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Servicemanual
Analytical balance

KERN TAXS / TAXE

Version 1.0

07/2025

GB



GB

KERN TAXS/TAXE

Version 1.0 07/2025

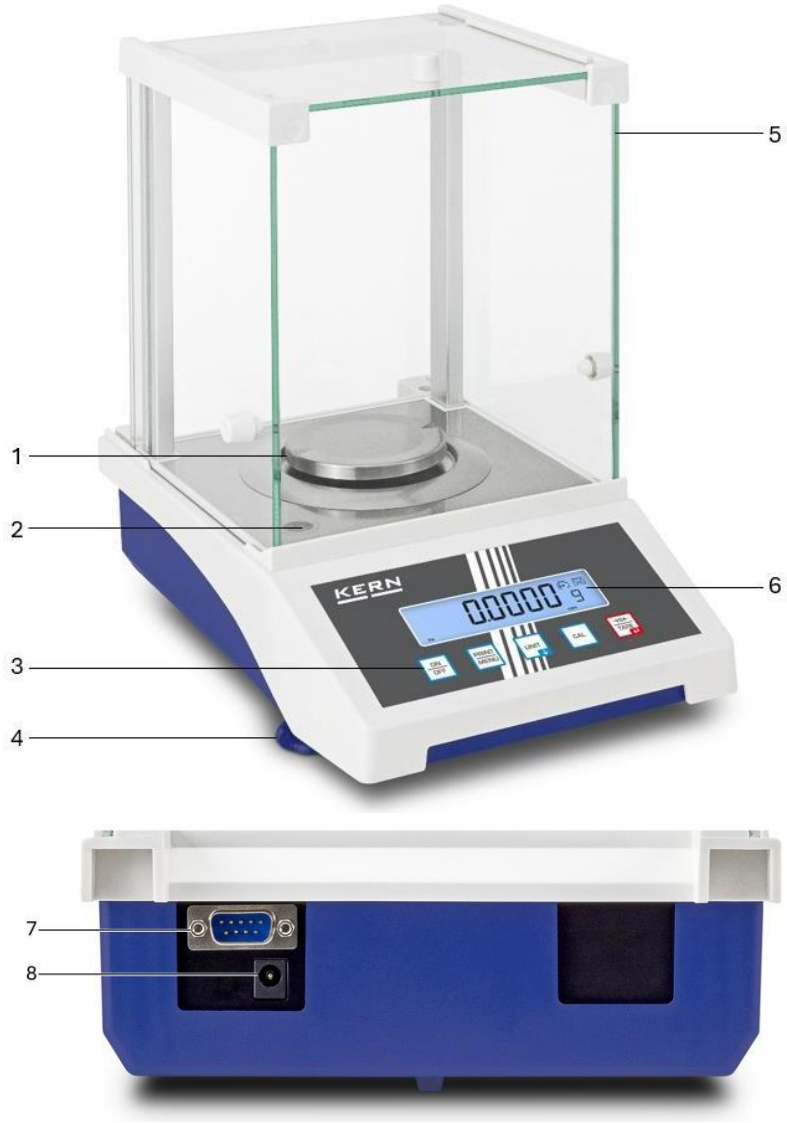
Servicemanual

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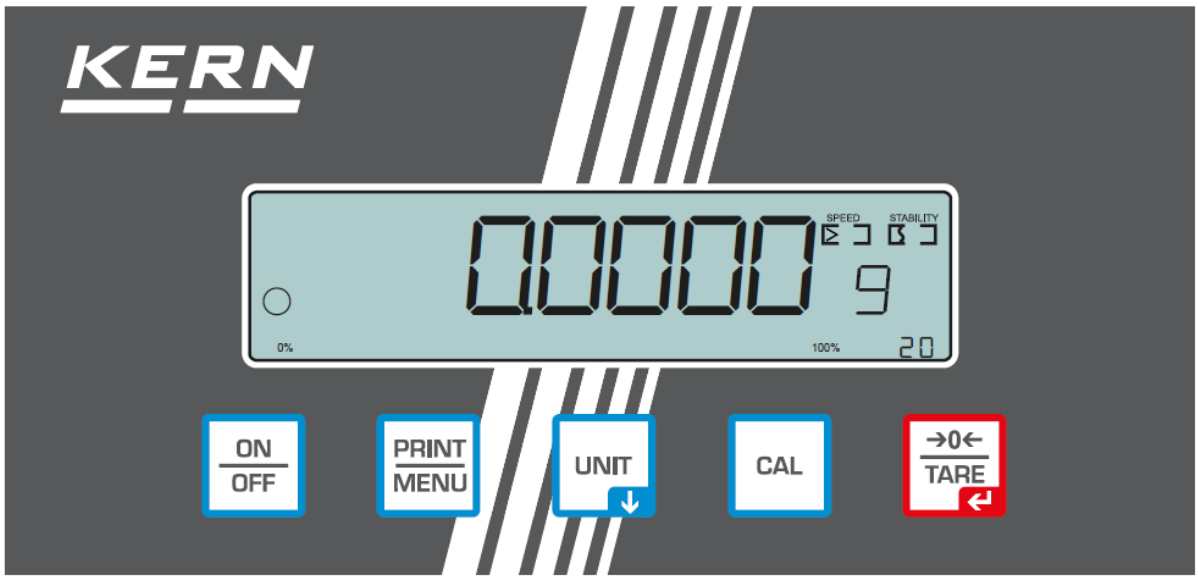
1 TOTAL VIEW

1.1 Components



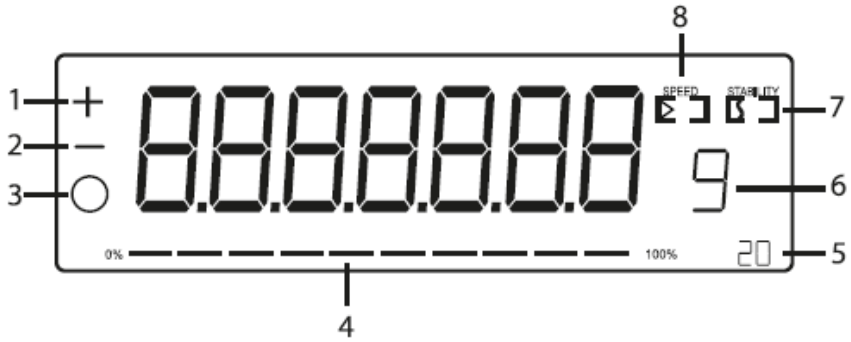
Pos.	Designation
1	Weighing plate
2	Spirit level
3	Keyboard
4	Foot screw
5	Windbreak
6	Display
7	RS232C Interface
8	Mains adapter connection

1.2 Keyboard overview



Button	Name	Function in operating mode	Function in the menu
ON OFF	**[ON/OFF]**	➢ Switch on/off	
PRINT MENU	**[PRINT | MENU]**	➢ Transmit weighing data via interface ➢ Call up menu ➢ (long keystroke)	➢ Navigation button at the top level of the menu structure
UNIT	**[UNIT]**	➢ UNIT button Change weighing unit	➢ Navigation button in the submenus
CAL	**[CAL]**	➢ CAL button Start calibration	
→0← TARE	**[→0← | TARE]**	➢ Zeros ➢ Taring	➢ Select menu item ➢ Confirm selection

1.3 Overview of display



Position	Display	Description
1	+	Plus display
2	-	Minus display
3	○	Stability indicator
4	0% ▬▬▬▬▬▬▬▬▬▬ 100%	Bar graph
5	20	Autocal interval in min.
6	**Unit display**	Selectable: g, mg, ct, oz
7	STABILITY	Stability display
8	SPEED	Reaction display

2 ERROR CODES

Error message	Explanation
Err.	Alignment error
Err. 1	Counting mode error (sample too light or overload)
Err.2	Weighing plate incorrectly positioned
Err.3	Overload
Err.4 Err.4A	Internal calibration error or motor error
Err.5	Percentage mode error (sample too light or overload)

3 TROUBLE SHOOTING

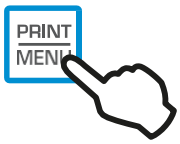
In the event of a fault in the program sequence, the scale should be switched off and disconnected from the power supply. The weighing process must then be re-started from the beginning.

Malfunction	Possible cause
The display does not light up	• The scale is not switched on • The connection to the power supply is interrupted (not plugged in or defective) • The mains voltage has failed
The weight display changes continuously	• Draught/air movement • Ambient conditions are not optimal • Glass doors are not closed • Vibrations of the table/floor • The weighing plate is scratched or has come into contact with foreign objects • Electromagnetic fields/static charging (choose a different installation location/switch off the interfering device if possible)
The weighing result is obviously incorrect	• The scale display is not set to zero • The adjustment is no longer correct • The scales are not level • There are strong temperature fluctuations • The warm-up time was not observed • Electromagnetic fields / static charge (choose another installation location / if possible, switch off the interfering device)

4 MENU

4.1 Navigation in the menu

Call up menu:



Application menu



- Press and hold **[PRINT | MENU]** until the first menu item is displayed

Select and set parameters:

Scrolling on one level	The individual menu blocks can be selected in sequence with **[PRINT | MENU].** If the desired menu block is skipped, the menu must be called up again.
Activate menu item / Confirm selection	Press **[->0<- | TARE]**

4.2 Overview Menu

Level 1	Level 2	Further levels / description
		Description of the
unit Unit	g	gram
	mg	Milligram
	ct	Carat
	oz	Ounce
SPEEd Reaction speed	[ ]	Very slow reaction speed
	[>]	Slow reaction speed
	[> >]	Moderate reaction speed
	[> > >]	Fast reaction speed
StAb Stability	[ ]	Very low sensitivity
	[S]	Low sensitivity
	[S S]	Moderate sensitivity
	[S S S]	High sensitivity
cou Counting	5	Reference weight: 5 parts
	10	Reference weight: 10 parts
	20	Reference weight: 20 parts
	50	Reference weight: 50 parts
	100	Reference weight: 100 parts
	200	Reference weight: 200 parts
	---	0.0001 g corresponds to 1 piece
dEFAuLt Factory settings		The scale is reset to the factory settings.
E-cAL	<cAL-200>	External adjustment
Pct Percentage weighing	100Pct	Reference weight 100%

Level 1	Level 2	Further levels / description	
		Description of the	
AutocAL (AXE scales only) Automatic adjustment	oFF	Set interval for automatic adjustment	
	10 min		
	20 min		
	30 min		
	40 min		
	50 min		
	60 min		
	70 min		
	80 min		
	90 min		
PEAk Maintain peak value	on	Peak value function activated	
	oFF	Peak value function deactivated	
bAud Baud rate	1200*	Setting the baud rate	
	2400		
	4800		
	9600		
Pr int Print	once	The weight value is output after pressing the **[PRINT | MENU]** button (chap. 15.3.1)	
	co-S	Continuous data output (chap.15.3.2)	
	co-r	Automatic data output (chap. 15.3.3)	
	ASk	EWJ / PFB	
		Com-mand	Function
		S	Stable weighing value for the weight is sent via the interface
Acc Totalise		Activate totalising function	

*Factory setting

5 CONFIGURATION AND ADJUSTMENT

5.1 Adjustment

As the value of the acceleration due to gravity is not the same at every location on earth, each scale must be adjusted to the prevailing acceleration due to gravity at the installation site in accordance with the underlying physical weighing principle (only if the scale has not already been adjusted to the installation site at the factory). This adjustment process must be carried out when the scale is first put into operation, after each change of location and in the event of fluctuations in the ambient temperature. In order to obtain accurate measured values, it is also advisable to periodically adjust the scale during weighing operation.

Carry out adjustment as close as possible to the maximum load of the scale (for recommended adjustment weight, see chapter 1). Adjustment is also pos- sible with weights of other nominal values or tolerance classes but is not opti- mal from a metrological point of view. The accuracy of the calibration weight must correspond approximately to the readability [**d]** of the scale, or slightly better.Information on test weights can be found on the Internet at: http://www.kern- sohn.com

- Ensure stable ambient conditions. A warm-up time (see section 1) is required for stabilisation.
- Ensure that there are no objects on the weighing plate.
- Avoid vibrations and air currents.

Only carry out adjustment with the standard weighing plate in place.

5.1.1 External adjustment AXS models

Realisation:



⇨ Press **[ON | OFF].**



⇨ Press **[→0← | TARE]** to set the scale to zero



⇨ Press **[CAL].**



⇨ **<CAL-100> or**
<CAL-200> is displayed (depending on model)

⇨ Apply calibration weight



⇨ After successful adjustment, <200.0000 G> is displayed.

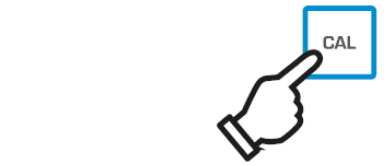


⇨ Remove the calibration weight

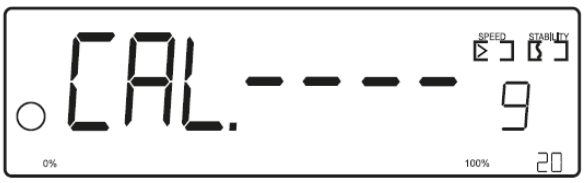
⇨ The scales are now ready for weighing

5.1.2 Internal adjustment AXE models

Realisation:



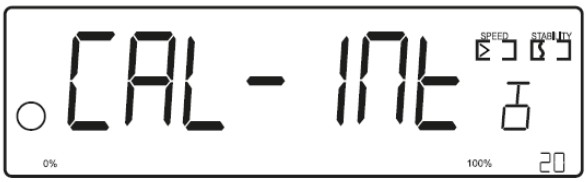
⇨ Press **[CAL].**



⇨ Calibration is started.

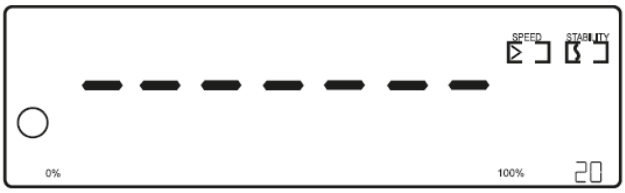
⇨ **<CAL.---->** is displayed

⇨ Avoid moving the scales during the calibration process

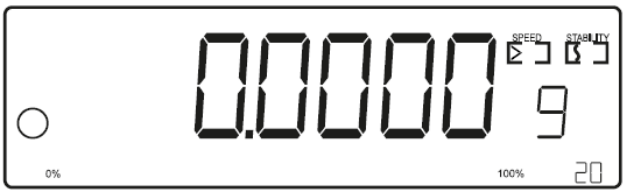


⇨ **<CAL- int>** is displayed flashing

⇨ Internal adjustment is carried out



⇨ **<-------->** is displayed



⇨ The scales are now ready for weighing

5.2 Linearization

This function is used for linear calibration. A set of calibration weights is required (optional parts, available for purchase).
For example, we performed weighing using the model TAXE 220-4-A with no load, closing the glass wind-proof cover before starting the calibration.

Pay attention during the calibration process to keep the environment stable, without any interference or crosswind. If there is any deviation after calibration, please readjust the environment and perform the calibration again.

1). Power off the device

2). Press and hold the " 

" + " 

" button

3). The display shows **"CAL-200"**

4). Wait until the display starts blinking, then place the **"200 g"** calibration weight. The display will then show **"------"**.

5). After a few seconds, **"CAL-150"** is displayed, remove the 200 g weight

6). When **"CAL-150"** starts blinking, place the **"150 g"** calibration weight. The display will then show **"------"**.

7). After a few seconds, when **"CAL-100"** is displayed, remove the 150 g weight.

8). When **"CAL-100"** starts blinking, place the **"100 g"** calibration weight. The display will then show **"------"**.

9). After a few seconds, when **"CAL-50"** is displayed, remove the 100 g weight.

10). When **"CAL-50"** starts blinking, place the **"50 g"** calibration weight. The display will then show **"------"**.

11). At the end of the calibration, the display will show **"CAL-"**. You may then remove the weight.

12). After that, the display will show **"CAL----"**. Approximately 5 seconds later, it will change to **"CAL-INT"**, indicating that the linearization process is complete.

Note: After calibration, wait 5 seconds before weighing any weight or other samples. If weighing immediately after calibration, there may be an error of 10 to 15 digits!

5.3 Overwriting internal adjustment weight value

This is exemplary for the TAXE 220-4-A. The displayed weight may vary depending on the specific model. Please use the weight demanded by the scale.

1). In weighing mode, press the " 

" + " 

" buttons simultaneously.

2). The display shows **"CAL-200"** blinking. Place the required **200 g** calibration weight on the scale.

3). The display changes to **"------"**. Wait until the display changes to **"CAL----"** or shows it, then remove the weight.

4). The display shows **"CAL-INT"**.

5). The display shows **"----"** and the motor runs (indicating calibration is in progress).

6). The display shows **"0.0000 g"**, indicating the weighing mode is complete.

Note: Please use an F1 class or better calibration weight for calibrating the internal weight.

5.4 Corner Adjust

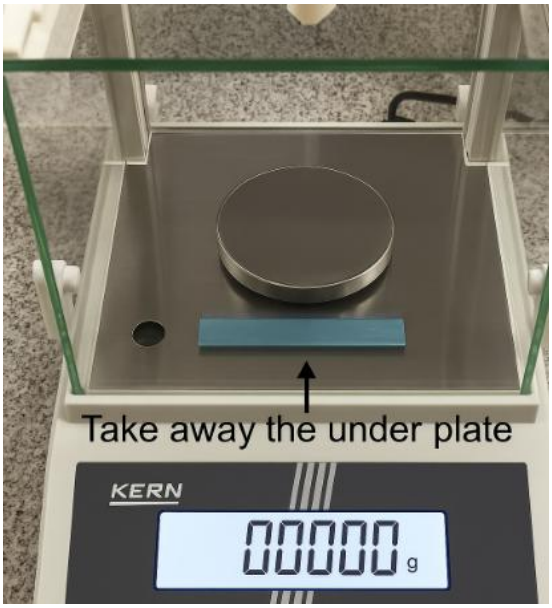
If excessive weight deviation is detected at the four corners of the weighing plate, a corner adjustment must be performed to ensure accurate and consistent measurement results.

1. Prepare the spanner for adjusting the four corners

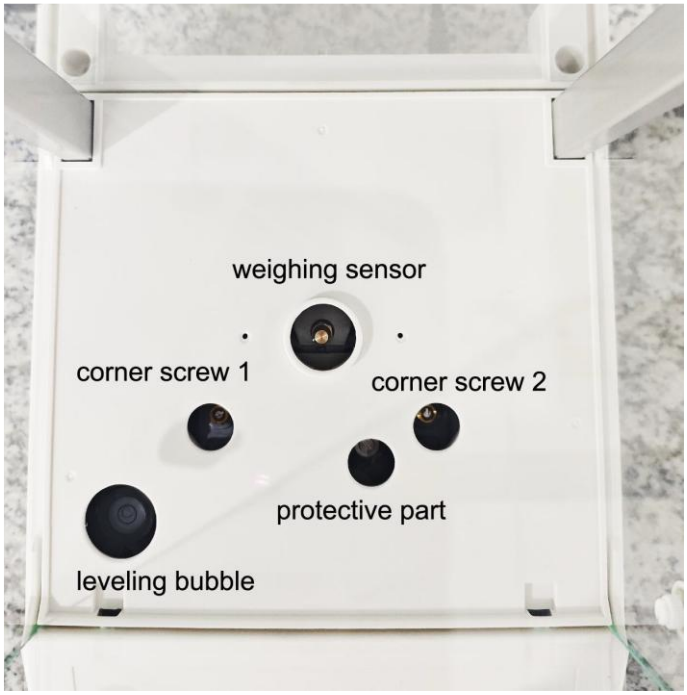




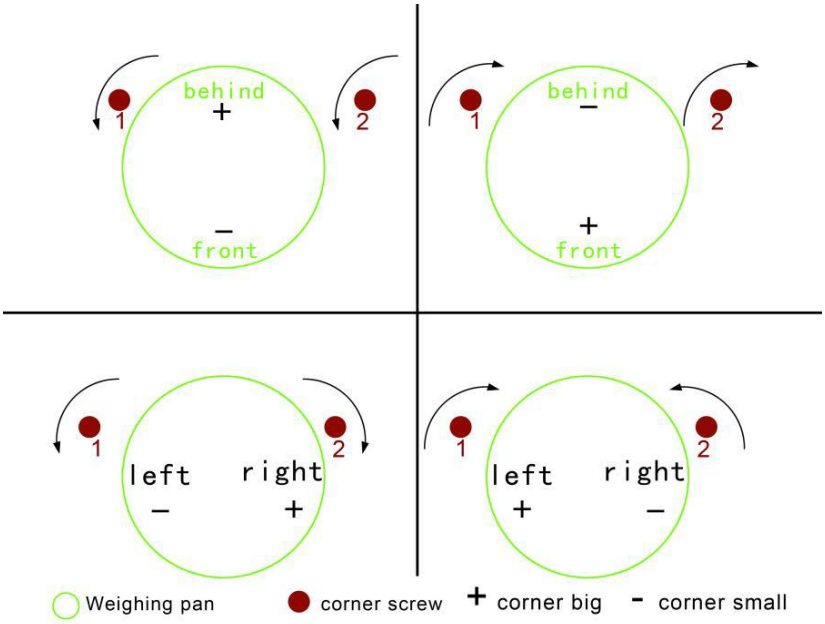
2. Unscrew the screws and remove the stainless-steel tray.



3. Adjust the corner slowly. A 1° adjustment corresponds to approximately 1 digit.



Please refer to the diagram below when adjusting the corner value:



6 REPLACING PARTS

6.1 Change PCB

Some issues may require replacing the PCB. However, certain components must be retained.

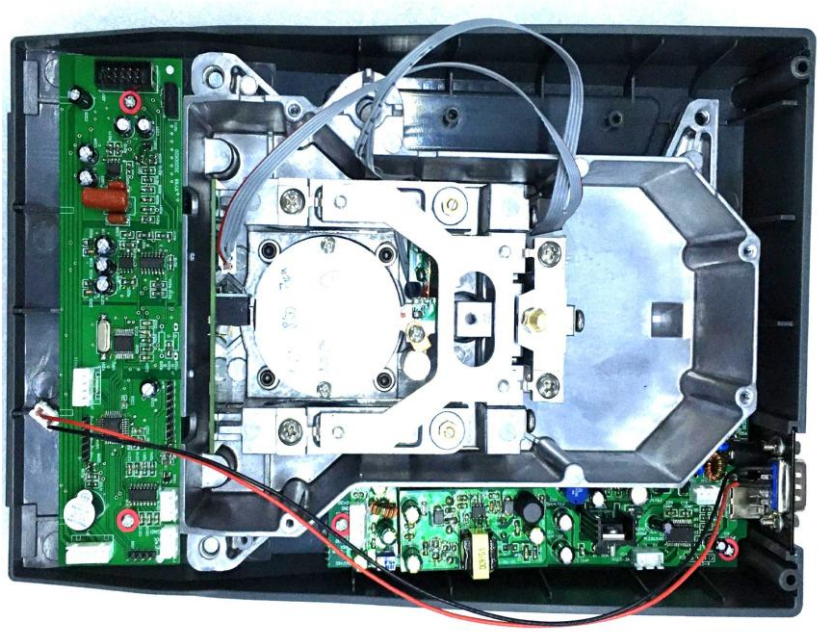
Step 1: Unscrew the two screws at the back of the scale and remove the cover.



Step 2: Prepare the new PCB to replace the old one.



Step 3: Replace the old PCB with the new one. Please note: the resistor **R228** must be retained and mounted on the new PCB.





R228 for resistance from old PCB

Error 2 and Error 3 are sometimes caused by a power supply issue. Now, we can check the DC-DC chips on the main PCB.



This issue affects the power supply to the weighing sensor, causing it to stop working. To fix this problem, replace the faulty chips or the entire power PCB.

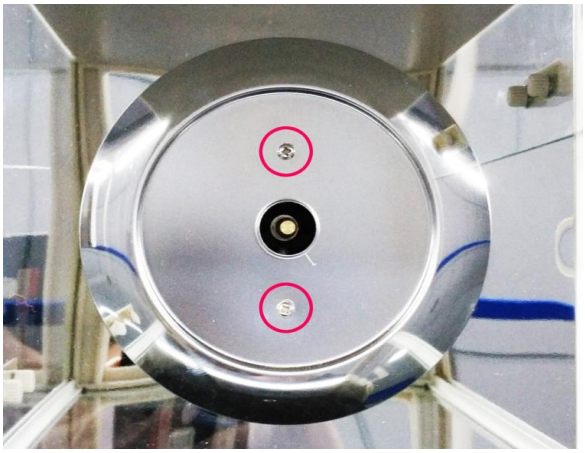
6.2 Sensor Protection Limit Adjustment

The protection mechanism may become misaligned due to shocks during shipping. Adjusting the protection limit can help restore proper operation.
If the balance displays “Err 2” or “------” and cannot return to zero (after placing the pan):

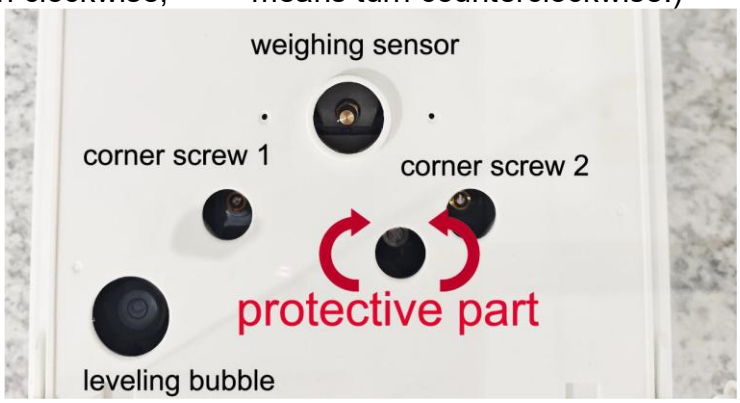
Step 1: Prepare a flathead “-” screwdriver and a Phillips “+” screwdriver.



Step 2: Unscrew the screws and remove the stainless-steel tray.



Step 3: Use the flathead “-” screwdriver to carefully adjust the screw. Do not turn it more than 5° per adjustment. Then, place the plate and test again. (Err 2 means turn clockwise, ------ means turn counterclockwise.)





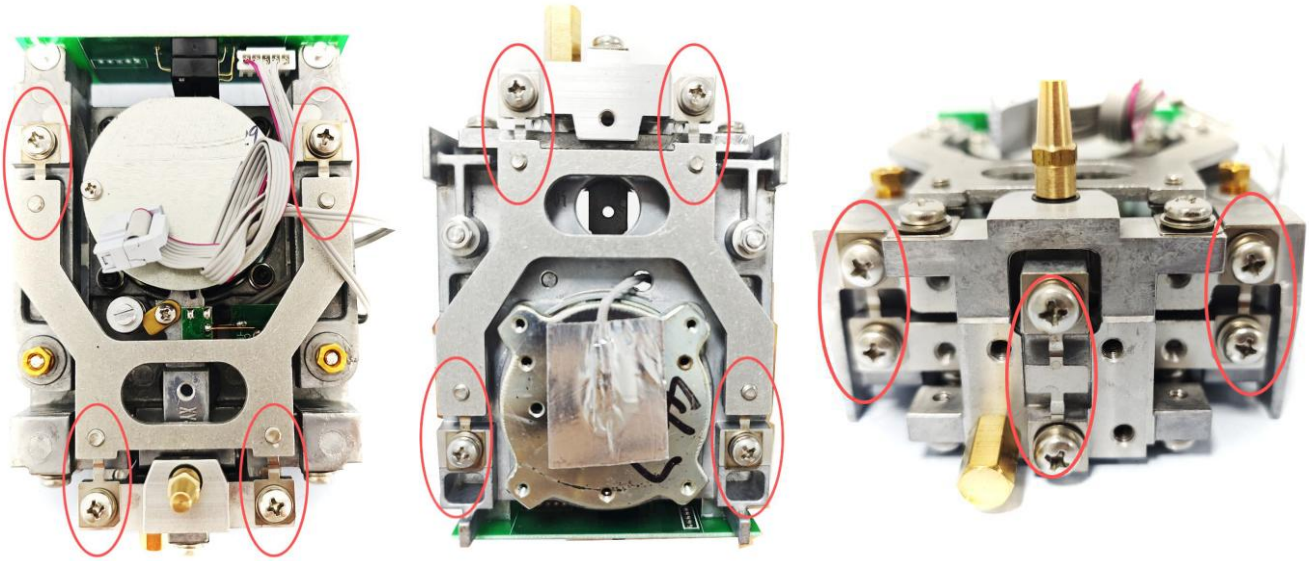
6.3 Check the sensor

If adjusting the protective screw does not solve the problem, we need to open the case and check whether the weighing reeds are broken.

Step 1: Open the case by unscrewing the two screws on the back of the balance.



Step 2: Check the sensor and the weighing reeds.



If the reeds are broken, they must be replaced:

1. Load-bearing reed
2. Fulcrum reed
3. Sling reed

The reeds are very fragile. When replacing one reed, you must secure all other parts, because the procedure can affect the other reeds.

6.4 Replacing the complete measuring system

If the sensor is broken and we do not have the tools to replace the reeds, we can directly replace the entire weighing sensor assembly.

Step 1: Prepare the sensor assembly (check the model with KERN first).



Step 2: Remove the old sensor by unscrewing the 4 screws and disconnecting the cable.

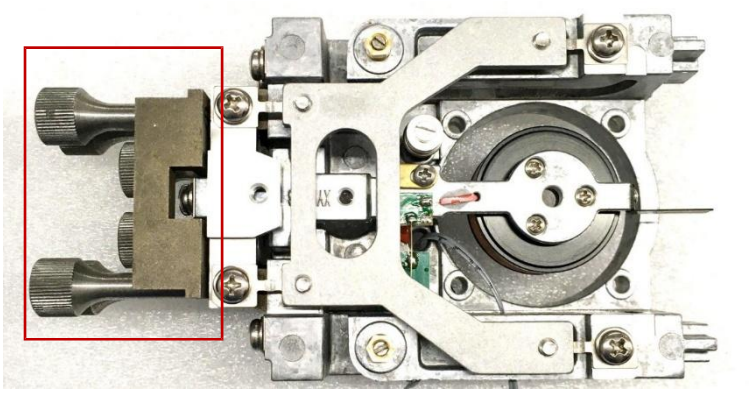


Step 3: Install the new sensor, connect the sensor cable, and then reattach the upper case.

6.5 Replacing the reeds for the sensor

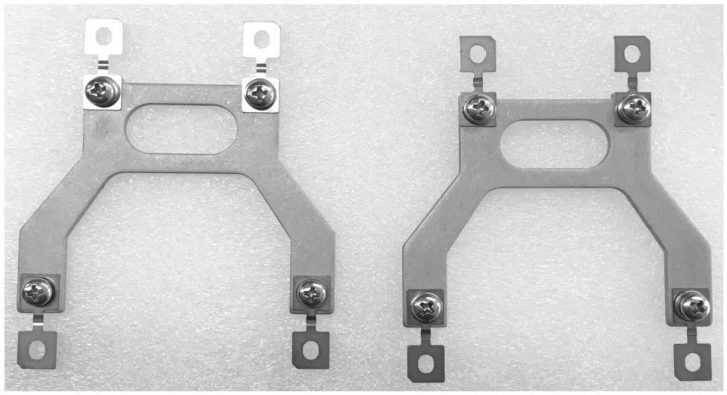
(This procedure must only be performed by Kern employees or authorized dealers with relevant experience.)

Step 1: Prepare the tools required to replace the reeds.

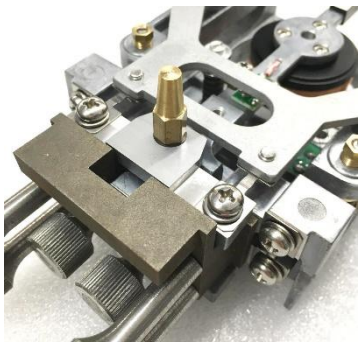


Step 2: Use the tools to secure the sensor reeds so they do not move during replacement.

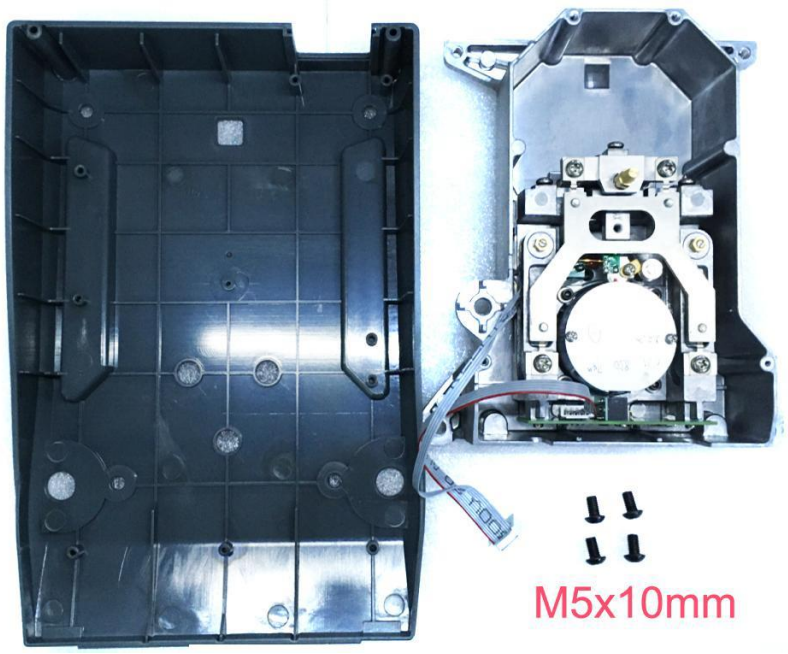
Step 3: Assemble the upper and lower parts as shown below.



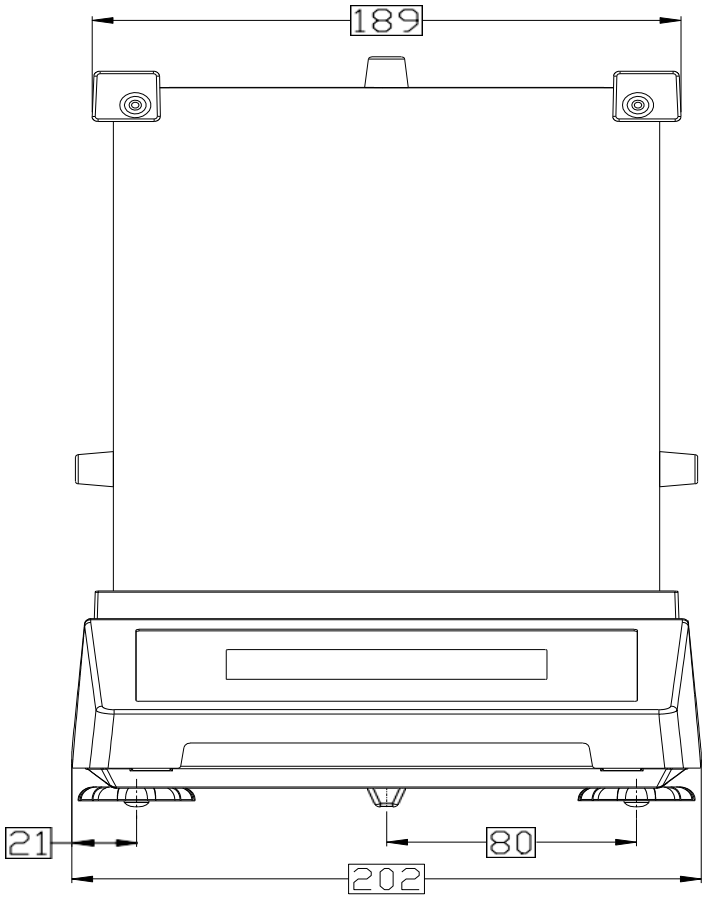
Step 4: Secure it to the sensor.

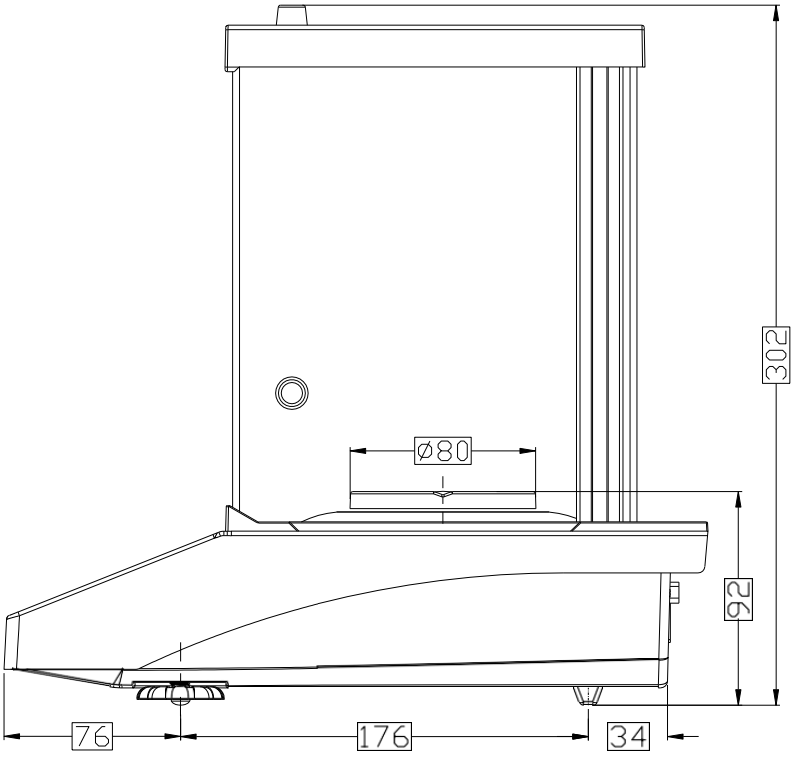


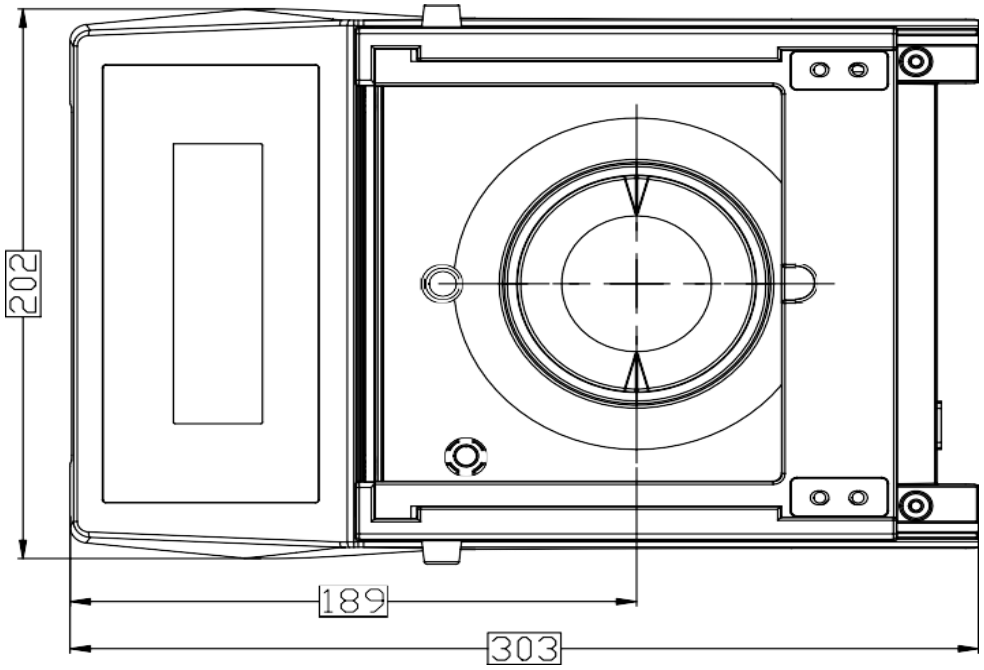
Step 5: Remove the supports and secure the sensor to the analytical balance.



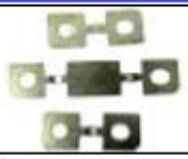
7 DIMENSIONS (mm)

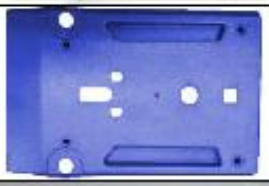





202
189
303

8 SPARE PART LIST

Article no.	Description	Image
RTAXS-1001	Bearing for TAXE-A, TAXS-A	
RTAXS-1002	Measurement system for TAXS-A	
RTAXS-1003	Measurement system for TAXE-A 120-4-A	
RTAXS-1004	Measurement system for TAXE-A 220-4-A	
RTAXS-2001	Display board for TAXE-A, TAXS-A	
RTAXS-2002	Main board for TAXE 120-4-A	
RTAXS-2003	Board for power supply for TAXE-A, TAXS-A	
RTAXS-2004	Motor board for TAXE 120-4-A & TAXE 220-4-A	
RTAXS-2005	Board, sensor for TAXE-A, TAXS-A	

RTAXS-2006	Main board for TAXE 220-4-A	
RTAXS-2007	Main board for TAXS 120-4-A	
RTAXS-2008	Main board for TAXS 220-4-A	
RTAXS-4001	Keyboard overlay for TAXE-A, TAXS-A	
RTAXS-5001	RS-232 interface for TAXE-A, TAXS-A	
RTAXS-6001	Weighing plate for TAXE-A, TAXS-A	
RTAXS-8001	Housing for TAXE-A, TAXS-A	
RTAXS-8002	Housing for TAXE-A, TAXS-A	
RTAXS-8003	Draft shield - glass for TAXE-A, TAXS-A	
RTAXS-8004	Draft shield - handle for TAXE-A, TAXS-A	

RTAXS-8005	Draft shield - bottom for TAXE-A, TAXS-A	
RTAXS-8006	Adjustable foot for TAXE-A, TAXS-A	
RTAXS-8007	Draft shield ring for TAXE-A, TAXS-A	
RTAXS-9001	Level indicator for TAXE-A, TAXS-A	
RTAXS-9002	Engine for TAXE 120-4-A & TAXE 220-4-A	
RTAXS-9003	Automatic adjustment for TAXE 120-4-A	
RTAXS-9004	Automatic adjustment for TAXE 220-4-A	
TYKA-52-A	Power supply (1 pieces) (CH;EURO;UK;US) for TAXE-A, TAXS-A 9 V, 3 A; Input: 100 V - 240 V Wall power supply, Switching power supply	