, XS603SDR, XS1003S	see Section 4.4.1
XS802S, XS2002S, XS4002S, XS4002SDR, XS6002S, XS6002SDR	see Section 4.4.2
XS4001S, XS6001S, XS8001S	see Section 4.4.3

4.4.1 Platform for XSxx3S, XSxx3SDR, XSxxx3S



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132152
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11131055
8	Auxiliary Foot left		11131056
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder high		11131045
18	Cover Service Switch		11131069
19	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133041 11132039

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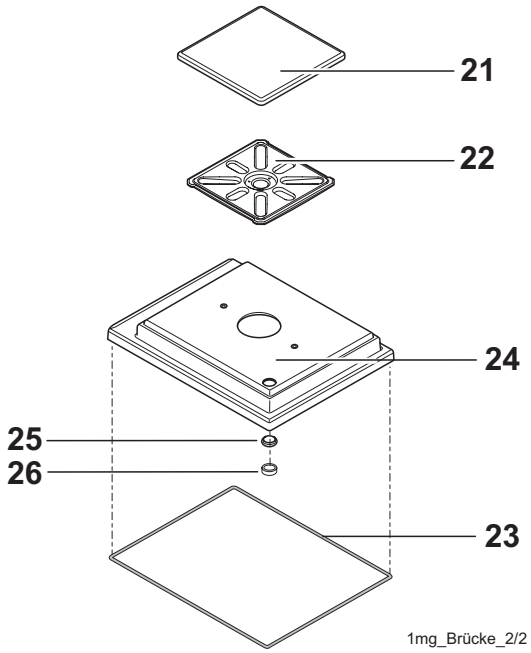

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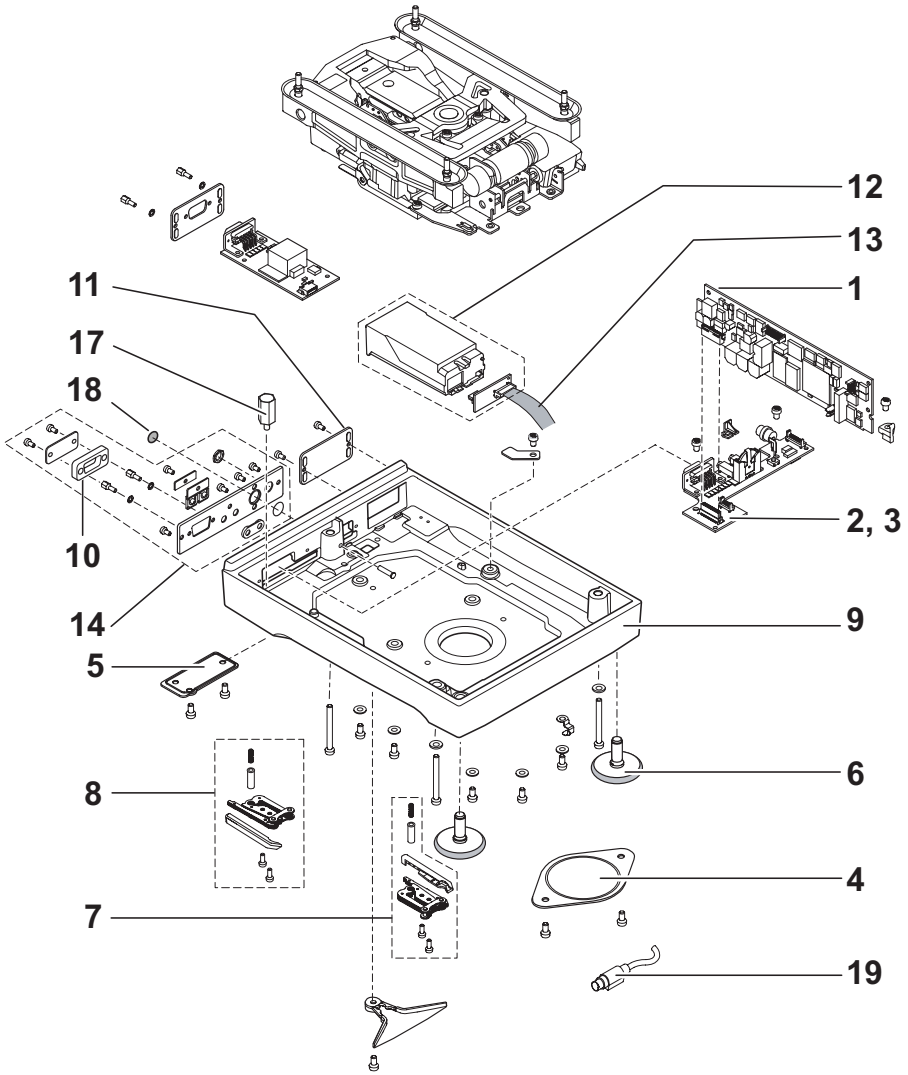
Item	Designation	Note	Part No.
21	Weighing Pan 127 x 127mm		11131022
22	Pan Support 1mg		11133040
23	Seal Housing		11131028
24	Top Housing		11133042
25	Level Window		11131046
26	Level		11101335

4.4.2 Platform for XSxx2S, XSxxx2S, XSxxx2SDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132152
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder small		11131044
18	Cover Service Switch		11131069
19	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133041 11132039

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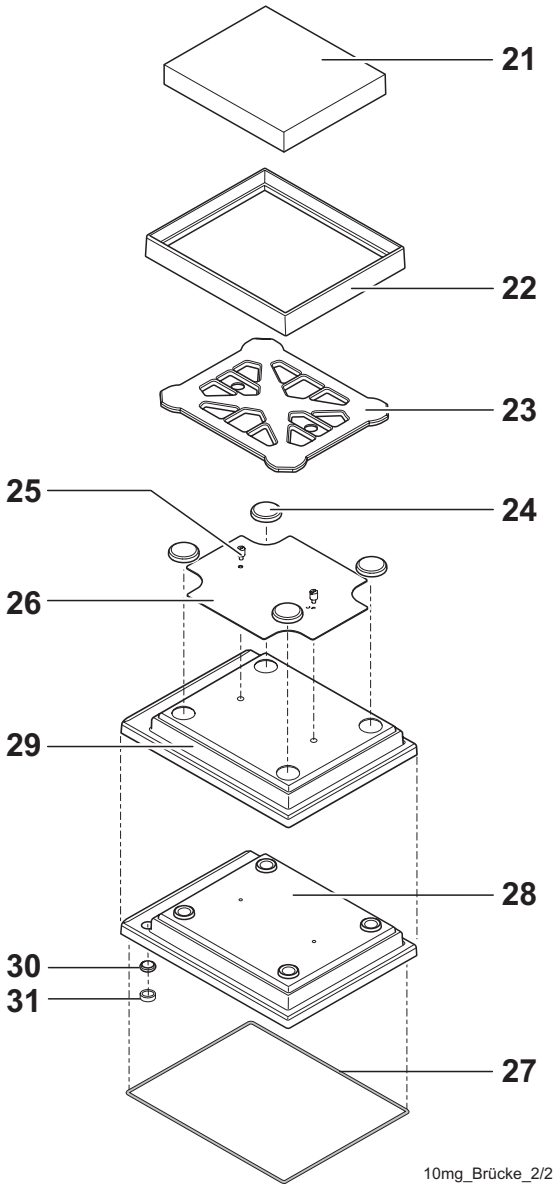

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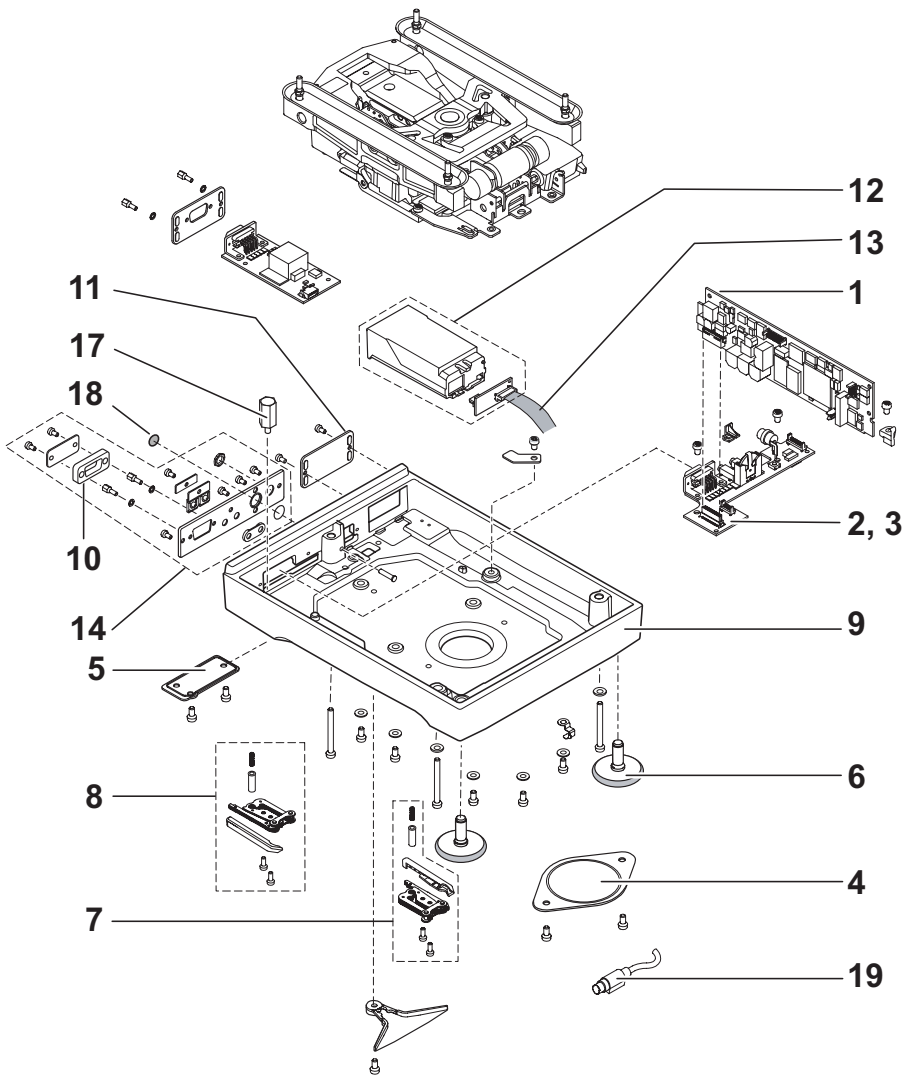
Item	Designation	Note	Part No.
21	Weighing Pan 170 x 205mm		11131030
22	Draft ring		11131040
23	Pan Support		11131034
24	Pan Support		11131029
25	Stop Screw		11131073
26	Fastening Plate		11131067
27	Seal Housing		11131028
28	Top Housing		11133043
29	Protective Cover	Platform only	11133034
	Protective Cover	Platform + Terminal	11132571
30	Level Window		11131046
31	Level		11101335

4.4.3 Platform for XSxxx1S



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132152
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder small		11131044
18	Cover Service Switch		11131069
19	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133041 11132039

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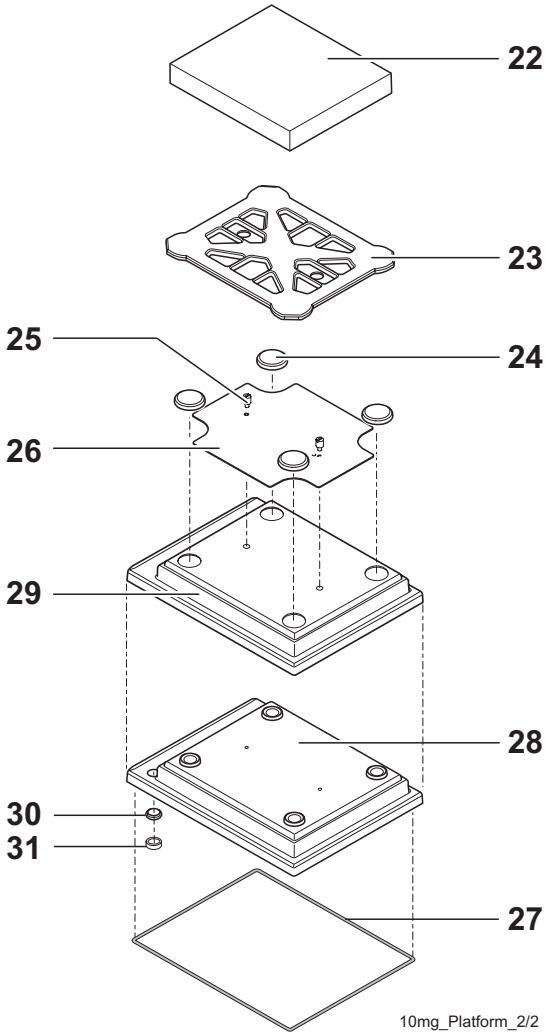

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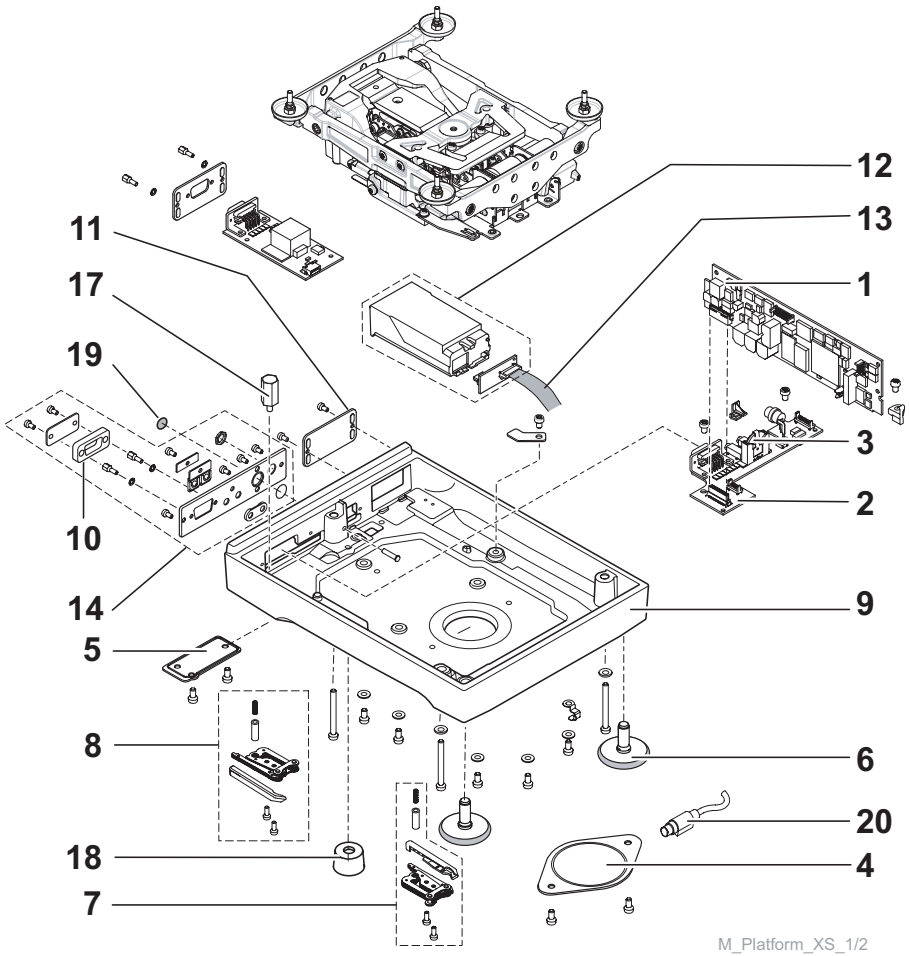
Item	Designation	Note	Part No.
22	Weighing Pan 190 x 223mm		11131031
23	Pan Support		11131037
24	Pan Support		11131029
25	Stop Screw		11131073
26	Fastening Plate		11131067
27	Seal Housing		11131028
28	Top Housing		11133043
29	Protective Cover	Platform only	11133034
	Protective Cover	Platform + Terminal	11132571
30	Level Window		11131046
31	Level		11101335

4.5 XS Platform Type «M»

Platform Type	see
XS6001M, XS6001MDR, XS10001M, XS12001MDR XS10000M	see Section 4.5.1
XS16001M XS16000M	see Section 4.5.2

4.5.1 Platform for XSxxxx0M, XSxxx1M, XSxxx1MDR, XSxxxx1M, XSxxxx1MDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132157
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131170
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
17	Level Holder small		11131044
18	Foot M		11106537
19	Cover Service Switch		11131069
20	Cable Terminal	approx. serial no. < 1126279999	11133029
		approx. serial no. > 1126280000	11132052

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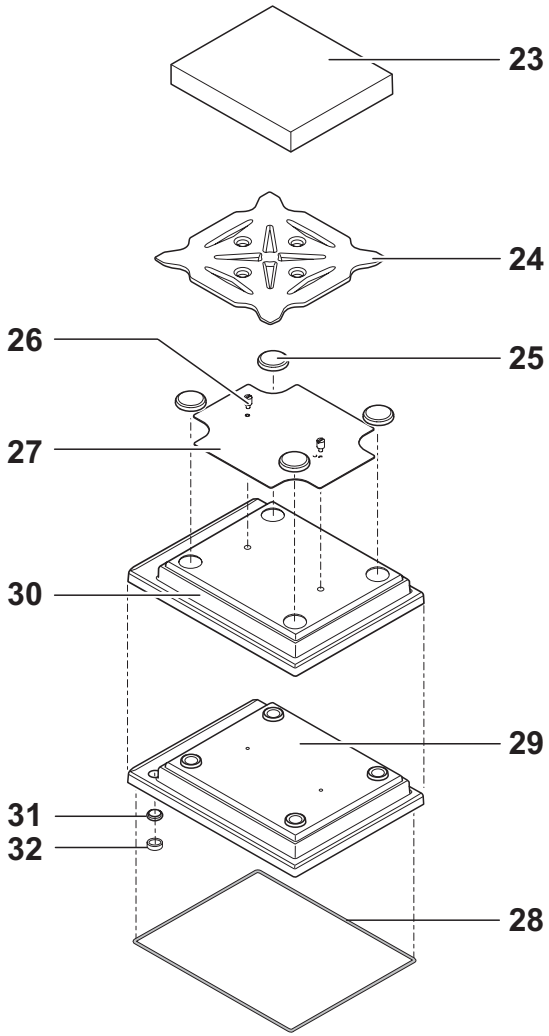

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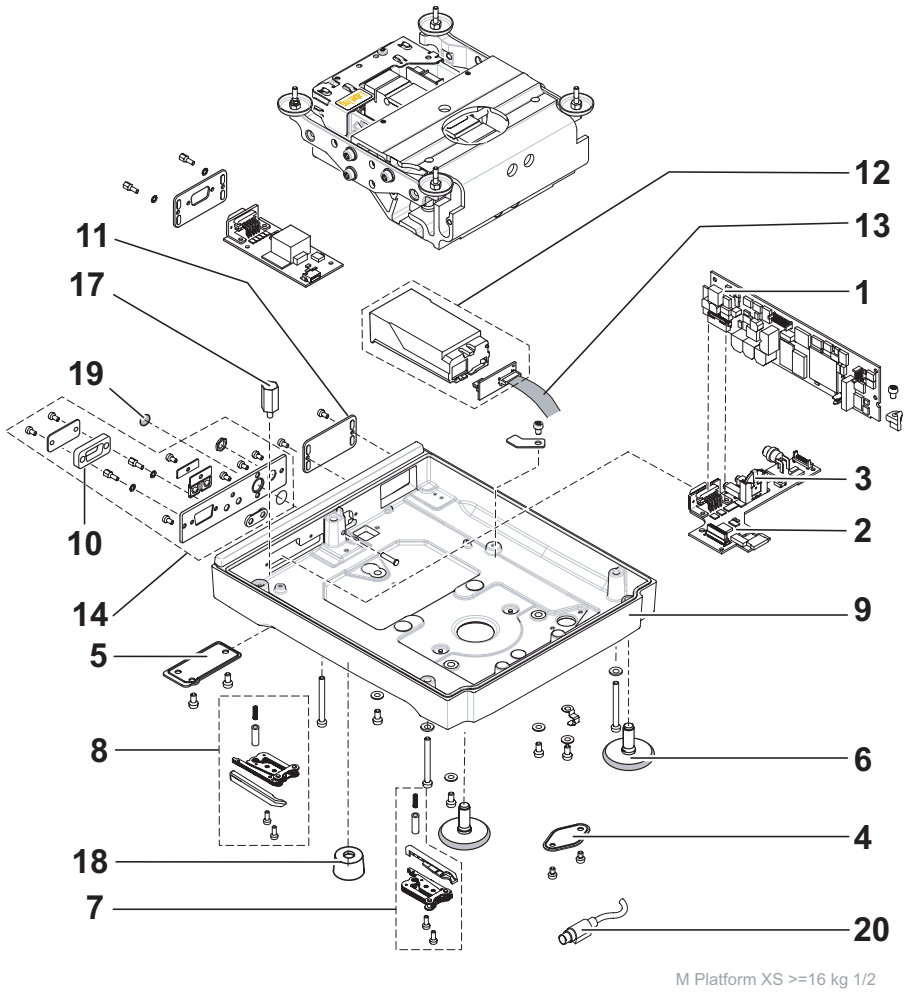
Item	Designation	Note	Part No.
23	Weighing Pan 240 x 240mm		11131173
24	Pan Support		11131172
25	Pan Support		11131029
26	Stop Screw		11131073
27	Fastening Plate		11131182
28	Seal Housing		11131185
29	Top Housing		11133044
30	Protective Cover	Platform + Terminal	11132572
	Protective Cover	Platform only	11132574
31	Level Window		11131046
32	Level		11101335

4.5.2 Platform for XS16000M, XS16001M



M Platform XS >=16 kg 1/2

Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132157
3	Battery		11106880
4	Hanger Cover		11131186
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131167
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
17	Level Holder small		11131044
18	Foot M		11106537
19	Cover Service Switch		11131069
20	Cable Terminal	approx. serial no. < 1126279999 approx. serial no. > 1126280000	11133029 11132052

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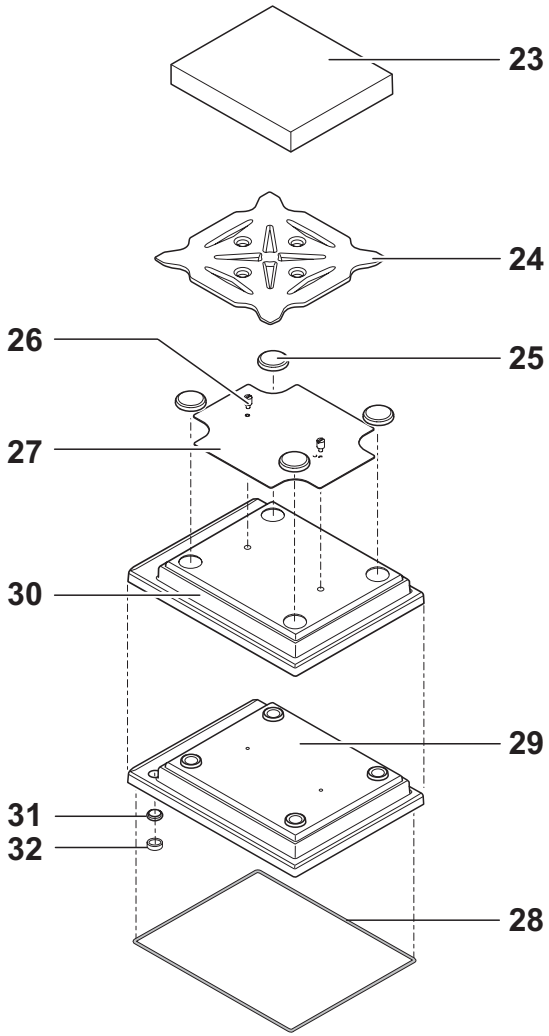


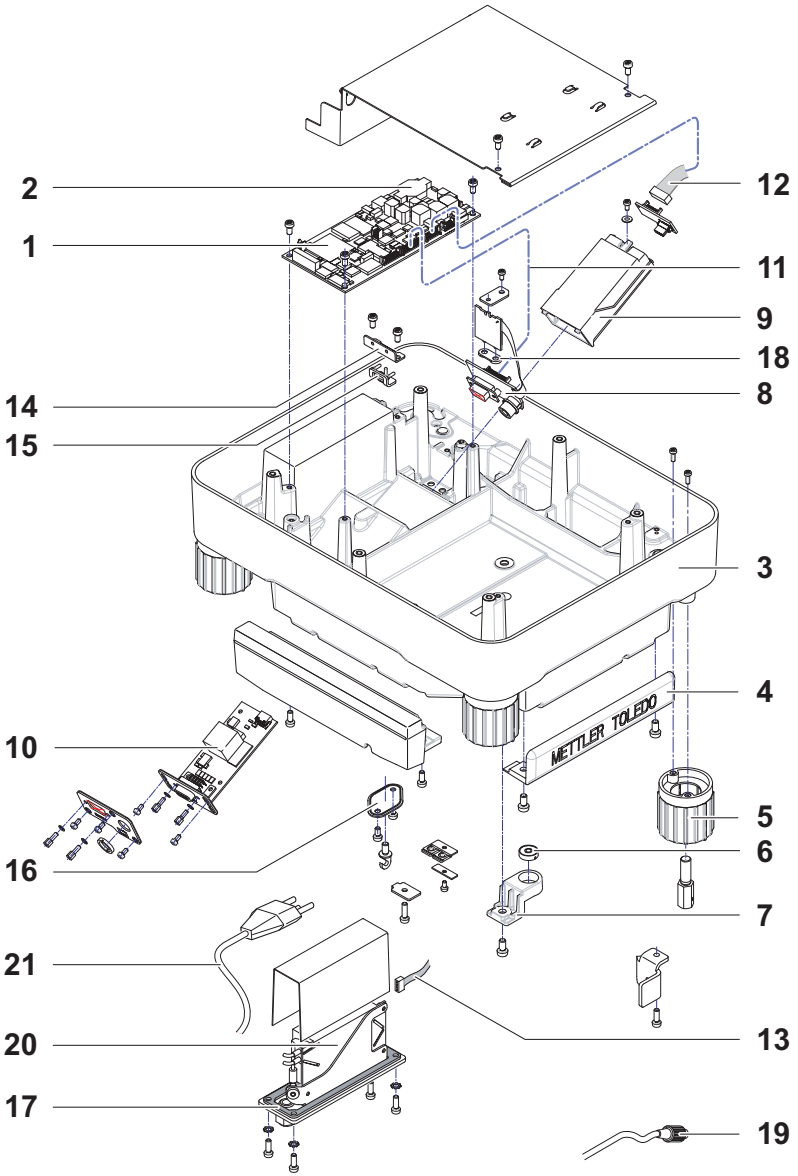
Item 1 - 20

Item	Designation	Note	Part No.
23	Weighing Pan 240 x 240mm		11131173
24	Pan Support		11131172
25	Pan Support		11131029
26	Stop Screw		11131073
27	Fastening Plate		11131182
28	Seal Housing		11131185
29	Top Housing		11133044
30	Protective Cover	Platform + Terminal	11132572
31	Level Window		11131046
32	Level		11101335

4.6 XS Platform Type «L»

Balance Type	see
XS8001L, XS16001L, XS32001L, XS32001LDR XS16000L, XS32000L	Section 4.6.1

4.6.1 Platform for XSxxxx0L, XSxxx1L, XSxxxx1L, XSxxxx1LDR



Item	Designation	Note	Part No.
1	Platform L PCB		11133073
2	Battery		11106880
3	Bottom Housing		11133101
4	Buffer Protecting Strip		11131215
5	Foot L-Platform		11131235
6	Level		215053
7	Level Holder L		11131239
8	Connection PCB L		11132120
9	Interface Holder compl.		11133033
10	Interface RS, BlueTooth, PS/2 (options)	see Operating Instructions	-
11	Cable 16 pin		11132102
12	Cable Option		11132029
13	Cable 4 pin		11132103
14	Cable Clip		11131222
15	Seal Cable		11131217
16	Hanger Cover		11131186
17	Seal Power Supply		11131230
18	Seal Aux Connector		11131117
19	Cable Terminal		11132124

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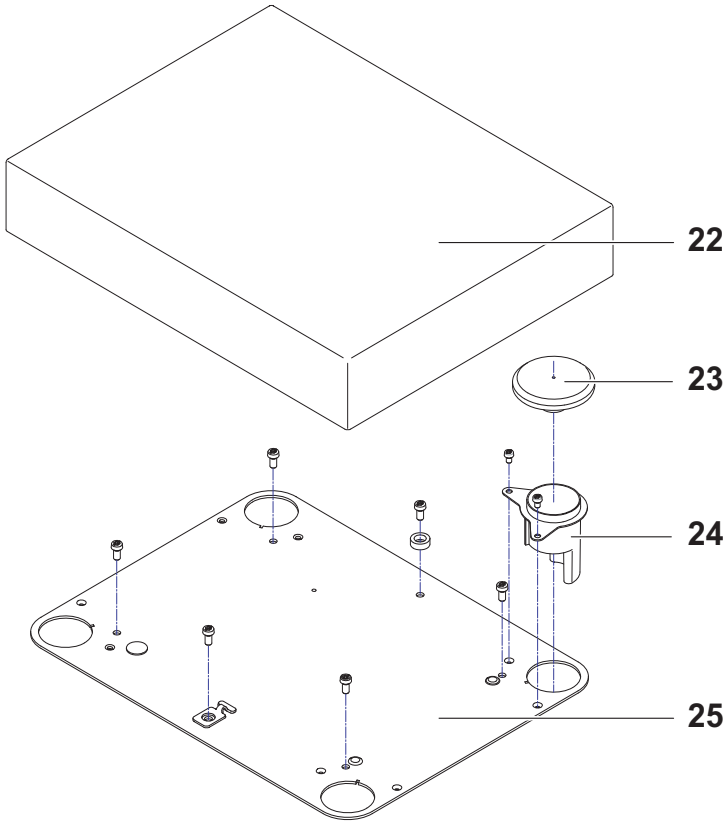


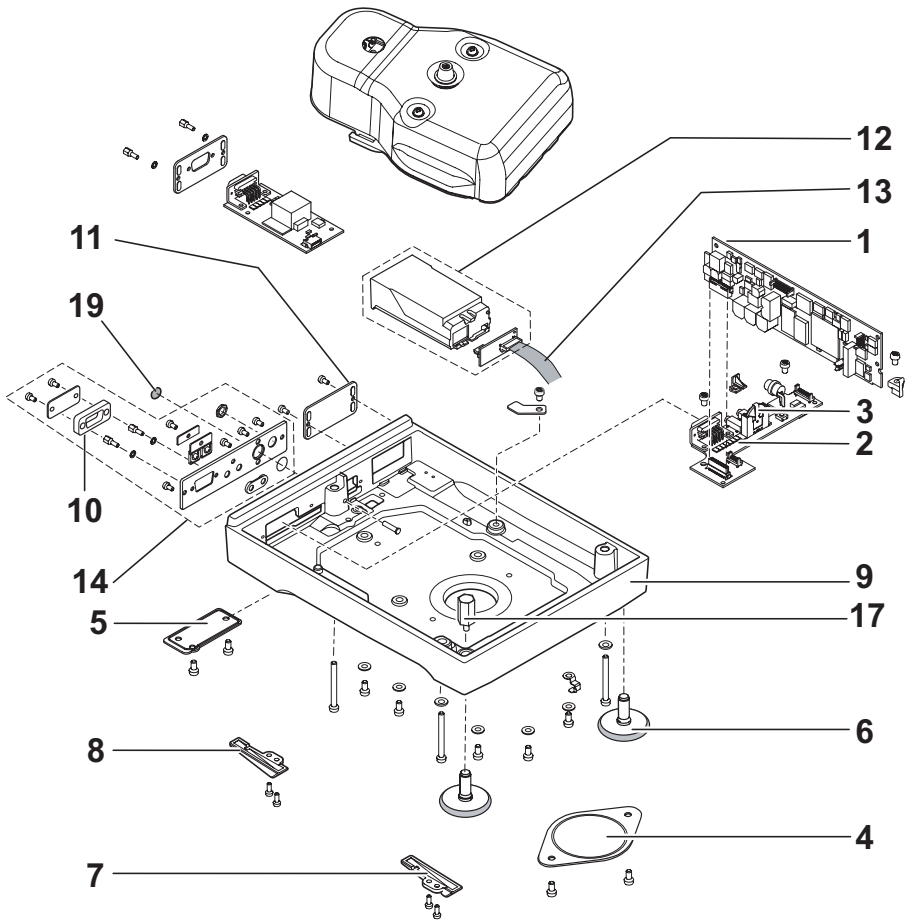
Item 1 - 19

Item	Designation	Note	Part No.
20	Power Supply with Cable Line	CH EU USA IT DK GB AUS ZA IL BR, TH IN	11133110 11133111 11133112 11133113 11133114 11133115 11133116 11133117 11133118 11133119 11133120
21	Cable Line	CH EU USA IT DK GB AUS ZA IL	11132110 11132111 11132112 11132113 11132114 11132115 11132116 11132117 11132118
22	Weighing Pan L 32 kg Weighing Pan L 64 kg		239105 11102124
23	Pan Support		239104
24	Guard Ring		239036
25	Housing Cover L		11131232

4.7 X Platform Type «S»

Platform Type	see
X204S, X404S, X404SDR	see Section 4.7.1
X203S, X603S, X603SDR, X1203S, X2003SDR, X5003SDR	see Section 4.7.2
X1202S, X2002S, X4002S, X6002S, X6002SDR, X8002S, X10002S, X10002SDR	see Section 4.7.3
X4001S, X6001S, X8001S, X10001S	see Section 4.7.4

4.7.1 Platform for Xxx4S, Xxx4SDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132152
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11131055
8	Auxiliary Foot left		11131056
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder high		11131045
18			
19	Cover Service Switch		11131069

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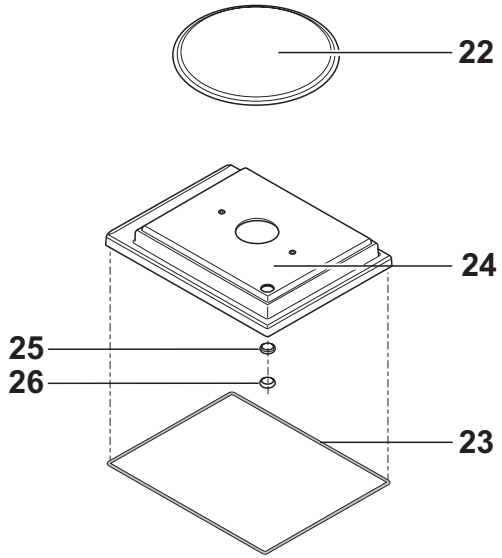

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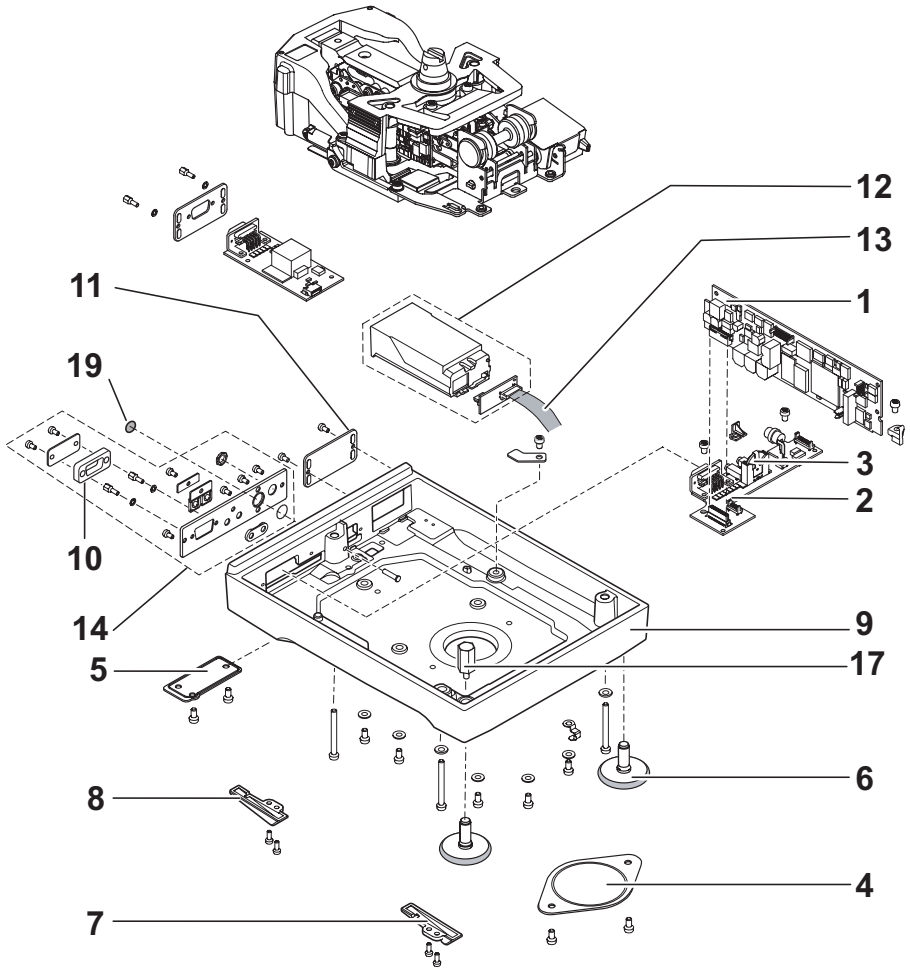
Item	Designation	Note	Part No.
22	Weighing Pan ∅ 90 mm		11133064
23	Seal Housing		11131028
24	Top Housing		11133042
25	Level Window		11131046
26	Level		11101335

4.7.2 Platform for Xxx3S, Xxx3SDR, Xxxx3S, Xxxx3SDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132152
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11131055
8	Auxiliary Foot left		11131056
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder high		11131045
18	Cover Service Switch		11131069
19			
20			

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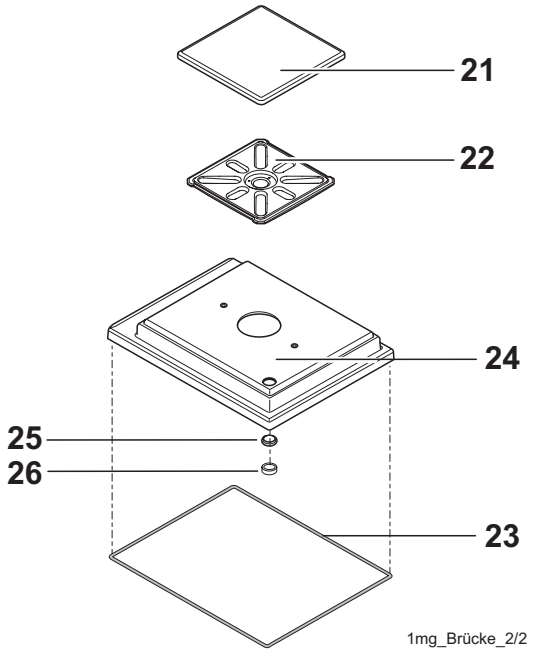

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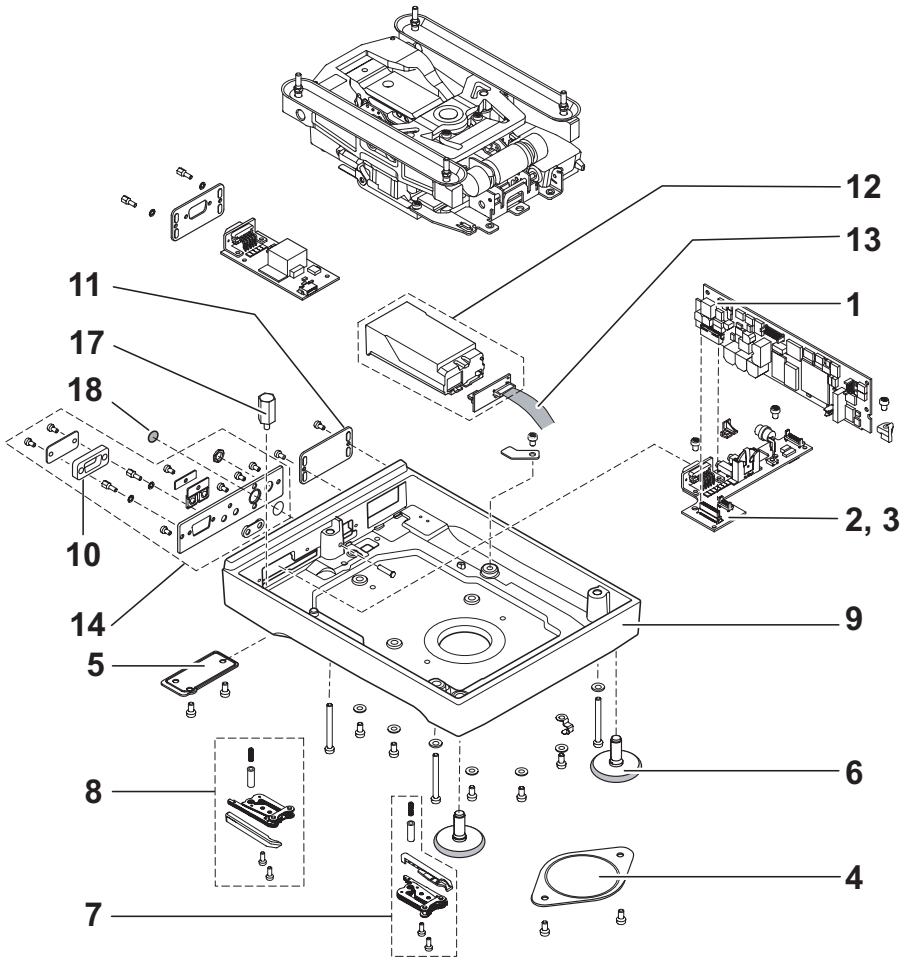
Item	Designation	Note	Part No.
21	Weighing Pan 127 x 127mm		11131022
22	Pan Support 1mg		11133040
23	Seal Housing		11131028
24	Top Housing		11133042
25	Level Window		11131046
26	Level		11101335

4.7.3 Platform for Xxxx2S, Xxxx2SDR, Xxxxx2S, Xxxxx2SDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132152
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder small		11131044
18	Cover Service Switch		11131069
19			
20			

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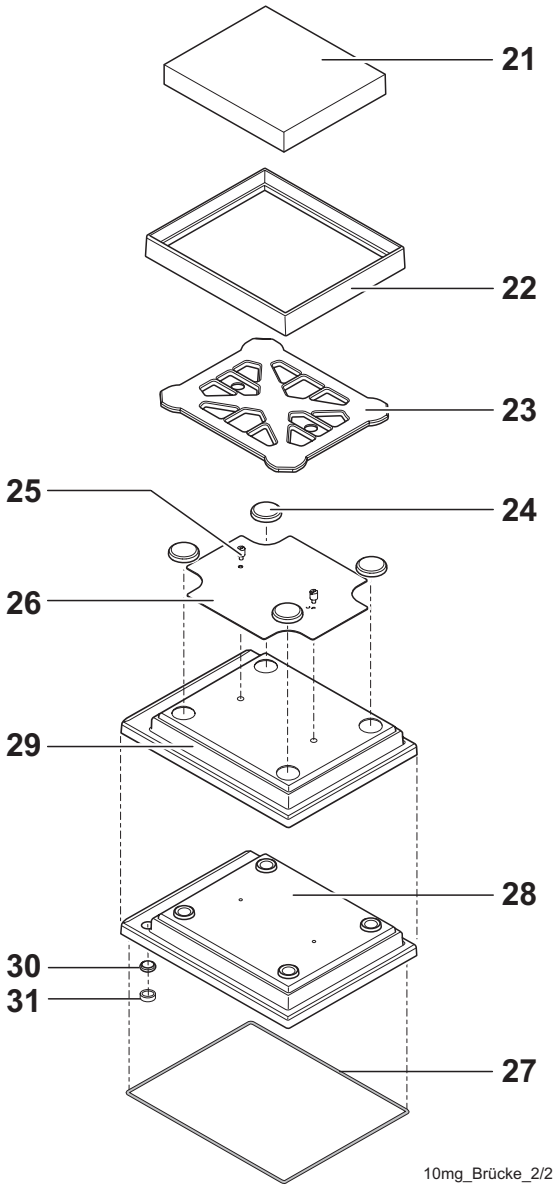

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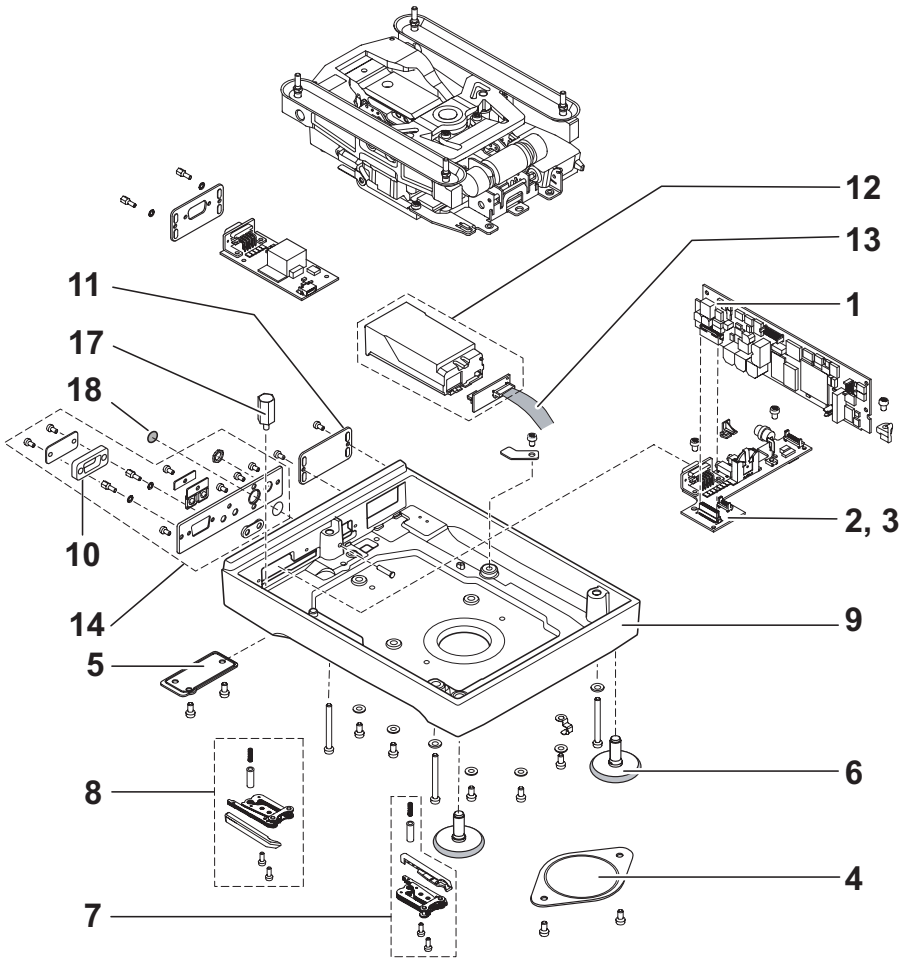
Item	Designation	Note	Part No.
21	Weighing Pan 170 x 205mm		11131030
22	Draft ring		11131040
23	Pan Support		11131034
24	Pan Support		11131029
25	Stop Screw		11131073
26	Fastening Plate		11131067
27	Seal Housing		11131028
28	Top Housing		11133043
29	Protective Cover		11133034
30	Level Window		11131046
31	Level		11101335

4.7.4 Platform for Xxxx1S, Xxxxx1S



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132152
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131010
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder small		11131044
18	Cover Service Switch		11131069
19			
20			

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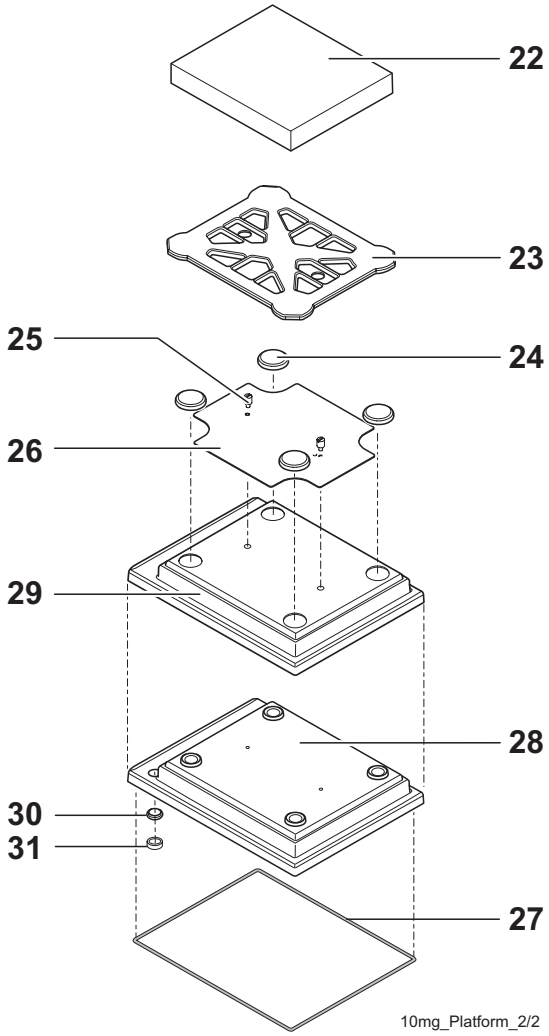

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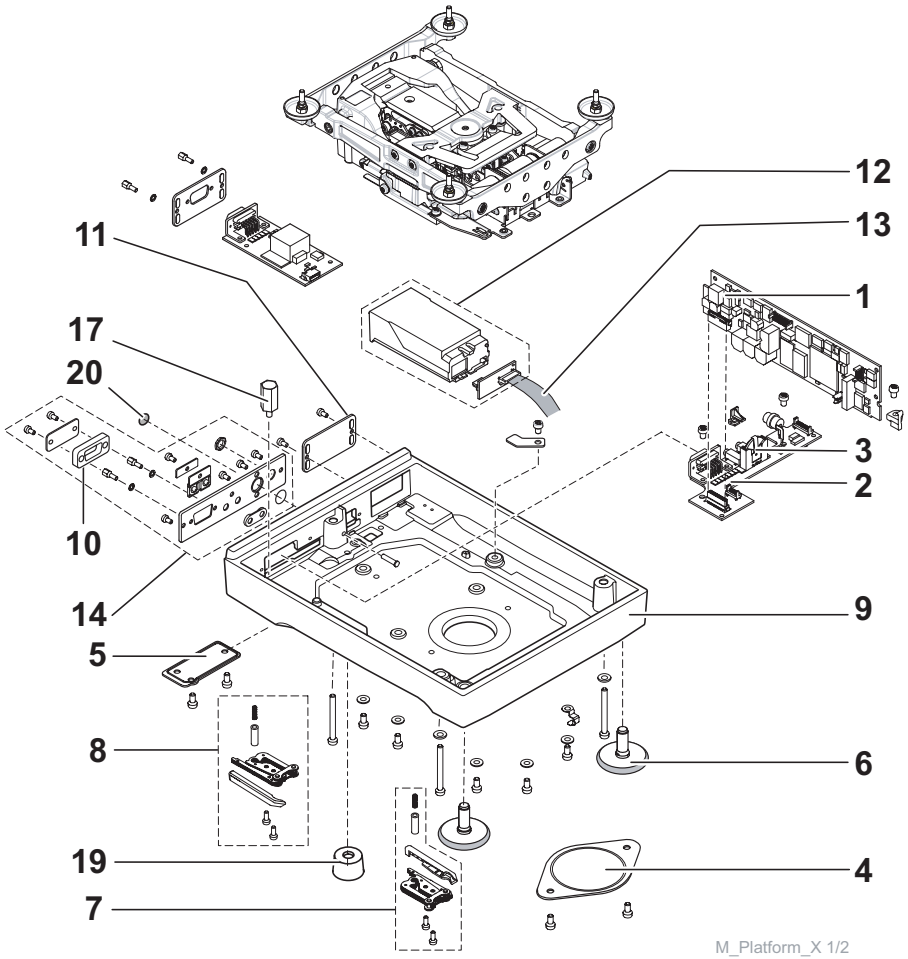
Item	Designation	Note	Part No.
22	Weighing Pan 190 x 223mm		11131031
23	Pan Support		11131037
24	Pan Support		11131029
25	Stop Screw		11131073
26	Fastening Plate		11131067
27	Seal Housing		11131028
28	Top Housing		11133043
29	Protective Cover		11133034
30	Level Window		11131046
31	Level		11101335

4.8 X Platform Type «M»

Platform Type	see
X12002MDR X8001M, X12001M X12000M	see Section 4.8.1
X20001M X20000M	see Section 4.8.2

4.8.1 Platform for Xxxxx0M, Xxxx1M, Xxxxx1M, Xxxxx2MDR



Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132157
3	Battery		11106880
4	Hanger Cover		11131074
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131170
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
15			
16			
17	Level Holder small		11131044
18			
19	Foot		11106537
20	Cover Service Switch		11131069

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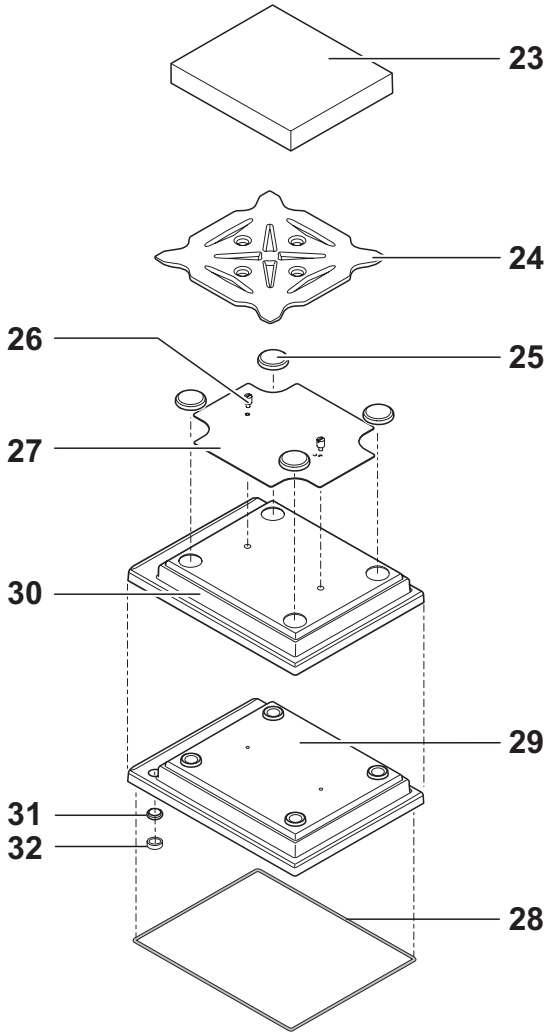
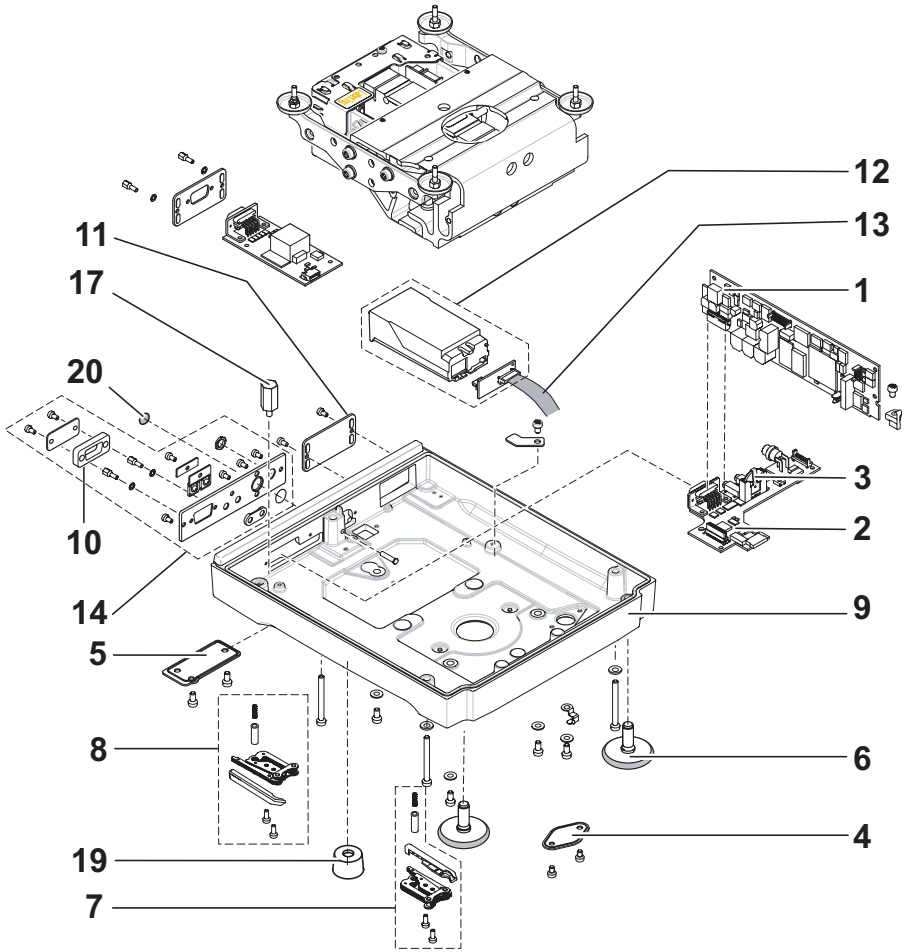


Item 1 - 20

Item	Designation	Note	Part No.
23	Weighing Pan 240 x 240mm		11131173
24	Pan Support		11131172
25	Pan Support		11131029
26	Stop Screw		11131073
27	Fastening Plate		11131182
28	Seal Housing		11131185
29	Top Housing		11133044
30	Protective Cover		11132574
31	Level Window		11131046
32	Level		11101335

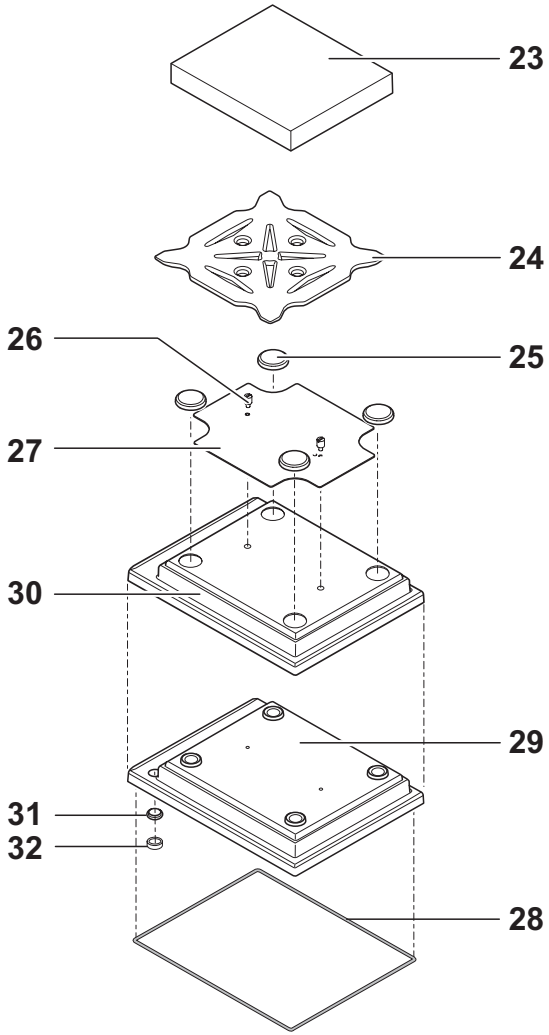
4.8.2 Platform for X20000M, X20001M



M Platform X >=16 kg 1/2

Item	Designation	Note	Part No.
1	Platform PCB		11133072
2	Backplane PCB		11132157
3	Battery		11106880
4	Hanger Cover		11131186
5	Cap Terminal Cable		11131075
6	Levelling Foot		11106323
7	Auxiliary Foot right		11133030
8	Auxiliary Foot left		11133031
9	Bottom Housing		11131167
10	Protection RS-Connector		11133032
11	Cover Opt. Interface		11131071
12	Interface holder compl.		11133033
13	Cable Option		11132029
14	Rear Panel compl.		11131016
17	Level Holder small		11131044
19	Foot		11106537
20	Cover Service Switch		11131069

Item 23 - 32



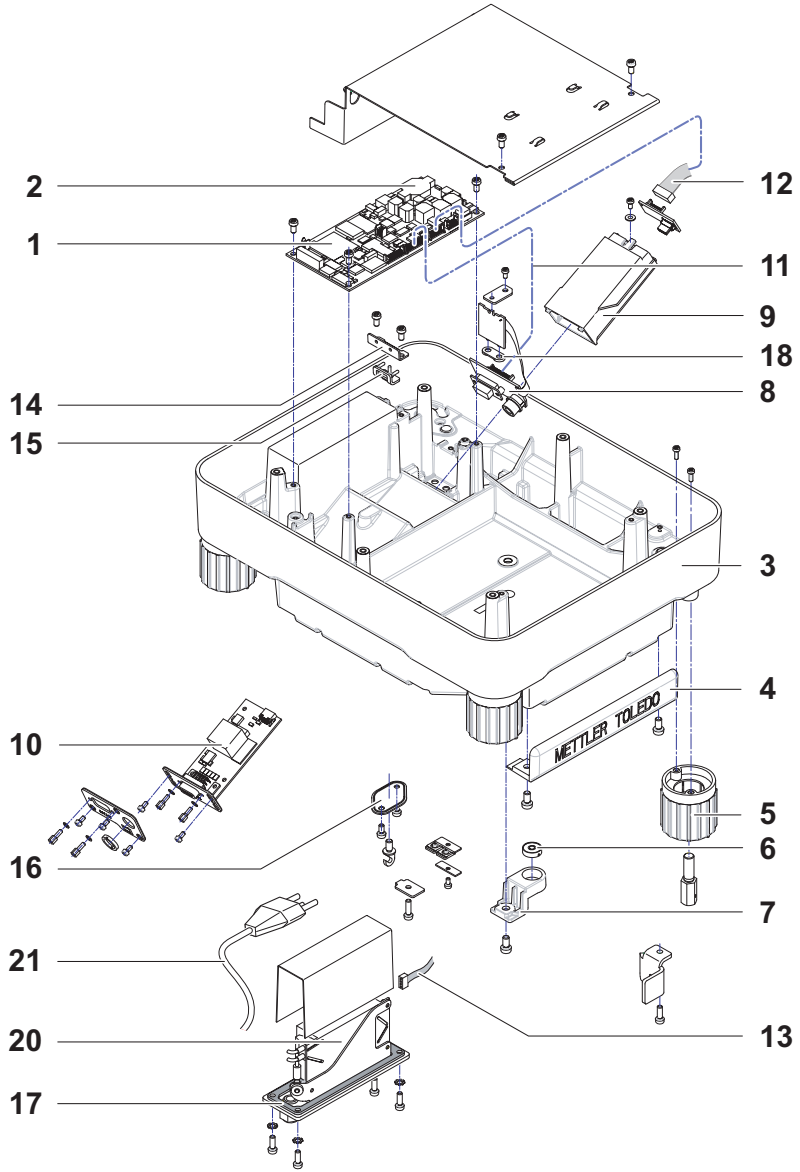
Item 1 - 20

Item	Designation	Note	Part No.
23	Weighing Pan 240 x 240mm		11131173
24	Pan Support		11131172
25	Pan Support		11131029
26	Stop Screw		11131073
27	Fastening Plate		11131182
28	Seal Housing		11131185
29	Top Housing		11133044
30	Protective Cover		11132574
31	Level Window		11131046
32	Level		11101335

4.9 X Platform Type «L»

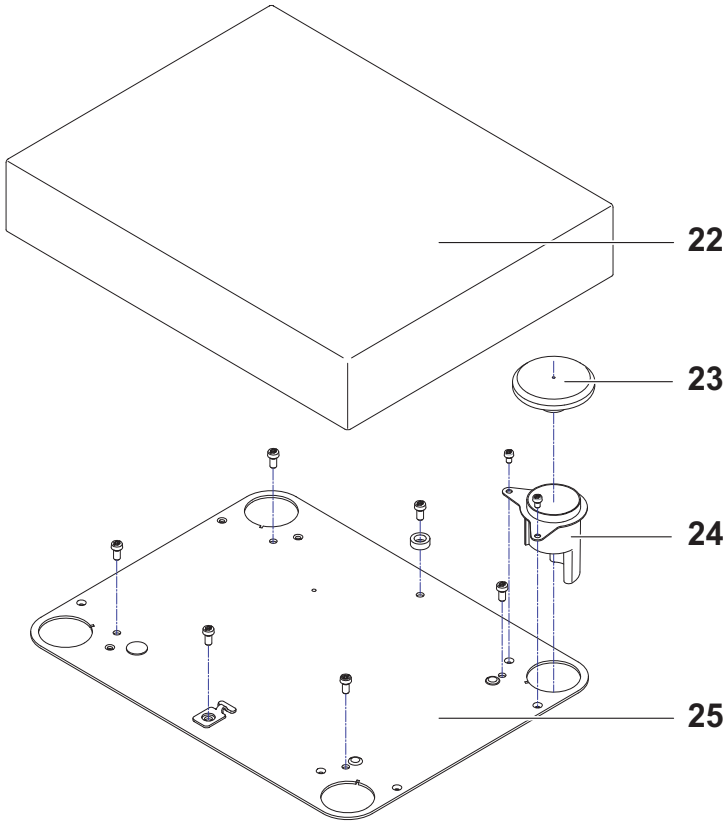
Balance Type	see
X16001L, X32001L, X64001L	Section 4.9.1
X32000L	

4.9.1 Platform for Xxxxx0L, Xxxxx1L



Item	Designation	Note	Part No.
1	Platform L PCB		11133073
2	Battery		11106880
3	Bottom Housing		11133101
4	Buffer Protecting Strip		11131215
5	Foot L-Platform		11131235
6	Level		215053
7	Level Holder L		11131239
8	Connection PCB L		11132120
9	Interface Holder compl.		11133033
10	Interface RS, BlueTooth, PS/2 (options)	see Operating Instructions	-
11	Cable 16 pin		11132102
12	Cable Option		11132029
13	Cable 4 pin		11132103
14	Cable Clip		11131222
15	Seal Cable		11131217
16	Hanger Cover		11131186
17	Seal Power Supply		11131230
18	Seal Aux Connector		11131117

Item 20 - 25



Item 1 - 19

Item	Designation	Note	Part No.
20	Power Supply with Cable Line	CH EU USA IT DK GB AUS ZA IL BR, TH IN	11133110 11133111 11133112 11133113 11133114 11133115 11133116 11133117 11133118 11133119 11133120
21	Cable Line	CH EU USA IT DK GB AUS ZA IL	11132110 11132111 11132112 11132113 11132114 11132115 11132116 11132117 11132118
22	Weighing Pan L 32 kg Weighing Pan L 64 kg		239105 11102124
23	Pan Support		239104
24	Guard Ring		239036
25	Housing Cover L		11131232

5 Weighing cell «MonoBloc» Overview

5.1 Weighing Cell assignment to XP-Balances

Designation	Part No.	Balance Type	see
Weighing cell compl. 0.1 mg for S-platform	11133013	XP204S, XP404S, XP404SDR	see Section 5.4
Weighing cell compl. 0.1 mg for S-platform	11133014	XP2003SDR	see Section 5.4
Weighing cell compl. 1 mg for S-platform	11133015	XP5003SDR	see Section 5.5
Weighing cell compl. 1 mg for S-platform	11133010	XP203S, XP603S, XP603SDR, XP1203S,	see Section 5.5
Weighing cell compl. up to 6 kg for S-platform	11133011	XP2001S, XP4001S, XP6001S, XP802S, XP1202S, XP2002S, XP4002S, XP4002SDR, XP6002S, XP6002SDR	see Section 5.6
Weighing cell compl. up to 6 kg for M-platform	11133011	XP6002MDR	see Section 5.7
Weighing cell compl. 8 to 12 kg for S-platform	11133012	XP8001S, XP10001S, XP8002S, XP10002S, XP10002SDR	see Section 5.8
Weighing cell compl. 8 to 12 kg for M-platform	11133012	XP12000M XP8001M, XP8001MDR, XP12001M, XP12002MDR	see Section 5.9
Weighing cell compl. 16 and 20 kg for M-platform Overload Protection	11133017 42900822	XP20000M XP16001M, XP16001MDR, XP20001M	see Section 5.10
Weighing cell compl. 8, 16 and 32 kg for L-platform Overload Protection	11133017 42900821	XP16000L, XP32000L XP8001L, XP16001L, XP32001L, XP32001LDR	see Section 5.11
Weighing cell compl. 64 kg for L-platform	11133018	XP64000L XP64001L	see Section 5.12

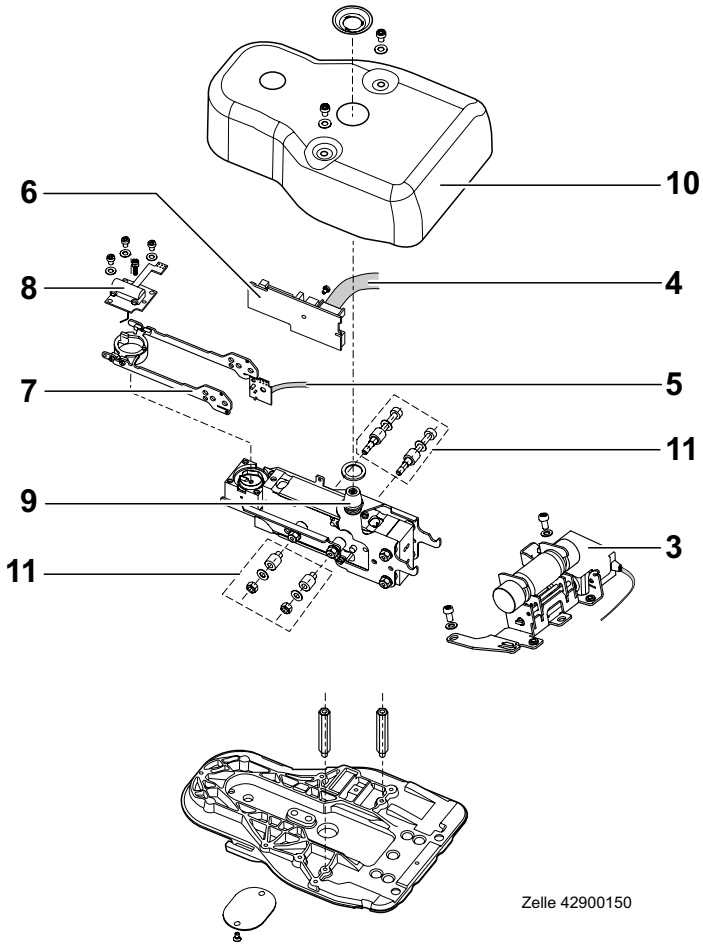
5.2 Weighing Cell assignment to XS-Balances

Designation	Part No.	Balance Type	see
Weighing cell compl. 1 mg for S-platform	11133010	XS203S, XS403S, XS603S, XS603SDR, XS1003S	see Section 5.5
Weighing cell compl. up to 6 kg for S-platform	11133011	XS802S, XS2002S, XS4002S, XS4002SDR, XS6002S, XS6002SDR XS4001S, XS6001S	see Section 5.6
Weighing cell compl. up to 6 kg for M-platform	11133011	XS6001M, XS6001MDR	see Section 5.7
Weighing cell compl. 8 to 12 kg for S-platform	11133012	XS8001S	see Section 5.8
Weighing cell compl. 8 to 12 kg for M-platform	11133012	XS10001M, XS12001MDR, XS10000M	see Section 5.9
Weighing cell compl. 16 and 20 kg for M-platform Overload Protection	11133017 42900822	XS16000M XS16001M	see Section 5.10
Weighing cell compl. 8, 16 and 32 kg for L-platform Overload Protection	11133017 42900821	XS16000L, XS32000L XS8001L, XS16001L, XS32001L, XS32001LDR	see Section 5.11

5.3 Weighing Cell assignment to X-Platforms

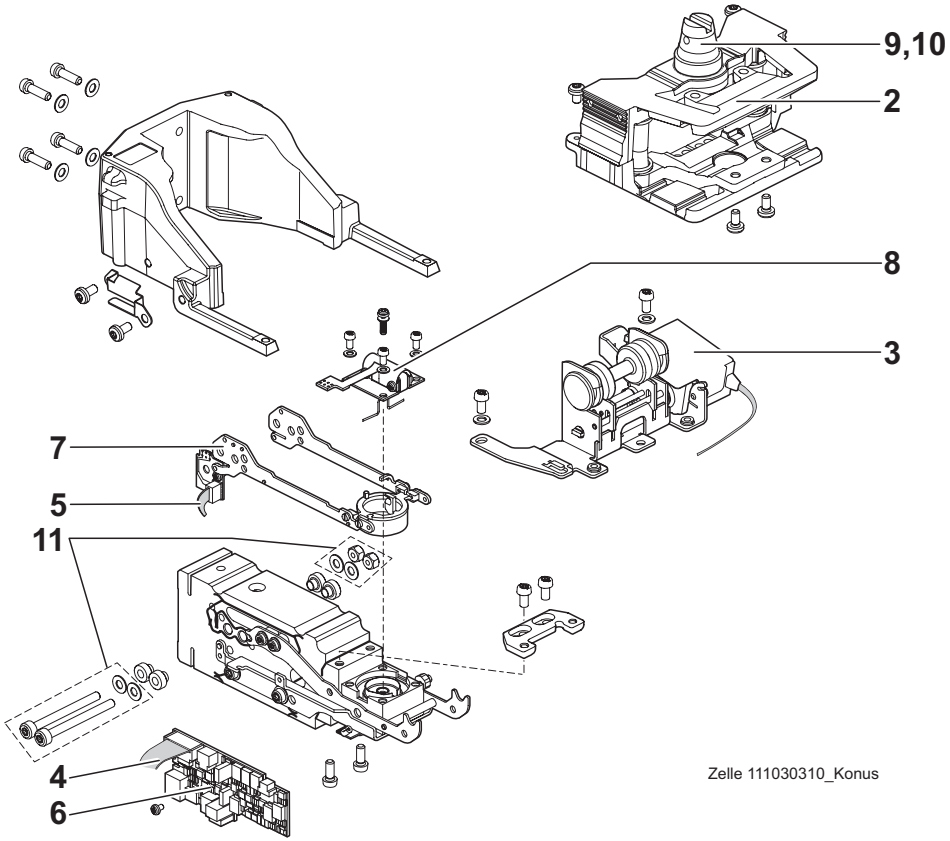
Designation	Part No.	Balance Type	see
Weighing cell compl. 0.1 mg for S-platform	11133013	X204S, X404S, X404SDR	see Section 5.4
Weighing cell compl. 0.1 mg for S-platform	11133014	X2003SDR	see Section 5.4
Weighing cell compl. 1 mg for S-platform	11133010	X203S, X603S, X603SDR, X1203S,	see Section 5.5
Weighing cell compl. 1 mg for S-platform	11133015	X5003SDR	see Section 5.5
Weighing cell compl. up to 6 kg for S-platform	11133011	X4001S, X6001S, X1202S, X2002S, X4002S, X6002S, X6002SDR	see Section 5.6
Weighing cell compl. 8 to 12 kg for S-platform	11133012	X8001S, X10001S, X8002S, X10002S, X10002SDR	see Section 5.8
Weighing cell compl. 8 to 12 kg for M-platform	11133012	X12000M X8001M, X12001M, X12002MDR	see Section 5.9
Weighing cell compl. 16 and 20 kg for M-platform Overload Protection	11133017 42900822	X20000M X20001M	see Section 5.10
Weighing cell compl. 8, 16 and 32 kg for L-platform Overload Protection	11133017 42900821	X32000L X16001L, X32001L	see Section 5.11
Weighing cell compl. 64 kg for L-platform	11133018	X64001L	see Section 5.12

5.4 Weighing cell compl. 0.1 mg for S-platform



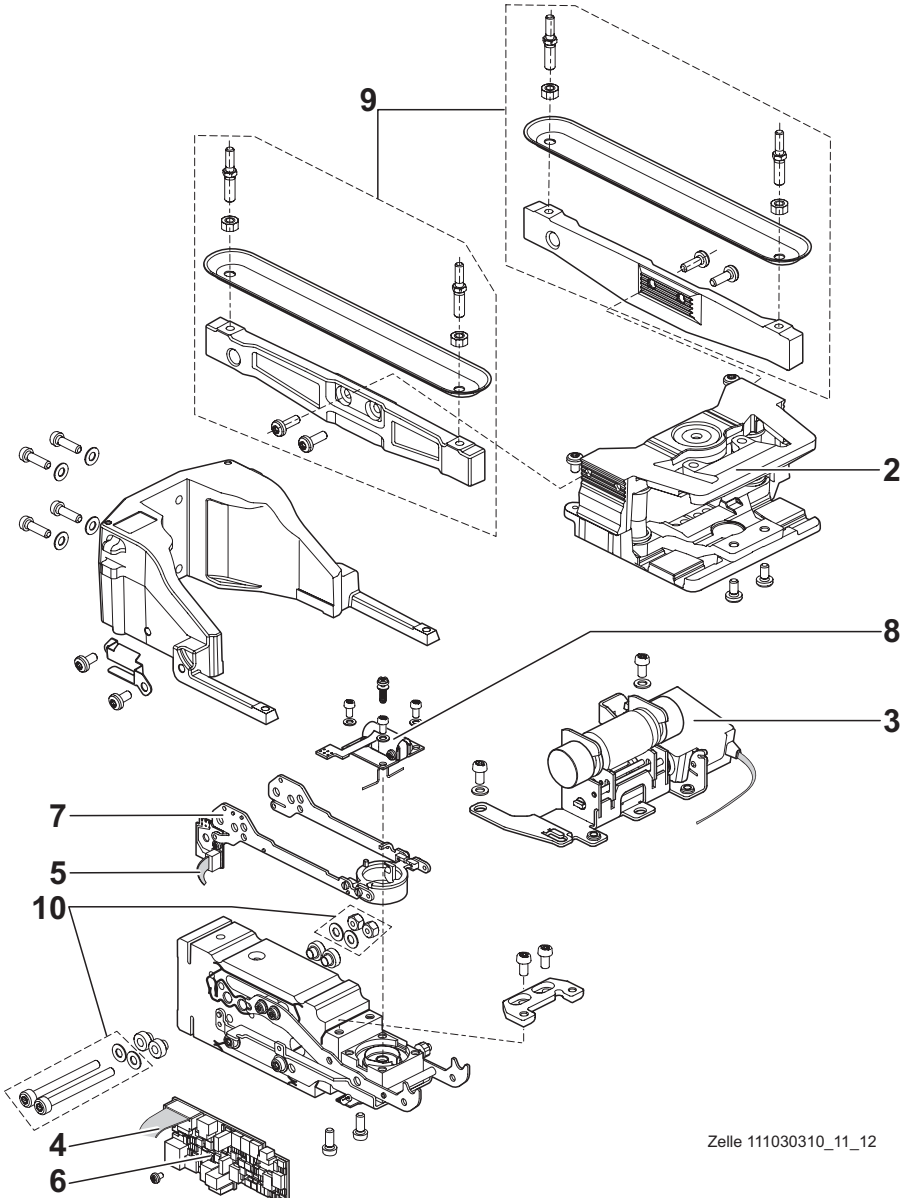
Item	Designation	Cell 11133013 Part No.	Cell 11133014 Part No.
1	Weighing cell «MonoBloc» assembled	11133013	11133014
3	Calibration Drive	42900801	42900801
4	Detector Cable	42900480	42900480
5	Coil Cable	42900481	42900481
6	Cell PCB	42900811	42900811
7	Lever	217400	217400
8	Detection	217401	217401
9	Cone Ferrite Ring	42900820	42900800
10	Cone Cover	42900462	42900428
11	Screw Set «MonoBloc»	42900819	42900819

5.5 Weighing cell compl. 1 mg for S-platform



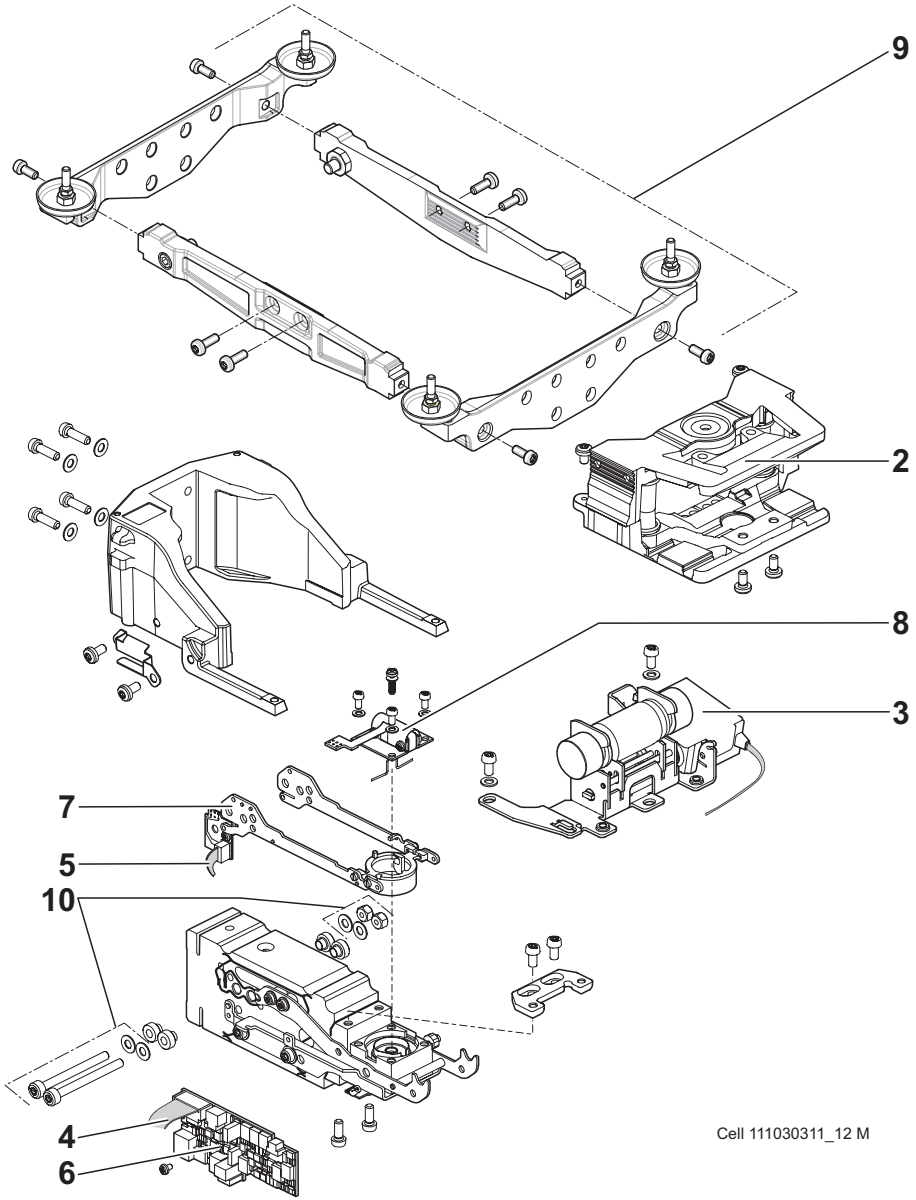
Item	Designation	Cell 11133010 Part No.	Cell 11133015 Part No.
1	Weighing cell «MonoBloc» c/w with Overload Protection	11133010	11133015
2	Overload Protection 1mg	42900803	42900804
3	Calibration Drive	42900801	42900801
4	Detector Cable	42900480	42900480
5	Coil Cable	42900481	42900481
6	Cell PCB 1mg	42900808	42900809
7	Lever	217400	217400
8	Detection	217401	217401
9	Cone Ferrite Ring	42900800	42900800
10	Cone Cover	42900428	42900428
11	Screw Set «MonoBloc»	42900819	42900819

5.6 Weighing cell compl. up to 6 kg for S-platform



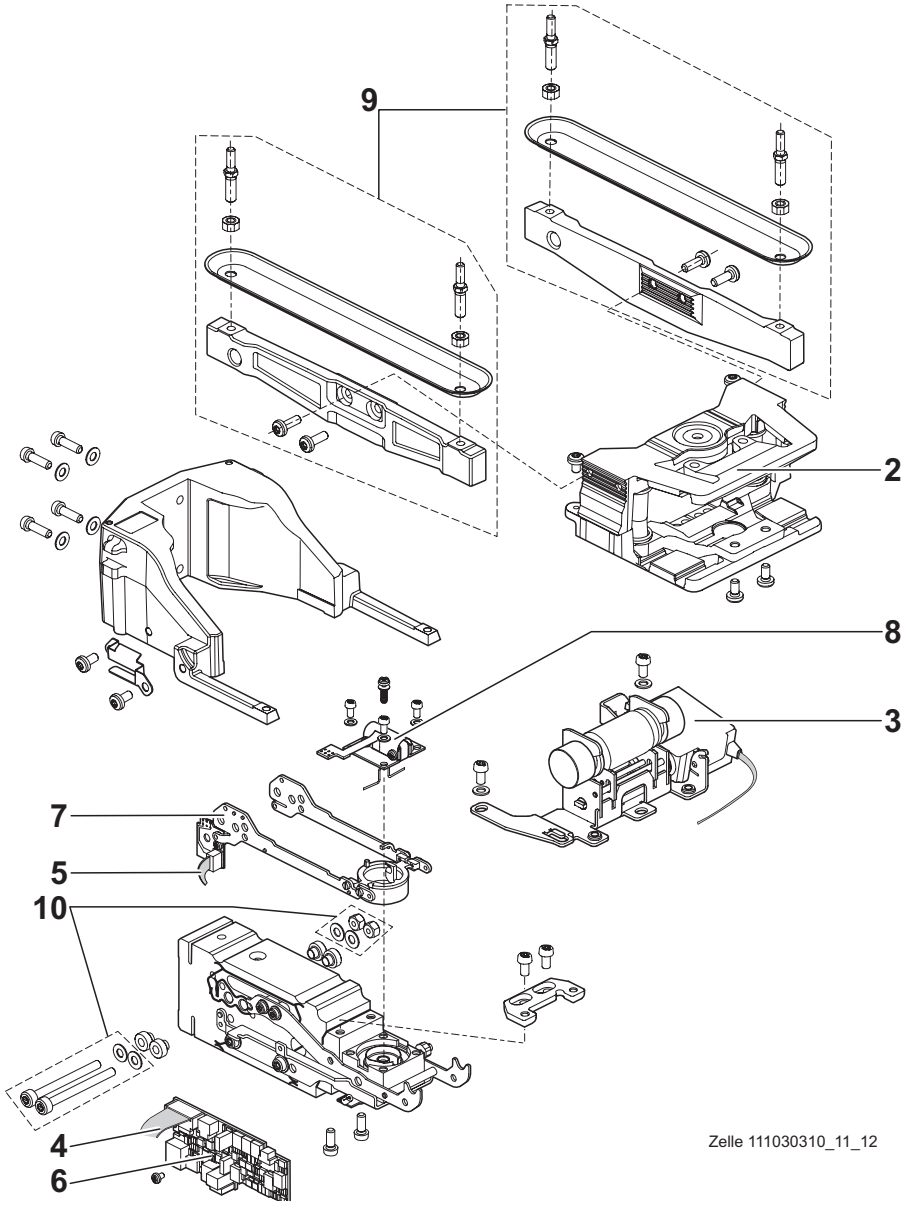
Item	Designation	Note	Part No.
1	Weighing cell «MonoBloc» c/w with Overload Protection	w/o item 9	11133011
2	Overload Protection 6kg		42900804
3	Calibration Drive		42900801
4	Detector Cable		42900480
5	Coil Cable		42900481
6	Cell PCB up to 6 kg		42900809
7	Lever		217400
8	Detection		217401
9	Four-Point Support left/right for S-platform		42900816
10	Screw Set «MonoBloc»		42900819

5.7 Weighing cell compl. up to 6 kg for M-platform



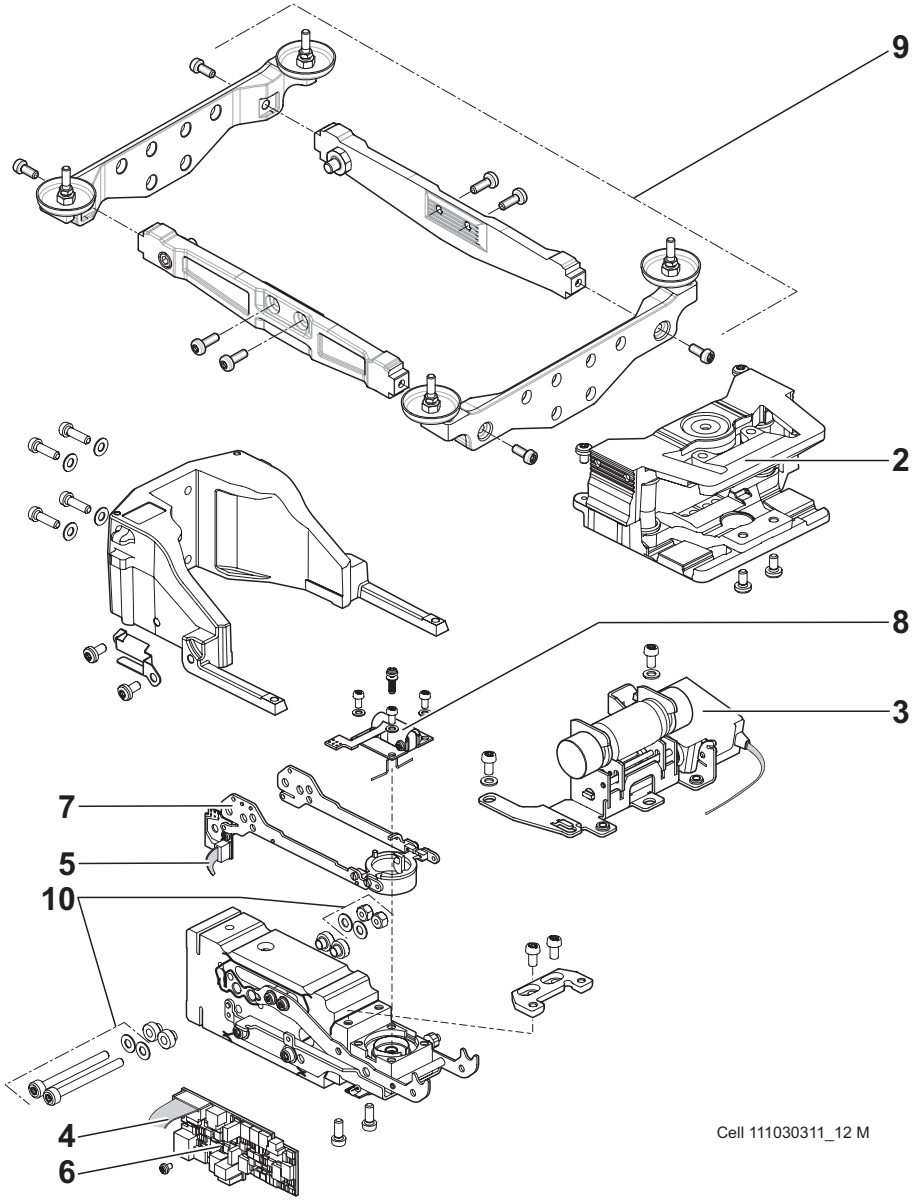
Item	Designation	Note	Part No.
1	Weighing cell «MonoBloc» c/w with Overload Protection	w/o item 9	11133011
2	Overload Protection 6 kg		42900804
3	Calibration Drive		42900801
4	Detector Cable		42900480
5	Coil Cable		42900481
6	Cell PCB up to 6 kg		42900809
7	Lever		217400
8	Detection		217401
9	Four-Point Support left/right for M-platform		42900818
10	Screw Set «MonoBloc»		42900819

5.8 Weighing cell compl. 8 to 12 kg for S-platform



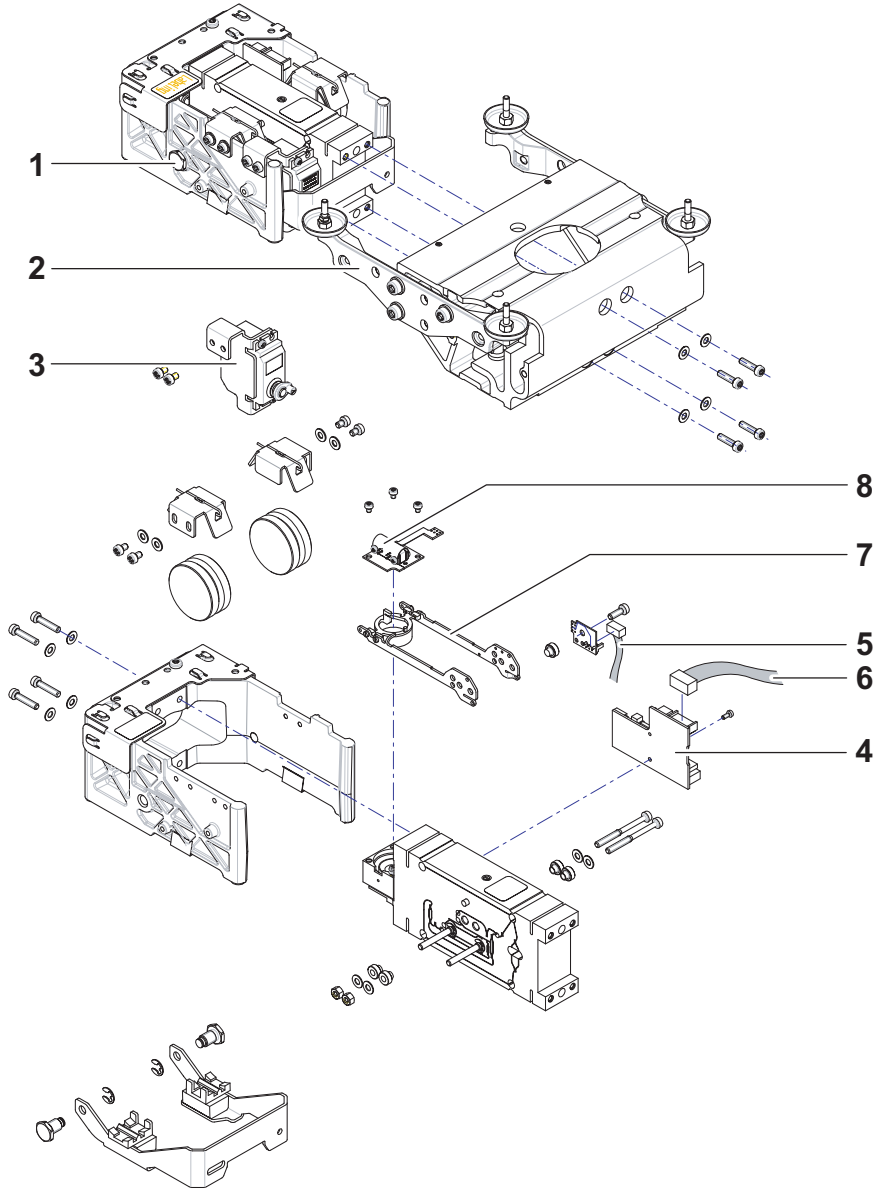
Item	Designation	Note	Part No.
1	Weighing cell «MonoBloc» c/w with Overload Protection	w/o item 9	11133012
2	Overload Protection 8-12 kg		42900805
3	Calibration Drive		42900801
4	Detector Cable		42900480
5	Coil Cable		42900481
6	Cell PCB		42900810
7	Lever		217400
8	Detection		217401
9	Four-Point Support left/right for S-platform		42900816
10	Screw Set «MonoBloc»		42900819

5.9 Weighing cell compl. 8 to 12 kg for M-platform



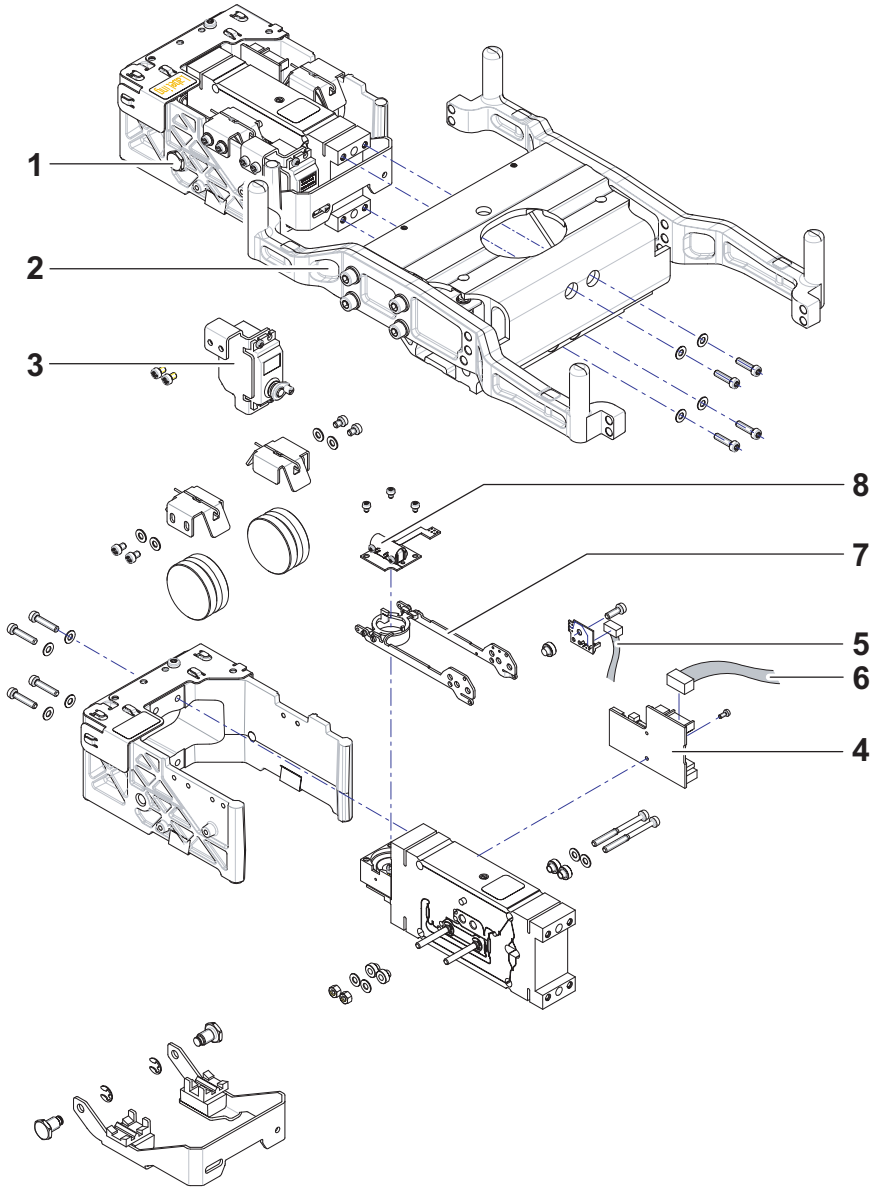
Item	Designation	Note	Part No.
1	Weighing cell «MonoBloc» c/w with Overload Protection	w/o item 9	11133012
2	Overload Protection 8-12 kg		42900805
3	Calibration Drive		42900801
4	Detector Cable		42900480
5	Coil Cable		42900481
6	Cell PCB		42900810
7	Lever		217400
8	Detection		217401
9	Four-Point Support left/right for M-platform		42900818
10	Screw Set «MonoBloc»		42900819

5.10 Weighing cell compl. 16 and 20 kg for M-platform



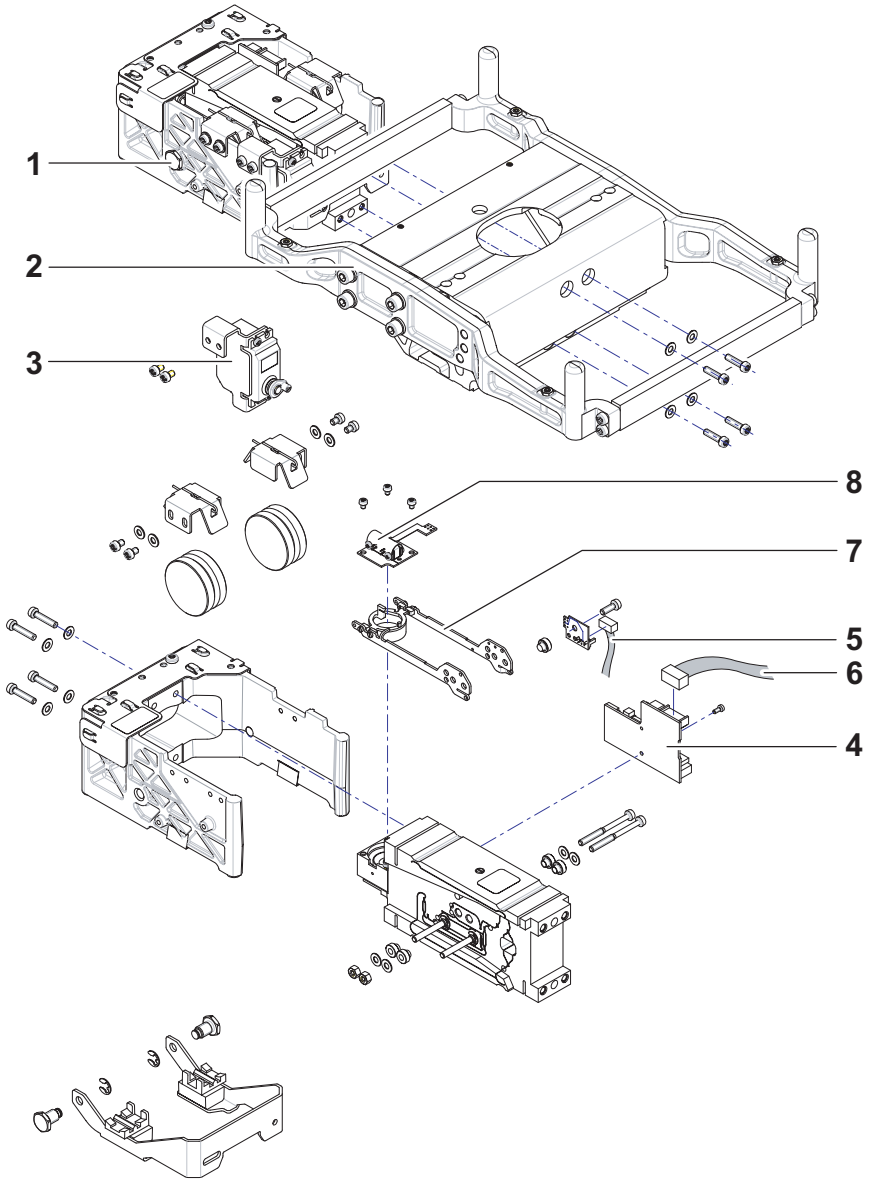
Item	Designation	Note	Part No.
1	Weighing cell «MonoBloc»	without Overload Protection	11133017
2	Overload Protection		42900822
3	Calibration Drive, with cable	c/w bracket	42900340
4	Cell PCB		42900813
5	Coil Cable		42900533
6	Cell Cable		42900534
7	Lever		217400
8	Detection		217401

5.11 Weighing cell compl. 8, 16 and 32 kg for L-platform



Item	Designation	Note	Part No.
1	Weighing cell «MonoBloc»		11133017
2	Overload Protection		42900821
3	Calibration Drive, with cable		42900340
4	Cell PCB		42900813
5	Coil Cable		42900533
6	Cell Cable		42900534
7	Lever		217400
8	Detector		217401

5.12 Weighing cell compl. 64 kg for L-platform



Item	Designation	Note	Part No.
1	Weighing cell «MonoBloc»		11133018
2	Overload Protection		42900823
3	Calibration Drive incl. cable		42900340
4	Cell PCB		42900813
5	Coil Cable		42900533
6	Cell Cable		42900534
7	Lever		217400
8	Detector		217401

6 Model Plate, Packaging

6.1 Model Plate XP-Balance

6.1.1 XP-Balance Type «S»

Balance	Part No.	Balance	Part No.	Balance	Part No.	Balance	Part No.
XP2001S	11131277	XP802S	11131271	XP203S	11130440	XP204S	11130404
XP4001S	11130456	XP1202S	11130448	XP603S	11130441	XP404S	11130400
XP6001S	11130457	XP2002S	11131273	XP603SDR	11130444	XP404SDR	11130471
XP8001S	11130466	XP4002S	11130450	XP1203S	11130446		
XP10001S	11130467	XP4002SDR	11131275	XP2003SDR	11130391		
		XP6002S	11130451	XP5003SDR	11130387		
		XP6002SDR	11130452				
		XP8002S	11130460				
		XP10002S	11130461				
		XP10002SDR	11130462				

6.1.2 XP-Balance Type «M»

Balance	Part No.	Balance	Part No.	Balance	Part No.	Balance	Part No.
XP12000M	11130361	XP8001M	11130375	XP6002MDR	11130383		
XP20000M	11130340	XP8001MDR	11130371	XP12002MDR	11130379		
		XP12001M	11130365				
		XP16001M	11130336				
		XP16001MDR	11131279				
		XP20001M	11130338				

6.1.3 XP-Balance Type «L»

Balance	Part No.	Balance	Part No.	Balance	Part No.	Balance	Part No.
XP16000L	11131280	XP8001L	11130341				
XP32000L	11131281	XP16001L	11130343				
XP64000L	11131282	XP32001L	11130345				
		XP32001LDR	11130347				
		XP64001L	11130349				

6.2 Model Plate XS-Balance

6.2.1 XS-Balance Type «S»

Balance	Part No.	Balance	Part No.	Balance	Part No.	Balance	Part No.
XS4001S	11130864	XS802S	11130852	XS203S	11130842		
XS6001S	11130866	XS2002S	11130854	XS403S	11130844		
XS8001S	11130868	XS4002S	11130856	XS603S	11130846		
		XS4002SDR	11130858	XS603SDR	11130848		
		XS6002S	11130860	XS1003S	11130850		
		XS6002SDR	11130862				

6.2.2 XS-Balance Type «M»

Balance	Part No.	Balance	Part No.	Balance	Part No.	Balance	Part No.
XS10000M	11130876	XS6001M	11130870				
XS16000M	11130879	XS6001MDR	11130872				
		XS10001M	11130874				
		XS12001MDR	11130921				
		XS16001M	11130877				

6.2.3 XS-Balance Type «L»

Balance	Part No.	Balance	Part No.	Balance	Part No.	Balance	Part No.
XS16000L	11130922	XS8001L	11130880				
XS32000L	11130923	XS16001L	11130882				
		XS32001L	11130884				
		XS32001LDR	11130886				

6.3 Model Plate Platform

6.3.1 Platform Type «S»

Platform	Part No.	Platform	Part No.	Platform	Part No.	Platform	Part No.
X4001S	11130458	X1202S	11130449	X203S	11130442	X204S	11130402
X6001S	11130459	X2002S	11130484	X603S	11130443	X404SDR	11130396
X8001S	11130468	X4002S	11130453	X603SDR	11130445	X404S	11130398
X10001S	11130469	X6002S	11130454	X1203S	11130447		
		X6002SDR	11130455	X2003SDR	11130393		
		X8002S	11130463	X5003SDR	11130389		
		X10002S	11130464				
		X10002SDR	11130465				

6.3.2 Platform Type «M»

Platform	Part No.	Platform	Part No.	Platform	Part No.	Platform	Part No.
X12000M	11130363	X8001M	11130373	X12002MDR	11130377		
X20000M	11130894	X12001M	11130367				
		X20001M	11130892				

6.3.3 Platform Type «L»

Platform	Part No.	Platform	Part No.	Platform	Part No.	Platform	Part No.
X32000L	11130906	X16001L	11130897				
		X32001L	11130899				
		X64001L	11130903				

6.4 Packaging

6.4.1 XP-Balance Type «S»

Balance Type XPxx4S

Item	Designation	Note	Part No.
1	Packaging 1mg		11133052
3	Export Carton1mg		11132834
4	Packaging Draft shield		11133054
5	Export Carton Draft shield		11132867

Balance Type XPxx3S

Item	Designation	Note	Part No.
2	Packaging 1mg		11133048
3	Export Carton 1mg		11132834
4	Packaging Draft shield		11133054
5	Export Carton Draft shield		11132867

Balance Type XPxx2S

Item	Designation	Note	Part No.
7	Packaging 10mg		11133046
9	Export Carton		11132839

Balance Type XPxx1S

Item	Designation	Note	Part No.
8	Packaging 0.1g		11133047
9	Export Carton		11132839

6.4.2 XP-Balance Type «M»

Balance Type XPxxxM

Item	Designation	Note	Part No.
21	Packaging		11133055
22	Export Carton		11132879

6.4.3 XP-Balance Type «L»

Balance Type XPxxxxL

Item	Designation	Note	Part No.
31	Packaging		11133057
32	Export Carton		11132912

31

32

6.4.4 XS-Balance Type «S»

Balance Type XSxx3S

Item	Designation	Note	Part No.
41	Packaging 1mg		11133053
3	Export Carton 1mg		11132834
42	Packaging MagicCube		11133049
43	Export Carton MagicCube		11132824

Balance Type XSxx2S

Item	Designation	Note	Part No.
46	Packaging 10mg		11133050
9	Export Carton		11132839

Balance Type XSxx1S

Item	Designation	Note	Part No.
48	Packaging 0.1g		11133051
9	Export Carton		11132839

6.4.5 XS-Balance Type «M»

Balance Type XSxxxM

Item	Designation	Note	Part No.
51	Packaging		11133056
22	Export Carton		11132879

6.4.6 XS-Balance Type «L»

Balance Type XSxxxxL

Item	Designation	Note	Part No.
31	Packaging		11133057
32	Export Carton		11132912

6.4.7 Platform Type «S»

Platform Xxx4S

Item	Designation	Note	Part No.
1	Packaging 1mg		11133052
3	Export Carton1mg		11132834
4	Packaging Draft Shield		11133054
5	Export Carton Draft Shield		11132867

Platform Xxx3S

Item	Designation	Note	Part No.
2	Packaging 1mg		11133048
3	Export Carton1mg		11132834
4	Packaging Draft Shield		11133054
5	Export Carton Draft Shield		11132867

Platform Xxx2S

Item	Designation	Note	Part No.
7	Packaging 10mg		11133046
9	Export Carton		11132839

Platform Xxx1S

Item	Designation	Note	Part No.
8	Packaging 0.1g		11133047
9	Export Carton		11132839

6.4.8 Platform Type «M»

Platform XxxxM

Item	Designation	Note	Part No.
21	Packaging		11133055
22	Export Carton		11132879

6.4.9 Platform Type «L»

Platform XxxxxL

Item	Designation	Note	Part No.
31	Packaging		11133057
32	Export Carton		11132912

6.4.10 Draft shield

Draft shield with sliding doors

Item	Designation	Note	Part No.
4	Packaging Draft shield		11133054
5	Export Carton Draft shield		11132867

Draft shield MagicCube

Item	Designation	Note	Part No.
42	Packaging MagicCube		11133049
43	Export Carton MagicCube		11132824

4 Checks

List of Contents

1 Instructions

Please find the instructions as what to look for and how to proceed in the document

Preventive Maintenance - Instructions

in Chapter 12.

2 Performing the checks

Note that for certain tasks, e.g. Function Check, the system needs to be acclimatized for approx. 1 hour.

Print out the document

Preventive Maintenance - Report

in Chapter 12 and fill in the form as you proceed with preventive maintenance.

5 Troubleshooting

List of Contents

1 Error Messages - Remedy

1.1 Terminal

Error Message	Possible cause	Error Message Host	Remedy
Invalid terminal bootmonitor	Missing Operating System	Error-1T	Replace terminal PCB
Program memory defect	Flash memory defect	Error-3T	Replace terminal PCB

1.2 Platform

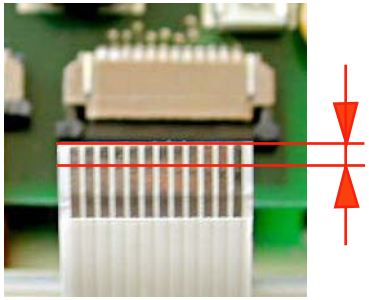
Error Message	Possible cause	Error Message Host	Remedy
Invalid platform bootmonitor	Missing Operating System	Error-1B	Replace platform PCB
Wrong loadcell brand	Wrong weighing cell	Error-2B	Replace weighing cell
Program memory defect	Flash memory defect	Error-3B	Replace platform PCB
Error 4	Data missing; either Cell Parameter or TDNR		Reload Cell Parameter Reload TDNR
Error 6	Standard Calibration has not been performed, EEPROM defect		Perform Standard Calibration in service mode

2 Error Symptoms - Recovery

2.1 Display is dark

Error symptom	Possible cause	Diagnostic	Remedy
Display is dark	**1** Balance on standby	-	Press «On» key.
	2 Power plug not connected	Check	Connect power plug.
	3 AC adapter not connected to balance	Check	Connect AC adapter.
	4 AC adapter is faulty	Green LED on AC adapter does not light.	Replace AC adapter (see Section 1, Chapter 3).
	5 Connector socket on balance is corroded or faulty	Check	Replace connector socket (Backplane PCB).
	6 Power outage in building supply	• Plug AC adapter into other socket. • Check socket with phase tester. • Connect another electrical device.	Inform person responsible (building electrician).
	7 Incorrect AC adapter	Check that input data on type plate match the power supply values.	Use correct AC adapter (see Section 1, Chapter 3).
	8 Terminal cable not connected	• Check connection on Terminal. • Check connection on balance.	• Connect Terminal cable (see Section 5.1.8, Chapter 6). • Connect Terminal cable.
	9 Terminal cable faulty	Check optically and electrically (kinks, check continuity, ring through).	Replace Terminal cable.
	10 Display faulty	-	Replace display (see Section 5.1.6, Chapter 6).
	11 Terminal software not loaded	• Establish connection to LARS/Service Mode. • Terminal software version is not displayed e.g. SW version Platform 4.01 SW version Terminal 4.21.	Load Terminal software with E-loader II http://extranet.mt.com.

2.2 Keypad does not function

Error symptom	Possible cause	Diagnostic	Remedy
Keypad does not function	**1** Terminal is dark	see Section 2.1	-
	2 Keypad or touchscreen is not connected	Check plug connection on Terminal.	Connect ribbon cable to Terminal (see Section 5.1.4, Chapter 6).
	3 Keypad faulty	Connect a new keypad (without affixing it first). If it functions, the existing keypad is faulty. If it does not function, see causes 5 and 6.	Replace Keypad (see Section 5.1.6, Chapter 6).
	4 Touch screen faulty	-	Replace Top Housing (see Section 5.1.4, Chapter 6).
	5 Faulty contacts on ribbon cable	• Contact coating is scratched off. • Contact pin in socket is distorted. 	• Cut 1 mm off ribbon cable with scissors. The ribbon cable penetrates further into the socket. • Replace the keypad.
	6 Terminal PCB faulty	-	Replace Terminal PCB (see Section 5.1.4, Chapter 6).

2.3 Display drifts, increases and decreases alternately

Error symptom	Possible cause	Diagnostic	Remedy
Increases and decreases alternately	**1** Vibrations at the workplace	Place beaker with tap water on the weighing bench. Vibrations cause ripples on the water surface.	• Protect weighing location against vibrations (vibration absorber, etc.). • Set weighing parameters coarser (e.g. change «Environment» from «Very stable» to «Stable»). • Find a different weighing location (by agreement with customer).
	2 Drafts	• Check that draft shield is closed. • Check for gaps in draft shield.	• Close draft shield. • Set weighing parameters coarser (e.g. change «Environment» from «Very stable» to «Stable»).
	3 Internal calibration weight is jammed	Actuate adjustment motor from Service Mode or LARS. The weight display changes and becomes stable.	Insert adjustment weights correctly (see Section 3.3, Chapter 6).
	4 Magnet system soiled		Clean magnet system (see Section 6.2.3, Chapter 6).
	5 Loose screws on the measuring cell		Check correct seating of the screws (see Section 6.3, Chapter 6).
	6 Moving part touching measuring cell		Check (see Section 6.3, Chapter 6).

2.4 Display unstable, constantly drifts into plus or minus

Error symptom	Possible cause	Diagnostic	Remedy
Display constantly drifts into plus or minus	**1** Sun or other heat source shines directly onto the balance	Is any sun shade (blinds, curtains, etc.) available?	Select location according to Operating Instructions (customer responsibility).
	2 Weighing sample absorbs moisture or evaporates moisture	• Is the weighing result with a test weight stable? • Sensitive weighing samples e.g. paper, cardboard, wood, plastic, rubber, liquids.	• Use aids. • Cover weighing sample.
	3 Weighing sample is electrostatically charged	• Is the weighing result with a test weight stable? • Sensitive weighing samples e.g. plastic, powder, insulating materials.	• Increase air humidity in weighing chamber (45% - 50%). • Use ionizer.
	4 Weighing sample is hotter or colder than the air in the weighing chamber	Weighing operation with test weight does not show this effect.	Bring weighing sample to room temperature before weighing.
	5 Balance has not yet reached thermal equilibrium	• Was there a power outage? • Was the AC adapter unplugged (balance, socket)	Acclimatize balance for approx. 2 hours.
	6 Internal adjusting weight is jammed	Actuate the adjustment motor from Service Mode or LARS. The weight display changes and becomes stable.	Insert adjustment weight correctly (see Section 3.3, Chapter 6).
	7 Detector soiled or faulty		Check, replace (see Section 6.2.1, Chapter 6).
	8 Magnet system soiled		Clean magnet system (see Section 6.2.3, Chapter 6).
	9 Loose screws on the measuring cell		Check correct seating of the screws.

2.5 Display shows overload or underload

Error symptom	Possible cause	Diagnostic	Remedy
Display shows overload or underload	**1** Incorrect weighing pan	Slightly lift or press weighing pan. The weight display appears.	Attach correct weighing pan.
	2 Missing weighing pan		Attach correct weighing pan.
	3 Incorrect zero point at switch-on		• Switch off balance. • Unplug power cable and plug in again.
	4 Incorrect TDNR	Input TDNR in LARS «Data» «Type definition» and check whether the balance type matches	Load TDNR (see Section 2.3, Chapter 7).
	5 Weight support/adjusting weight are jammed		see Section 3.3, Chapter 6
	6 Incorrect measuring cell built in	Check whether the part number of the new measuring cell matches the respective balance (see Section 5, Chapter 3)	Build in correct measuring cell.
	7 Lever short-circuits to ground	Measure the resistance between the coil contact and the measuring cell chassis. >100 kΩ o.k.	Replace lever (see Section 6.2.2, Section 6.3.1, Chapter 6).
	8 Cell PCB faulty		Replace Cell PCB (see Section 6.5, Chapter 6).
Display switches between overload and underload	Balance operated with test SW	Test SW with time-switch set to end at 1 Aug 2005	Short term error symptoms recoveries remedy: Set date to before 1.8.2005 Long term remedy: Load current Standard SW using e-loader

2.6 Display flashes «0.00000»

Error symptom	Possible cause	Diagnostic	Remedy
Display flashes «0.00000»	**1** Lever cannot move freely, touches fixed parts	• Switch off balance. • Unplug power cable. • Remove weighing pan. • Press lightly on pan support. Typical click of the measuring cell must be audible.	Check measuring cell.
	2 Ribbon cable not connected to balance or faulty	Check all cable connections on the balance PCB and cell PCB.	Connect ribbon cable.
	3 Current-conducting wires are touching	Use measuring instrument to check continuity (ring through).	Align current-conducting wires (see Section 6.3.1, step 7, Chapter 6).
	4 Coil short-circuits to ground, short-circuits otherwise, or is interrupted	Measure resistance.	Replace lever (see Section 6.2.2, Section 6.3.1, Chapter 6).
	5 Cell PCB faulty		Replace Cell PCB (see Section 6.5, Chapter 6).

2.7 Taring not possible

Error symptom	Possible cause	Diagnostic	Remedy
Taring not possible	**1** Vibrations at the workplace.	• Press Tare again. • Display unstable.	see Section 2.4

2.8 Adjustment with internal calibration weights not possible

Error symptom	Possible cause	Diagnostic	Remedy
Internal calibration not possible	**1** Weighing pan is loaded.	Check	Unload (empty) weighing pan.
	2 Dead load too small.		Check tolerance values in Service Mode and compare with tolerance table in Chapter 9.
	3 Adjustment weight is jammed or outside the supporting position.	• Lower the internal weights from Service Mode or LARS. • If the display remains unstable, raise the internal weights and place external weights in position. If the display is stable the adjusting weight is jammed. If the display is unstable, see Section 2.3.	see Section 3.3, Chapter 6.
	4 Adjusting motor is faulty.	No sound from motor.	• Connect cable to motor. • Replace motor PCB. • Replace motor.

2.9 Excessive hysteresis

Error symptom	Possible cause	Diagnostic	Remedy
Excessive hysteresis	**1** Hair, dust fibers, or dirt between fixed and moving parts.		Check
	2 Detector soiled or faulty.		Check, replace (see Section 6.2.1, Chapter 6).
	3 Magnet system soiled.		Clean magnet system (see Section 6.2.3, Chapter 6).
	4 Loose screws on the measuring cell.		Check correct seating of the screws.

2.10 Corner load cannot be set

Error symptom	Possible cause	Diagnostic	Remedy
Corner load cannot be set	**1** Excessive hysteresis.	Check hysteresis: • Touch empty weighing pan and raise slightly Display does not return to original value. • Place weight on pan and touch weighing pan without moving weight.	see Section 2.9

2.11 Linearity cannot be adjusted

Error symptom	Possible cause	Diagnostic	Remedy
Linearity cannot be adjusted	**1** Incorrect switch-on zero point.		• Switch off balance. • Disconnect power cable and connect again.
	2 Excessive hysteresis.		see Section 2.9
	3 Corner load too high.		Check, adjust (see Section 7.2, Chapter 6).
	4 Cell PCB faulty.		Replace Cell PCB (see Section 6.5, Chapter 6).
	5 Adjustment parameters outside permitted range.	-	Reload cell data (see Chapter 7).
	6 Incorrect coarse adjustment.	Perform CAL (Service menu or LARS).	Mandatory sequence of adjustments: • CAL • LIN • Std CAL • CAL

6 Repair

List of Contents

1 General Instructions for Repair

WARNING

Electrical shock hazard

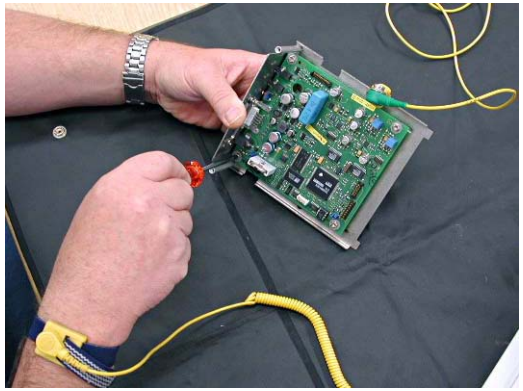
Unplug power supply cable before starting work on Balance or Terminal.

1.1 Balance types

Some repair tasks are similar or the same for the different balance types, other tasks are different for each type.

Carefully read section titles and make sure the description is for the balance at hand.

1.2 ESD



WARNING

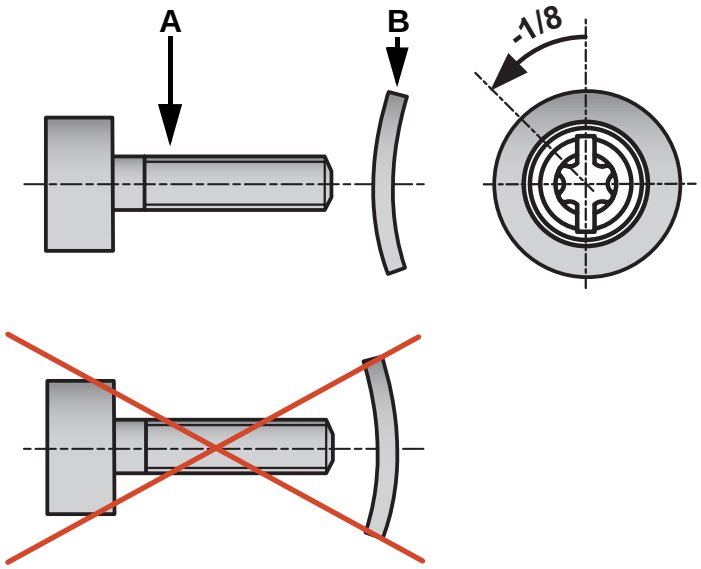
Electrostatic sensitive devices.

Always use antistatic kit when working on electronic components.

- When removing and installing the Weighing 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.
- EEPROMs 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.

Components which are sensitive to electrostatic discharge are marked with an ESD protection symbol.

1.3 Correctly tighten screw with spring washer

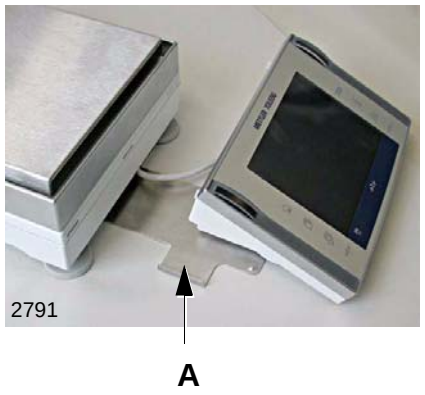


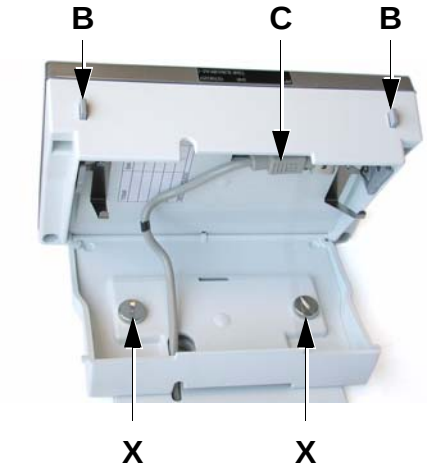
- Correctly assemble spring washer **B** and screw **A** (sketch).
- Use correct screwdriver to screw in screw until definite resistance is felt.
- Unscrew screw by 1/8 of a turn.
- If a torque screwdriver is available, set it to 60 Ncm.

2 Disassembly

2.1 Separate Terminal from Platform

2.1.1 PPT Terminal S and M platform





Note

Do not scratch the display. Do not place the Terminal on the edges of the Terminal holder. Protect the display with a soft cloth.

1 Lift the Terminal off and pull out the Terminal Holder **A**.

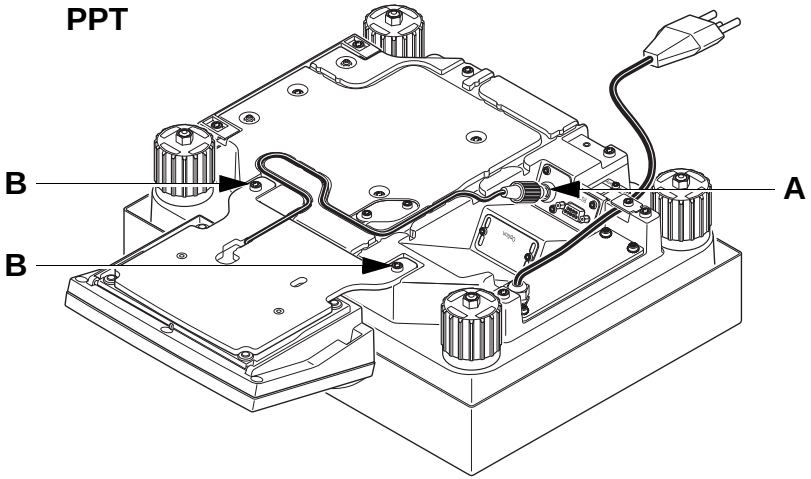
With newer balances, the Terminal is screwed onto the Terminal Holder by means of 2 knurled screws **X**. Pull Terminal c/w Terminal Holder out to gain access to the buttons **B**.

2 Press the 2 buttons **B** and open the Terminal. Unscrew Terminal from the Terminal Holder.

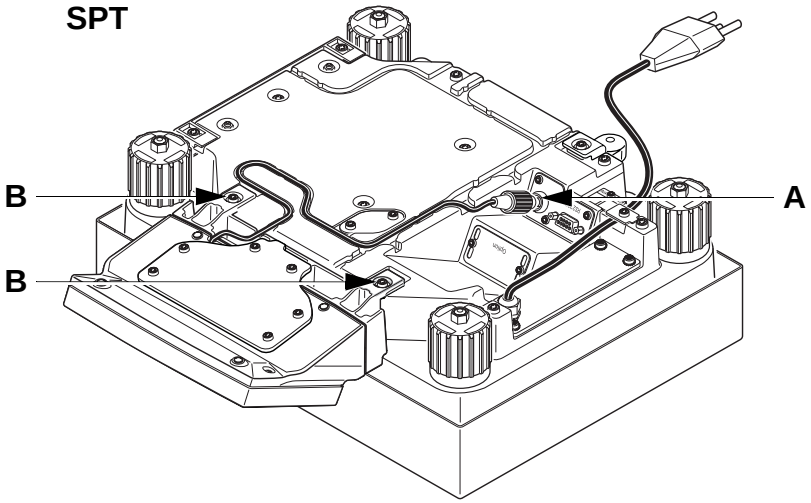
3 Unplug Terminal cable **C**.

2.1.2 PPT/SPT Terminal L platform

PPT



SPT



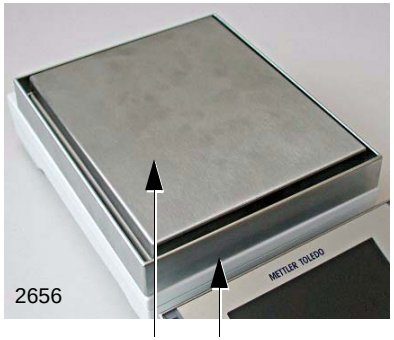
1 Disconnect Terminal Cable **A**.

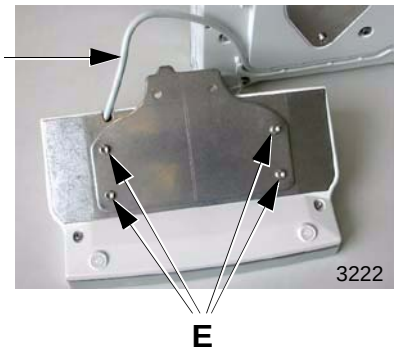
Note

Protect the display with a soft cloth in order not to scratch it.

2 Unscrew the Terminal (2 screws **B**) from the Housing Bottom.

2.1.3 SPT Terminal S and M platform





1 Remove draft shield element **A**, weighing pan **B** and platform support **C**.

2 Turn balance on its side.

3 Firmly hold the terminal and unscrew and remove screws **D**. Free terminal cable from groove.

4 Protect the display with a soft cloth and place the terminal in front of the platform, the display facing down.

5 Unscrew and remove screws **E**.
- Lift off the connecting plate and cover plate.

6 Unplug terminal cable **F**.

2.2 Remove draft shield/draft shield element and weighing pan

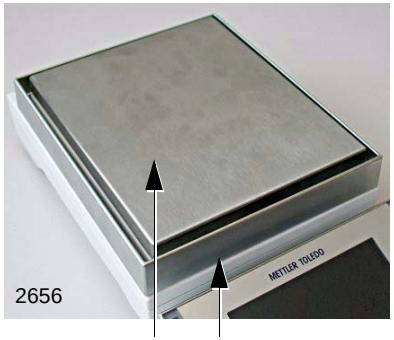
2.2.1 Balance with draft shield «Magic Cube»

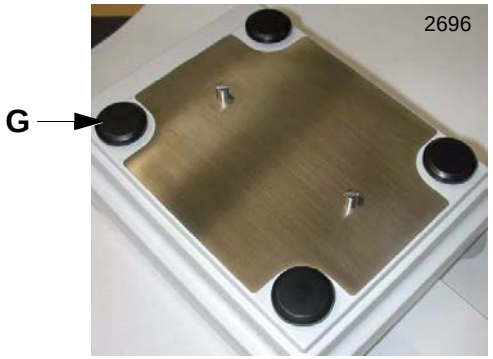
1. Open door top of draft shield.
2. Remove U-glass **A** and put aside.
3. Remove weighing pan **B** and pan support **C**.
4. Close door top and remove complete draft shield.

2.2.2 Balances with draft shield with sliding doors

1. Open sliding doors of draft shield.
2. For rectangular weighing pans:
   - Remove weighing pan, element and pan support or element.
3. For round weighing pans:
   - Remove weighing pan and pan support.
4. Close sliding doors and remove complete draft shield.

2.2.3 Balance with/without draft shield element





1 Remove draft shield element **A** and weighing pan **B**.

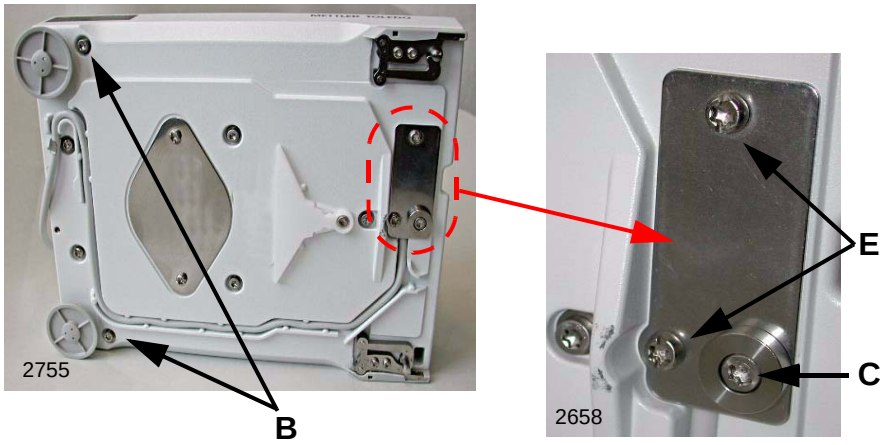
2 Remove pan support **C** and the four pan mounts **G**.

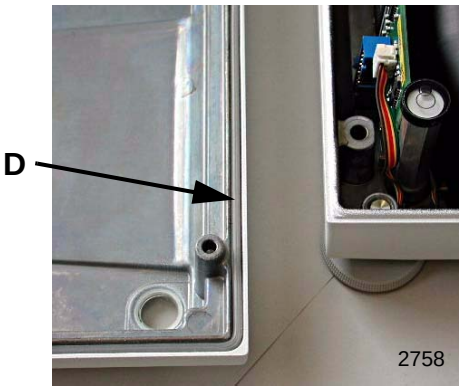
Note

The pan support can become jammed on the cone (Xxx4, Xxx3). The pan support can be removed by lightly moving it backward and forward.

2.3 Open Platform

2.3.1 Outer cover S and M platforms





Separate Terminal from Platform see Section 2.1

Remove draft shield/draft shield element and weighing pan see Section 2.2.

1 Tip the Platform onto its side.

2 Unscrew and remove screws **B** and **C** (Torx M4 x 40).
- Screws **B** with washers.
- Screws **C** without washers.

3 Stand Platform on its feet and remove cover.

Note

The inserted seal **D** can tear when removing the cover. Also replace the distorted housing seal.

Spare part see Section 4, Chapter 3.

Do not unscrew screws **E**.

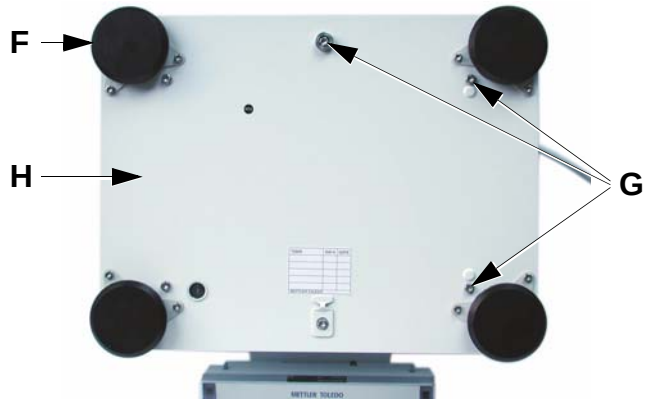
2.3.2 Protective cover S platforms

Balance types «S» with cone support.

1 Slacken screws **A** (Torx M3 x 6) on the protective cover.

2 Push protective cover lightly in direction of arrow and lift off.

2.3.3 Outer Cover L platform



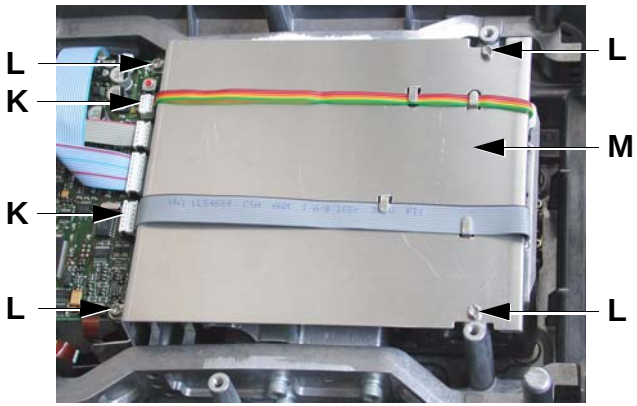
1 Lift off weighing pan.

2 Pull off the 4 Pan Supports **F**.

3 Unscrew (6 screws **G** Torx M5 x 10) and remove cover **H**.

Install in reverse order.

2.3.4 Inner Cover L platform



1 Remove Outer Cover, see Section 2.3.3.

2 Disconnect cables **K**.

3 Unscrew (4 screws **L** Torx M4 x 8) and remove Inner Cover **M**.

Install in reverse order.

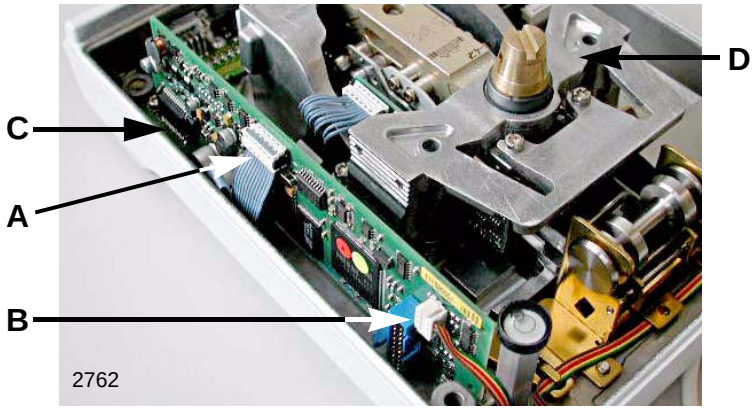
2.4 Remove Electronic Components

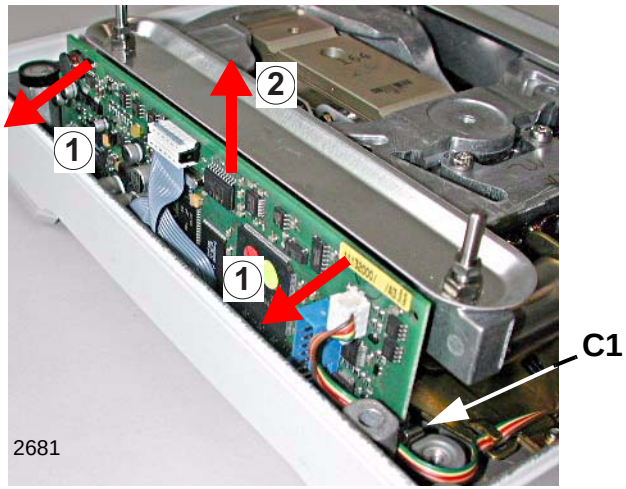
WARNING

Electrostatic sensitive devices.

Always use antistatic kit when working on electronic components (see Section 1.2).

2.4.1 Platform PCB S and M type





Open Platform see Section 2.3

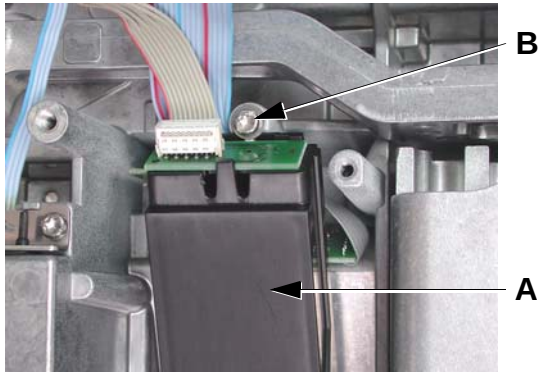
1 Unplug plugs **A** and **B** from the Platform PCB.

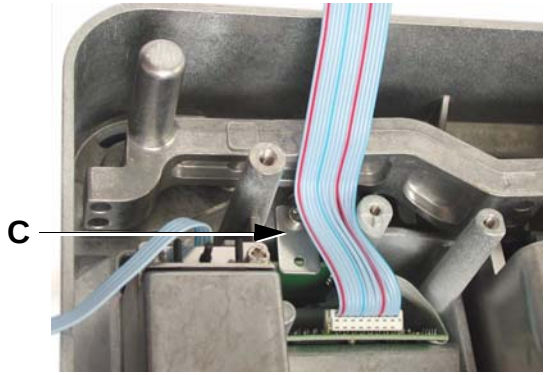
2 Carefully pull the Platform PCB up and out of the plug connection **C** to the backplane PCB. Press clip **C1** outward.

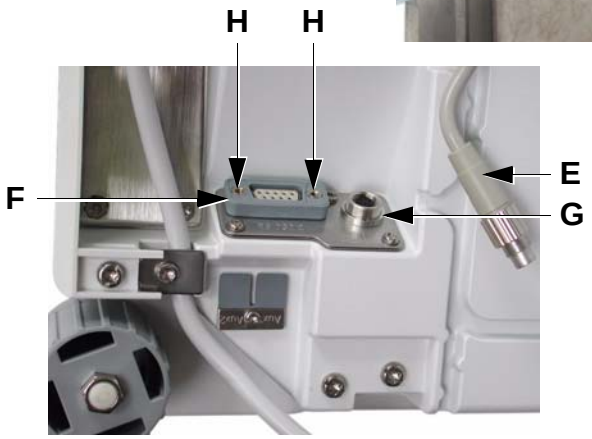
Note

On Platforms with 4-point support, tip the Platform PCB lightly outward (arrow1) and pull up (arrow2) and out of the plug connector **C**.

2.4.2 Platform PCB, Interface Holder and Connection PCB, L type







1 Remove Inner Cover L platform see Section 2.3.4.

2 Remove Platform PCB:
- Disconnect cables,
- remove remaining screw (Torx M4 x 8).

3 Unscrew and remove Interface Holder **A** (1 screw **B** M4 x 6 with washer).

4 Remove plate **C** (1 screw M4 x 6).

5 Disconnect Terminal Cable **E**.

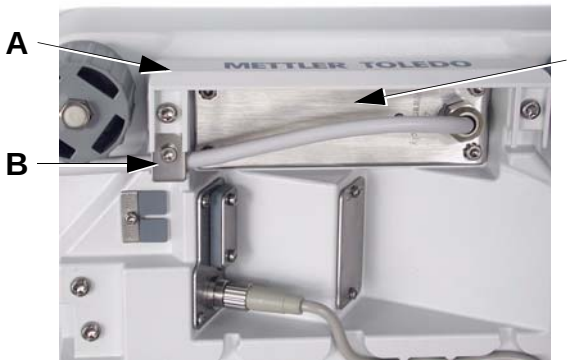
6 Remove RS232 gasket **F**.

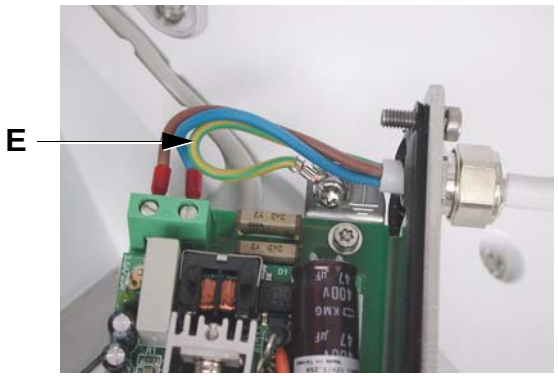
7 Unscrew CAN socket nut **G** (use CAN key).

8 Unscrew RS232 (2 bolts **H**) and remove/replace Connection PCB L.

Install in reverse order.
Make sure the Seal Aux Connector is in place. Replace it if necessary. See explosion drawing in Chapter 3.

2.4.3 Power Supply, Power Cable, Cable 4-pin, L type





Power Supply

1 Remove Buffer Protection Strip **A** (2 Torx M5 x 10).

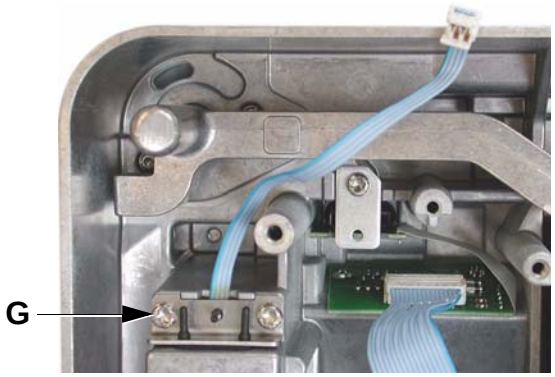
2 Remove cable holder **B** (Torx M4 x 16).

3 Unscrew Power Supply **C** (4 Torx M4 x 12 with toothed lock washer) and lift it out.

4 Disconnect Cable 4-pin **D** and remove/replace Power Supply.

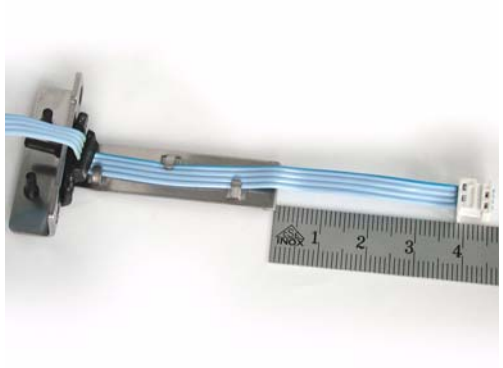
Power Cable

5 When replacing only the Power Cable, make sure, for safety reasons, to build a loop **E** with the ground wire.



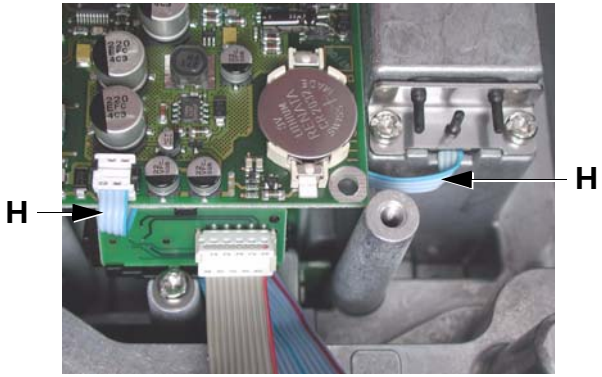
Cable 4-pin

6 Unscrew Cable Clip **G** (2 Torx M4 x 6).



7 Set new cable on clip as shown on the left.

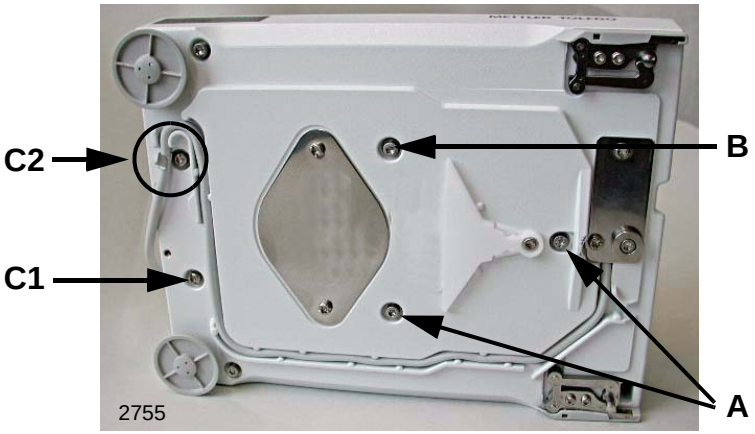
- Note connector orientation, protruding length 38 mm.
- Check Cable Seal, replace if necessary.

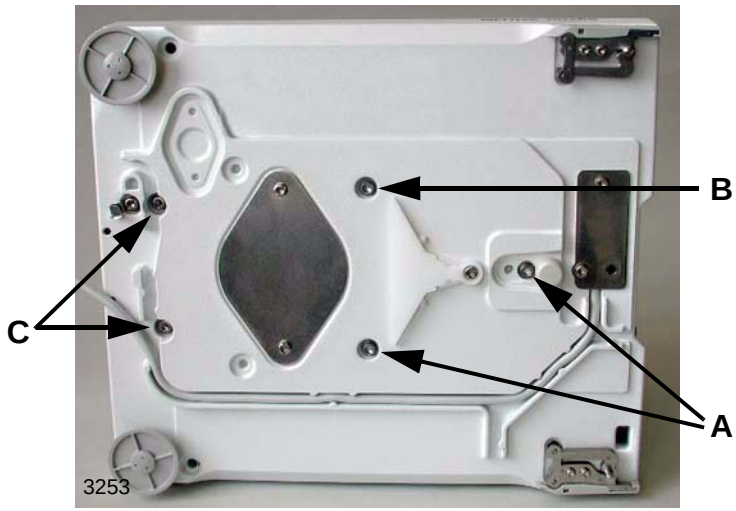


8 When reinstalling, assure proper cable routing **H**.

2.5 Remove Weighing Cell

2.5.1 S and M <= 12kg type balances





1 Remove Platform PCB, see Section 2.4.1.

2 Tip the platform onto its side.

3 Hold the weighing cell on the supporting section.

NOTE: At first, only slacken screw **B**. Unscrew and remove screws **A** and **C** or **C1, C2**. When unscrewing screw **B**, take care that the bottom housing does not tip.

Balance Type «S»

4 Unscrew and remove five screws on the underside.
- Screws **A** and **B** (Torx M4 x 12)
- Screws **C1** and **C2** (Torx M4 x 6)
  Screw **C2** with Cable holder.

Balance Type «M» <= 12 kg

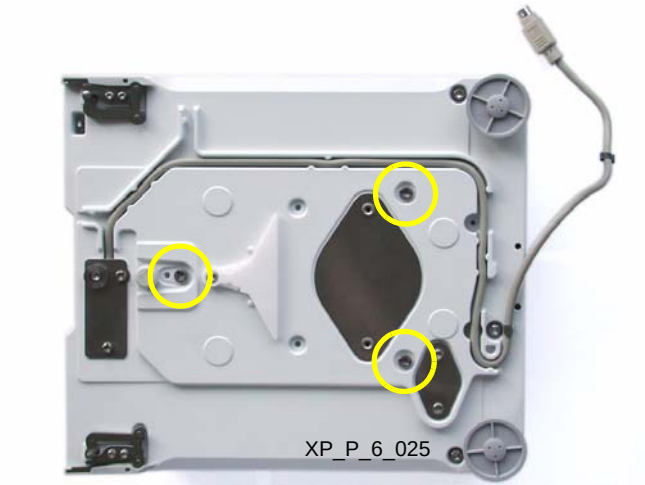
4 Unscrew and remove five screws on the underside.
- Screws **A** and **B** (Torx M4 x 12)
- Screws **C** (Torx M4 x 6)

5 Stand the bottom housing on its feet. Lift the «MonoBloc» Weighing cell out of the bottom housing.

Note

The «MonoBloc» Weighing cell cannot be laid flat on a level surface because the hook for below-the-balance weighing projects underneath.

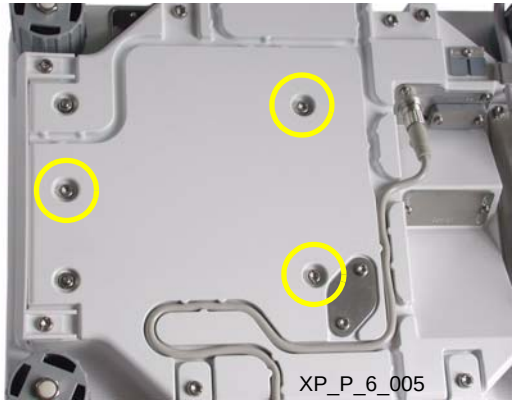
2.5.2 M >= 16kg type balances

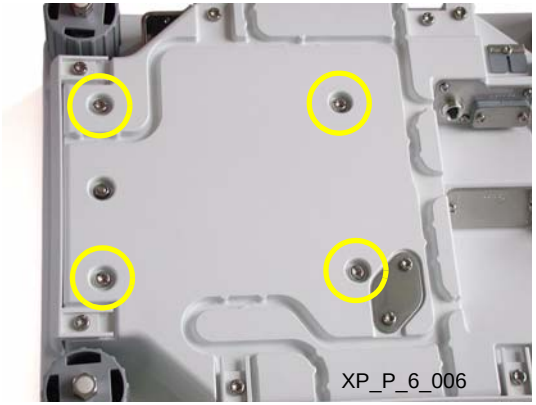


1 Remove the Platform PCB, see Section 2.4.1.

2 Turn the platform over, unscrew the 3 screws Torx M5 x 16 and lift housing off cell.

2.5.3 L type balances





1 Remove Inner Cover, see Section 2.3.4.

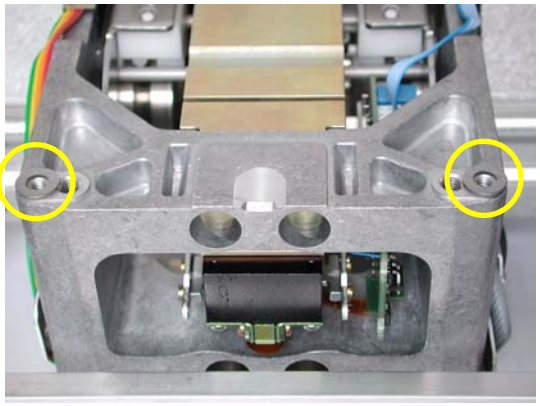
2 Turn the platform over.

8 kg, 16 kg and 32 kg cell 11133017

3 Unscrew 3 screws Torx M5 x 12 and lift housing off cell.

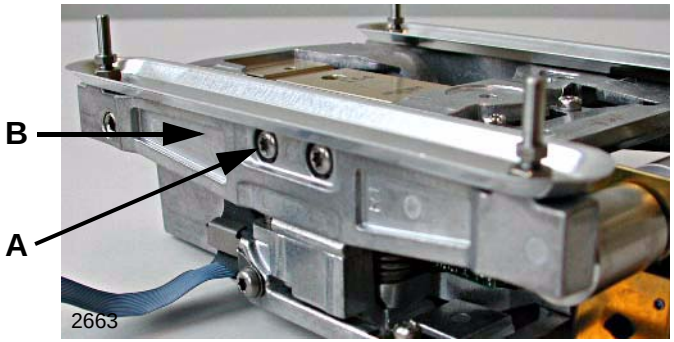
64 kg cell 11133018

3 Unscrew 4 screws Torx M5 x 12 and lift housing off cell. Note the 2 spacers (washers) required for proper cell installation!



2.6 Separate Weighing Cell from calibration drive

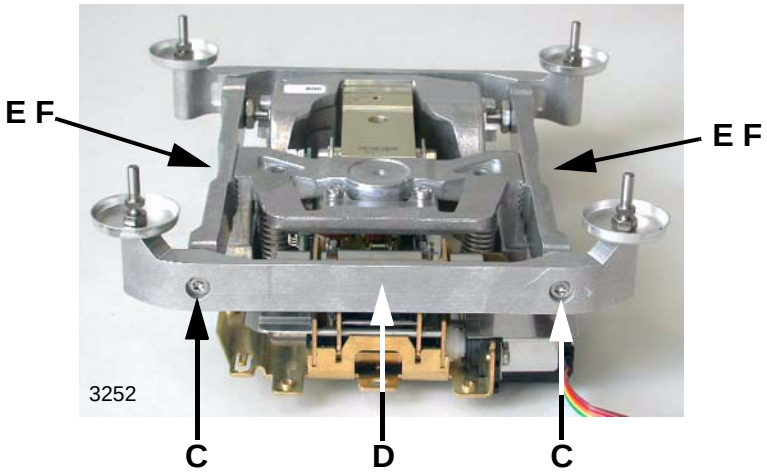
2.6.1 S and M <= 12kg type balances



Remove Weighing Cell see Section 2.5.

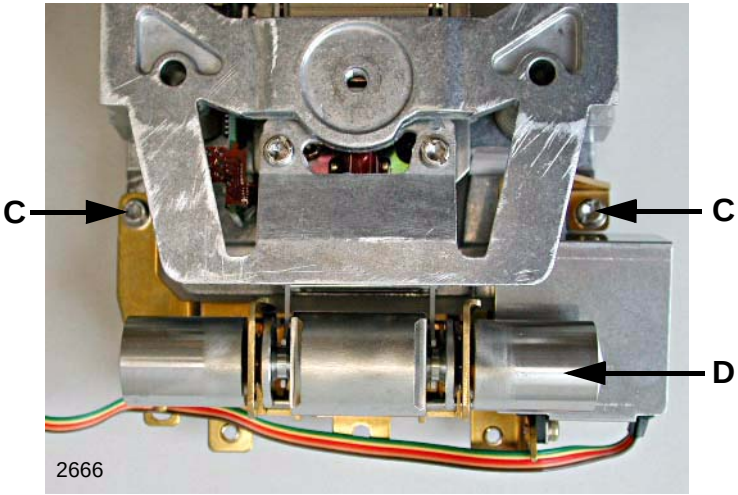
Balance types «S» with 4-point support

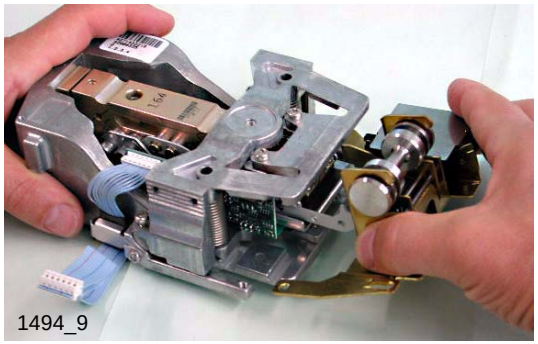
1 Unscrew and remove screws **A** (Torx M4 x 12).
2 Remove 4-point support **B**.



Balance types «M» with 4-point support

3 Unscrew and remove screws **C** (Torx M4 x 12).
4 Remove both connectors **D**.
5 Unscrew and remove screws **E** (Torx M4 x 8).
6 Remove both sides of 4-point support **F**.





Note

Never touch the weight **D** with bare hands.

If the calibration weight has been touched, clean it with alcohol.

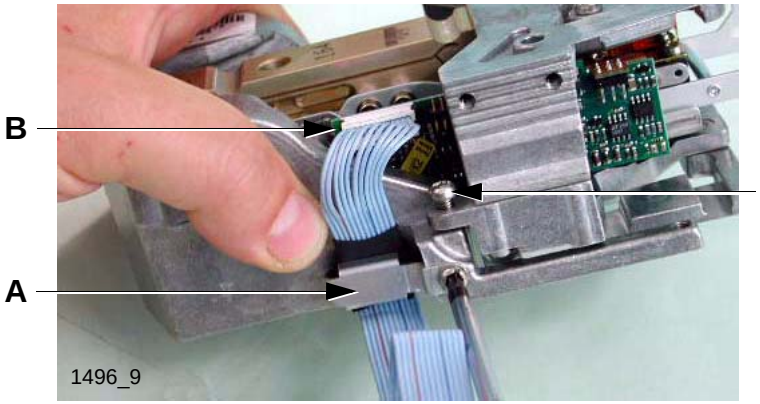
1 Unscrew and remove screws **C** (Torx M4 x 8).

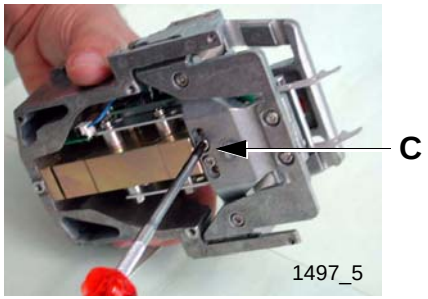
2 Hold the «MonoBloc» Weighing cell on the supporting section.

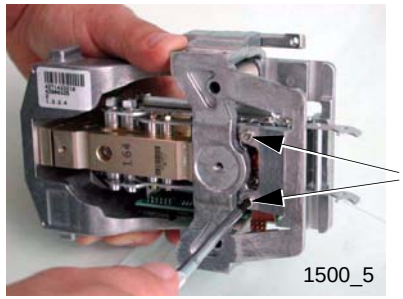
3 Lift the calibration drive and separate from the «MonoBloc» Weighing cell.

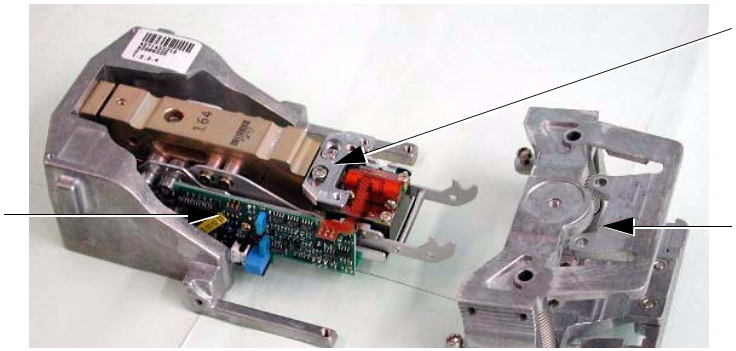
2.7 Remove overload protection

2.7.1 S and M <= 12kg type balances









Separate Weighing Cell from calibration drive see Section 2.6.

1 Release holder **A** for ribbon cable and unplug ribbon cable from cell PCB **B**.

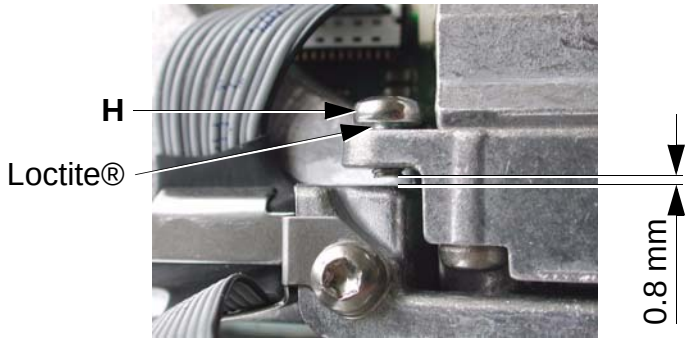
2 Unscrew and remove screws **C** (underneath, Torx M4 x 10) and screws **D** (on top, Torx M4 x 10).

3 Carefully pull off the overload protection **E** to the side. Do not damage the cell PCB **F**.

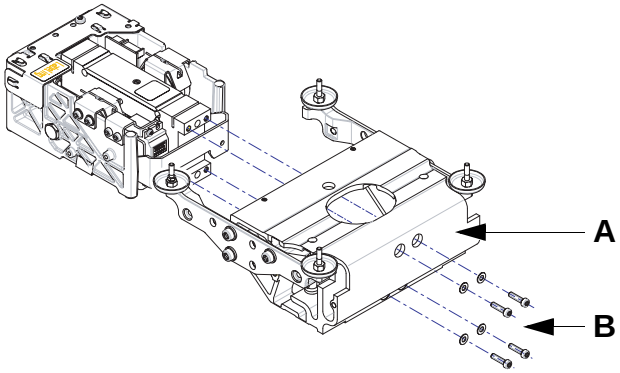
4 Unscrew and remove holder **G**.

NOTE

Normally, screw **H** does not need to be touched. The following is for informational purposes only:



2.7.2 M >= 16kg and L type balances

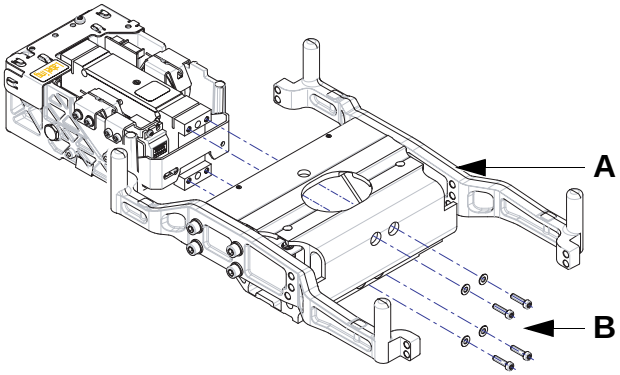


Note torque - use appropriate tools!

Unscrew 4 screws **B** and remove Overload Protection **A**.

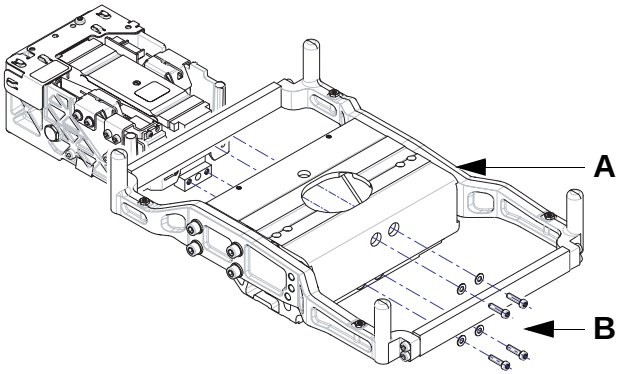
M-platform - 16, 20 kg

- Screws B: M4 x 20
- Torque: 4 Nm



L-platform - 8, 16, 32 kg

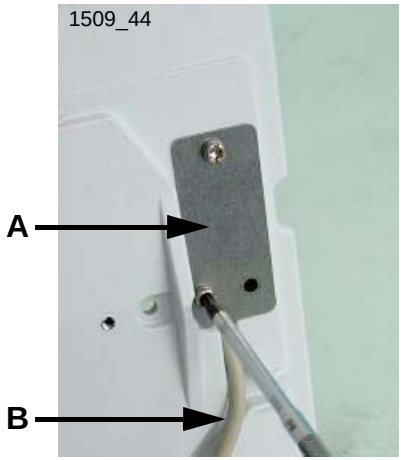
- Screws B: M4 x 20
- Torque: 4 Nm

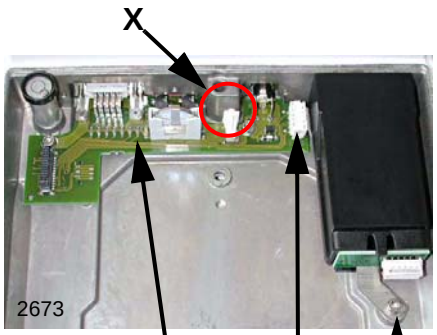


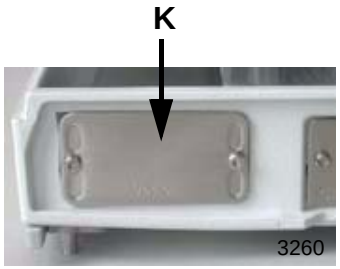
L-platform - 64 kg

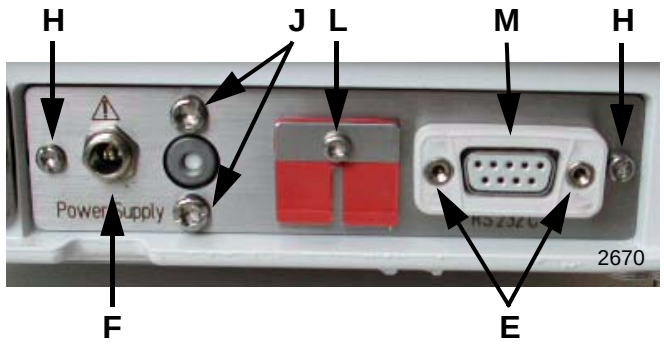
- Screws B: M5 x 20
- Torque: 9 Nm

2.8 Remove Backplane PCB and rear panel









Applies to S and M ≤12kg platforms only

Remove Weighing Cell see Section 2.5.

Remove backplane PCB

1. Unscrew and remove the cover **A** on the underside of the Platform and unplug the Terminal cable **B**.
2. Unscrew and remove screw **C** (Torx M4 x 6) to release the interface holder.
   If an option is installed, remove this first. Otherwise, remove cover plate **K**.
3. Unplug the interface cable **D** from the backplane PCB.
4. Unscrew and remove nuts **E** from the RS232 socket.
5. Unscrew and remove nut **F** from the power supply socket.
6. Unscrew (Torx M4 x 6) and remove the Backplane PCB **G**.

Note

The certification pin **X** can easily fall out of the guide. Remove rear panel.

1. Unscrew and remove cover of RS232 socket.
2. Pull seal **M** off the RS232 socket.
3. Unscrew and remove nuts **E** from the RS232 socket.
4. Unscrew nut **F** from the power supply socket.
5. Unscrew and remove screws **H** (Torx M3 x 6), **J** (Torx M4 x 6)and **L** (Torx M3 x 6) and remove the rear panel.

2.9 Replace Battery

ATTENTION

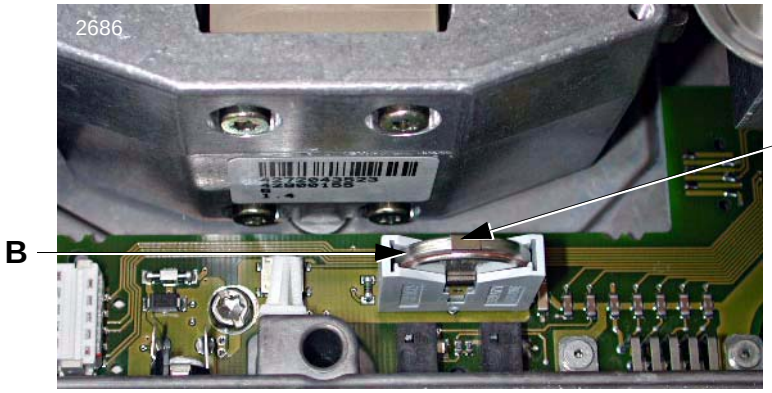
Electrical shock hazard

Unplug power supply cable before starting work on Balance or Terminal.

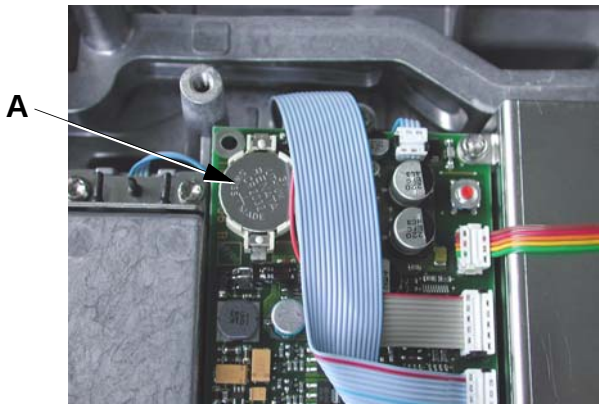
WARNING

Electrostatic sensitive devices.

Use antistatic kit, see Section 1.2.



S and M type



L type

Note

- Replace battery every 5 years.
- After replacing it, set new battery expiry date in LARS (+ 5 years).
- Do not dispose of batteries with trash.
  Batteries must be disposed of according to national regulations.

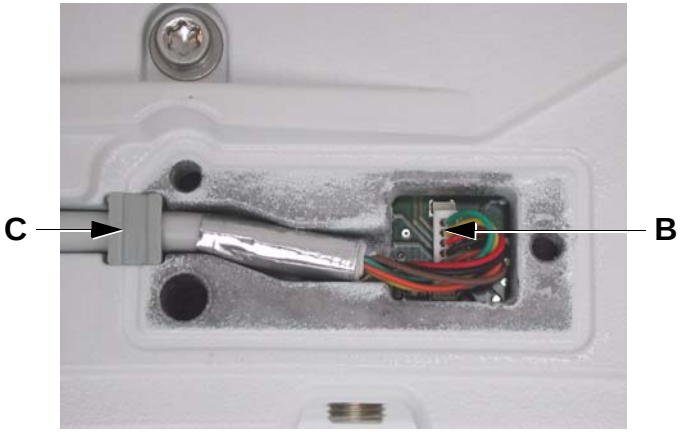
1 Open Platform see Section 2.3.

2 **S and M type:** Press contact spring **A** slightly to the side and remove/replace the battery **B**.

L type: Pull battery off battery holder, replace.

2.10 Replace Terminal Cable

Description applies to S and M type platform. The connection for L type platform is accomplished by means of a plug connection.



Separate Terminal from Platform see Section 2.1.

Remove draft shield/draft shield element and weighing pan see Section 2.2.

1 Tip the platform onto its side.

2 Unscrew plate **A**.

3 Unplug and replace terminal cable **B**.
- Carefully position seal **C**.

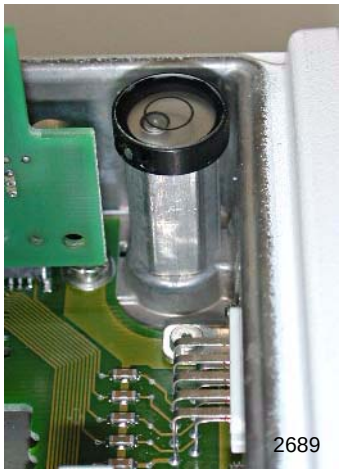
4 Put plate **A** into position and screw in.

Note

The seal on plate **A** must not be torn. Spare part, see Section 2, Chapter 3.

5 Insert terminal cable into groove D.

2.11 Replace Level Indicator



S and M platform

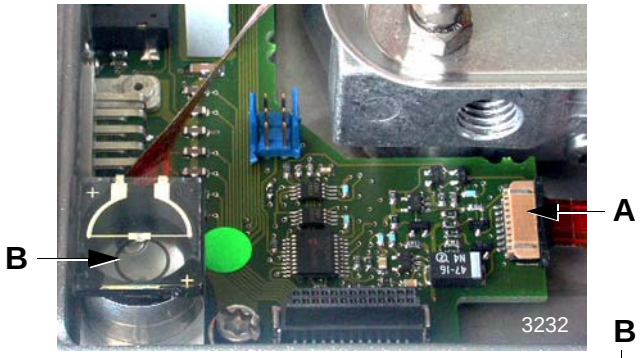
L platform

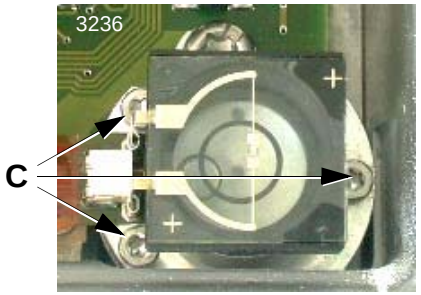
Open Platform see Section 2.3.

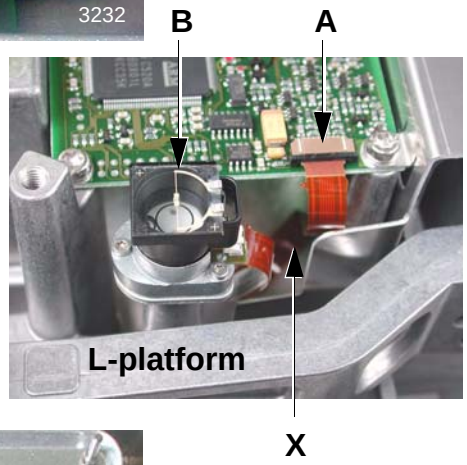
1. Remove level indicator (**avoid knocks**, they can destroy the «MonoBloc» Weighing cell).
2. Completely clean the level indicator seating of all traces of grease and adhesive.
3. Place the test level on the «MonoBloc» and level the Platform. Remove the test level.
4. Install the new level indicator:
   - Apply a thin layer of adhesive.
   - Place the level indicator in position and align it so that the air bubble is in the center.

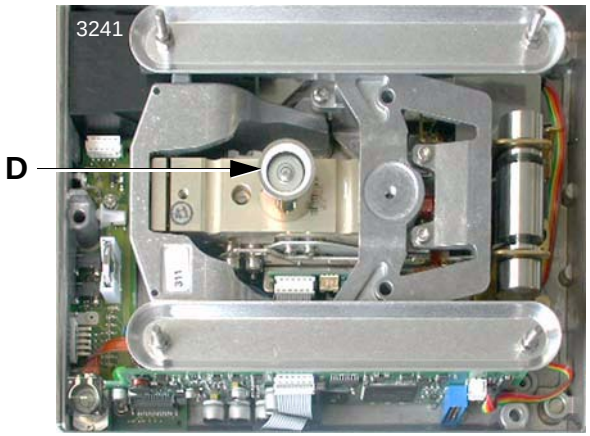
Close Platform see Section 3.6.

2.12 Replace Level Control









S and M-platforms: Open Platform see Section 2.3
L-platforms: Remove Outer Cover, see Section 2.3.3

Removal

1 S and M-platforms only: Remove platform PCB, see Section 2.4.1.

2 Release fastener on plug connector **A**. Unplug ribbon cable.

3 Unscrew Level Control **B** (three screws **C**).

Installation

1 Install new Level Control **B**.
- Fix with three screws **C**, 2 revolutions each.

2 Plug in ribbon cable and fasten **A**.
L-platforms: Observe cable routing **X**!

3 S and M-platforms only: Install platform PCB, see Section 3.4.4.

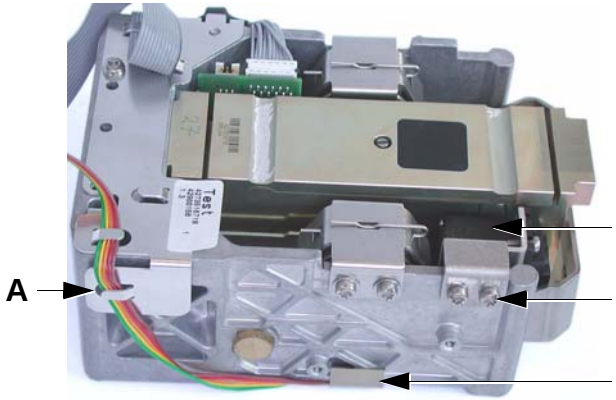
4 Adjust Level Control.
- Place service level **D** on the MonoBloc.
- Level the platform by referring to the service level.
- Secure support feet.
- Adjust Level Control by carefully turning screws **C**. The air bubble must be in the center.
- Check: The air bubbles on the service level and the Level Control must be in the center.

5 Remove service level.

6 Adjust Level Control sensor using LARS.

S and M-platforms: Close Platform see Section 3.6
L-platforms: Install Outer Cover.

2.13 Replace Calibration Drive M >= 16kg and L type balances



64 kg cell:

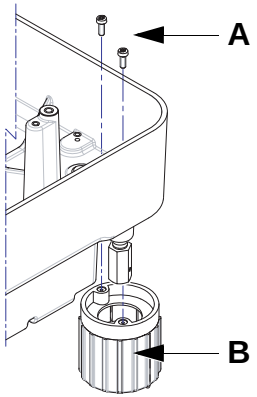
1 Remove Overload Protection, see Section 2.7.2.

2 Free Calibration Drive Cable from cable holder **A** and clamp **B**.

NOTE: With the 64 kg cell, a washer **E** is placed at each screw **C** between the motor bracket and the cell support (see picture).

3 Unscrew 2 screws **C** (Torx M4 x 6) and remove/replace Calibration Drive **D**.

2.14 Replace Foot L-platform

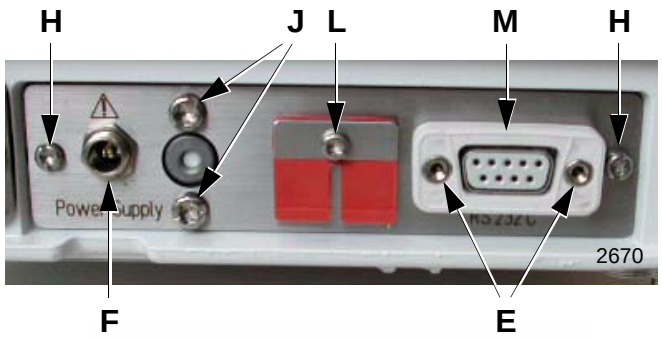


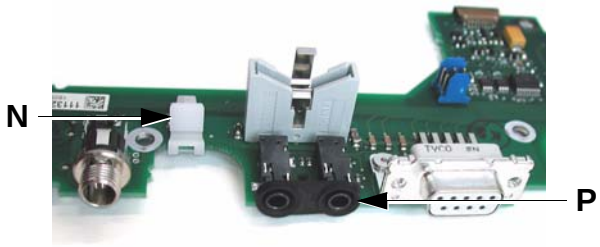
1 Remove Cell (see Section 2.5.3).

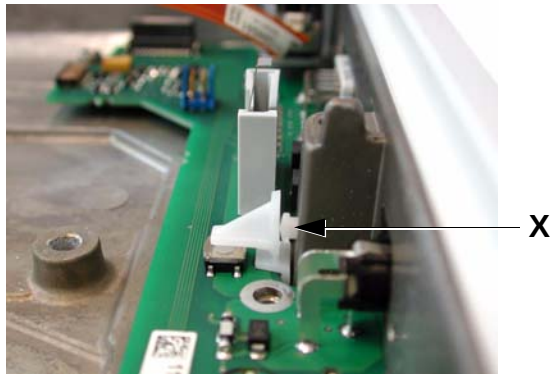
2 Unscrew (2 screws **A** Torx M3 x 8) and remove/replace Foot **B**.

3 Assembly

3.1 Install Rear Panel and Backplane PCB







Applies to S and M ≤12kg platforms only

Rear Panel

1 Insert rear panel and fasten with screws **H** (Torx M3 x 6), **J** (Torx M4 x 6) and **L** (Torx M3 x 6).

2 Screw nut **F** onto the power supply socket, tighten moderately as the socket gets damaged easily!

3 Screw nut **E** with washer onto the RS232 socket.

4 Place seal **M** over the RS232 socket.

5 Screw cover onto the RS232 socket.

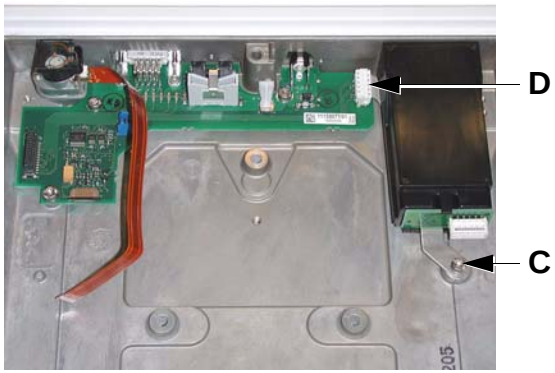
Backplane PCB

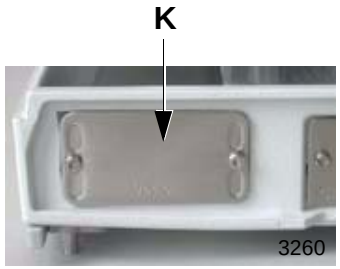
6 Place actuator **N** and gasket **P** on Backplane PCB.

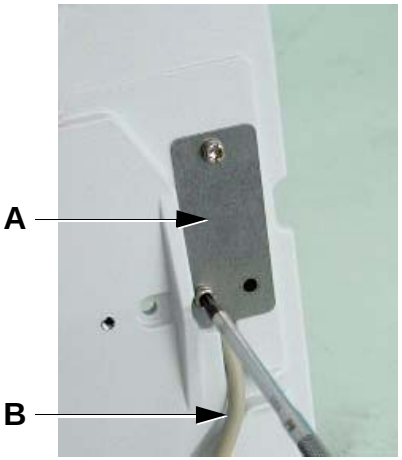
7 Insert certification pin **X** and put backplane PCB in place.

8 Screw nut **F** onto the power supply socket.

9 Screw nuts **E** with washer onto the RS232 socket.







10 Fasten Backplane PCB with 3 screws Torx M4 x 6.

11 Connect options cable **D** to backplane PCB.

12 Fasten interface holder with screw **C** (Torx M4 x 6).
If available, insert option or close the interface holder with Cover **K** (screws UNC4-40x4).

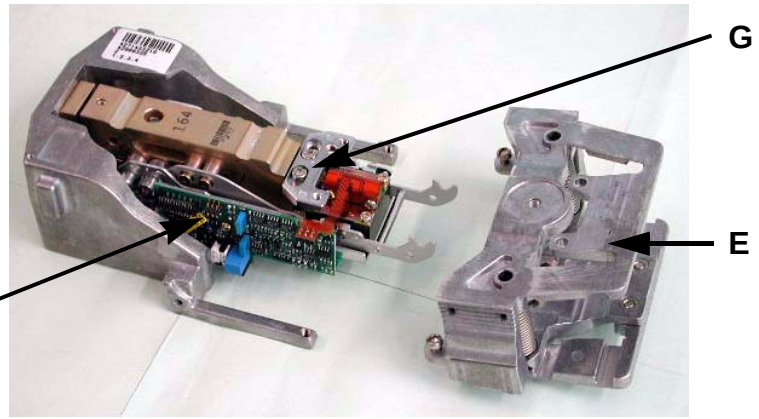
13 Connect Terminal Cable **B** and screw cover **A** tightly onto the underside of the Platform.

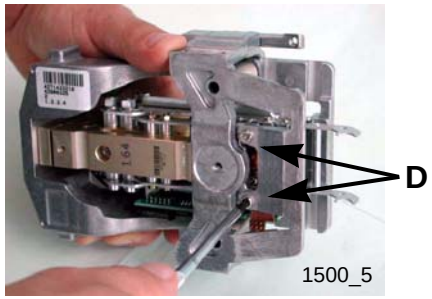
14 If a new battery has been installed, set new battery expiry date in LARS (+ 5 years). See also Section 2.9.

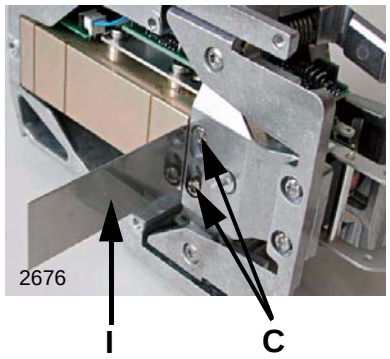
15 Connect Level Control (if available).

3.2 Install the overload protection

3.2.1 S and M <= 12kg type balances







1 Screw holder **G** tight. Align with 0.5 mm spacer strip **I**.

2 Carefully push overload protection **E** into position and align. Do not damage cell PCB **F**.

3 Insert screws **C** (Torx M4 x 10). Do not tighten.

Align

To align the overload protection **E** parallel to the «MonoBloc», before tightening the screws **C** (Torx M4 x 10) insert the 0.5 mm spacer strip **G** as shown at left.
Align the overload protection symmetrically by eye.

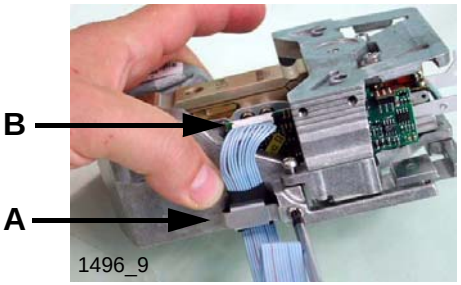
4 Fasten screws **C** tight.

5 Screw in screws **D** (Torx M4 x 10).

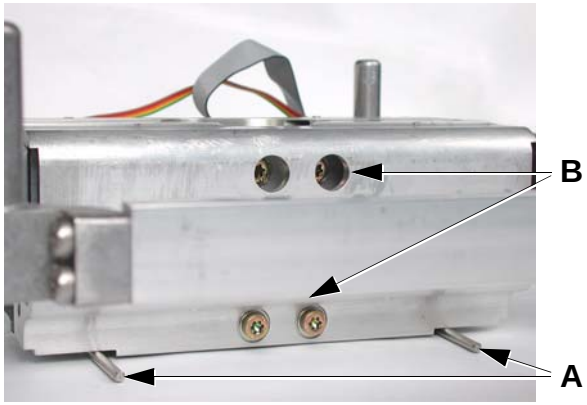
6 Remove spacer strip **I**.

7 Plug ribbon cable onto the cell PCB **B**.

8 Fasten ribbon cable with holder **A**.



3.2.2 M >= 16kg and L type balances



Note torque - use appropriate tools!

1. Place the Overload Protection on the Weighing Cell.
2. Place two 3.47 dia pins p/n 217270 **A** (Mounting Gauge set 217411) under the Overload Protection (recess on each side), as shown in the picture.
3. Fix Overload Protection to the Weighing Cell with 4 screws **B**.

M-platform 16, 20 kg

4 screws M4 x 20 with washer

Torque: 4 Nm

L-platform 8, 16, 32 kg

4 screws M4 x 20 with washer

Torque: 4 Nm

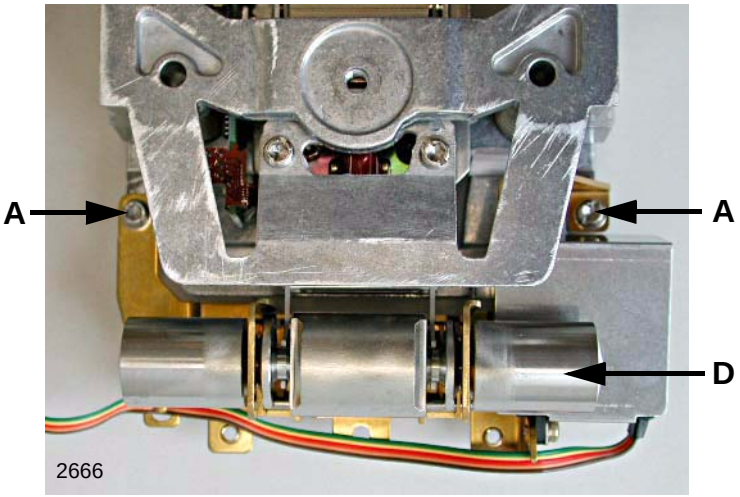
L-platform 64 kg

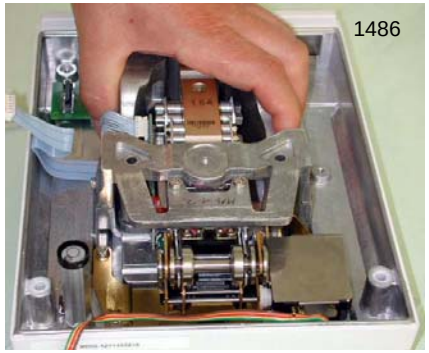
4 screws M5 x 20 with washer

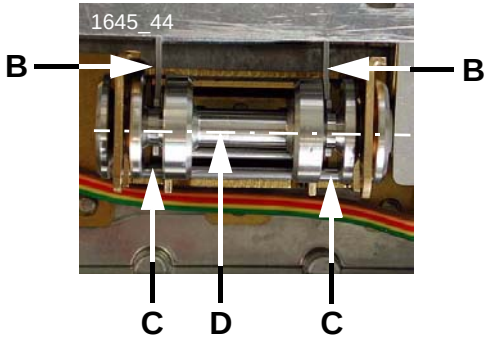
Torque: 9 Nm

3.3 Assemble Weighing Cell and Calibration Drive

Applies to S and M ≤12 kg platforms only!







1 Place Calibration Drive in installation position on the Weighing Cell.

Note

The Calibration Drive rests on the hanger **B** of the MonoBloc Weighing Cell. Do not press.

2 Insert screws **A** (Torx M4 x 8). Do not tighten.

3 Insert the MonoBloc Weighing cell with the calibration drive into the bottom housing. Hold only by the MonoBloc support. Do not fasten screws.

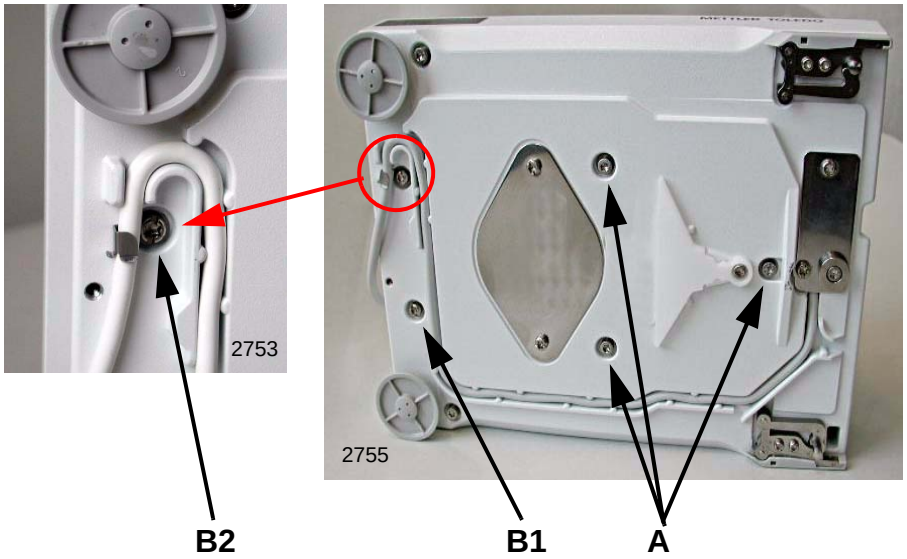
4 Align Calibration Drive with Weighing Cell:
- Longitudinal axis
  Hangers **B** must lie centered in the groove **C** of the calibration weight **D**.
- Transverse axis
  The center line **D** of the calibration weight must lie centered in the openings of hanger **B**.

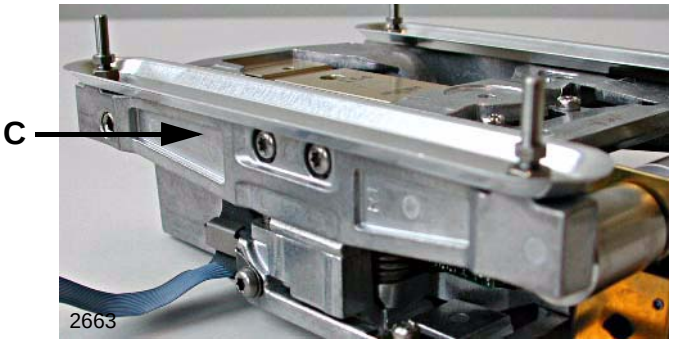
5 Lower the calibration weight.
- To do this, the balance must be electrically complete and connected to the power supply.
- The calibration weight must be lowered into the hangers **B** with no displacement either longitudinally or laterally.

6 Fasten screws **A** tight.

3.4 Install Weighing Cell

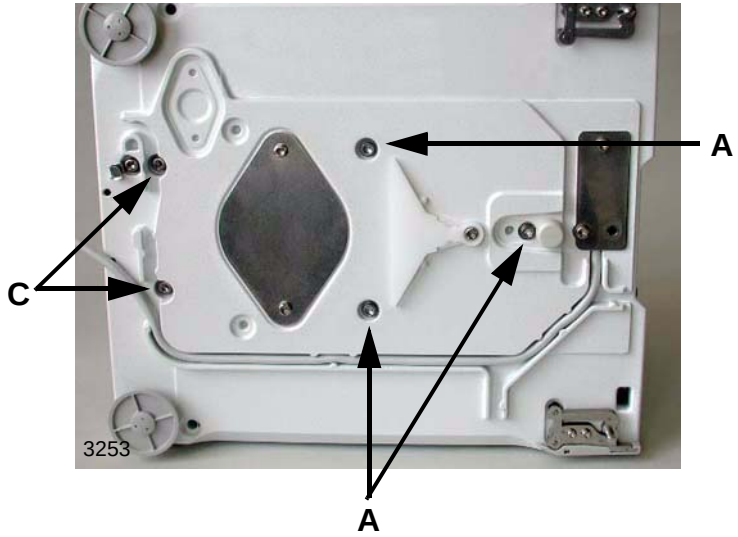
3.4.1 S type balances

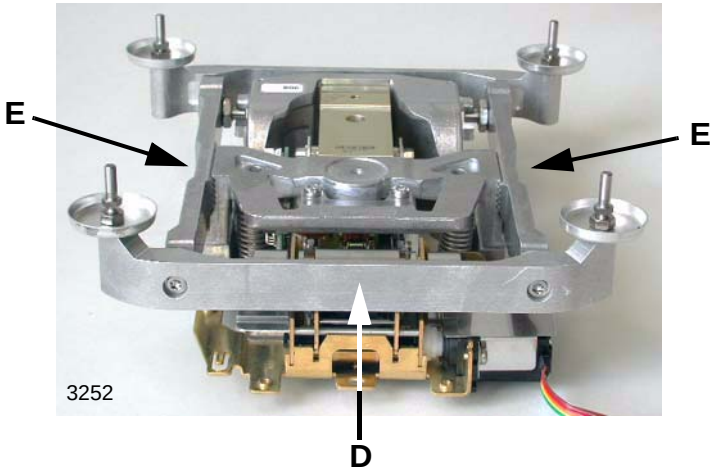




1. Place the cell in the platform and tip to the side.
2. Screw in five screws. **Do not tighten.**
   - Screws **A** with spring washer (Torx M4 x 12)
   - Screws **B1** and **B2** with spring washer (Torx M4 x 6) screw **B2** with cable holder.
3. Align cell parallel to one edge of the bottom housing. Hold the Weighing Cell only by its frame.
4. Tighten screws **A**, **B1, B2** (see Section 1.3).
5. Screw support **C** tight.

3.4.2 M <= 12kg type balances





1 Place the cell in the platform and tip to the side.

2 Screw in five screws. **Do not tighten.**
- Screws **A** with spring washer (Torx M4 x 12)
- Screws **C** with spring washer (Torx M4 x 6).

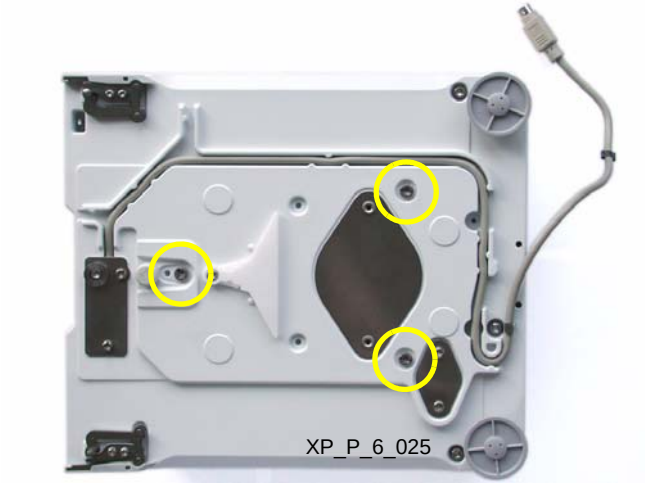
3 Align cell parallel to one edge of the bottom housing. Hold the Weighing Cell only by the MonoBloc support.

4 Tighten screws **A** and **C** (see Section 1.3).

5 Fasten both sides of 4-point support **E** with screws.

6 Fasten connectors **D** with screws.

3.4.3 M >= 16kg type balances



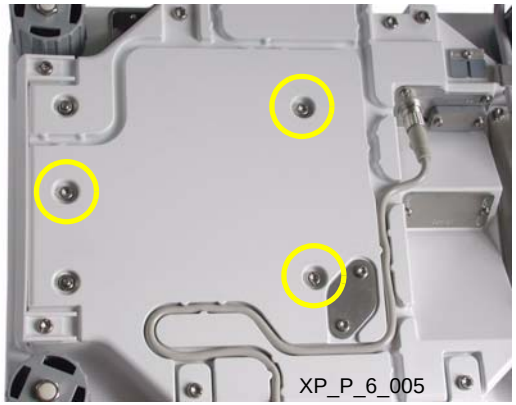
1 Place the platform on the cell and fix with 3 screws (Torx M5 x 16), tighten hand-tight.

2 Install Platform PCB, see Section 3.4.5 and connect cables.

3 Place the Top Housing on the balance and align it with the Bottom Housing.
Now center the load bearing pins **X** within the 4 holes in the housing.

4 Tighten the 3 cell fixing screws (pull the balance partially over the edge of the table).

3.4.4 L type balances



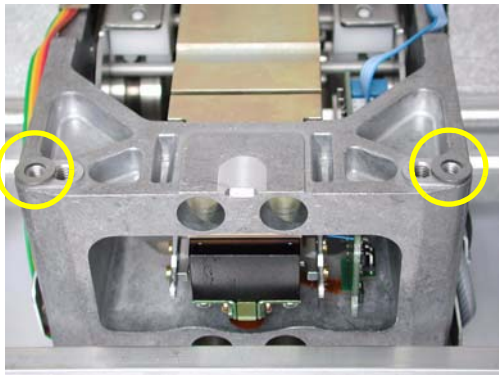
8 kg, 16 kg and 32 kg cell 11133017

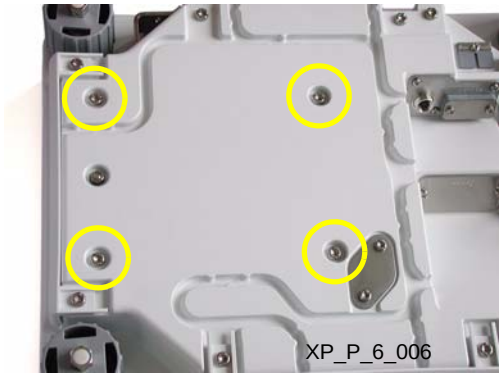
1 Place the Bottom Housing on the cell and fix hand tight with 3 screws Torx M5 x 12.

2 Turn the balance over.
Place the Housing Cover **Y** on the balance and align it with the Bottom Housing. Secure cover with 2 screws.

3 Now center the load bearing pins **X** within the 4 holes in the Guard Rings **Z**.

4 Tighten the 3 cell fixing screws (pull the balance partially over the edge of the table).





64 kg cell 11133018

ATTENTION

Make sure the 2 spacer washers are in place when installing cell 11133018.
Otherwise the cell will get damaged!

1 Place the 2 spacers (washers) as shown in the picture.

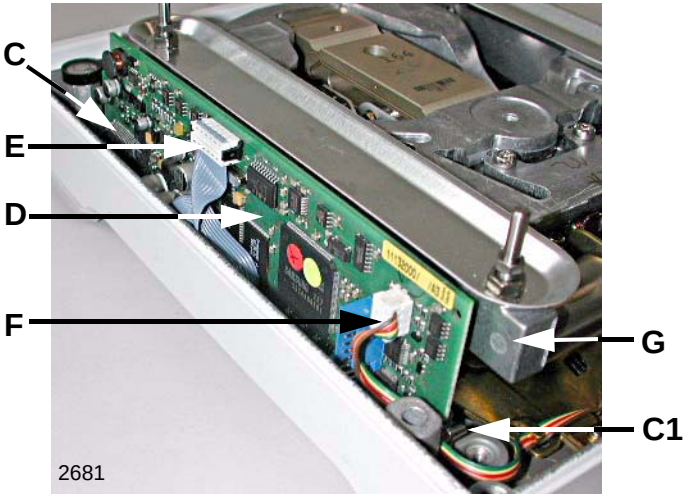
2 Place the Bottom Housing on the cell and fix hand tight with 4 screws Torx M5 x 12.
Make sure the spacer washers are in place!

3 Turn the balance over.
Place the Housing Cover **Y** on the balance and align it with the Bottom Housing. Secure cover with 2 screws.

4 Now center the load bearing pins **X** within the 4 holes in the Guard Rings **Z**.

5 Tighten the 4 cell fixing screws (pull the balance partially over the edge of the table).

3.4.5 Install Platform PCB



1 Insert Platform PCB **D**, plug connector **C** and clip **C1**.

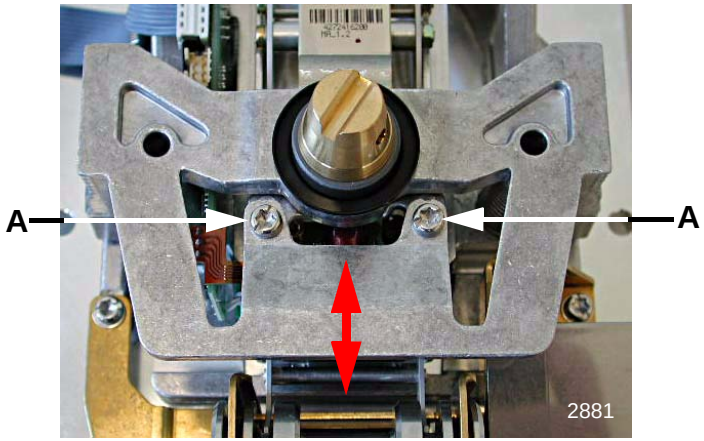
2 Plug plugs **E** and **F** onto the Platform PCB.

Note

New Platform PCB - Load Data see Section 3.3, Chapter 7

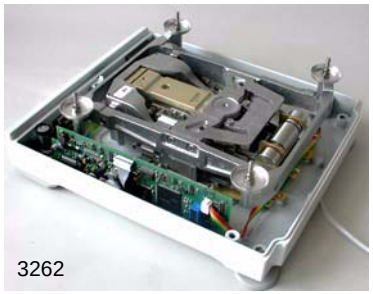
3.4.6 Adjust horizontal position of weighing pan

Balance types «S» and «M» with cone support



1 Slacken screws **A** then screw in again slightly.
2 Place pan support into position.
3 Visually check horizontal position of pan support relative to housing.
4 Lift pan support off and press lightly on overload protection (arrow) to adjust horizontal position.
5 Tighten screws **A**.
6 Visually check horizontal position of pan support.
7 Repeat adjustment if necessary.

Balance types «S» and «M» 4-point support



1 Place pan support on pan mounts.

2 Visually check the horizontal position of the pan holder relative to the housing.

3 Set the horizontal position by adjusting the four locating pins **C**.
After adjusting the locating pins, secure them with the locking nuts **D**.

4 Visually check the horizontal position of the pan support.

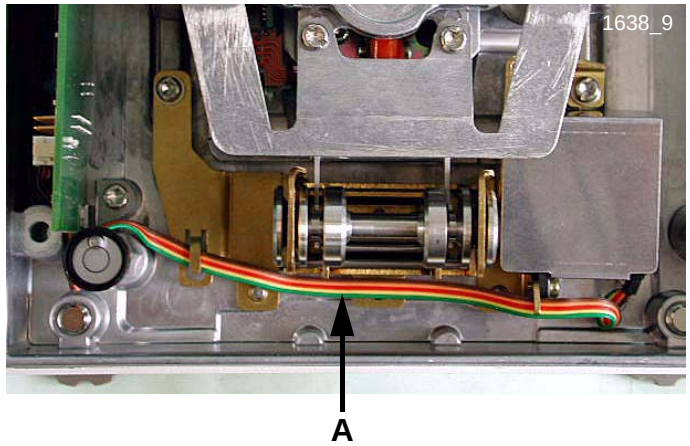
5 Repeat adjustment if necessary.

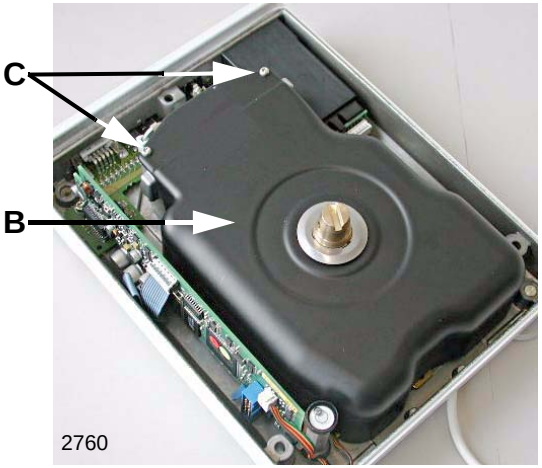
Note

Turn the pan support through 180° in horizontal plane. Check that the pan support rests on the pan mounts without wobbling.

3.5 Place protective cover into position

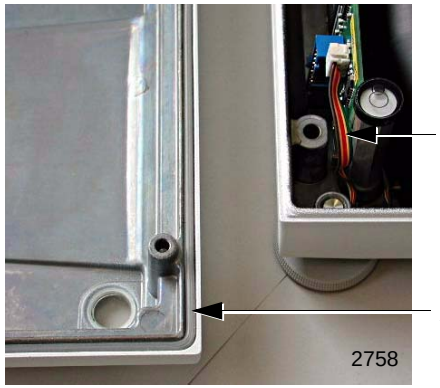
Balance types «S» and «M» with cone support.





1. Install the ribbon cable **A** to the calibration drive as shown in the photo.
2. Place protective cover **B** into position.
3. Screw in screws **C** (Torx M3 x 8).

3.6 Close Platform



NOTE: Carefully place all cables and make sure none gets pinched when closing the platform!

1 Insert seal **A** in groove of cover.

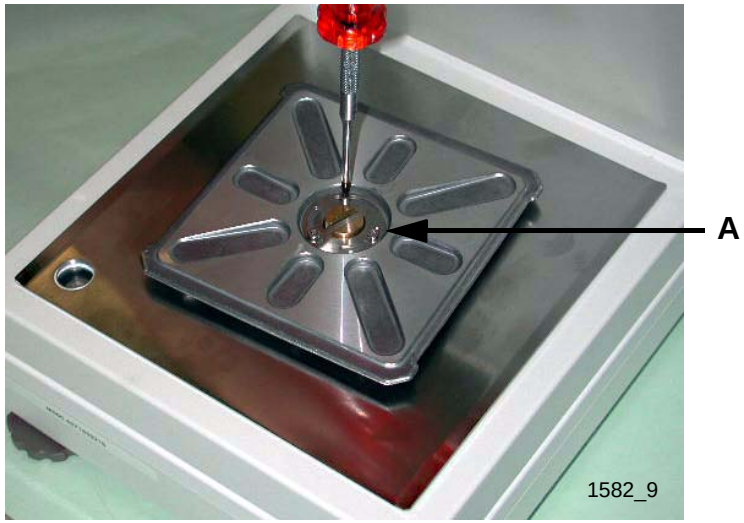
2 Place cover into position. Turn Platform on its side.

3 Screw in screws **B** and **C**:
- Screw **B** (Torx M4 x 40) without spring washer.
- Screws **C** (Torx M4 x 40) with spring washer.

Replace Terminal Cable, see Section 2.10

3.7 Adjust pan support

Balance types «S» and «M» with cone support and rectangular weighing pan.



Adjust parallelism of weighing pan and Platform

1 Place pan support on cone.

2 (Visually) check parallelism of pan support to an edge of the Platform.

3 Adjust the parallelism
- Slacken three screws **A**
- Turn pan support
- Tighten screws **A**.

Align horizontally with housing

1 Level Platform with leveling screws.

2 Place pan support and weighing pan into position.

3 Check alignment of weighing pan to housing (no level indicator).

4 Adjust alignment (see Section 3.4.6).

4 Repair draft shield

Draft shield «Magic Cube» see Section 4.1.

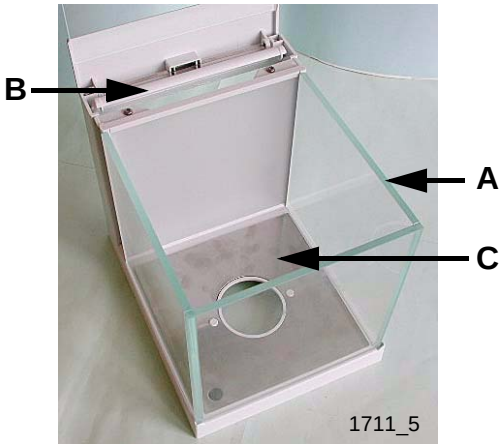
Draft Shield with Sliding Doors see Section 4.2.

4.1 Draft shield «Magic Cube»

Spare parts see Section 3.1, Chapter 3.

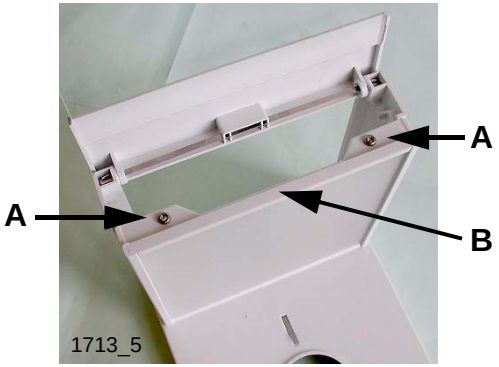
To replace the U-glass and side door if it has been inserted,
it is not necessary to remove the draft shield from the Platform.

4.1.1 Dismantle draft shield



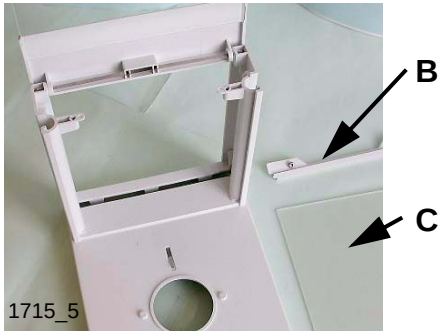
1. Remove draft shield from Platform.
2. Remove washer **A**.
3. If side door **B** is not inserted in the draft shield, remove it from its out-of-use position.
4. Remove base plate **C**.

4.1.2 Replace side door spring



1 Unscrew and remove screws **A** (Torx K40 x 12).
2 Lift side door spring **B** up and off.

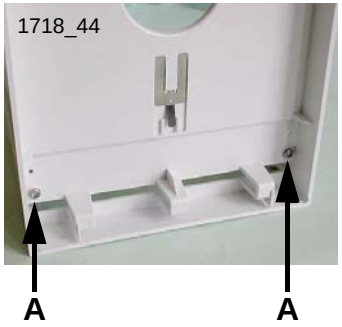
4.1.3 Replace rear glass wall

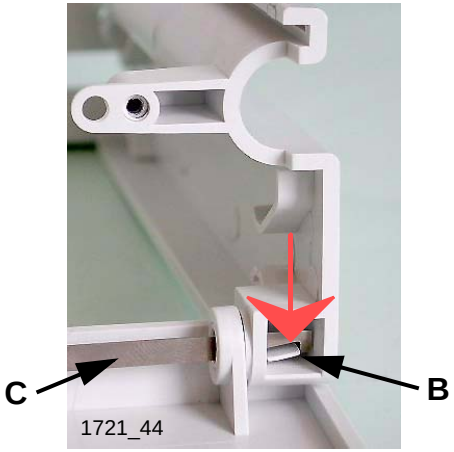


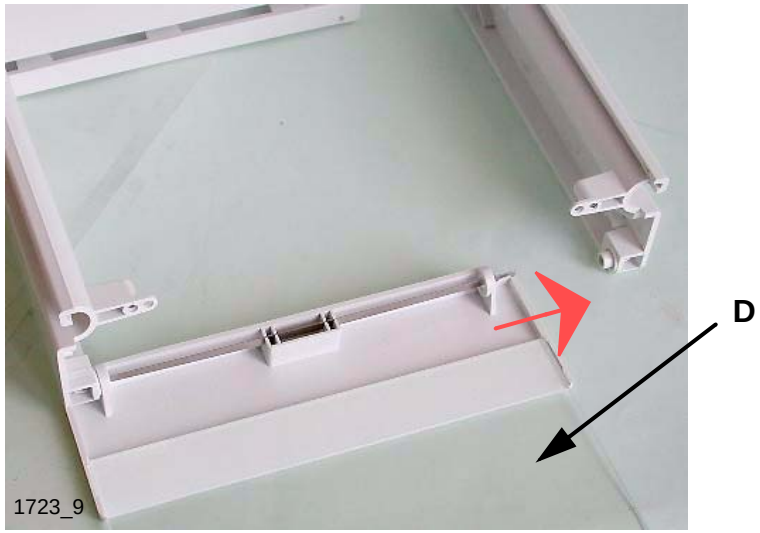
Replace side door spring **B** see Section 4.1.2

1 Pull rear glass wall **C** up and out of the side guides.
2 Insert new rear glass wall and fasten side-door spring with screws.

4.1.4 Replace top door







Replace side door spring see Section 4.1.2.

Replace rear glass wall see Section 4.1.3.

1 Carefully tip the draft shield toward the back.

2 Unscrew and remove one screw **A** (Torx K40 x 12) on the underside of the draft shield and thereby release the respective support.

Remove torsion spring

1 Press the lock **B** of the torsion spring **C** on the top of the released support in the direction of the arrow.

2 Pull the support sideways and off the torsion spring.

3 Pull the top door **D** off the fixed support along with the torsion spring **C**.

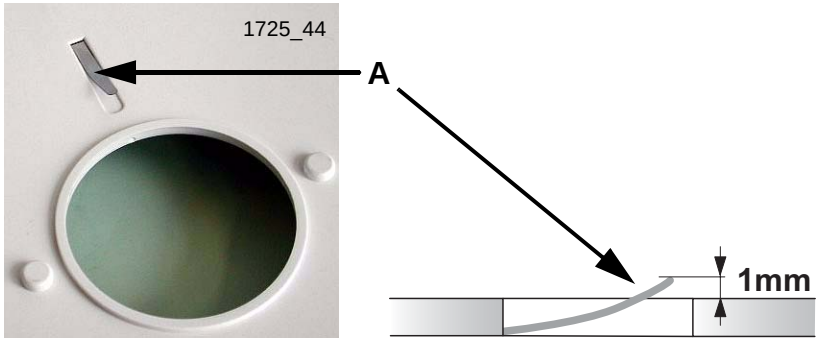
Install torsion spring

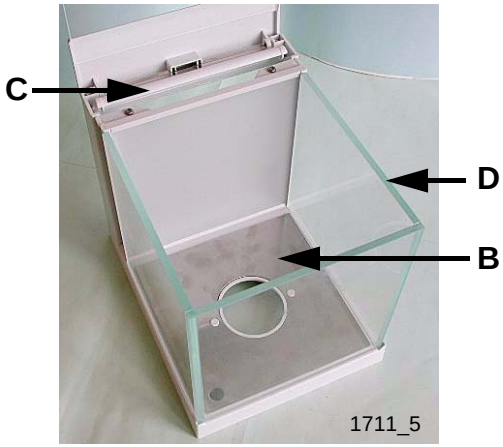
1 Insert the torsion spring **C** into the new top door **D**.

2 Insert the top door into the fixed support along with the torsion spring. The torsion spring must engage in the latch **B**.

3 Insert the removed support (latch **B** of the torsion spring must engage) and screw onto the underside of the draft shield **A**.

4.1.5 Assemble draft shield





1 Install side door spring (see Item 4.1.2) and rear glass wall (see Item 4.1.3).

2 Bend metal lug **A** (grounding) slightly upward.

3 Insert base plate **B**.

4 Insert side door or place in out-of-use position **C**.

5 Place U-glass **D** in position.

Clean draft shield

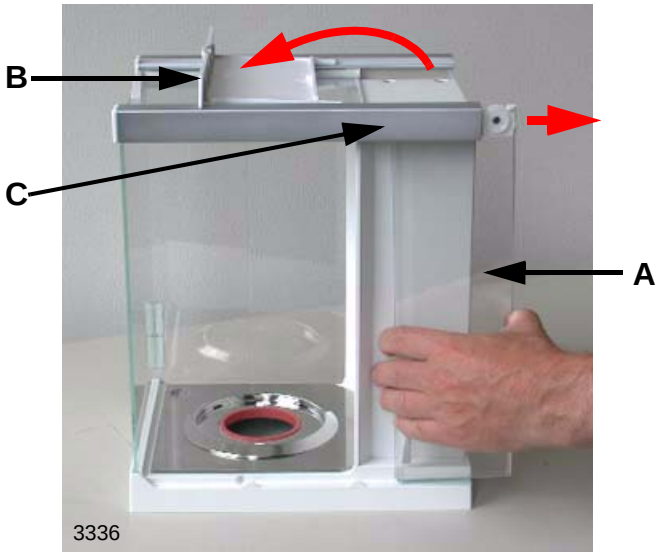
Remove finger marks from glass surfaces with normal commercial glass cleaner and a soft cloth.

4.2 Draft Shield with Sliding Doors

Spare Parts see Section 3.2, Chapter 3

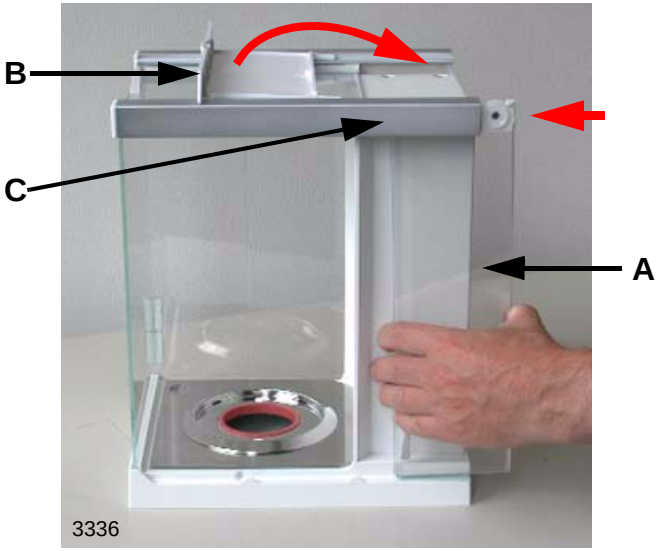
Remove the draft shield from the platform for all cleaning and repair work.

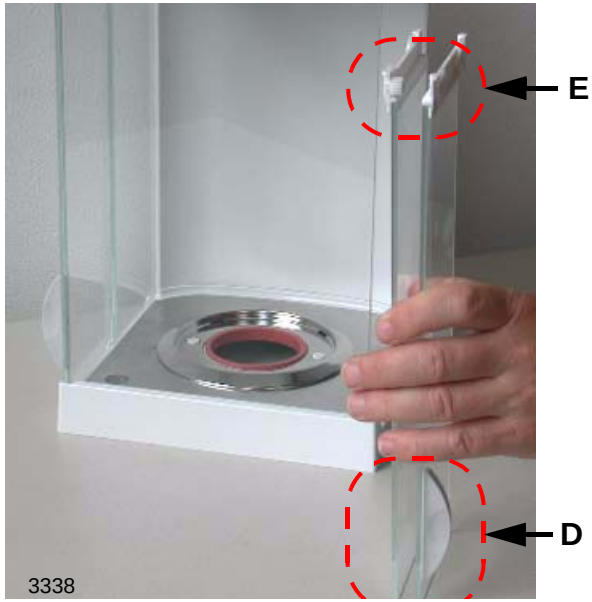
4.2.1 Replace sliding doors



Removal

1. Slide each sliding door **A** toward the «back» until it stops.
2. Tilt flap **B** to the «front».
3. Hold both parts of each sliding door and pull them out of the guide **C**.





Installation

1 Tilt flap **B** to the «front».

2 Hold together both parts of each sliding door **A**.
- Handle **D** outside, toothed wheel **E** inside.

3 Push both parts into the guide **C** together.
- Until they are felt to be stopped.

4 Tilt flap **B** towards the «back» and snap audibly into place.

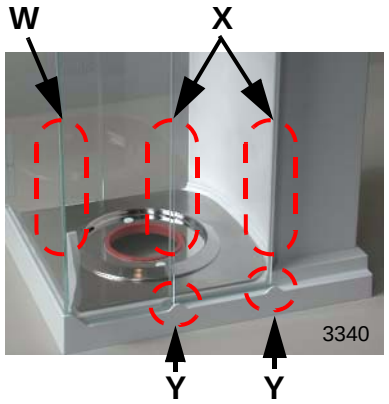
Check

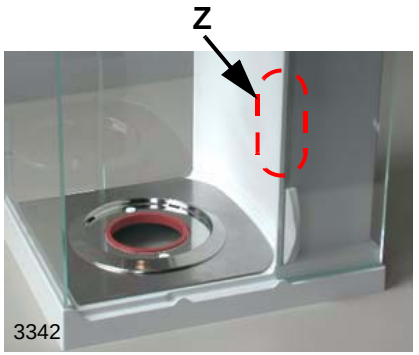
Close sliding doors:

- Closes flush with the front glass **W**.
- Both parts of the side glass and the rear panel overlap **X**.
- The side glasses are inside the projections **Y**.

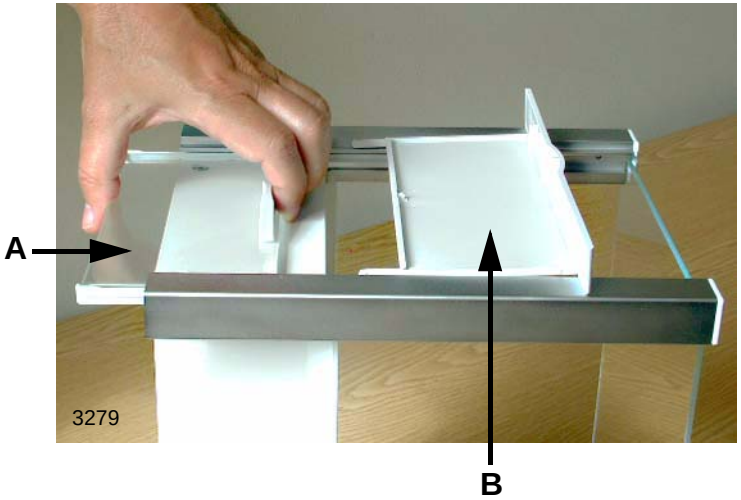
Open sliding doors:

- Both parts of the sliding doors and the rear panel must fit flush **Z**.





4.2.2 Replace top glass



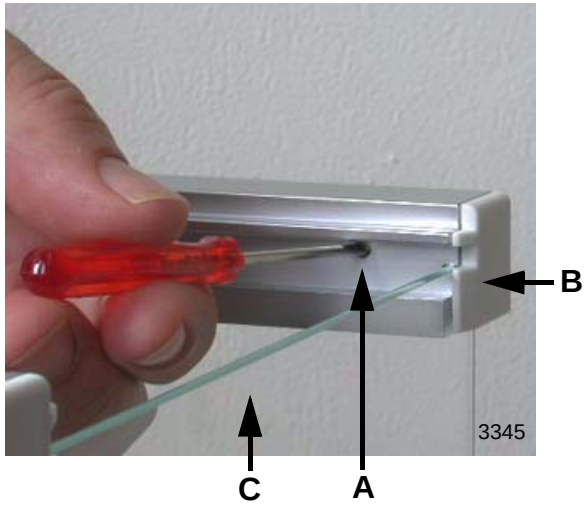
Removal

1 Push top glass **A** towards the «back» until it stops against flap **B**.
2 Tilt flap **B** towards the «front».
3 Hold both parts and pull them out of the guide.
4 Lift the parts away from each other.

Installation

1 Tilt flap **B** towards the «front».
2 Hold both parts of the top glass and push them into the guide.
3 Push in the top glass until it is next to flap **B**.
4 Tilt flap **B** towards the «back» and snap it audibly into place.
5 Close the top glass.

4.2.3 Replace front glass



1 Push top glass and sliding doors towards the back until they stop.

2 Press in cam **A** of cap **B**.
- With a blunt instrument.

3 Pull off cap **B** on both sides.

4 Lift up front glass **C**.

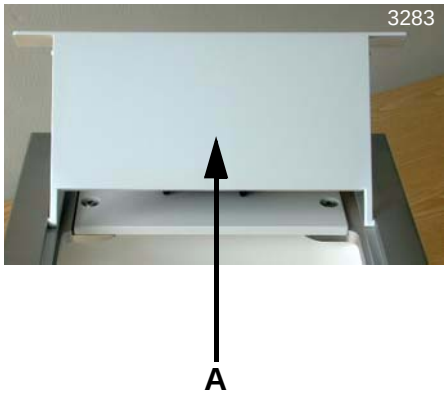
5 Insert front glass **C**.
- The front glass must fit exactly into the guide on the bottom.

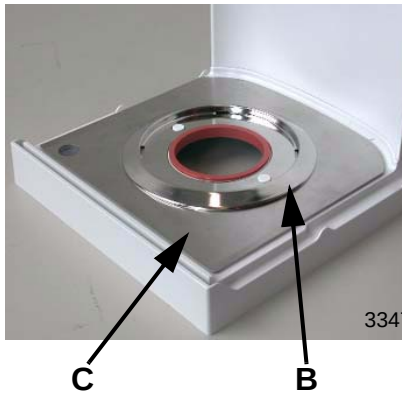
6 Insert cap **B** on both sides.
- Snap cam **A** into place.

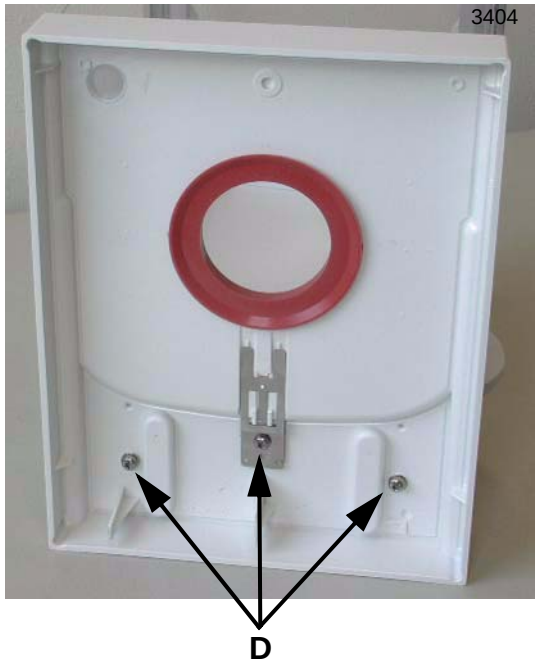
Check

- The side glasses must close against the front glass with no gap.
- The side glasses and top glass overlap the front glass.

4.2.4 Disassemble / reassemble the Draft Shield







Disassemble

Replace sliding doors see Section 4.2.1

Replace top glass see Section 4.2.2

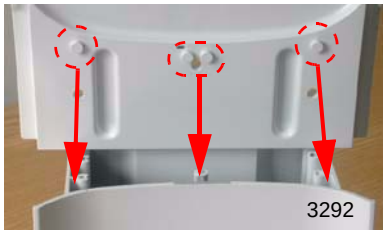
Replace front glass see Section 4.2.3

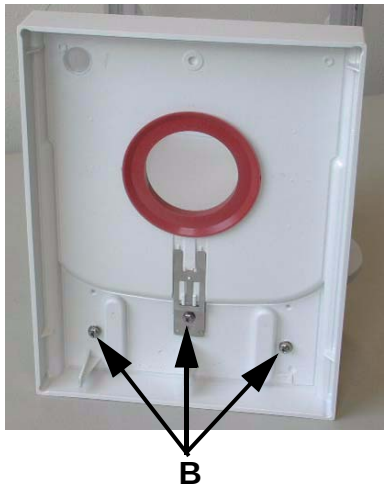
1 Take flap **A** off its hinges.
- Carefully press hinges toward each other and remove flap.

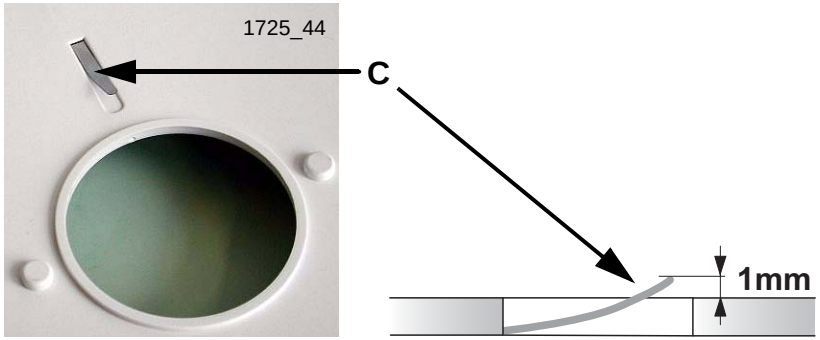
2 Remove draft shield element **B** and bottom plate **C**.

3 Lay draft shield on its rear panel.

4 Unscrew and remove screws **D** and separate the draft shield base from the rear panel.







Reassemble

5 Lay rear panel and draft shield base on a smooth surface and assemble.
- The pegs **A** fit into the profile of the rear panel and thereby center the base and rear panel.

6 Fasten base with screws.
- Screw in the 3 screws (Torx M4x10 with washer). Do not tighten.
- Align base and rear panel (check).
- Tighten 3 screws **B**.

7 Insert base plate.
- Bend metal strip **C** (grounding) slightly upward.

8 Insert ring seal.

9 Stand draft shield on its base and complete with draft shield element and all glasses.

5 Repair Terminal

PPT Terminal see Section 5.1.

SPT Terminal see Section 5.2.

WARNING

Electrical shock hazard

Unplug power supply cable before starting work on balance or terminal.

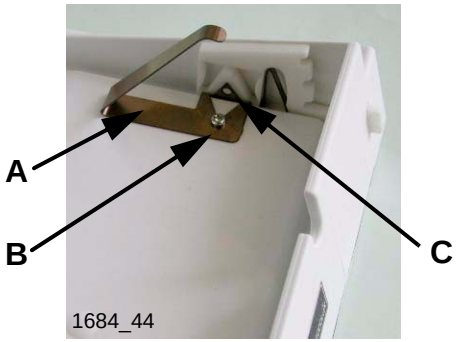
5.1 PPT Terminal

Spare Parts see Section 2.1, Chapter 3.

5.1.1 Prepare Terminal for repair

Separate Terminal from Platform (see Section 2.1).

5.1.2 Replace adjusting lever



Note

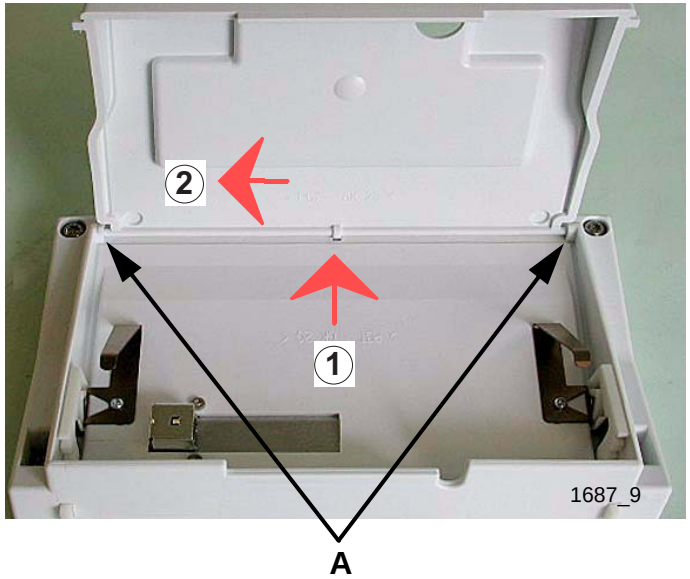
The latches **A** on the left and right have to be installed differently (Spare Parts see Section 2.1, Chapter 3).

1 Unscrew and remove screw **B** (Torx K25 x 6).

2 Remove latch and replace with new latch (metal spring and plastic part are supplied as spare-part set).
Plastic pin **C** must engage in the hole in the metal spring.

3 Screw in screw **B** (Torx K25 x 6).

5.1.3 Replace adjusting-foot plate



1 Completely open the Terminal.

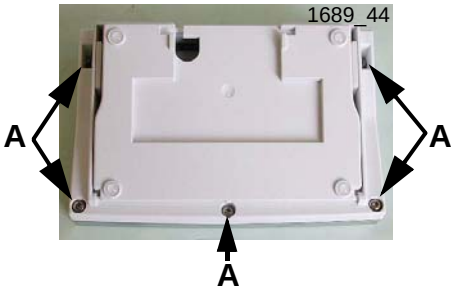
2 At the point indicated, press the adjusting-foot plate lightly outward and move it sideways.
The adjusting foot plate can then be released from the swivel points **A**.

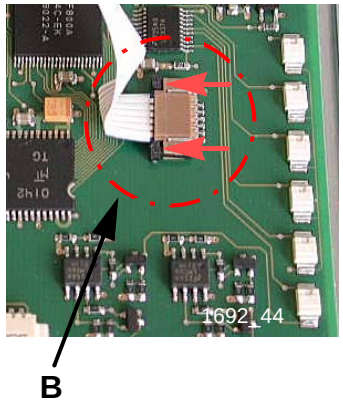
5.1.4 Open/close Terminal

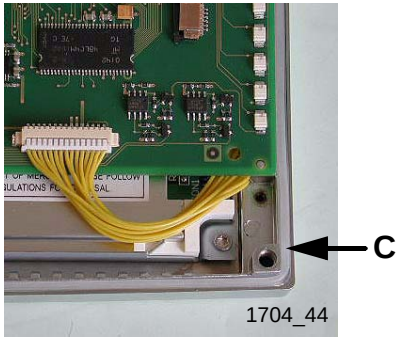
WARNING

Electrostatic sensitive devices.

Always use antistatic kit when working on electronic components (see Section 1.2).







Remove adjusting lever see Section 5.1.2.

Remove adjusting- foot see Section 5.1.3.

Open

1. Unscrew and remove the screws **A** (Torx M4 x 10).
2. Raise the bottom part of the Terminal.
3. Release the fastener **B** of the plug connector (direction of arrow) and unplug the ribbon cable.

Close

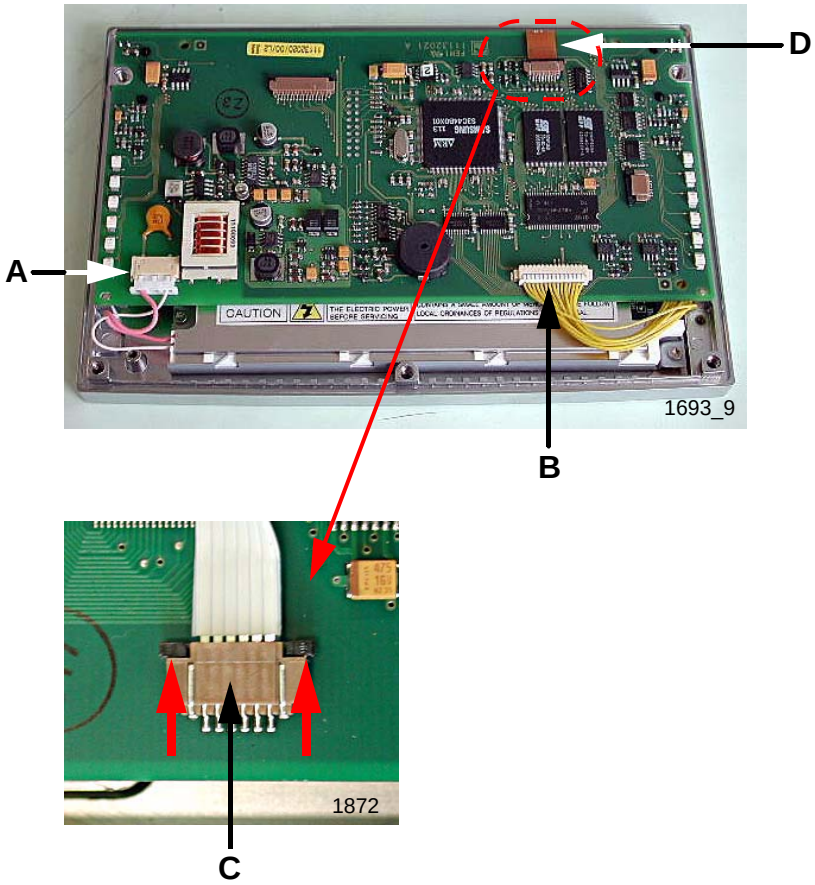
1. Insert ribbon cable and secure **B**.
2. Insert seal **C** in the groove provided (see Chapter 3, Section 2.1).
3. Place bottom part of Terminal into position.
   The toothed screening plate must lie against the inside of the top housing.
4. Screw in screws **A** (Torx M4 x 10).

5.1.5 Remove/install Terminal PCB

WARNING

Electrostatic sensitive devices.

Always use antistatic kit when working on electronic components (see Section 1.2).



Open/close Terminal see Section 5.1.4.

Remove

1 Unplug plugs **A** and **B**.

2 Release fastener of plug connector **C** (direction of arrow) and unplug ribbon cable **D**.

3 Raise Terminal PCB and put aside.

Install

1 Insert Terminal PCB. Do not pinch ribbon cable **D**.

2 Insert ribbon cable and secure.

3 Insert plugs **A** and **B**.

4 Close Terminal, see Section 5.1.4.

Note

New Terminal PCB - Load Data see Section 3.3, Chapter 7

5.1.6 Remove/install Display

Attention

Display is very easily scratched.
Avoid finger marks and dust.
If cleaning is required, use only a soft cloth (as for spectacles).
Do not use paper.

Remove/install Terminal PCB see Section 5.1.5.

Remove

1 Unscrew and remove screws **A** (Torx M2,5 x 5).
2 Lift display **B** out and put it aside carefully.

Install

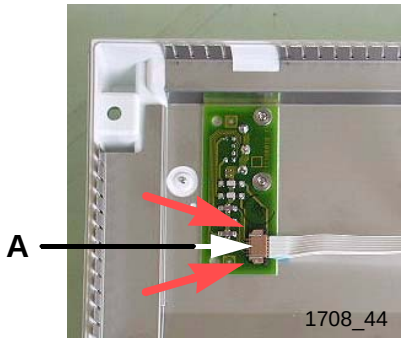
1 Insert display **B** and align.
2 Tighten screws **A** (Torx M2,5 x 5).
3 Install Terminal PCB see Section 5.1.5.

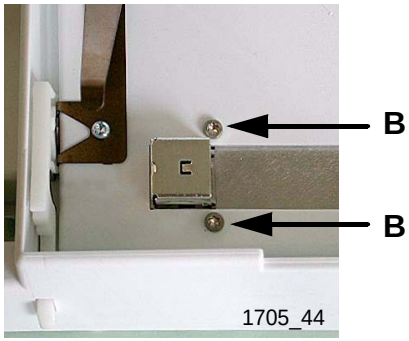
5.1.7 Replace Terminal socket/connector PCB

WARNING

Electrostatic sensitive devices.

Always use antistatic kit when working on electronic components (see Section 1.2).





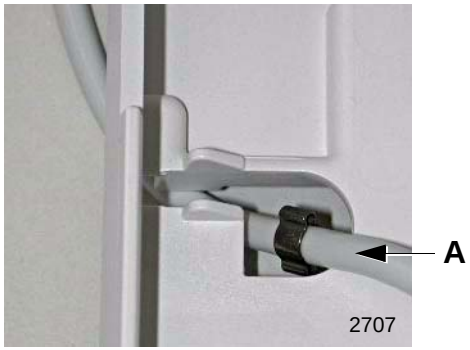
Open/close Terminal see Section 5.1.4.

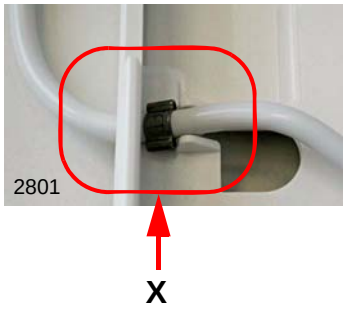
1. Release fastener **A** on connector PCB (direction of arrow) and unplug ribbon cable.
2. Unplug and remove screws **B** (Torx M2,5 x 6).
3. Replace Terminal socket.
4. Insert ribbon cable and secure.

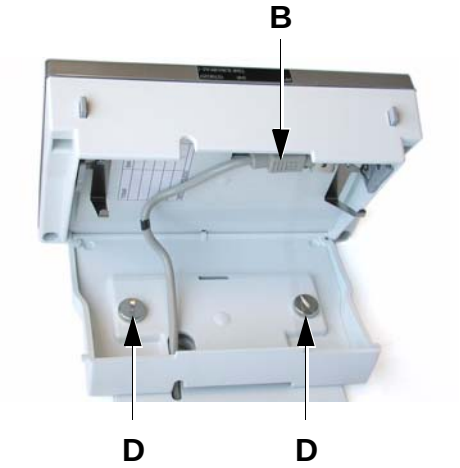
5.1.8 Connect Terminal and Platform

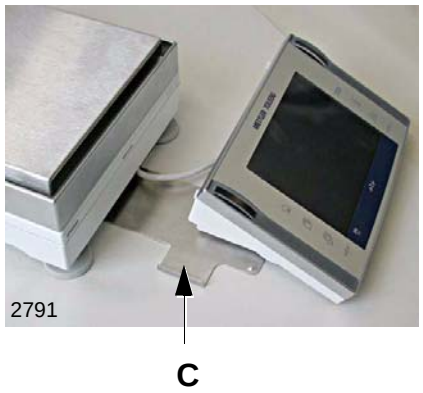
ATTENTION

Do not kink the Terminal cable.









1. Lead the Terminal Cable **A** through the provided hole in the bottom part and lock by means of the retaining ring **X**.
2. Connect Terminal Cable **B**.
3. With newer balances, screw Terminal onto Terminal Holder by means of 2 knurled screws **D**.
4. Close Terminal and push holder **C** under the Platform and engage it.
5. With older balances, place the Terminal on the Terminal Holder.

5.2 SPT Terminal

Spare Parts, see Section 2.1, Chapter 3

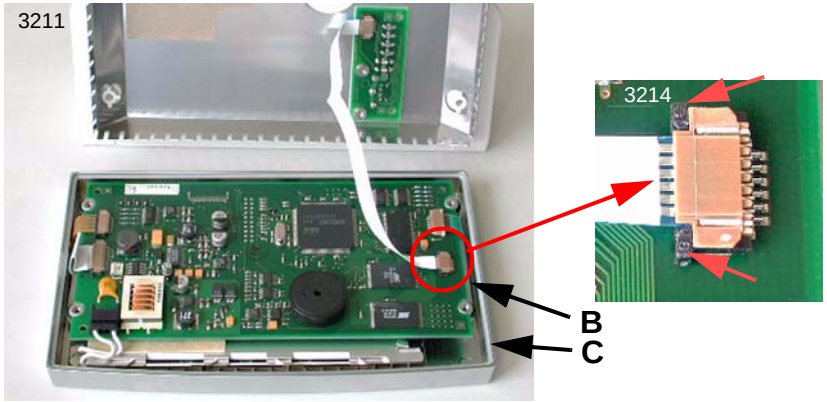
5.2.1 Prepare Terminal for repair

Separate Terminal from Platform (see Section 2.1.3).

5.2.2 Open/close Terminal

WARNING

Electrostatic sensitive devices.
Use antistatic kit, see Section 1.2.



Open

1. Unscrew and remove the screws **A** (Torx M4 x 10).
2. Raise the bottom part of the Terminal.
3. Release the fastener **B** of the plug connector (direction of arrow) and unplug the ribbon cable.

Close

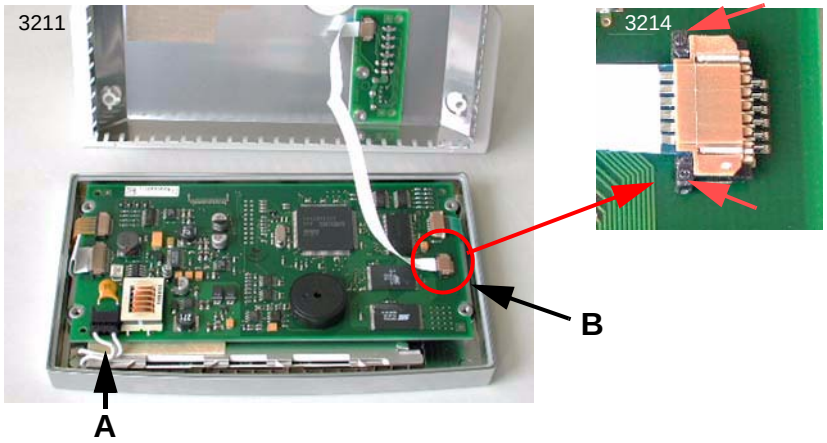
1. Insert ribbon cable and secure **B**.
2. Insert seal **C** in the groove provided (see Chapter 3, Section 2.1).
3. Place bottom part of Terminal into position.
   The toothed screening plate must lie against the inside of the top housing.
4. Screw in screws **A** (Torx M4 x 10).

5.2.3 Remove/install Terminal PCB

WARNING

Electrostatic sensitive devices.

Always use antistatic kit when working on electronic components (see Section 1.2).



Open/close Terminal see Section 5.2.2

Remove

1 Unplug plug **A**.
2 Release fastener of plug connector **B** (direction of arrow) and unplug ribbon cable.
3 Raise Terminal PCB and put aside.

Install

1 Insert Terminal PCB. Do not pinch ribbon cable.
2 Insert ribbon cable and secure.
3 Insert plugs **A**.
4 Close Terminal.

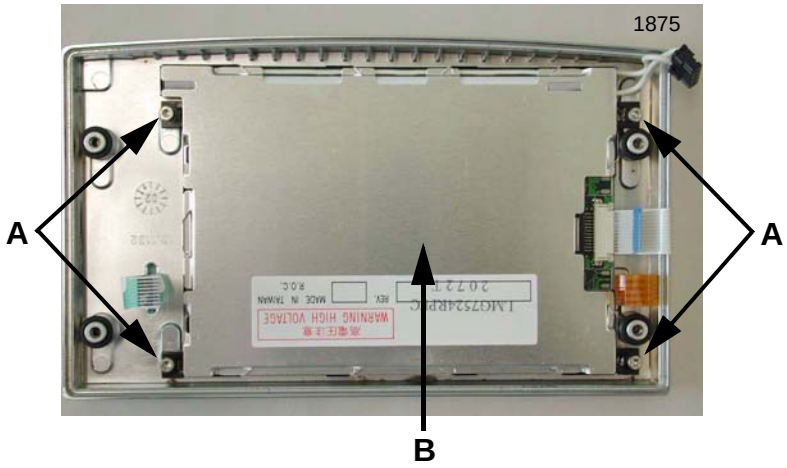
Note

New Terminal PCB - Load Data see Section 3.3, Chapter 7.

5.2.4 Remove/install Display

ATTENTION

Display is very easily scratched.
Avoid finger marks and dust.
If cleaning is required, use only a soft cloth (as for spectacles).
Do not use paper.



Remove/install Terminal PCB see Section 5.2.3.

Remove

1 Unscrew and remove screws **A** (Torx M2,5 x 5).
2 Lift display **B** out and put it aside carefully.

Install

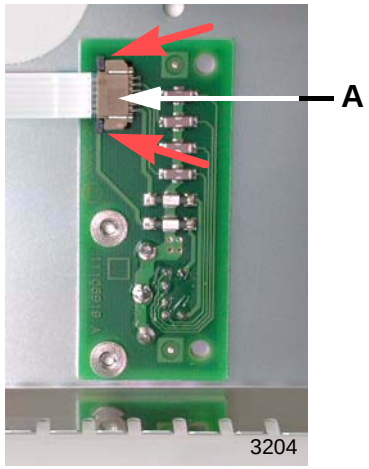
1 Insert display **B** and align.
2 Tighten screws **A** (Torx M2,5 x 5).
3 Install Terminal PCB.

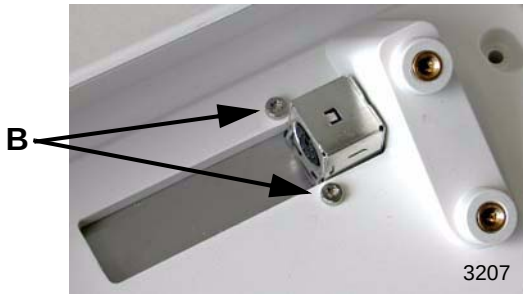
5.2.5 Replace Terminal socket/connector PCB

WARNING

Electrostatic sensitive devices.

Always use antistatic kit when working on electronic components (see Section 1.2).





Open/close Terminal see Section 5.2.2.

1. Release fastener **A** on connector PCB (direction of arrow) and unplug ribbon cable.
2. Unplug and remove screws **B** (Torx M2,5 x 6).
3. Replace Terminal socket.
4. Insert ribbon cable and secure.

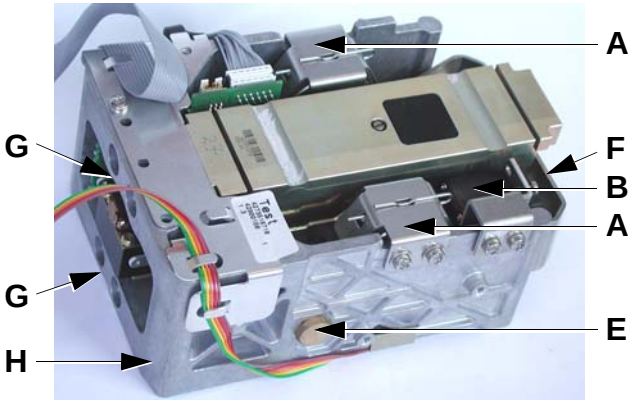
6 Repair Weighing Cell

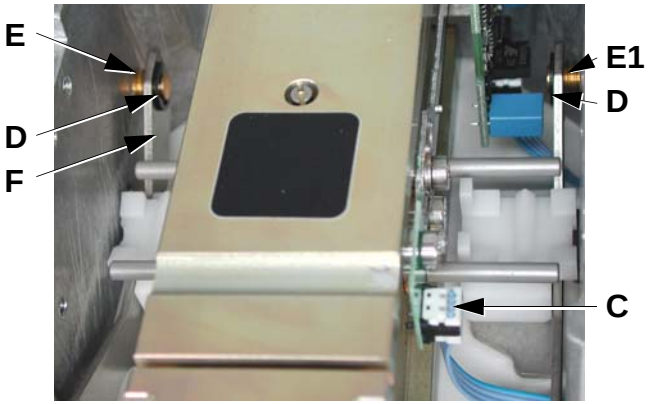
WARNING

Electrostatic sensitive devices.

Use antistatic kit, see Section 1.2.

6.1 Remove Cell Support, M >= 16kg and L type balances





1 Remove Overload Protection, see Section 2.7.2.

2 Unscrew and remove the two calibration weight holders **A** (4 Torx M4 x 6 with washer), remove calibration weights.

3 Unscrew and remove calibration motor **B**, see Section 2.13.

4 Disconnect cable **C** on contact PCB.

5 Remove the 2 retaining rings **D** on the brass screws **E**. Loosen the brass screw **E1** on the Cell PCB side and remove the calibration bracket **F**.

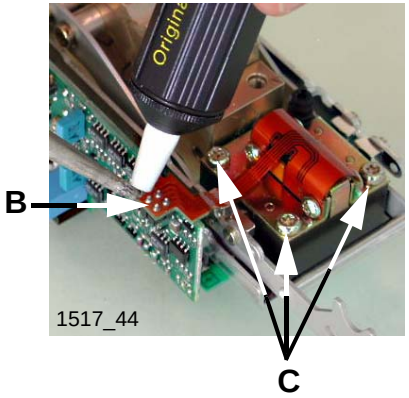
6 Unscrew MonoBloc from Cell Support **H**
- 8 to 32 kg cell: 4 screws **G** Torx M4 x 20, torque 4 Nm
- 64 kg cell: 4 screws **G** Torx M5 x 20, torque 9 Nm.

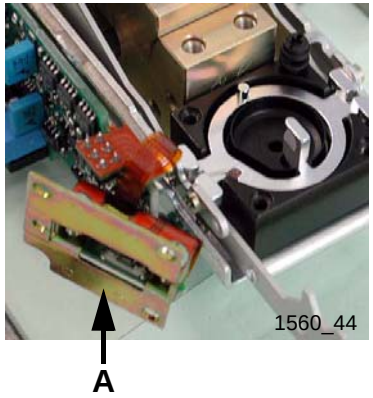
Install in reverse order.

6.2 Dismantle the Cell

Spare Parts see Section 5, Chapter 3.

6.2.1 Remove detector





1 If the detector **A** needs to be replaced:
- Unsolder flexprint **B**.

2 Slacken the fastening screws **C** of the detector.

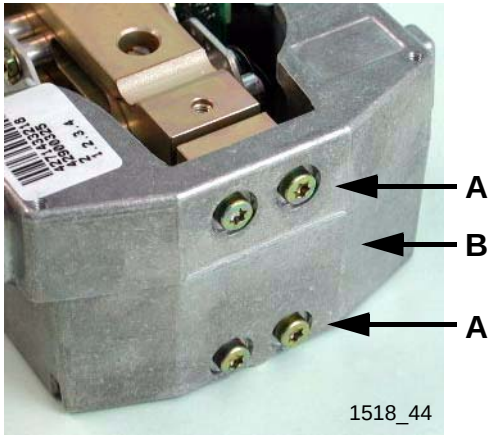
3 Lift the detector **A** which is held by the magnetic field and fold it aside.

Install detector, see Section 6.3.2.

Note

If the detector is replaced, the height stop must be checked and possibly readjusted (see Section 7.1).

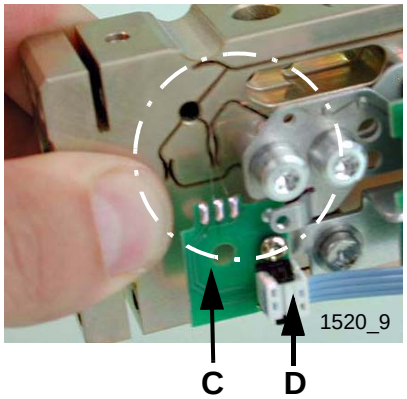
6.2.2 Remove lever, S and M <= 12 kg type balances

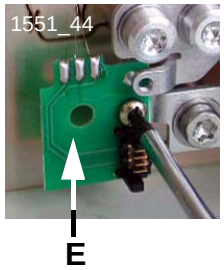


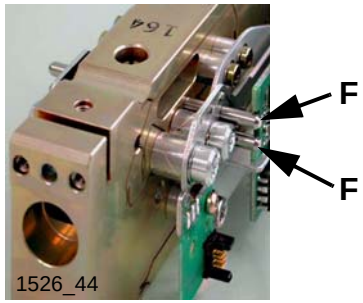
1 S and M <= 12 kg type balances only:
Unscrew and remove the fastening screws **A** (Torx M4 x 14) from the MonoBloc support **B** and remove the MonoBloc from the MonoBloc support along with the lever.

Note

Screws **A** are fastened very tight (5 Nm). Use proper tools!







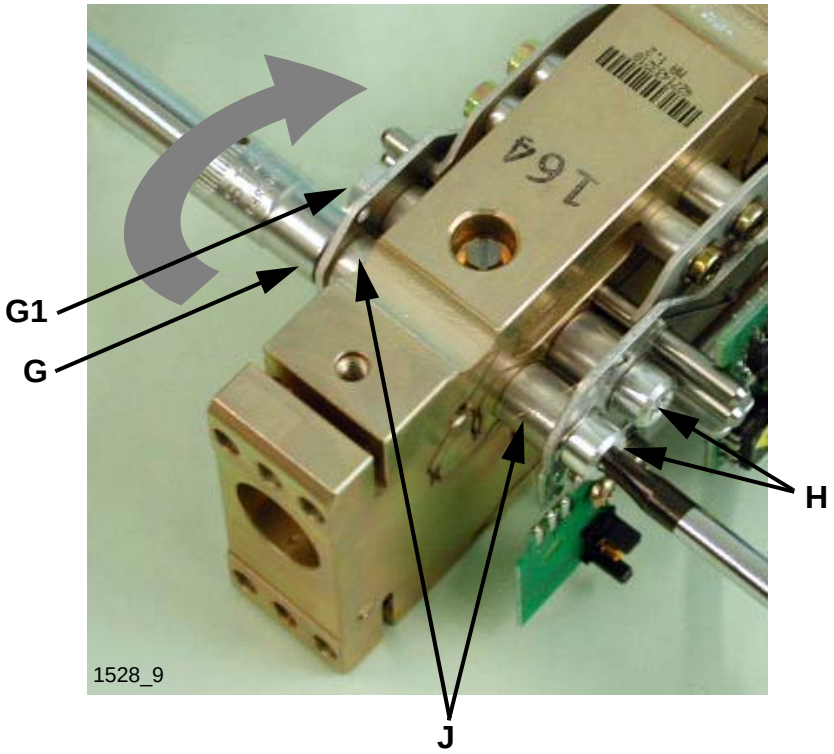
WARNING

*Hold the MonoBloc only by the back end. Do not damage the three coil wires **C** on the contact PCB.*

2 Disconnect coil cable **D**.

3 Unscrew contact print **E** from the holder and screw it tightly onto the lever.

4 Insert 2 centering pins **F** from the gauge set into the holes provided.



WARNING

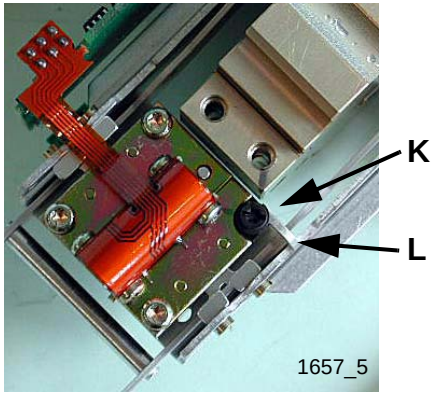
Apply torque only in the direction of the arrow in order to not compress the flexible bearing!

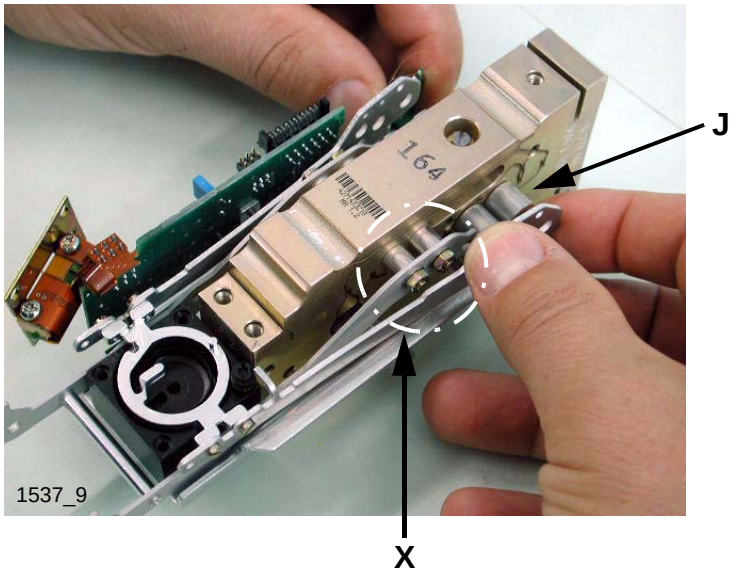
5 Hold the screw heads **H** with a screwdriver so they do not turn. Carefully loosen the nuts **G** in the direction of the arrow. The bolt must not turn, only the nut!
To release nut **G1**, push the centering pin slightly back.

6 Remove the screws.
Do not confuse the 4 aluminum lugs **J**! Mark them if necessary.

NOTE concerning S and M ≤12 kg cells

The screws **H** and nuts **G** are made of aluminum. Every time they are unscrewed, they must be replaced with corresponding new screws and nuts. Screws and nuts are both contained in the screws set Part No. 42900819 (see Section 5, Chapter 3).





7 Mark the position of the height-adjusting screw **K** with a pencil. Turn the height-adjusting screw so that the cut-out sets lever **K** free.

8 Unscrew the detector and swivel to the side (see Section 6.2.1).

9 Pull out the centering pin.

10 Carefully pull out the lever and spread it if necessary so that it can minimally pass over the screws/nuts at **X**.

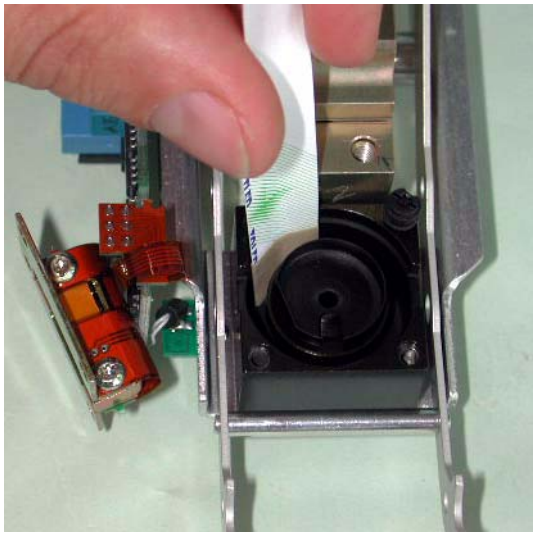
Note

Do not confuse the 4 aluminum lugs **J**! Mark them if necessary.

When replacing the lever, if any dead weight is screwed onto the old lever, transfer it to the new lever.

Install the lever, see Section 6.3.1.

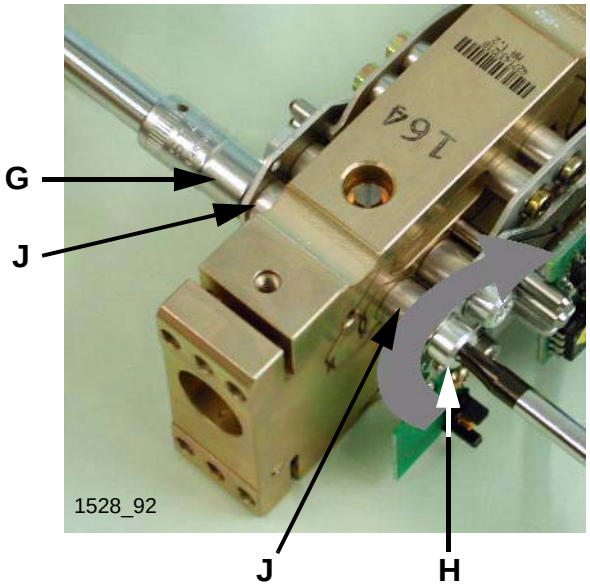
6.2.3 Clean the magnet recess



1. Affix double-sided adhesive tape to one end of a strip of paper (e.g. part of a business card).
2. Clean the magnet recess.

6.3 Assemble the Cell

6.3.1 Install the lever



ATTENTION

Apply torque only in the direction of the arrow in order to not compress the flexible bearing!

*Ensure correct positioning of the aluminum sleeves **J**.*

Insert the screws correctly (see photo).

1 Lay the lever in the specified position, spreading it if required.

2 Check that the aluminum lugs are correctly positioned.

3 Insert centering pins in the holes provided.

NOTE concerning S and M ≤12 kg cells

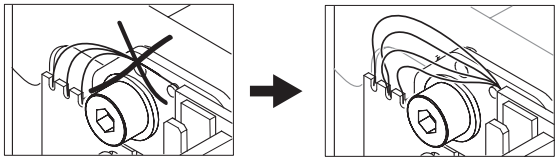
The screws **H** and nuts **G** are made of aluminum. Every time they are unscrewed, they must be replaced with corresponding new screws and nuts. Screws and nuts are both contained in the screws set with Part No. 42900819 (see Section 5, Chapter 3).

4 Hold the nuts **G** with a wrench so they do not turn. Carefully tighten the screws **H** in the direction of the arrow. The nut must not turn, only the screw!
- Cells in S and M ≤12 kg type balances: Torque 1.8 Nm
- Cells in M ≥16 kg and L-type balances: Torque 2.5 Nm.

5 Tighten the screws **H** alternately.

Note

Take care that the lever is centered in the magnet recess and does not make contact at the sides.

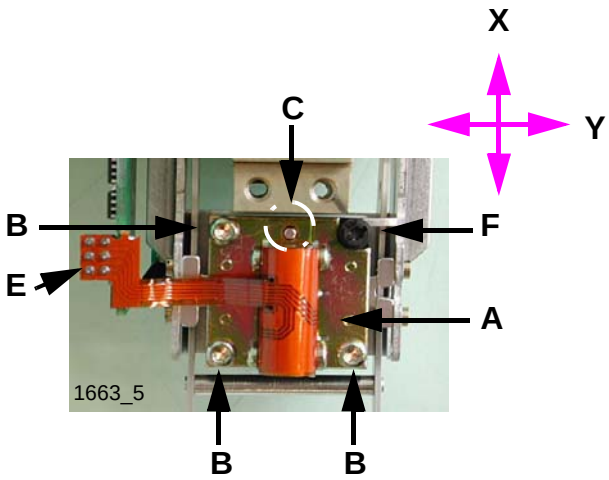


6 Separate the contact PCB from the lever and screw it tightly to the holder.

7 Align the coil wires as shown in the sketch.
If the coil wires touch adjacent parts (e.g. MonoBloc), hysteresis effects of several digits can occur.

8 Pull out the centering pins.

6.3.2 Install detector



1 Place detector **A** in position. Screw in screws **B** but do not tighten yet.

2 Center detector on the side stops **C**.
- Longitudinal direction **X**
  Move the detector in the longitudinal direction **X** until the side stop **C** is positioned in the center of the drilled hole.
- Lateral direction **Y**
  Move the detector in the lateral direction **Y** until the side stop **C** is positioned in the center of the drilled hole.

3 Tighten the screws **B** alternately by equal amounts.

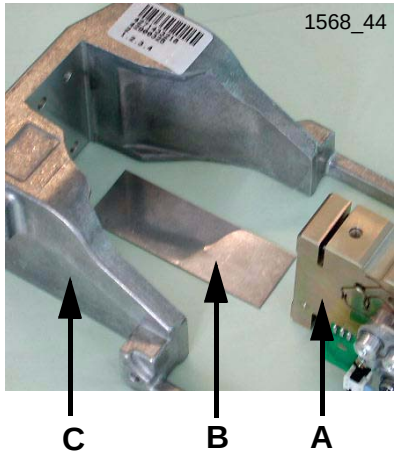
Check

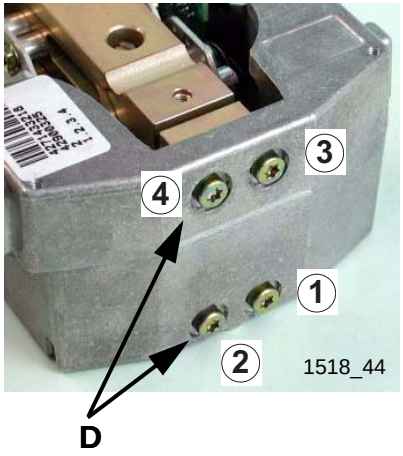
Move the lever within the lever stop **F**. The side stop must not touch the detector.

4 If necessary, solder the flexprint **E** to the cell PCB.

5 Adjusting vertical stop see Section 7.1.

6.3.3 Screw «MonoBloc» onto Support, S and M <= 12 kg type balances



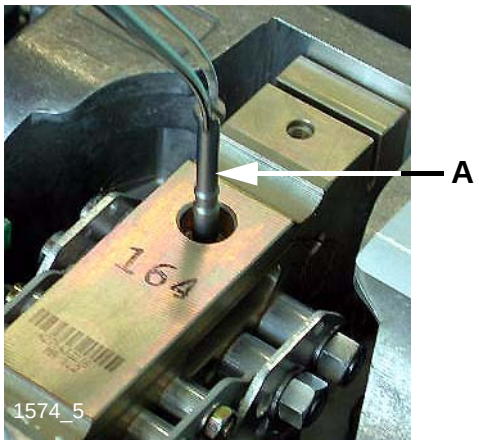


NOTE: If the hook of the below-the-balance weighing attachment projects, place the cell so that the hook projects over the edge of the bench.

1 Lay the «MonoBloc» **A** on the spacer strip **B** (0.5 mm).

2 Screw MonoBloc onto support **C**.
- Press the «MonoBloc» and MonoBloc support onto the supporting surface.
- Tighten the screws in the sequence 1 - 4. Tightening torque: 5 Nm.

6.4 Clean the drilled hole in the shock protector



1 With a screwdriver slacken the shock protector **A** approx. ¼ turn counterclockwise.

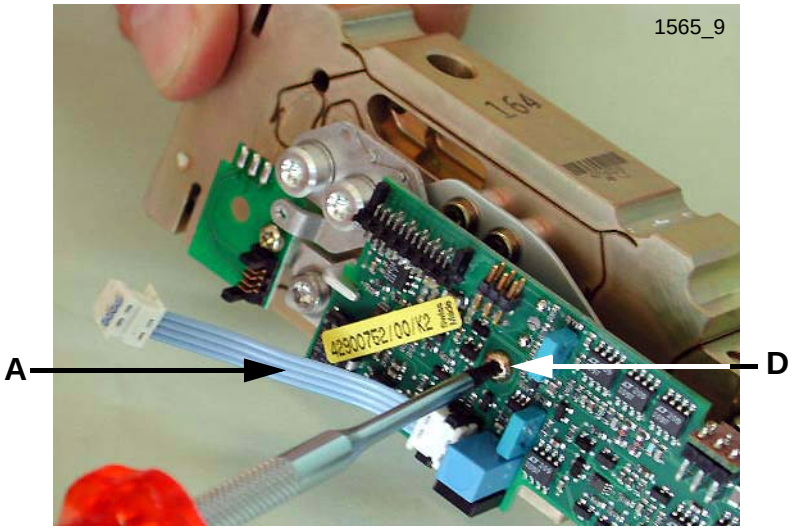
2 Pull the shock protector up and out.

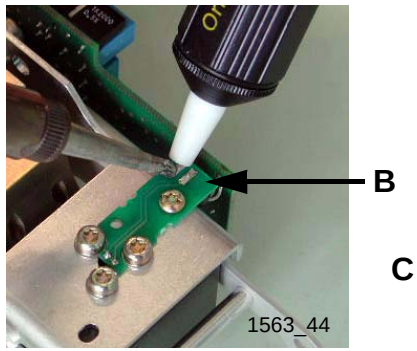
3 Check and if necessary clean the drilled hole.

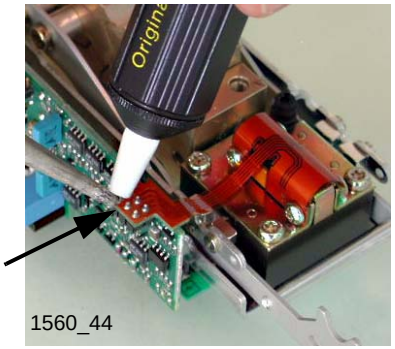
4 Insert the shock protector.
- The machined edges on the shock protector must point away from the magnet.
- Insert the shock protector as far as the stop.

5 With a screwdriver tighten the shock protector.

6.5 Replace the cell PCB







S and M <= 12kg type balances: Separate Weighing Cell from calibration drive, see Section 2.6.

Remove overload protection see Section 2.7.

Separate the «MonoBloc» from the MonoBloc support:
- S and M <= 12 kg type balances see Section 6.2.2, step 1,
- M >= 16 kg and L-type balances see Section 6.1.

1 Unplug cable **A**.

2 Unsolder connection **B** to the temperature sensor.

3 Unsolder flexprint **C**.

4 Remove screw **D** and replace cell PCB.

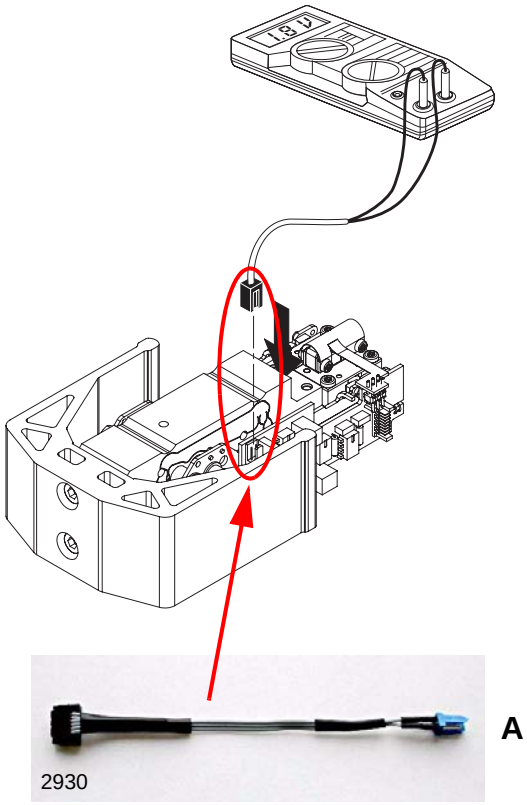
5 Load new cell data, see Section 2.3, Chapter 7.

Note

First turn the self-tapping screw **D** counterclockwise until it engages in the first thread. Only then tighten it clockwise.

7 Adjust Weighing Cell

7.1 Vertical stop



Note

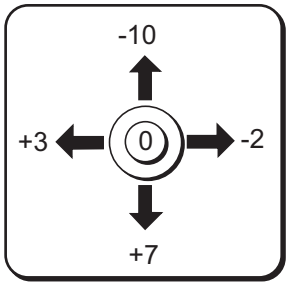
If the detector has been replaced, readjust the vertical stop.

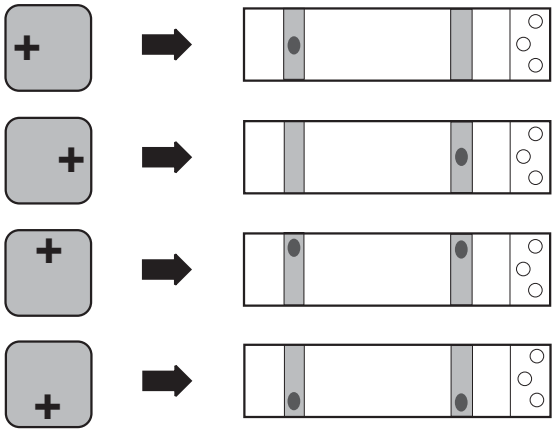
1 Preparation
- The measuring cell remains in the balance housing.
- Switch off balance.
- The ribbon cable of the detector board remains plugged into the cell board.
- Plug the 6-pin plug of the detector cable **A** (see Chapter 11) into the cell PCB and use the service cable to connect it to the voltmeter (DC range).

2 Adjusting vertical stop
- Switch on balance.
- Press coil lever down (the lever is at the bottom of the vertical stop).
- Note voltage value.
- Lift coil lever until it touches the height stop.
- Note voltage value.

If the two voltage values either side of zero are not of the same magnitude but, e.g. +3 V and -2 V, the vertical stop must be adjusted until the values are symmetrical.
Voltage range: ±1 - 6V
Asymmetry: max. ± 10% of Voltage range

7.2 Cornerload





Checking the cornerload

1. Place test weight in the middle of the weighing pan and tare.
2. Move test weigh to the weighing pan edge and note down/print out display values witch differ from zero with sign (see examples).
3. Compare display values with cornerload tolerances (see Chapter 9).

Adjusting the cornerload

The «MonoBloc» measuring cell is not adjusted by means of the cornerload screws, but by removing material from its top.

This is achieved by a few strokes with a round needle file exerting slight pressure.

ATTENTION

Do not file right at the outside at the flexible bearing positions.

On completion of the adjustments, clean filing sites by removing swarf with adhesive tape.

Filing must be performed at one or two of the marked positions as described in the below table.

7 LARS

List of Contents

1 LARS Installation

LARS = LabTec Repair and Service Software

1.1 Requirements

- The balance types described in this document require **LARS V1.72** or later.
- USB dongle LARSLock 

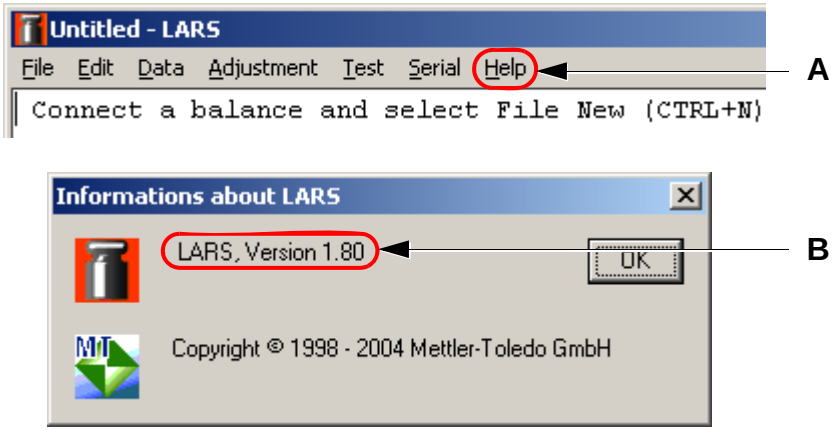
, part number 11107505.

ATTENTION

Before you install LARS from the ServiceExpert disc, please check on the LMS home page whether you have the latest version of the LARS software.

Make sure that you have authorization to perform software installations on your laptop/PC. If you do not have this authorization, ask your system supporter to install the software for you.

1.2 Software-Check



1 Double-click on .

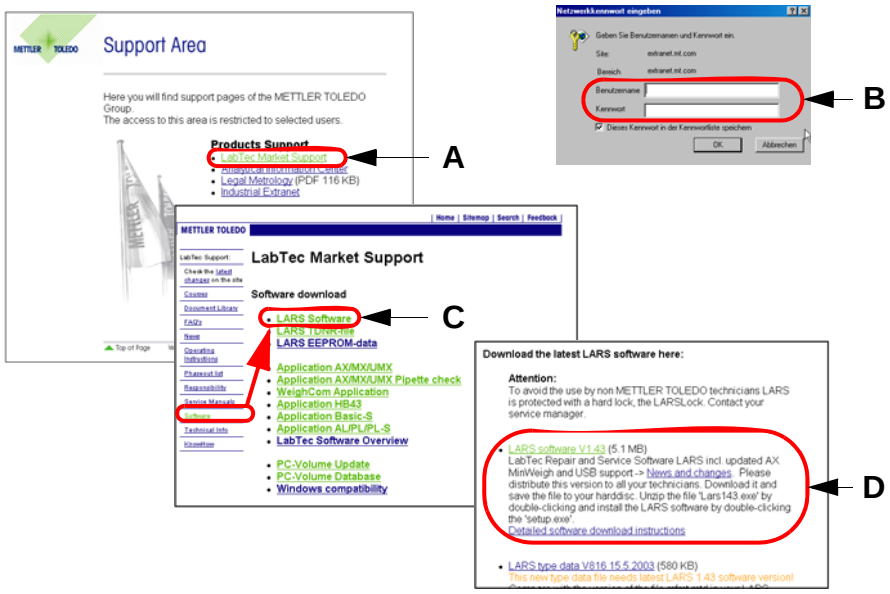
2 Click on «Help» **A** and then on «Info».

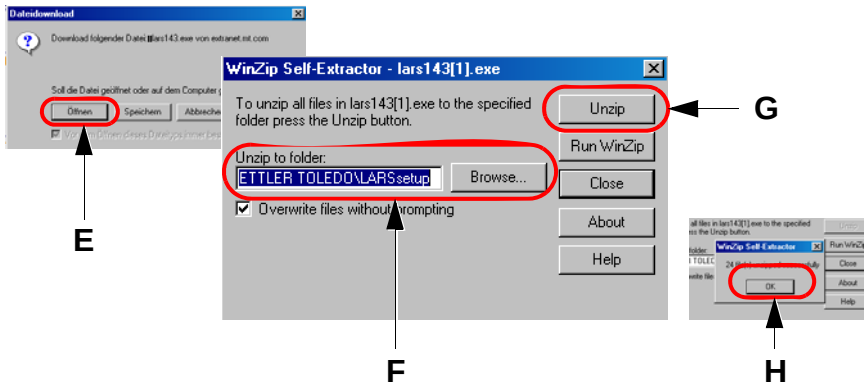
The About LARS window opens. The currently installed version is displayed **B**.

If the installed software is not the current version (Internet), the new version must be installed on the laptop/PC.

New software versions are available on the Internet (see Section 1.3).

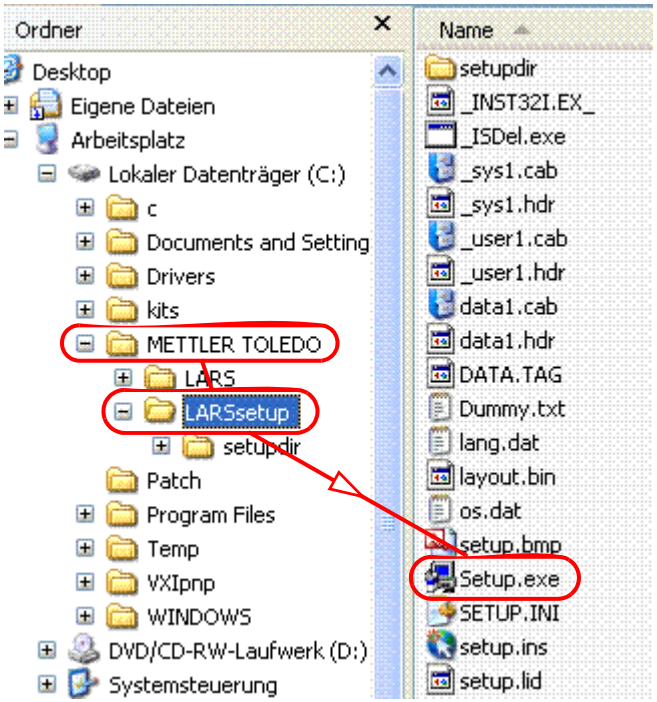
1.3 Software download from the Internet





1. Click on the link http://extranet.mt.com (Labtec Market Support).
2. Click on LabTec Market Support **A**.
3. Enter user name and password **B**.
4. Click on Software and then on LARS Software **C**.
   The most recent version of the LARS software is shown at the top of the list **D**.
5. Select the link of the software version you wish to download.
6. Click on Open **E**.
7. The storage location **F** is displayed. This can be accepted (recommended), or selected according to your own system organization.
8. Click on Unzip **G**.
   The individual files are saved in the selected storage location.
9. Click on OK **H**. Close the WinZip window.

1.4 Software-Installation



The installation procedure now starts. Follow the instructions of the installation program.

2 Using LARS

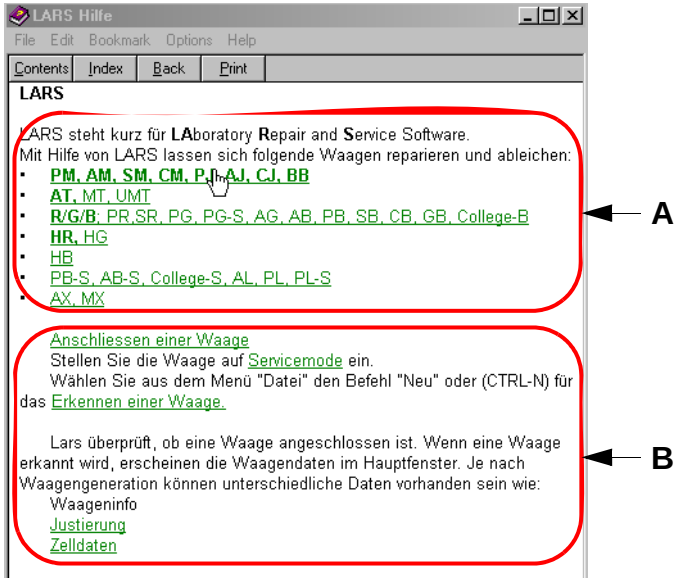
2.1 Connect balance to Laptop/PC

1 Connect the balance by means of a RS9–RS9 cable to the serial port COM of the Laptop/PC.
If no serial port is available, get a RS9–USB adapter.

2 Connect the dongle LARSLock to the Laptop/PC.

Part No. for LARSLock and RS9– RS9-Cable see Chapter 11.

2.2 Working with LARS



To start

1 Double-click on 

The LARS menu appears.

LARS Operating Instructions

The LARS functions are described in detail in the LARS-help.

Press **F1** to open the Help window shown on the left:

- **B** shows the steps which are generally necessary for service with LARS.
- Double-clicking on the balance type **A** shows in an additional window the special service procedure for the selected balance.

The Help key F1 can be pressed again for each operation. The Help function explains the current situation.

To quit

File > Quit.
The stored data of the balance are backed up in the selected file and are available for a future service.

2.3 Load type data (TDNR)

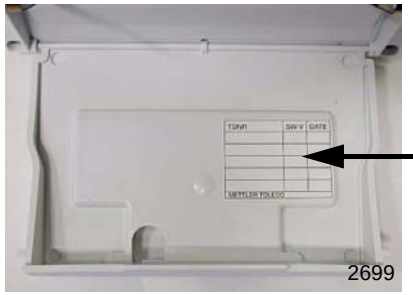
If a new Platform PCB has been installed in the balance, a new type definition must be loaded.

2785

A

2788

A



2699

B

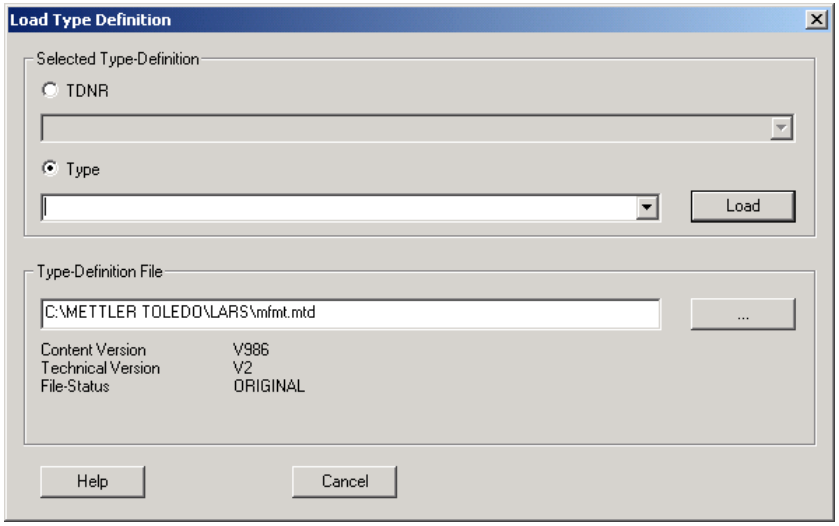
Note

The TDNR on the black laser label **A** should not be used before being tested.

Firmware or hardware changes may make it necessary to adjust the TDNR in line with the new functionalities too.

Where this is the case, it is useful to enter the new TDNR and the new firmware version in the relevant service label **B**. This prevents errors and facilitates searches for the correct TDNR if they can no longer be read from the balance.

Service Data Plate see Chapter 11.



Searching by TDNR

1 From the Data menu, select the Type Definition command.

2 Enter the appropriate TDNR in the «TDNR» field in the «Load type definition» dialog field.

3 Click on Load and follow the instructions.

Note

You can obtain specific information by clicking the Help button or pressing the F1 key.

3 Firmware Handling

ATTENTION

Before replacing the balance or Terminal firmware, the customer settings must always be saved.

3.1 e-loader

Customer settings must be printed out, and then input to the balance by hand after the update has been completed.

3.1.1 Print out the customers settings

1 Select user.

2 Open menu settings.

3 Touch Print key
Menu settings are printed.

4 Select System menu.

5 Touch Print key
Menu settings are printed.

6 Select next user.

7 Repeat steps 2 to 6 until the desired settings have been printed for all users.

3.1.2 Backup with e-Loader

Especially when a firmware update takes place because of a firmware fault, it is **not allowed** to use the e-loader functions

«Save data from XS balance in file...»
and
«Restore data for XS balance from file...».

Only if these functions are not used can fault-free operation of the balance after a firmware update be assured.

3.2 Data on PCB

3.2.1 Data on the Platform PCB

- Part of TDNR (Cell)
- Balance Firmware
- SNR

3.2.2 Data on the Cell PCB

- Part of TDNR (Cell)
- Cell data

3.2.3 Data on the Terminal PCB

- TDNR (Terminal)
- Terminal Firmware
- SNR

3.3 Change of hardware also affects firmware

Changed hardware	What changes must be made to the firmware?						
	Balance firmware Terminal firmware	**TDNR**	**Cell data**	**SNR**	**Adjustment**	**Customer settings**	**other settings**
Platform PCB	Load firmware (see Section 2.2)	Load (see Section 2.3)	-	Load	Check LIN, and CAL, and adjust if necessary	Load from back-up (see Section 3). Input by hand.	- Last Service - Next Service - Battery Expiry Date
Cell PCB	-	Load (see Section 2.3)	Load	-	Check LIN, and CAL, and adjust if necessary	-	
Terminal PCB	Load firmware	Load (see Section 2.3)	-	Load	-	Load from back-up (see Section 3). Input by hand.	

3.4 Change of firmware also affects other functions

Changed hardware	What changes must be made after the software is changed?						
	Balance firmware Terminal firmware	**TDNR**	**Cell data**	**SNR**	**Adjustment**	**Customer settings**	**another adjustments**
Platform PCB	New features, appli-cations, or languages	-	-	-	Check LIN and CAL, and adjust if necessary	Load from safe (see Section 3). Input by hand.	- Last Service - Next Service - Battery Expiry. Date
Cell PCB	-	-	-	-	-	-	
Terminal PCB	Load firmware (see Section 2.2)	-	-	-	Check LIN and CAL, and adjust if necessary	Load from safe (see Section 3). Input by hand.	

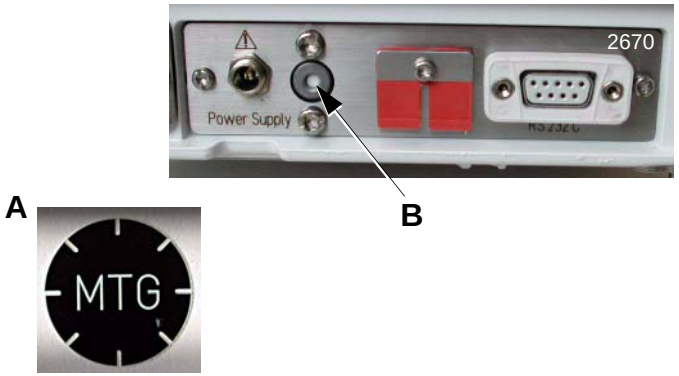
8 Adjusting in the Service Menu

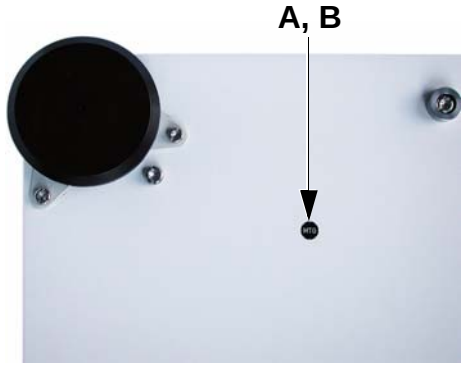
List of Contents

1 General

The service application is part of the balance firmware.
Updating the balance firmware will automatically update the service application as well.

1.1 Starting the Service menu

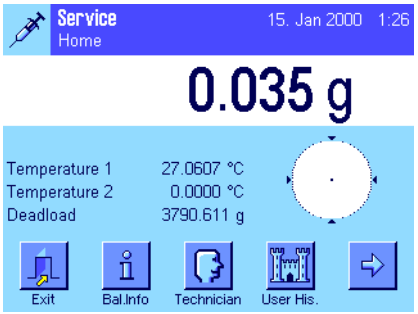


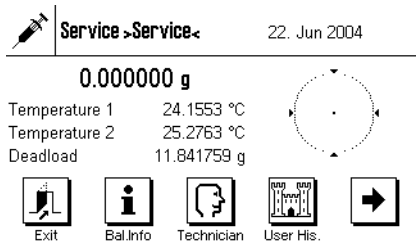


L platform (remove weighing pan)

1. Switch on the balance and wait until the display shows «0.0000».
2. Remove the securing sticker **A** (L-platform: lift off weighing pan).
3. Using a suitable object, press the service button **B**.
   - After 5 bleeps, the display goes dark.
   - After 2 more bleeps, the Service menu overview appears.

1.2 Overview menu



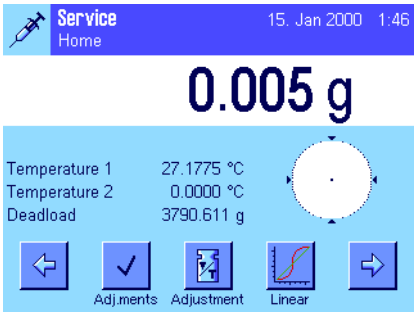


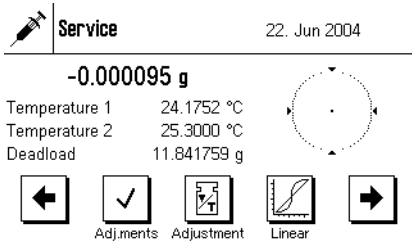
Note

In some countries, and on special customer request, the Service menu is disabled. In the overview menu, only the «Exit» key is available. Settings in the Service menu can only be made with LARS (see Chapter 7).

Menu page 1/3

«Exit»	To quit the Service menu
«Bal.Info»	Current service-relevant values of the balance
«Technician»	Name of the technician
«UserHis»	Last 50 user adjustments



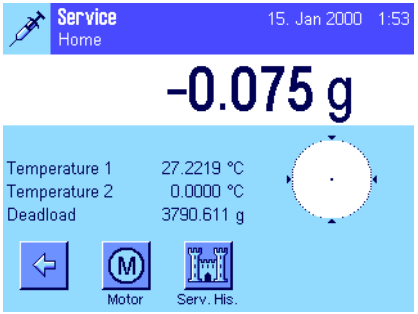


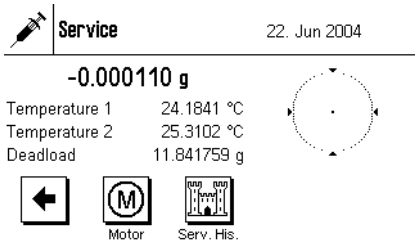
Menu page 2/3

«Adj.ments» Performed Adjustments (Lin, StdCal etc.)

«Adjustment» (see Section 1.4)

«Linear» (see Section 1.5)





Menu page 3/3 (PS)

«Motor» Motor test (see Section 1.6)

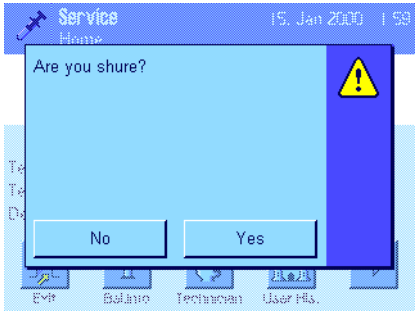
«Serv.His.» Who did which adjustment. Last 20 service adjustments.

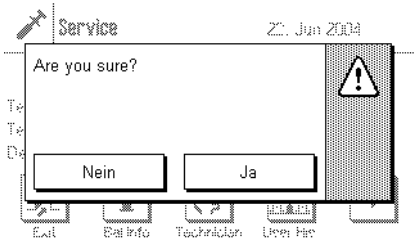
1.2.1 Select service settings

Touching the various symbols on the screen calls up the individual menu points.

The clear and simple menu guidance allows systematic working in the Service menu.

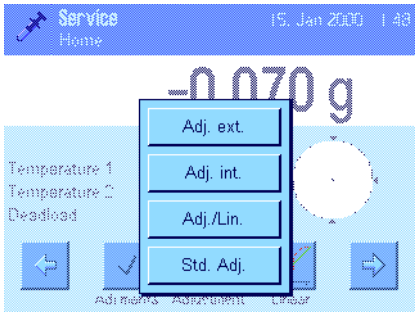
1.3 Quit the Service menu

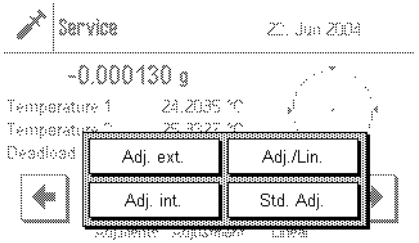




1. Touch the «Exit» symbol
2. Confirm with «Yes» (No terminates the operation)
   - The balance returns from the Service menu to the Weighing menu.

1.4 Adjustment menu



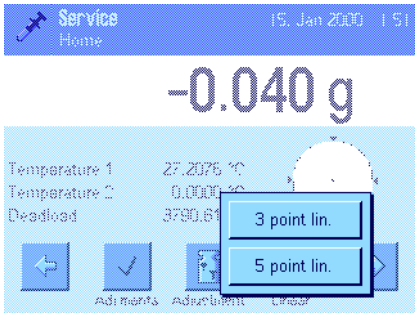


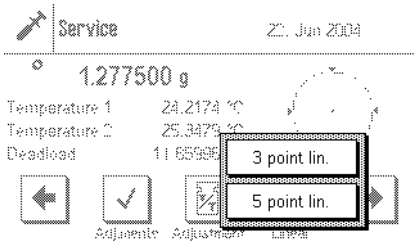
The Adjustment menu has four submenus.

- «Adj.ext.» adjustment with external weights
- «Adj.intern» adjustment with internal weight
- «Adj. /Lin» linearization
- «Std. Adj.» standard calibration

The individual adjustments are performed according to the guidance displayed in the menu.

1.5 Linear menu



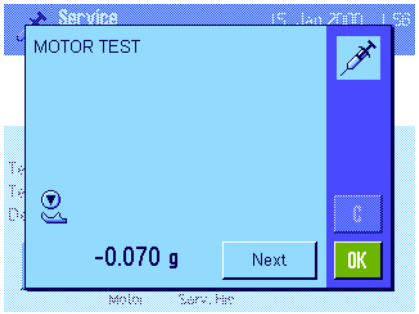


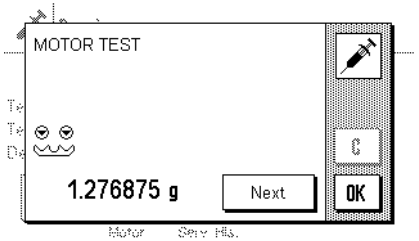
The Linear menu contains two submenus.

- «3point lin.» 3-point linearization
- «5point lin.» 5-point linearization

The individual adjustments are performed according to the guidance displayed in the menu.

1.6 Motor menu





The Motor menu is used to test the functioning of the calibration motor.

1. Touch the Next button
The motor lowers the calibration weight
- Display: Weight of internal calibration weight

2. Touch the Next button again
The motor raises the calibration weight
- Display: 0.000 g

9 Adjustment Data

List of Contents

1 XP Balances

1.1 XP Balance Type «S»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XP204S 1 I	210 g 0.1 mg 1 mg		100 g 0.3 mg		100 g 10 0.2 mg		0/50/100/150 g 50 g 0.2 mg	d	200 g E2 * 1 mg	
XP404S 1 I	410 g 0.1 mg 1 mg		200 g 0.3 mg		200 g 10 0.1 mg		0/100/200/300 g 100 g 0.2 mg	d	400 g E2 * 2 mg	
XP404SDR DR I	410 g / 80 g 1 mg / 0.1 mg 1 mg		200 g 1 mg		200 g 10 0.6 mg		0/100/200/300 g 100 g 0.6 mg	d	400 g E2 * 2 mg	
XP203S 1 II	210 g 1 mg 0.01 g		100 g 3 mg		100 g 6 0.9 mg		N.A 50/100/150/200 g 2 mg	E2	200 g E2 5 mg	
XP603S 1 II	610 g 1 mg 0.01 g		200 g 3 mg		200 g 6 0.9 mg		0/200/400 g 200 g 2 mg	d	600 g F1* 4.5 mg	
XP603SDR DR II	610 / 120 g 0.01 g / 1 mg 0.01 g		200 g 0.01 g		200 g 6 6 mg		N.A. 200/400/600 g 0.01 g	F1	600 g F1* 9 mg	
XP1203S 1 I	1210 g 1 mg 0.01 g		500 g 3 mg		500 g 10 0.8 mg		0/200/400/600/800/1000 g 200 g 2 mg	d	1.2 kg F1* 6 mg	
XP2003SDR DR I	2100 g / 500 g 0.01 g / 1 mg 0.01 g		1000 g 0.01 g		500 g 10 6 mg		0/500/1000/1500 g 500 g 6 mg	d	2 kg F1 0.01 g	

* Conventional weight value

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XP5003SDR DR I	5100 g / 1000 g 0.01 g / 1 mg 0.01 g		2 kg 0.01 g		2 kg 10 6 mg		0/1/2/3/4 kg 1 kg 6 mg	d	5 kg F1* 0.02 g	
XP802S 1 II	810 g 0.01 g 0.1 g		500 g 0.02 g		500 g 6 8 mg		N.A. 200/400/600/800 g 0.02 g	F1	800 g F1 0.06 g	
XP1202S 1 II	1210 g 0.01 g 0.1 g		500 g 0.02 g		500 g 6 8 mg		N.A. 400/800/1200 g 0.02 g	F1	1.2 kg F1 0.06 g	
XP2002S 1 II	2100 g 0.01 g 0.1 g		1 kg 0.03 g		1 kg 6 8 mg		N.A. 0.5/1/1.5/2 kg 0.02 g	F1	2 kg F1 0.06 g	
XP4002S 1 II	4100 g 0.01 g 0.1 g		2 kg 0.03 g		2 kg 6 8 mg		0/1/2/3 kg 1 kg 0.02 g	d	4 kg F1 0.06 g	
XP4002SDR DR II	4100 g / 800 g 0.1 g / 0.01 g 0.1 g		2 kg 0.1 g		2 kg 6 0.06 g		0/1/2/3 kg 1 kg 0.06 g	d	4 kg F1 0.06 g	
XP6002S 1 II	6100 g 0.01 g 0.1 g		2 kg 0.03 g		2 kg 6 8 mg		0/2/4 kg 2 kg 0.02 g	d	6 kg F1* 0.06 g	
XP6002SDR DR II	6100 g / 1200 g 0.1 g / 0.01 g 0.1 g		2 kg 0.1 g		2 kg 6 0.06 mg		N.A. 2/4/6 kg 0.1 g	F1	6 kg F1 0.15 g	
XP8002S 1 II	8100 g 0.01 g 0.1 g		5 kg 0.04 g		5 kg 6 8 mg		0/2/4/6 kg 2 kg 0.02 g	d	8 kg F1* 0.06 g	

* Conventional weight value

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XP10002S 1 II	10100 g 0.01 g 0.1 g		5 kg 0.04 g		5 kg 10 8 mg		0/2/4/6/8 kg 2 kg 0.02 mg	d	10 kg F1* 0.05 g	
XP10002SDR DR II	10100 g / 2000 g 0.1 g / 0.01 g 0.1 g		5 kg 0.1 g		5 kg 10 0.06 g		0/2/4/6/8 kg 2 kg 0.05 g	d	10 kg F1* 0.1 g	
XP2001S 1 II	2100 g 0.1 g 0.1 g		1 kg 0.1 g		1 kg 6 0.08 g		N.A. 0.5/1/1.5/2 kg 0.06 g	F1	2 kg F1 0.15 g	
XP4001S 1 II	4100 g 0.1 g 0.1 g		2 kg 0.2 g		2 kg 6 0.08 g		N.A. 1/2/3/4 kg 0.06 g	F1	4 kg F1 0.24 g	
XP6001S 1 II	6100 g 0.1 g 0.1 g		2 kg 0.2 g		2 kg 6 0.08 g		N.A. 2/4/6 kg 0.06 g	F1	6 kg F1 0.24 g	
XP8001S 1 II	8100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		0/2/4/6 kg 2 kg 0.1 g	d	8 kg F1 0.6 g	
XP10001S 1 II	10100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		0/2/4/6/8 kg 2 kg 0.1 g	d	10 kg F1 0.5 g	

* Conventional weight value

1.2 XP Balance type «M»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XP6002MDR DR II	6100 g / 1200 g 0.1 g / 0.01 g 0.1 g		2 kg 0.1 g		2 kg 6 0.06 g		N.A. 2/4/6 kg 0.06 g	F1	6 kg F1 0.15 g	
XP12002MDR DR I	12100 g / 2400 g 0.1 g / 0.01g 0.1 g		5 kg 0.1 g		5 kg 6 0.06 g		0/2/4/6/8/10 kg 2 kg 0.06 g	d	12 kg F1* 0.096 g	
XP8001M 1 II	8100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		N.A. 2/4/6/8 kg 0.1 g	F1	8 kg F1 0.6 g	
XP8001MDR DR II	8100 g / 1600 g 1 g / 0.1g 1 g		5 kg 1 g		5 kg 6 0.6 g		N.A. 2/4/6/8 kg 0.6 g	F1	8 kg F1 0.6 g	
XP12001M 1 II	12100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		N.A. 4/8/12 kg 0.1 g	F1	12 kg F1 0.6 g	
XP16001M 1 II	16100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		N.A. 4/8/12/16 kg 0.2 g	F1	16 kg F1 0.8 g	
XP16001MDR DR II	16100 g / 3200 g 1 g / 0.1 g 1 g		5 kg 1 g		5 kg 6 0.6 g		0/4/8/12/16 kg 4 kg 0.6 g	d	16 kg F1 0.8 g	
XP20001M 1 II	20100 g 0.1 g 1 g		10 kg 0.2 g		10 kg 6 0.08 g		N.A. 5/10/15/20 kg 0.2 g	F1	20 kg F1 0.8 g	

* Conventional weight value

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XP12000M 1 -	12100 g 1 g -		5 kg 1 g		5 kg 6 0.6 g		N.A. 4/8/12 kg 0.6 g	F1	12 kg F1 0.6 g	
XP20000M 1 II	20100 g 1 g 1 g		10 kg 1 g		10 kg 6 0.6 g		N.A. 5/10/15/20 kg 0.6 g	F1	20 kg F1 0.8 g	

* Conventional weight value

1.3 XP Balance type «L»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XP8001L 1 II	8100 g 0.1 g 1 g		5 kg 0.3 g		5 kg 6 0.08 mg		N.A. 2/4/6/8 kg 0.2 g	F1	8 kg F1 0.64 g	
XP16001L 1 II	16100 g 0.1 g 1 g		5 kg 0.3 g		5 kg 6 0.08 g		N.A. 4/8/12/16 kg 0.2 g	F1	16 kg F1 0.8 g	
XP32001L 1 II	32100 g 0.1 g 1 g		10 kg 0.3 g		10 kg 6 0.08 g		N.A. 10/20/30 kg 0.3 g	F1	32 kg F1 0.96 g	
XP32001LDR DR II	32100 g / 6400 g 1 g / 0.1g 1 g		10 kg 1 g		10 kg 6 0.6 g		0/5/10/15/20/25 kg 5 kg 0.3 g	d	32 kg F1 0.96 g	
XP64001L 1 II	64100 g 0.1 g 1 g		20 kg 0.5 g		20 kg 6 0.1 g		N.A. 20/40/60 kg 0.5 g	F1	64 kg F1 1.28 g	
XP16000L 1 II	16100 g 1 g 1 g		5 kg 0.3 g		5 kg 6 0.6 g		N.A. 4/8/12/16 kg 0.6 g	F1	16 kg F1 1.28 g	
XP32000L 1 II	32100 g 1 g 1 g		10 kg 1 g		10 kg 6 0.6 g		N.A. 10/20/30 kg 0.6 g	F1	32 kg F1 1.92 g	
XP64000L 1 II	64100 g 1 g 1 g		20 kg 1 g		20 kg 6 0.6 g		N.A. 20/40/60 kg 0.6 g	F1	64 kg F1 1.92 g	

* Conventional weight value

2 XS Balances

2.1 XS Balance Type «S»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XS203S 1 II	210 g 1 mg 0.01 g		100 g 3 mg		100 g 6 0.9 mg		N.A. 50/100/150/200 g 2 mg	E2	200 g E2 5 mg	
XS403S 1 II	410 g 1 mg 0.01 g		200 g 3 mg		100 g 6 0.9 mg		N.A. 100/200/300/400 g 2 mg	E2	400 g E2 6 mg	
XS603S 1 II	610 g 1 mg 0.01 g		200 g 3 mg		200 g 6 0.9 mg		0/200/400 g 200 g 2 mg	d	600 g F1* 4.5 mg	
XS603SDR DR II	610 g / 120 g 0.01 g / 1 mg 0.01 g		200 g 0.01 g		200 g 6 6 mg		N.A. 200/400/600 g 6 mg	F1	600 g F1* 9 mg	
XS1003S 1 I	1010 g 1 mg 0.01 g		500 g 3 mg		500 g 6 0.8 mg		0/200/400/600/800 g 200 g 2 mg	d	1 kg F1* 5 mg	
XS802S 1 II	810 g 0.01 g 0.1 g		500 g 0.02 g		500 g 6 8 mg		N.A. 200/400/600/800 g 0.02 g	F1	800 g F1* 0.06 g	
XS2002S 1 II	2100 g 0.01 g 0.1 g		1 kg 0.03 g		1 kg 6 8 mg		0/500/1000/1500 g 500 g 0.02 g	d	2 kg F1 0.05 g	
XS4002S 1 II	4100 g 0.01 g 0.1 g		2 kg 0.03 g		2 kg 6 8 mg		0/1/2/3 kg 1 kg 0.02 g	d	4 kg F1 0.06 g	

* Conventional weight value

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XS4002SDR DR II	4100 g / 800 g 0.1 g / 0.01 g 0.1 g		2 kg 0.1 g		2 kg 6 0.06 g		N.A. 1/2/3/4 kg 0.06 g	F1	4 kg F1 0.06 g	
XS6002S 1 II	6100 g 0.01 g 0.1 g		2 kg 0.03 g		2 kg 6 8 mg		0/2/4 kg 2 kg 0.02 g	d	6 kg F1* 0.06 g	
XS6002SDR DR II	6100 g / 1200 g 0.1 g / 0.01 g 0.1 g		2 kg 0.1 g		2 kg 6 0.06 g		0/2/4 kg 2 kg 0.06 g	d	6 kg F1 0.15 g	
XS4001S 1 II	4100 g 0.1 g 0.1 g		2 kg 0.2 g		2 kg 6 0.08 g		N.A. 1/2/3/4 kg 0.06 g	F1	4 kg F1 0.24 g	
XS6001S 1 II	6100 g 0.1 g 0.1 g		2 kg 0.2 g		2 kg 6 0.08 g		N.A. 2/4/6 kg 0.06 g	F1	6 kg F1 0.24 g	
XS8001S 1 II	8100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		0/2/4/6 kg 2 kg 0.1 g	d	8 kg F1 0.6 g	

* Conventional weight value

2.2 XS Balance Type «M»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XS6001M 1 II	6100 g 0.1 g 0.1 g		2 kg 0.2 g		2 kg 6 0.08 g		N.A. 2/4/6 kg 0.06 g	F1	6 kg F1 0.24 g	
XS6001MDR DR II	6100g / 1200 g 1 g / 0.1 g 1 g		2 kg 1 g		2 kg 6 0.6 g		N.A. 2/4/6 kg 0.6 g	F1	6 kg F1 0.3 g	
XS10001M 1 II	10100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		N.A. 2/4/6/8/10 kg 0.1 g	F1	10 kg F1 0.5 g	
XS12001MDR DR II	12100 g / 2400 g 1 g / 0.1 g 1 g		5 kg 1 g		5 kg 6 0.6 g		0/2/4/6/8/10/12 kg 2 kg 0.6 g	d	12 kg F1 0.6 g	
XS16001M 1 II	16100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		N.A. 4/8/12/16 kg 0.2 g	F1	16 kg 0.8 g	
XS10000M 1 -	10100 g 1 g -		5 kg 1 g		5 kg 6 0.6 g		N.A. 2/4/6/8/10 kg 0.6 g	F1	10 kg F1 0.5 g	
XS16000M 1 II	16100 g 1 g 1 g		5 kg 1 g		5 kg 6 0.6 g		N.A. 4/8/12/16 kg 0.6 g	F1	16 kg F1 0.8 g	

* Conventional weight value

2.3 XS Balance Type «L»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
XS8001L 1 II	8100 g 0.1 g 1 g		5 kg 0.3 g		5 kg 6 0.08 g		N.A. 2/4/6/8 kg 0.2 g	F1	8 kg F1 0.64 g	
XS16001L 1 II	16100 g 0.1 g 1 g		5 kg 0.3 g		5 kg 6 0.08 g		N.A. 4/8/12/16 kg 0.2 g	F1	16 kg F1 0.8 g	
XS32001L 1 II	32100 g 0.1 g 1 g		10 kg 0.3 g		10 kg 6 0.08 g		N.A. 10/20/30 kg 0.3 g	F1	32 kg F1 0.96 g	
XS32001LDR DR II	32100 g / 6400 g 1 g / 0.1 g 1 g		10 kg 1 g		10 kg 6 0.6 g		0/5/10/15/20/25 kg 5 kg 0.3 g	d	32 kg F1 0.96 g	
XS16000L 1 II	16100 g 1 g 1 g		5 kg 1 g		5 kg 6 0.6 g		N.A. 4/8/12/16 kg 0.6 g	F1	16 kg F1 1.28 g	
XS32000L 1 II	32100 g 1 g 1 g		10 kg 1 g		10 kg 6 0.6 g		N.A. 10/20/30 kg 0.6 g	F1	32 kg F1 1.92 g	

* Conventional weight value

3 Platform

3.1 X Platform Type «S»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
X204S 1 I	210 g 0.1 mg 1 mg		100 g 0.3 mg		100 g 10 0.2 mg		0/50/100/150 g 50 g 0.2 mg	d	200 g E2 * 1 mg	
X404S 1 I	410 g 0.1 mg 1 mg		200 g 0.3 mg		200 g 10 0.1 mg		0/100/200/300 g 100 g 0.2 mg	d	400 g E2 * 2 mg	
X404SDR DR I	410 g / 80 g 1 mg / 0.1 mg 1 mg		200 g 1 mg		200 g 10 0.6 mg		0/100/200/300 g 100 g 0.6 mg	d	400 g E2 * 2 mg	
X203S 1 II	210 g 1 mg 0.01 g		100 g 3 mg		100 g 6 0.9 mg		N.A 50/100/150/200 g 2 mg	E2	200 g E2 5 mg	
X603S 1 II	610 g 1 mg 0.01 g		200 g 3 mg		200 g 6 0.9 mg		0/200/400 g 200 g 2 mg	d	600 g F1* 4.5 mg	
X603SDR DR II	610 / 120 g 0.01 g / 1 mg 0.01 g		200 g 0.01 g		200 g 6 6 mg		N.A. 200/400/600 g 0.01 g	F1	600 g F1* 9 mg	
X1203S 1 I	1210 g 1 mg 0.01 g		500 g 3 mg		500 g 10 0.8 mg		0/200/400/600/800/1000 g 200 g 2 mg	d	1.2 kg F1* 6 mg	
X2003SDR DR I	2100 g / 500 g 0.01 g/ 1 mg 0.01 g		1000 g 0.01 g		500 g 10 6 mg		0/500/1000/1500 g 500 g 6 mg	d	2 kg F1 0.01 g	

* Conventional weight value

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
X5003SDR DR I	5100 g / 1000 g 0.01 g / 1 mg 0.01 g		2 kg 0.01 g		2 kg 10 6 mg		0/1/2/3/4 kg 1 kg 6 mg	d	5 kg F1* 0.02 g	
X1202S 1 II	1210 g 0.01 g 0.1 g		500 g 0.02 g		500 g 6 8 mg		N.A. 400/800/1200 g 0.02 g	F1	1.2 kg F1 0.06 g	
X2002S 1 II	2100 g 0.01 g 0.1 g		1 kg 0.03 g		1 kg 6 8 mg		0/500/1000/1500 g 500 g 0.02 g	d	2 kg F1 0.05 g	
X4002S 1 II	4100 g 0.01 g 0.1 g		2 kg 0.03 g		2 kg 6 8 mg		0/1/2/3 kg 1 kg 0.02 g	d	4 kg F1 0.06 g	
X6002S 1 II	6100 g 0.01 g 0.1 g		2 kg 0.03 g		2 kg 6 8 mg		0/2/4 kg 2 kg 0.02 g	d	6 kg F1* 0.06 g	
X6002SDR DR II	6100 g / 1200 g 0.1 g / 0.01 g 0.1 g		2 kg 0.1 g		2 kg 6 0.06 mg		N.A. 2/4/6 kg 0.1 g	F1	6 kg F1 0.15 g	
X8002S 1 II	8100 g 0.01 g 0.1 g		5 kg 0.04 g		5 kg 6 8 mg		0/2/4/6 kg 2 kg 0.02 g	d	8 kg F1* 0.06 g	
X10002S 1 II	10100 g 0.01 g 0.1 g		5 kg 0.04 g		5 kg 10 8 mg		0/2/4/6/8 kg 2 kg 0.02 mg	d	10 kg F1* 0.05g	
X10002SDR DR II	10100 g / 2000 g 0.1 g / 0.01 g 0.1 g		5 kg 0.1 g		5 kg 10 0.06 g		0/2/4/6/8 kg 2 kg 0.05 g	d	10 kg F1* 0.1 g	

* Conventional weight value

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
X4001S 1 II	4100 g 0.1 g 0.1 g		2 kg 0.2 g		2 kg 6 0.08 g		N.A. 1/2/3/4 kg 0.06 g	F1	4 kg F1 0.24 g	
X6001S 1 II	6100 g 0.1 g 0.1 g		2 kg 0.2 g		2 kg 6 0.08 g		N.A. 2/4/6 kg 0.06 g	F1	6 kg F1 0.24 g	
X8001S 1 II	8100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		0/2/4/6 kg 2 kg 0.1 g	d	8 kg F1 0.6 g	
X10001S 1 II	10100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		0/2/4/6/8 kg 2 kg 0.1 g	d	10 kg F1 0.5 g	

3.2 X Platform Type «M»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
X12002MDR DR II	12100 g / 2400 g 0.1 g / 0.01g 0.1 g		5 kg 0.1 g		5 kg 6 0.06 g		0/2/4/6/8/10 kg 2 kg 0.06 g	d	12 kg F1 0.096 g	
X8001M 1 II	8100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		0/2/4/6 kg 2 kg 0.1 g	d	8 kg F1 0.6 g	
X12001M 1 II	12100 g 0.1 g 1 g		5 kg 0.2 g		5 kg 6 0.08 g		N.A. 4/8/12 kg 0.1 g	F1	12 kg F1 0.6 g	
X12000M 1 -	12100 g 1 g -		5 kg 1 g		5 kg 6 0.6 g		N.A. 4/8/12 kg 0.6 g	F1	12 kg F1 0.6 g	
X20001M 1 II	20100 g 0.1 g 1 g		10 kg 0.2 g		10 kg 6 0.08 g		N.A. 5/10/15/20 kg 0.2 g	F1	20 kg F1 0.8 g	
X20000M 1 II	20100 g 1 g 1 g		10 kg 1 g		10 kg 6 0.6 g		N.A. 5/10/15/20 kg 0.6 g	F1	20 kg F1 0.8 g	

3.3 X Platform Type «L»

Balance Data			Excentricity		Repeatability		Linearity		Sensitivity	
Type Range Class	Capacity Readability d e		Refer. Weight Tolerance ±	Method	Refer. Weight Measurements Std. deviation max.	Method	Preload Refer. Weight Tolerance ±	Method	Refer. Weight Class Tolerance ±	Method
X16001L 1 II	16100 g 0.1 g 1 g		5 kg 0.3 g		5 kg 6 0.08 g		N.A. 4/8/12/16 kg 0.2 g	F1	16 kg F1 0.8 g	
X32001L 1 II	32100 g 0.1 g 1 g		10 kg 0.3 g		10 kg 6 0.08 g		N.A. 10/20/30 kg 0.3 g	F1	32 kg F1 0.96 g	
X64001L 1 II	64100 g 0.1 g 1 g		20 kg 0.5 g		20 kg 6 0.1 g		N.A. 20/40/60 kg 0.5 g	F1	64 kg F1 1.28 g	
X32000L 1 II	32100 g 1 g 1 g		10 kg 1 g		10 kg 6 0.6 g		N.A. 10/20/30 kg 0.6 g	F1	32 kg F1 1.92 g	

10 Accessories

List of Contents

1 Frequently used accessories

Note

Accessories for balances are listed in the «Technical data and Accessories» chapter of the Operating Instructions. All information required for ordering accessories will be found there.

The Operating Instructions are on the LAB service-expert CD or at http://extranet.mt.com LabTec Market Support.

1.1 Protective Cover Terminal

Designation	Part No.
Protective Cover Terminal PPT	11132570
Protective Cover Terminal SPT	11106870

1.2 Protective Cover Platform

Designation	Part No.
Protective Cover for Platform; balance types «S»	11133034
Protective Cover for Platform; balance types «M»	11132574

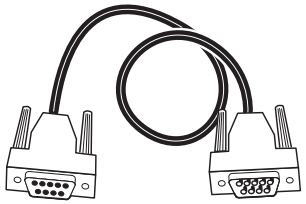
1.3 Protective Cover Platform/Terminal

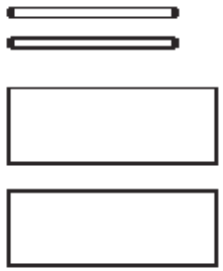
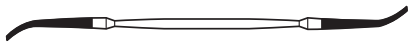
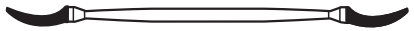
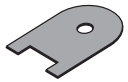
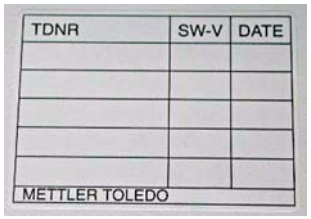
Designation	Part No.
Protective Cover for Platform/Terminal; balance types «S»	11132571
Protective Cover for Platform/Terminal; balance types «M»	11132572

1.4 Power supply

Designation	Note	Part No.
Power supply	S and M platforms	11132070
Line cable S and M platforms	DK	87452
	GB	89405
	USA	88668
	AUS	88751
	SA	89728
	EU (Schuko)	87925
	CH	87920
	IT	87457

11 Service Aids

Designation		Part No.
LARS Software	Download the latest version of the LARS Software from http://extranet.mt.com LabTec Market Support	-
USB-Dongle ‘LARSLock‘		11107505
ServiceExpert-CD		11780410
RS9 – RS9 connection cable for balance – PC, 1m m/f		11101051
ESD Service-Kit		11600009

Mounting Gauges «MonoBloc» 2 Pins Ø 2.97 mm (S-Balances) 217211 2 Pins Ø 3.47 mm (B/G/R-Balances) 217270 1 Spacer strip 0.5 mm 217225 1 Spacer strip 6.5 mm 217378		217411
File		299017
File for B-«MonoBloc»		11600083
6-pin detector cable		11134000
CAN key		73692
Service Data Plate		11106832

12 SOPs and Forms

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METTLER TOLEDO

SOP/Work Instruction:
***Preventive Maintenance* for XP and XS Precision Balances**

Content:

1. Purpose

This work instruction describes the procedures of **Preventive Maintenance** for XP and XS precision balances. In order to establish an unified service as well as meeting our quality standards all METTLER TOLEDO trained and certified service technicians must follow this instructions. Depending on the country additional work steps may be performed, e.g. for Calibration Certificates or approved models.

2. Scope

Maintenance work is usually part of a METTLER TOLEDO Service contract and is done at a specified time. This SOP is the framework for PM and has to be followed. Only factory trained and METTLER TOLEDO certified technicians are allowed to execute work in this manner. All measurement methods are defined in Doc.No: 11793000(1). METTLER TOLDO is accredited with regard to ISO 17025 and Calibration Certificates are issued.

All balances of the families XP … S, XP … M, XP … L as well as XS … S, XS … M and XS … L are covered by this Work Instruction.

3. General Considerations

3.1 Recommended Service Intervals

The Service Interval is defined by the customer depending on:

- the importance of the balance in the QA process
- importance of the results delivered by the balance
- risk and liability of results
- use of balance (quantitative)
- environment (dust, chemicals, etc.)

Recommendation

Depending on the accuracy required for the application and depending on the risk of the process, in case of inaccurate weighing or a malfunction of the balance, we recommend the following maintenance intervals:

Risk: liability, life support Cost: loss, damage	Absent-Normal Low-Medium	Severe High
Preventive Maintenance Interval	Once a year	Twice a year

Table 1 Preventive maintenance interval recommendation

3.2. Administrative

Before starting work it is recommended to:

- talk to the responsible person and explain the work to be done
- Verify requirements with supervisor, e.g. approval for cleaning, adjustments, etc. ask responsible person for any other requirements
- Get familiar with inter-company safety requirements

3.3. Calibration tests

These tests are an extensive diagnosis of the instruments about its functioning and measurement properties. Typically, these tests are performed by an authorized and trained METTLER TOLEDO service technician and aim at the evaluation of the individual properties of the balance, i.e. repeatability, eccentric load, linearity, sensitivity, internal reference mass. The values obtained of these properties can then be compared with the manufacturers balance specifications whether they are met. The Calibration Procedure is described in the Document Test and Measurements for Mettler-Toledo analytical and precision balances (Calibration SOP) Doc.No:11793000.

4. Preventive Maintenance Procedures

In order to work efficiently and accurate minimizing errors document all findings the PM Report "Preventive Maintenance Report for XP and XS S, M and L platform precision balances "Doc.No: 11793002[(2)] shall be used.

4.1 Identification

Identify balance and data regarding to service contract.

4.2 Customer Comments/Input

Get comments and input of the users or supervisor working with the balance.

4.3 Visual Inspection

4.3.1 Objective

Find broken or worn parts which may prevent a proper operation.

4.3.2 Procedure and Acceptance Criteria

Inspect	Acceptance Criteria
- Housing and terminal - Keypad and touch screen - Draft shield - Weighing pan - Leveling feet and level - Protective cover - AC adaptor and power cable	- No crack, dirt nor loose screws. - No crack and dirt. - No broken glass or cracks - No crack and dirt, correct fit - Level bubble in center - Clear and no dirt, correct fit - No broken insulation and dirt

4.4 Cleaning

4.4.1 Objective

Clean and check all components of the balance

4.4.2 Procedure
Do not use Nitro Solvents

- Clean draft shield windows (if applicable)
- Clean door guides (if applicable)
- Lift weighing pan and clean and polish
- Clean or replace in-use cover
- Clean display

4.4.3 Acceptance Criteria
All components of the balance are free of debris and dust that would prevent normal function of the weighing system.

4.5 Internal Inspection (if necessary)

4.5.1 Objective
An internal inspection is advised if any of the following circumstances are found

- dirty and dusty environment
- dirt was found under the weighing pan and pan support
- unstable behavior of the balance

4.5.2 Procedure and Acceptance Criteria
Any handling on electronic boards or components requires the use of appropriate ESD precautions, e.g. ESD mats and bracelets.

Disconnect Power

Inspect	Acceptance Criteria
- Check if dirt is present at any place - Check boards, cables and cell - Check adjustment weights - Check overload protection	- Clean - No connectors unplugged, no visible damage on the cell - No dirt - Overload protection is moving freely (not locked)

4.6 Battery Check

4.6.1 Objective
Assure seamless operation of the balance without loosing stored time or date information.

4.6.2 Check Battery
The lifetime of the internal Lithium battery can be expected to be greater or equal 5 years. In case the balance is 5 years or older and the battery has not been changed, or the battery is in place for equal or more than 5 years, or the battery information symbol in the display is lit replace with same type and set new expiration date(see SMA[3]).

4.6.3 Acceptance Criteria
Either product is younger than 5 years or documented evidence shows that battery has been changed.

4.7 Calibration/Adjustments (if necessary)

4.7.1 Objective
If the balance is out of specification, either customer's requirements or manufacture's tolerances it needs to be adjusted to meet those specifications.

4.7.2 Procedure
An adjustment is necessary if one of the calibration parameters is out of specification
- Eccentricity
- Linearity
- Sensitivity

Do appropriate adjustments with regard to the Service Manual (SMA^3).

4.7.3 Acceptance Criteria
All values are within the defined specifications

4.8 Final Test

4.8.1 Objective
Assure proper operation and settings of the balance. All peripherals are connected and working.

4.8.2 Procedure and Acceptance Criteria

Check	Acceptance Criteria
- Leveling feet and level indicator - Connect balance to mains (if applicable) - Check touch screen - Check door drive (if applicable) - Check draft shield closing - Check eccentricity - Check linearity - Check repeatability - Check function of peripherals (if applicable, e.g. printer or barcode reader)	- Level bubble is in center - All keys are responding - Door moves according the keys. - no gaps between doors - (SMA^3) - (SMA^3) - (SMA^3) - Working accordingly

4.9 Approved Models (if applicable)
Depends on country specific situation and will be dealt with separately in the country.

4.10 Calibration Documents (if applicable)
Depending on customer's requirements issue all necessary calibration reports. Sign documents and get customer's approval (sign-off)

4.11 Other Documents
Affix all necessary labels and Service Sticker

5. Completion of work
Inform supervisor of any deviations or non-conformances.
Get Sign-off on all required documents.
Hand over all necessary documents.

6. Typical Duration

These values for the duration are typical values under good conditions. Time may vary depending on various issues.

Balance type	Duration in Minutes
XP…S/M/L	30
XS…S/M/L	30

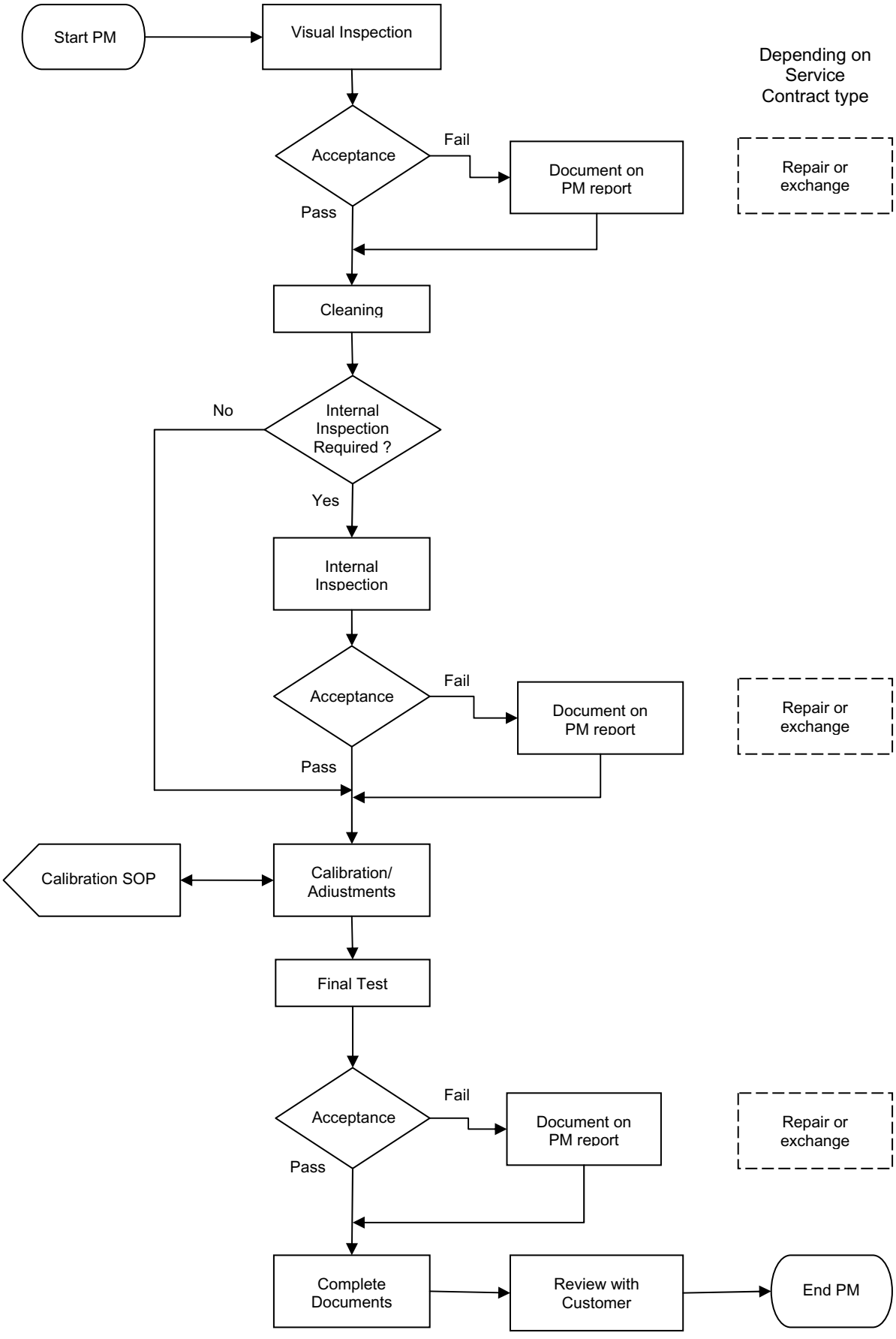
Excluded in this estimation are:

- any repairs
- issuing additional national Calibration Certificates
- acclimatizing weights and balance
- heavy cleaning
- check of complex peripherals other than e.g. printer or barcode reader

7. Tools and References

1 Test and Measurement Methods for Mettler-Toledo analytical and precision balances (11793000)
2 Preventive Maintenance Report XP and XS S, M and L platform balances (11793002)
3 Service Manual XP/XS precision balances (17780586)

8. Annex: Annex A -Preventive Maintenance Flowchart



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Annex B - Change History

Version	Changes
SOP21Dec2005	- All work steps are structured in Objective-Procedure-Acceptance Criteria - Acceptance Criteria have been added to “Cleaning” and “Adjustments” - The former chapters 3, 4 and 5 are consolidated in new chapter 3 “General Considerations” - “Maintenance tests” has been replaced with “Calibration Test” - Renaming “Procedures” with “Preventive Maintenance Procedures” - “Checklist” has been replaced with “Preventive Maintenance Report” or “PM Report” - Battery Check procedure has been added - Time estimation in “Typical Duration” has been lowered to 30 Minutes - Glossary has been removed - Flowchart diagram has been added.

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Tailored Services

METTLER TOLEDO

Preventive Maintenance Report for XP and XS precision balances

1. Basic Information

Company_____ Address_____

Contact _____ Unit Location_____ Tel. _____

Product _____ S/N _____ Remarks_____

Customer comments	

2. Checks

Test	**Acceptance Criteria**		**Fulfilled**			**Comments**
			Passed	Failed	n/a	
Visual Inspection - Housing and terminal - Keypad and touch screen - Weighing pan - Sliding doors (if applicable) - Leveling feet and level - Protective cover - AC adaptor and power cable	 - No crack, dirt nor loose screws. - No crack and dirt. - No crack and dirt. - No crack and dirt. - No crack and dirt. - Clear and no dirt. - No broken insulator and dirt.		 ☐ ☐ ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐ ☐ ☐	
Cleaning (no nitro solvents) - Clean draft shield windows - Clean Weighing pan - Clean door guides - Clean or replace in-use cover - Clean display			 ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐	
Internal inspection - Disconnect balance from mains - Check boards, cables and cell - Check adjustment weights - Check overload protection	 - No connectors unplugged, no visible damage on the cell - No dirt - Overload protection is moving freely (not locked)		 ☐ ☐ ☐	 ☐ ☐ ☐	 ☐ ☐ ☐	

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Test	Acceptance Criteria		Fulfilled			Comments
			Passed	Failed	n/a	
Function check - Leveling feet and level - Connect balance to mains - Check touch screen - Check door operation - Check eccentricity - Check linearity - Check repeatability - Check function of peripherals	 - Level bubble in center. - All keys are working right. - Door moves smoothly - Passed - Passed - Passed - Working accordingly		 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	 ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
- All necessary labels attached			☐	☐	☐	
- All necessary documents handed over to customer			☐	☐	☐	
Additional Comments						

3. Completion

Performed by: _____ Date:_____ Signature: _____
(Name)

Customer : _____ Date:_____ Signature:_____
(Name)

4. Next Preventive Maintenance

Due Date:_____

5. References

All work is based on the SOP “Preventive Maintenance for XP and XS Precision Balances”
Doc.No: 11793001

2 Forms

2.1 Certificate - Examples

2.1.1 Certificate Blank

Cal_Cert_Blanc

2.1.2 Blanks

Blank order no. 11780454 (100 pcs)

Certificate of Balance Calibration

Balance:

Eccentricity

Yes ☐ No ☐

	First/Center	
Rear/Left	Rear/Right	
Front/Left	Front/Right	
	Last Center	

Tolerance: _____ Deviation: _____

Linearity

Yes ☐ No ☐

Absolute Differential	Weight Tare	Display Tare	Display Reference	Difference Reference
1				
2				
3				
4				
5				
6				
7				

Tolerance: _____ Deviation: _____

Sensitivity

Yes ☐ No ☐

Weight	Display

Tolerance: _____ Deviation: _____

Repetability

Yes ☐ No ☐

	empty	load	Difference
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Tolerance: _____ Deviation: _____

issued by

Mettler-Toledo Services, Balance Road, MT-8606 Weightcity

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