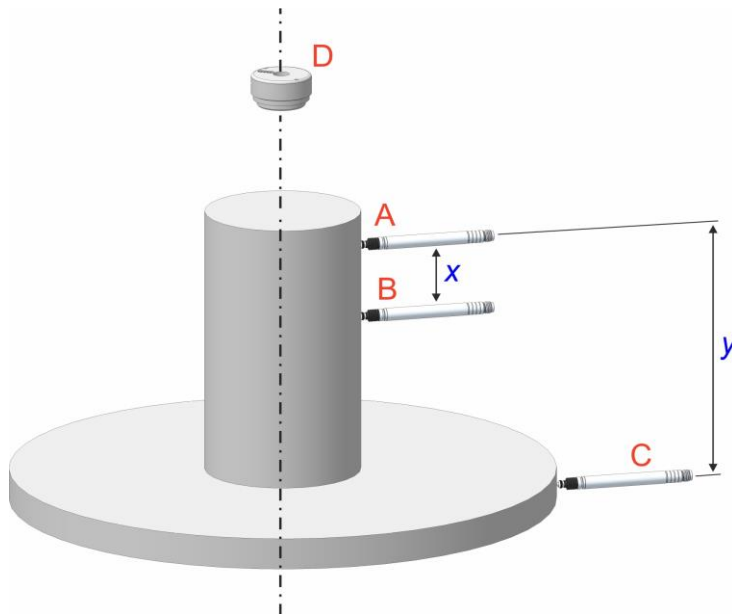


1. Introduction

The ComGage special measuring mode *Measurement of radial runout to cylinder axis* allows the measurement of a radial runout in relation to a calculated cylinder axis.



For this, the measuring mode calculates the cylinder axis of the measured part from the measuring values of the probes **A** and **B** during one complete rotation.

With the values of the rotary encoder **D**, it can be determined at any time in which direction the cylinder axis is tilted.

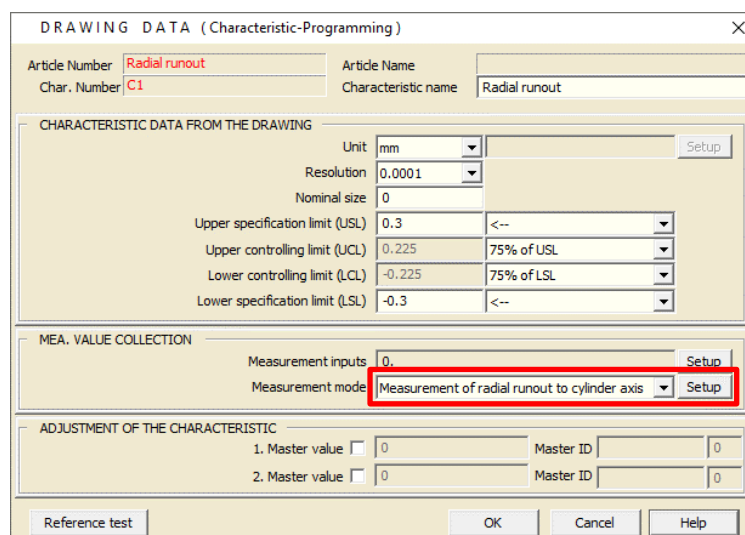
After the end of the measurement, the measuring values of probe **C** are compensated in relation to the calculated cylinder axis and the radial runout is determined from these compensated measuring values.

Important notes :

- This special measuring mode requires the software license Module 72.
- All characteristics used for recording the measuring values of the probes have to be calibrated with a master or a reference part.

2. Configuration

The special measuring mode has to be selected in the drawing data of the related characteristic :



DRAWING DATA (Characteristic-Programming)

Article Number: Radial runout
Char. Number: C1
Article Name: Radial runout
Characteristic name: Radial runout

CHARACTERISTIC DATA FROM THE DRAWING

Unit: mm
Resolution: 0.0001
Nominal size: 0
Upper specification limit (USL): 0.3
Upper controlling limit (UCL): 0.225
Lower controlling limit (LCL): -0.225
Lower specification limit (LSL): -0.3

MEA. VALUE COLLECTION

Measurement inputs: 0
Measurement mode: Measurement of radial runout to cylinder axis

ADJUSTMENT OF THE CHARACTERISTIC

1. Master value: 0
2. Master value: 0

Reference test

OK Cancel Help



The settings for the “Measurement inputs” are ignored. But because of performance reasons, we recommend the use of a constant, e.g. 0.

The special measuring mode can be configured in the following dialogue by clicking the Setup button :

Output value

Here can be selected which value shall be calculated as measurement result :

- **X-coordinate of the centre point of bearing seat 1**
The x-coordinate of the centre point which was calculated from the measuring values of probe A is output as measurement result.
- **Y-coordinate of the centre point of bearing seat 1**
The y-coordinate of the centre point which was calculated from the measuring values of probe A is output as measurement result.
- **X-coordinate of the centre point of bearing seat 2**
The x-coordinate of the centre point which was calculated from the measuring values of probe B is output as measurement result.
- **Y-coordinate of the centre point of bearing seat 2**
The y-coordinate of the centre point which was calculated from the measuring values of probe B is output as measurement result.
- **X-coordinate of the centre point of the bearing surface**
The x-coordinate of the centre point of the bearing surface is calculated from the centre points of bearing seat 1 and 2 by using the intercept theorem and output as measurement result.
- **Y-coordinate of the centre point of the bearing surface**
The y-coordinate of the centre point of the bearing surface is calculated from the centre points of bearing seat 1 and 2 by using the intercept theorem and output as measurement result.
- **Minimum of the bearing surface**
The minimum distance of the bearing surface to the calculated cylinder axis is output as measurement result.



- **Maximum of the bearing surface**
The maximum distance of the bearing surface to the calculated cylinder axis is output as measurement result.
- **Radial runout to cylinder axis**
The radial runout in relation to the calculated cylinder axis is output as measurement result.
- **Average of the bearing surface**
The average distance of the bearing surface to the calculated cylinder axis is output as measurement result.

Characteristic with probe values of bearing seat 1

Here the characteristic containing the values of the probe farthest away from the probe at the bearing surface (**A**) has to be selected. The measuring direction of the characteristic has to be configured in such a way that the measuring value increases when the tip of the probe is pushed in.

Characteristic with probe values of bearing seat 2

Here the characteristic containing the values of the probe nearest to the probe at the bearing surface (**B**) has to be selected. The measuring direction of the characteristic has to be configured in such a way that the measuring value increases when the tip of the probe is pushed in.

Characteristic with probe values at the bearing surface

Here the characteristic containing the values of the probe at the bearing surface (**C**) has to be selected. The measuring direction of the characteristic has to be configured in such a way that the measuring value increases when the tip of the probe is pushed in.

Distance between bearing seat 1 and bearing seat 2 (in x direction)

The distance between the probes **A** and **B** has to be entered in the same unit (e.g. mm) which is used in the related characteristics.

Distance between bearing seat 1 and bearing surface (in x direction)

The distance between probe **A** and the plane surface has to be entered in the same unit (e.g. mm) which is used in the related characteristics.

Characteristic with rotary encoder values

Here the characteristic containing the values of the rotary encoder (**D**) has to be selected. The measuring values have to run from 0 ... 360° during one rotation.

Save data for analysis in “wgl008.xls”

If this option is activated, the characteristic values used for the calculations can be saved in the file wgl008.xls. This allows to check the calculations and to search for the cause of problems which might have occurred.



3. Procedure for determining the radial runout

All characteristics containing the measuring values of the probes have to be calibrated with a master or a reference part.

Sequence in the test step to perform the measurement

- Perform a dynamic measurement of the characteristic
- Save the measuring value of the characteristic

Example (C1 = characteristic with measurement mode “Measurement of radial runout to cylinder axis”) :

| | | | | |
|------------------------------|-----|-----|-----|---|
| Dynamic measurement on : C1 | --- | --- | --- | Test Step Start |
| Dynamic measurement off : C1 | --- | --- | --- | Formula : C5>X (C5 = rotary encoder) → X depends on the resolution of the rotary encoder |
| Save measured values : C1 | --- | --- | --- | Characteristic 1 --> dyn. measuring stopped |
| Change to next test step | --- | --- | --- | Characteristic 1 --> dyn. measuring stopped |