


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

| | | |
|---|--|--|
|  | Denison Mayes Group | |
| | Issue No: 030 Issue date: 06 May 2005 | |
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SUMMARY OF ACCREDITATION

Calibration performed on site

FORCE

Alignment and restraint – Concrete machines
Concrete cube testing machines
Compression testing machines
Creep testing machines
Entensometers
Impact testing machines (Izod & Charpy)
Soil testing machines /devices
Tensile testing machines

HARDNESS

Testing machines, Brinell, direct
Testing machines, Brinell, indirect
Testing machines, Rockwell, direct
Testing machines, Rockwell, indirect
Testing machines, Vickers, direct
Testing machines, Vickers, indirect

MASS

Testing machine masses



Site calibration

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DETAIL OF ACCREDITATION

| Measured Quantity Instrument or Gauge | Range | Best Measurement Capability Expressed as an Expanded Uncertainty ($k=2$) | Remarks |
|--|---|---|--|
| FORCE | | | NOTES |
| VERIFICATION OF STATIC UNIAXIAL TESTING MACHINES | | | |
| Verification and calibration of the force measuring system by force proving instruments in Tension | From 0.10 kN up to 500 kN Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.12% | <p>1. The uncertainties stated are for the application of the calibration/verification force and do not take into account the characteristics of the machine being verified.</p> <p>2. The verification procedure used may be either in accordance with BS EN ISO 7500-1:2004, ASTM:E4 or as agreed by UKAS.</p> <p>3. In the place of the newton, verifications may be requested in the following units: ton-force (tonf), pound-force (lbf) or kilogram-force (kfg).</p> <p>4. The verification procedure used shall be in accordance with BS EN 12390-4 Annex A.</p> <p>5. The calibration procedure used shall be in accordance with BS EN 12390-4 Clause 4.</p> <p>6. The uncertainties stated are for the calibrating rig and do not take into account the characteristics of the extensometer being calibrated.</p> <p>7. Imperial and metric extensometers may be calibrated up to extension of 0.2 inch and 5.0 mm respectively. The calibration certificate issued shall be in accordance with the requirements of BS EN ISO 9513 or ASTM:E83.</p> <p>8. The calibration/verification shall be in accordance with the requirements of BS EN ISO 6508:1999 and E18:05</p> <p>9. The calibration/verification shall be in accordance with the requirements of BS EN ISO 6506:1999 and E10.01.</p> <p>10. The verification shall be in accordance with the requirements of BS EN ISO 6507:1998 and E92:97</p> |
| | From 0.05 kN up to 4 MN for Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.24% | |
| | From 0.05 kN up to 4 MN to ASTM E4-03 | 0.24% | |
| Verification and calibration of the force measuring system by force proving instruments in Compression | From 0.10 kN up to 500 kN Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.12% | |
| | From 0.05 kN up to 5 MN for Class 1, 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.24% | |
| | From 5 MN up to 10 MN for Class 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.45% | |
| | From 0.05 kN up to 10 MN to ASTM E4-03 | 0.24% | |
| Verification and calibration of the force measuring system by calibrated masses in Tension | From 0.01 N up to 500 N for Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.1% | |
| Verification and calibration of the force measuring system by calibrated masses in Compression | From 0.01 N up to 500 N for Class 0.5, 1, 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.1% | |
| Rate of application of force (pacer rate) | | 1% | |
| COMPRESSION TESTING MACHINES FOR CONCRETE | | | |
| Verification of concrete cube testing machines by proving devices in Compression | From 0.05 kN up to 5 MN for Class 1, 2 and 3 machines to BS EN ISO 7500-1:2004 | 0.24% | |



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|---|---|---|------------------------|
| COMPRESSION TESTING MACHINES FOR CONCRETE | | | |
| Performance (Alignment and restraint of upper machine platen) | From 200 kN up to 2 MN to BS EN 12390-4:2000 | See notes 3 and 4 | |
| Rate of application of force (Load pacer rate) | As BS EN 12390-4:2000 | 1% |] See note 5 |
| Flatness of platens (Machine platens, auxiliary platens and spacing blocks) | As BS EN 12390-4:2000 | 0.01 mm | |
| TENSION CREEP TESTING MACHINES | | | |
| Verification of the applied load using force proving instruments | From 0.1 kN up to 100 kN for Class 0.5, 1 and 2 machines to BS EN ISO 7500-2:1999 | 0.12% |] See notes 1, 2 and 3 |
| Verification of the applied load using masses | From 5 N up to 100 N for Class 0.5, 1.0 and 2.0 machines to BS EN ISO 7500-2:1999 | 0.1% | |
| FORCE MEASURING DEVICES | | | |
| Calibration of force measuring devices used in soil testing apparatus | From 5 N up to 100 N From 100 N up to 500 kN From 500 kN up to 1 MN As BS 1377:Part 1:1990 | 0.1% 0.12% 0.24% |] See notes 1, 2 and 3 |
| IMPACT TESTING MACHINES | | | |
| Charpy | BS EN 10045-2:1993 ASTM E23-04 but excluding proof test using certified specimens |] As required to determine compliance with the permitted tolerances | |
| Izod | BS 131:Part 4:1972 | | |
| MASS | | | |
| Masses for generating force on tension creep testing machines | Up to 5 kg 5 kg to 33 kg | 0.3 g 1.6 g | |



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|---|--|--|-------------------|
| <p>LENGTH</p> <p>Extensometers</p> | <p>As BS EN ISO 9513:2002 for the following classes and gauge lengths:</p> <p>Class 0.2 from 25 mm Class 0.5 from 10 mm Class 1 from 5 mm Class 2 from 5 mm</p> <p style="text-align: right;">Up to 300 mm</p> <p>As ASTM E83-02 for the following classes and gauge lengths:</p> <p>B-1 20 mm B-2 10 mm C 5 mm</p> <p style="text-align: right;">Up to 200 mm</p> | <p>($0.1 + 0.02L$) μm where L is the extension in units of 25 μm See notes 6 and 7</p> | |
| <p>HARDNESS TESTING MACHINES IN SERVICE</p> | | | |
| <p>Direct verification of Rockwell Hardness Testing Machines</p> | <p>Rockwell scales: A, B, C, D, E, F, G, H, K, N & T</p> | <p>0.24% force 0.1 μm length 0.1 second time</p> | <p>See note 8</p> |
| <p>Indirect verification of Rockwell Hardness Testing Machines</p> | <p>Rockwell scales: A, B, C, D, E, F, G, H, K, N & T</p> | <p>1 Rockwell unit</p> | <p>See note 8</p> |
| <p>Direct verification of Brinell Hardness Testing Machines</p> | <p>Brinell scales: from HB 10/3000 to HB 1/1</p> | <p>0.24% force 0.1 second time</p> | <p>See note 9</p> |
| <p>Indirect verification of Brinell Hardness Testing Machines and Indentation Measuring Devices</p> | <p>Brinell scales: from HB 10/3000 to HB 5/25</p> <p>From HB 2.5/187.5 to HB 1/1</p> | <p>+ 1.5% HB + & 0.5% (mm) See note 9 + 2% HB + & 10 μm</p> | |
| <p>Indirect verification of Portable Brinell Hardness Testers (King or Brinell type)</p> | <p>From HB 10/3000 down to HB 5/250</p> | <p>1.5% HB</p> | |
| <p>Verification of indentation measuring devices for Brinell Hardness</p> | <p>Direct</p> <p>Indirect</p> | <p>0.1% or 10 μm whichever is larger See note 9 0.5% or 20 μm whichever is the larger</p> | |



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|--|--|--|---------|
| <p>HARDNESS TESTING MACHINES IN SERVICE</p> <p>Direct verification of Vickers Hardness Testing Machines</p> <p>Indirect verification of Vickers Hardness Testing Machines</p> <p>Verification of Vickers Indentation Measuring Devices</p> | <p>Vickers scales: HV100 to HV5 HV3 to HV0.2</p> <p>Vickers scales: HV100 to HV5 HV3 to HV0.2 HV0.1</p> <p>Direct Indirect</p> | <p>0.24% Force 0.1 sec Time</p> <p>1% HV Hardness 0.1 sec Time</p> <p>1.0 µm Length 0.5% (in mm) on diagonals (3 µm minimum)</p> <p align="center">See note 10</p> | |
| END | | | |