Position Tolerance Evaluation

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

4 measurement point(s) - overall verdict OK

Inputs

Position tolerance t	0.3000 mm (Ø)
Material condition	Maximum material condition (M) (MMC)
Feature type	Hole (internal feature)
Minimum size LSL	6.0000 mm
Maximum size USL	6.1000 mm

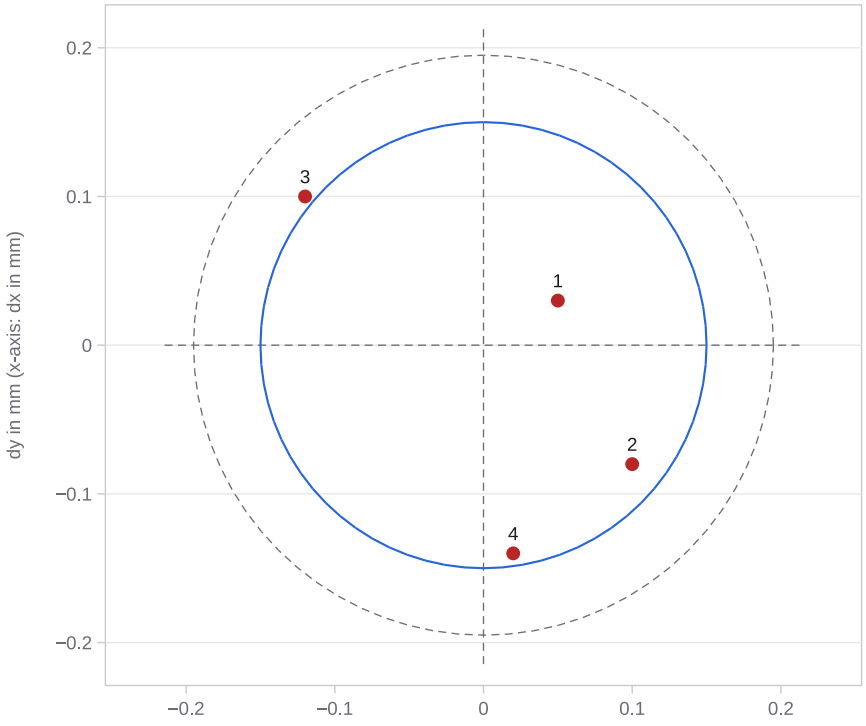
Measurement points (* = highest utilization)

Point	dx in mm	dy in mm	Actual size in mm	d in mm	Bonus in mm	T_tot in mm	Utilization	Verdict
1	0.0500	0.0300	6.0200	0.1166	0.0200	0.3200	36.4 %	OK
2	0.1000	−0.0800	6.0800	0.2561	0.0800	0.3800	67.4 %	OK
3 *	−0.1200	0.1000	6.0300	0.3124	0.0300	0.3300	94.7 %	OK
4	0.0200	−0.1400	6.0900	0.2828	0.0900	0.3900	72.5 %	OK

Assessment d ≤ T_tot per point

Criterion	Value	Limit	Status
Point 1	0.1166 mm	0.3200 mm	● OK
Point 2	0.2561 mm	0.3800 mm	● OK
Point 3	0.3124 mm	0.3300 mm	● OK
Point 4	0.2828 mm	0.3900 mm	● OK

Tolerance zone and actual positions



Circle: zone Ø t, dashed circle: largest available zone Ø T_tot, numbered points: actual positions of the measurement points

Notes

Note: if (M) additionally follows a datum letter, the whole pattern may shift relative to the datum. This datum shift must not be added as a per-point bonus and is not considered here.

Calculation basis

Position tolerance per ISO 1101: the tolerance zone is a cylinder of diameter t around the theoretically exact true position. The coordinate deviations give the radial distance of the actual location; the diameter-related position deviation is twice that value: $d = 2 \cdot \sqrt{(dx^2 + dy^2)}$. A point passes when d is less than or equal to the available tolerance T_{tot}.

Bonus tolerance per ISO 2692: at maximum material condition (M), the distance of the actual diameter from the maximum material size (hole: minimum size, shaft: maximum size) may additionally be used up as position deviation, $T_{tot} = t + \text{bonus}$. At minimum material condition (L), the distance from the minimum material size applies analogously. Each measurement point receives the bonus from its own actual size. If an actual size lies outside the limit sizes, the point already fails on size; a negative bonus does not exist.

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