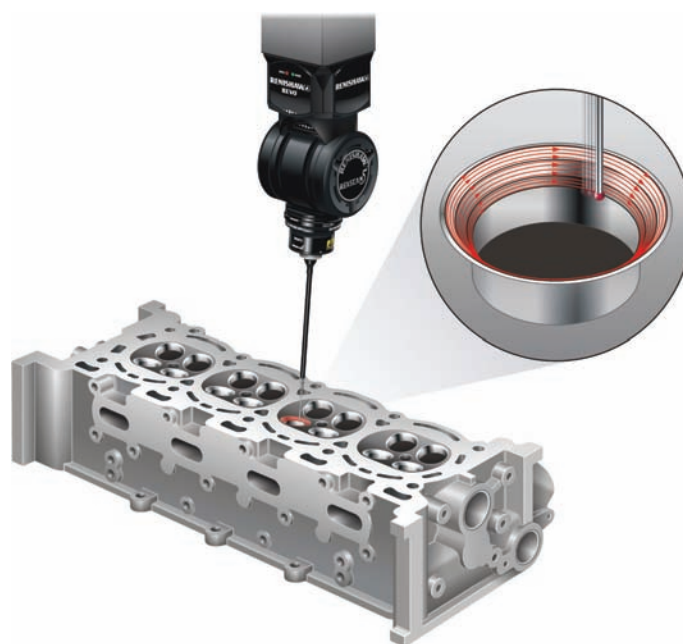


# Fast measurement and analysis of valve seats and guides

## REVO® valve seat and guide measurement and analysis

The measurement of valve seat and guides has traditionally been very challenging, involving time-consuming methods that are often a compromise and not capable for the task.

REVO and Renishaw's Renscan5™ technology change this situation dramatically, making it possible to collect large amounts of data very quickly, from which the analysis parameters for both the valve seat and the valve guide features can be calculated. The method performs exceptionally well in repeatability and reproducibility tests.



Adaptive scanning



Helical scan

**Data collection process takes  
approximately 20 seconds!**

## Data collection

### Helical scans

The measurement process involves two helical scans, one on the valve guide bore and the second over the valve seat area.

On the guide a single helical scan is used with a typical pitch of 0.5 mm, at a scanning speed of 150 mm/s.

### Adaptive scanning

This valve seat scan utilises REVO's adaptive scanning capability, which allows a single scan command to cover the areas above and below the critical valve seat surfaces.

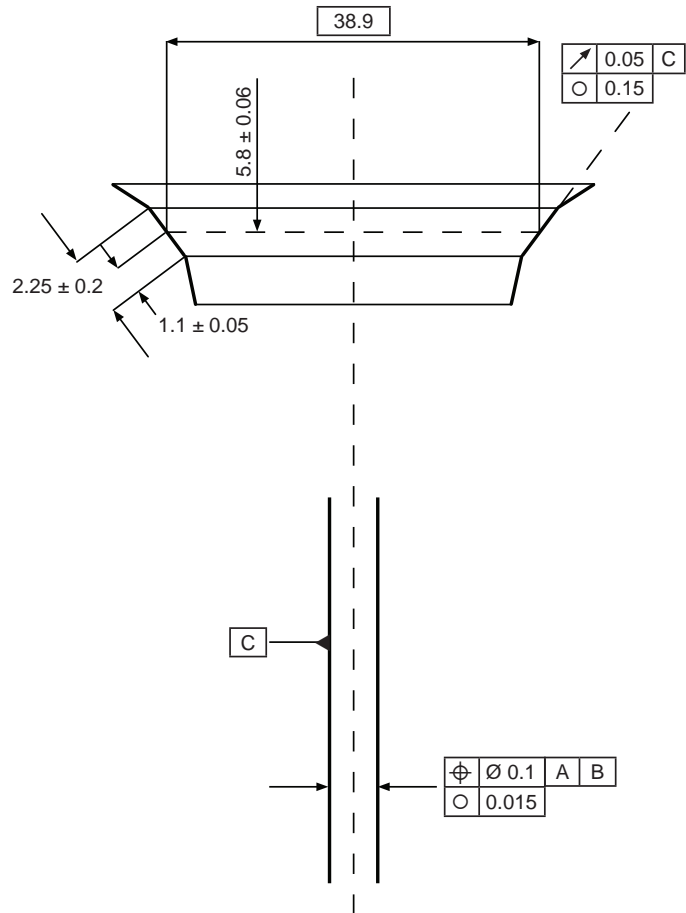
On the valve seat a single helical scan is also used, with a typical pitch of 0.1 mm, at a scanning speed of 500 mm/s.

## Data evaluation

The valve seat and guide analysis utility that is embedded in Renishaw's MODUS™ metrology software is utilised to evaluate the scan data and return the attributes listed below (note that this analysis facility is also provided by Renishaw to other metrology software providers that support the REVO® system).

The analysis provides the following attributes from the two scan data sets:

- form error of the valve seat
- circularity profile of the seat at any specified height
- valve seat width
- runout of the seat to the guide bore axis
- diameter of the guide
- straightness of the guide cylinder.
- cylindricity of the guide
- circularity profile of the guide cylinder at any specified height
- form errors of the cones, above and below the valve seat cone



Part attributes



## Conclusion

These figures show that the REVO process for valve seat measurement (and subsequent analysis) provides a rapid method of measuring this critical feature.

The complete process of measurement and evaluation typically takes just 20 seconds allowing comprehensive inspection of cylinder heads in just a few minutes.

To find out more information and request a free benchmark of one of your parts, please contact your local Renishaw office.

**For worldwide contact details, please visit our main website at [www.renishaw.com/contact](http://www.renishaw.com/contact)**

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