

Measurement System Analysis (MSA)

Sample document with complete example values. It shows the report the purchased export produces for YOUR input - it is not itself a report for any part.

Project: Sample project

Part/Position: no real part

Prepared by: Sample, not released

Method 1 - gauge capability against the reference standard (Cg/Cgk)

Method 1 - gauge capability (Cg/Cgk against reference standard) per AIAG MSA / VDA 5. Overall verdict: capable.

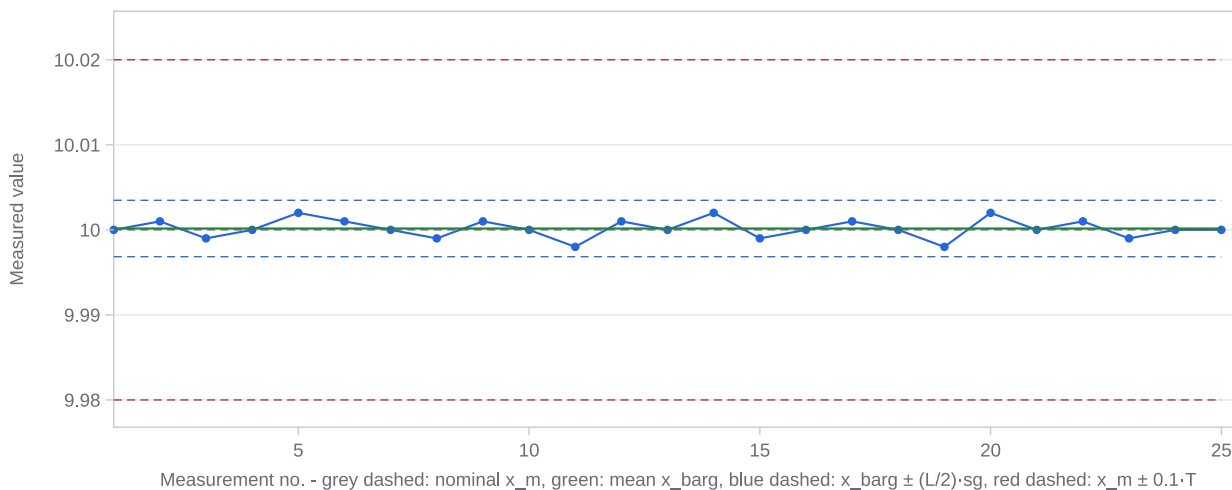
Characteristic values

Number of repeat measurements n	25
Mean $\bar{x}$	10.00016
Repeatability standard deviation sg	0.00111
Systematic deviation (bias)	0.00016
Cg (spread)	6.03
Cgk (spread + bias)	5.98
%RE (resolution)	0.5 %
Bias t-value	0.72
Critical t ($1-\alpha/2$, $n-1$)	2.06
Tolerance T	0.2
Reference spread L	6
Tolerance fraction p	0.2

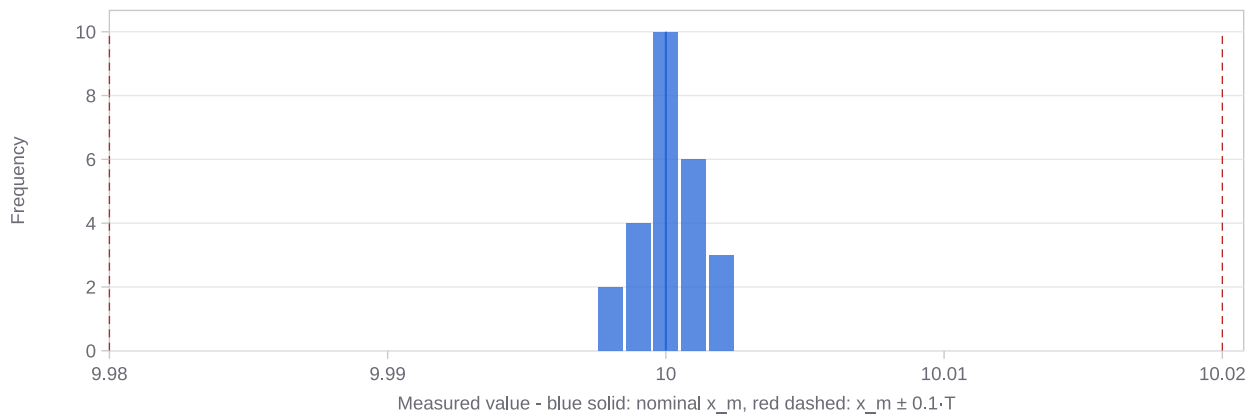
Assessment

Criterion	Value	Limit	Status
$Cg \geq 1.33$	6.03	1.33	● OK
$Cgk \geq 1.33$	5.98	1.33	● OK
$\%RE \leq 5 \%$	0.5 %	5 %	● OK

Run chart of individual values



Histogram of individual values



Measured values (raw data)

No.	1	2	3	4	5
1-5	10.000	10.001	9.999	10.000	10.002
6-10	10.001	10.000	9.999	10.001	10.000
11-15	9.998	10.001	10.000	10.002	9.999
16-20	10.000	10.001	10.000	9.998	10.002
21-25	10.000	10.001	9.999	10.000	10.000

Calculation basis

Method 1 assesses repeat measurements of a calibrated reference standard against a tolerance fraction p . $C_g = (p \cdot T) / (L \cdot s_g)$ captures the pure repeatability spread, $C_{gk} = ((p/2) \cdot T - |Bias|) / ((L/2) \cdot s_g)$ additionally captures the systematic deviation $Bias = \bar{x}_{barg} - \bar{x}_m$. $\%RE = RE/T \cdot 100$ checks the resolution, a two-sided t-test checks the significance of the bias. Capable from $C_g \geq 1.33$ and $C_{gk} \geq 1.33$ with $\%RE \leq 5\%$.

About this sample

All values on these pages come from a freely chosen example calculation and belong to no real part. The purchased export contains the same sections with your input, your header data (project, part, prepared by) and as searchable text. Pricing and scope: maschinenbaurechner.de/en/pricing

Note: The results are design and orientation aids. They do not replace independent verification, calculation and approval by a qualified person. The terms of use at maschinenbaurechner.de apply.