Experiment 3

AIM: To study bore gauge diameter with bore gauge.

APPARATUS: Work piece, Vernier caliper and bore gauge indicator set with anvil.

Theory:

Bore gauge indicator:

These are the instruments designed for checking bore diameter by the comparative method. The instruments principle of operation is shown in figure. The instrument basically consists of a hallow tube into which is contained a lever pivoted about one end of the lever is linked to the movable contact of the instrument i.e. the instrument has three contacts. Equally spaced along the circumference of the head. One being movable above and two fixed ones and other end of the lever actuates the pointer. The three contacts bears against the internal surface of the rest and properly the instrument in relation to the axis of the bore being checked. The contacts are interchangeable with roads in order to broaden the range of measurement, the smallest size. This instrument can check in the order of 11-18 cm in diameter. The range of setting in about ± 0.06 to ± 0.22 cm with scale division value of 0.002 and 0.01 respectively.
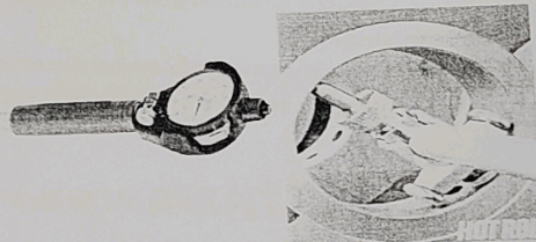

Figure: Bore Gauge

PROCEDURE:

1. First of all take the work piece where internal diameter is to be calculated.

2. Now take the Vernier calipers and place the knife edges inside the work piece and read the reading for internal diameter of work piece.

3   See the reading that is obtained from micrometer. If the reading is say 34.8 mm then take the anvil of size 34 mm and washers of size 0.5 mm and fit it to the body of the gauge.

4   Now set the dial gauge indicator for zero position and then make readings at any position inside the work piece. This should be done carefully as the anvil movable screw will wear in rough handling of the gauge.

5   The above step is repeated for different positions inside the work piece.

6   Now set micrometer and keep the micrometer to dial gauge indicator and note down the reading.

7   Now calculate the internal diameter using given formulae

Actual size = anvil length + washer length $\pm$ (R1 R2) x m.

R1= reading obtained in dial gauge when the same dial gauge kept in micrometer.

R2= reading obtained from the work piece.

OBSERVATIONS:

Rough measurement of bore using A — type Vernier calipers:

S. No.	Reading at point 1	Reading at point 2	Mean
1.			
2.			
3.			
4.			
5.			

Average reading = _____ mm

RESULT:

Internal diameter of the work piece by using Vernier caliper is _____ mm

Diameter obtained by using dial gauge indicator is _____ mm

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Questions:

1) What are the precautions required during use of dial Bore gauge?

2) Which one is more precise when compared to inside micrometre & dial bore gauge?

3) What are the applications of inside dial bore gauge?

4) How do you find the taper of bore?

5) What are the other instruments for measuring bores?

6) What are the types of bore gauge?

7) Why we call the dial bore indicator as a gauge?