

**Department: Production**

**Title : Measuring & Test Equipment – External Calibration Source**

<b>EQUIPMENT TYPE/DESCRIPTION</b>	Equipment for sub contract calibration
<b>DEPARTMENT RESPONSIBLE FOR CALIBRATION</b>	Quality
<b>FREQUENCY OF CALIBRATION</b>	See below
<b>STANDARDS AND EQUIPMENT TO BE USED FOR CALIBRATION</b>	External - traceable to national standards
<b>IDENTIFICATION AND RECORDS</b>	Each instrument/equipment will :- Be identified by ser. No./plant no. Have indication of cal. Status Have record card showing cal. History

**METHOD OF CALIBRATION:**

The following equipment is to calibrated by either manufacturer or external source at the frequency indicated:-

<b>Description</b>	<b>Frequency</b>	<b>Acceptance Criteria</b>
1. Surface Plates	24 Months	Calibrate to BS 817 2008
2. Engineers Square	24 Months	Calibrate to BS 939 2007
3. Digital Thermometer	12 Months	Calibrate to $\pm 0.2^{\circ}\text{C}$ throughout temperature range.
4. Slip Gauge Sets	12 Months	Calibrate to BS 4311 2007
5. Plug Gauges	12 Months	Calibrate to BS 969 2008
6. Dial/Digital Test Indicators	12 Months	Calibrate to BS 2795 1981
7. Particle Size Analyser	12 Months	Calibrate to Manufacturers procedure $\pm 10\%$ deviation range.
8. Steel Rule (1Meter)	12 Months	Calibrate to; Max deviation between any two measured adjacent graduation lines - Maximum error = Imperial scale 0.00015", Metric scale 0.0045mm. Max deviation between any two measured graduation lines on a single scale - Maximum error = Imperial scale 0.00040", Metric scale 0.011mm. Position of 10mm / 1/2" graduation from flat end datum - 1/2" error = 0.0010" 10mm error = 0.023mm.
9. Height Gauges	12 Months	Calibrate to BS EN ISO 13225 2012
10. Vernier & Digital Callipers	12 Months	Calibrate to BS 887 2008
11. Internal Micrometers	12 Months	Calibrate to BS 870 2008

**Department: Production**

**Title : Measuring & Test Equipment – External Calibration Source**

12. Depth Micrometer	12 Months	Calibrate to BS 870 2008
13. External Micrometer	6 Months	Calibrate to BS 870 2008
14. Torque Measuring Equipment	12 Months	Calibrate to BS EN ISO 6789 2003
15. Digital Electronic Press. Gauges (Prod. Test)	6 months	Calibrate to; Pressure applied vs displayed result six increments of scale per manufacturers specification of $\pm 0.2\%$ full scale.
16. Co-Ordinate Measuring Machine	12 months	Calibrate to QCT Calibration Procedure no. 1
17. Shadowgraph (Projector)	12 months	Calibrate to X axis max error = 0.002mm over 15mm. Y axis max error = 0.002mm over 15mm.
18. Dedicated Measurement Systems	See Cards	Calibrate to manufacturers specification
19. Pressure Transducers	12 months	Calibrate to; Pressure applied vs displayed result six increments of scale per manufacturers specification of $\pm 0.1\%$ for DP1280 & $\pm 0.1\%$ for PDCR2111.
20. Load Cell	18 months	Calibrate to; Load vs displayed result throughout range. $\pm 0.5\%$ .
21. Hygrometer	12 months	Calibrate to manufacturers specification.
22. Brass Rule	36 months	Calibrate to; Max deviation between any two measured adjacent graduation lines - Maximum error = Imperial scale 0.00017", Metric scale 0.0052mm.
23. Force Gauge	12 months	Calibrate to; Apply tension 0.5, 1, 5, 10, 20 kg. Result $\pm 0.5\%$ full scale. Apply compression 0.5, 1, 5, 10, 20 kg. Result $\pm 0.5\%$ full scale.
24. Microscope	12 months	Calibrate to procedure CP04
25. Ring Gauge	12 months	Calibrate to BS 969 2008
26. IDP & Transmitter (Avro)	12 months	Calibrate to; Pressure applied vs displayed result six increments of scale per manufacturers specification of $\pm 0.2\%$ full scale.
29. Wireless Thermometer	6 months	Calibrate to; $\pm 0.2^{\circ}\text{C}$ throughout temperature range.
30. Tacometer	12 months	Calibrate to manufacturers specification

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31. Flow Meter	12 months	Calibrate to; Apply flow 400, 300, 200, 150, 100, 80, 60, 40, 20, 10 LPM. Maximum error $\pm$ 1% full scale reading.
32. Scales	12 months	Calibrate to; Load vs displayed result @ zero, 25% load, 50% load, 75% load & full load within 1%.
33. 6000 PSI Pressure Gauge	12 months	Calibrate to BS EN 837-1 1998
34. Welding Equipment	12 months	Calibrate to manufacturers specification.

On completion of calibration, check for calibration status (label) and update calibration record card, file calibration certificate.

Note – If items are calibrated to a BS specification it is permissible to use newer issued versions of the specification.

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RECORD OF ISSUE AND REVISION

Revision Number	Description of Change	Auth. Sig. And Date
0 1 2 3	Refer to Archive History for details of changes	J Sharples
4	Items 22, 24 and 25 added to for sub contract calibration	J Sharples Nov. 98
5	Item 26 added for sub contract calibration	J Sharples Jan 02
6	Items 27 thro 36 added for sub contract calibration	J Sharples Jun 05
7	Messmer Mullen Burst Gauge deleted. Load Gauges was 18 months. Freezer deleted. Items 31 to 40 added. Change name to APPH Limited	D. Holmes August 2015
8	Permissible deviations changed to Acceptance Criteria. Acceptance criteria added to all items. Master Pressure Gauge deleted Torque Meter deleted Length Gauge deleted Surface Finish Setting Piece deleted Weighing Equipment deleted Bore Micrometer deleted Load Gauge deleted Caliper Gauges deleted Vee Blocks deleted Hardness Tester deleted Flow Meter added Scales added 6000 PSI Pressure Gauge added Welding Equipment added Permission to use newer (updated) specifications added	D. Holmes Feb 16