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GD&T quick lab reference

Printable reference for common controls. Keep this page at the inspection bench as a practical check aid.

Control	What it controls	Practical check formula
Straightness	Line element form	max absolute deviation from best fit line
Flatness	Surface form	max(z) minus min(z) across sampled points
Circularity	Roundness in one section	max(r) minus min(r) at one section
Cylindricity	Full cylinder form	max radial distance minus min radial distance
Parallelism	Orientation to datum	max distance to datum plane minus min distance
Perpendicularity	Ninety degree orientation	absolute(measured angle minus 90 deg)
Angularity	Basic angle orientation	absolute(measured angle minus basic angle)
Position	True location to datums	TP = 2 * sqrt(dx^2 + dy^2)
Profile of Surface	Surface contour accuracy	max absolute deviation from nominal profile
Total Runout	Composite rotation error	max indicator reading over full rotation path

Validation note: Use ASME Y14.5 and customer contract requirements as the governing source. This chart is a workflow quick reference, not a substitute for formal engineering interpretation.