Proceq ZAA 2600.SW
Automatic Scrub Tester

Instruction Manual

Index

Exclusion of liability

1 Description of device

The Proceq ZAA 2600 Automatic Scrub Tester is a linear abrasion tester with touchscreen and stepless adjustable stroke length for reproducible wet abrasion, scrub resistance, washability and crockmeter tests.

In particular, this instrument has the following features:

- Thanks to its modular construction, the automatic universal unit can be equipped with different kits for carrying out also application, scratch and mar resistance tests as well as recording of the drying time.
- Upgrade can be achieved at any time by simply purchasing an add-on kit.
- Fast tool change (friction sets and friction finger sets for crocking tests).
- Scalability ensures upgrade possibility after initial purchase without returning the equipment.
- Up to 4 wet and/or dry tests can be carried out at the same time.
- Customised tests can be carried out easily with the optional universal holder.
- Storage of various profile settings such as stroke length and number of cycles.
- Stroke speed (cycle speed) up to 100 double strokes per minute.
- Also appropriate for thick and curved samples.
- Up to 4.5 kg (9.92 lbs) can be loaded.
- Easy to use.
- Compact design saves counter space.
- Custom-made versions on request.

2 Safety information

2.1 Symbols used

This note comprises instructions needed to follow directions, specifications, proper working procedure and to avoid data loss, damage or destruction of the instrument.

This note signifies a warning about dangers to life and limb if the apparatus is handled improperly. Observe these notes and be particularly careful in these cases. Also inform other users on all safety notes. Besides the notes in this instruction manual the generally applicable safety instructions and regulations for prevention of accidents must be observed.

2.2 Safety notes and hints

It is strictly forbidden to open the housing of the Proceq ZAA 2600. If not observed, all guarantee and liability claims to Proceq SA will be void.

Place the device on a solid, even surface before operation and ensure that the separator (power socket) is accessible and that the instrument can be separated from the power supply at any time.

Never touch any moving parts during operation.

The side panels must always be mounted during operation.

Do not lean over the unit during operation.

Always wear safety glasses during operation.

Only connect the Proceq ZAA 2600 to alternating current of a voltage of 100 – 240 V at 50 to 60 Hz. The voltage must correspond to the information given on the identification plate of the apparatus. The device may only be connected to sockets with a protective earth conductor.

Never use a damaged power cable. Only use power cable with protective earth conductor. Removable power cables must not be replaced by an insufficiently rated power cable. Only use the power cable provided by the manufacturer.

The Automatic Scrub Tester Proceq ZAA 2600 is constructed in accordance with the state of the art and is safe to operate. However, there is always risk when the instrument is handled improperly or differently than intended by the manufacturer.

Depending on the abrasives used, the test may only be carried out in a ventilated environment.

Always unplug the power cable before assembling and/or converting the unit.

Scrub or crock abrasion tests may produce dust through abrasion. If necessary, appropriate safety related measures must be provided by using a suction device.

The Proceq ZAA 2600 is a multi-function device and is exclusively intended to use in various functions defined in chapter 1 of this manual. Any other use

– not authorized by Proceq – is considered as being not in accordance with the intentions of the manufacturer and is conducted at the user's own risk. The manufacturer is not liable for any resulting damages.

- Every person operating or maintaining the Proceq ZAA 2600 must have read and understood this instruction manual in its entirety, in particular the safety precautions and warnings.
- Unauthorized modifications and changes of the Proceq ZAA 2600 are not permitted.
- Reproduction without permission is not allowed.
- Before lifting or moving the apparatus, the sample tray must be removed to reduce the total weight. Tilting the device can cause the sample tray to fall out.
- All maintenance and repair not explicitly allowed and described in this manual shall only be carried out by Proceq SA or your authorized Proceq agent, failure to comply voids warranty.
- **Proceq SA** refuses all warranty and liability claims for damages caused by usage of the Proceq ZAA 2600 in combination with **non-original accessories**, or accessories from 3rd party suppliers.
- All local safety regulations apply for the operation of the Proceq ZAA 2600.

The following warning symbols can be seen on the device:

Danger of hand injury: Hands can be bruised, or otherwise injured.

Danger of electric shock.

3 Delivery of device

3.1 Damages during carriage

On receipt of the goods, check for any visible damages on the packaging. If it is undamaged you may sign the receipt of the goods. If you do suspect by visual inspection that damage has occurred, make a note of the visible damage on the delivery receipt and request the courier to countersign it. Moreover, the courier service must be held responsible for the damage in writing.

If a hidden damage is discovered while unpacking, you have to inform and hold the courier liable immediately in the following way: “When opening the parcel we had to notice that … etc.“ This superficial checking of the goods has to be done within the time limit set by the carrier, which is normally 7 days. However, the period could vary depending on the courier. Hence, it is recommended to check the exact time limit when receiving the goods.

If there are any damages also inform your authorized Proceq agent or **Proceq SA** immediately.

3.2 Shipment

Should the device be transported again, it must be packaged properly. Preferably use the original packaging for later shipments. Additionally use filling material in the package to protect the device from any shock during carriage.

To protect persons and the apparatus, proper care must be taken when lifting or carrying it. It is recommended to hold and carry the Proceq ZAA 2600 on both sides of the housing. Always remove the sample tray before lifting or tilting the device.

3.3 Standard delivery

The following parts are included in the delivery:

- automatic scrub tester with touchscreen
- sample tray
- 2 sample frames
- tool holder
- drain hose
- reversible, double sided glass plate: printing blanket and glass surface
- 4 rubber feet (for the glass plate for modification sets)
- spirit level
- power cable
- Allen key 3 mm and 2.5 mm
- certificate of manufacturer
- instruction manual

3.4 Options for Proceq ZAA 2600.SW as well as Proceq ZAA 2600

Friction set for ASTM D2486 1 brush 1 weight 1 cushioning pad 1 holder 2 metal strips 250 µm	
Friction set for ASTM D3450 1 sponge 1 weight 1 holder	
Friction set for ASTM D4213 1 sponge 5 abrasive pads (3M Scotch Brite®) 1 weight 1 holder	
Friction set for ASTM D4828 1 sponge 1 weight 1 holder	

Friction set for ISO 11998 5 abrasive pads (3M Scotch Brite®) 1 holder	
Weight 50 g	
Weight 100 g	
Weight 500 g	
Universal holder 1 holder 1 foam cushion 1 hard rubber cushion	
Modification set „Application“	
Modification set „Heatable Application“	
Modification set „Crockmeter“	
Maintenance Proceq ZAA 2600	

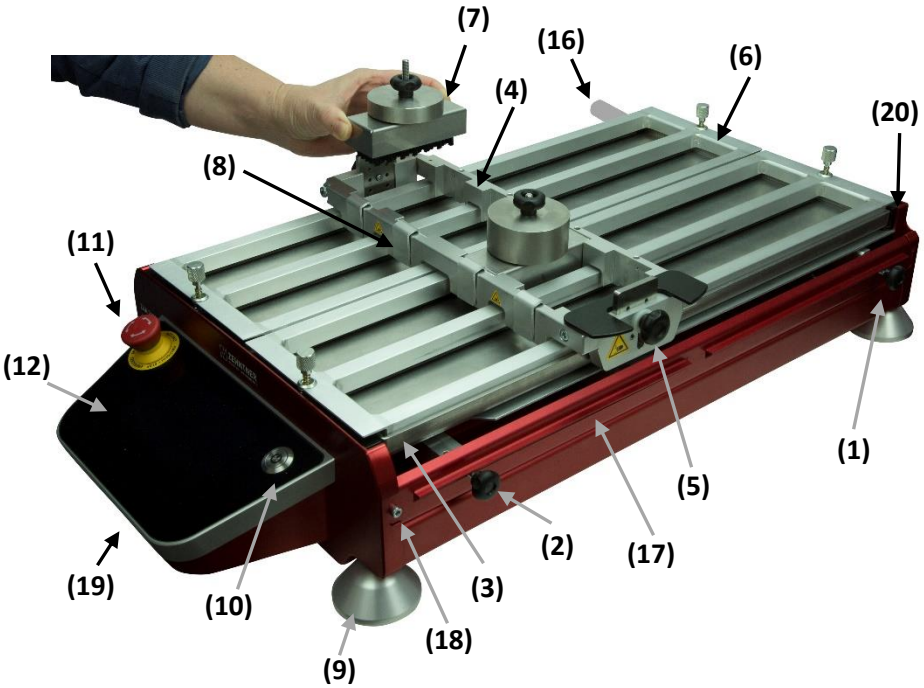
3.5 Options for crockmeter tests

Friction finger set A acc. to DIN 55654 1 friction finger holder 1 friction finger A (22 mm x 22 mm / 0.87” x 0.87”) 1 set rubbing cloth clamp 1 set of 2 pieces elastic strap 10 pieces felt insert	
Friction finger set B with Ø 16 mm (0.63”) for tests according to: - DIN 55654 - AATCC test method 8 - EN DIN 13523-11 - EN ISO 105-X12 - Volkswagen PV 3906 - based on ASTM F1319 1 friction finger holder 1 friction finger B with Ø 16 mm (0.63“) 1 rubbing cloth clamping ring	
Friction finger set C for tests according to: - DIN 55654 - BMW AA-0134 1 friction finger holder 1 friction finger C 1 set rubbing cloth clamp 1 set of 2 pieces elastic strap 2 sets cellular rubber	
Weight for test force 9 N The test weight is only achieved with a Proceq friction finger set.	
Weight for test force 22 N The test weight is only achieved with a Proceq friction finger set.	
Weight 50 g	
Weight 100 g	

Weight 500 g	
Felt cloth	
Cotton rubbing cloth acc. to ASTM F1319 and ISO 105-F09	

A guideline for selecting the suitable equipment according to the desired standards can be found in the document „Equipment for crockmeter tests“ available at: www.proceq.com

4 Device overview



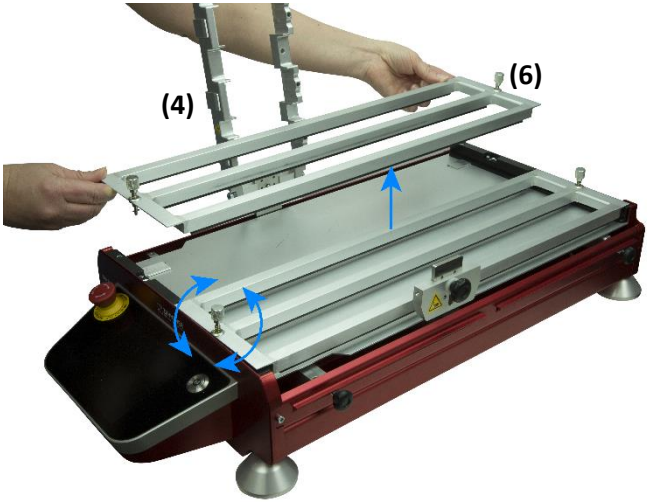
(1) **Start stop**
(2) **End stop**
(3) **Sample tray**
(4) **Tool holder**
(5) **Height adjustment for tool holder**
(6) **Sample frames**
(7) **Friction set**
(8) **Clip**
(9) **Levelling feet**
(10) **Power button**
(11) **Emergency stop button**
(12) **Touchscreen**
(13) **Power supply** 100 V – 240 V / 50 Hz – 60 Hz
(14) **Delay action fuse** 0.8 A / 250 V
(15) **Main switch** (On / Off)
(16) **Drain hose**
(17) **Side panel**
(18) **Fixing screw of the side panel**
(19) **USB Port** (for future use)
(20) **Fixing bar**

5 Assembly and starting up

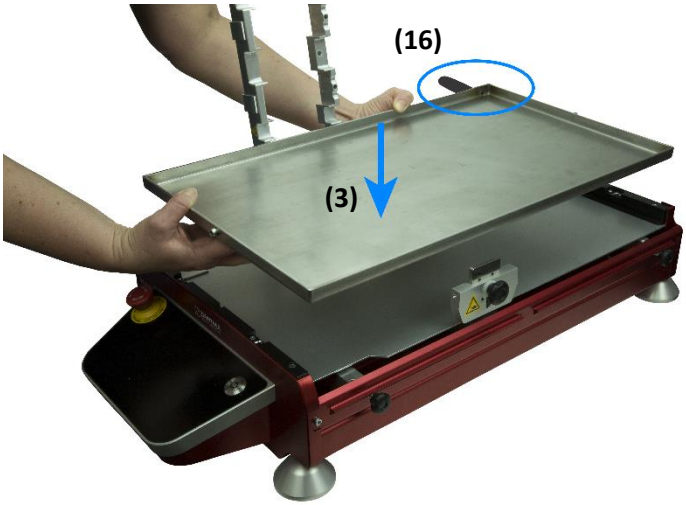
5.1 Assembly

Before the first use the apparatus has to be assembled or converted for use with the desired options:

- Fold up the tool holder (4).
- Loosen the screws of the sample frames (6) with a quarter-turn and remove the sample frames (6).



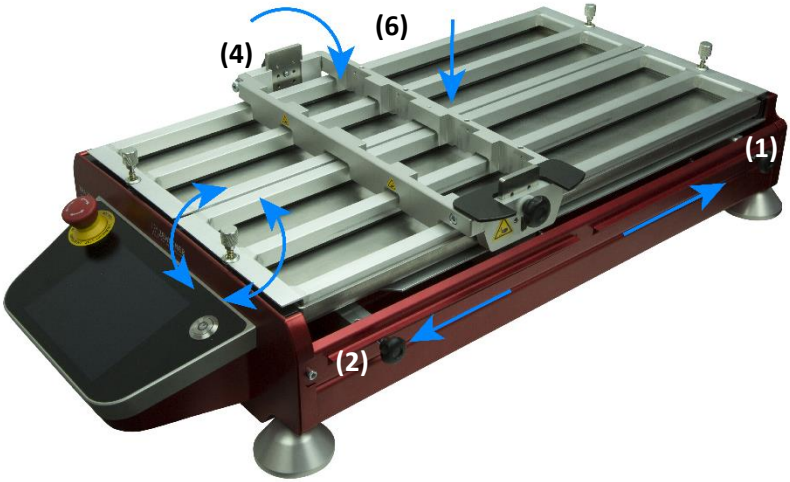
- Place the sample tray (3) in the unit. The drain lead-out has to be at the back part of the unit.



- Fix the drain hose (16) to the drain lead-out.

The drain hose (16) has to lead the liquid outwards. The hose must not point into the unit. When using the device with liquids the drain hose (16) must be mounted.

- Place the sample frames (6) in the unit and while pressing them down fix the screws with a quarter-turn.
- Fold down the tool holder (4).



- Move the start stop (1) backwards and the end stop (2) forward as far as possible. Fasten their screws.

To protect persons and apparatus, proper care must be taken when lifting or carrying it. It is recommended to hold and carry the Proceq ZAA 2600 on both sides of the housing. Always remove the sample tray before lifting or tilting the device.

5.2 Startup

Connect the device to a power socket with the supplied power cable and turn on the main switch (15).
Switch on the device by pressing the power button (10). The device will be ready after a short start-up phase.

5.3 Shutdown

Turn off the device by pressing the power button (10). The display will turn off and the device is shutting down. Before removing the power cable, turn off the main switch (15).

5.4 Glass plate

The provided delivered glass plate is used for the optional modification sets, mainly such as application. Generally, the scrub tester can be used with the glass plate, though the thickness of the sample will be reduced due to the maximal height of the tool holder (4) and no liquids must be used. Therefore, it is recommended to use the scrub tester with the sample tray for scrub tests.

5.5 Disassembly for transport

⚠ Always switch off the device and unplug the power cable before dissembling.

To prevent transport damage, the device must be disassembled as follows:

- Fold up the tool holder (4) and loosen the screws of the sample frames (6) with a quarter-turn.
- Remove the sample frames (6) and afterwards the sample tray (3).
- Replace the sample frames (6) and fix them again, fold down the tool holder (4).
- Move the tool holder (4) to the centre of the device.
- Move the start stop (1) and the end stop (2) to the centre of the device as well and fasten them with their screws.

Shipping condition:

ℹ No friction sets must be inserted into the tool holder (4) for shipping.

6 Scrub test

6.1 Preparation

Before the apparatus is prepared for scrub tests, you should have decided:

- according to which standard the scrub test should be carried out
- which friction set you will be using
- if an even or a curved sample will be inserted

Up to 4 identical or different friction sets can be used at the same time, depending on the friction material, the sample surface, the speed and the test load.

The highest possible test load is depending on the friction material, the sample surface and the speed.

6.1.1 Available friction sets

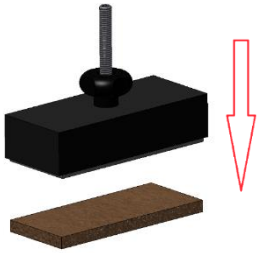
	Friction set for ISO 11998
	Friction set for ASTM D4213 Standard specification: weight – 450 g (0.99 lbs), bearing surface – 95 x 75 mm (3.74“ x 2.95”). The bearing surface has been halved and the weight reduced to half.
	Friction set for ASTM D4828 Standard specification: weight – 1000 g (2.2 lbs), bearing surface – 95 x 76 mm (3.74“ x 2.99”). The bearing surface has been halved and the weight reduced to half.
	Friction set for ASTM D3450 Standard specification: weight – 1500 g (3.31 lbs), bearing surface – 95 x 76 mm (3.74“ x 2.99“).The bearing surface has been halved and the weight reduced to half.
	Friction set for ASTM D2486
	Universal holder The universal holder is not subject to any standards. It can be equipped with any abrasive media. The test load will be determined by the operator in 50 g (0.11 lbs) steps.

The weight of the friction sets will only be reached if the knurled nut is mounted.

To avoid ejection of weights they have to be screwed to the holder.

6.1.2 Use of the friction sets:

Use of the friction sets for ISO 11998:

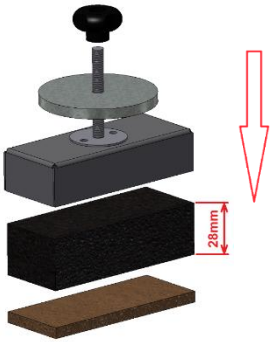


- Press the abrasive pad firmly onto the Velcro surface of the holder.

No additional weight is needed for tests according to ISO 11998.

Spare abrasive pads
Spare Velcro

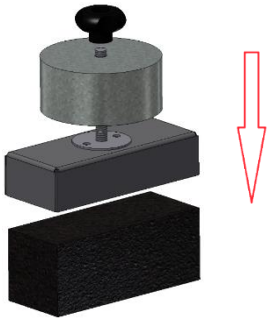
Use of the friction sets for ASTM D4213:



- Slide on the weight for ASTM D4213 and screw it in place.
- Use a sponge of 95 x 38 x 28 mm (3.74 x 1.5 x 1.1”).
- Insert the sponge into the holder with the largest surfaces facing up and down.
- Place the abrasive pad on the sponge. (The pad will only be placed.)

Spare sponge
Spare abrasive pad

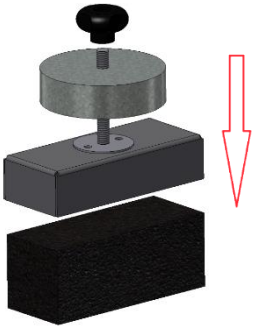
Use of the friction sets for ASTM D3450:



- Slide on the weight for ASTM D3450 and screw it in place.
- Use a sponge of 95 x 38 x 38 mm (3.74 x 1.5 x 1.5”).
- Insert the sponge into the holder.

Spare sponge

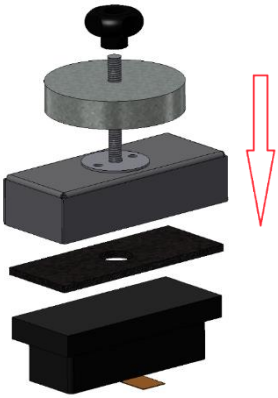
Use of the friction sets for ASTM D4828:



- Slide on the weight for ASTM D4828 and screw it in place.
- Use a sponge of 95 x 38 x 38 mm (3.74 x 1.5 x 1.5”) .
- Insert the sponge into the holder.

Spare sponge

Use of the friction sets for ASTM D2486:

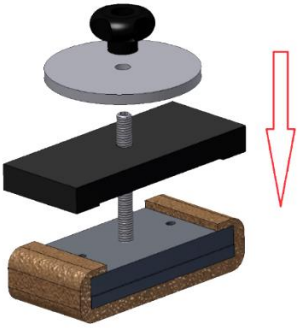


- Slide on the weight for ASTM D2486 and screw it in place.
- Place the cushion pad (with holes) in the holder.
- Insert the brush bristles down into the holder.
- The metal strip shown is interlocked with the substrate according to ASTM D2486.

Spare brush
Spare cushion pad
Spare metal strip

Use of the universal holder:

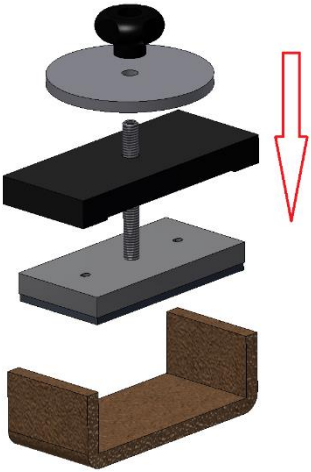
- Clamp the abrasive medium between the two blocks.
- Slide on the selected additional weight and screw it in place.

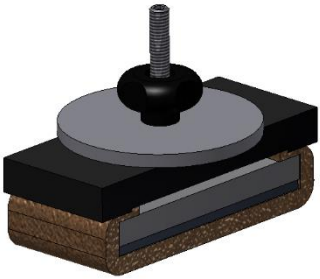


Spare foam cushion

Spare hard rubber cushion

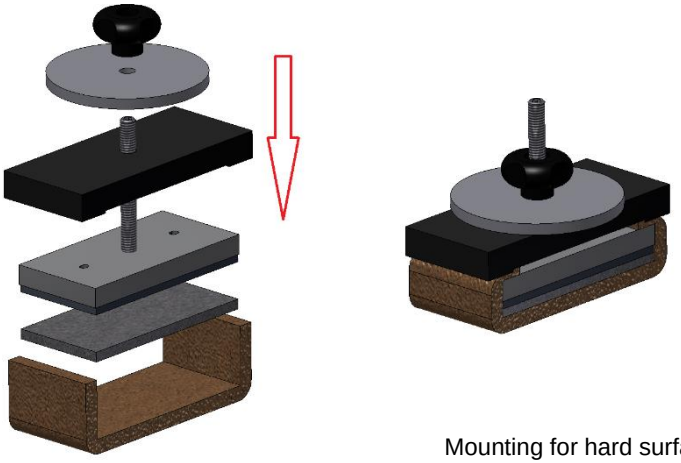
For tests on **medium hard surfaces** (e.g. plastic plate) it is recommended to equip the holder only with the hard rubber cushion.





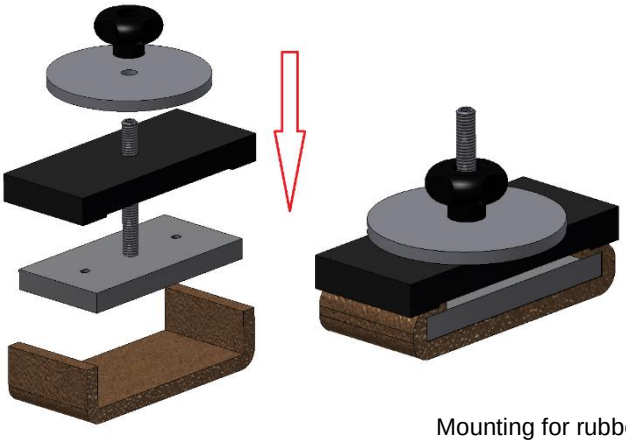
Mounting for medium hard surfaces

For tests on **hard surfaces** (e.g. painted steel plate), it is recommended to mount the supplied foam cushion between the hard rubber cushion and the abrasive. As a result, the abrasive is better adapted to the substrate.



Mounting for hard surfaces

Vibrations may occur during tests on rubber-like surfaces (e.g. soft-touch painting). In such cases it is recommended to remove all rubber elements (foam cushion, hard rubber cushion as well as the adhesive film).



Mounting for rubber-like surfaces

6.2 Carry out a scrub test

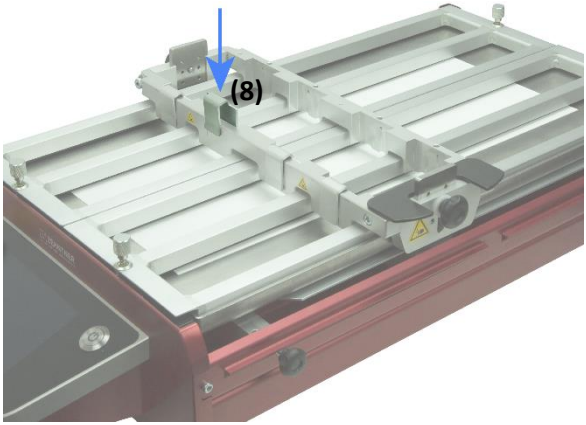
The side panels (17) must always be mounted during operation.

Never touch any moving parts during operation.

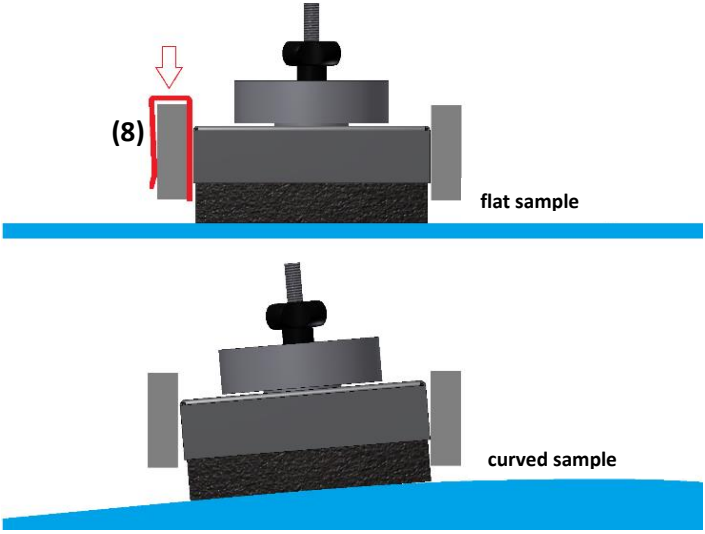
Depending on the abrasives used, the test may only be carried out in a ventilated environment.

- Place the device on a solid, even surface.
- Level the apparatus using the included spirit level. To do so, place the spirit level on the sample tray and adjust the levelling feet (9) until the Proceq ZAA 2600 is levelled perfectly. The sample tray must be firmly in place.
- Fold up the tool holder (4).
- Open the screws of the sample frames (6) with a quarter-turn and remove the sample frames (6).
- Place the sample.

- Replace the sample frames (6) in the unit and while pressing them down fasten the screws with a quarter-turn.
- Fold down the tool holder (4).
- When testing flat samples mount the clips (8). They ensure stable running of the friction sets.

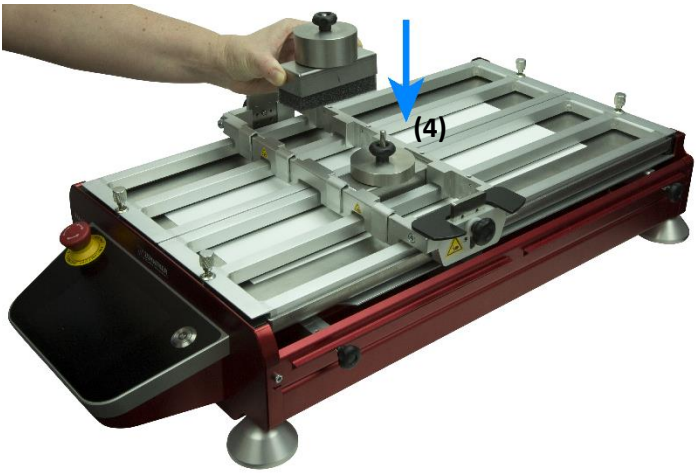


In case of curved samples, the clips (8) must be removed.



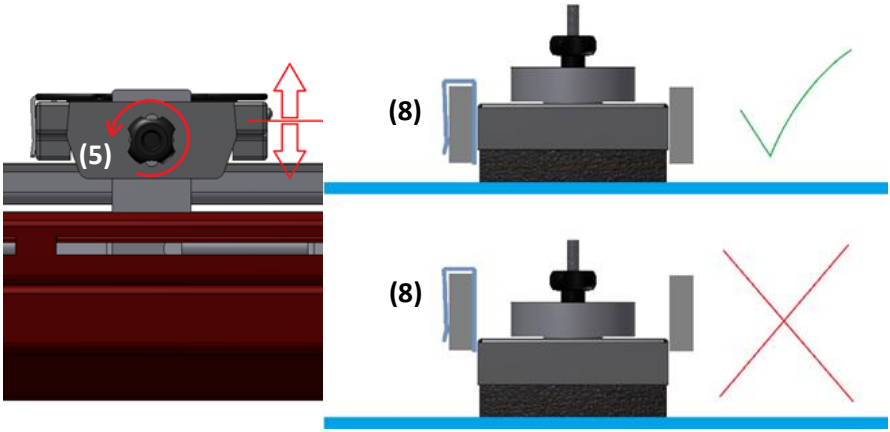
The clips (8) have to be mounted even in case of curved samples if exceeding one or both of the following parameters in order to avoid ejection of the friction sets at high speed and load:
- speed: 80 double stroke / min
- weight of the friction sets: 600 g

- Move the tool holder (4) either with  or manually to the back part of the sample.
- Press the „Zero“ button  on the touchscreen to set the start position.
  Note: Do not zero directly at the start stop (1), but at least ca. 3 mm in front.
- Moisten the chosen friction set according to standard and place it in the tool holder (4).



Maximum load: 4.5 kg (99.21 lbs) (2 x 22 N).

- Check the height of the sample frames (6) and adjust it with the screw (5) if necessary.



- Set the number of double strokes and stroke length on the touchscreen (refer to chapter 7.1.7 “Setting the stroke length” on page 29).

⚠ Set the scrub length so that the testing head stays on the sample for the complete stroke length.

⚠ Do not lean over the unit during operation.

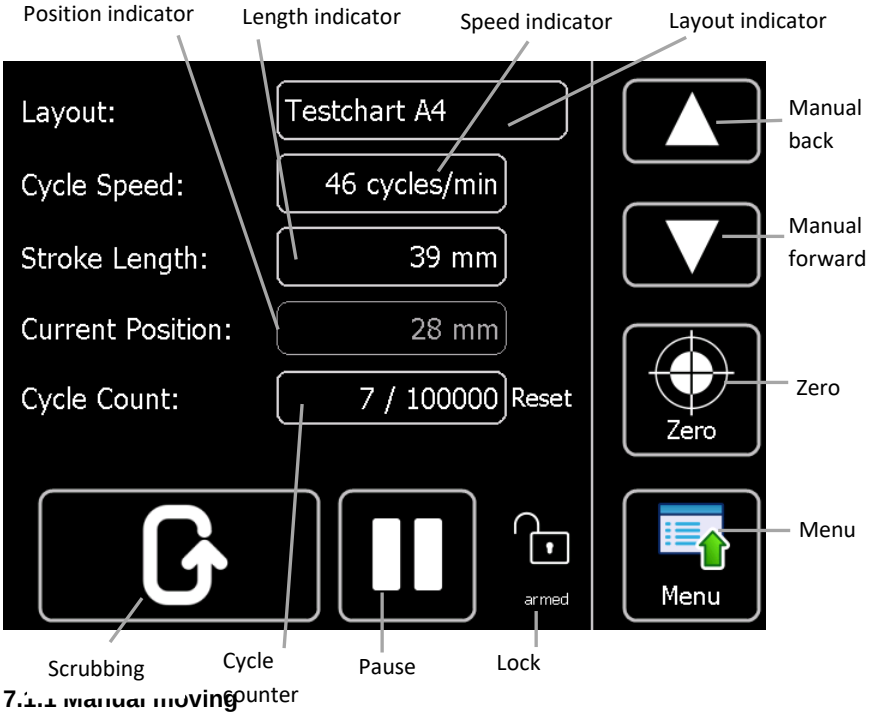
- Start the scrub test by tapping  on the display.
- Prepare the evaluation and test report according to standard.

7 Operation and Menu

7.1 Main screen

The Proceq ZAA 2600 is equipped with a capacitive touch screen with a glass front. The touch screen is configured to allow operation with gloves up to 1 mm thickness.

The most important settings can be accessed directly from the main screen. The menu is used for any additional settings.

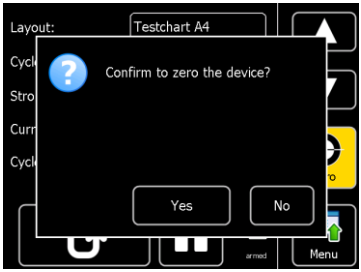


7.1.1 Manual moving

The tool holder (4) can be moved using the „Manual forward“  and „Manual back“  buttons. If one of these buttons is pressed, the tool holder (4) starts to

move slowly. If the button is held for more than a second, the speed will increase. Alternatively the tool holder (4) can also be moved by pushing it forward or backwards in the middle of the holder.

7.1.2 Zero the scrub tester



The current position of the tool holder (4) can be set to 0 by pressing the „Zero“ symbol 

Confirm the appearing message with „yes. Should this button be pressed accidentally during the procedure, you can abort the zeroing process by pressing “no”.

Note: Do not zero directly at the start stop (1), but at least ca. 3 mm in front.

7.1.3 Scrubbing

The scrubbing procedure starts when pressing the „Scrubbing“ button  . The meter counts the double strokes made. The scrubbing procedure stops automatically when the set number of double strokes has been reached.

One double stroke equates to one forward and backward movement of the tool holder (4).

7.1.4 Pause

The scrubbing procedure can be interrupted by pressing the „Pause“  button.
The procedure continues when tapping the „Scrubbing“  button again.

7.1.5 Select layout

The layout indicator shows the name of the currently selected layout. A layout is a renameable memory slot storing speed and stroke length. This is especially useful for recurring tasks where the same speed and length are required again.
The current layout can be selected by tapping the layout field.

7.1.6 Setting the cycle speed

The double stroke speed can be set by tapping the Speed field. A slider will appear on the right side of the touch screen to change the value. The value can also be changed by using the + and − button.

The preset double stroke speed will automatically be saved in the currently selected layout.

7.1.7 Setting the stroke length

The stroke length can be set by tapping the Length field. A slider will appear on the right side of the touch screen to change the value. The value can also be changed by using the + and − button.

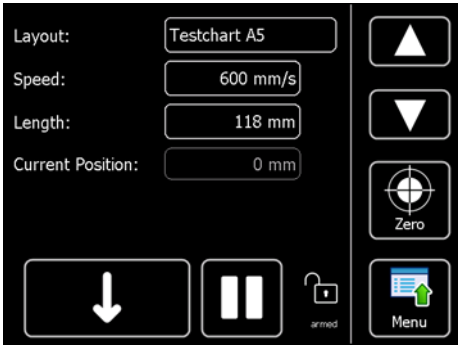
The preset stroke length will automatically be saved in the currently selected layout.

7.1.8 Position

The position field shows the current position of the tool holder (4) relative to the previously defined zero position.

7.1.9 Menu

The menu can be opened using the „Menu“ Menu button. Various settings can be changed from here.



If the device is equipped with the appropriate modification set, also other tests like crocking, scratching or applications can be carried out with the Proceq ZAA 2600 universal unit.

These functions are always integrated in the menu, however they are not working without the modification sets. If you see this screen, the device is in application mode. Go back to the scrubbing mode as follows:

Open the menu Menu, select „Setup“and „Machine Mode“, then tap „Scrubbing“.

7.1.10 Lock

The lock blocks all movement commands of the tool holder (4). It can be activated and deactivated by tapping the lock button.

If the button is in the „armed“ 

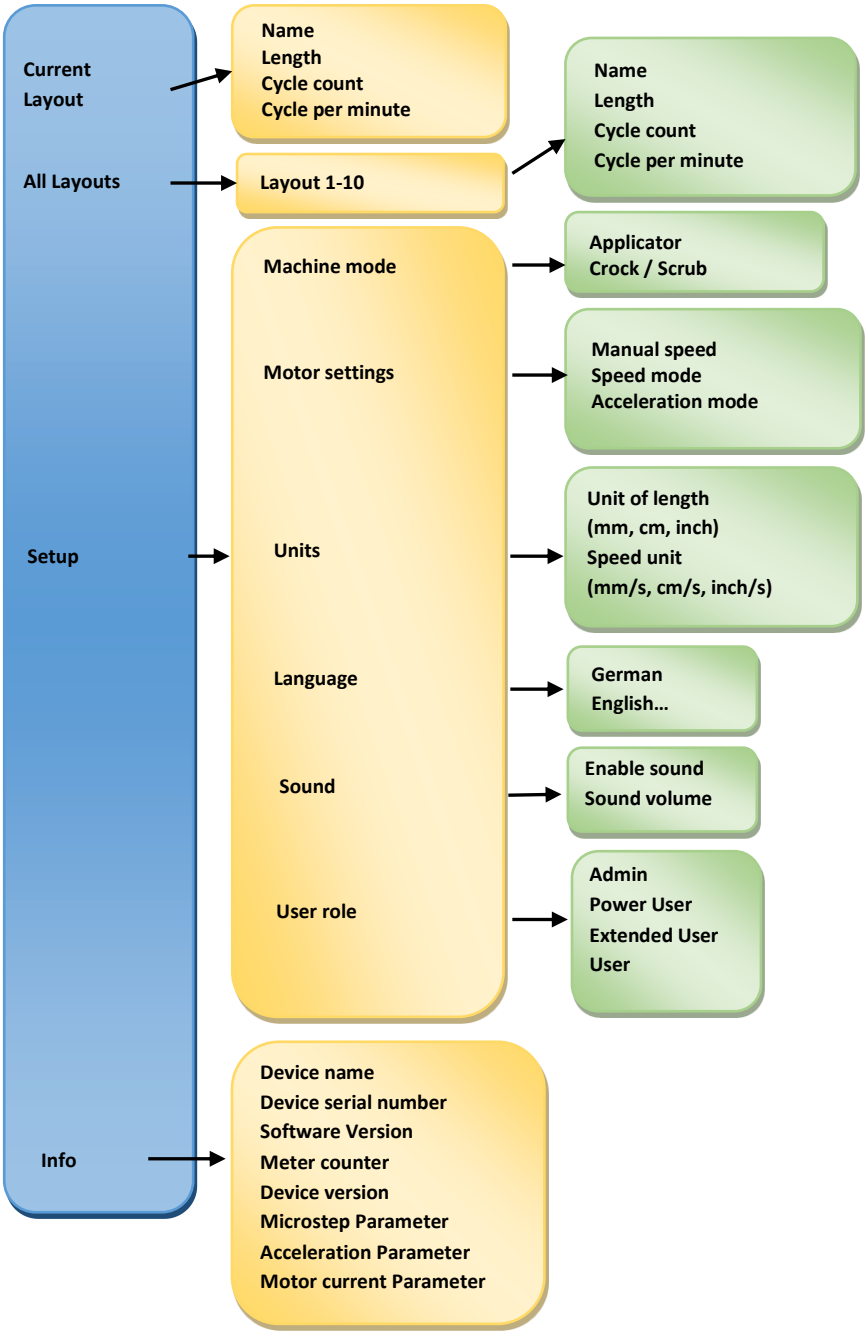
setting, all functions are active.

If the button is in the „locked“ 

setting, the functions „Scrubbing”, “Manual forward” and “Manual back” are locked.

The „locked“ setting prevents the moving of the tool holder (4) when touching the screen accidentally.

7.2 Menu structure in scrubbing mode



Open the menu by pressing the „Menu“ 

button.

Go back a level by pressing the „Back“  button.

Return to the main screen by pressing the „Home“  button.

7.3 Using layouts

Layouts are memory slots with a custom set name which store a saved application profile (cycle speed and stroke length). This is especially useful for recurring tasks where the same speed and length are required again.

There are 10 layout slots available. Layout settings can be changed as follows.

7.3.1 Selecting a layout

The current layout can be selected by tapping the layout field on the main screen.

7.3.2 Editing the selected layout

To edit the currently selected layout, choose „Selected layout“ in the menu. The parameters „Name“, „Speed“ and „Length“ can be adjusted by tapping the values, entering the desired adjustment and confirming it with “OK”.

Return to the main screen by tapping the „Home“  button.

The speed and length settings can also be changed directly from the home screen. To adjust the values tap on the speed or the length field and either use the slider or the  and  buttons. These settings will be saved automatically in the selected layout.

7.3.3 View and edit all layouts

To show all existing layouts, select „All layouts“ in the menu. A list of all saved layouts will be displayed. The active layout will be shown as “selected”.
To change the name or settings of a layout, tap the relevant entry in the list. The values can then be changed in the same way as described in chapter 7.3.2 “Editing the selected layout” on page 32.

7.4 Motor settings

Various settings for the motor can be changed via „Settings“ -> „Motor settings“ in the menu.

7.4.1 Manual speed

Manual speed sets the speed at which the tool holder (4) moves when using the „manual back“  or “manual forward”  buttons.

7.4.2 Speed mode

There are two speed modes:

Normal 0 – 300 mm/s:	The normal speed mode is appropriate for most uses.
Schnell 0 – 600 mm/s:	The fast mode is for procedures requiring high drawing speed.

If not specifically required otherwise, it is recommended to use the „Normal“ speed mode for the procedures.

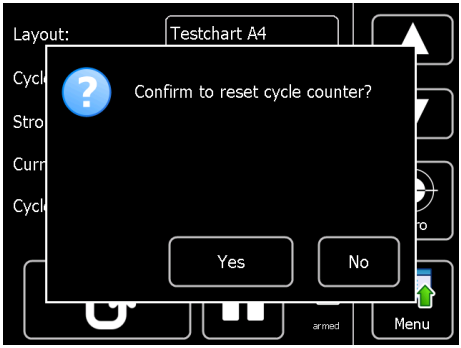
7.4.3 Acceleration mode

There are three different acceleration modes:

Normal:	The normal mode is appropriate for most uses.
Increased:	The increased acceleration is for uses where the top speed of the tool holder (4) needs to be reached quickly.
High:	The high acceleration mode is only appropriate for uses with very high speed, requiring the top speed of the tool holder (4) to be reached as fast as possible. High acceleration mode can lead to a jerk at the start of the drawing process.

If not specifically required otherwise, it is recommended to use the „Normal“ acceleration mode for most procedures.

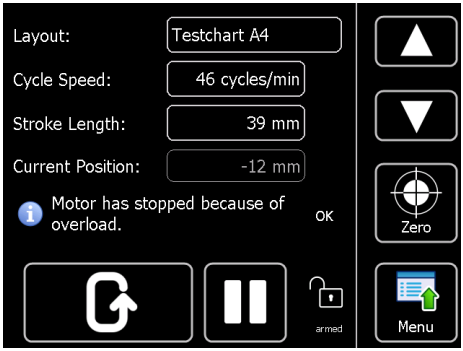
7.5 Reset



With the „Reset“ button the cycle counter (double stroke counter) will be reset. This cannot be undone.
If the „Reset“ button has been tapped this message appears which has to be either confirmed or rejected.

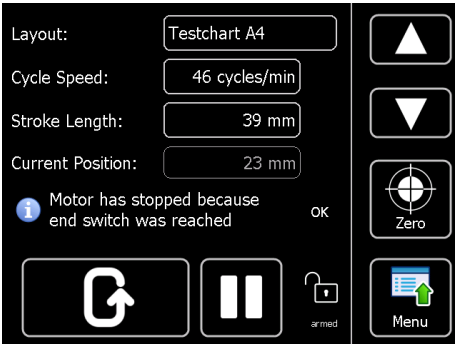
7.6 Status messages

7.6.1 Overload



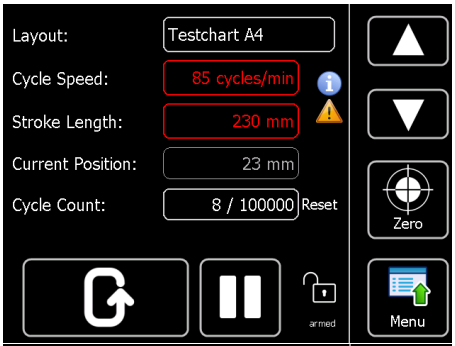
"Motor has stopped because of overload. “This message is only an information, you can tap either on “OK” or move forward with . Should the message be displayed repeatedly during a procedure, the scrubbing resistance is probably too high. A possible solution could be to increase the acceleration mode. Select “Setup” and “Motor Settings”, then “Acceleration mode” and tap „Elevated“ in the menu.

7.6.2 End switch

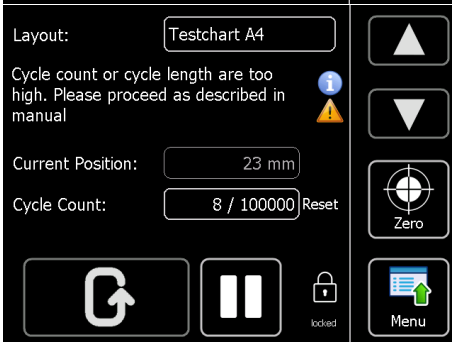


„Motor has stopped because end switch was reached“. The preset stroke length exceeds the position of the end switch. It is recommended to always move the end stop (2) completely to the front and the start stop (1) completely to the back part of the device.
Solution: Move the end stop (2) completely to the front of the device and press „OK“ or „Scrubbing“ afterwards.

7.6.3 Cycle speed and stroke length cannot be set



The fields for cycle speed and stroke length are marked red. After tapping on the information symbol a message will appear that either the cycle counts or the cycle speed are too high.



Solution: The motor cannot reach the preset number of double strokes with the preset stroke length and speed. Either the double stroke (cycle) speed or the stroke length has to be reduced. Alternatively, the acceleration mode or speed mode of the motor can be adjusted. For this see chapter 7.4 “Motor settings” on page 33.

7.6.4 The motor is overheated

If the motor of the unit is overheated, this message appears and the current action will be interrupted. Confirm the message with OK, the device switches off. Let the device cool down before switching it on again. Arrange for sufficient ventilation around the device. The unit must not be operated outside of the allowed temperature range.

7.6.5 Lubrication the guide rods

After a service performance of about 2'000 km a message will appear at start-up reminding you to lubricate the guide rods. Carry out the lubrication as described in chapter 11.3 "Lubrication of the guide rods" on page 48.
To switch off the reminder until the next interval, choose "Do not show this message again" and close with "OK".

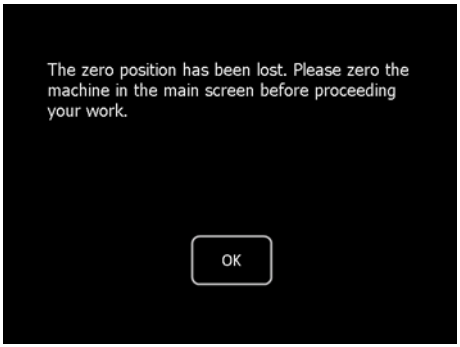
7.7 Emergency stop function

Pressing the Emergency Stop button (11) immediately stops the motor. The power supply of the motor is interrupted so that the tool holder (4) can be moved by hand.

The touch screen and control unit of the Proceq ZAA 2600 remain active since only the power supply is interrupted.

To unlock the Emergency Stop button (11), turn it counterclockwise.

The following message will be displayed after unlocking the Emergency Stop (11):



The Zero position must be reset. Move the tool holder (4) to the desired starting position and press the „Zero" 

button.

8 Crocking with the scrub tester

It is possible to mount friction finger sets on the tool holder (4). In this combination, crocking tests can be carried out with samples up to 15 mm thickness (with the sample tray placed).

To test samples above 15 mm thickness it is recommended to purchase the modification set „Crockmeter“.

Up to 4 identical or different friction sets can be used at the same time, depending on the friction material, the sample surface, the speed and the test load.

The maximum possible test load is depending on the friction material, the sample surface and the speed.

8.1 Preparation

Before the apparatus is prepared for crocking tests, you should have decided:

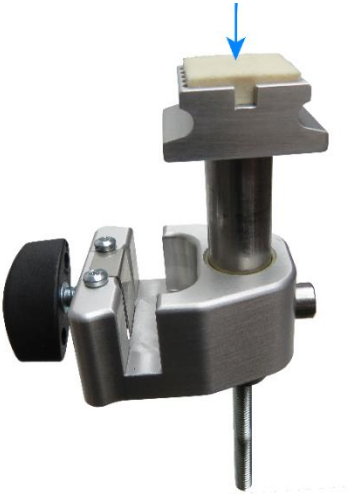
- according which standard the crocking test should be carried out
- which friction finger set, friction material and/or friction medium if necessary you will be using
- on the number of double strokes
- on the evaluation procedure
- on the time between the friction stress and the evaluation of the friction lane

8.2 Mounting the friction finger sets

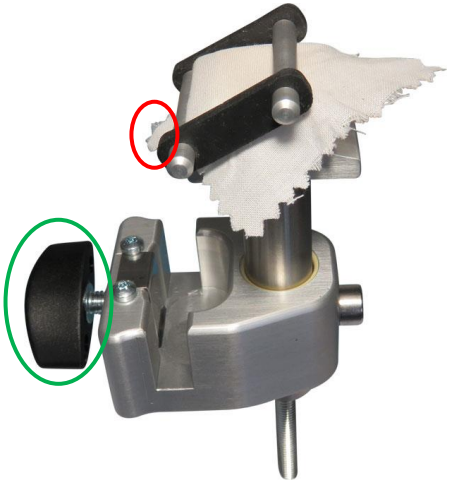
To carry out crocking tests at least one friction finger set and one weight are needed. Some standards or test procedures require additional equipment and auxiliary material.

For available options for crockmeter tests please refer to chapter 3.5 “Options for crockmeter tests” on page 12.
A guideline for selecting the suitable equipment according to the desired standards can be found in the document „Equipment for Crockmeter tests“ available at:
www.proceq.com

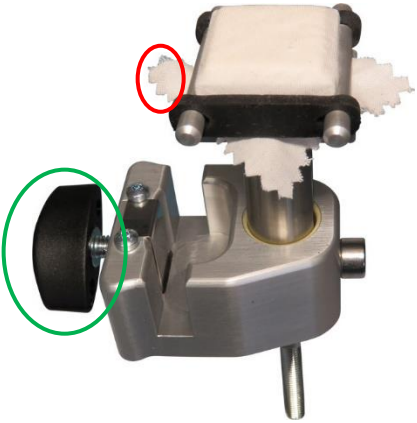
8.2.1 Mounting the friction finger set A



1) Place the felt stamp.



2) Place the rubbing cloth on the felt stamp with one corner (circled in red) facing the holder screw (circled in green).



3) Clamp the rubbing cloth smoothly.

4) Slide on the weight and screw it in place.

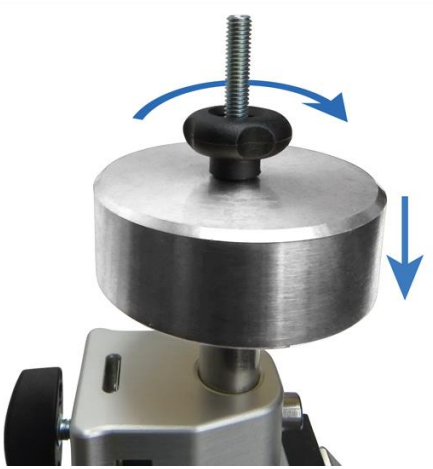
If your friction finger set does not look like picture 3, meaning one corner of the rubbing cloth (circled in red) does not face the holder screw (circled in green), you need to redo step 2.

The test load of 22 N will only be reached if the knurled nut is mounted.

To avoid ejection of weights (accidentally falling down) they have to be screwed to the holder.

8.2.2 Mounting the friction finger set B

1) Compress the ring to enlarge the diameter and move it over the rubbing cloth.



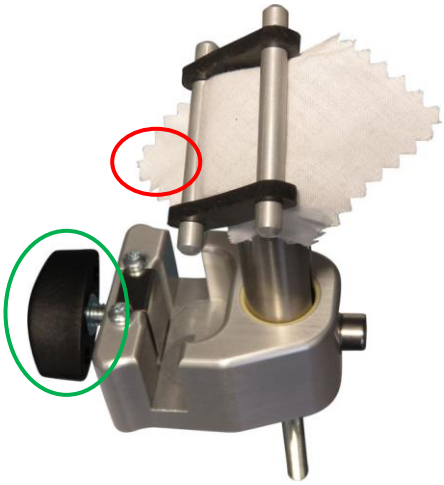
2) Slide on the weight and screw it in place.

The test load of 9 N will only be reached if the knurled nut is mounted furthermore it prevents the weight from accidentally falling down (risk of injury).

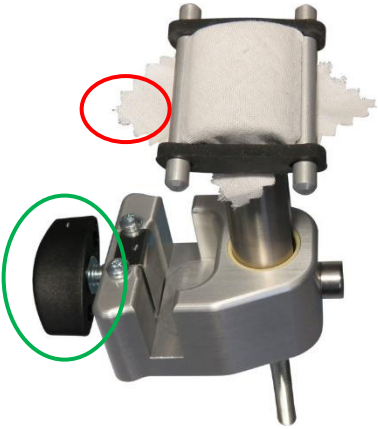
To avoid ejection of weights (accidentally falling down) they have to be screwed to the holder.

8.2.3 Mounting the friction finger set C

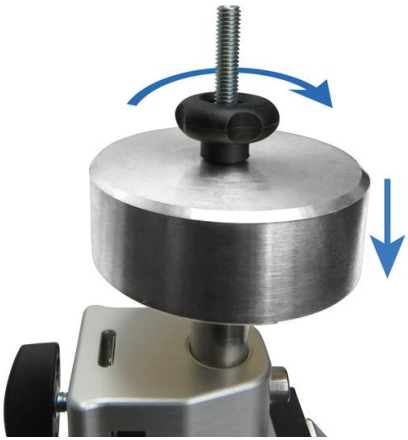
1) Check the cellular rubber for damages.



2) Place the rubbing cloth on the cellular rubber with one corner (circled in red) facing the holder screw (circled in green).



3) Clamp the rubbing cloth smoothly.



4) Slide on the weight and screw it in place.

If your friction finger set does not look like picture 3, meaning one corner of the rubbing cloth (circled in red) does not face the holder screw (circled in green), you need to redo step 2.

The test load of 9 N will only be reached if the knurled nut is mounted.

To avoid ejection of weights (accidentally falling down) they have to be screwed to the holder.

8.3 Carry out crockmeter tests

⚠ Never touch any moving parts during operation.

⚠ The side panels must always be mounted during operation.

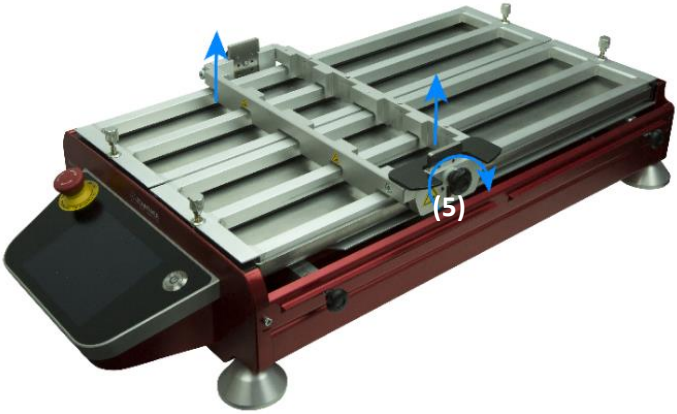
⚠ Do not lean over the unit during operation.

⚠ Risk of injury: Never hold the sample by hand during operation. It has to be fixed with an appropriate means, e.g. double sided adhesive tape.

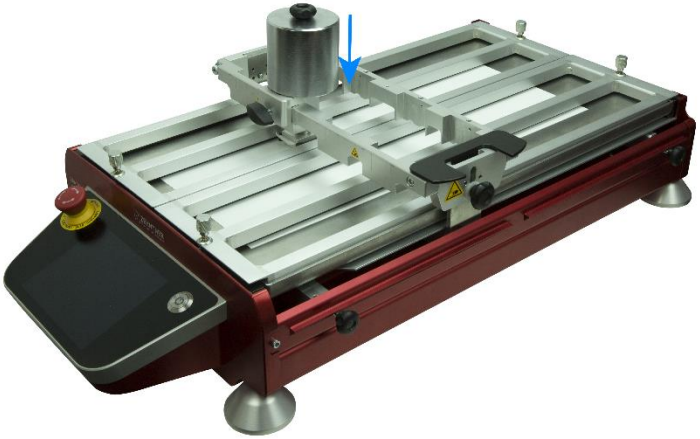
- Place the device on a solid, even surface.
- Level the apparatus using the included spirit level. To do so, place the spirit level on the sample tray and adjust the levelling feet (9) until the Proceq ZAA 2600 is levelled perfectly. The sample tray must be firmly in place.
- Fold up the tool holder(4).
- Open the screws of the sample frames (6) with a quarter-turn and remove the sample frames (6).
- Place the sample.

- Place the sample frames (6) in the unit again and while pressing them down fasten the screws with a quarter-turn.
- Fold down the tool holder (4).

- Loosen the screws of the height adjustment for tool holder (5). Place the tool holder (4) in the highest position and fasten the screws.



- Remove the four clips (8).
- Mount the friction finger set in the lane above the sample and fasten it with the screw. Alternatively, the modification set „Crockmeter“ can be used.



Maximum load: 4,5 kg (99.21 lbs) (2 x 22 N).

- Move the start stop (1) backwards and the end stop (2) forward as far as possible. Fasten their screws.
- Move the tool holder (4) either with ▲ or manually to the back position of the sample.
- Press the „Zero“ button Zero on the touchscreen to set the start position. Note: Do not zero directly at the start stop (1), but at least ca. 3 mm in front.

- Set the number of double strokes and stroke length on the touchscreen. (refer to chapter 7.1.7 “Setting the stroke length” on page 29).
- If necessary, apply the friction medium agreed on the friction material and/or on the coating.
- Start the crocking procedure by tapping on the button  .
- Clean the area of the friction lane according to the standard after the time agreed on.
- Evaluate the friction lanes and create the test report.

9 Converting from scrub tester into basic unit

Thanks to its modular construction, the automatic universal unit can be equipped with different kits for carrying out applications, washability, crocking and scratch resistance tests as well as recording of the drying time.

Before mounting an optional modification set, the device has to be converted to basic unit.

Always unplug the power cable before assembling and/or converting the unit.

- Fold up the tool holder (4) and open the screws of the sample frames (6) with a quarter-turn.
- Remove the sample frames (6) and afterwards the sample tray (3) together with the drain hose (16).
- Push the start stop (1) and the end stop (2) to the centre of the device and remove them afterwards.
- Loosen the fixing screws of the side panels (18) and remove the side panels (17).
- Loosen the Allen screws of the height adjustment and remove the tool holder (4).
- Loosen the screws of the fixing bar (20) and remove the fixing bars.
- Screw in the four rubber feet delivered in place of the fixing bars.
- Remount the side panels (17), the one with slit on the right side, the other one on the left side.
- Remount the previously removed screws of the start- (1) and end stop (2).
- Check if the four rubber feet are mounted.

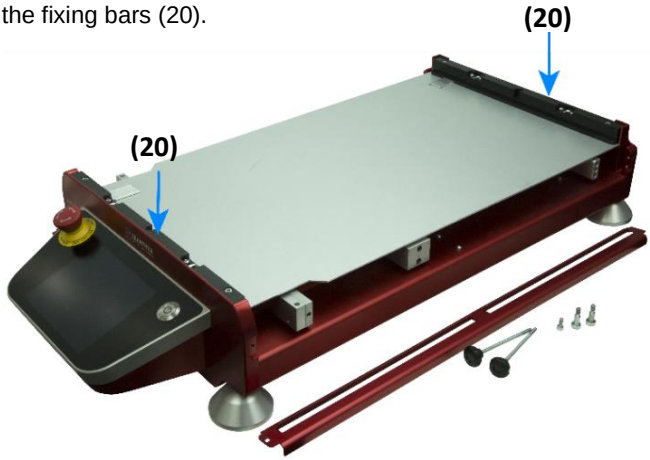
Basic unit

10 Converting from basic unit into scrub tester

⚠ Always unplug the power cable before assembling and/or converting the unit.

- Remove the start stop (1) and the end stop (2).
- Loosen the fixing screws of the side panels (18) and remove the side panels (17).
- Remove the four rubber feet

- Mount the fixing bars (20).

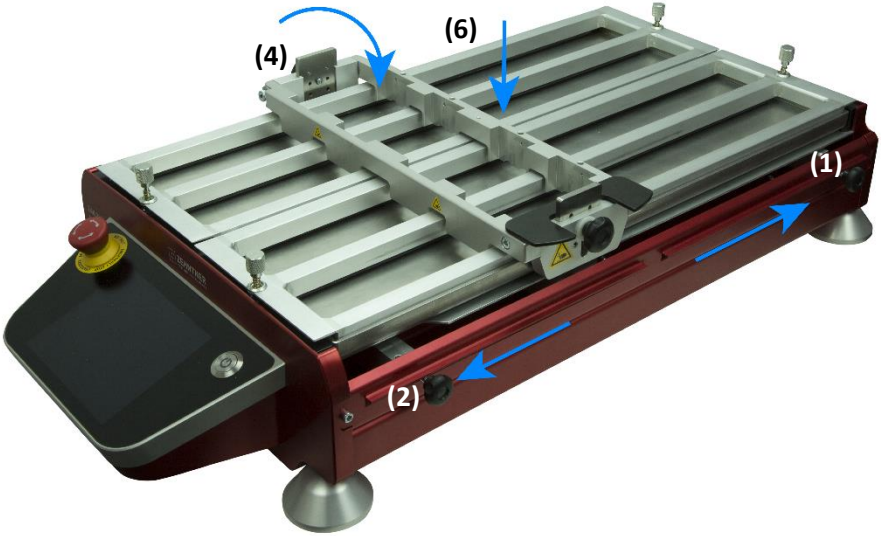


- Mount the height adjustment (5) with the tool holder (4) on the left side of the device, the height adjustment (5) without the tool holder on the right side.

- Fold up the tool holder (4) and place the sample tray (3) in the unit. The drain lead-out has to be at the back part of the unit.
- Fix the lead-out (16) at the drain union.

The drain hose (16) has to drain the liquid outwards. The hose must not point into the unit. When using the device with liquids the drain hose (16) must be mounted.

- Place the sample frames (6) in the unit and while pressing them down fix the screws with a quarter-turn.
- Fold down the tool holder (4).
- Remount the side panels (17), the one with slit on the right side, the other one on the left side.
- Remount the previously removed screws of the start stop (1) and end stop (2).
- Move the start stop (1) backwards and the end stop (2) forward as far as possible. Fasten their screws.



11 Maintenance and cleaning

11.1 Maintenance and cleaning work that can be carried out by the user

Only the following maintenance and cleaning work shall be carried out by the user:

- Outer cleaning of the apparatus (see chapter 11.2 on page 48)
- Periodical lubrication of the guide shafts (see chapter 11.3 on page 48)
- Replacing of the fuse (see chapter 11.4 on page 50)
- Inspection (see chapter 11.5 on page 50)

All other maintenance and repair work shall only be carried out by **Proceq SA** or your authorized Proceq agent otherwise all guarantee and liability claims are void.

11.2 Cleaning

In order to ensure a perfect function, the Proceq ZAA 2600 should be kept as clean as possible. Remove eventual stains of friction medium, coating materials or adhesives immediately before they can dry. Later they can often only be removed with difficulty.

For **cleaning of the apparatus** use commercially available cleaning agents such as cleaning agent for glass, benzine, acetone. Do not use strong acids or alkaline liquids!
For **cleaning of the printing blanket** use only cleaning agents which do not affect the printing blanket. Unsuitable for this purpose are solvents containing ketone such as acetone, or nitro-cellulose diluents.

Before cleaning the Proceq ZAA 2600, always switch off the apparatus and pull out the power plug. Never immerse the apparatus in water or other liquids: Danger of short circuit.

While cleaning, take care that no cleaning liquid penetrates the interior of the apparatus. The function of electrical or mechanical components could be impaired.

If the device has to be disinfected, do not use disinfectants that contain sodium hydroxide.

11.3 Lubrication of the guide rods

From time to time it can be necessary to lubricate the guide rods with some sewing machine oil or something similar.

Before lubricating the guide rods of the Proceq ZAA 2600, always switch off the apparatus and unplug it.

No oil shall be sprayed into the apparatus. The function of electrical or mechanical components could be impaired.

For lubricating proceed as follows:

- Remove the sample frames (6) and the sample tray (3) (see chapter 5.1 “Assembly” as from page 16).
- Loosen the screws of the side panels (18) and remove both side panels (17) with the Allen key.
- Turn the apparatus carefully on one side so that the side opening of the cover becomes accessible.
- Put some drops of sewing machine oil on your finger and spread it over the whole length of the guide rods.
- Repeat this for the other side of the apparatus.
- Adjust the start stop (1) at the very beginning and the end stop (2) at the very end and move the tool holder (4) back and forth several times, so that the oil gets evenly distributed over the whole length of the rods.
- Remount the side panels (17), the one with slit on the right side, the other one on the left side.
- Remount the sample tray (3) and sample frames (6).

11.4 Replacing the fuse

If the apparatus cannot be switched on this could be due to a defect fuse. You can replace the fuse yourself by opening the fuse holder (14) on the back of the apparatus between the main switch (15) and the power supply socket (13) carefully using a screw driver or a similar tool.

Before replacing the fuse of the Proceq ZAA 2600, always switch off the apparatus and unplug it.

Replace the microfuse (14) only by an equivalent fuse of the same type with the same specification. Observe that the inscription at the connection caps of the fuse corresponds to one of the following designations:

- T 0.8 A / 250 V
- T 800 mA / 250 V
- T 800 / 250 V.

- Clamp the new fuse into the fuse holder (14) and put it back in its place.

Should it still be impossible to switch on the apparatus, please contact **Proceq SA** or your authorized Proceq agent.

11.5 Inspection

The instrument should be checked for proper condition by a qualified electrician at an interval of 2 years. Alternatively, this test may also be performed by Proceq SA.

12 Technical specifications

Stroke speed:	1-600 mm/s, (0.04-23.62”) up to 100 double strokes / min
Resolution:	1 mm/s
Stroke speed accuracy:	±1 %
Touchscreen display:	5.7“, TFT (LCD) colour, VGA resolution LED backlight
Material:	Housing: red anodized aluminium Sample tray: stainless steel 1.4301
Dimensions device (LxWxH):	695 x 355 x 210 mm (27.36 x 13.98 x 8.27”)
Dimensions glass plate (LxWxH):	553 x 300 x 15 mm (21.77 x 11.81 x 0.59”)
Dimensions sample tray (LxWxH):	525 x 313 x 16 mm (20.67 x 12.32 x 0.63”)
Weight without sample tray:	15.8 kg (34.83 lbs) – without friction sets
Weight with sample tray:	20 kg (44.09 lbs) – without friction sets
Stroke length:	1-320 mm ± 2 mm (0.04 - 12.6” ± 0.08”)
Testing lanes:	4
Max. dimensions sample plate:	515 x 292 x 28 mm (20.28 x 11.5 x 1.1”)
Power supply:	115 VAC –230 VAC ± 10 %, 50 Hz / 60 Hz
Power consumption:	108 W
Fuse power supply:	0.8A / 250 VAC delay-action
Standards for scrub tests:	ISO 11998, ASTM D4213, ASTM D4828, ASTM D3450, ASTM D2486, JIS K 5600
Standards for crocking tests:	DIN 55654, DIN EN 13523-11, ASTM D6279, EN ISO 105-X12, AATCC Test method 8-2007 is based on: ASTM F1319

Ambient conditions for operation

Temperature range:	5°C to +45°C (41 °F to 113 °F)
Relative humidity:	20% to 80%, no condensation
Sunlight:	Do not expose to strong sunlight for long period

Ambient conditions for transport and storage:

Temperature range:	-20°C to +85°C (-68 °F to 185 °F)
Relative humidity:	20% to 80%, no condensation
Sunlight:	Do not expose to strong sunlight for long period

General:

Excess voltage category:	II
Degree of soiling:	2
Protection class:	1
Altitude:	up to 2.000 m above sea level

For indoor use only.

Version 1.2 dated 26.01.2018