APLAC INTERLABORATORY COMPARISON

PROFICIENCY TESTING PROGRAM

APM 024

Calibration of Plain Plug Gauges

MEASUREMENT INSTRUCTIONS TO

LABORATORIES

A. INSTRUCTIONS TO LABORATORIES
for Circulation Group: C-1

1. EQUIPMENT

Equipment and Accessory Description:

Group	Content	Serial No.	Nominal Diameter	Material	Manufacturer
C-1	Plain Plug Gauges	S-62/1	5 mm	Steel (EN31)	YPG, UK
		S-62/2	15 mm		
		S-62/3	40 mm		
		S-62/4	100 mm		
	Wooden Inner Box	S-62	-	Wood	YPG, UK
	Portable Transit Case	-	-	Aluminum	Daedo, Korea
	Material property of Plain Plug Gauges : Coefficient of Thermal expansion: 11.6×10^{-6} /K Modulus of Elasticity : 206 000 N/mm^2				

On receipt, unpack the artefacts and inspect them for any defects. Make sure to sketch surface condition of all the artefacts on the "*Surface Condition Report of Gauges*". Contact your accreditation body if there is any damage. Send "*Surface Condition Report of Gauges*" by fax and/or e-mail right away to your accreditation body.

2. MEASUREMENTS TO BE CARRIED OUT

The measurement items of interest are two diametrical distances between the nominal gauge points, defined as mid-elevation along the gauge cylinder and in the diameter direction specified by the engraved marks on the gauge (X-X' and Y-Y'. See Fig. 1).

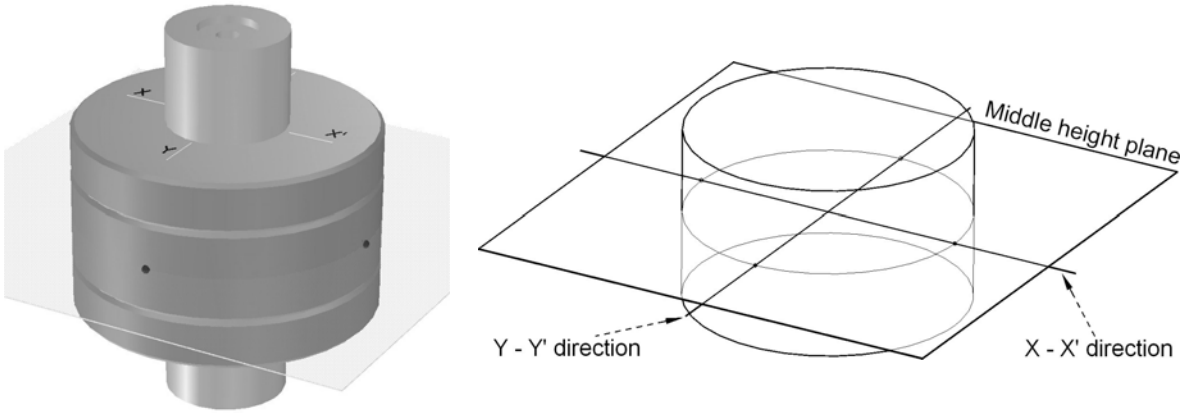

Fig. 1 Diameter measurement positions

The measurement values must be appropriately corrected to the reference temperature of 20 °C using the thermal expansion coefficient given in this document. Additional corrections, if any, have to be applied according to the equipment and procedures used by each laboratory. And measurement

uncertainty (*U*) shall be reported by using expanded measurement uncertainty. Coverage factor shall be a value which defines an interval having a level of confidence of approximately 95 %.

After the measurements, the artifacts must be cleaned, greased, and carefully re-packaged in the original container.

3. DOCUMENTS TO BE SUBMITTED

Within one week of the completion of the measurements, participating laboratories are required to send the attached "*Results Sheet*", "*Surface condition report of Gauges*", and their calibration report to their accreditation body. No other documents are required. Laboratories should make a copy of the *Results Sheet* for their own records.

Where possible, uncertainties should be calculated using the method in the ISO *Guide to the Expression of Uncertainty in Measurement.*

4. GENERAL INFORMATION

For general queries, please contact your accreditation body.

Additional information may be obtained from the program coordinator below:

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Fax No.: +82 31 500 0244
E-mail: pt@ktl.re.kr

B. SURFACE CONDITION REPORT OF GAUGES

Date:

Name of participant:

Circulation group:

Name of responsible person:

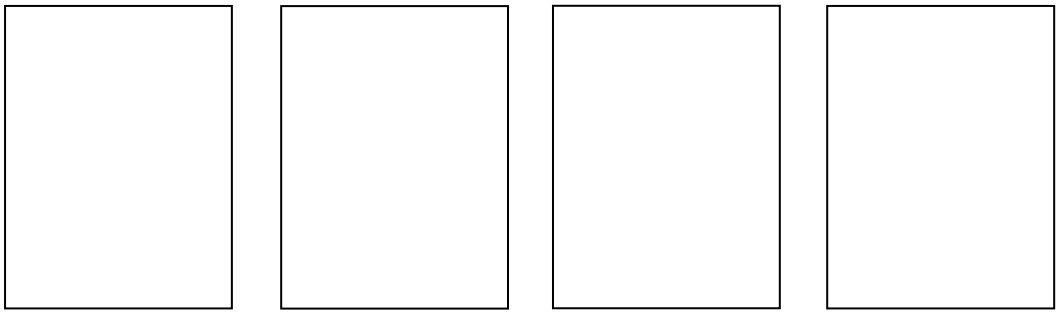
Name of accreditation body:

Please mark: □ on receipt □ after mesurement

Plain Plug Gauges of nominal diameter 5 mm:

S/N: _____ Please sketch the damage (such as scratches or rusts) and describe it in detail.

< X > < X' > < Y > < Y' >



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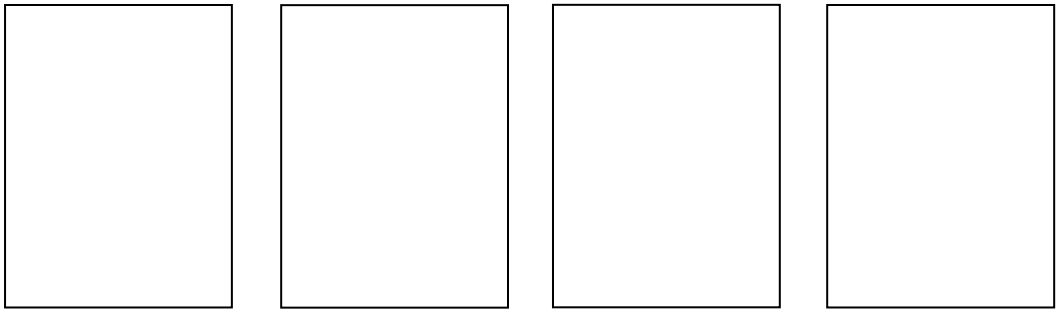
Plain Plug Gauges of nominal diameter 15 mm:

S/N: _____ Please sketch the damage (such as scratches or rusts) and describe it in detail.

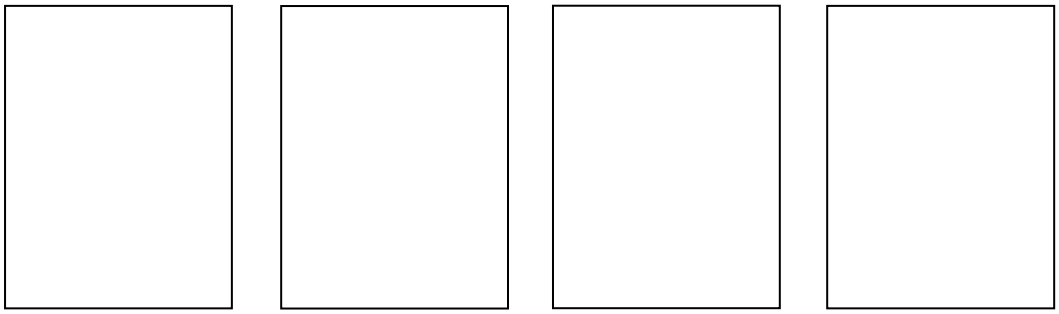
< X > < X' > < Y > < Y' >



Plain Plug Gauges of nominal diameter 40 mm:

S/N: _____ Please sketch the damage (such as scratches or rusts) and describe it in detail.

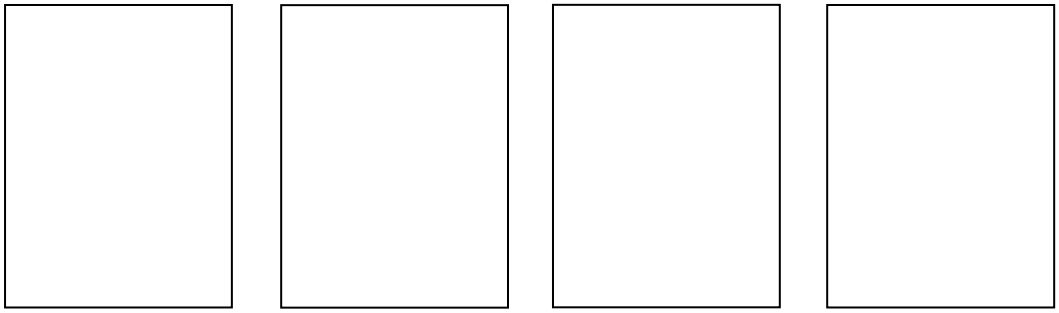
< X > < X' > < Y > < Y' >



Plain Plug Gauges of nominal diameter 100 mm:

S/N: _____ Please sketch the damage (such as scratches or rusts) and describe it in detail.

< X > < X' > < Y > < Y' >



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NOTE: Photograph may be helpful to describe damages well.

C. RESULTS SHEET

Name of participant: _____

Circulation group: _____

Date of measurement: _____

Environment: 1. Temperature _____ 2. Humidity _____

Reference standard (type, S/N, material): _____

_____

_____

Name of accreditation body: _____

Results:

Nominal diameter (mm)	Gauge S/N	Diameter (mm)		Measurement uncertainty *U* (µm)	Coverage factor *k*	Remarks
		X – X'	Y – Y'			
5						
15						
40						
100						

NOTE:

1. Diameter must be reported as a value at the reference temperature of $t_o = 20$ °C
2. Measurement uncertainty (*U*) shall be reported by using expanded uncertainty.
3. Coverage factor shall be a value which defines an interval having a level of confidence of approximately 95 %.
4. Thermal expansion coefficient: $(11.6 \pm 1.0) \times 10^{-6}$ /K (Level of confidence: approximately 95 %)
   Modulus of elasticity: 206 000 N/mm^2.
5. Use SI unit only.

Signature of responsible person: _____

Date: _____ / _____ / _____

dd mm yyyy