

# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

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|  <p><b>0209</b></p> <p>Accredited to<br/>ISO/IEC 17025:2017</p> | <h3>Tru-Thread Limited</h3> <p>Issue No: 024 Issue date: 27 August 2021</p>      |  |
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| <p><b>Calibration performed at the above address only</b></p>  |  |  |

### Calibration and Measurement Capability (CMC)

| Measured Quantity<br>Instrument or Gauge   | Range            | Expanded Measurement<br>Uncertainty ( $k = 2$ ) | Remarks   |
|--|------------------|---|---|
| <p>RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES<br/>UNLESS OTHERWISE STATED</p> |                  |   |   |
| LENGTH   |                  |   | NOTES   |
| Plain plug gauges (parallel)<br>and rollers  | 1 to 50 diameter | 0.80  | Comparison to gauge blocks<br>using a comparator  |
|  | 50 to 100        | 1.0   |   |
|  | 100 to 150       | 1.5   |   |
|  | 150 to 200       | 2.0   |   |
|  | 200 to 300       | 3.0   |   |
| Plain plug gauges (taper)  | 3 to 50 diameter | 2.0 on diameter                                 | Comparison to gauge blocks<br>and rollers using a length<br>measuring machine                       |
|  | 50 to 100        | 3.0   |   |
|  | 100 to 200       | 4.0   |   |
|  | 200 to 300       | 5.0   |   |
| Taper up to 1 in 8<br>on diameter  | 3 to 50 diameter | 4.0 on diameter                                 | Using a two axis measuring<br>machine   |
|  | 50 to 100        | 5.0   |   |
|  | 100 to 200       | 6.0   |   |
|  | 200 to 300       | 7.0   |   |
| Plain ring gauges (parallel) and<br>setting standards                                  | 2 to 50 diameter | 1.5   | Comparison to master<br>setting rings using a length<br>measuring machine                           |
|  | 50 to 100        | 1.8   |   |
|  | 100 to 150       | 2.0   |   |
|  | 150 to 300       | 3.0   |   |
| Plain ring gauges (taper)  | 2 to 50 diameter | 3.0 on diameter                                 | Comparison to gauge blocks<br>and vee end pieces using an<br>internal diameter measuring<br>machine |
|  | 50 to 100        | 4.0   |   |
|  | 100 to 200       | 5.0   |   |
|  | 200 to 300       | 8.0   |   |
| Taper up to 1 in 8<br>on diameter  | 2 to 50 diameter | 5.0 on diameter                                 | Comparison to gauge blocks<br>and vee end pieces using an<br>internal diameter measuring<br>machine |
|  | 50 to 100        | 6.0   |   |
|  | 100 to 200       | 7.0   |   |
|  | 200 to 300       | 10  |   |



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| Measured Quantity<br>Instrument or Gauge   | Range   | Expanded Measurement<br>Uncertainty ( $k = 2$ ) | Remarks  |
|--|---|---|--|
| RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES<br>UNLESS OTHERWISE STATED   |   |   |  |
| LENGTH Continued   |   |   |  |
| Screw plug gauges (parallel)<br>including check and setting plugs<br>See Note 1  | 1 to 100 diameter<br>100 to 300<br>300 to 400               | 2.5 on pitch diameter<br>5.0<br>7.0             | By comparison to cylindrical<br>setting standards and thread<br>measuring cylinders using a<br>screw diameter measuring<br>machine<br><br>Note 1. Single and multi-<br>start symmetrical and<br>asymmetrical thread forms. |
| Screw plug gauges (taper)<br>including API working gauges and<br>API profile gauges to Specs. 5B, 7<br>& 11B<br>See Note 2 | 2 to 100 diameter<br>100 to 300<br>300 to 350               | 4.0<br>8.0<br>10                                | By comparison to cylindrical<br>setting standards and thread<br>measuring cylinders using a<br>bench micrometer.<br>API gauge compared to<br>master ring<br>Note 2 Single start,<br>symmetrical thread forms<br>only.      |
| Screw ring gauges (parallel)<br>See Notes 1 and 3  | 1 to 100 diameter<br>100 to 150<br>150 to 300<br>300 to 400 | 5.0<br>6.0<br>8.0<br>12                         | on pitch<br><br>comparison to a cylindrical<br>vee groove setting standard<br>using a two axis measuring<br>machine<br>Note 3. Includes use of<br>check plugs for screw rings<br>from 1 mm to 6mm<br>diameter.             |
| Screw ring gauges (taper)<br>including API working gauges to<br>Specs. 5B, 7 & 11B<br>See Note 2                           | 6 to 150 diameter<br>150 to 300<br>300 to 350               | 7.0<br>10<br>15                                 | Using a two axis measuring<br>machine.<br>API gauge compared to<br>master plug   |
| Screw pitch  | 0.2 to 8  | 1.5   | Using a two axis measuring<br>machine  |
| Screw flank angle  | 0° to 52°   | 5.0 minutes of arc                              | Optical projection and a hob<br>& flank machine  |
| Thread pitch profile gauges  | 1 to 8 pitch  | 7.0   | Optical projection and a two<br>axis measuring machine   |
| Plain gap gauges (parallel)  | 2 to 50<br>50 to 100<br>100 to 200<br>200 to 300            | 3.0<br>5.0<br>8.0<br>12                         | By comparison to gauge<br>blocks   |
| END  |   |   |  |



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**Appendix - Calibration and Measurement Capabilities**

**Introduction**

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

**Calibration and Measurement Capabilities (CMCs)**

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of  $k = 2$ . An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

**Expression of CMCs - symbols and units**

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand. Thus, for example, a measurement uncertainty of 1.5 % means  $1.5 \times 0.01 \times q$ , where  $q$  is the quantity value.

The notation  $Q[a, b]$  stands for the root-sum-square of the terms between brackets:  $Q[a, b] = [a^2 + b^2]^{1/2}$