PROCISION™
BY TRANSCAT®

User Manual

TCH-SERIES BALANCES

May 2021

1. GENERAL INFORMATION

1.1 INTENDED USE

TCH series balances are designed for fast and precise measurements of weighed loads masses and direct commercial settlements. Taring in full weighing range enables to determine net mass of weighed loads.

1.2 PRECAUTIONS

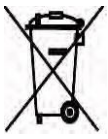
- Prior to first use, it is highly recommended to carefully read this User Manual, and operate the balance as intended.
- Do not use the balance for a dynamic weighing. Even if small quantities of weighed material are added or removed from the weighing pan of the instrument, the reading should be taken only after stabilization of the measurement results.
- While loading the balance make sure that load is placed in the very center of the weighing pan.
- Make sure the load does not exceed instrument's measuring range (maximum capacity).
- Do not leave heavy loads on the weighing pan for a long period of time.
- In case of failure, immediately unplug the instrument.
- Balances to be decommissioned, should be decommissioned in accordance with valid legal regulations.
- Do not use the balance is areas endangered with explosion. The balance is not designed to operate in EX zones.

1.3 BATTERY

The device connected to mains power monitors the battery state and charges it if possible. After sudden lack of power supply from the mains the device automatically switches to accumulator without breaking operation.

TCH scales are devices designed to be supplied from SLA accumulators (Sealed lead acid type) 6V and capacity 3 to 4Ah charged while connected to mains without stopping operation.

In case of an elongated storage period in low temperatures, it is not allowed the full discharge of the accompanied batteries.



The equipment including accumulators does not belong to your regular household waste. The European legislation requires that electric and electronic equipment be collected and disposed separately from other communal waste with the aim of being recycled.

Caution:

Some symbols on accumulators identify harmful elements/compounds: Pb = lead, Cd = cadmium, Hg = mercury.

1.4 WARRANTY CONDITIONS

Transcat will exchange, replace or repair the existing balance for any damage that appears to be faulty by production or by construction within the 5-year warranty period.

Warranty is voided if:

A. Transcat will exchange, replace or repair the existing balance for any damage that appears to be faulty by production or by construction within the 5-year warranty period.

B. Warranty is voided if:

- mechanical defects caused by inappropriate use:
    - defects of thermal and chemical origin,
    - defects caused by lightning, overvoltage in the power network
    - defects caused by water damage
    - or other random event
- overloading the mechanical measuring system
- installing another version of the operating system
- utilizing the balance contrary to its intended use
- repairs carried out by non-authorized service centers
- removing or destroying protective stickers which secure the balance's housing against unauthorized access

C. Warranty card must be filled out for warranty to be valid.

2. UNPACKING AND INSTALLATION

2.1 PLACE OF USE AND ASSEMBLING

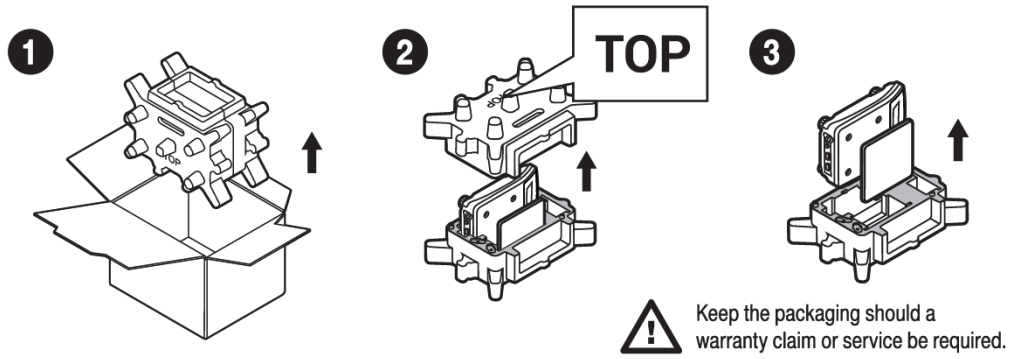
- The balance should be stored and used in locations free of vibrations and shakes, free of air movement and dust.
- Ambient air temperature should not exceed the range of: +15 °C ÷ +30 °C.
- Ambient relative humidity should not exceed 80%.
- During balance operation, ambient temperature in the weighing room should not change rapidly.
- The balance should be located on a stable wall console desk or a stable working table which is not affected by vibrations and distant from heat sources.
- Keep all package element should your device be transported in the future. Remember that only original packaging can be used for shipping purposes. Prior to packing, uncouple any cables, remove any separable components (weighing pan, shields, inserts). Pack the device components into an original packaging. The original packaging protects the equipment against potential damage during transportation.

2.2 STANDARD DELIVERY COMPONENTS LIST

- Balance and components shown in Section 2.4 depending on balance model
- Warranty Card
- USB
    - User Manual

2.3 UNPACKING

To unpack the system, follow the diagram below-

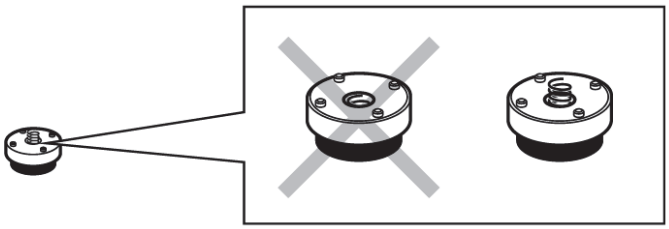


2.4 BALANCE ASSEMBLY

Components:

Installation:

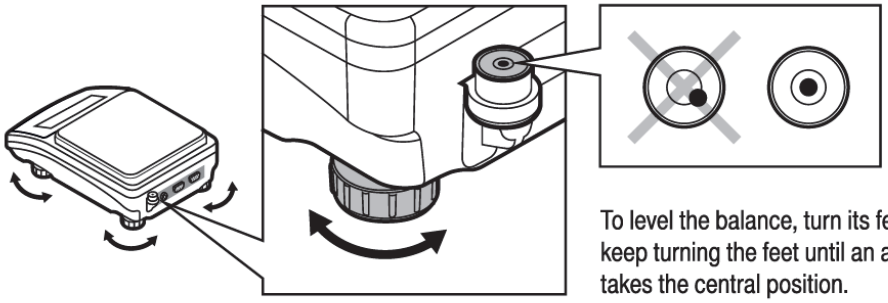
- Check grounding spring to insure it is in the appropriate location. Make sure that the grounding spring juts slightly out of the hole.



- Install components following diagram below:

2.5 BALANCE LEVELING

It is necessary to level the balance prior to plugging it in. To level the balance, turn its feet until the air bubble is in the center position.



To level the balance, turn its feet and keep turning the feet until an air bubble takes the central position.

The balance should firmly rest on a surface, each of the feet must be supported.

2.6 POWERING THE DEVICE

Before plugging in your balance, it is imperative to wait until the balance reaches thermal stabilization (estimated 1-8 hours). On switching on, the balance requires 30 minutes of temperature stabilization time. During temperature stabilization displayed information may change. Adjustment should be carried out after temperature stabilization.

For correct operation of the balance the temperature range is +15˚C ± +30˚C; Any changes of temperature and humidity during operation can cause indication errors. Errors can be corrected by carrying out user adjustment.

For balances that were stored in much lower temperatures (e.g. during winter period), thermal stabilization period may be extended.

- Balance should be plugged in only with the power adapter that comes standard with the model. Nominal power supply of the power adapter (specified on the power adapter data plate) should be compatible to the power supply.
- Plug the balance in – connect the power adapter to the socket, next connect its connector to port located at the back of the balance housing.
- Press  button on the key pad.

  ! Remember to start the balance with no load on the weighing pan
- Test of the display unit takes place right after connecting the balance to the power, all the elements and pictograms are backlit for a short time.
- Next, the name and the program number appears
- the indication gets to ZERO (displayed reading unit depends on the balance). During the balance start, the test of an internal mass adjustment mechanism occurs (single location and elevation of the internal mass adjustment).
- If the indication is different than zero, please press  button

2.7 BATTERY STATUS

An internal battery comes standard with the balance. pictogram, displayed at the top of the display, signals battery status.

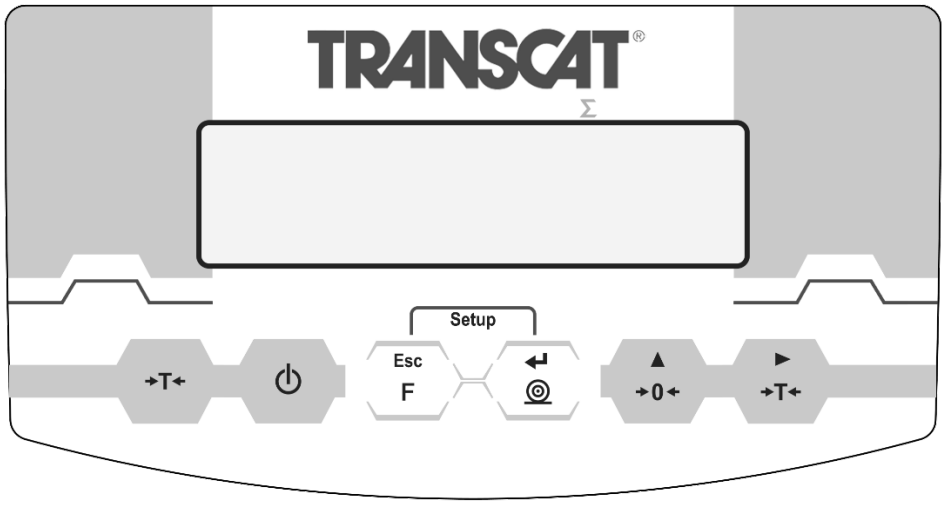
Pictogram operation	Overview
No pictogram	Battery full. Standard balance operation.
Pictogram displayed continuously	Battery status low. The balance will shut down. Immediately charge the battery.
Pictogram blinks every 1 s.	Battery charge in progress. The device is connected to the power supply charging the battery.
Pictogram blinks every 0.5 s.	Battery error. Battery is damaged

2.8 BATTERY POWER

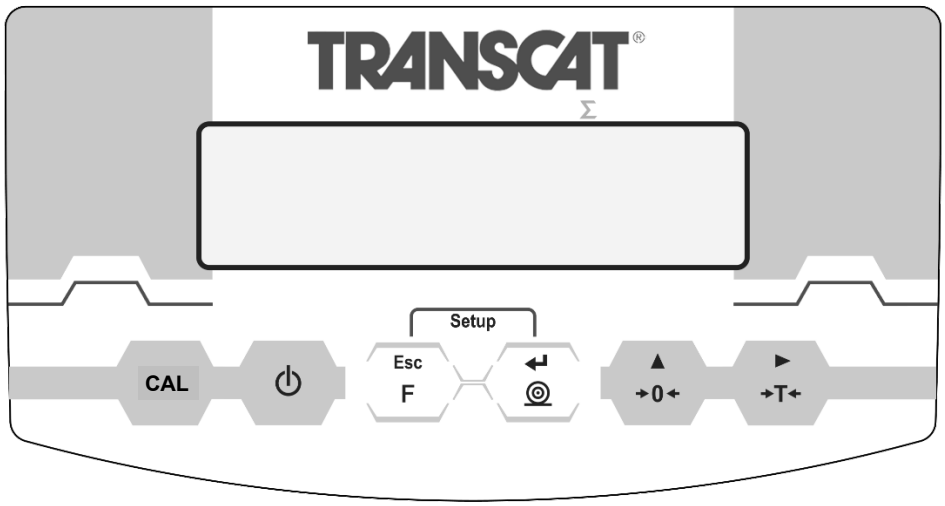
- Simultaneously Esc F and ▶ →T← keys.
- Battery power given in **%** is displayed for 2s.
- Wait for the home screen to be displayed.

3. BALANCE CONTROL

3.1 BALANCE KEYBOARD



TCH Overlay



TCH.C Overlay

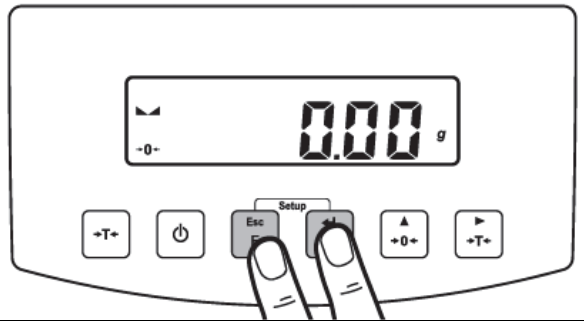
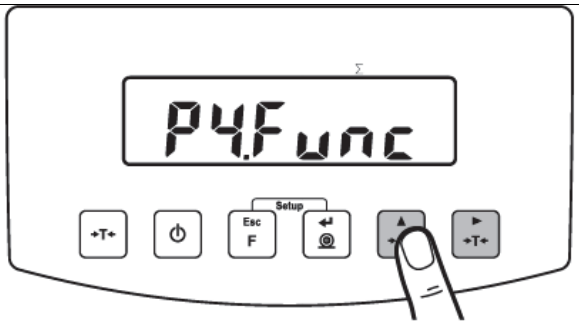
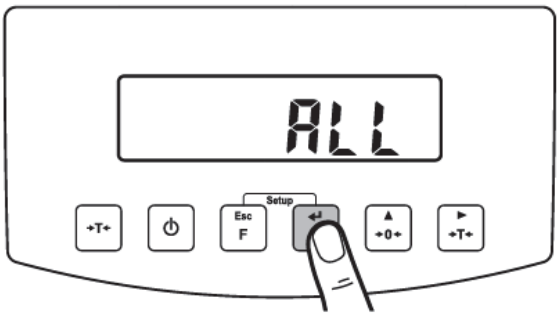
⏻	Press to switch the balance on/off
Esc F	Function: press to select working mode. ESC: Exit out of menus/submenus
↵ ◎	Press to send the weighing result to a printer or a computer.
▲ →0←	Zero: press to zero the balance. Up arrow: move up the menu or submenu
► →T←	Tare: press to tare the balance. Right arrow: enter into menu or submenu or select parameter to modify
CAL	Triggers internal calibration (only available on TCH.C models)

Caution:

On pressing Esc F *and* ↵ ◎ *keys balance menu is displayed and keys' functions change. For detailed overview of keys' functions go further down this user manual.*

3.2 ENTERING BALANCE MENU

Use keypad to navigate in the balances menus and submenus.

Esc F + ↵	Simultaneously press to enter 'Main Menu'
	
▲ →0←	Press to move upwards within balance menus and submenus
► →T←	Press to enter submenu
	
↵	Press to confirm introduced modifications
	

3.3 INSCRIPTIONS ON THE DISPLAY

No	Text string	Description
1	**FIL**	Filter level
2	**bAud**	Transmission baud rate
3	**PCS**	Piece counting
4	**HiLo**	+/- control according to a standard mass
5	**rEPL**	Automatic printout
6	**StAb**	The condition of printing data
7	**Auto**	Autozero correction
8	**t1**	Power save – time to switch off while no operation
9	**toP**	Latch of the max measurement
10	**Add**	Totalizing
11	**AnLS**	Weighing animals
12		Indication in autozero zone (indication = exact zero)
13		Stable result (ready to read)
14	**PCS**	Operation mode - counting pieces
15	**kg (g)**	Operation mode - weighing
16		Rechargeable battery pack or battery discharged (BAT-LO)
17	**Net**	Tare function has been used
18		+/- control with reference to the standard mass : setting the lower threshold or mass below the first threshold.
19		+/- control with reference to the standard mass: load masa between the thresholds
20		+/- control with reference to the standard mass: setting the upper threshold or mass over the second threshold.

3.4 BALANCE MENU

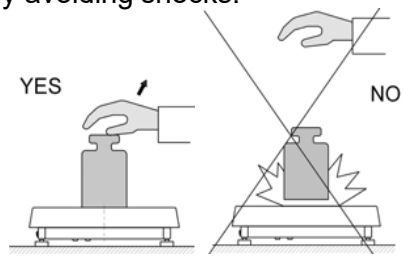
Main menu is divided into function groups. Function group is a group of interrelated parameters.

Main Menu	Sub Menu	Overview
P1.CAL		Calibration for External Calibration Models
	1.1CA-E	External Calibration
	1.2CA-u	User Defined Calibration
P1.CAL		Calibration for Internal Calibration Models
	1.1iCal	Internal Calibration
	1.2uCal	User Calibration
	1.3CA-C	Calibration Triggered by Timer
	1.4CA-r	Calibration Report
P2.rEAD		
	2.1.FiL	Filter Level
	2.2.APPr	Value Release
	2.3Enut	Ambient Conditions
	2.4.Aut	Autozero Function
	2.5.tArA	Tare Function
	2.6.ttr	Tare: Enter mode
	2.7.tArn	Tare: Values Memory
	2.8.LdiG	Last Digit
P3.Func		
	3.1.UUGG	Weighing
	3.2.PcS	Parts Counting
	3.3.HiLo	+/- Control
	3.4.dEu	% Weighing
	3.5.toP	Peak Hold
	3.6.Add	Totalizing
	3.7.AnLs	Animal Weighing
P4.Conn		
	4.1.rS1	RS232 (1) Port
	4.2.rS2	RS232 (2) Port
P5.duce		
	5.1.PC	Computer
	5.2.Prtr	Printer
	5.3.AdSP	Additional Display
P6.Prnt		
	6.1.CrEP	Calibration Report
	6.2.GLP	GLP Printout
P7.Othr		
	7.1.bLbt	Backlight
	7.2.bEEP	‘Beep’ Sound
	7.3.t1	Automatic Shutdown
	7.4.SdAt	Current Date
	7.5.Stnn	Current Time
	7.6.FdAt	Date Format
	7.7.Ftin	Time Format
	7.8.dFLu	Default User Settings
P8.InFo		
	8.1.Fab	Serial Number
	8.2.PurS	Program Version
	8.4.PstP	Settings Printout
P9.Unit		
	9.1.UnSt	Start unit
	9.2.Unin	Temporary Unit

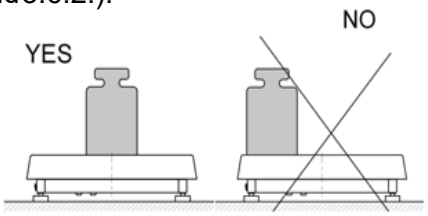
4. WEIGHING MODE

Load the weighing pan. You can read weighing result when , pictogram is displayed. To assure long-term operation and correct mass measurements follow the rules presented below:

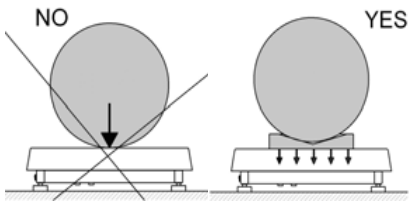
- Load the weighing pan steadily avoiding shocks:



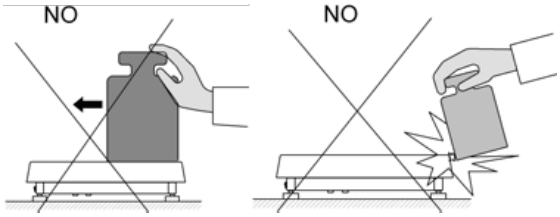
- Place weighed loads centrally on the weighing pan (eccentricity errors are specified by PN-EN 45501 standard, points 3.5 and 3.6.2.):



- Do not load the pan with concentrated force:



- Avoid side loading, in particular side shocks:



4.1 UNITS

<P9.Unit> parameters group enables selecting start and temporary unit. Selecting unit other than [g] is possible during weighing or during other modes operation. 'Parts counting' and 'Percent weighing' modes are exceptions for which the unit cannot be changed.

4.2 START UNIT

Parameter for setting unit that is displayed and used after device start-up.

Procedure:

- Enter <P9.Unit / 9.1.UnSt> submenu.
- Press  key, available units are displayed successively one by one.
- g (gram)
- kg (kilogram)
- ct (carat)
- lb (pound)
- Select start unit and press  key, next go back to the home screen, to do it press  key.
- Upon next start-up the scale runs with set start unit.

4.3 TEMPORARY UNIT

Temporary unit runs from the moment it is set to the scale shut-down and restart.

Procedure:

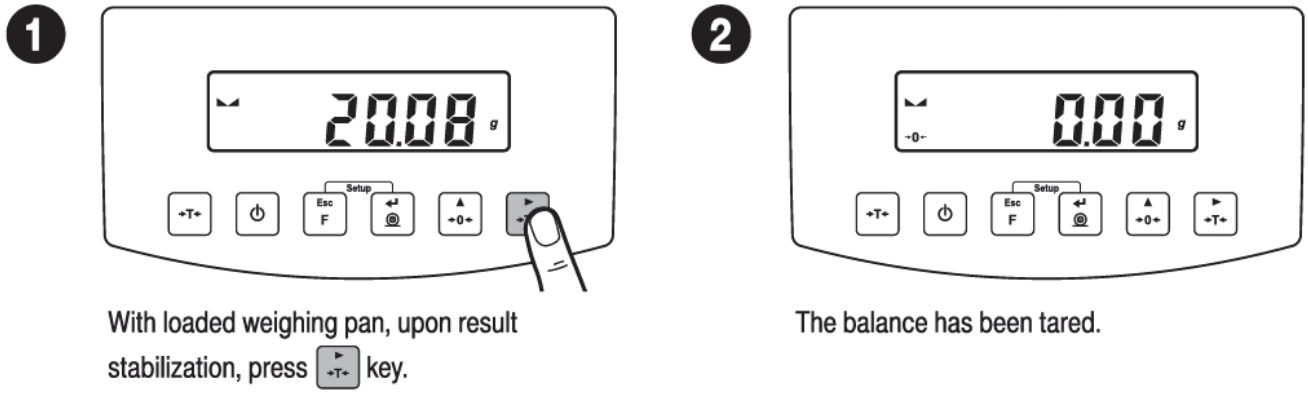
- Enter <P9.Unit / 9.2.Unin> submenu.
- Press  key, available units are displayed successively one by one.
- g (gram)
- kg (kilogram)
- ct (carat)
- lb (pound)
- Select temporary unit and press  key, next go back to the home screen.

4.4 TARING

In order to determine the net mass put the packaging on the pan.

After stabilizing press -  (**Net** pictogram will be displayed in the left upper corner and zero will be

indicated).



With loaded weighing pan, upon result stabilization, press →T← key.

The balance has been tared.

After placing a load on the weight pan net mass will be shown.

Taring is possible within the whole range of the scale. After unloading the pan the display shows the tarred value with minus sign.

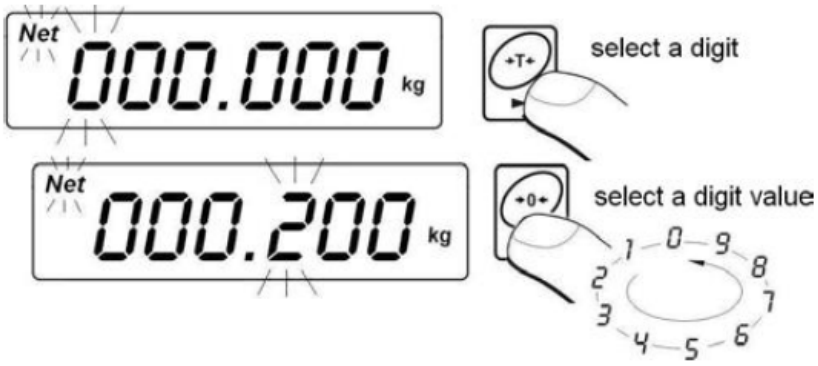
Notice:
Taring cannot be performer when a negative or zero value is being displayed. In such case ***Err3*** *appears on the display and short audible signal will be emitted.*

4.5 MANUAL TARE ENTERING

You can also inscribe a tare value.

Procedure:

- Press simultaneously →0← and →T←
- You will see :



- Using →0← and →T← set **the tare value**,
- Press ↵,
- Program returns to weighing's mode. The inscribed tare value can be seen on the display with **"–"** sign,

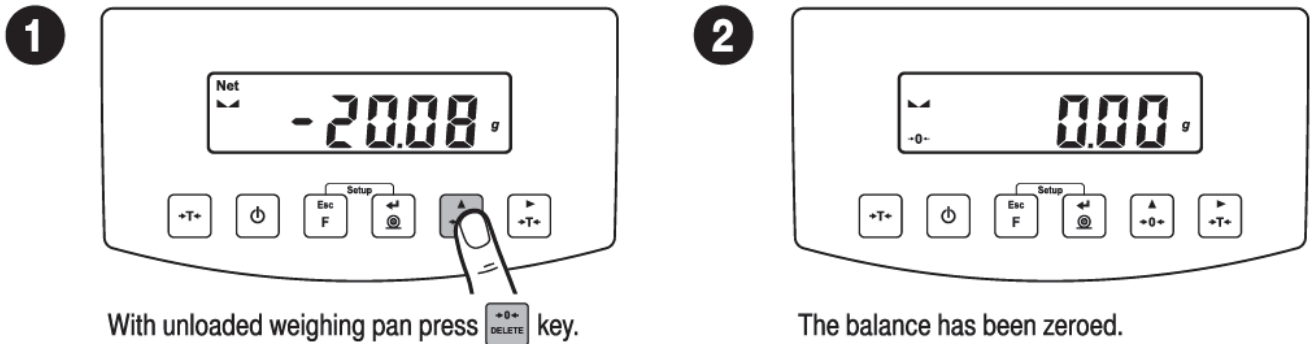
- Tare can be inscribed anytime in weighing's mode.

Notice:

1. You cannot inscribe a new tare value when the tare value in memory is greater than zero. In the case of trying this the **<Err3>** message will be displayed and short audible signal will be emitted.
2. Users can also enter up to 9 tare values to the scale memory.

4.6 ZEROING

The scale will display zero and following pictograms: ◣◢ and →0←.



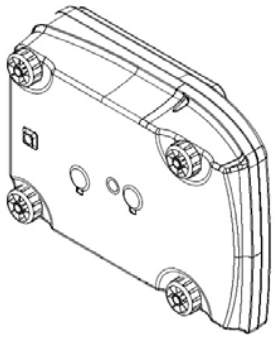
Notice:
Zeroing is possible only within the ***±2%*** *interval of the maximal range. If zeroing is performed beyond this range the* ***<Err2>*** *message and short audible signal will be emitted.*

4.7 UNDER-PAN WEIGHING

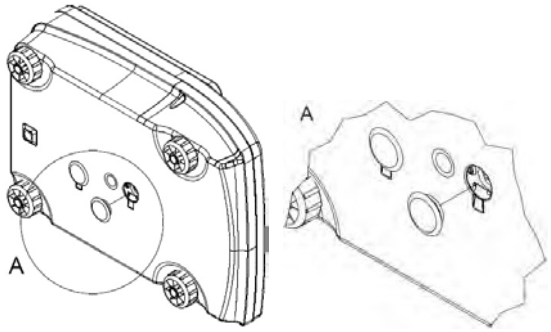
TCH scales offer under-pan weighing option wherein the load is weighed when hanged under the device. This is especially useful when there is a need to weigh load of non-standard dimension, shape or load that generates electromagnetic field.

Preparing the scale for under-pan weighing:

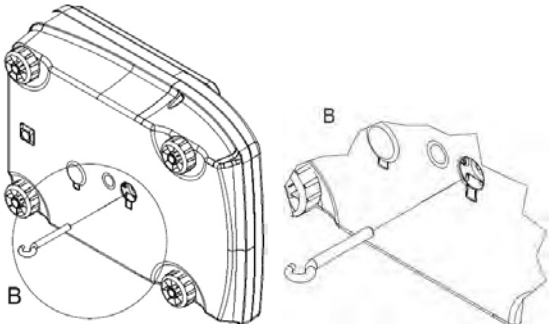
1. Unpack the scale, assemble the unit and turn the scale one side down.

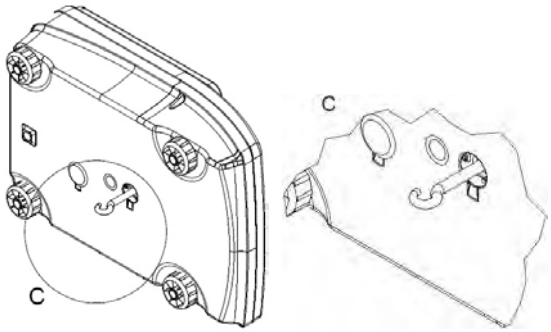


2. Remove the hole plug.



3. Fix the hook.





4. Turn the scale bottom side down.

5. BALANCE PARAMETERS

Scale parameters are set to adjust the weighing device to ambient conditions (filters) or individual needs (autozero on/off, tare values memory). These parameters are to be found in **<P2.rEAd>** submenu. **<P2.rEAd>** submenu comprises functions allowing you to adjust your weighing device to ambient conditions of given workstation.

5.1 UNDER-PAN WEIGHING

- Enter <P2.rEAd / 2.1.FiL> submenu.
- Press  key, filter values are displayed successively one by one: **1** - Fast, **2** - Average, **3** – Slow.
- Set respective value and press  key to confirm, next go to the home screen.

	***The higher filter value, the longer the weighing takes.***

5.2 VALUE RELEASE

Enter this parameter to adjust rate of stabilization of the measurement result. Depending on the selected option, weighing time is either shorter or longer.

Procedure:

- Enter **<P2.rEAd / 2.2.APPr>** submenu.
- Press  key, available values are displayed successively one by one: **F_P** - fast and reliable, **PrEc** – reliable, **FASt** – fast.
- Press  key to confirm, next go to the home screen.

5.3 AMBIENT CONDITIONS

Parameter relating to ambient and environmental conditions of the workstation. Enter this parameter and set 'nStAb' value if the ambient conditions are unfavorable (air drafts, vibrations).

Procedure:

- Enter **<P2.rEAd / 2.3.Enut>** submenu.
- Press  key, parameter values are displayed successively one by one: **nStAb** – unstable, **StAb** – stable.
- Press  key to confirm, next go to the home screen.

5.4 AUTOZERO FUNCTION

'Autozero' function has been designed to enable automatic control and correction of zero indication. This guarantees precise weighing results.

There are, however, some cases when this function can be a disturbing factor for the measuring process, e.g. very slow placing of a load on the weighing pan (load adding, e.g. pouring, filling). In such case, it is recommended to disable the function.

Procedure:

- Enter **<P2.rEAd / 2.4.Aut>** submenu.
- Press  key, parameter values are displayed successively one by one: **YES** – autozero function enabled, **no** – autozero function disabled.

- Press  key to confirm, next go to the home screen.

5.5 TARE FUNCTION

'Tare' function has been designed to enable setup of appropriate parameters for tare operation.

Procedure:

- Enter **<P2.rEAd / 2.5.tArA>** submenu.
- Press  key, available values are displayed successively one by one:

no	Regular tare mode. Select this parameter to make the scale overwrite the set (selected) tare value with the most recently entered one.
tArF	Select this parameter to make the scale store the latest tare value in memory. The latest tare value is displayed after scale restart.
AtAr	Automatic tare mode.
EAcH	Select this parameter to make the scale automatically tare each accepted measurement.

- Press  key to confirm, next go to the home screen.

5.6 TARE: ENTER MODE

The tare is entered using  +  keys combination from the home screen level. There are two enter modes.

Procedure:

- Enter **<P2.rEAd / 2.6.ttr>** submenu.
- Press  key, parameter values are displayed successively one by one:

tArEH	Select to enter tare value manually by means of  +  keys combination.
tArnn	Select to enter tare value that is stored in scale memory, use  +  keys combination.

- Press  key to confirm, next go to the home screen.

5.7 TARE: VALUES MEMORY

It is possible to store 10 tare values in scale memory.

5.7.1 ENTERING TARING VALUE TO WEIGHING DEVICE MEMORY

- Enter **<P2.rEAd / 2.7.tArn>** submenu, name of tare no. 1 from tares database is displayed (**<tArE 0>**), to select a different record press →0← key.
- Select respective entry and press →T← key, tare value edit box is displayed.
- Enter tare value, to do it press →0← and →T← keys:

→T←	Press to select digit that is to be edited.
→0←	Press to set digit value, 0 - 9 .

- Press ↵ key to confirm, **<tArE 0>** window is displayed.
- Now press Esc F key to go to the home screen.

5.7.2 SELECTING TARE VALUE FROM THE WEIGHING DEVICE MEMORY

- Enter **<P2.rEAd / 2.7.tArn>** submenu, name of tare no. 1 from tares database is displayed (**<tArE 0>**), to select a different record press →0← key.
- To set the selected tare press ↵ key.
- The set tare value is displayed with minus sign, **Net** symbol is shown in the upper-left corner of the screen:

!	***The tare value acquired from the weighing device memory is not remembered upon the weighing device restart.***

5.8 LAST DIGIT

Function designed to disable display of the last weighing indication digit, this results with less accurate measurement.

Procedure:

- Enter **<P2.rEAd / 2.8.LdiG>** submenu.
- Press  key, available values are displayed successively one by one:

ALAS	Select to make the last digit always on.
nEur	Select to make the last digit always off.
uuSt	Select to make the last digit on only when the weighing indication is stable.

- Press  key to confirm, next go to the home screen.

6. ADJUSTMENT (TCH.C SERIES)

In precise scales changes of gravitational acceleration have noticeable influence. The gravitational acceleration changes with altitude and latitude. Every scale has to be adjusted to the place of use especially when the place changes. Frequent calibration also prevents weighing process from the influence of humidity and temperature.

For assuring the maximal accuracy of weighing a periodical user calibration is required.

Calibration should be performed:

- Before weighing process,
- After a long break between series of measurements,
- After the ambient temperature change.

Conditions of triggering off calibration:

- Automatic internal calibration:
  - Started after adjusted time period
  - Started after powering up the device
- Manual internal calibration started from the keyboard,
- Calibration with an external weight.

6.1 INTERNAL ADJUSTMENT

The internal calibration process can be initiated manually or automatically. Press CAL to initiate it manually. Automatic calibration system performs internal calibration and informs a user on the display about the course of the process.

6.1.1 MANUAL INTERNAL CALIBRATION

Procedure:

- While in weighing mode press CAL to begin internal calibration procedure.
- The scale program starts to check stability conditions for the calibration process .

- Then the program automatically goes to the internal calibration procedure.

- After completion of the calibration process program returns to the weighing mode,

- Calibration process can be terminated anytime by pressing 

which is signaled by the following message on the display:

Notice:

1. It should be remembered that internal calibration should be performed with unloaded pan with keeping possibly constant ambient conditions.
2. If the calibration process lasts longer than 15 seconds scale software will react with **<Err8>** displayed and a short sound and then the calibration procedure will start again.

6.1.2 AUTOMATIC INTERNAL CALIBRATION

The automatic calibration process can be triggered off by 2 different factors:

Calibration after powering up

- After performing the start procedure, the scale program starts to check stability conditions.
- Then the program automatically goes to the internal calibration procedure.
- After completion of the calibration process program returns to weighing mode.

Calibration triggered off by timer

- The time condition for subsequent automatic calibration is 3 hours. It means that, when no other triggering factor appear, the calibration will appear every 3 hours;
- The calibration procedure triggered off by the time change starts.
- Then the program automatically goes to the internal calibration procedure.

6.2 CALIBRATION REPORT

Users, in parameter **<P1.4.CA-r>**, can enable a function of automatic printout of report form calibration process on a connected printer.

Procedure:

- Enter the submenu **<P1.CAL.CA-r>**

The example printout of report from calibration:

```
******Calibration report******

Calibration:          internal
Triggered off by:         init
Difference:          -00.[5] g

Name: ......................
```

7. ADJUSTMENT (TCH SERIES)

In precise scales changes of gravitational acceleration have noticeable influence. The gravitational acceleration changes with altitude and latitude. Every scale has to be adjusted to the place of use especially when the place changes. Frequent calibration also prevents weighing process from the influence of humidity and temperature.

For assuring the maximal accuracy of weighing a periodical user calibration is required.

Calibration should be performed:

- Before weighing process,
- After a long break between series of measurements,
- After the ambient temperature change.

Conditions of triggering calibration:

- Calibration with an external weight.

7.1 EXTERNAL CALIBRATION

External calibration is carried out by means of an external mass standard of specified accuracy class and weight. Both, accuracy class and mass standard weight depend on balance type and max capacity and the correct value is saved within the balances factory settings. The process takes semi-automatic form; successive stages are signaled with prompts.

Procedure:

- Enter **<P1.CAL / 1.1.CA-E>** submenu, text **<UnLoAd>** (remove weight) is displayed.
- Remove any load from the weighing pan and press  key.
- Mass of an empty weighing pan is determined, this is signaled with display of 'dash', **< - >**. Next, the text **<LoAd>** (load weight) and mass value that is to be loaded, e.g. **2000 g** (varies by scale model), are displayed.
- Load the weighing pan with weight of specified mass value and press  key.
- Weight mass is determined, this is signaled with display of 'dash', **< - >**. Next, text **<UnLoAd>** (remove weight) is displayed.

Remove the load form the weighing pan, **<1.1.CA-E>** submenu is displayed

Caution:
*If the calibration process (span adjustment) lasts longer than 15 the **<Err8>** message will be displayed and short audible signal will be emitted. Press* 

to perform calibration again with more stable ambient conditions!

7.2 USER CALIBRATION

User calibration must be carried out using an external weight of class F1, and of mass value ≥ 30% of the maximum capacity value.

Procedure:

- Enter **<P1.CAL / 1.2.CA-u>** submenu, edit box for declaring weight mass is displayed (the mass value must be ≥ 30% of the maximum capacity value).
- Enter weight mass value and press  key to confirm, text **<UnLoAd>** (remove weight) is displayed.
- Remove the load from the weighing pan and press  key.
- Mass of an empty weighing pan is determined, this is signaled with display of 'dash', **< - >**. Next, text **<LoAd>** (load weight) and mass value that is to be loaded, e.g. **2000g**, are displayed.
- Load the weighing pan with weight of specified mass value and press  key.
- Weight mass is determined, this is signaled with display of 'dash', **< - >**. Next, text **<UnLoAd>** (remove weight) is displayed.
- Remove the load from the weighing pan, **<1.2.CA-u>** submenu is displayed.

Caution:
*If the start mass adjustment lasts longer than 15 the **<Err8>** message will be displayed and short audible signal will be emitted. Press*  *to perform calibration again with more stable ambient conditions!*

8. WORKING MODES

The weighing device features the following working modes:

- Weighing
- Parts counting
- +/- control
- Percent weighing %
- Peak Hold
- Totalizing
- Animal weighing

8.1 RUNNING WORKING MODE

- Go to home screen, press  key, name of the first available working mode is displayed.
- Press  key, names of available working modes are displayed successively one by one.
- Enter selected working mode, to do it press  key.

	***The weighing device program has been designed to make the scale run, upon restart, with the latest operated working mode on.***

8.2 WORKING MODES LOCAL SETTINGS

Each working mode features specific (local) functions which enable adapting device operation to individual needs. The functions are to be found in local settings. To go to local settings of each working mode enter **<P3.Func>** submenu. Some special functions are available for all working modes, refer to the table below:

	Accessibility	Save mode	Time	Lo threshold
Weighing	3.1.1.Acc	3.1.2.Snn	3.1.3.Int	3.1.4.Lo
Parts counting	3.2.1.Acc	3.2.3.Snn	3.2.4.Int	3.2.5.Lo
+/- control	3.3.1.Acc	3.3.2.Snn	3.3.3.Int	3.3.4.Lo
Percent weighing %	3.4.1.Acc	3.4.3.Snn	3.4.4.Int	3.4.5.Lo
Peak Hold	3.5.1.Acc	-	-	3.5.2.Lo
Totalizing	3.6.1.Acc	3.6.2.Snn	3.6.3.Int	3.6.4.Lo
Animal weighing	3.7.1.Acc	-	-	3.7.3.Lo

The table presents special function number and name for each of the working modes. Remaining specific functions referring directly to a given working mode are described further down this user manual.

8.2.1 WORKING MODE ACCESSIBILITY

To enable/disable given working mode, press 

key.

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Go to **<Acc>** function.
- Press  key, parameter values are displayed successively one by one:
  YES – working mode enabled, **no** – working mode disabled.
- Press  key to confirm, next go to the home screen.

8.2.2 SAVE MODE

Parameter allowing you to set mode of sending data from the weighing device to a peripheral device.

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Go to **<Snn>** function.

- Press  key, parameter values are displayed successively one by one:

StAb	Manual printout of stable ◣◢ weighing result. Upon pressing  key at the moment when the result is unstable (no pictogram displayed), the program first waits for the stability condition to be met, only then printout is carried out.
nStAb	Manual printout of each weighing result. In case of unstable indication, **<?>** sign is displayed in front of the 'mass frame'.
rEPL	Automatic printout of the first stable weighing result above **<Lo>** threshold (to set **<Lo>** threshold go to **<Lo>** parameter).
rEPLi	Automatic printout with time interval set in **[min]** (to set the interval go to **<Int>** parameter).

- Press  key to confirm, next go to the home screen.

8.2.3 AUTOMATIC PRINTOUT TIME INTERVAL

Parameter enabling you to set frequency of automatic printout. Printout interval is set in minutes with 1 [min] accuracy within 1 [min] - 1440 [min] range.

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Enter **<Int>** function, window for entering **time interval** value is displayed.
- Press  key to confirm, next go to the home screen.

8.2.4 LO THRESHOLD

<Lo> parameter allows you to configure the function of automatic operation. In order to save the next measurement, before carrying it out the mass indication must get below the set net value of Lo threshold.

Procedure:

- Enter **<P3.Func>** menu and select given working mode.
- Enter **<Lo>** function, window for entering **Lo threshold** value is displayed.
- Enter respective value and press  key to confirm, then continue weighing.

9. WORKING MODE – WEIGHING

<UUGG> is a standard working mode enabling you to carry out the weighing operation along with record of the result to the database.

9.1 LOCAL SETTINGS

To go to local settings enter **<3.1.UUGG>** submenu.

3.1.1.Acc	Working mode
3.1.2.Snn	Save mode
3.1.3.Int	Time interval
3.1.4.Lo	Lo threshold

10. WORKING MODE – PARTS COUNTING

Parts Counting is a working mode enabling you to determine quantity of small pieces of the same mass, which determination is done on the basis of mass of sample piece (single part), and where the sample piece mass (single part mass) is determined using the weighing device.

10.1 LOCAL SETTINGS

To go to local settings enter **<3.2.PcS>** submenu.

3.2.1.Acc	Working mode
3.2.2.UUt	Operation mode
3.2.3.Snn	Save mode
3.2.4.Int	Time interval
3.2.5.Lo	Lo threshold

10.1.1 SELECTING WORKING MODE

Parameter allowing you to select method of determination of sample piece mass.

Procedure:

- Enter <3.2.PcS / 3.2.2.UUt> submenu.
- Press  key, parameter values are displayed successively one by one:

S_S	Select to set sample mass by determining mass of a single
Suu	Select to set sample mass by entering mass of a single part.

- Enter respective value and press  key to confirm, then continue weighing.

10.2 SETTING SAMPLE MASS BY ENTERING MASS OF A SINGLE PART

- Enter **<3.2.PcS / 3.2.2.UUt>** submenu, set **<Suu>** value.
- Enter **<PcS>** working mode (parts counting), first, text **<SEt_Ut>** is displayed for 1 s, next, window for entering mass value of a single part.
- Enter respective value and press  key to confirm, home screen is displayed automatically along with quantity of parts loaded onto the weighing pan (pcs).

	***If the value of entered single part mass is greater than max capacity value, then message <Err Hi> is displayed.***

10.3 SETTING SAMPLE MASS BY DETERMINING MASS OF A SINGLE PART

- Enter **<3.2.PcS / 3.2.2.UUt>** submenu, set **<S_S>** value.
- Enter **<PcS>** working mode (parts counting), blinking value of sample quantity is displayed.
- Press  key to select one of the following options:

10	Reference sample quantity: 10 pcs.
20	Reference sample quantity: 20 pcs.
50	Reference sample quantity: 50 pcs.
100	Reference sample quantity: 100 pcs.
0000	Custom reference sample quantity - enter the required value

- Select respective option and press  key to confirm, first, text **<LoAd>** is displayed for 1 second, then the weighing window.
- If the parts are to be weighed in a container, first put the container on a weighing pan and tare it.
- Load the weighing pan with declared amount of parts. When the indication is stable (◣◢ pictogram is displayed), press  key to confirm the mass.
- Single part mass is calculated automatically, next quantity of parts (pcs) is displayed.

	***Total weight value of all parts loaded onto the weighing pan cannot be greater than the max capacity value.***
	***Single part mass value must be equal or greater than 0.1 of the reading unit. Unless this condition is met, the weighing device displays a message <Err Lo>.***
	***In the course of parts quantity determination before confirming the declared quantity value it is necessary to wait for a stable◣◢ measurement .***

11. WORKING MODE – +/- CONTROL

+/- control is a working mode enabling you to enter checkweighing thresholds values (**Min**, **Max**).

11.1 LOCAL SETTINGS

To go to local settings enter **<3.3.HiLo>** submenu.

3.3.1.Acc	Working mode accessibility
3.3.2.Snn	Save mode
3.3.3.Int	Time interval
3.3.4.Lo	Lo threshold

11.2 DECLARING CHECKWEIGHING THRESHOLDS

- Enter **<HiLo>** working mode (+/- control), first, text **<SEt Lo>** is displayed for 1 s, next, window for declaring low weighing threshold (Min).
- Enter respective value and press  key to confirm, first, text **<SEt Hi>** is displayed for 1 second, next, window for declaring high weighing threshold (Max).
- Enter respective value and press  key for confirmation, working mode's home screen is displayed along with declared threshold value, where:

Min	Load mass lower than low weighing threshold.
Ok	Load mass within weighing thresholds.
Max	Load mass greater than high weighing threshold.

	***If the entered low threshold value (Min) is greater than high threshold value (Max), <Err Lo> error is displayed.***
	***If the entered high threshold value (Max) is greater than the maximum capacity value, <Err Hi> error is displayed.***

12. WORKING MODE – PERCENT WEIGHING

Percent weighing is a working mode enabling you to compare measured load mass with the reference sample mass. The result is expressed in [**%**]. Reference sample mass can be either determined by weighing or entered to weighing device memory by an operator.

12.1 LOCAL SETTINGS

To go to local settings enter **<3.4.dEu>** submenu.

3.4.1.Acc	Working mode accessibility
3.4.2.UUt	Operation mode

3.4.3.Snn	Save mode
3.4.4.Int	Time interval
3.4.5.Lo	Lo threshold

12.1.1 SELECTING WORKING MODE

Parameter allowing you to select method of determination of reference sample mass.

Procedure:

- Enter **<3.4.dEu / 3.4.2.UUt>** submenu.
- Press  key, parameter values are displayed successively one by one:

S_S	Select to set reference sample mass by determining the mass
Suu	Select to set reference sample mass by entering the mass

- Set respective value and press  key to confirm, next go to the home screen.

12.2 REFERENCE SAMPLE MASS DETERMINED BY WEIGHING

- Enter **<3.4.dEu / 3.4.2.UUt>** submenu, set **<S_S>** value.
- Enter <dEu> working mode (Percent weighing), first, text <LoAd> is displayed for 1 second, then the weighing window.
- Load the weighing pan with the reference sample. When the indication is stable (pictogram is displayed), press key to confirm the mass.
- Mass of the weighed load is automatically set as reference sample mass; the home screen is displayed along with 100.000% value.

12.3 REFERENCE SAMPLE MASS DETERMINED BY ENTERING THE MASS VALUE

- Enter **<3.4.dEu / 3.4.2.UUt>** submenu, set **<Suu>** value.
- Enter **<dEu>** working mode (Percent weighing).
- Text **<SEt_Ut>** is displayed for 1 s, next, window for declaring mass of reference sample.
- Enter respective value and press  key to confirm. The home screen is displayed automatically with **0.000%** value.

	***If the value of entered reference sample mass is greater than max capacity value, then message <Err Hi> is displayed.***

13. WORKING MODE – PEAK HOLD

Peak Hold is a working mode allowing you to snap value of maximum force applied to the weighing pan during one weighing process.

13.1 LOCAL SETTINGS

To go to local settings enter **<3.5.toP>** submenu.

3.5.1.Acc	Working mode accessibility
3.5.2.Lo	Lo threshold

13.2 PEAK HOLD OPERATION

- Enter **<3.5.toP / 3.5.2.Lo>** submenu, set **<Lo>** parameter value (Lo threshold) after exceeding of which maximum force is to be registered.
- Enter **<toP>** working mode (Peak Hold). From now on the scale registers and holds every single weighing which is above the **Lo threshold**, and which is higher than the result of the previous peak hold. Snapped peak hold value is signalled by **<Max>** pictogram displayed at the top of the screen.
- The start of the next process of peak hold measurement is possible only after removing the load from the weighing pan and pressing 

key.
- This causes returning to the home screen of **<toP>** mode. Pictogram **<Max>** is automatically deleted.

14. WORKING MODE – TOTALIZING

Totalizing is a working mode enabling you to sum mass of all weighed ingredients, and to print (via scale-connected printer) the total mass value. The program allows you to sum up to 30 weighings (ingredients) maximum within one process.

14.1 LOCAL SETTINGS

To go to local settings enter **<3.6.Add>** submenu.

3.6.1.Acc	Working mode accessibility
3.6.2.Snn	Save mode
3.6.3.Int	Time interval
3.6.4.Lo	Lo threshold

14.2 TOTALIZING OPERATION

- Enter **<Add>** working mode (Totalizing) blinking „▲” pictogram is displayed.
- If the ingredients are to be weighed in a container, first put the container on a weighing pan and tare it.
- Load the weighing pan with the ingredient no.1. When the indication is stable (◣◢ pictogram is

displayed), press key to confirm the mass.

- Total mass value is displayed, now the "▲" pictogram is displayed continuously.
- Unload the weighing pan, **ZERO** is displayed, "▲" marker starts blinking again.
- Load the weighing pan with the ingredient no.2, wait for a stable weighing result and press key.
- Total mass value of ingredient no. 1 and 2 is displayed, now the "▲" pictogram is displayed continuously.
- In order to finish the process, press Esc F key, text **<Prnt?>** (Print?) is displayed.
- Press key, total mass value of all recorded weights are printed on a scale-connected printer.

14.3 REPORT EXAMPLE

```
(1)                          13.500 g
(2)                          14.400 g
(3)                           9.700 g
(4)                         100.500 g
(5)                           4.000 g
(6)                           8.200 g
(7)                          20.800 g
(8)                           5.800 g
-----------------------------------
Total:                      176.900 g
```

- In order to print the report once again press key.
- To exit "report printout mode" press Esc F key. As a result home screen of **<Add>** working mode is displayed and all the data get zeroed automatically.

⚠	***If the display capacity is exceeded (i.e. there is not enough space for all the digits of the weighing result) <Hi> error is displayed. In such a case either remove the ingredient from a weighing pan and finish the totalizing process or place load of a lower weight value on the weighing pan.***

15. WORKING MODE – ANIMAL WEIGHING

Animal Weighing is a working mode enabling you to weigh products that disrupt efficient establishing of stability. It is mostly intended to measure weight of animals.

15.1 LOCAL SETTINGS

To go to local settings enter **<3.7.AnLS>** submenu.

3.7.1.Acc	Working mode accessibility	
3.7.2.Aut	Averaging time	Enter this parameter to declare duration of the process in seconds (5s, 10s, 20s, 30s, 40s, 50s, 60s) - on the basis of indications recorded within the set time interval the scale calculates the weighing result, i.e. an average weight value.
3.7.3.Lo	Lo threshold	

15.2 ANIMAL WEIGHING OPERATION

- Enter **<AnLS>** working mode (Animal Weighing).
- First text **<tinnE>** is displayed for 1 s, next, window for setting duration (in seconds) of animal weighing.
- Press 

key, parameter values are displayed successively one by one: 5[s], 10[s], 20[s], 30[s], 40[s], 50[s], 60[s].
- Set the respective value, press  key to confirm, weighing window with **A** letter is displayed.
- Load the weighing pan with an animal.
- On exceeding the set mass value of **<Lo> threshold** parameter, animal weighing starts, this is signalled with display of 'dash', **< - >**.
- Upon process completion mass value of an animal is snapped and displayed together with **OK** pictogram in the upper part of the display. The snapped mass value is sent to a scale-connected printer.
- Press 

key to restart animal weighing.
- Press  key to reprint the snapped mass value.
- Upon unloading of the weighing platform, the weighing window with letter **A** is displayed. The scale can be loaded with an animal again.

16. COMMUNICATION

Communication between the scale and the peripheral devices is established via the following ports: RS232 (1), RS232 (2), USB Type A, USB type B. To set the ports go to **< P4.Conn >** submenu.

16.1 RS232 (1) PORT

- Enter **<P4.Conn / 4.1.rS1>** submenu and set respective transmission parameters:

4.1.1.bAd	Baud rate: 2400, 4800, 9600, 19200, 38400, 57600,
4.1.2.PAr	Parity: **nonE** – none; **EuEn** – even; **Odd** – odd.

- Press  key to confirm, next go to the home screen.

16.2 RS232 (2) PORT

- Enter **<P4.Conn / 4.2.rS2>** submenu and set respective transmission parameters:

4.2.1.bAd	Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 115200
4.2.2.PAr	Parity: **nonE** – none; **EuEn** – even; **Odd** – odd.

- Press  key to confirm, next go to the home screen.

16.3 USB A PORT

USB port of type A is intended for:

- Connecting a USB flash drive in order to enable
  - Operator's parameters export/import
  - Weighing reports export
  - Alibi report export

16.4 USB B PORT

USB port of type A is intended for connecting the scale to a computer. In order to make the connection of a scale and computer possible, it is necessary to install virtual COM port on the computer. For this software, please contact: support@schulersci.com

17. PERIPHERAL DEVICES

<P5.ducE> menu contains list of devices cooperating with scale.

17.1 COMPUTER

<5.1.PC> submenu allows you to:

- select port to which the computer is connected,
- enable/disable continuous transmission,
- set frequency of printouts for continuous transmission.

17.1.1 COMPUTER PORT

- Enter **<5.1.PC / 5.1.1.Prt>** submenu.
- Press  key, parameter values are displayed successively one by one: **nonE** – none; **rS1** – RS232 (1); **rS2** – RS232 (2), **USbb** – USB type B
- Press  key to confirm, next go to the home screen.

17.1.2 CONTINOUS TRANSMISSION

- Enter **<5.1.PC / 5.1.2.Cnt>** submenu.
- Press  key, parameter values are displayed successively one by one:

nonE	Continuous transmission disabled.
CntA	Continuous transmission in basic unit.
Cntb	Continuous transmission in current/temporary unit.

- Press  key to confirm, next go to the home screen.

17.1.3 PRINTOUT INTERVAL FOR CONTINOUS TRANSMISSION

Parameter enabling you to set frequency of printout for continuous transmission. Printout interval is set in seconds with 0.1 [s] accuracy within 0.1- 3600 [s] range.

Procedure:

- Enter **<5.1.PC / 5.1.3.Int>** submenu, window for entering interval value is displayed.
- Press  key to confirm, next go to the home screen.

17.2 PRINTER

17.2.1 PRINTER PORT

Parameter enabling you to select port to which data is to be sent upon pressing  key.

Procedure:

- Enter **<5.2.Prtr / 5.2.1.Prt>** submenu.
- Press  key, parameter values are displayed successively one by one:

nonE	None port selected.
rS1	Port RS232 (1).
rS2	Port RS232 (2).
USbA	USB port of type A

- Press  key to confirm, next go to the home screen.

17.3 ADDITIONAL DISPLAY

The weighing instrument can cooperate with additional WD displays.

17.3.1 ADDITIONAL DISPLAY PORT

- Enter **<5.3.AdSP / 5.3.1.Prt>** submenu.
- Press  key, parameter values are displayed successively one by one: **nonE** – none; **rS1** – RS232 (1); **rS2** – RS232 (2).
- Press  key to confirm, next go to the home screen.

18. PRINTOUTS

It is possible to define adjustment report printout template and GLP printout template. To set the printouts go to **< P6.Prnt >** submenu.

18.1 CALIBRATION REPORT

<P6.1.CrEP> is a group of parameters allowing you to declare variables that are to be printed on an calibration report printout. Each variable features accessibility attribute: **YES** – print, **no** – do not print. Calibration report is automatically generated upon each completed calibration process.

Variables list:

No.	Name	Description
6.1.1.	CtP	Performed calibration type.
6.1.2.	dAt	Calibration Date
6.1.3.	tin	Calibration time.
6.1.4.	Idb	Serial number of the scale.
6.1.5.	CdF	Difference between mass of Calibration weight that was measured during last Calibration and mass of currently measured Calibration weight.
6.1.6.	dSh	Dashed line separating printout data and signature fields.
6.1.7	SiG	An area for the signature of the operator carrying out the calibration

	***Printouts are generated exclusively in English.***

Report example:

```
----------Calibration Report----------
Calibration type                External
Date                         2016.10.15
Time                           12:39:23
Balance ID                       123456
Difference                       -0.02g
--------------------------------------
Signature

.....................................
```

18.2 GLP PRINTOUT

<P6.2.GLP> is a group of parameters allowing you to declare variables that are to be printed on a weighing printout. Each variable features accessibility attribute: **YES** – print, **no** – do not print.

18.3 VARIABLES LIST

No.	Name	Description
6.2.1	dAt	Performed weighing date.
6.2.2	tin	Performed weighing time.
6.2.3	Idb	Serial number of the scale.
6.2.4	n	Net weight value of performed weighing in basic measuring unit.
6.2.5	t	Tare weight value in the current unit.
6.2.6	b	Gross weight value in the current unit.
6.2.7	CrS	Current weighing result (net weight) in a current unit.
6.2.8	CrP	The last adjustment report generated in accordance with settings declared for the adjustment report printout.

	***Printouts are generated exclusively in English.***

Report example:

```
Date                         2016.10.15
Time                           12:04:17
Net                              49.98g
Tare                             17.20g
Gross                            67.18g
```

19. BALANCE SETTINGS

<P7.Othr> is a group of parameters enabling you to adapt the scale to individual needs.

19.1 BACKLIGHT

Parameter allowing you to change display brightness, the brightness can be changed within **0%** - **100%** range.

Procedure:

- Enter <P7.Othr / 7.1.bLbt> submenu.
- Press  key, parameter values are displayed successively one by one, where:

nonE	Backlight off.
10	Display brightness low limit value in [%].
100	Display brightness high limit value in [%].

- Press  key to confirm, next go to the home screen.

19.2 'BEEP' SOUND

Parameter allowing you to enable/disable sound signal informing the operator about pressing panel key(s).

Procedure:

- Enter <P7.Othr / 7.2.bEEP> submenu.
- Press  key, parameter values are displayed successively one by one:
  no – sound signal disabled, **YES** - sound signal enabled.
- Press  key to confirm, next go to the home screen.

19.3 AUTOMATIC SHUTDOWN

Parameter allowing you to set time interval, in [min], after which the weighing device shuts down automatically. If the indication is stable during the declared time interval, the device is shut down automatically.

Shutdown function is inactive and the device cannot be turned off if any process is started or if you operate the menu.

Procedure:

- Enter **<P7.Othr / 7.3.t1>** submenu.
- Press  key, parameter values are displayed successively one by one:
  nonE – function disabled, **1**, **2**, **3**, **5**, **10**.

- Press  key to confirm, next go to the home screen.

19.4 DATE AND TIME

Parameter allowing you to set current date and time and to specify date and time format.

Procedure:

- Enter **<P7.Othr>** submenu and change the settings. Refer to the below table:

Parameter	Description
<7.4.SdAt>	Enter this parameter to set current date, where the date format is **YYYY.MM.DD***.
<7.5.Stnn>	Enter this parameter to set current time, where the time format is **24H****.
<7.6.FdAt>	Enter this parameter to select date format. Available values: **1** - DD.MM.YYYY, **2** - MM.DD.YYYY, **3** - YYYY.MM.DD* (set by default), **4** - YYYY.DD.MM.
<7.7.Ftin>	Enter this parameter to select time format. Available values: **24H**** (set by default), **12H****.

**) - Date format: Y – year, M – month, D – day.*
***) - Time format: 12H – 12-hour format, 24H - 24-hour format.*

19.5 DEFAULT USER SETTINGS

Parameter allowing you to restore default operator settings.

Procedure:

- Enter **<P7.Othr / 7.8.dFLu>** submenu, text **<Cont?>** is displayed (Continue?).
- Press  key to confirm. The process of restoring default settings starts, this is signalled with display of 'dash', **< - >**.
- Upon process completion **<7.8.dFLu>** submenu is displayed. Go to home screen.

20. SCALE DATA

Scale data menu, **<P8.InFo>**, provides information on the weighing device and its program. The parameters serve informative purposes:

Parameter	Description
<8.1.Idb>	Serial number of the scale.
<8.2.PurS>	Program version.
<8.3.PStP>	Settings printout. Enter the parameter to send scale settings to printer port (all parameters).

21. IMPORT/EXPORT

Function enabling you to archive weighing reports and Alibi reports and to copy parameters between weighing devices of the same series. Import/export operation can be carried out by means of USB flash drive comprising **<FAT files system>**. Upon connection of the USB flash drive to the USB A port, the drive gets detected automatically as a result **<IE>** sub menu is created. Since extensions of exported weighing reports and Alibi reports files are specific and the file-stored data is encoded it requires a special software. For this software, please reach out to support@schulersci.com .

21.1 WEIGHING RECORDS EXPORT

Option enabling you to export weighing to a USB flash drive. Weighing device proram offers option of record of 5000 weighings

Procedure

- Connect the USB flash drive to USB A port
- Enter **<IE / IE1.UUE>** Submenu
- The program automatically saves exported data to a USB flash drive file
  - File name and extension: xxxxxx.wei, where xxxxxx – serial number

21.2 ALIBI WEIGHINGS EXPORT

Option enabling you to export ALIBI weighing to a USB flash drive. Weighing device proram offers option of record of 100000 weighings

Procedure

- Connect the USB flash drive to USB A port
- Enter **<IE / IE2.ALE>** Submenu
- The program automatically saves exported data to a USB flash drive file
  - File name and extension: xxxxxx.ali, where xxxxxx – serial number

21.3 PARAMETERS EXPORT/IMPORT

Export / import of all user parameters between weighing devices of the same series carried out using USB flash drive.

Export Procedure

- Connect the USB flash drive to USB A port
- Enter **<IE / IE3.SPE>** Submenu
- The program automatically saves exported data to a USB flash drive file
  - File name and extension: xxxxxx.par, where xxxxxx – serial number

Import procedure

- Connect the USB flash drive to USB A port, make sure that the drive stores parmeters file in the main directory (file name: xxxxxx.par, where xxxxxx – serial number)
- Enter **<IE / IE4.SPI>** Submenu
- User parameters are automatically imported from xxxxxx.par file

22. APPENDIX

22.1 MAINTENANCE

Disassembly of weighing pan and other detachable components (the components differ depending on a balance type – see: UNPACKING AND INSTALLATION section).

Caution:
Cleaning anti-draft chamber while still installed may cause damage to the measuring system.

22.1.1 CLEANING ABS COMPONETS

To clean dry surfaces and avoid smudging, use clean non-coloring cloths made of cellulose or cotton. You can use a solution of water and detergent (soap, dishwashing detergent, glass cleaner). Gently rub the cleaned surface and let it dry. Repeat cleaning process if needed.
In the case when contamination is hard to remove, e.g. adhesive, rubber, resin, polyurethane foam residues etc., you can use a special cleaning agents based on a mixture of aliphatic hydrocarbons that do not dissolve plastics. Before using the cleanser for all surfaces, we recommend carrying out tests. Do not use products containing abrasive substances.

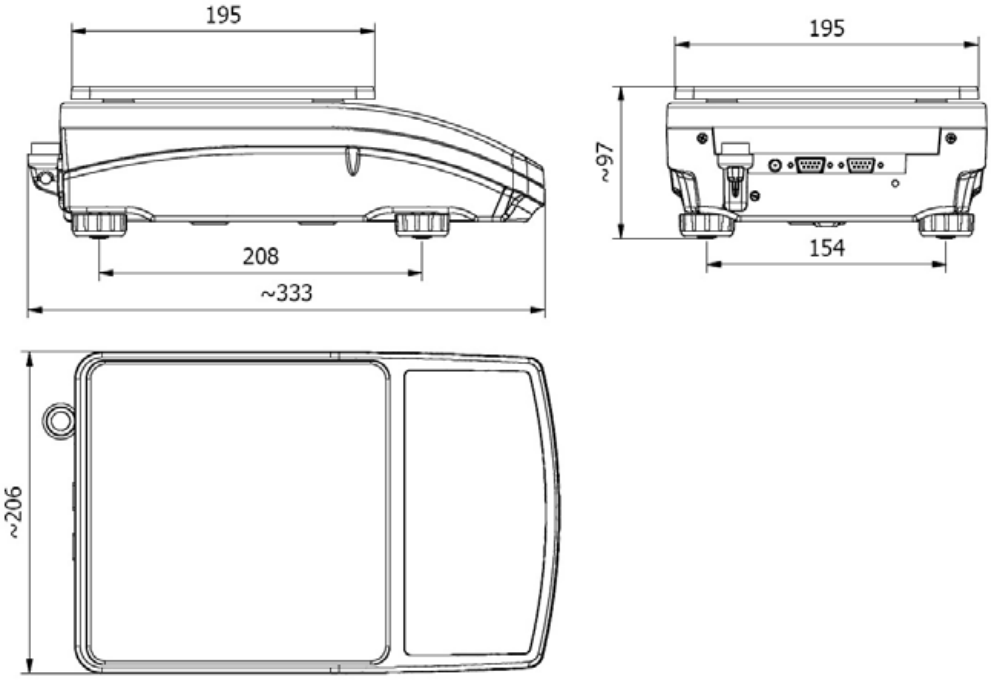
22.1.2 CLEANING STAINLESS STEEL COMPONETS

Avoid using cleansers containing any corrosive chemicals, e.g. bleach (containing chlorine). Do not use products containing abrasive substances. Always remove the dirt using microfiber cloth to avoid damage of protective coating.

In case of a daily maintenance:

1. Remove the dirt using cloth dipped in warm water.
2. For best results, add a little dishwashing detergent.

22.2 DIMENSIONS



22.3 TROUBLESHOOTING

Problem	Cause	Solution
Turning on does not work	Discharged batteries.	Connect to mains or change batteries
	No batteries (not installed or improperly installed)	Check the correctness of installation (polarization)
The scale turns off automatically	“t1” set to “YES” (Power save)	In “othr” submenu change “5.4 t1” to “no”
After turning on “LH” message on the display	Loaded weight pan during powering up	Unload the pan. Then the scale will indicator zero.

22.4 ERROR MESSAGES

- E r r 2 -	- Value beyond zero range.
- E r r 3 -	- Value beyond tare range.
- E r r 4 -	- Adjustment weight or start mass out of range (±1% for adjustment weight, ±10 for start mass).
- E r r L o	- Determined mass of single part in 'Parts counting' mode too small. - Value of 'Min' threshold is greater than value of 'Max' threshold in '+/- control' mode.
- E r r H i -	- Entered value of single part greater than maximum capacity in 'Parts counting' working mode. - Entered value of 'Max' threshold greater than maximum capacity in '+/- control' mode. - Entered reference mass greater than maximum capacity in 'Percent weighing' mode.
- E r r 8 -	- Time of the following operations determining, adjustment process exceeded: taring, zeroing, start mass determination, calibration process, taring, zeroing, start mass
- n u l l -	- Zero value from converter.
- F U L L -	- Weighing range exceeded.
- L H -	- Start mass error, indication out of range (-5% – +15% of start mass).
- H i -	- Display range of total mass on scale display exceeded in 'Totalizing' mode.