Range of Applications
In Quality Assurance

Metrology and production control

Incremental length gauges from HEIDENHAIN play a role in incoming goods inspection, fast dimension checking during production, statistical process control in production or quality assurance, or in any application where fast, reliable and accurate length measurement is required. Their large measuring lengths are a particular advantage: whether the part measures 5 mm or 95 mm, it is measured immediately with one and the same length gauge.

Whatever the application, HEIDENHAIN has the appropriate length gauge for the required accuracy. The **HEIDENHAIN-CERTO** length gauges offer a very high accuracy of ± 0.1 µm/± 0.05 µm*/± 0.03 µm* for extremely precise measurement. Length gauges from the **HEIDENHAIN-METRO** program have accuracy grades as fine as ± 0.2 µm, while the **HEIDENHAIN-SPECTO** length gauges, with ± 1 µm accuracy, offer particularly compact dimensions.

* After linear length-error compensation in the evaluation electronics

Thickness gauging of silicon wafers

Gauge block calibration and measuring device inspection

The usual inspection of measuring equipment called for by standards, and the inspection of gauge blocks in particular, necessitate a large number of reference standard blocks if the comparative measurement is performed using inductive length gauges. The problem is the small measuring range of inductive gauges: they can measure length differences of only up to 10 µm. Incremental length gauges, which offer large measuring ranges together with high accuracy, greatly simplify the calibration of measuring devices required to ensure traceability.

The length gauges of the **HEIDENHAIN-CERTO** program with measuring ranges of 25 mm with ± 0.1 µm/± 0.03 µm* accuracy and 60 mm with ± 0.1 µm/± 0.05 µm* accuracy are especially well suited for this task. It permits a significant reduction in the required number of reference standard blocks, and recalibrating becomes much simpler.

Inspection of styli

Calibration of gauge blocks

In Production

Multipoint inspection apparatuses

Multipoint inspection devices require durable length gauges with small dimensions. They should also have relatively large measuring ranges of several millimeters with consistent linear accuracy in order to simplify the construction of inspection devices—for example by enabling the construction of one device for several masters. A large measuring length also provides benefits in master production, because simpler masters can be used.

Thanks to their small dimensions, the **ACANTO** absolute length gauge, like the **HEIDENHAIN-SPECTO** incremental length gauge, are specially designed for multi-point measuring stations. The feature accuracy grades up to ± 1 µm over measuring ranges up to 30 mm. Higher accuracy requirements up to ± 0.2 µm can be met with similarly compact **HEIDENHAIN-METRO** length gauges.

Unlike inductive gauges, HEIDENHAIN-SPECTO length gauges provide stable measurement over long periods—eliminating recalibration.

Testing station for flatness inspection

Position measurement

Incremental length gauges from HEIDENHAIN are also ideal for position measurement on precision linear slides or X-Y tables. Working with measuring microscopes, for example, becomes much easier thanks to the digital readout and the flexible datum setting.
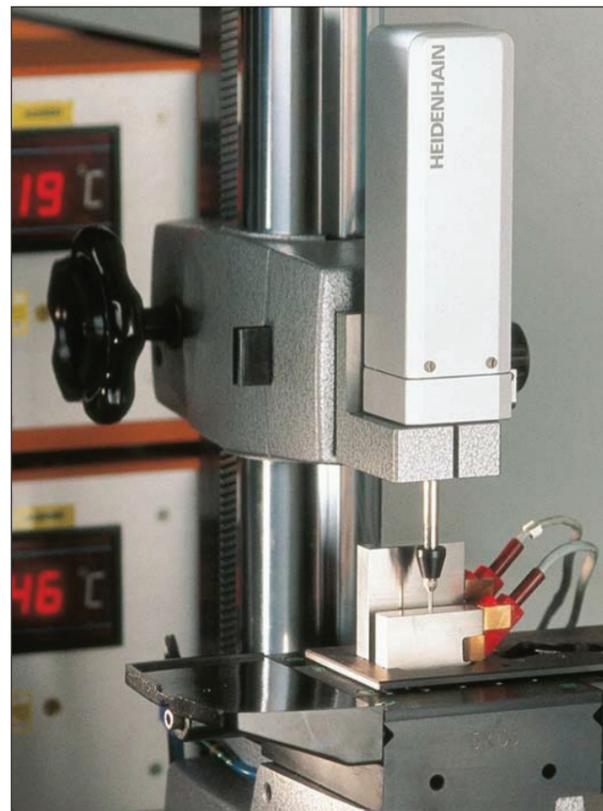
Here, length gauges from the **HEIDENHAIN-METRO** and **HEIDENHAIN-SPECTO** program come into use with large measuring ranges of 30 mm, 60 mm or 100 mm at consistently high accuracy grades of ± 0.5 µm or ± 1 µm.

In this application as linear measuring device, the length gauge's fast installation in accordance with the Abbe measuring principle by its clamping shank or planar mounting surface is of special benefit.
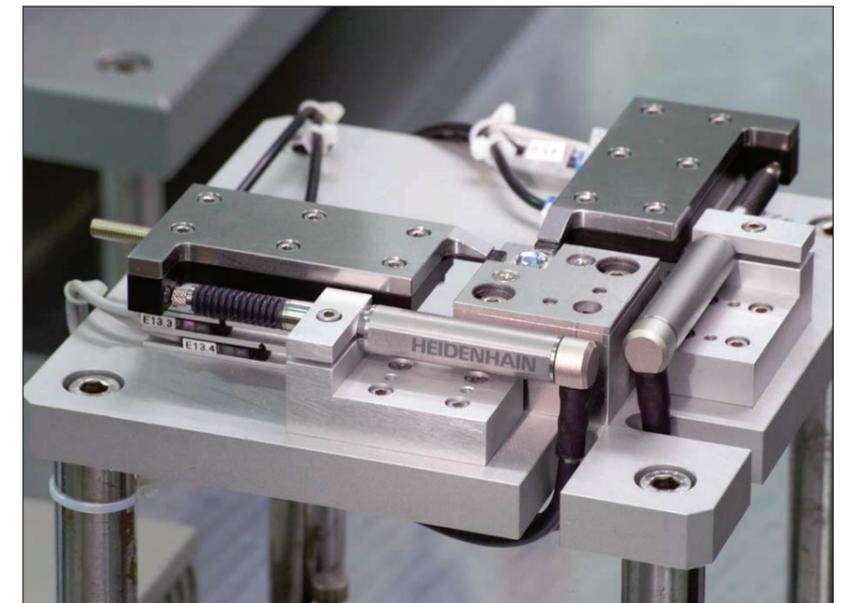

Position measurement on an X-Y table for lens mounting

Tolerance gauging of semifinished products