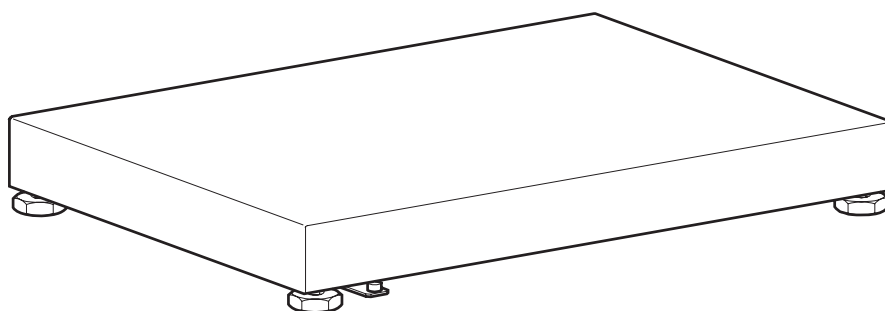


Service manual

METTLER TOLEDO MultiRange Table and stand scales PBA430... / PBA430x...

METTLER TOLEDO



www.mt.com/support

Contents

Page

1	General information.....	4
2	Safety information for operation in Ex area	5
3	Spare parts	7
3.1	Weighing platform	7
3.2	Terminal box IDNet (optional)	10
4	Technical data and tolerances	11
4.1	Verification diagrams	11
4.2	Setting values for cornerload and overload limits	15
5	Replacing parts	16
5.1	Safety precautions	16
5.2	Replacing load cells.....	16
5.3	Replacing A/D converter	17
5.4	Replacing IDNet cable	18

1 General information

Version	The PBA430... / PBA430x... table and stand scales contain one strain gauge sensor.
PBA430... / PBA430x... analog (standard)	<ul style="list-style-type: none"> • These scales can be connected to operating terminals with integrated analog/digital converters, e.g. the METTLER TOLEDO IND4x9 or IND690 weighing terminal. • The analog/digital conversion occurs in the operating terminal. All scales-specific and country-specific parameters are saved there as well.
PBA430... IDNet (optional)	<ul style="list-style-type: none"> • These scales can be operated with all METTLER TOLEDO operating terminals with a IDNet connection. • The analog/digital conversion is carried out by Point-Print, which is installed in a stainless-steel housing in the base frame. • All scales- and country-specific parameters are saved on the Point-Print. • The setting parameters in Service Mode are described in the service manual for the A/D converter Point ME-22004256.
Rectangular weighing platforms	<p>Rectangular weighing platforms are available in the following dimensions:</p> <ul style="list-style-type: none"> • PBA430(x)-A 240 x 300 mm • PBA430(x)-BB 300 x 400 mm • PBA430(x)-B 400 x 500 mm • PBA430(x)-BC 500 x 650 mm • PBA430(x)-CC 600 x 800 mm
Square weighing platforms	<p>Square weighing platforms are available in the following dimensions:</p> <ul style="list-style-type: none"> • PBA430(x)-QA 229 x 229 mm • PBA430(x)-QB 305 x 305 mm • PBA430(x)-QC 457 x 457 mm
Documentation	Information on operation is found in the operating instructions of the PBA430... / PBA430x... ME-22010231 table and stand scales.
Important information	<ul style="list-style-type: none"> • With verified scales, calibration must be performed externally with test weights in accordance with the configured maximum load. • With nonverified scales, test weights of at least 1/2 maximum weight are required. • The analog/digital converter contains precision electronic components, which are sensitive to static electricity discharge. For this reason, you should always wear a grounding wrist strap when working with the analog/digital converter to divert static electricity discharges.
Tools	<p>No special tools are required to repair the weighing platforms.</p> <p>→ Use a torque wrench to screw in the bolts.</p>

2 Safety information for operation in Ex area



The explosion-protected PBA430... weighing platforms are approved for operation in Zone 2 and Zone 22 hazardous areas.

The explosion-protected PBA430x... weighing platforms are approved for operation in Zone 1 and Zone 21 hazardous areas.

There is an increased risk of injury and damage when the explosion-protected weighing platforms are used in a potentially explosive atmosphere.

Special care must be taken when working in such hazardous areas. The code of practice is oriented to the "Safe Distribution" concept drawn up by METTLER TOLEDO.

- Competence** ▲ The weighing platforms may only be installed, maintained and repaired by authorised METTLER TOLEDO service personnel.
- Ex approval**
- ▲ No modifications may be made to the terminal and no repair work may be performed on the modules. Any weighing platform or system modules that are used must comply with the specifications contained in the installation instructions. Non-compliant equipment jeopardises the intrinsic safety of the system, cancels the Ex approval and renders any warranty or product liability claims null and void.
 - ▲ Peripheral devices (operation terminals) not Ex approved may only be used in a safe area and may not exceed the maximum supply voltage or the maximum voltage of the load cells.
 - ▲ The safety of the weighing system is only guaranteed when the weighing system is operated, installed and maintained in accordance with the respective instructions.
 - ▲ Also comply with the following:
 - the instructions for the system modules
 - the regulations and standards in the respective country
 - the applicable statutory requirements for electrical equipment installed in hazardous atmospheres in the respective country,
 - all instructions related to safety issued by the owner
 - ▲ Before initial start-up and following service work, check the explosion-protected weighing system for the proper condition of all safety-related parts.
- Operation**
- ▲ Prevent the build-up of static electricity. Always wear suitable working clothes when operating or performing service work in an hazardous area.
 - ▲ Do not use protective hoods.
 - ▲ Avoid causing damage to the weighing platforms.

**Installation/
Maintenance**

- ▲ Installation and maintenance work may be carried out on the weighing platform in the hazardous zone, providing the following conditions are fulfilled:
 - the owner has issued a permit ("spark permit" or "fire permit")
 - the area has been rendered safe and the owner's safety co-ordinator has confirmed that there is no danger
 - the necessary tools and any required protective clothing are provided (danger of the build-up of static electricity)
- ▲ The certification papers (certificates, manufacturer's declarations) must be present.
- ▲ Lay cables in such a way that they are protected from damage.
- ▲ Only route cables into the housing of the system modules via the earthing cable gland or METTLER TOLEDO plug and ensure proper seating of the seals.
- ▲ Always disconnect the system from the power supply before commencing maintenance work. Where certain inspections, tests or adjustments require the system to remain connected to the power supply, this work must be performed with particular care.

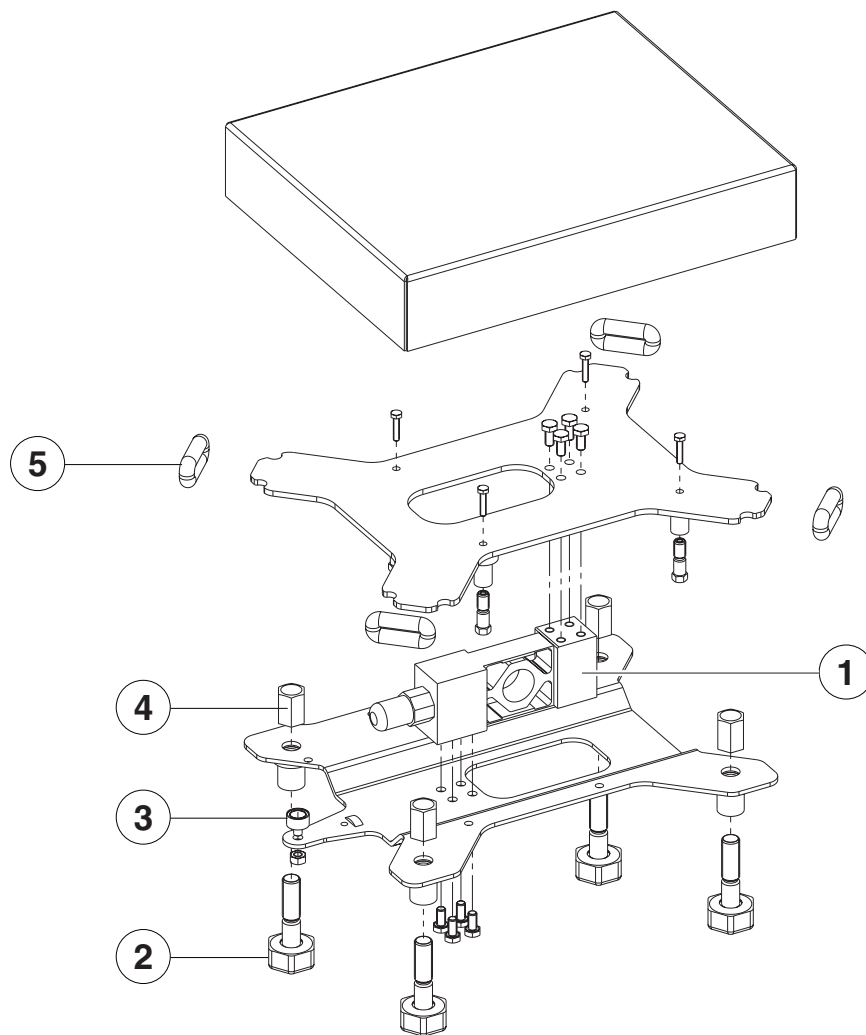
Service

- ▲ Service technicians must have attended a product-specific course of training for hazardous-duty equipment.
- ▲ Service work should be performed outside hazardous zones wherever possible. Service work includes dismantling an Ex unit inside the hazardous zone and moving it into the safe zone.
- ▲ Only use the parts or modules specified in the spare parts list as replacements.
- ▲ Do not separate connectors until the weighing system has been deenergised.

3 Spare parts

3.1 Weighing platform

3.1.1 Exploded drawing



3.1.2 Spare parts list

Item	Designation					Order No.
1	Load cell	Max. load	Application ¹⁾	Dimensions in mm	Cable length	
	708-11kg-C3 Ex (2.2 mV/V) Y22000	3 kg	PBA430(x)- A3	240 x 300	1.5 m	22 008 728
					5 m	22 008 729
	708-11kg-C3 Ex (2.2 mV/V)	3 kg 6 kg	PBA430(x)- A3 1x3000e PBA430(x)- (Q)A6	240 x 300 229 x 229	1.5 m	22 010 200
					5 m	22 008 730
	708-22kg-C3 Ex (2,2 mV/V) Y22.000 ²⁾	6 kg	PBA430(x)- A PBA430(x)- QA	240 x 300 229 x 229	1,5 m	22 015 809
					5 m	22 008 735
	708-22kg-C3 Ex (2.2 mV/V)	15 kg	PBA430(x)- A PBA430(x)- QB	240 x 300 305 x 305	1.5 m	22 010 201
					5 m	22 008 731
	708-50kg-C3 Ex	30 kg	PBA430(x)- BB PBA430(x)- B PBA430(x)- QB	300 x 400 400 x 500 305 x 305	1.5 m	22 010 202
					5 m	22 008 732
	708-100kg-C3 Ex	60 kg	PBA430(x)- BB PBA430(x)- B PBA430(x)- QB PBA430(x)- QC	300 x 400 400 x 500 305 x 305 457 x 457	2.5 m	22 010 203
					5 m	22 008 733
	708-200kg-C3 Ex	150 kg	PBA430(x)- B PBA430(x)- QC	400 x 500 457 x 457	2.5 m	22 010 204
					5 m	22 008 734
2	709-100kg-C3 Ex	60 kg	PBA430(x)- BC PBA430(x)- CC	500 x 650 600 x 800	5 m	22 010 205
	709-250kg-C3 Ex	150 kg	PBA430(x)- BC PBA430(x)- CC	500 x 650 600 x 800	5 m	22 010 206
	709-500kg-C3 Ex	300 kg	PBA430(x)- BC PBA430(x)- CC	500 x 650 600 x 800	5 m	22 010 207
	709-1000kg-C3 Ex	600 kg	PBA430(x)- CC	600 x 800	5 m	22 010 208
3	Levelling foot					
	for PBA430(x)- A / B / BB / BC / QA / QB / QC					21 255 397
	for PBA430(x)- CC					00 504 834
4	Level indicator					00 504 924
5	Nut for foot					21 252 811
6	O-ring					21 253 808

¹⁾ Standard configuration: 2 x 3000 e MR²⁾ Standard from December 1st, 2007

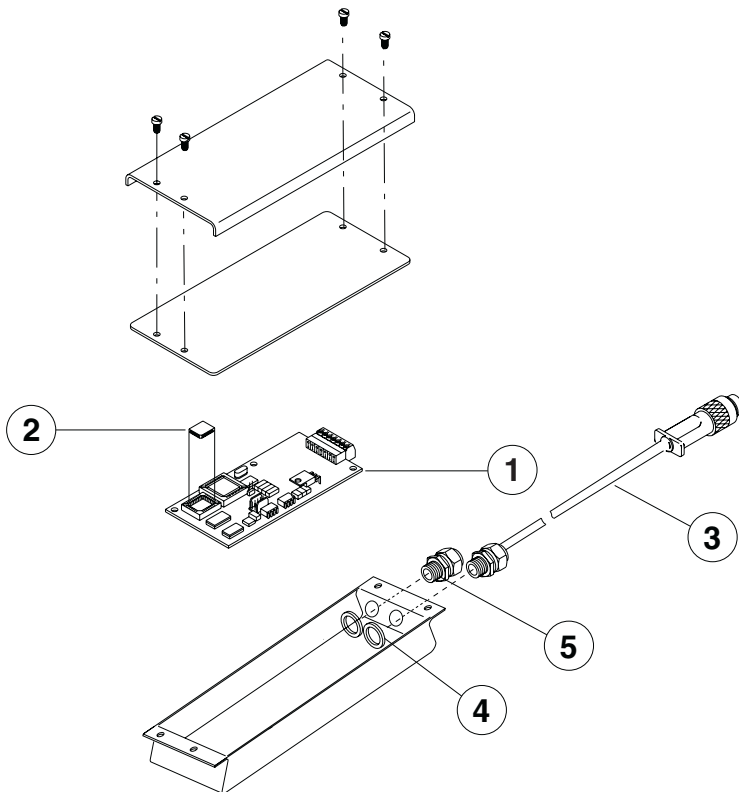
Item	Designation					Order No.
1	load cell with KS+ coating ¹⁾	Max. load	Application	Dimensions in mm	Cable length	
	0708-11kg-C3 Ex C ²⁾	3 kg	PBA430(x)- A3	240 x 300	1.5 m	22 021 310
	0708-22kg-C3 Ex C ²⁾	6 kg	PBA430(x)- QA6 PBA430(x)- A6	229 x 229 240 x 300	1.5 m	22 021 311
		15 kg	PBA430(x)- A15 PBA430(x)- QB15	240 x 300 305 x 305		
	0708-50kg-C3 Ex C	30 kg	PBA430(x)- QB30 PBA430(x)- BB30 PBA430(x)- B30	305 x 305 300 x 400 400 x 500	1.5 m	22 021 312
	0708-100kg-C3 Ex C	60 kg	PBA430(x)- QB60 PBA430(x)- BB60 PBA430(x)- QC60 PBA430(x)- B60	305 x 305 300 x 400 457 x 457 400 x 500	2.5 m	22 021 313
	0708-200kg-C3 Ex C	150 kg	PBA430(x)- QC150 PBA430(x)- B150	457 x 457 400 x 500	2.5 m	22 021 314

¹⁾ to be identified by the letter "C" in the type code, e.g. 0708-11kg-C3 Ex **C**

²⁾ Y value: 22.000

3.2 Terminal box IDNet (optional)

3.2.1 Exploded drawing



3.2.2 Spare parts list

Item	Designation	Order No.
1	Point-ADC PCB, no EPROM	00 507 000
2	EPROM for Point-ADC	00 507 274
3	Connection cable IDNet 2.5 m 5 m	22 002 107 22 012 680
4	Lock nut M12 x 1.5	22 006 566
5	Cable coupler M12 x 1.5	22 006 567

4 Technical data and tolerances

4.1 Verification diagrams

The following verification diagrams are shown for configuration with two weighing ranges (MultiRange).

When dealing with configurations with two weighing ranges and when testing **with an increasing load**, the closer (drawn through) tolerances must be followed.

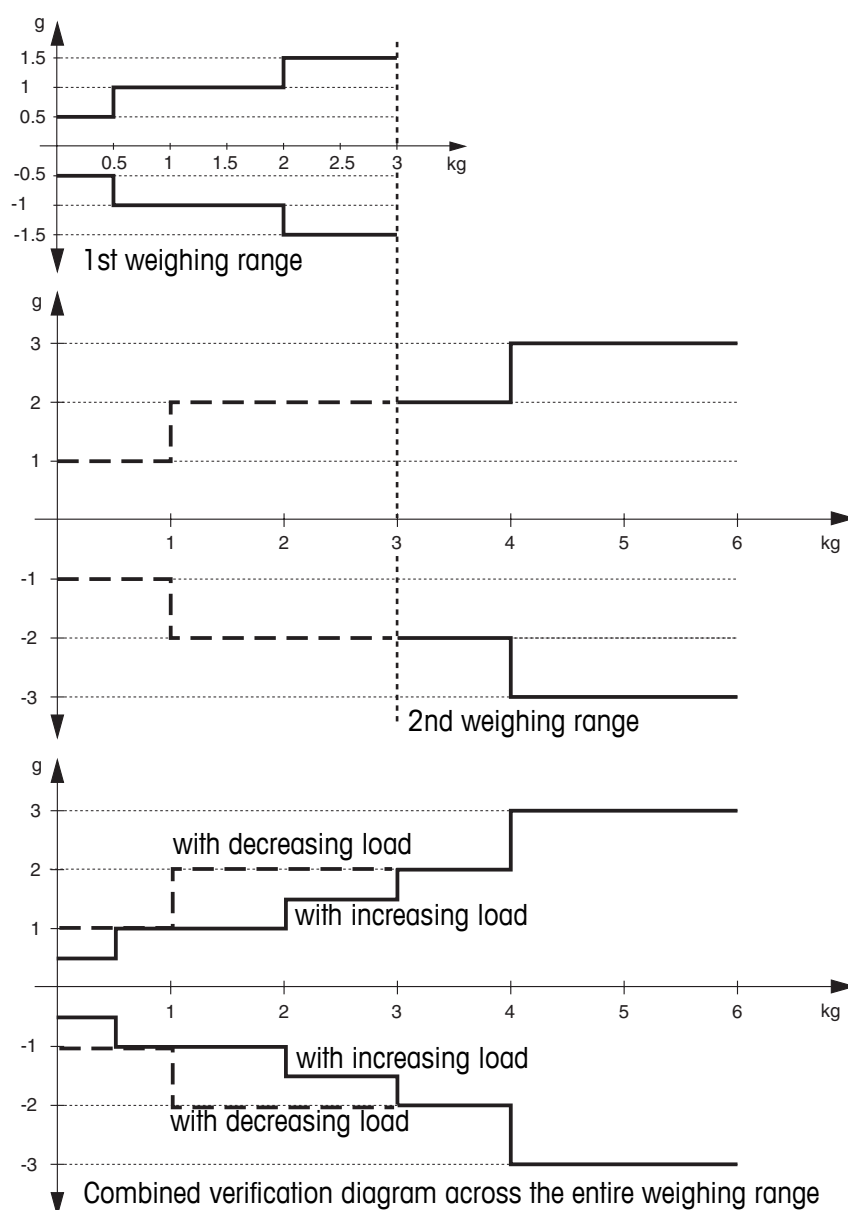
When testing **with a decreasing load** and starting with the second weighing range, the wider tolerances (dotted) must be followed.

Example

6 kg weighing platform

Weighing range 1: 3 kg / 1 g

Weighing range 2: 6 kg / 2 g



Cell configuration	Test with excentric load	Verification data	Verification diagram
2 x 3000 e MultiRange	<p>Scale 1 Weight 0.5 kg Tolerance 0.5 g</p> <p>Scale 2 Weight 1 kg Tolerance 1 g</p>	<p>Scale 1 e1 value 0.5 g max. 1 1.5 kg</p> <p>Scale 2 e2 value 1 g max. 2 3 kg</p>	
2 x 3000 e Multirange	<p>Scale 1 Weight 1 kg Tolerance 1 g</p> <p>Scale 2 Weight 2 kg Tolerance 2 g</p>	<p>Scale 1 e1 value 1 g max. 1 3 kg</p> <p>Scale 2 e2 value 2 g max. 2 6 kg</p>	
2 x 3000 e Multirange	<p>Scale 1 Weight 2 kg Tolerance 2 g</p> <p>Scale 2 Weight 5 kg Tolerance 5 g</p>	<p>Scale 1 e1 value 2 g max. 1 6 kg</p> <p>Scale 2 e2 value 5 g max. 2 15 kg</p>	

Cell configuration	Test with excentric load	Verification data	Verification diagram
2 x 3000 e MultiRange	Scale 1 Weight 5 kg Tolerance 5 g Scale 2 Weight 10 kg Tolerance 10 g	Scale 1 e1 value 5 g max. 1 15 kg Scale 2 e2 value 10 g max. 2 30 kg	
2 x 3000 e Multirange	Scale 1 Weight 10 kg Tolerance 10 g Scale 2 Weight 20 kg Tolerance 20 g	Scale 1 e1 value 10 g max. 1 30 kg Scale 2 e2 value 20 g max. 2 60 kg	
2 x 3000 e Multirange	Scale 1 Weight 20 kg Tolerance 20 g Scale 2 Weight 50 kg Tolerance 50 g	Scale 1 e1 value 20 g max. 1 60 kg Scale 2 e2 value 50 g max. 2 150 kg	

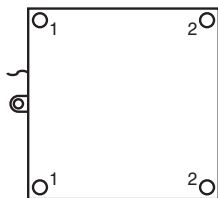
Cell configuration	Test with excentric load	Verification data	Verification diagram
2 x 3000 e MultiRange	<p>Scale 1 Weight 50 kg Tolerance 50 g</p> <p>Scale 2 Weight 100 kg Tolerance 100 g</p>	<p>Scale 1 e1 value 50 g max. 1 150 kg</p> <p>Scale 2 e2 value 100 g max. 2 300 kg</p>	
2 x 3000 e Multirange	<p>Scale 1 Weight 100 kg Tolerance 100 g</p> <p>Scale 2 Weight 200 kg Tolerance 200 g</p>	<p>Scale 1 e1 value 100 g max. 1 300 kg</p> <p>Scale 2 e2 value 200 g max. 2 600 kg</p>	

Notes on verification

- With verified scales, calibration must be performed externally with test weights in accordance with the configured maximum load.
- With nonverified scales, test weights of at least 1/2 maximum weight are required.

4.2 Setting values for cornerload and overload limits

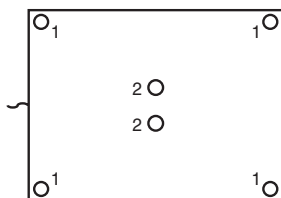
4.2.1 PBA430(x)-QA



→ Set the cornerload resp. overload limit screws on the left corners (1) and the right corners (2) to the following values:

Type	Dimensions	max. load	Overload limit	
			Corner (1)	Corner (2)
PBA430(x)-QA	229 x 229 mm	6 kg	1.5 mm	0.9 mm

4.2.2 All other weighing platforms PBA430(x)



→ Set the cornerload resp. overload limit screws at the corners (1) and the middle (2) to the following values:

Type	Dimensions	max. load	Overload limits	
			Corners (1)	Middle (2)
PBA430(x)-A	240 x 300 mm	6 kg 15 kg	0.8 mm 1.6 mm	— —
PBA430(x)-BB	300 x 400 mm	30 kg 60 kg	1.8 mm 2.2 mm	0.6 mm 0.6 mm
PBA430(x)-B	400 x 500 mm	30 kg 60 kg 150 kg	1.4 mm 3.0 mm 4.7 mm	0.8 mm 0.7 mm 1.3 mm
PBA430(x)-BC	500 x 650 mm	60 kg 150 kg 300 kg	2.9 mm 5.8 mm 7.0 mm	0.7 mm 1.3 mm 2.9 mm
PBA430(x)-CC	600 x 800 mm	60 kg 150 kg 300 kg 600 kg	1.8 mm 3.0 mm 5.5 mm 9.5 mm	0.3 mm 0.3 mm 0.8 mm 0.8 mm
PBA430(x)-QB	305 x 305 mm	15 kg 30 kg 60 kg	0.8 mm 1.1 mm 1.8 mm	0.4 mm 0.4 mm 0.5 mm
PBA430(x)-QC	457 x 457 mm	60 kg 150 kg	3.0 mm 4.7 mm	0.7 mm 1.3 mm

5 Replacing parts



5.1 Safety precautions

- ▲ Disconnect the terminal from the power supply before you replace parts.
- ▲ Always wear an earthing wrist strap during all work on the weighing platform.

5.2 Replacing load cells

Notes

- The load cells are calibrated at the factory in such a way that adjustment of the corner load is not necessary.
- After the load cell has been replaced, the corner load and overload limits have to be reset, refer to section 4.2.
- Lubricate screws before mounting and clean screwing areas.

5.2.1 Removing the load cell

1. Remove the load plate.
2. Loosen the fastening screws of the load cell at the frame top section and lift off the frame top section.
3. Loosen the fastening screws of the load cell at the frame bottom section and remove the load cell.

5.2.2 Disconnecting the load cell

Analog weighing platforms

- Disconnect the load cell at the terminal.

Weighing platforms with IDNet connection

1. Screw off the cover at the IDNet terminal box and detach the connecting wires of the load cell at the terminals.
2. Loosen the cable gland and pull out the load cell cable.

5.2.3 Installing the load cell

1. Insert the new load cell in the bottom frame section.
2. Align the load cell parallel and screw tight to the bottom frame section.

Tightening torque	load cell 708	10 Nm
	load cell 709	25 Nm

5.2.4 Closing the weighing platform

1. Align the frame top section parallel to the frame bottom section and screw it to the load cell.
 Tightening torque load cell 708 10 Nm
 load cell 709 25 Nm
2. Put on the load plate.

5.2.5 Connecting the load cell

Analog weighing platforms

→ Connect the load cell to the terminal in accordance with the color coding.

Weighing platforms with IDNet connection

1. Fasten the cable of the new load cell with a cable gland to the IDNet terminal box and connect the load cell cable in accordance with the color coding.

Assignment	Colour	Terminal
EXC+	Green	1
SEN+	Blue	2
SIG+	White	3
SIG–	Red	5
SEN–	Brown	6
EXC–	Black	7

2. Close the cover of the IDNet terminal box.

5.3 Replacing A/D converter

5.3.1 Removing A/D converter

1. Unscrew cover on IDNet terminal box.
2. Disconnect plug at A/D converter.
3. Loosen both nuts and remove A/D converter PCB.

5.3.2 Installing A/D converter

1. Transfer EPROM from defective PCB to new PCB.
2. Insert plug.
3. Insert PCB into the housing and secure it with both nuts.
4. Place cover on the IDNet terminal box and screw it down.

5.4 Replacing IDNet cable

1. Disconnect the weighing system from the power supply.
2. Remove load plate.
3. Unscrew cover on IDNet terminal box.
4. Loosen the in-box-plug on the A/D converter PCB.
5. Undo the earthing cable gland and remove IDNet cable.
6. Mount new cable. Ensure proper seating of the o-ring of the cable gland when doing so.
7. Plug in in-box-plug.
8. Place cover on the IDNet terminal box and screw it down.



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