

Dimensional control for mechanical parts: boring

Objective

Measure bore diameters and shape defects (out-of-roundness, conical shape) instantly and reliably using an easy-to-use tool that can be operated by non-dedicated operators.

Main components

- Solex pneumatic micro-measurers
- Specific gauge
- Depending on the case, a system **with** or **without** assembly

Advantages

Solex pneumatic micro-measurers, which use a gauge specific to the part being measured, are either used to present the part on an assembly with a fixed gauge, or to bring the gauge onto the part.

The advantages of the pneumatic method are determining when there are low tolerances on the boring to be checked (less than 100 μm).

Application

There are a large number of applications, since all types of borings to be checked can be envisaged, examples are:

- Inner diameters of bearing rings (part d on figure 1), that are used to fix to a fixed or rotating shaft
- Gearbox gears (figure 2), that must also respect precise tolerances

The contactless measurement used uses a constant pressure air flow through the holes in the gauge. When there are size variations in the checked boring, the air flow varies, causing pressure changes that are detected by the flow meter.

A gauge specific to this application is shown in figure 3.

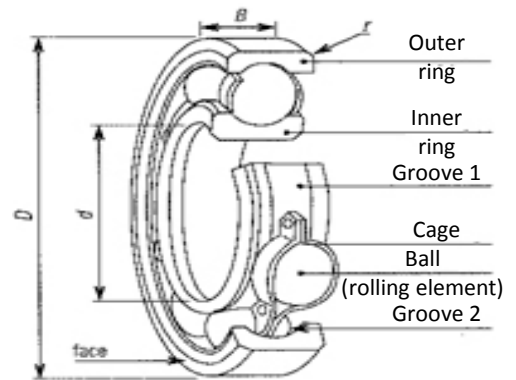


Figure 1 – Ball bearing

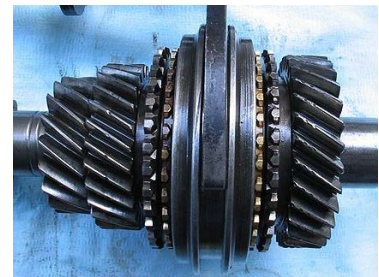


Figure 2 – Gears in a gearbox on their shaft
(source: Wikipedia)

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Options & Developments

There is also a NEW electronic version of SOLEX micro-measurers making it possible to save and store measurement data, thus allowing statistical processing for advanced production performance analysis.

A large number of gauges designed to determine internal or external sizes and shape defects (perpendicularity, straightness, out-of-roundness, etc.) are available.

Contact based size check solutions, or combined solutions, are available, please don't hesitate to contact us for more information.

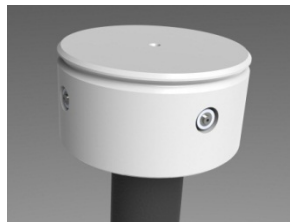


Figure 3 – Diagram of a specific nozzle plug for this application

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|-----------------------|--|
| Nozzle specifics | Size depending on the diameter to be measured, fixed on a support or mobile. |
| Measurement range | 15 μm to 200 μm according to the request |
| Accuracy | 0.1 to 2 μm according to the measurement range |
| Reading | On SOLEX graduated rule |
| Instrument dimensions | Pneumatic: 730 / 112 / 96 mm – Pneumatic-electronic: 330 / 185 / 95 mm |