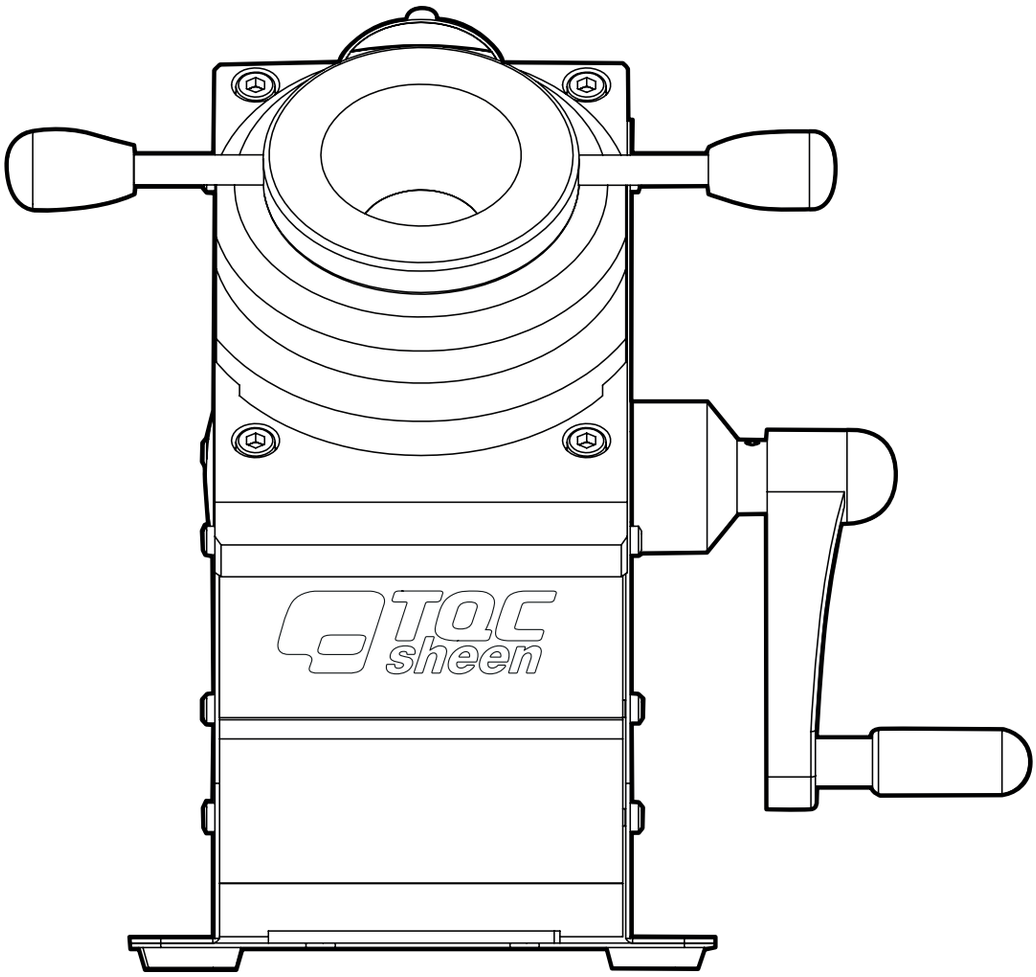


TQC SHEEN MANUAL CUPPING TESTER

SP4400

Operating Instructions (V1.0 0623)

PRODUCT DESCRIPTION

The TQC Sheen manual cupping tester is a sturdy instrument for testing the resistivity of coatings at various stages of deformation in accordance with ISO 1520. The built in gear-box minimizes the manual force which is required to deform the test panel, allowing to perform a smooth deformation.
The degree or deformation is digitally displayed at a resolution of 0.01 mm. Mandatory test in Qualicoat, QIB and GSB accredited laboratories.

STANDARDS

EN-ISO 1520, BS 3900 E4

SPECIFICATIONS

Max. sample thickness steel	0,8 mm
Max. sample thickness aluminum	1,2 mm
Max. sample width	95 mm
Max sample length	infinite
Punch diameter	20 mm /hardened steel
Die diameter	27 mm /hardened steel
Micrometer resolution	0,01 mm
Cupping range/stroke	15 mm
Displacement per revolution	0.48 mm per handle revolution
Dimensions (HxWxD)	313x340x370 mm
	12.3x13.4x14.6 inch
Total weight	16 kg

WHAT'S IN THE BOX?

- TQC SHEEN Manual cupping tester
- Digital micrometer
- Calibration plate
- 1mm Allen key
- User manual

PREPARATIONS

- Look up the appropriate standard for a correct execution of the test.
- Place the instrument on a firm strong bench, orientate the instrument with panel holder to the operator, permitting sufficient room to operate the handle and observe the deformation of substrates. side is clear of sharp objects.
- Place the digital micrometer on the cupping tester as shown below.

If not already done, install the tip in the micrometer.

Insert the micrometer in the designated hole on top of the TQC SHEEN Manual Cupping Tester.

Ensure it is straight and pressed against the housing.

Hold the micro meter in position and fix the micrometer byusing the 1mm Allen key. Do not over tighten.

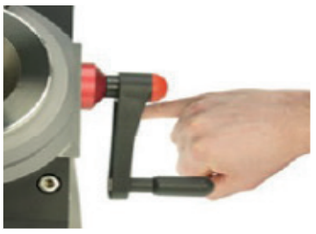
CALIBRATION

- Prior to the first use and later at monthly intervals the Manual Cupping Tester should be calibrated.
- Check the punch and panel clamps for any dirt or impurities. If dirty, then clean by using a soft cloth and non aggressive solvent like Iso Propyl Alcohol.
- Turn the right-side handle in the indicated Down direction so that the punch has retracted and the sample holder has full clearance.
- Check if the calibration plate that will be used is still intact and clean.
- Place the calibration plate.
- Close the clamp by turning both handles clockwise. Do not use excessive force during closing.
- Turn on the micrometer by pressing the ON/OFF button.
- Slowly and gently turn the handle on the right-hand side with one finger in the indicated UP direction. When the slightest resistance can be felt immediately stop and hold the handle in place.
- Press the ZERO key on the micrometer to set the zero level.
- Turn back the the handle on the right-hand side in the indicated DOWN direction for about 5 revolutions and very gently turn the punch up again. Resistance should be felt at zero mm.

Turning the punch handle

Checking for sample holder clearance

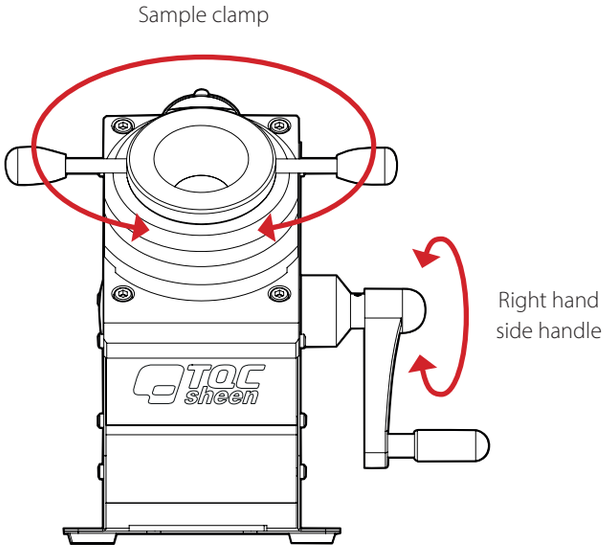
Place the calibration plate



Gently turn the handle

PERFORMING A MEASUREMENT

- Check if the cupping tester has been calibrated initially or recently according to your test lab procedures.
- Lower the punch and open the clamp so the test sample will fit.
- Place the test sample with the coated side up in the clamp. Do not exceed the panel thickness as stated in the specifications and on the machine. Testing on thicker panels can damage the drive shaft and cause deformations that could render the device unusable.
- Close the clamp to hold the panel in place. Do not use force when clamping, otherwise when removing the panel the required force to release the panel can be too high.
- Turn on the micrometer.
- Gently turn the handle to raise the punch. To get an indentation speed of about 0.2mm/s requires about half a revolution per second.
- The test is carried out either to a predetermined indentation depth or to the depth where the first defects in the coating can be seen.
- After the results have been determined turn the punch back to below the zero position to completely free the test sample from the punch.
- Release the sample clamp to free the sample from the die.
- Remove the sample.



INTERPRETATION OF THE RESULTS

Cracks and defects in the coating will form when the stresses caused by the cupping exceed the max flexibility of the coating. Generally the forming of such cracks and defects is preceded by a small discoloration of the coating. The visibility of the cracks and defects depends on the type and color of the coating, as well as the visual capability's of the operator.

According to the standards an optional maximum magnification of 10x may be used when evaluating the samples. Please refer to your appropriate standard for further information regarding magnification and illumination.

REPLACING MICROMETER BATTERIES

- To change the battery open the battery compartment located on top of the micrometer.
- Note the + and - orientation of the battery.
- Remove the battery and discard in the appropriate way.
- Replace the battery in the right + and - orientation.
- Carefully reinsert the holder in the micrometer.
- Turn on the micrometer and test its functionality.

MAINTENANCE

- Though robust in design, this instrument is precision-machined and needs to handle with appropriate care.
- 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.
- If for a reason the digital micrometer fails a new one can be ordered using SKU SP4410 Digital micrometer.
- If the micrometer tip has damage a new one can be ordered using SKU SP4415.

SAFETY PRECAUTIONS

- Use care when turning the handle and moving the punch upwards.
- Always have the sample clamp tightened properly during testing.
- Never test shattering or breaking materials like glass or acrylics.
- Avoid condensation to prevent corrosion of the instrument.

CUSTOMER SERVICE

When requesting service please include Model No. and Serial No. as indicated on the device tag.

Customer service is provided on request by:
info@industrialphysics.com
info.china@industrialphysics.com

DISCLAIMER

The right of technical modifications is reserved. Please refer to our terms and conditions as published on our website.

The information given in these instructions may be incomplete. Anyone using the product for a purpose other than that described in this document does so at his/her own risk.

TQC Sheen is a brand of Industrial Physics Inc.

TQC sheen | INDUSTRIAL PHYSICS

www.industrialphysics.com