

DIGITAL ROTOTHINNER™

DV2000



User Guide

V1.2 0218

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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)

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 Sheen Digital Rotothinner™ is exclusively designed to be used to measure the viscosity of paint and relate products in P or cP in laboratory and production environment. The design is setup for use with TQC spindles and is carefully calibrated to conform to use according ISO 2884-2. Other applications constitute improper use. TQC will not be held liable for damage resulting from improper use.

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 Sheen
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.
NOTE	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. 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 - TQC Sheen Digital Rotothinner™



Danger

The TQC Sheen Digital Rotothinner™ reaches high rotational speeds. Do not touch moving parts during testing.



Warning

Contacting a moving spindle may cause injuries. Though the TQC Sheen Digital Rotothinner™ is limited in strength it can still cause pain.

Don't leave the TQC Sheen Digital Rotothinner™ unattended for extended periods.

2.6 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 instrument's 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.

2.7 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.

2.8 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 SCOPE OF SUPPLY

- DV2000 - TQC Sheen Digital Rotothinner™ *
- Handle
- Can
- 240V/110V power adapter

*Spindles and calibration oils have to be ordered separately. See 6.2

5 FEATURES

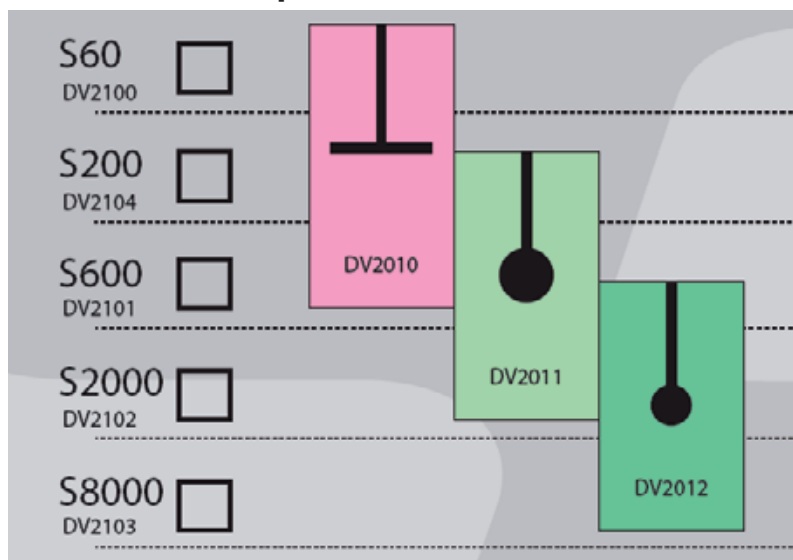
- easy to use
- highly accurate
- manual and automatic operation
- four lines digital display with backlight
- level adapter set (½ pint, 1 pint) included

6 INSTRUMENT DATA

6.1 Name / Article

DV2000 TQC Sheen Digital Rotothinner™

6.2 Accessories (Optional)



Spindles

DV2010	Spindle 1	0-22P
DV2011	Spindle 2	0,1-75P
DV2012	Spindle 3	1-350P

Calibration oils

DV2100	Oil S60	- 250ml
DV2101	Oil S600	- 250ml
DV2102	Oil S2000	- 250ml
DV2103	Oil S8000	- 250ml
DV2104	Oil S200	- 250ml

6.3 Technical Data

Mains	:	100-240V / 50-60Hz
Operating temperature	:	+15°C - +35°C / +59°F - +95°F
Net weight	:	8500 g / 18.7 lbs
Speed	:	562 rpm

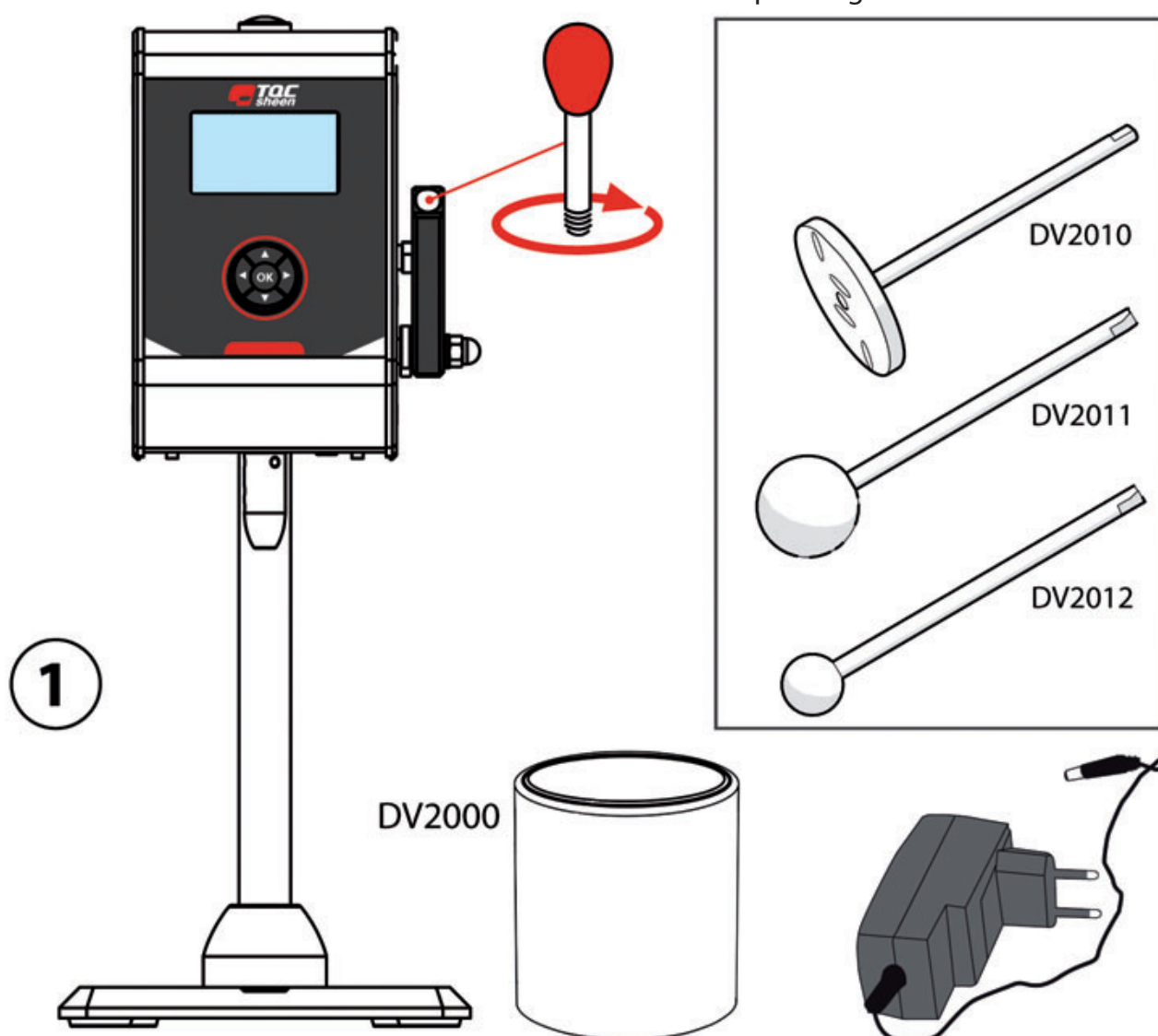
Spindle	: Supplied separately
Range	: 0 - 22P - 0 - 2200cP - Spindle 1 0,1 - 75P - 10 - 7500cP - Spindle 2 1 - 350P - 100 - 35000cP - Spindle 3
Resolution	: 0,1P 1cP
Accuracy	: $\pm 1\%$ of full scale
Repeatability	: $\pm 1\%$ of full scale
Sample container	: RL seal required for spindle 1
Dimensions	: 200 x 360 x 550mm / 7.9 x 14.2 x 21.7inch (w x d x h)

7 OPERATION

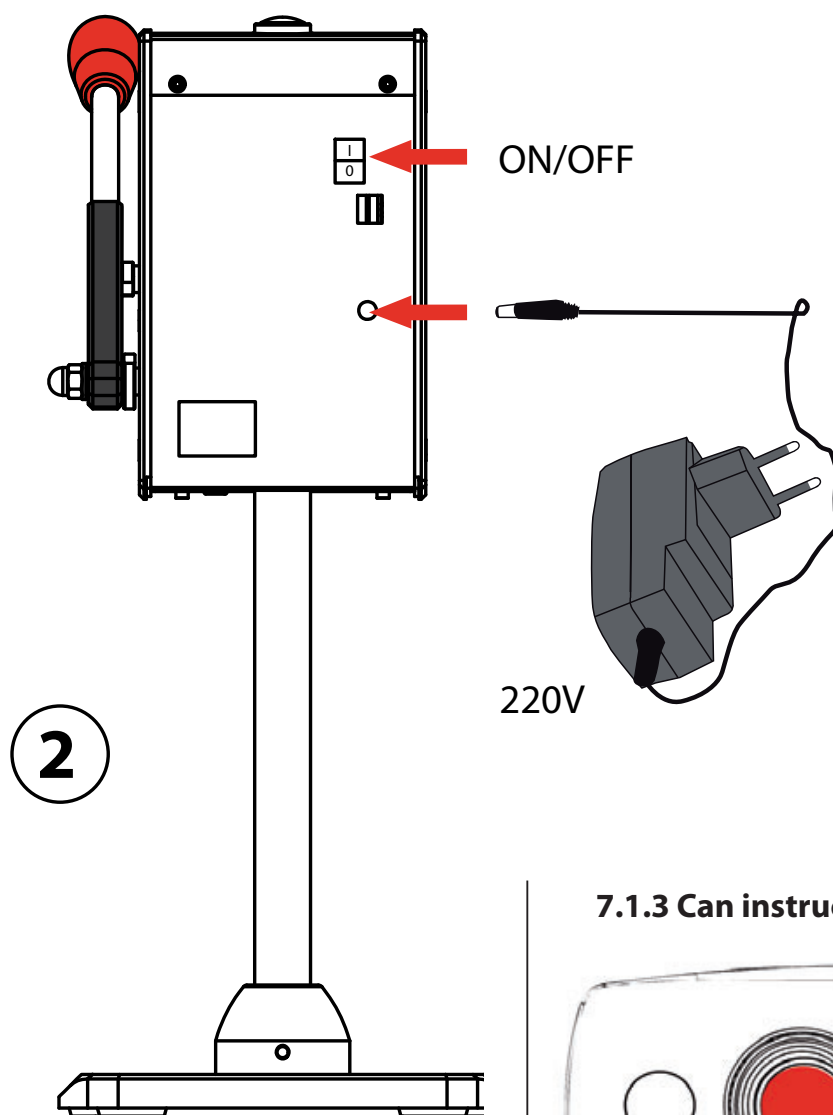
7.1 Assembly

7.1.1 Parts

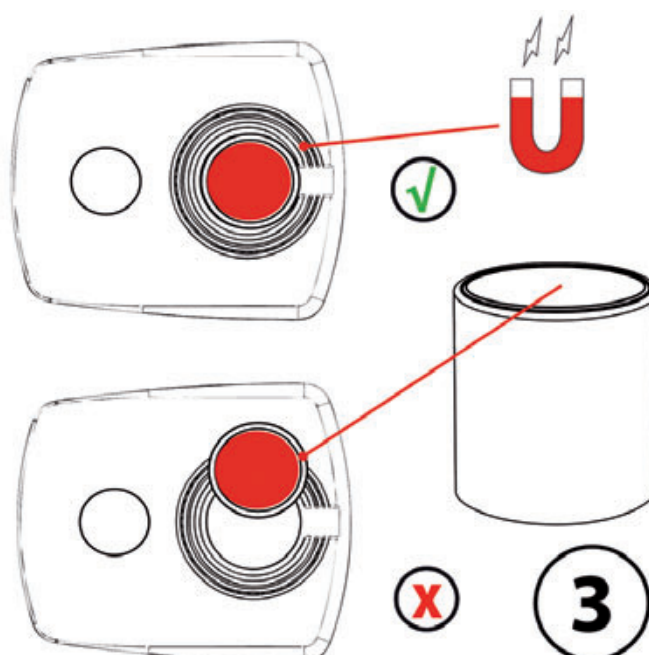
Depending on order



7.1.2 Plug connection ON/OFF switch

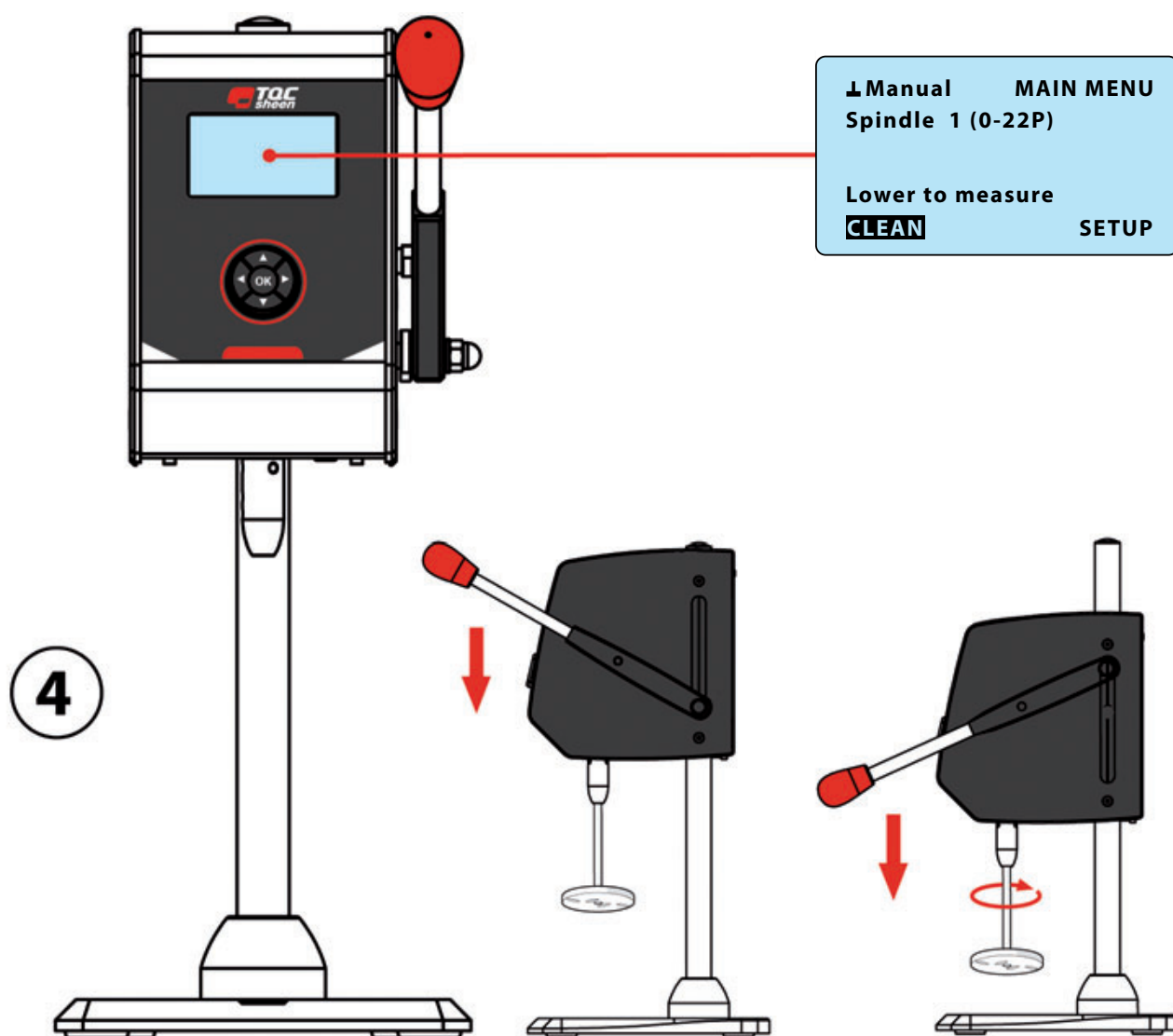


7.1.3 Can instruction

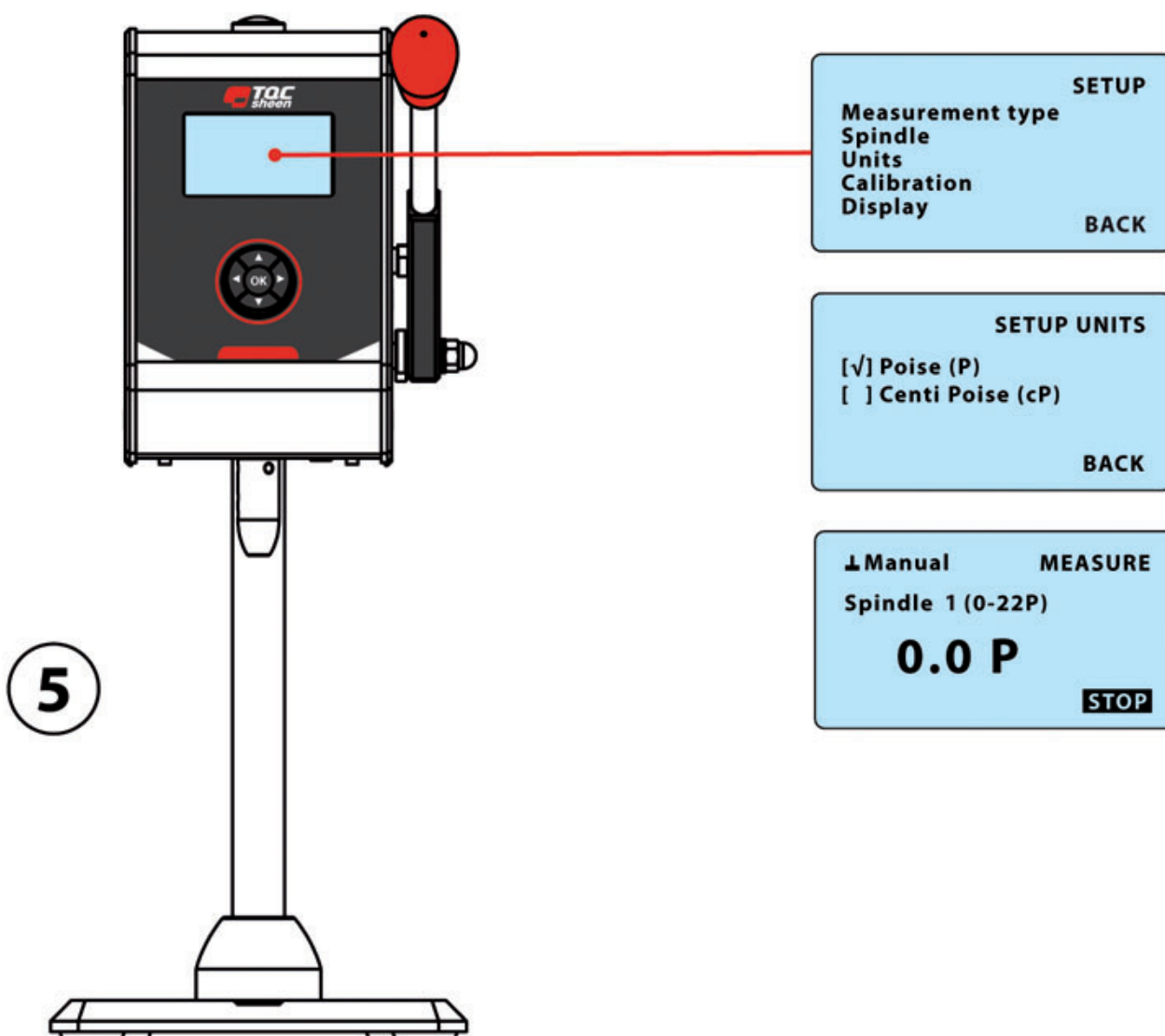


Fill the can **WITH THE SPINDLE IN IT** to 1 cm below the rim.

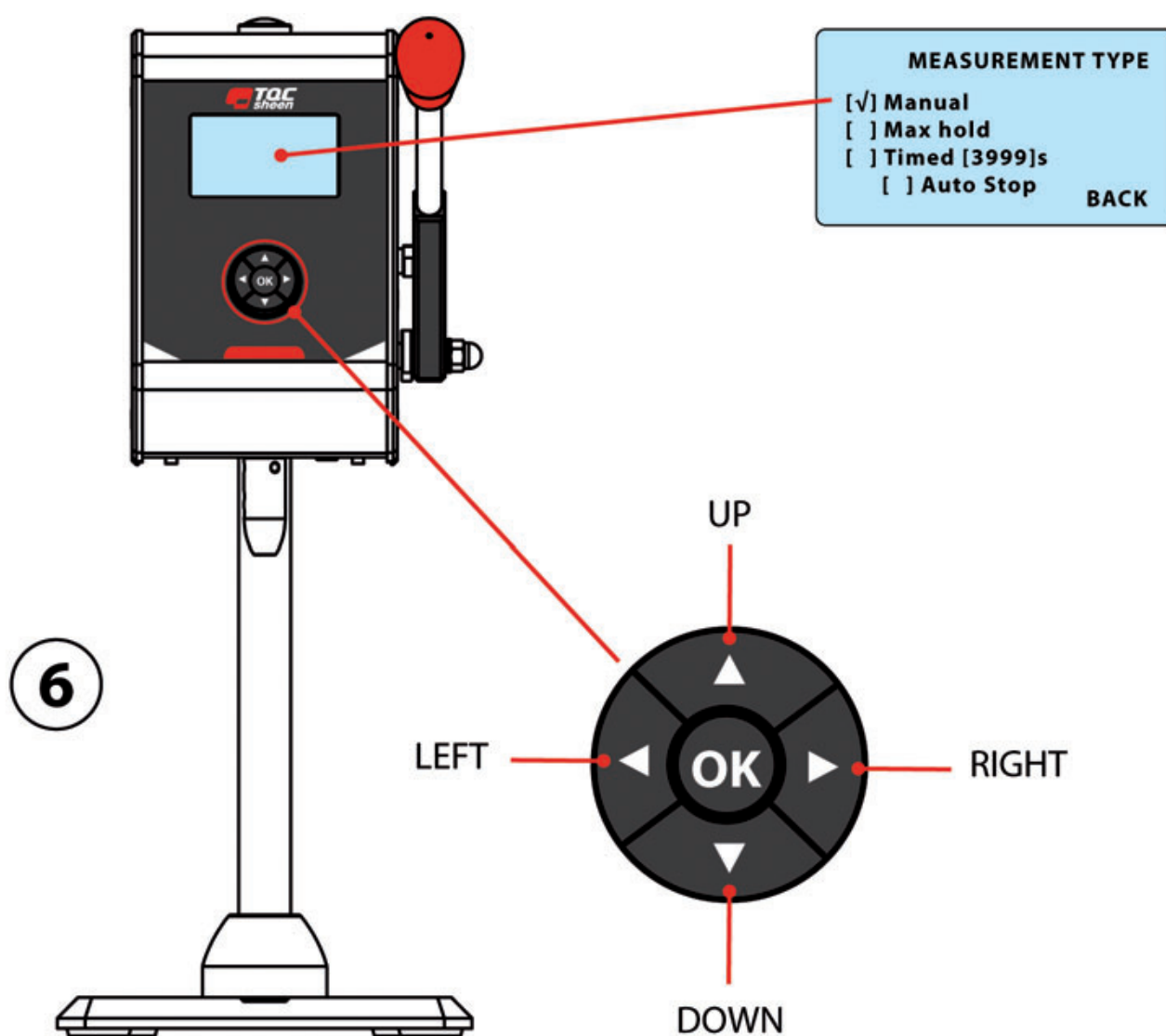
7.2 Main menu



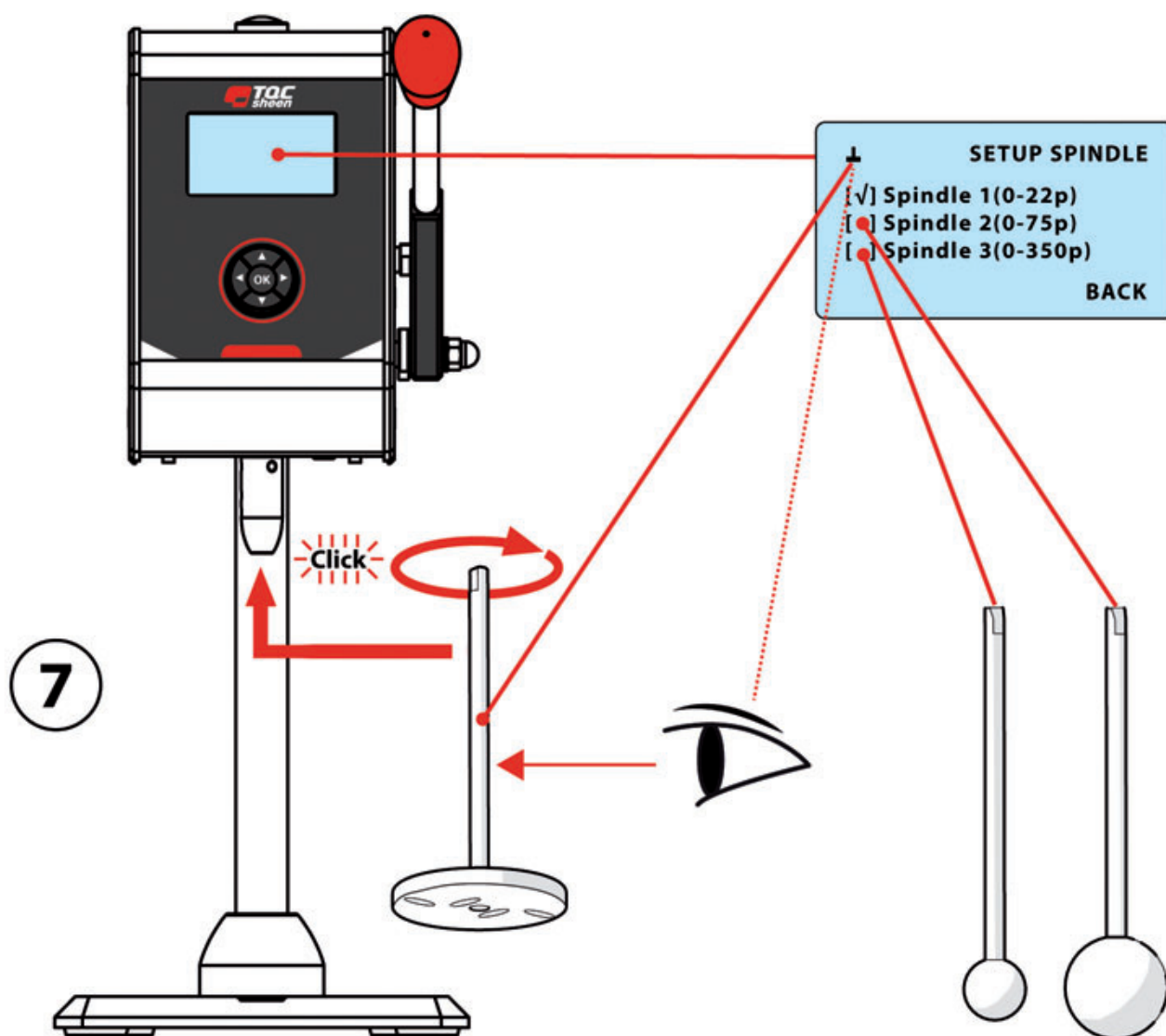
7.3 Setup menu



7.3.1 Measurement type

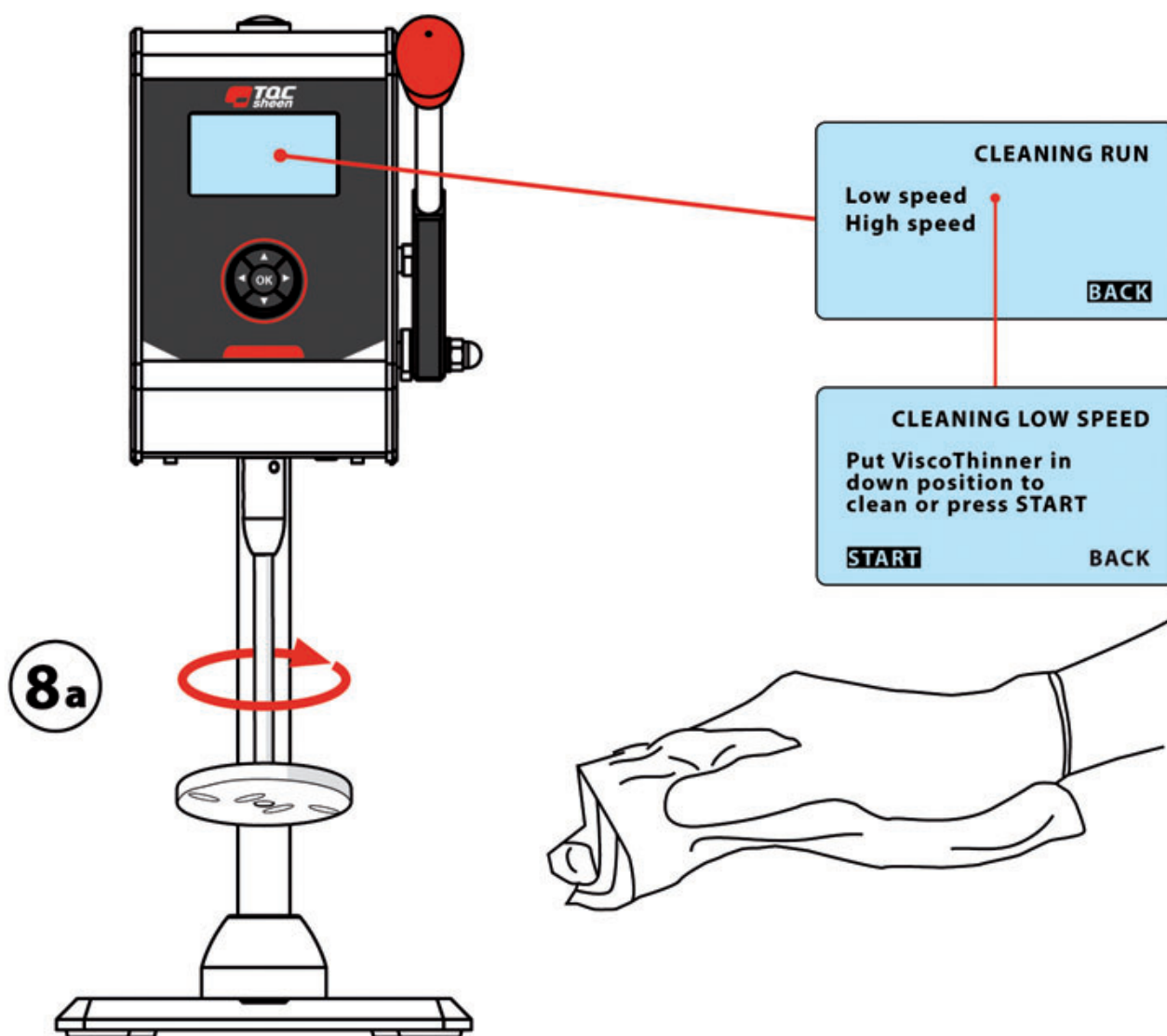


7.3.2 Setup spindle

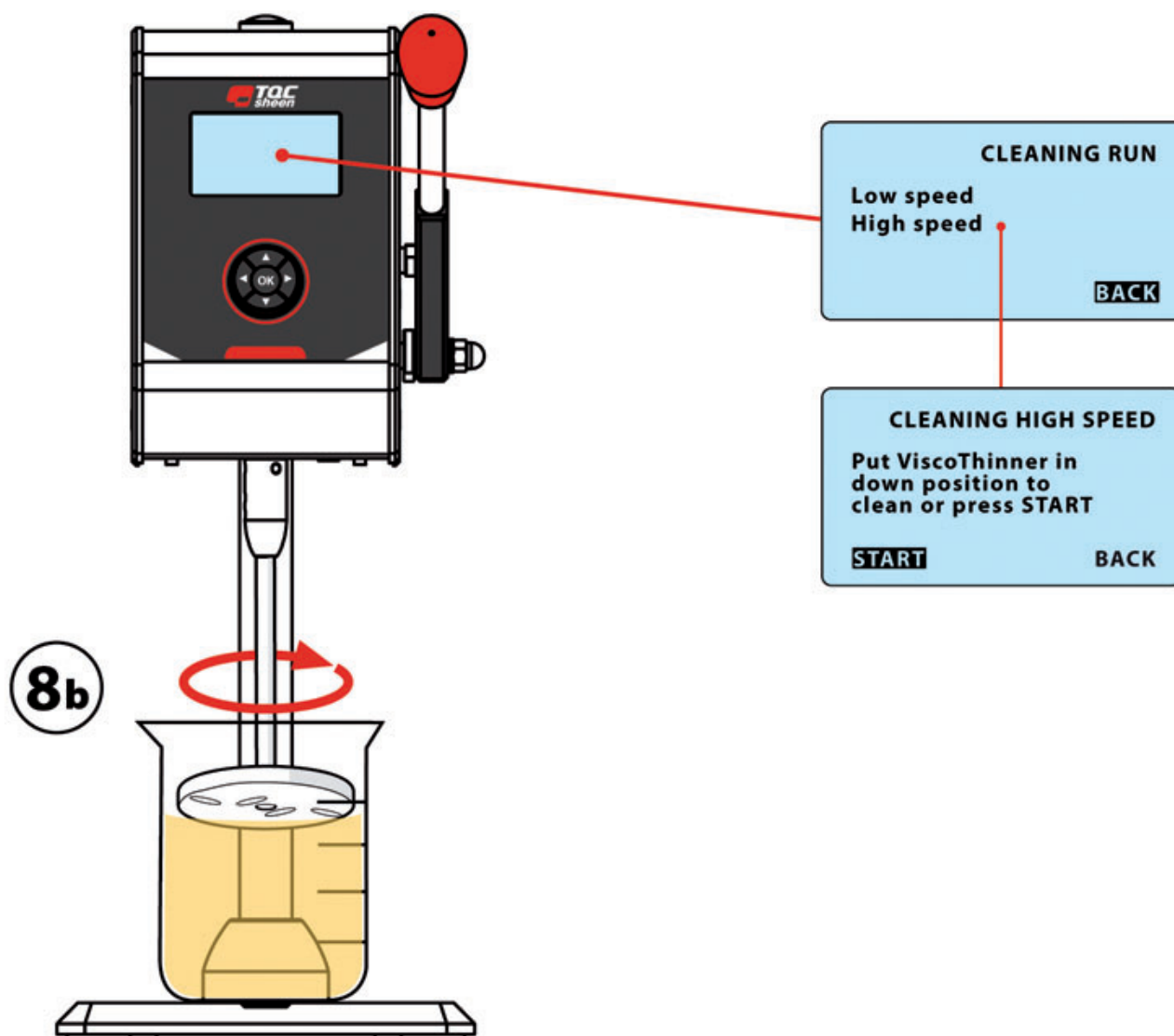


7.4 Cleaning

7.4.1 Cleaning run low speed

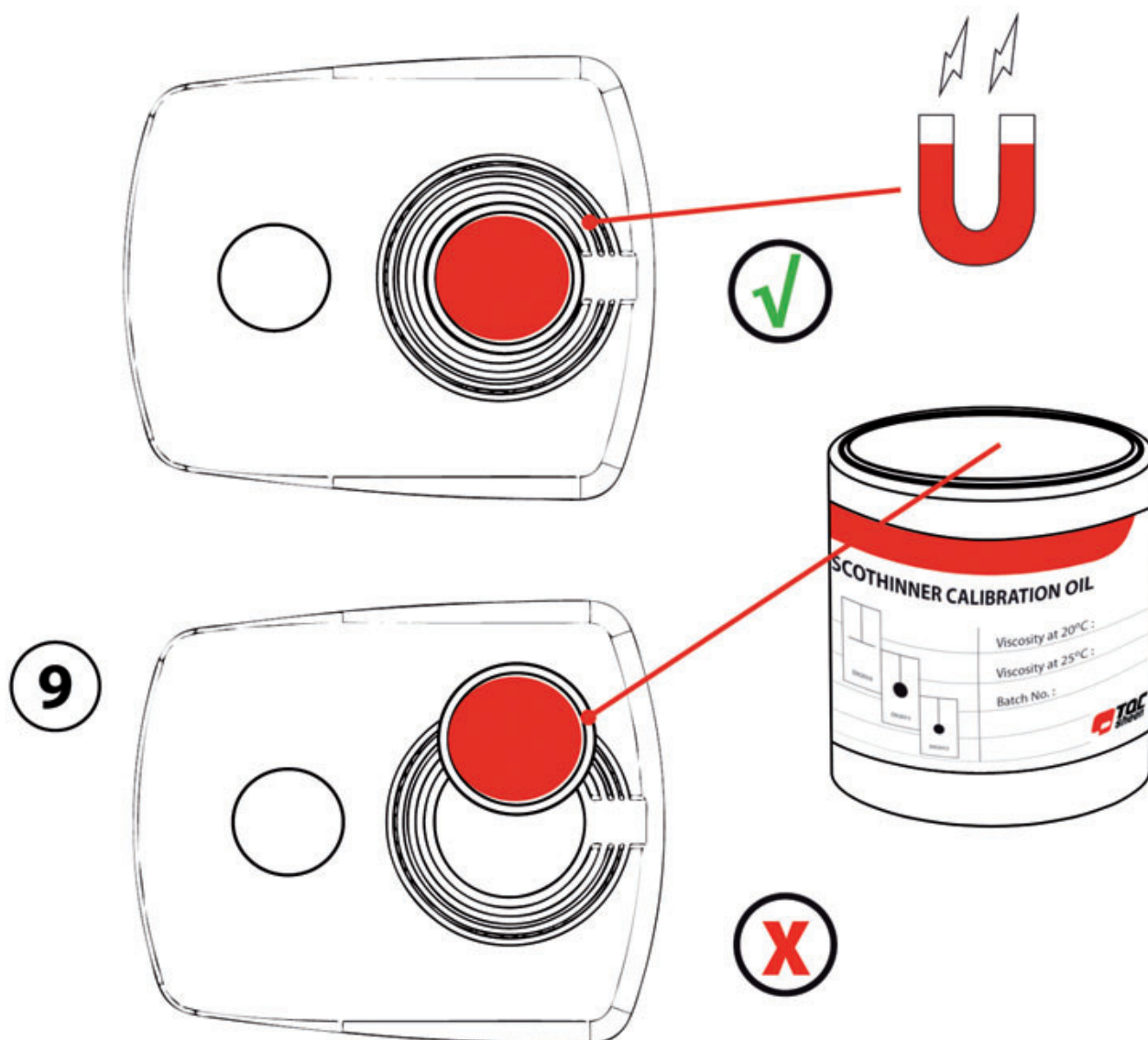


7.4.2 Cleaning run high speed

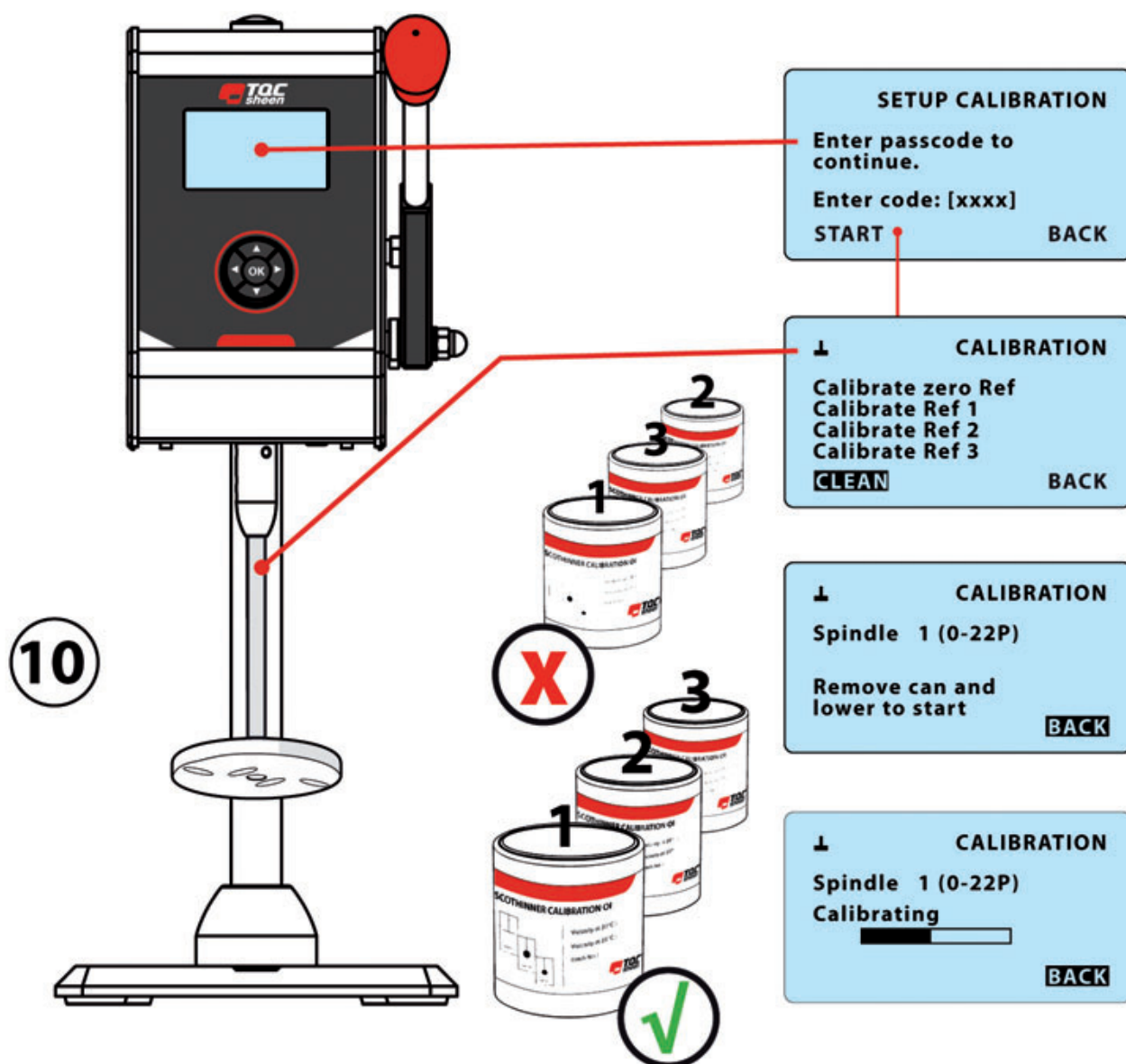


7.5 Calibration

7.5.1 Position of the can



7.5.2 Setup calibration



8 CARE AND MAINTENANCE

8.1 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 Sheen Digital Rotothinner™ does not require any maintenance.
- After finishing a viscosity measurement, always directly clean the spindle.
Do not allow any paint to dry on the spindle.
- The passcode that is programmed to reach the calibration menu is: 2908

8.2 Customer Service

When requesting service always include Model No. and Serial No. from device tag.
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



9 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.

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