

# **TQC AUTOMATIC FILM APPLICATOR**

**(INCL. OPTIONAL TOOLS)**

**AB3120, AB3220, AB3320, AB3400, AB3420, AB3425, AB3125, AB3225,  
AB3325, AB3405, AB3075**



## **IMPORTANT!**

Before taking this instrument in use we strongly advise you to read this manual carefully.

## **User Guide**

**V3.3 0516**

## CONTENT

---

1	GENERAL	4
1.1	Importance of operating manual	4
1.2	User-responsibility	4
1.3	Responsibility of personnel	4
1.4	Dangers	4
1.5	Designated purpose	4
1.6	Copyright	5
1.7	Manufacturer's/Supplier's address	5
2	SAFETY INSTRUCTIONS	5
2.1	Meaning of Symbols	5
2.2	Availability of Safety Information	5
2.3	Training of Personnel	6
2.4	Dangers from Electrical Energy	6
2.5	Points of Special Danger - Moving Zone tool carrier	6
2.6	Points of Special Danger - Heated Film applicator	6
2.6	Care, Maintenance, Repairs	7
2.7	Modifications to the Equipment	7
2.8	Cleaning of the Instrument and Disposal of Materials	7
3	TRANSPORT AND STORAGE	7
3.1	Packing	7
3.2	User: Check on Receipt	7
3.3	Reporting Transport Damage and Documentation	8
3.4	Storage and Protective Measures when not in use	8
4	INSTRUMENT DATA	8
4.1	Name / Article	8-9
4.2	Scope of Supply	9
4.3	Technical Data	9-10
4.4	Dimensions and Weight	10
4.5	Basic Unit	10
4.6	Noise Level	10
5	INSTALLATION AND ASSEMBLY	11
5.1	Installation and Operation	11
5.2	Preparation of Energy Connections	11
5.3	Vacuum	11
5.4	Mains Connection	11

6	INSTRUMENT CONTROLS AND FUNCTIONS	12
6.1	Overview	12
7	INSTRUMENT COMPONENT ASSEMBLY	13
7.1	Overview	13
7.2	Instrument Preparations	14
7.3	Glass Bed	14
7.4	Perforated Vacuum Bed	14
7.5	Double Channel Vacuum Bed	14
7.6	Film Applicators (Tools)	15
7.7	Test Charts	15
7.8	Drying Time Recorder	16
7.9	Multi Tool Platform	16
8	MENU DISPLAY INFORMATION AND OPERATION	16
8.1	Automatic Film applicator operation	16-17
8.2	Drying Time recorder operation	18-19
8.3	Heated Film bed control	20
8.4	Warning signals	20
9	OPERATION	20
9.1	Preparatory Work	20
9.2	Film Application	20
9.3	Start the instrument	21
10	CARE AND MAINTENANCE	21
10.1	Inspection and Maintenance	21
10.2	Disposal of Materials	21
10.3	Customer Service	21
11	DISCLAIMER	22
ANNEX A	INSTALLATION OF THE VACUUM BED	23
ANNEX B	POSITIONING OF SPIRAL BAR LIFTER	24
ANNEX C	INSTALLATION OF THE LAMP	25
ANNEX D	POWER SUPPLY HEATED MODELS	26-29
ANNEX E	TEST CHART PLACEMENT	30-33
ANNEX F	GRINDOMETER TOOL FOR AFA	36-42

## 1 GENERAL

---

### 1.1 Importance of operating manual

This manual is written in order to become familiar with all the functions and possible applications of the instrument. It contains important instructions about how to use the instrument safely and economically; according to the purpose designated. Following these instructions is not only essential to avoid risks. It also reduces repair costs and down-time and increases the products reliability and service-life.

Anyone who works with the instrument should follow the instructions in this manual, particularly the safety related instructions. Additionally local rules and regulations relating to environmental safety and accident prevention should be observed.

### 1.2 User-responsibility

*The user should*

- a) Only allow persons to work with the instrument who are familiar with the general instructions on how to work safely and to prevent accidents. The use of the instrument should have been instructed duly. The safety chapter and the warnings in this manual should have been read and understood; acknowledged as evidenced by their signature.
- b) Regularly check the safety-awareness of personnel at work.

### 1.3 Responsibility of personnel

Before commencing work anyone appointed to work with the instrument should pay attention to the general regulations relating to working safety and accident prevention. The safety chapter and the warnings in this manual should have been read and understood; acknowledged as evidenced by their signature.

### 1.4 Dangers

This instrument has been designed and constructed in accordance with state-of-the-art technology and the acknowledged safety regulations. Nevertheless, working with the instrument may cause danger to the life and health of the operator or to others, or damage to the instrument or other property. Therefore the instrument should only be used for its designated purpose, and in a perfect technical condition. Any defect that could have a negative effect on safety should be repaired immediately.

### 1.5 Designated purpose

The TQC Film applicator is exclusively designed to apply films of paint and coatings on test panels and test charts and as from models launched after Apr. 2013 for testing of the drying time of coatings on previous described substrates.

Other applications constitute improper use. TQC will not be held liable for damage resulting from improper use.

Designated purpose also includes properly observing all instructions in the operation manual, and adherence to inspection and maintenance schedules.

## 1.6 Copyright

The copyright of this operating manual remains with TQC.

This operating manual is intended solely for the user and his personnel. Its instructions and guidelines may not be duplicated, circulated or otherwise passed on to others, neither fully, nor partly. Infringement of these restrictions may lead to legal action may be taken if this restrictions are infringed upon.

## 1.7 Manufacturer's/Supplier's address



TQC  
Molenbaan 19  
2908 LL Capelle aan den IJssel

The Netherlands,  
T +31(0)10-7900100,  
F +31 (0)10-7900129

## 2 SAFETY INSTRUCTIONS

### 2.1 Meaning of Symbols

The following symbols for dangers are used in this instruction manual.

Symbol	Explanation	Warning
 <i>Danger</i>	Possible immediate danger to the life or health of personnel	If this guideline is not noted it can lead to severe danger to health, up to fatal injury
 <i>Warning</i>	A dangerous situation could be caused	Non observance of this guideline can lead to injury or to damage to equipment.
<b>NOTE</b>	Special tips and particular information	Guidelines to make optimal use of the instrument.

### 2.2 Availability of Safety Information

The instruction manual should be kept at the place where the instrument is operated. In addition to the information contained in the instruction manual, general and local regulations for accident prevention and environmental protection shall be kept available and observed.

Always ensure all guidelines in respect of safety and dangers on the instrument are in readable condition.

In case of danger the instrument has to be switched off by means of the emergency-button on the front of the instrument. Then eliminate danger.

### 2.3 Training of Personnel

- Anyone who operates the instrument should be trained properly.
- It has to be clear who has which responsibility regarding commissioning, set-up of maintenance and repairs, installation, and operation.
- Anyone who hasn't finished training should be supervised by an experienced person while working with the instrument.

### 2.4 Dangers from Electrical Energy

- Work on the electrical supply may only be done by a qualified electrician.
- The electrical equipment of the instrument must be checked regularly. Loose connections and cable damaged by heat must be corrected immediately.
- Always make sure the instrument's power is turned off while adjusting any electrical component.

### 2.5 Points of Special Danger - Moving Zone tool carrier

There is one special point of danger in the moving zone of the tool carriers:



**Danger**

***Do not move the Applicators Tool Carrier Bar on the instrument manually!***

***Keep your hands away from the work area and tool carrier bar after the instrument has started!***

### 2.6 Points of special danger - Heated Film applicators

The TQC AB3400 and AB3405 are both heated film applicators and are able to reach temperatures above 60 °C.



**Danger**

***Contacting the heated film applicator may cause injuries. Handle the hot surface with care.***



**Warning**

***Don't leave the heated vacuum bed unattended for extended periods.***

## 2.7 Care, Maintenance, Repairs

- Always make sure the instrument is connected to an earthed socket.
- Maintenance and inspection should be carried out at the correct intervals.
- Operating personnel should be informed before starting with maintenance or repair work .
- Always make sure the instruments power is turned off and the instrument is not connected to a socket while adjusting any electrical component whenever maintenance, inspection or repair work is done.
- Do not open the instrument. In case of malfunction always consult the manufacturer.
- Never touch electronics or circuit boards when not ESD secured.

## 2.8 Modifications to the Equipment

- Any modifications or additions or alterations to the instrument may solely be made with permission from the manufacturer.
- All measures involving modifications require written confirmation of approval from TQC.
- Instruments which are not in fault-free condition must immediately be switched off.
- Only use replacement parts from the original supplier. Parts used from other sources aren't guaranteed to take the loading and meet the safety requirements.

## 2.9 Cleaning of the Instrument and Disposal of Materials

- When in use it is not always possible to avoid some spill of paint on the work surface.
- Try to keep the instrument as clean as possible to prevent distortions of functions.
- To clean the instrument properly use a suitable solvent to dispose remains of paint or ink.
- Wear gloves during cleaning; Don't spill an overdose of solvent during cleaning.
- Cleaning materials must always be used and disposed of correctly.

## 3 TRANSPORT AND STORAGE

---

### 3.1 Packing

Please take note of pictorial symbols on the packing.

### 3.2 User: Check on Receipt

Check packing for damage  
After unpacking check complete supply.

### 3.3 Reporting Transport Damage and Documentation

Any damage should be documented as accurately as possible (possibly photographed) and reported to the relevant insurers or, in the case of sales “delivered to customers works”, to the supplier.

### 3.4 Storage and Protective Measures when not in use

The instrument must be stored in a dry ( $\pm 40\%rH$ ) place at a temperature between 10 - 40°C. The storage period should not be longer than 3 months. Store instrument in the original packing if possible.

## 4 INSTRUMENT DATA

### 4.1 Name / Article

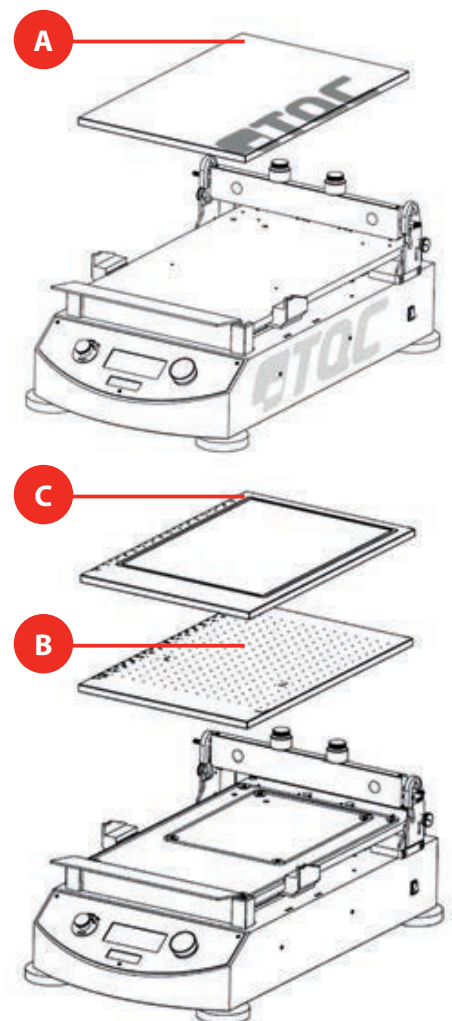
**AB3120** TQC motorised automatic film applicator 230V with glass bed (A) and combined attachment assembly for standard block applicators and wire bar coaters.

**AB3125** TQC motorised automatic film applicator 110V with glass bed (A) and combined attachment assembly for standard block applicators and wire bar coaters.

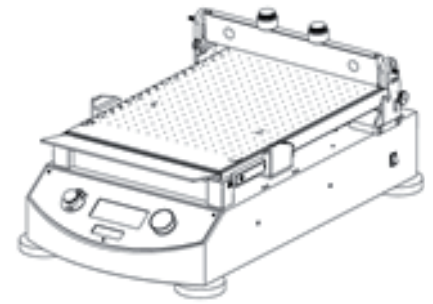
**AB3220** TQC motorised automatic film applicator 230V with perforated vacuum bed (B), built-in vacuum pump and combined attachment assembly for standard block applicators and wire bar coaters.

**AB3225** TQC motorised automatic film applicator 110V with perforated vacuum bed (B), built-in vacuum pump and combined attachment assembly for standard block applicators and wire bar coaters.

**NOTE** TQC Automated Film Applicators equipped with a perforated vacuum bed can be retrofitted with an optional double channeled vacuum bed and vice versa.







**AB3320** TQC motorised automatic film applicator 230V with double channelled vacuum bed (C), built-in vacuum pump and combined attachment assembly for standard block applicators and wire bar coaters.

**AB3325** TQC motorised automatic film applicator 110V with double channelled vacuum bed (C), built-in vacuum pump and combined attachment assembly for standard block applicators and wire bar coaters.

**NOTE** TQC Automated Film Applicators equipped with a double channelled vacuum bed can be retrofitted with an optional perforated vacuum bed and vice versa.

**AB3400** TQC motorised automatic film applicator 230V with heated perforated vacuum bed, built-in vacuum pump and combined attachment assembly for standard block applicators and wire bar coaters.

**AB3405** TQC motorised automatic film applicator 110V with heated perforated vacuum bed, built-in vacuum pump and combined attachment assembly for standard block applicators and wire bar coaters. Includes 110 VAC to 230 VAC converter

**AB3420** TQC motorized automatic film applicator 230 VAC (exclusive application bed) inclusive vacuum pump + automatic clamp unit.

**AB3425** TQC motorized automatic film applicator 110 VAC (exclusive application bed) inclusive vacuum pump + automatic clamp unit.

**NOTE** Include one or more application beds from the Accessories (Optional) section below to complete the TQC motorized automatic film applicator.

### Accessories (Optional)

**AB3500** TQC Drying time recorder tool  
(Only suitable for models with firmware version 2.01 or above)

**AB3000** Rubber mat for TQC Automated Film Applicator.

**AB3100** Replacement Glass Bed for TQC Automated Film Applicator

**AB3200** Replacement perforated vacuum bed for TQC Automatic Film Applicator  
(Not for heated model).

**AB3300** Replacement double channelled vacuum bed for TQC Automated Film Applicator.

**VF0135** Spiral bar adapters / lengthening rods

**AB3416** 110 VAC to 230 VAC converter

**AB3075** Grindometer tool for AFA

### 4.2 Scope of Supply

The scope of supply varies due to the specific applications previously mentioned in the purchase order. (I.e. Glass Bed Perforated Vacuum Bed, Double Channel Vacuum Bed and accessories.)

### 4.3 Technical Data

#### **Automatic Film Applicator**

Traverse Speed	:	2 – 500 mm/s
Traverse Speed accuracy	:	+/- 1% of set speed
Stroke length	:	50 – 359 mm
Stroke length accuracy	:	+/- 2 mm
Max test chart size	:	DIN A3
Max test substrate thickness	:	35mm including applied coating
Max. test panel size (only glass bed models)	:	460 x 300 x 9 mm ( LxWxH)
Max. Width alternative film applicators	:	max. 300 mm
Max. Height alternative film applicators	:	max. 80 mm
Wire bar length	:	max. 325 mm spiral area in 364 mm length at fixation points
Wire bar diameter	:	max. Ø10 mm at the fixation points
Max vacuum	:	-178 mbar

#### **Drying Time Recorder**

Drying time range	:	1 min. – 2880 min (48 hours)
Time accuracy	:	≤ 1% of set time
Maximum test length	:	350mm
Maximum number of tracks	:	8
Force per needle	:	3,5g / 0,03N
Weight separate weights	:	5g / piece
Ø needle	:	2 mm
Material	:	aluminium, stainless steel
Dimensions	:	50x60x 315 mm / 1.97x2.36x315x12.4 inch
Weight	:	280g

#### **Heated perforated vacuum bed**

Minimum temperature	:	Ambient + 5°C
Maximum temperature	:	Ambient + 100°C (Absolute max 140°C)
Resolution of set temperature	:	1°C
Resolution of readout temperature	:	0.1°C
Temperature controller	:	Separate
Power consumption heating	:	450 Watt
Power Supply	:	230V, 50Hz

### 4.4 Dimensions and Weight

D x W X H	:	650 x 350 x 240 mm
Net weight	:	31 kg – 36 kg dependent on model

#### 4.5 Basic Unit

Power Supply	:	115 – 230 V, 50 - 60 Hz
Power consumption	:	max. 80 Watt
Display	:	Blue Illuminated, graphic 100 x 35 mm, 193x64 pixels
Safety	:	Emergency Button and intelligent proximity switches, integrated Acoustic Alarm
Function	:	Jog Shuttle knob by Rotation / Pushing
Drawn down Speeds	:	12 steps selectable from 2 - 500 mm/s. and free selectable (custom)
Drawn down Lengths	:	A5 / A4 / A3 and free selectable (custom with variable starting/ stopping point), except for the heated vacuum bed which only operates with A3. If smaller test charts are used a A3 sized paper frame has to be created to protect the holes from paint walk.

#### 4.6 Noise Level

The continuous noise level from the instrument does not exceed 70 dB.

### 5 INSTALLATION AND ASSEMBLY

---

#### 5.1 Installation and Operation

The instrument has to be installed in a suitable place, preferably on a sturdy table or work area, with normal ambient temperature. Special fixings are not required.

Carefully unpack the apparatus and the accessories and check complete supply.

Place, if necessary, a spirit level on the work surface and adjust the height of the feet.

#### 5.2 Preparation of Energy Connections

The instrument is equipped with a safety tested mains supply cable and may only be connected to plug sockets with earth connection complying with the safety regulations.



**Danger**

***Before connecting the instrument, check whether the supply voltage specified on the indication label corresponds to the local supply voltage. If it does not, the instrument must not be connected under any circumstances. Contact your local supplier or TQC for full specifications on how to set the correct voltage.***

**NOTE**

Voltage selector might be hidden, depending on model.



#### 5.3 Vacuum Connection

Only applicable for selected applicator series. The applicator has a built in vacuum pump to provide the vacuum bed enough under pressure to hold test charts of either A4 or A3 size. When the size differs from the stated A4 or A3, cover up all remaining holes to the nearest larger size in

order to create adequate vacuum. The level of vacuum created may depend on operation and age of the machine as well as test substrate used.



## 5.4 Mains Connection

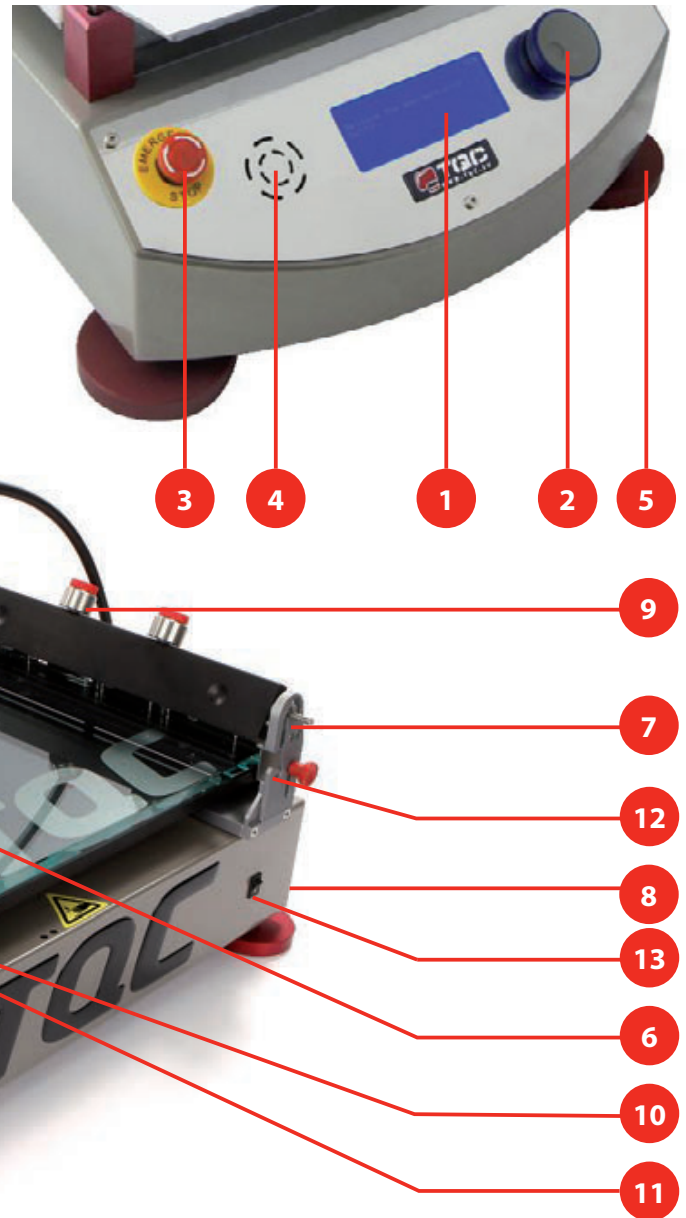
The mains connection is located at the rear of the instrument. Plug in the female plug in the socket on the rear of the housing. The ON/OFF Switch is located at the right hand site near the end of the instrument.

**NOTE** When installing AB3400 and AB3405, please see Annex D for installation

## 6 INSTRUMENT CONTROLS AND FUNCTIONS

### 6.1 Overview

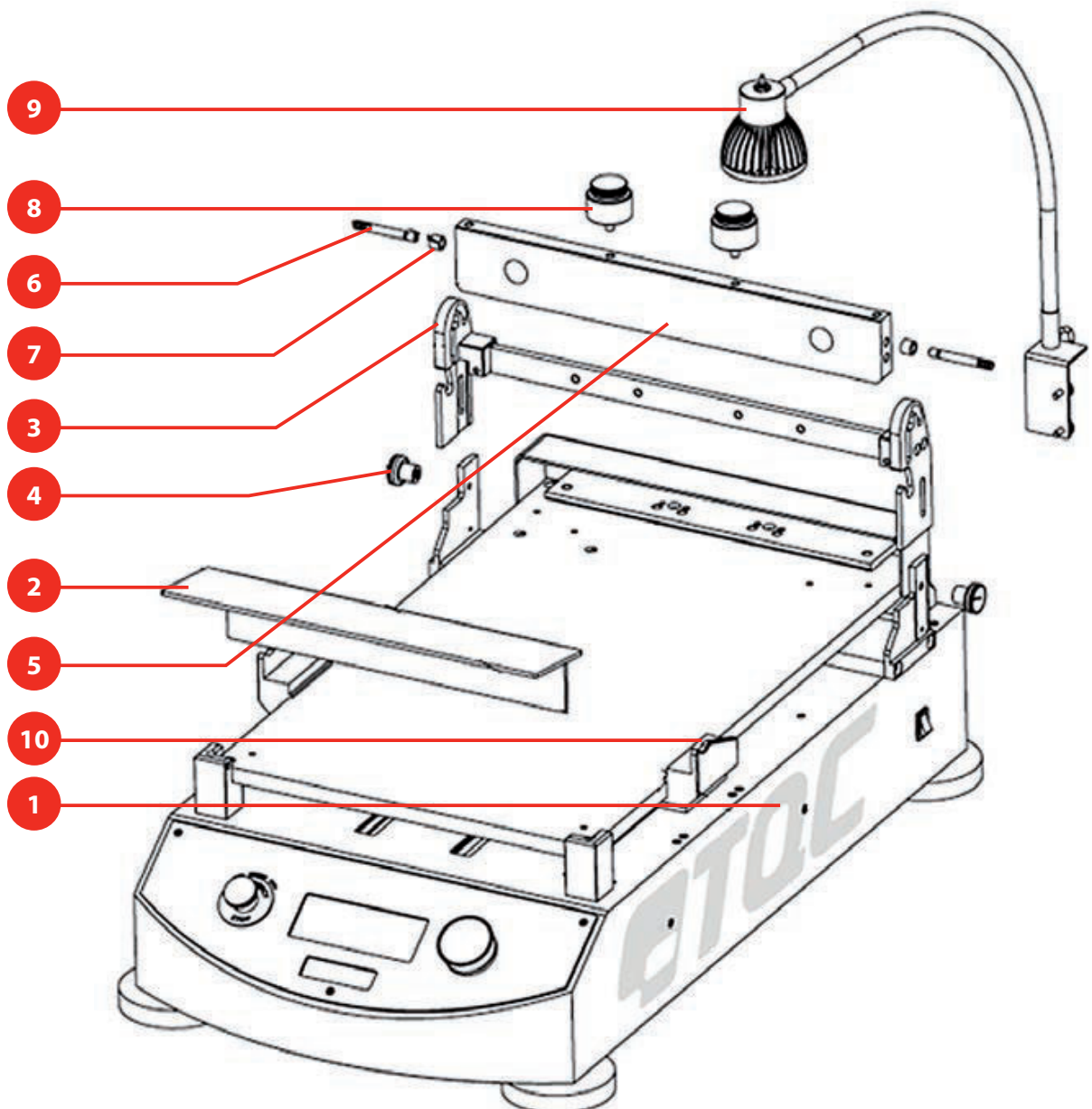
1. Display with process information
2. Jog Shuttle
3. Emergency button
4. Acoustic alarm / Buzzer
5. Levelling supports
6. Glass bed or vacuum bed
7. Automated clamping device for test charts
8. Mains connection
9. Spiral applicator weight
10. Spiral bar release device
11. Hand protection device
12. Adjustable tool holder
13. Main Switch



## 7 INSTRUMENT COMPONENT ASSEMBLY

### 7.1 Overview

1. Housing
2. Splash shield
3. Tool Carrier
4. High Adjustment fixation
5. Spiral bar weight
6. Spiral bar weight guide pins
7. Spiral bar weight guide rings
8. Spiral bar weight extra weights
9. Lamp assembly
10. Lifter



## 7.2 Instrument Preparations

Position glass bed or vacuum bed between the designated red supporting studs at the 4 corners on the unit. The heated vacuum bed model comes with a pre assembled vacuum bed. For the other vacuum models follow the vacuum seal installation instructions in Annex A.

### 7.3 Glass Bed

This bed 470 x 300 x 12 mm can either be used directly as an application carrier or (for example) smaller cards or foils.

Charts or foils are automatically clamped in a special device at the end of the unit as soon a test is performed. For cleaning purposes the glass bed can be removed.

### 7.4 Perforated Vacuum Bed

In order to create an adequate vacuum the instructions for setting up the vacuum seal O-rings as in Annex A need to be followed. The Perforated Vacuum Bed is automatically connected to the vacuum pump as soon as placed between the red supporting studs on the O-rings.

The Perforated Vacuum Bed serves to hold thick foils, charts and other papers for coating.

The area size under vacuum depends on the selection made in the menu of the instrument (see 8.9).

### 7.5 Double Channel Vacuum Bed

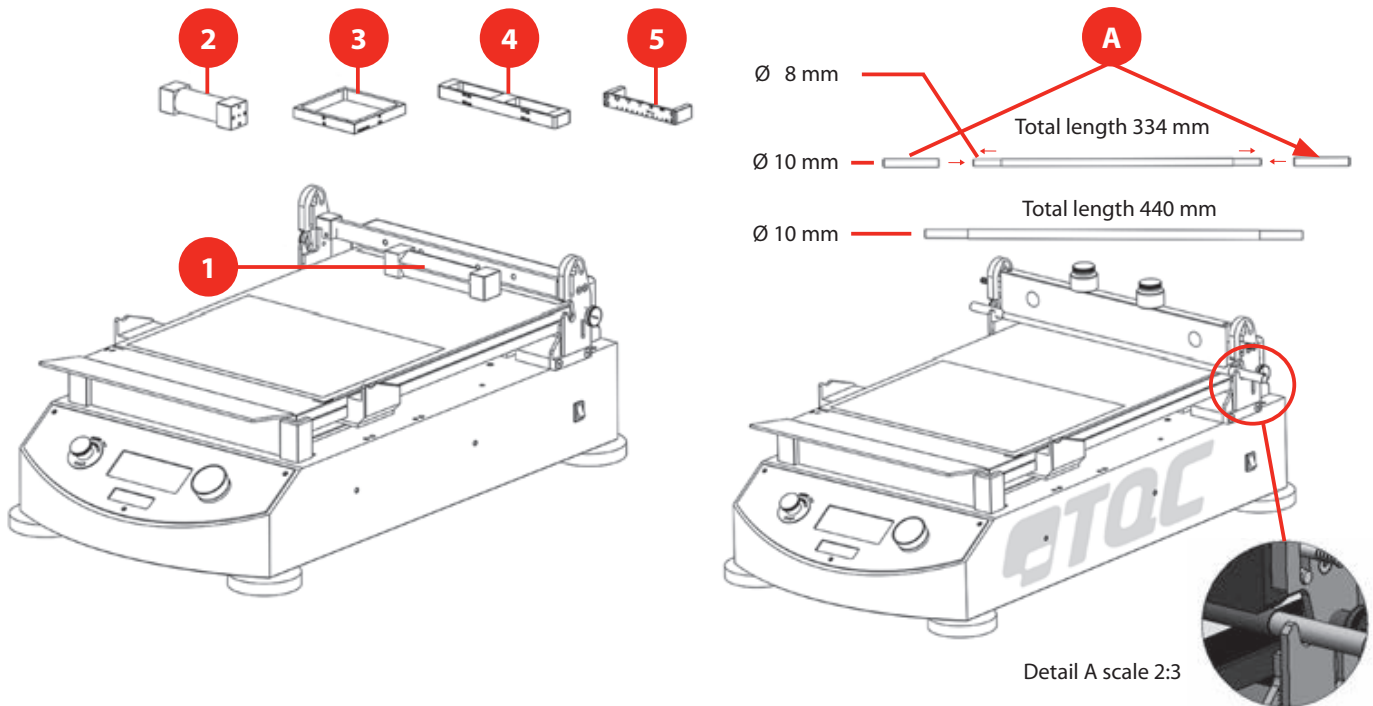
In order to create an adequate vacuum the instructions for setting up the vacuum seal O-rings as in Annex A need to be followed. Double Channel Vacuum Beds are used for testing on foils. When otherwise the foil will not remain smooth on a normal vacuum bed. The Double Channel Vacuum Bed only has vacuum in two concentric rings on the outside of the bed. This requires the foils to be about A3 size for the Double Channel Vacuum Bed to be able to hold them.

To prevent pollution of some holes outside the dimensions of charts we advise to cover the surrounded area with paper or tape.

**NOTE** For assembly please also watch included DVD

## 7.6 Film Applicators (Tools)

Spiral Bar applicators, Bird applicators, Baker applicators, Quadruplex applicators, SAG Quadruplex applicators Adjustable Micrometer applicators, SAG and levelling applicators. Place the applicators as shown in below pictures;



For details on film applicators datasheets are available on [www.tqc.eu](http://www.tqc.eu)

**NOTE** The length of TQC Spiral bar coaters has changed during the years. The older shorter version can be used on the TQC Automatic Film Applicator by the use of optional available lengthening rods.

## 7.7 Test Charts

We supply a range of test charts (TQC, Leneta® or equivalent) like:

Opacity (hiding power) charts, Opacity Display charts, Sag and levelling charts, Brush out charts, Plain White charts or others. CERTIFIED TQC TEST CHARTS!!!

For more details go to:

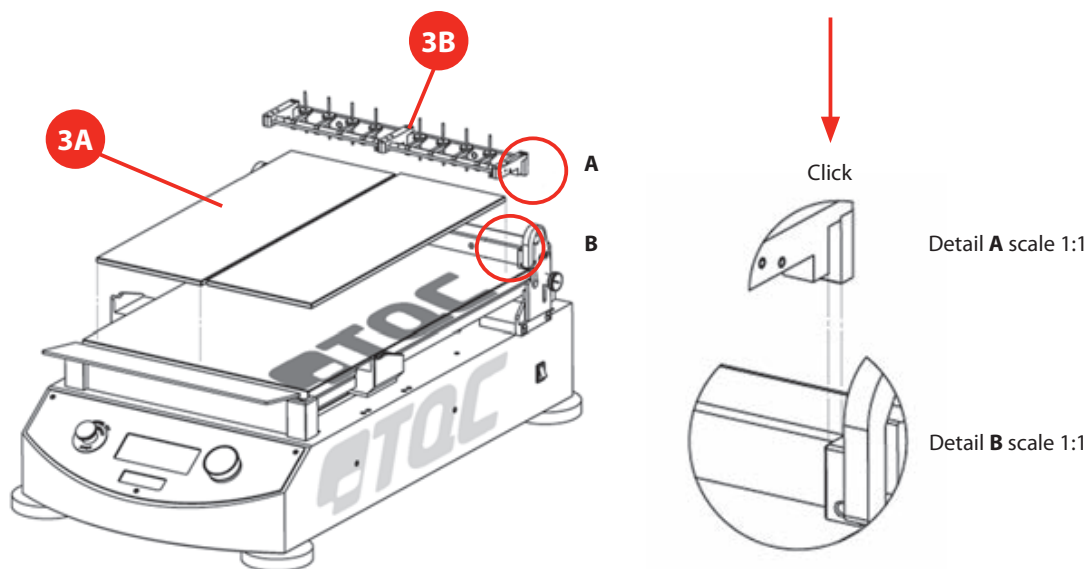
<http://www.tqc.eu/en/products/productlistarticles/214/1/false/Test-charts>

**NOTE** For details on Test Chart placement, please see Annex E

## 7.8 Drying Time Recorder

The TQC Automated Film Applicator can be used as a Drying Time Recorder. In order to use the TQC Automatic Film Applicator as a Drying Time Recorder following steps need to be followed:

- Remove the Spiral bar weight (5 from drawing chapter 7) by pulling out the Spiral bar weight guide pins(6).
- Take care that both Spiral bar weight guide pins (6) and Spiral bar weight guide rings (7) are stored in a safe place. In order to not to lose them.
- Place the optional available Drying Time Recorder Tool on the bar of the TQC Automatic Film Applicator as illustrated in below image:



## 8 MENU DISPLAY INFORMATION AND OPERATION

### 8.1 Automatic Film applicator operation

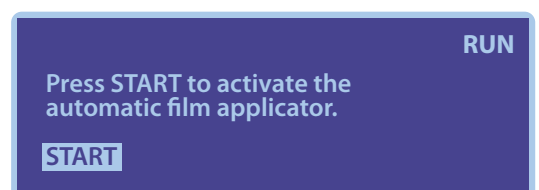
#### **TQC Start screen after switched on.**

Switch on instrument by mains switch at the right side on the housing. This is the first screen shown after switching on the instrument.

**NOTE** The version number displayed is the firmware version number.

#### **RUN - Automatically the first selection screen or the MAIN MENU appears**

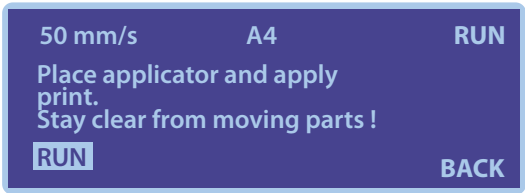
Press the Jog shuttle knob to start the sequence.  
The applicator carrier bar is moved and set in position.





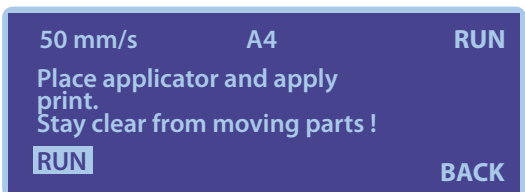
### RUN - Positioning Chart

The current draw down speed as well as the length is shown in the top of the display. Press the Jog shuttle knob to confirm or turn it to go back in the menu and make changes. Place the draw down chart on the glass bed or glass bed or vacuum bed. Choose the appropriate applicator to fulfil the test.



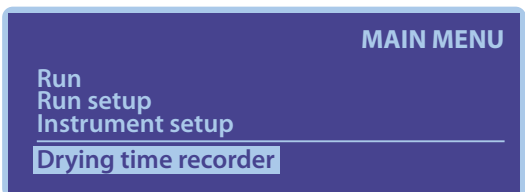
### RUN – Applicator and Paint applying

Apply just enough paint to fulfil the test on the test chart chosen. Press the Jog shuttle knob to start the run or turn it to go back in the menu and make changes. Display shows “Running”. Keep your hands away from moving parts.



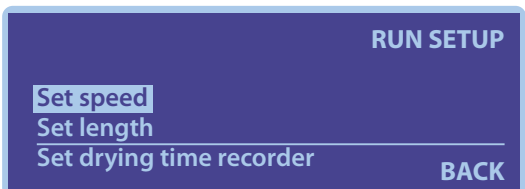
### MAIN MENU – Run, Run setup, Instrument setup

In the main menu you can change parameters according to your needs. Rotate the Jog shuttle knob to select and press to choose. Follow the questions as they come.



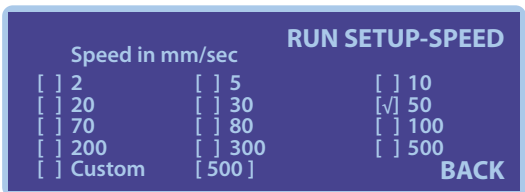
### RUN SETUP - Set Speed

Push the Jog shuttle knob to set the draw down speed.



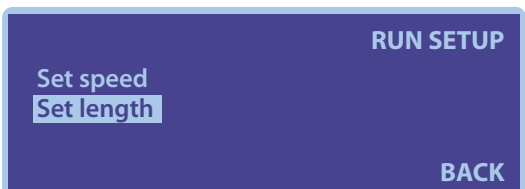
### RUN SET-SPEED

There are 12 preset speeds to choose from, 2 – 500 mm/s. Custom is a free selectable speed in 1 mm/s intervals. After made changes rotate to BACK and press the Jog shuttle knob.



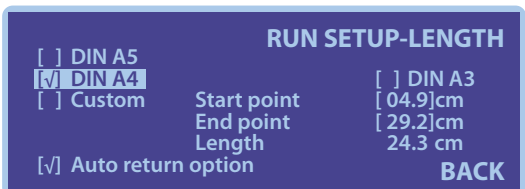
### RUN SETUP – Set Length

Push the Jog shuttle knob to set the traverse length.



### RUN SETUP-LENGTH

There are 3 preset chart sizes selectable, A5 - A4 - A3 followed by an auto return of the tool carrier bar. Selecting “Custom” offers you to set a Start and End point on the platform. The traverse length is automatically set in

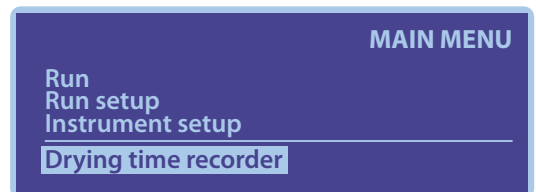


accordance with the start/end points in millimetres.  
After made changes rotate to BACK and press the Jog shuttle knob VACUUM will only switch dependent on the length of the test chart to A4 or A3, except for the heated vacuum bed which only operates with A3. If smaller test charts are used you have to create a A3 sized paper frame to protect the holes from paint walk.

**NOTE** When using the custom length settings the spiral bar release studs can not be used and need to be set to the end of the application bed, as close as possible to the display.

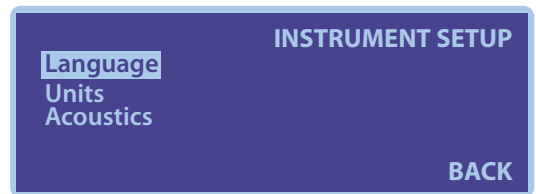
**MAIN-MENU – Instrument setup**

In the main menu rotate the jog shuttle knob to Instrument setup and press on it.



**INSTRUMENT SETUP**

Select Language to set the desired language.  
Select Units to set: Speed in mm/s, cm/s or inch/s and Length in mm, cm or inches. Select Acoustic signals: Signals off, Low volume or High Volume.

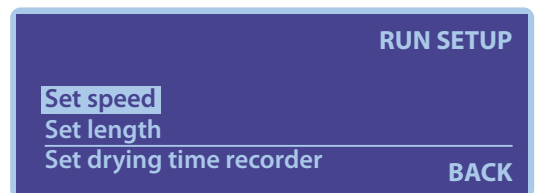


**8.2 Drying Time recorder operation**

The TQC drying time recorder is partially preset by the settings of the Automatic Film application. In order to set up a new drying time test follow the steps below:

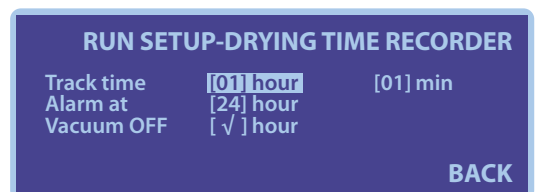
**MAIN MENU – RUN SETUP**

In the run setup menu the general setting of the Film applicator and separate of the drying time recorder settings can be entered. Select the “Set drying time recorder” menu to get into the set-up menu for the drying time recorder.



**RUN SETUP-DRYING TIME RECORDER**

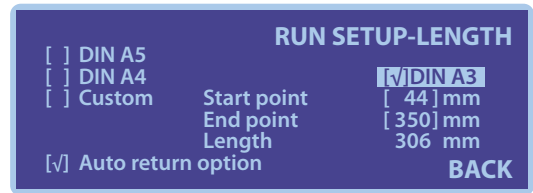
Within the Drying time recorder setup options as track time total run time for drying time, alarm interval and vacuum control can be set. Track time can be set from 1 minute to 48 hours. The speed will be depended on track time and set track length. A shorter track length will mean a lower speed. When performing drying time tests for extended test times turn off the vacuum pump to prevent extensive wear on the internal vacuum pump. Return to run setup menu by selecting



**NOTE** The vacuum control is only available for models equipped with vacuum.

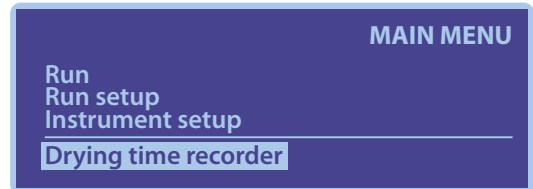
### RUN SETUP LENGTH

The length of a drying time test can be set here. The operation is the same as that for setting the length for an application.



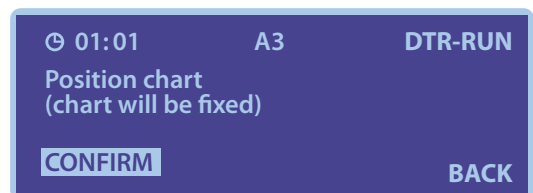
### MAIN MENU

To perform a new drying time test select "Drying time recorder" in the main menu. This will start a drying time run with the setting of the previous menus.



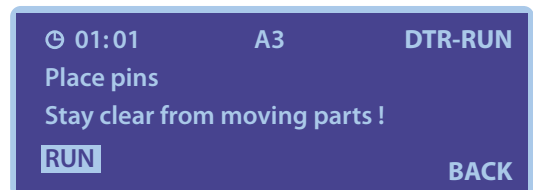
### DTR-RUN (1)

The drying time recorder will now be initiated. Follow the instruction on the screen, and position a test chart or a test substrate. When placed, select confirm to continue.



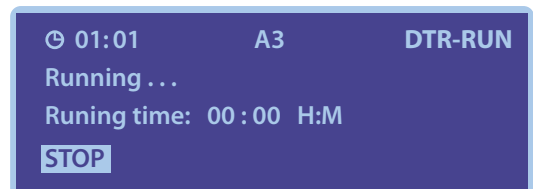
### DTR-RUN (2)

The chart / test substrate is now fixed and the drying time recorder tool can now be placed. Click the tool in place as shown in below illustrations. When ready select run to continue.



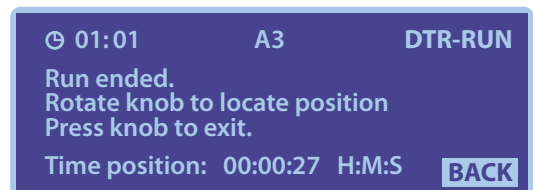
### DTR-RUN (3)

The drying time recorder is now running. The display shows the set time in the top left corner and the Running time in the centre of the screen. To end the run select stop. It can appear that the drying time recorder is not reacting to your command. The internal processor causes this. The processor is at that time busy performing other tasks, and will execute your command as soon as the performed task is completed.



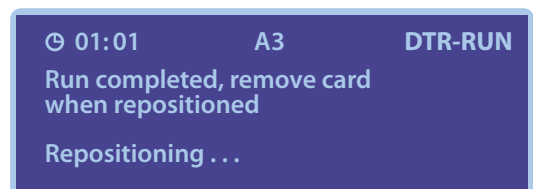
### DTR-RUN (4)

When the RUN is ended the tool holder can be moved to the points of interest on the test track by rotating the jog shuttle. The display will show the elapsed time of when the tool holder first passed that point. Select back to confirm.



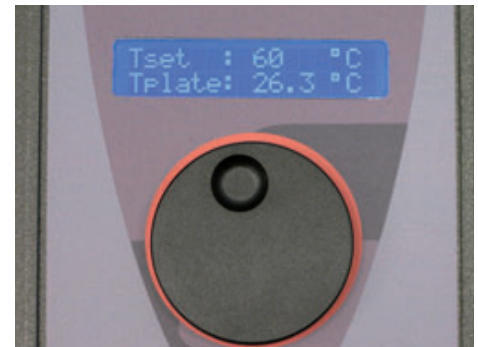
### DTR-RUN (5)

At this step the vacuum or clamp will be released and the chart / substrate can be removed from the test bed.



### 8.3 Heated Film bed control

The TQC Heated film bed controller is operated by two buttons. The power switch on the top and the temperature set knob on the front. To set the temperature first turn the machine on and then set the temperature. The test bed will warm up to the set temperature.



### 8.4 Warning signals

Due to circumstances the display can show:

“Release the Emergency Stop” Caused by manually pressing of the Red emergency button. Check the fault or wrong handling, and, after assuring that there is no danger, release the emergency stop



“Lifter is in wrong position” Caused by wrong movement or positioning after spiral bar lifting situations. The lifter is in position when you feel a click. See Annex B on lifter positioning



“Emergency Stop” Remove applicator and turn machine off. For safety reasons 3 sets of detection sensors at each site on the housing register the proximity of fingers and shuts down any activity of the instrument.



## 9 OPERATION

### 9.1 Preparatory Work

- Connect the instrument to the mains at the rear side of the housing.
- When using the glass bed position the test chart or foil totally to the rear and automatic clamping device.
- When using the vacuum bed position the test chart totally to the rear and let the chart or foil suck in for some seconds.
- Install and fix the tool carrier and the appropriate film applicator.

### 9.2 Film Application

For film application a suitable flat and even base, the glass bed or vacuum bed, as well as a suitable to use type applicator is necessary.

### 9.3 Start the instrument

Start the instrument following the steps listed in Section 8.

## 10 CARE AND MAINTENANCE

---

### 10.1 Inspection and Maintenance

- Though robust in design, this instrument is precision-machined. Never drop it or knock it over.
- Always clean the instrument after use.
- Clean the instrument using a soft dry cloth. Never clean the instrument by any mechanical means such as a wire brush or abrasive paper. This may cause, just like the use of aggressive cleaning agents, permanent damage.
- Do not use compressed air to clean the instrument.
- Generally the TQC Film applicator does not require any maintenance.
- After finishing the film application, take off the film applicators and clean them immediately.



**Danger**

***Make sure that no paint or other liquids are spilled on the electronics or left in the holes of the vacuum bed.***

The film applicators are subject to some natural wear and must be inspected from time to time to ensure that they are in fault-free condition.

### 10.2 Disposal of Materials

Disposal of materials used in the operation of the instrument or for auxiliary functions and exchanged items should be dealt with safely and in a manner that will not harm the environment. Follow the local regulations.

### 10.3 Customer Service

When requesting service always include Model No. and Serial No. from device tag on rear of machine. Customer service is provided on request by:

#### **TQC**

Molenbaan 19  
2908 LL Capelle aan den IJssel  
The Netherlands,  
T +31 (0)10 7900100  
F +31 (0)10 7900129  
Email: info@tqc.eu

## 11 DISCLAIMER

---

The right of technical modifications is reserved.

The information given in this manual is not intended to be exhaustive and any person using the product for any purpose other than that specifically recommended in this manual without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. Whilst we endeavour to ensure that all advice we give about the product (whether in this manual or otherwise) is correct we have no control over either the quality or condition of the product or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability whatsoever or howsoever arising for the performance of the product or for any loss or damage (other than death or personal injury resulting from our negligence) arising out of the use of the product. The information contained in this manual is liable to modification from time to time in the light of experience and our policy of continuous product development.

## ANNEX A | INSTALLATION OF THE VACUUM BED

After unpacking the TQC automatic Film applicator the rubber seals for the vacuum bed need to be placed. Without these seals the vacuum can NOT be created.

Remove all tape holding the Perforated- or Double Channel Vacuum Bed. Take great care to remove all the tape.

Remove the vacuum bed from the base bed, and stow it in a safe place.

Take the two black rubber rings from the package and differentiate in size\*.

Place the smallest of the rings (A4)\* around the inner supports and the largest (A3) around the outer supports, as shown in below image (detail A).

Gently lower down the vacuum bed (B or C). Take care not to disturb the placement of the rubbers.

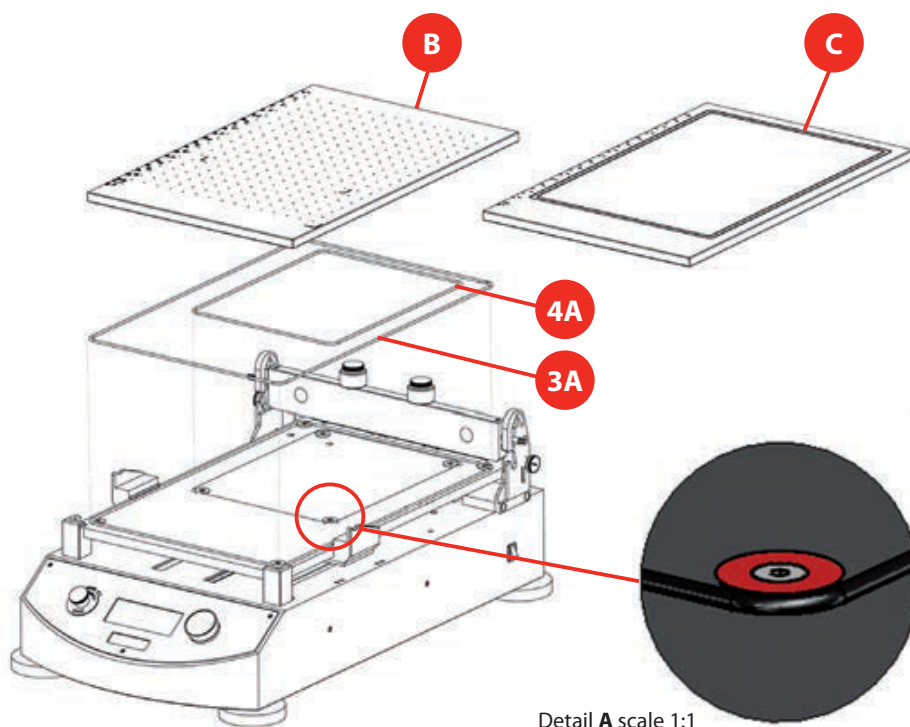
Turn the device on and follow the instruction to start a new test, using an A3 test chart, however hold at the step where the vacuum pump turn on.

Place an A3 test chart and press it down. It should be sucked to the vacuum bed. If not grab the sides of both the base plate and the vacuum bed and press them together.

When the pitch of the vacuum pump changes and sounds softer the vacuum seal is complete.

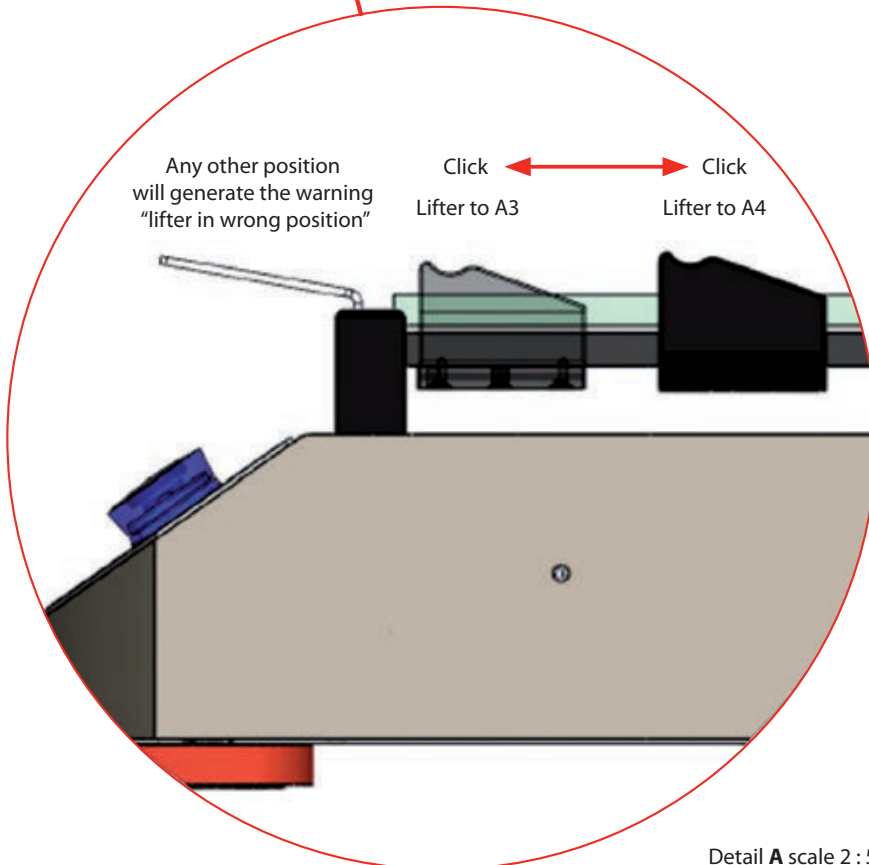
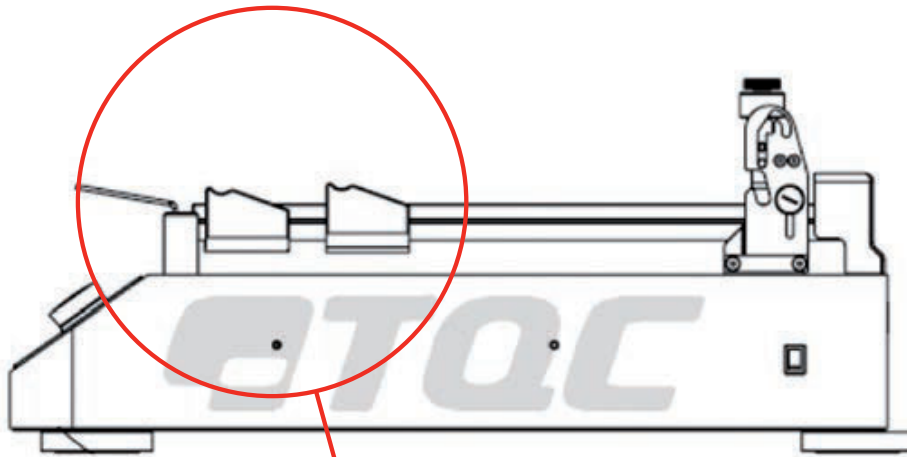
Continue the run and afterwards you are ready.

\* When installing double channel only place A3 ring



Detail A scale 1:1

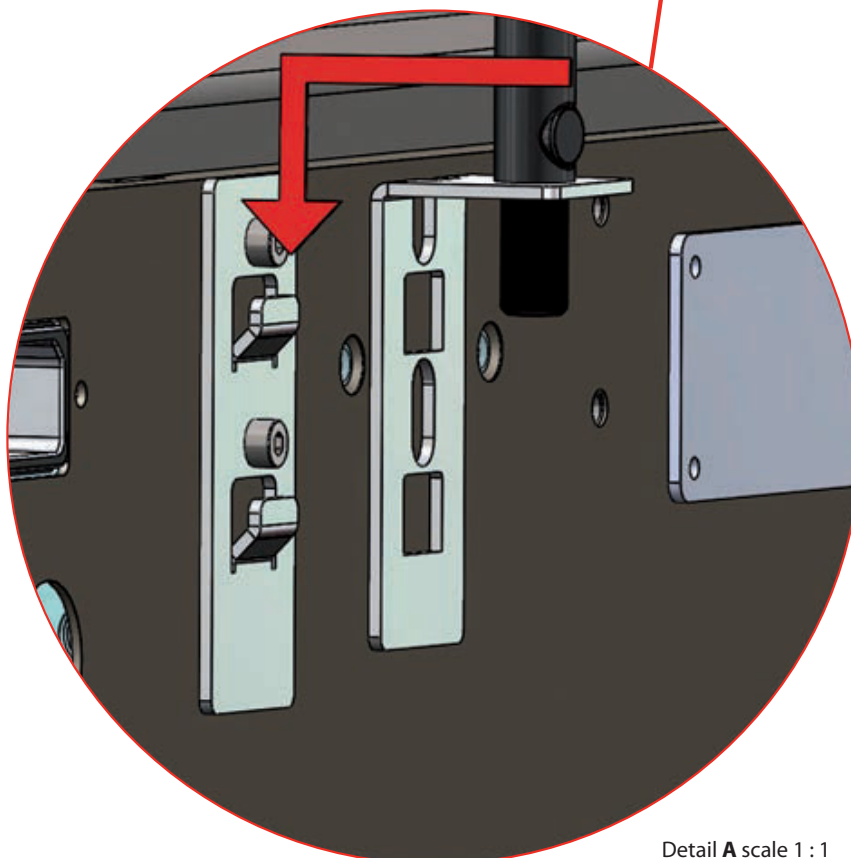
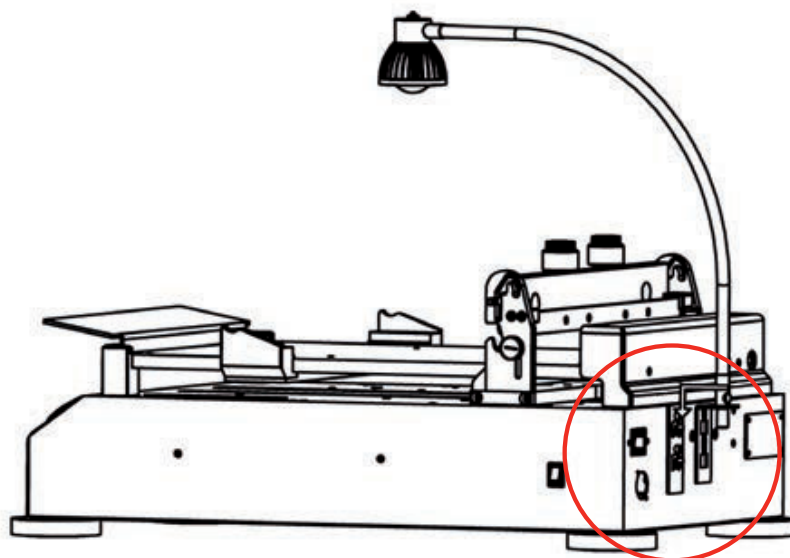
## ANNEX B | POSITIONING OF SPIRAL BAR LIFTER



Detail A scale 2 : 5



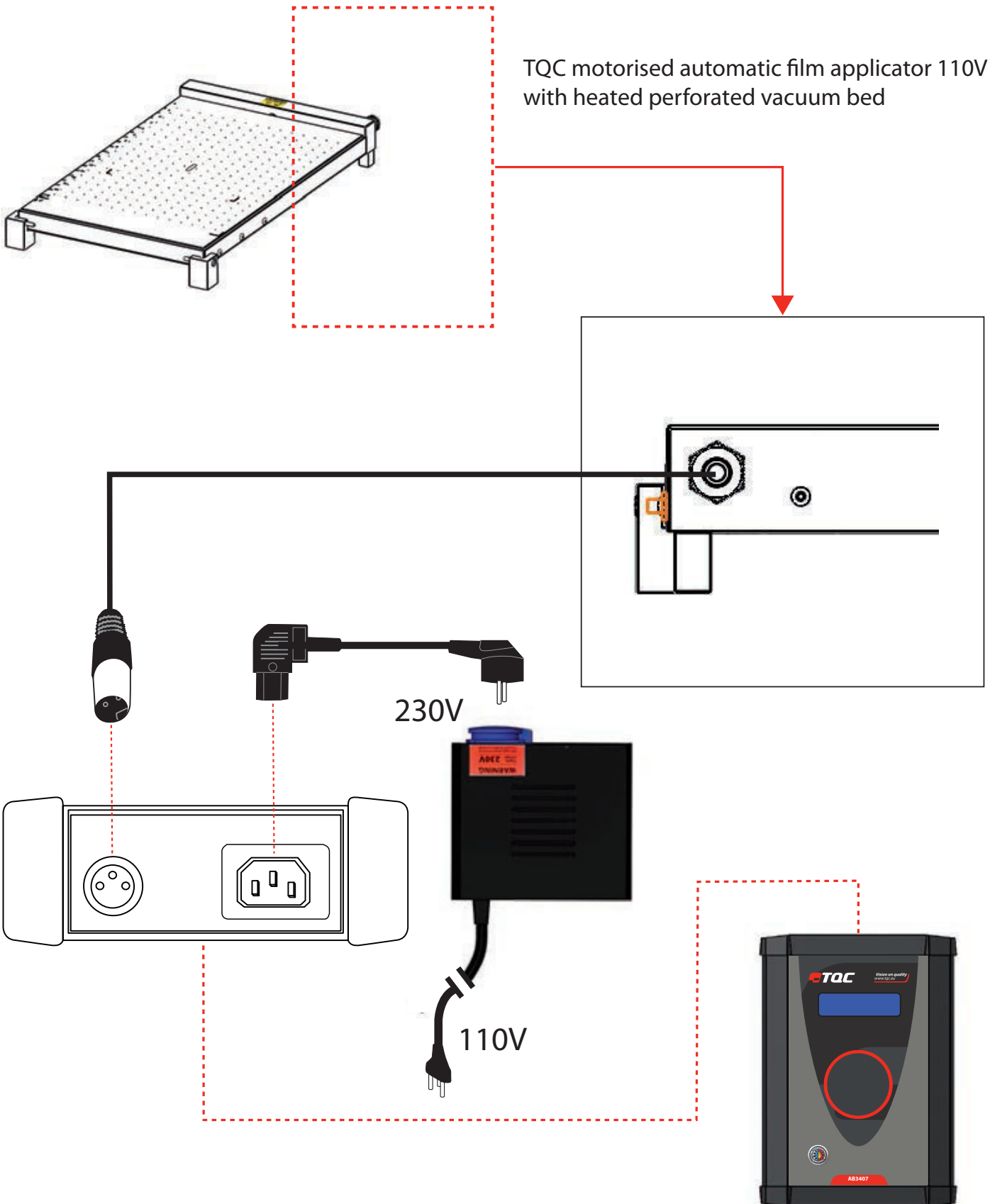
ANNEX C | INSTALLATION OF THE LAMP



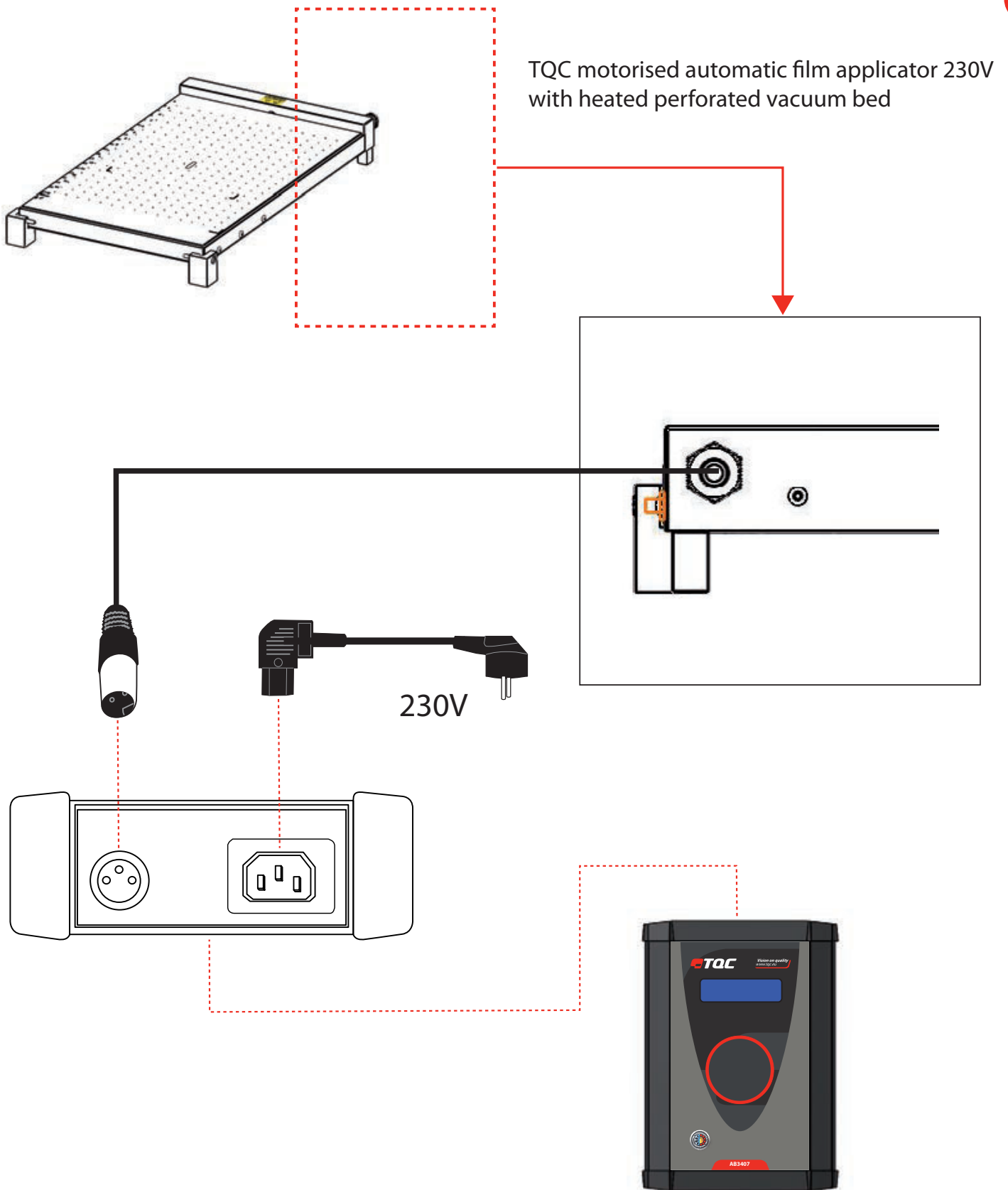
Detail A scale 1 : 1

## ANNEX D | POWER SUPPLY HEATED MODELS

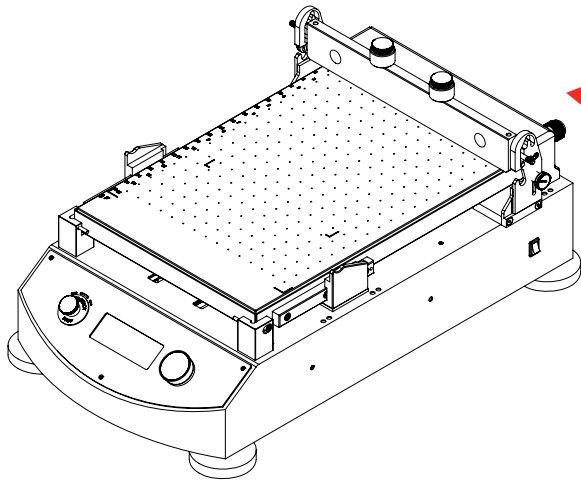
TQC motorised automatic film applicator 110V with heated perforated vacuum bed



ANNEX D | POWER SUPPLY HEATED MODELS

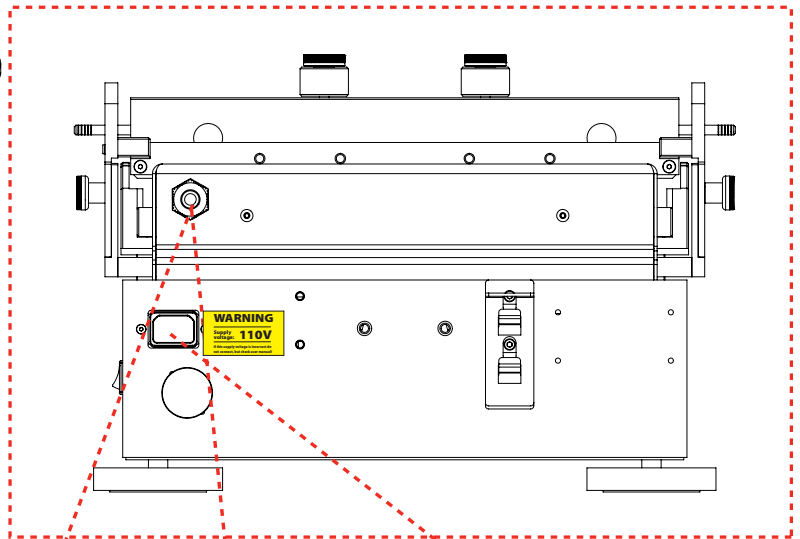


## ANNEX D | POWER SUPPLY HEATED MODELS

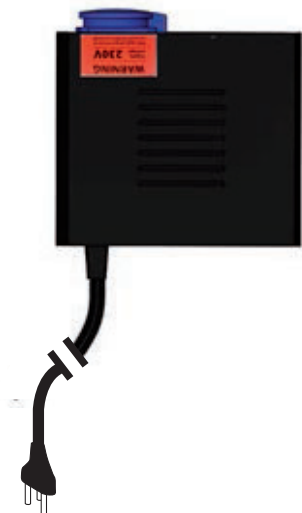
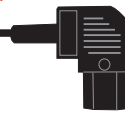


TQC motorised automatic film applicator 110V with heated perforated vacuum bed

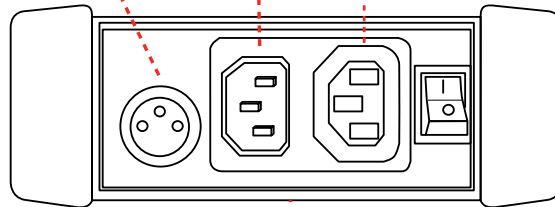
Old model  
before 24-02-2015



230V

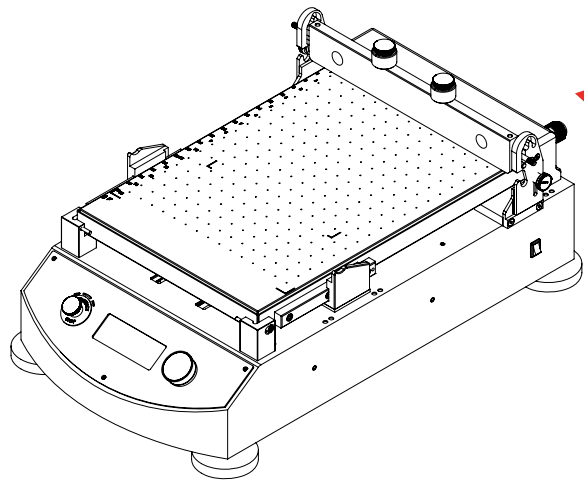


110V



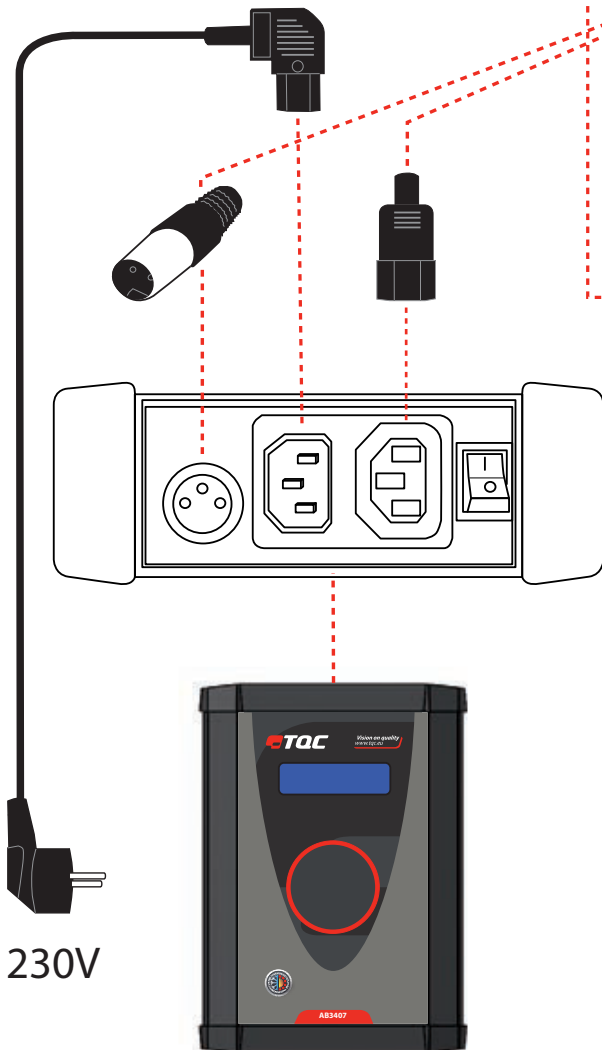
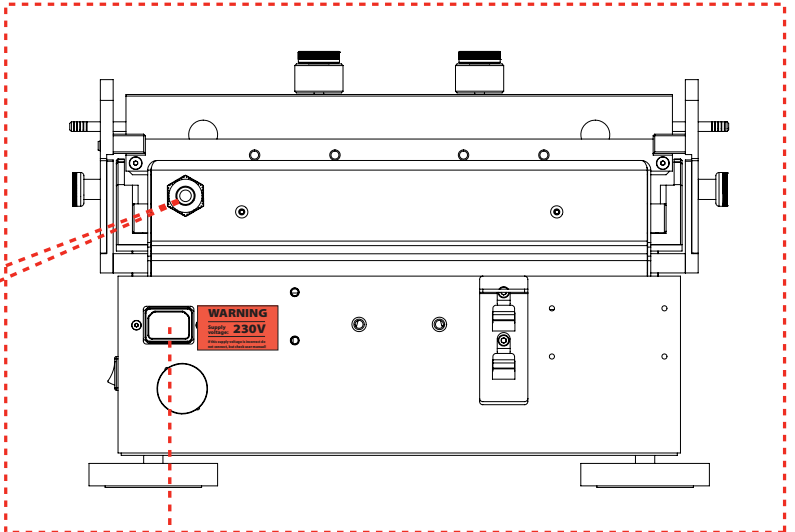
110V

ANNEX D | POWER SUPPLY HEATED MODELS



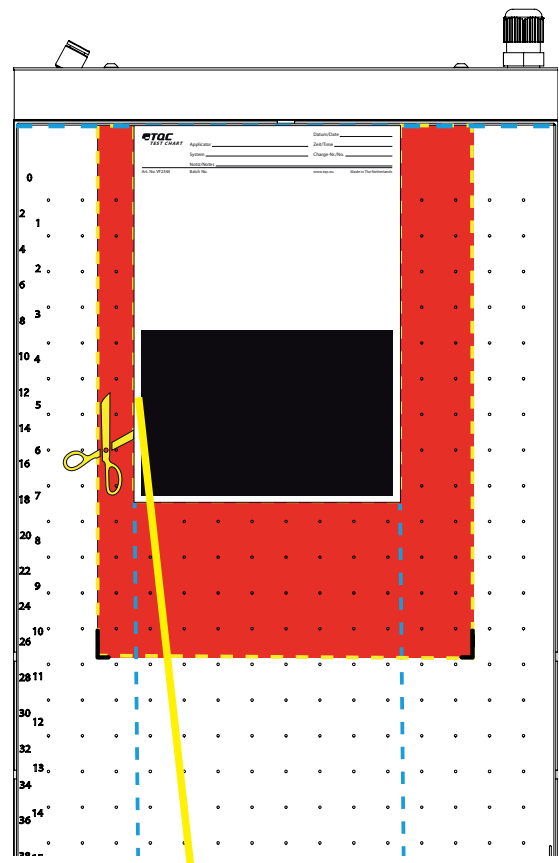
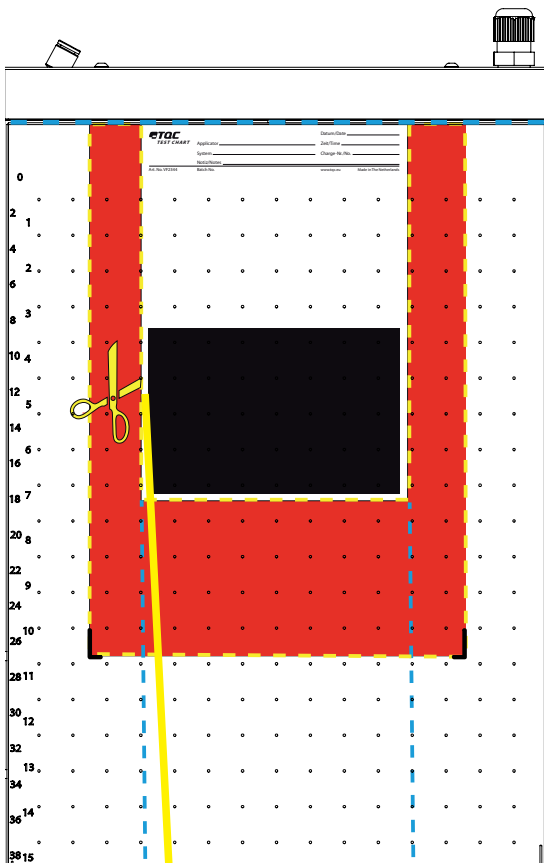
TQC motorised automatic film applicator 230V with heated perforated vacuum bed

Old model  
before 24-02-2015



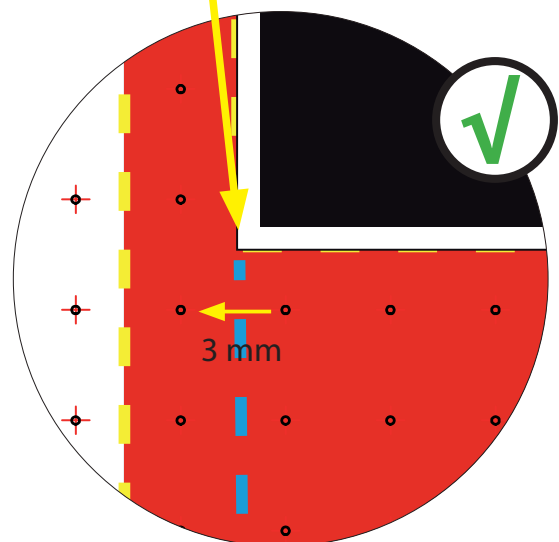
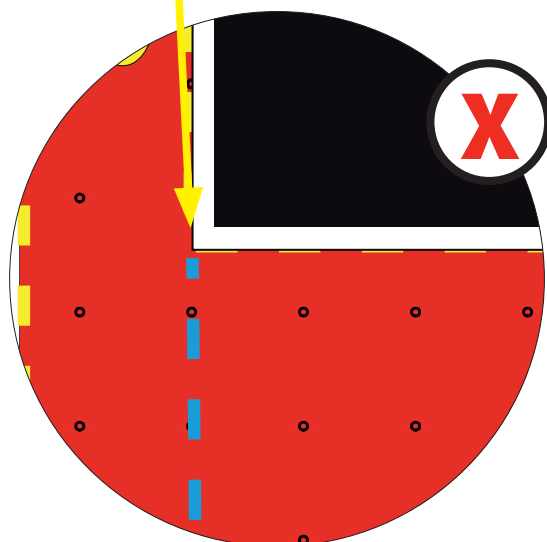
## ANNEX E | TEST CHART PLACEMENT

### A5 Chart



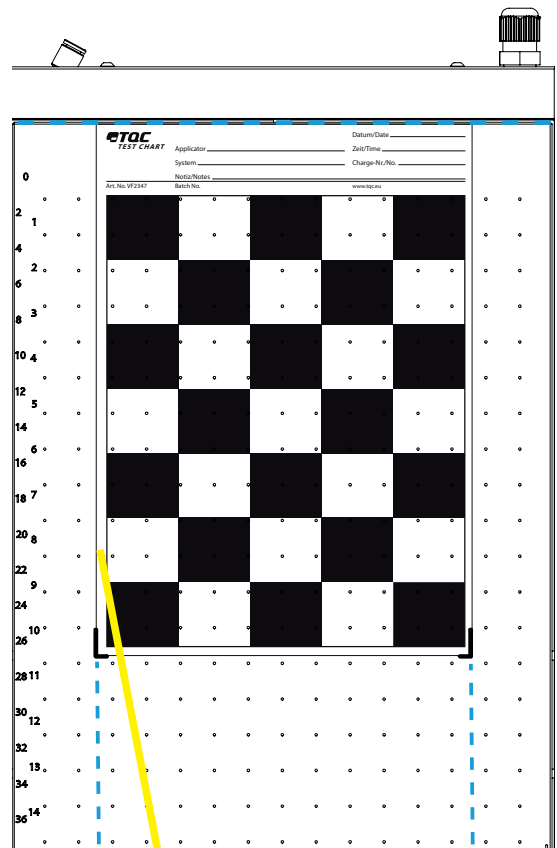
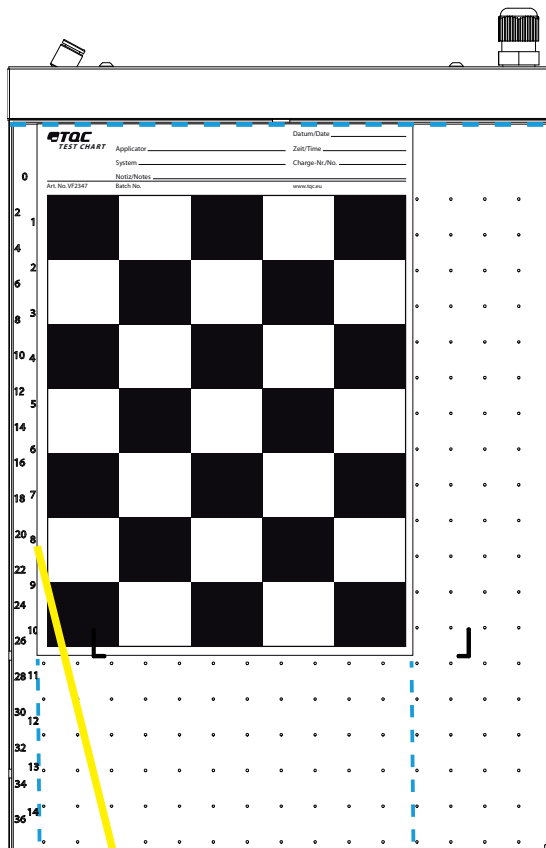
 = Vacuum hole  = A4 Mask

  = Position

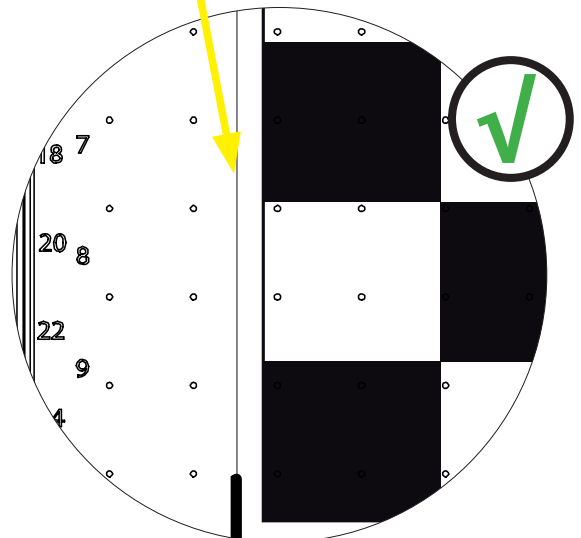
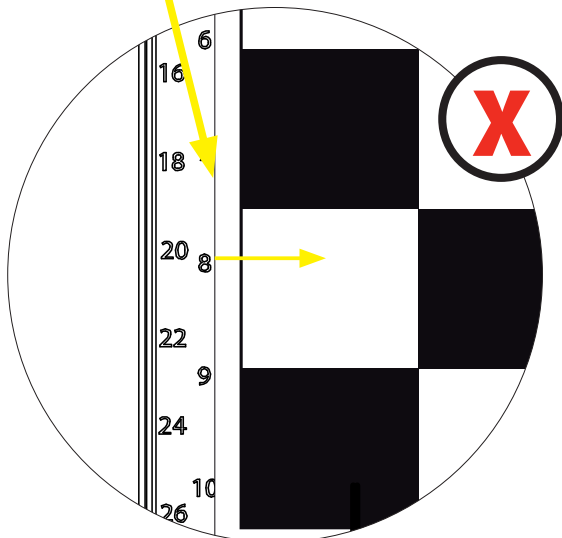


ANNEX E | TEST CHART PLACEMENT

A4 Chart

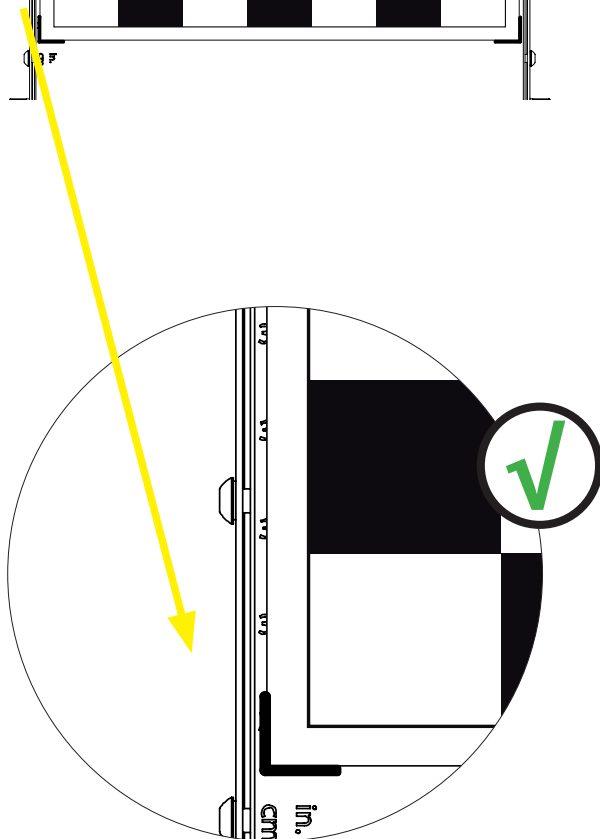
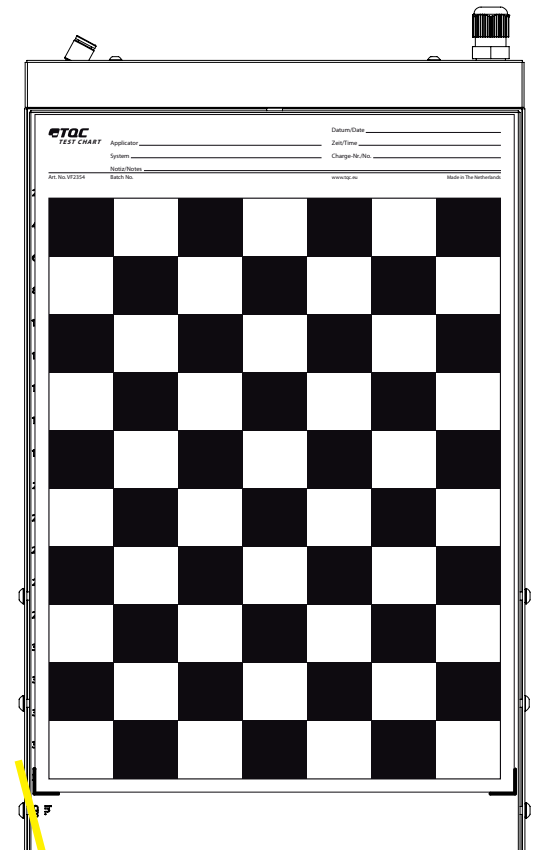


= Vacuum hole    
 = Position



## ANNEX E | TEST CHART PLACEMENT

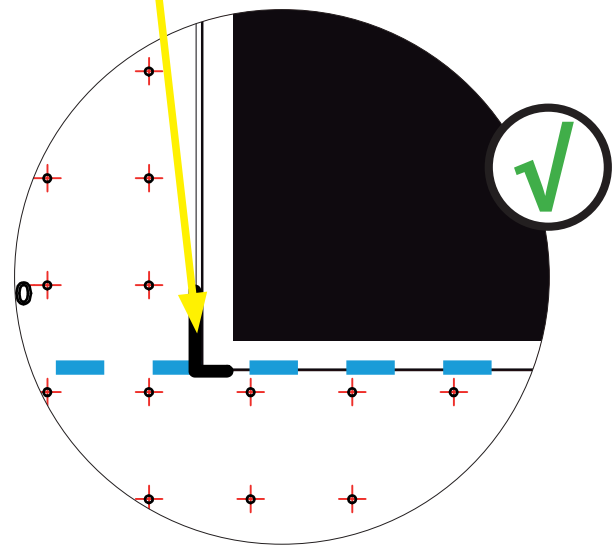
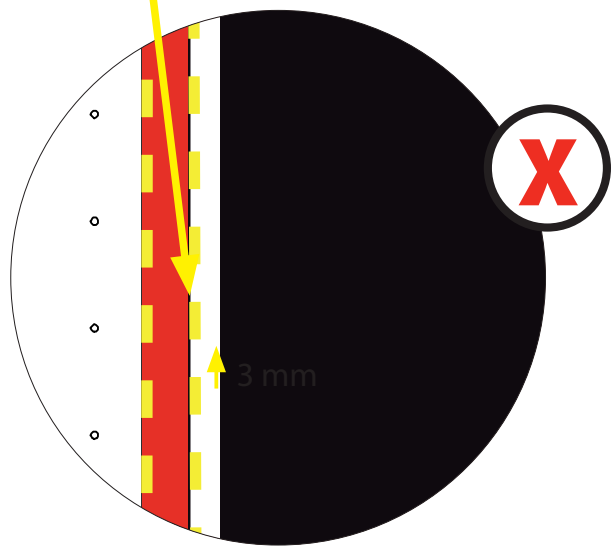
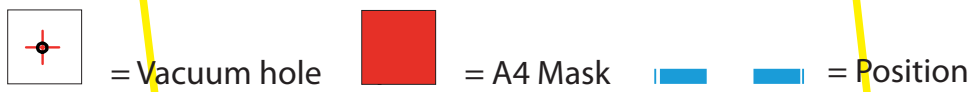
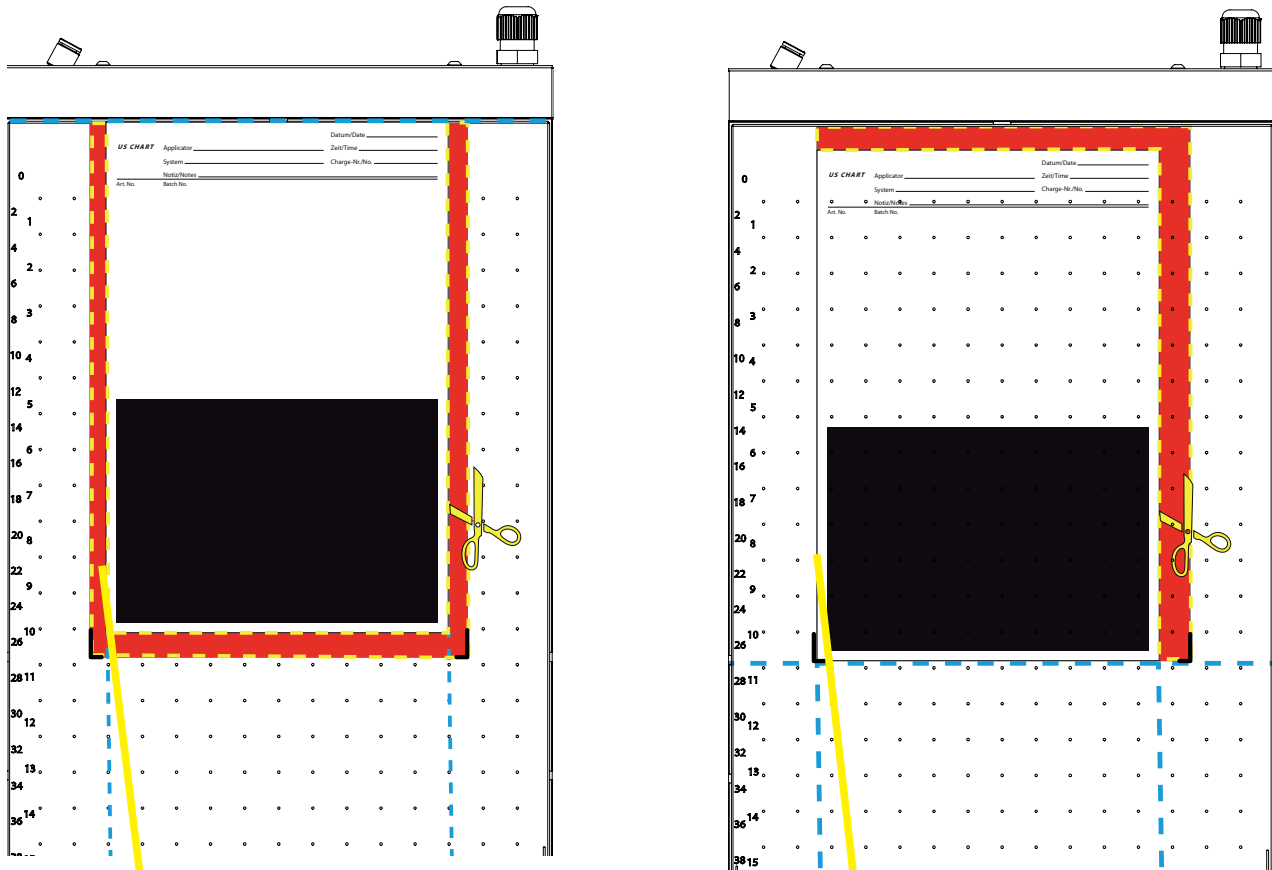
### A3 Chart





ANNEX E | TEST CHART PLACEMENT

US Chart



This product complies to

- Machinery Directive 2006/42 / EC
- Low Voltage Directive 2006/95 / EC
- EMC Directive 2004/108 / EC

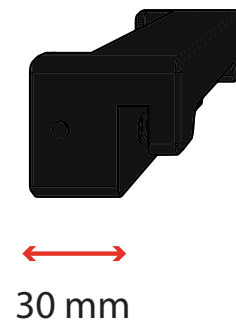
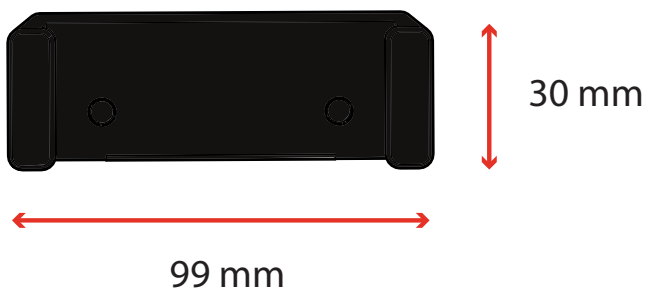
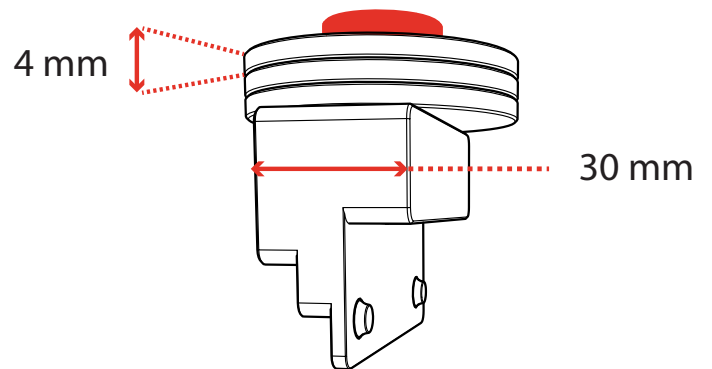
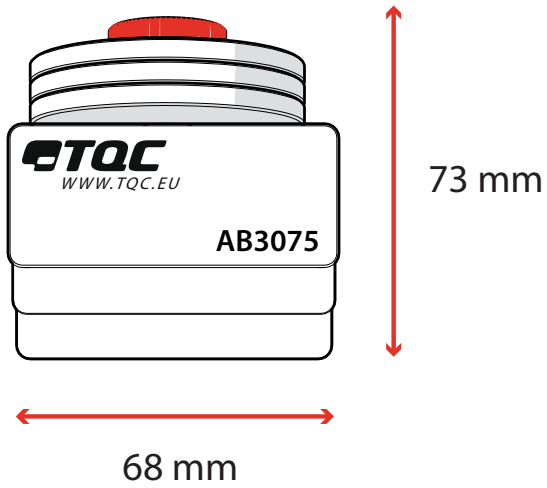
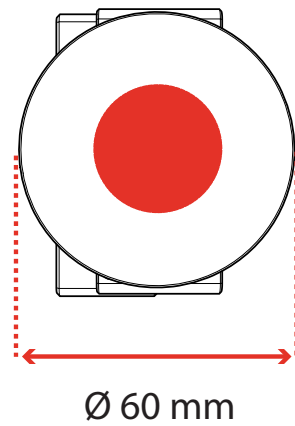


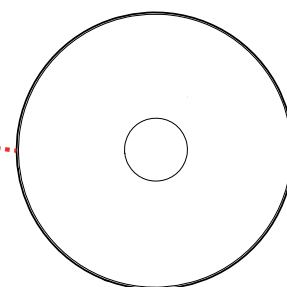
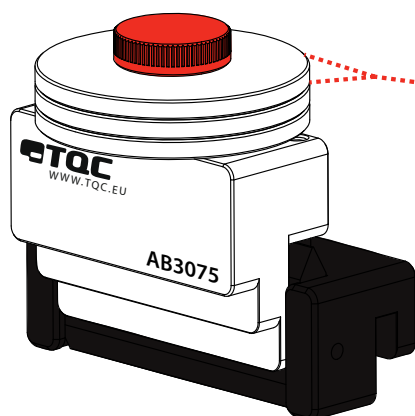
This product is RoHS 2 compliant (2011/65/EU)

## **TQC GRINDOMETER TOOL FOR AFA**

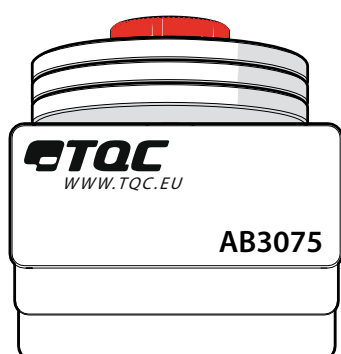
### **AB3075**



**ANNEX F | GRINDOMETER TOOL FOR AFA****Dimensions**

**ANNEX F | GRINDOMETER TOOL FOR AFA****Weight**

100 g



805 g

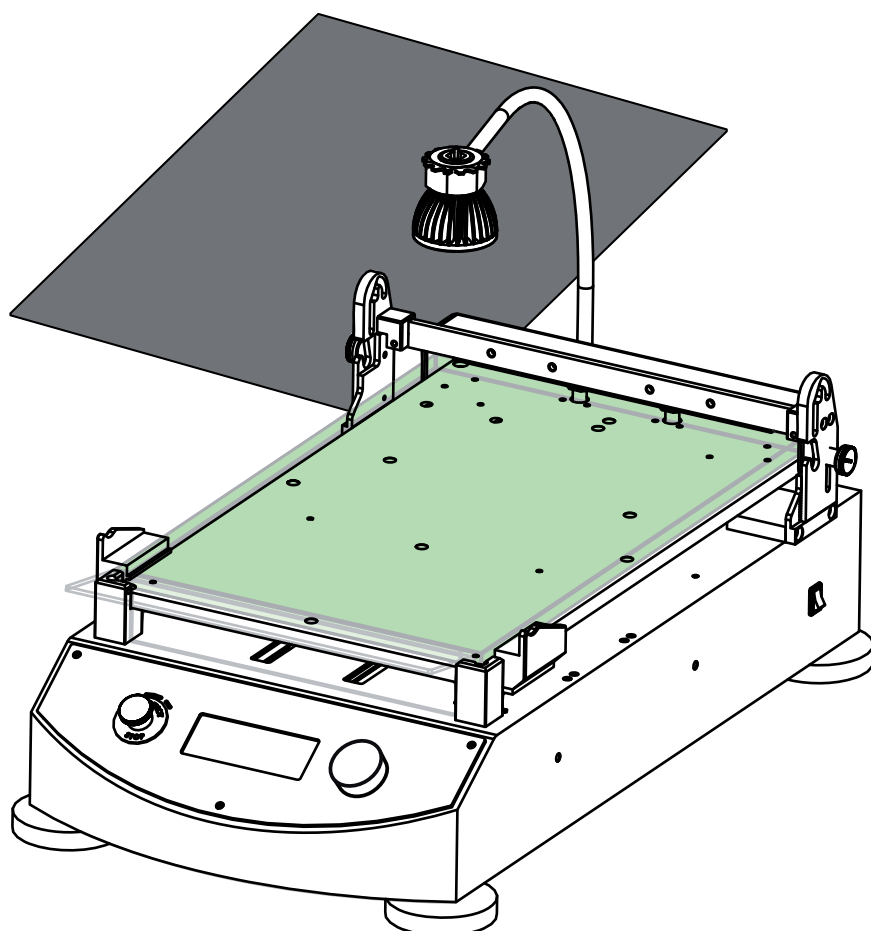


114 g

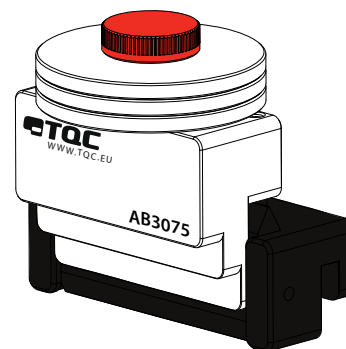
## ANNEX F | GRINDOMETER TOOL FOR AFA

### Tool Operation

1



AB3075



$\mu\text{m}$ 70	$\mu\text{m}$ 70	$\mu\text{m}$ 70
60	60	60
50	50	50
40	40	40
30	30	30
20	20	20
10	10	10
0	0	0

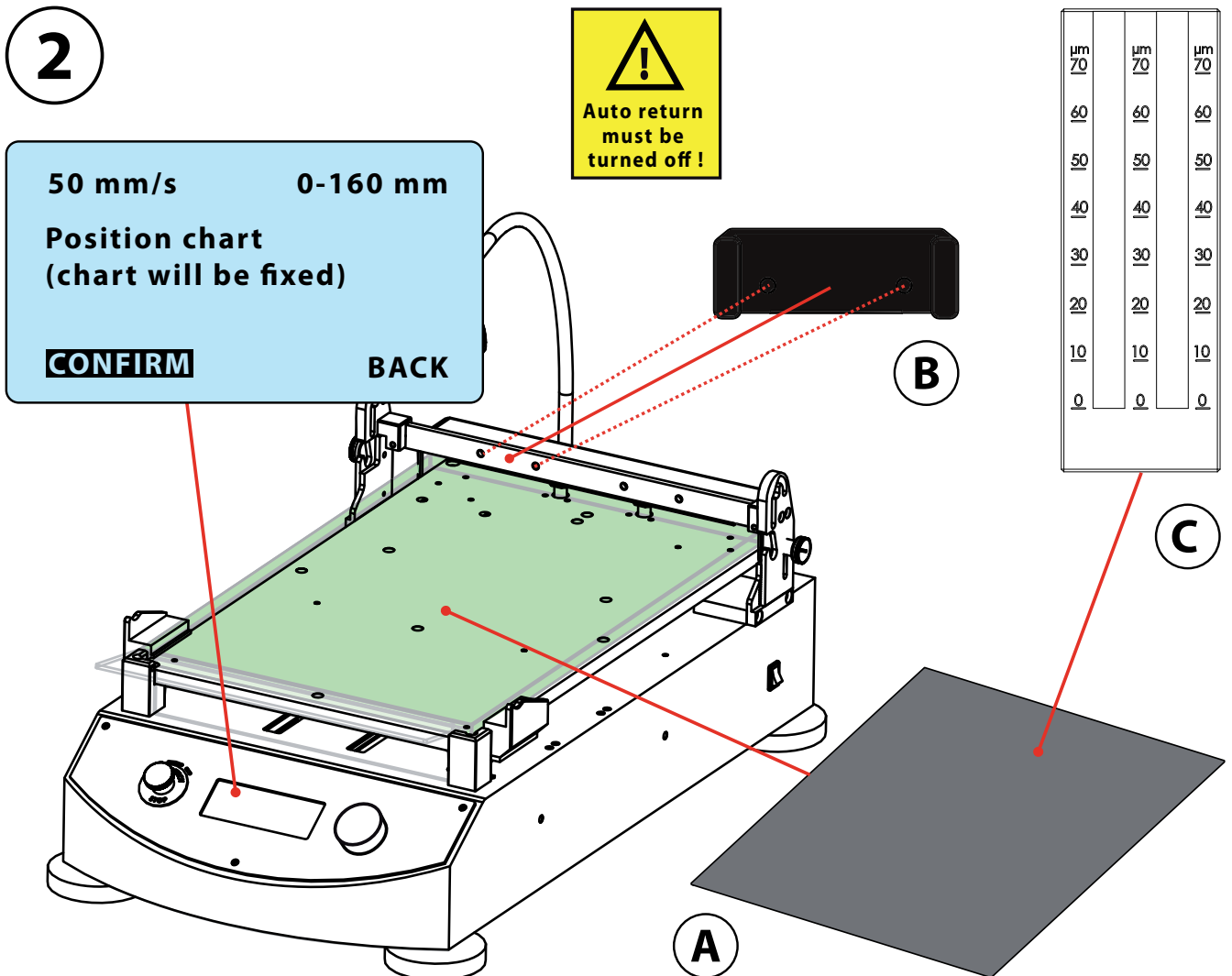
## ANNEX F | GRINDOMETER TOOL FOR AFA

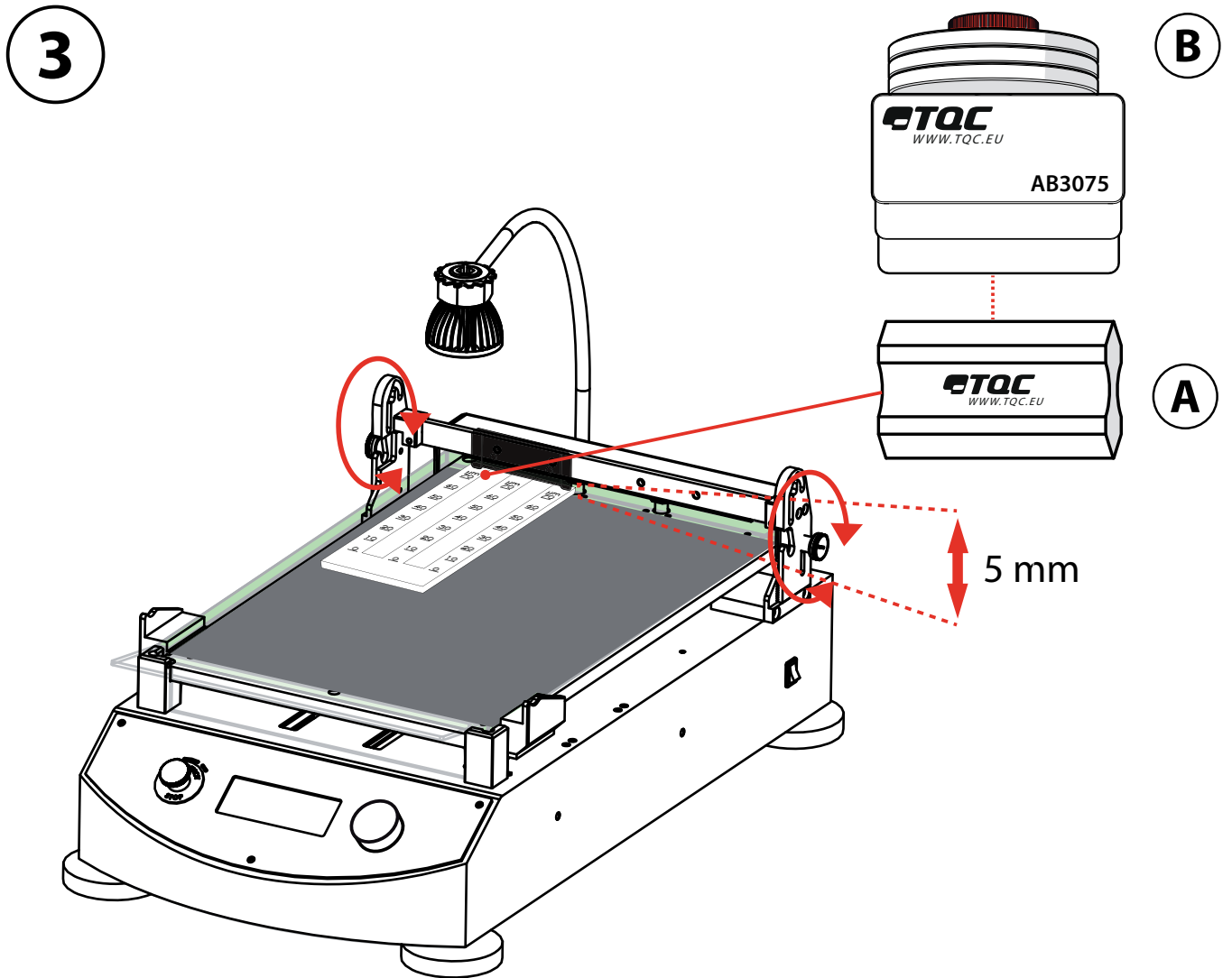
### Setup

#### Settings

- Speed : 30 – 50 mm/s
- Length : Custom Start point - 0 mm / End point 160 mm
- Turn auto return off

See also 8.2



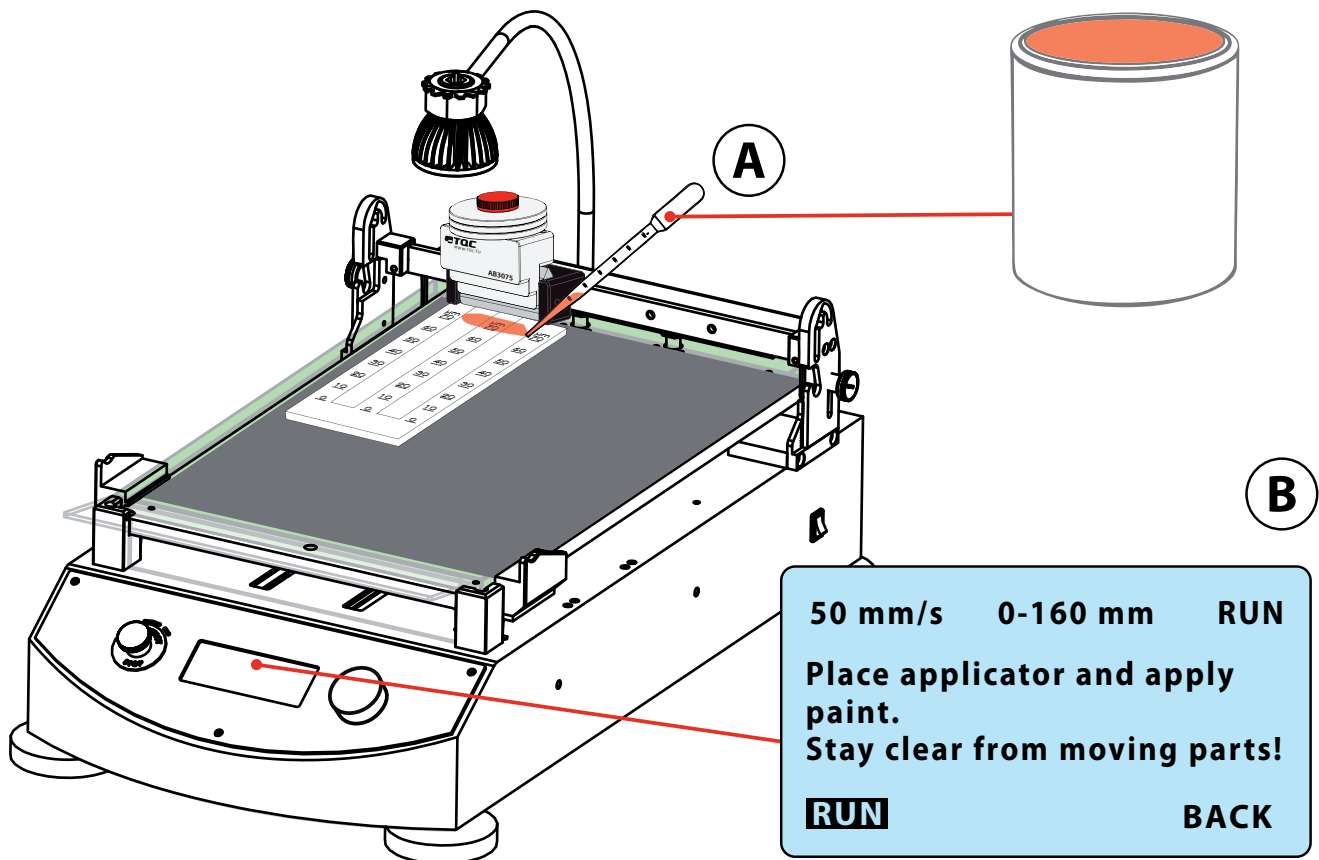
**ANNEX F | GRINDOMETER TOOL FOR AFA****Height adjustment**



## ANNEX F | GRINDOMETER TOOL FOR AFA

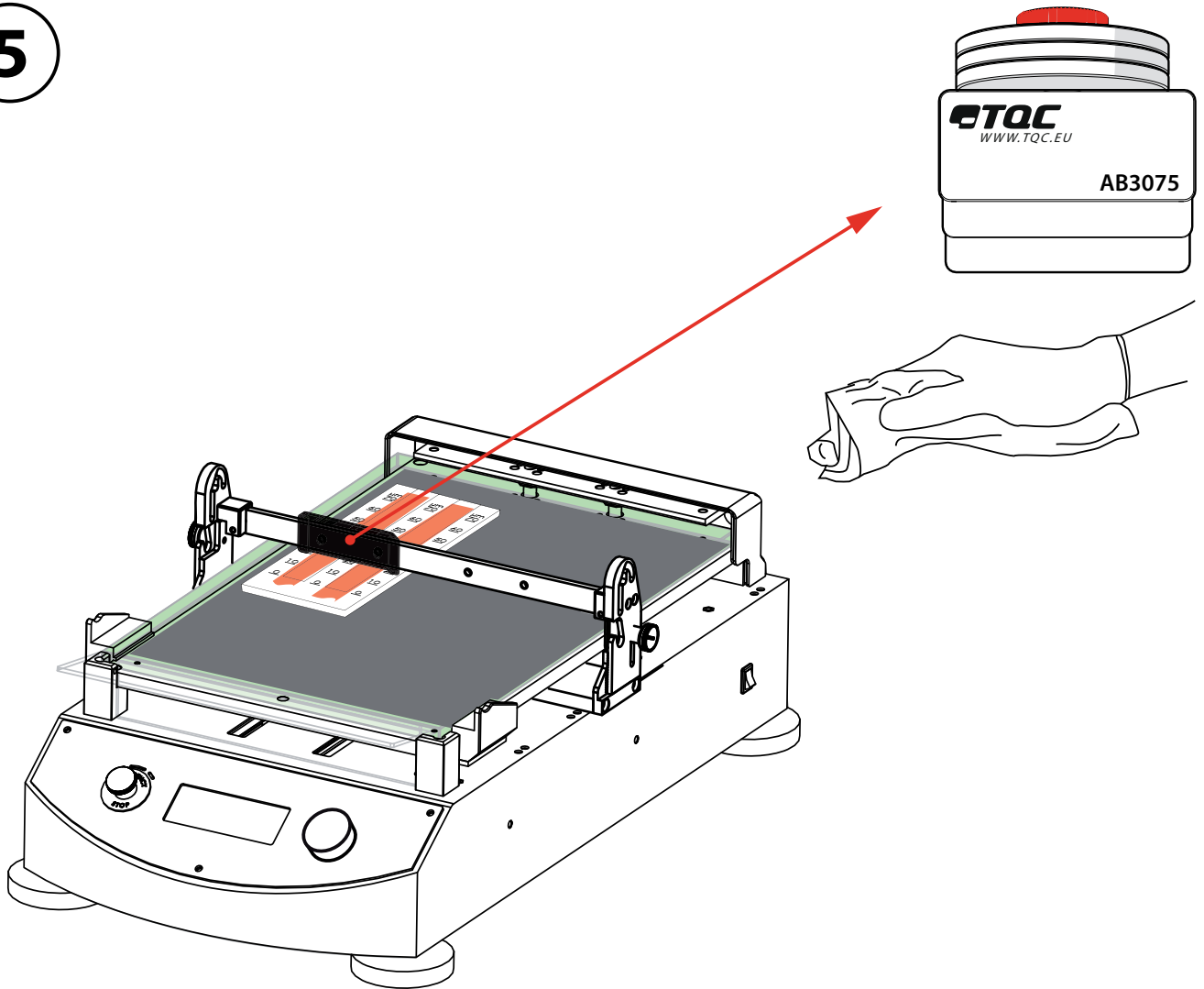
### Drawdown

4



**ANNEX F | GRINDOMETER TOOL FOR AFA**

After drawdown

**5**



*Vision on quality*  
*www.tqc.eu*



TQC B.V.

Molenbaan 19  
2908 LL Capelle aan den IJssel  
The Netherlands

+31(0)10 - 79 00 100  
 +31(0)10 - 79 00 129  
 info@tqc.eu  
 www.tqc.eu



TQC UK

Po Box 977A  
Surbiton, KT1 9XL - England

+44 208 255 0143  
 janet@tqc.eu  
 www.tqc.eu



TQC GmbH

Nikolaus-Otto-Strasse 2  
D-40721 Hilden - German

+49 (0)2103-25326-0  
 +49 (0)2103-25326-29  
 info.de@tqc.eu  
 www.tqc.eu



TQC-USA Inc.

4053 S. Lapeer Road - Suite  
Metamora, MI. 48455 - USA

+1 810 678 2400  
 +1 810 678 2422  
 joel@tqc-usa.com  
 www.tqc-usa.com



TQC ITALIA S.R.L.

Via Cesare Cantu', 26  
20831 Seregno (MB) - ITALY

+39 0362 1822230  
 +39 0362 1822234  
 info@tqcitaly.it  
 www.tqc.eu



TQC Norge AS

Øvre Langgate 26  
3110 Tønsberg - Norway

+47 33310220  
 +47 33310221  
 info@tqc.eu  
 www.tqc.eu