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|------------------------|---|-------------|------------|
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| Discipline             | Mechanical Calibration  | Issue Date  | 06.08.2015 |
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|    | Quantity Measured/<br>Instrument                     | Range / Frequency | *Calibration Measurement<br>Capability (±) | Remarks                       |
|----|--|-------------------|--|-------------------------------|
| I. | DIMENSION  |                   |  |                               |
| 1. | EXTERNAL   |                   |  |                               |
|    | MICROMETER*  | 0 to 25 mm        | 1.2 um                                     | Using O Grada Slin            |
|    | (Analogue/Digital)                                   | 0 to 23 mm        | 1.2 μm                                     | Gauge by Comparison           |
|    |  | 100 mm to 300 mm  | 4.4 μm                                     | Method                        |
| 2. | Depth Micrometer <sup>\$</sup><br>(Analogue/Digital) |                   |  |                               |
|    | LC: 0.01 mm  | 0 to 25 mm        | 6.0 μm                                     | Using 0 Grade Slip            |
|    |  | 25 mm to 150 mm   | 5.9 µm                                     | Gauge by Comparison<br>Method |
| 3. | CALIPER <sup>\$</sup>                                |                   |  |                               |
|    | (Analog/Dial/Digital)                                | 0 4 150           | 0.2  |                               |
|    | LC: $0.01$ mm <sup><math>\psi</math></sup>           | 0 to 150 mm       | 9.2 μm                                     | Using Caliper Checker         |
|    |  | 0 to 600 mm       | 9.7 μm<br>12.0 μm                          | by Comparison Method          |
|    |  | 0 10 000 1111     | 12.0 µm                                    |                               |
| 4. | <b>DEPTH CALIPER <sup>\$</sup></b>                   |                   |  |                               |
|    | (Analog/Dial/Digital)                                |                   |  | Using 0 Grade Slip            |
|    | LC: 0.02 mm  | Up to 300 mm      | 14.2 μm                                    | Gauge by Comparison<br>Method |
| 5. | <b>HEIGHT GAUGE<sup>\$</sup></b>                     |                   |  |                               |
|    | (Analog/Dial/Digital)                                |                   |  |                               |
|    | LC: 0.01 mm <sup>6</sup>                             | 0 to 300 mm       | 8.5 μm                                     | Using Caliper Checker         |
|    |  | 0 to 600 mm       | 9.5 μm                                     | by Comparison Method          |

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|     | Quantity Measured/<br>Instrument   | Range / Frequency | *Calibration Measurement<br>Capability (±) | Remarks  |
|-----|--|-------------------|--|--|
| 6.  | DIAL GAUGE <sup>\$</sup><br>(Plunger Type)<br>Analog/Digital<br>LC: 0.001 mm | Up to 25 mm       | 2.9 µm                                     | Using Dial Gauge<br>Calibrator by<br>Comparison Method |
| 7.  | DIAL GAUGE <sup>\$</sup><br>(Lever Type)<br>Analog/Digital                   |                   |  |  |
|     | LC: 0.001 mm   | Up to 0.14 mm     | 2.8 µm                                     | Using Dial Gauge                                       |
|     | LC: 0.002 mm   | Up to 0.2 mm      | 3.0 µm                                     | Comparison Method                                      |
|     | LC: 0.01 mm  | Up to 1.6 mm      | 6.4 µm                                     |  |
| 8.  | BORE DIAL GAUGE <sup>\$</sup><br>(Transmission Only )                        | Up to 1 mm        | 1.4 µm                                     | Using Dial Gauge<br>Calibrator by<br>Comparison Method |
| 9.  | GROOVE DIAL<br>GAUGE <sup>\$</sup>   |                   |  | Using Course Diask /                                   |
|     | (Internal)<br>LC: 0.01 mm  | 10 mm to 100 mm   | 7.6 µm                                     | Caliper Checker by                                     |
|     | LC: 0.025 mm   | 10 mm to 120 mm   | 38.0 µm                                    | Comparison Method                                      |
| 10. | DIAL THICKNESS<br>GAUGE <sup>\$</sup><br>LC: 0.01 mm                         | 0 to 30 mm        | 5.8 µm                                     | Using Gauge Blocks by<br>Comparison Method             |

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|     | Quantity Measured/<br>Instrument                                       | Range / Frequency                                 | *Calibration Measurement<br>Capability (±)        | Remarks  |
|-----|--|---|---|--|
| 11. | PISTOL CALIPER <sup>\$</sup><br>LC: 0.1 mm                             | 0 to 100 mm                                       | 70.0 µm   | Using Gauge Blocks by<br>Comparison Method                                 |
| 12. | SNAP GAUGE/GAP<br>GAUGE <sup>\$</sup>                                  | 0 to 50 mm<br>50 mm to 100 mm<br>100 mm to 300 mm | 2.7 μm<br>4.8 μm<br>5.3 μm                        | Using Gauge Blocks by<br>Comparison Method                                 |
| 13. | FEELER GAUGE <sup>\$</sup>   | Up to 1.0 mm                                      | 2.2 μm  | Using Digital<br>Micrometer by<br>Comparison Method                        |
| 14. | FORD CUP <sup>\$</sup><br>(Orifice Diameter )                          | Dia Up to 6 mm                                    | 11.1 μm   | Using Vernier Caliper<br>by Comparison Method                              |
| 15. | ELECTRONIC<br>HEIGHT GAUGE*<br>( Dial/ Digital )<br>LC:0.001 mm        | Upto 300 mm<br>Upto 600 mm                        | 6.0 μm<br>6.7 μm                                  | Using Caliper Checker<br>by Comparison Method                              |
| 16. | PROFILE<br>PROJECTOR/<br>VIDEO MEASURING<br>MACHINE*                   | 0 to 300 mm<br>0 to 360°                          | 2.6 μm<br>42 min. of arc                          | Using Linear Glass<br>Scale & Angular<br>Graticule by<br>Comparison Method |
| 17. | BENCH CENTRE <sup>*</sup><br>(Parallelism & Co-<br>Axiality Of Centre) | 0 to 300 mm                                       | 3.3 µm  | Using Mandrel / Dial<br>Indicator by<br>Comparison Method                  |
| 18. | GRANITE/ CAST IRON<br>SURFACE PLATE*                                   | 2000 mm * 1000 mm                                 | 3.5 x $\sqrt{\frac{L+W}{150}}$ µm,<br>(L&W in mm) | Using Spirit level by<br>Comparison Method                                 |

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|            | Quantity Measured/<br>Instrument                                      | Range / Frequency     | *Calibration Measurement<br>Capability (±) | Remarks   |
|------------|---|-----------------------|--|---|
| II.        | PRESSURE & VACUUN   | И                     |  |   |
| 1.         | PRESSURE <sup>#</sup><br>(Pneumatic Gauge)                            | 0 to 25 bar           | 0.18 bar                                   | Using Pressure<br>Calibrator by<br>Comparison Method<br>based on DKD R-6-1            |
| 2.         | PRESSURE GAUGE /<br>TRANSMITTER <sup>#</sup><br>(Hydraulic)           | 0 to 700 bar          | 0.29 bar                                   | Using Pressure<br>Calibrator by<br>Comparison Method<br>based on DKD R-6-1            |
| 3.<br>III. | VACUUM GAUGE <sup>#</sup>   | -0.9 bar to 0 bar     | 0.18 bar                                   | Using Pressure<br>Calibrator by<br>Comparison Method<br>based on DKD R6-2<br>(Part 1) |
| 1.         | SOUND LEVEL<br>METERS AND<br>SOUND LEVEL<br>CALIBRATORS <sup>\$</sup> | 94 dB & 114 dB @ 1kHz | 0.56 dB                                    | Using Sound level<br>Calibrators & Meters as<br>per<br>OIML R- 58                     |

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| Range / Frequency                 | *Calibration Measurement<br>Capability (±)             | Remarks   |
|-----------------------------------|--|---|
| AND SPEED<br>100 RPM to 90000 RPM | 1.56% rdg to 0.03% rdg                                 | Using Tachometer by comparison method   |
|                                   | Range / Frequency<br>AND SPEED<br>100 RPM to 90000 RPM | Range / Frequency *Calibration Measurement<br>Capability (±)   AND SPEED 100 RPM to 90000 RPM   100 RPM to 90000 RPM 1.56% rdg to 0.03% rdg |

\* Measurement Capability is expressed as an uncertainty ( $\pm$ ) at a confidence probability of 95%

<sup>\$</sup>Only in Permanent Laboratory

\*Only for Site Calibration

<sup>#</sup> The laboratory is also capable for site calibration however, the uncertainty at site depends on the prevailing actual environmental conditions and master equipment used.

<sup>¢</sup>Laboratory can also calibrate instruments/devices of coarser resolution / least count within the accredited range using same reference standard/ master equipment under the scope of accreditation.

| Neeraj | Verma |
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