

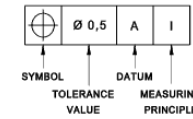
GENERAL TOLERANCES FOR LINEAR AND ANGULAR DIMENSIONS (DIN ISO 2768 T1)

LINEAR DIMENSIONS

Permissible deviations in mm for ranges in nominal lengths	f (fine)	Tolerance class designation (description)		v (very coarse)
		m (medium)	c (coarse)	
		±0.05	±0.1	
over 3 up to 6	±0.05	±0.1	±0.3	±0.5
over 6 up to 30	±0.1	±0.2	±0.5	±1
over 30 up to 120	±0.15	±0.3	±0.8	±1.5
over 120 up to 400	±0.2	±0.5	±1.2	±2.5
over 400 up to 1000	±0.3	±0.8	±2	±4
over 1000 up to 2000	±0.5	±1.2	±3	±6
over 2000 up to 4000		±2	±4	±8

Nennmaßbereich in mm	Toleranzklasse																					
	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	J6	J7	K6	K7	M6	M7	N6	N7	P6	P7
über 0 bis 3	+28	+39	+12	+16	+20	+8	+12	+6	+10	+14	+25	+40	+2	+4	0	0	-2	-2	-4	-4	-6	-6
über 3 bis 6	+38	+50	+18	+22	+28	+12	+16	+8	+12	+18	+30	+48	+5	+6	+2	+3	-1	0	-5	-4	-9	-8
über 6 bis 30	+47	+61	+22	+28	+35	+14	+20	+9	+15	+22	+36	+58	+5	+8	+2	+5	-3	0	-7	-4	-12	-9
über 30 bis 120	+59	+75	+27	+34	+43	+17	+24	+11	+18	+27	+43	+70	+6	+10	+2	+6	-4	0	-9	-5	-15	-11
über 120 bis 400	+73	+92	+33	+41	+53	+20	+28	+13	+21	+33	+52	+84	+8	+12	+2	+6	-4	0	-11	-7	-18	-14
über 400 bis 1000	+89	+112	+41	+50	+64	+25	+34	+16	+25	+39	+62	+100	+10	+14	+3	+7	-4	0	-12	-8	-21	-17
über 1000 bis 2000	+106	+134	+49	+60	+76	+29	+40	+19	+30	+46	+74	+120	+13	+18	+4	+9	-5	0	-14	-9	-26	-21
über 2000 bis 4000	+126	+159	+58	+71	+90	+34	+47	+22	+35	+54	+87	+140	+16	+22	+4	+10	-6	0	-16	-10	-30	-24

H11-c11 Slack running fit	Used to give flexibility under load, easy assembly or a close fit at elevated working temperatures.		12 MM DIA H11-c11 I.C. engine exhaust valve in guide
H9-d10 Loose running fit	Used for gland seals, loose pulleys and very large bearings.		44 MM DIA H9-d10 Idler gear on spindle
H9-e9 Easy running fit	Used for widely separated bearings or several bearings in line.		80 MM DIA H9-e9 Camshaft in bearing
H8-f7 Normal running fit	Suitable for applications requiring a good quality fit that is easy to produce.		18 MM DIA H8-f7 Gearbox shaft in bearing
H7-g6 Sliding and location fit	Not normally used for continuously running bearings unless load is slight. Suitable for precision sliding and location.		6 MM DIA H7-g6 Valve mechanism link pin
H7-h6 Location fit	Suitable for many non-running assemblies.		12 MM DIA H7-h6 Valve guide in head
H7-k6 Push fit	Used for location fits when a slight interference, which eliminates movement of one part relative to the other, is an advantage.		20 MM DIA H7-k6 Clutch member keyed to shaft
H7-n6 Tight assembly fit	Used when the degree of clearance that can result from a H7-k6 fit is not acceptable.		80 MM DIA H7-n6 Commutator shell on shaft
H7-p6 Press fit	Ferrous parts are not overstrained during assembly or dismantling.		200 MM DIA H7-p6 Split journal bearing
H7-s6 Heavy press fit	Mainly used for permanent assemblies.		100 MM DIA H7-s6 Cylinder liner in block



- STRAIGHTNESS
- FLATNESS
- CIRCULARITY
- CYLINDRICITY
- PROFILE OF LINE
- PROFILE OF SURFACE
- COAXIALITY
- POSITION
- SYMMETRY
- PARALLELISM
- PERPENDICITY
- ANGULARITY
- RUN-OUT
- TOTAL RUN-OUT

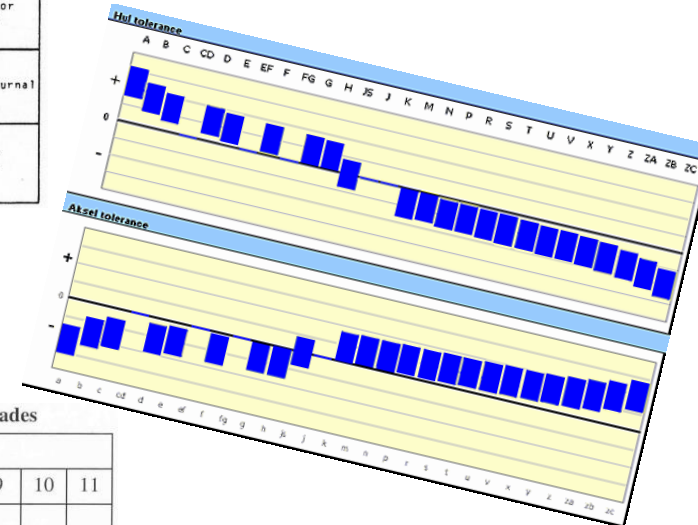


Table 18. Relation of Machining Processes to IT Tolerance Grades

	IT Grades							
	4	5	6	7	8	9	10	11
Lapping & Honing								
Cylindrical Grinding								
Surface Grinding								
Diamond Turning								
Diamond Boring								
Broaching								
Powder Metal sizes								
Reaming								
Turning								
Powder Metal sintered								
Boring								
Milling								
Planing & Shaping								
Drilling								
Punching								
Die Casting								