

ISO system of limits and fits																									
basic shaft system																									
upper and lower limits in micrometer (0.001 mm)																									
over	up to	d9	e8	f7	g6	h5	h6	h7	h8	h9	h11	js5	js6	js13	js14	k5	k6	m5	m6	n5	n6	p6	r6	s6	s7
-	3	-20 -45	-14 -28	-6 -16	-2 -8	0 -4	0 -6	0 -10	0 -14	0 -25	0 -60	2 -2	3 -3	70 -70	125 -125	4 0	6 0	6 2	8 2	8 4	10 4	12 6	16 10	20 14	24 14
3	6	-30 -60	-20 -38	-10 -22	-4 -12	0 -5	0 -8	0 -12	0 -18	0 -30	0 -75	2.5 -2.5	4 -4	90 -90	150 -150	6 1	9 1	9 4	12 4	13 8	16 8	20 12	23 15	27 19	31 19
6	10	-40 -76	-25 -47	-13 -28	-5 -14	0 -6	0 -9	0 -15	0 -22	0 -36	0 -90	3 -3	4.5 -4.5	110 -110	180 -180	7 1	10 1	12 6	15 6	16 10	19 10	24 15	28 19	32 23	38 23
10	18	-50 -93	-32 -59	-16 -34	-6 -17	0 -8	0 -11	0 -18	0 -27	0 -43	0 -110	4 -4	5.5 -5.5	135 -135	215 -215	9 1	12 1	15 7	18 7	20 12	23 12	29 18	34 23	39 28	46 28
18	30	-65 -117	-40 -73	-20 -41	-7 -20	0 -9	0 -13	0 -21	0 -33	0 -52	0 -130	4.5 -4.5	6.5 -6.5	165 -165	260 -260	11 2	15 2	17 8	21 8	24 15	28 15	35 22	41 28	48 35	56 35
30	50	-80 -142	-50 -89	-25 -50	-9 -25	0 -11	0 -16	0 -25	0 -39	0 -62	0 -160	5.5 -5.5	8 -8	195 -195	310 -310	13 2	18 2	20 9	25 9	28 17	33 17	42 26	50 34	59 43	68 43
50	65	-100 -174	-60 -106	-30 -60	-10 -29	0 -13	0 -19	0 -30	0 -46	0 -74	0 -190	6.5 -6.5	9.5 -9.5	230 -230	370 -370	15 2	21 2	24 11	30 11	33 20	39 20	51 32	60 41	72 53	83 53
65	80	-100 -174	-60 -106	-30 -60	-10 -29	0 -13	0 -19	0 -30	0 -46	0 -74	0 -190	6.5 -6.5	9.5 -9.5	230 -230	370 -370	15 2	21 2	24 11	30 11	33 20	39 20	51 32	62 43	78 59	89 59
80	100	-120 -207	-72 -126	-36 -71	-12 -34	0 -15	0 -22	0 -35	0 -54	0 -87	0 -220	7.5 -7.5	11 -11	270 -270	435 -435	18 3	25 3	28 13	35 13	38 23	45 23	59 37	73 51	93 71	106 71
100	120	-120 -207	-72 -126	-36 -71	-12 -34	0 -15	0 -22	0 -35	0 -54	0 -87	0 -220	7.5 -7.5	11 -11	270 -270	435 -435	18 3	25 3	28 13	35 13	38 23	45 23	59 37	76 54	101 79	114 79
120	140	-145 -245	-85 -148	-43 -83	-14 -39	0 -18	0 -25	0 -40	0 -63	0 -100	0 -250	9 -9	12.5 -12.5	315 -315	500 -500	21 3	28 3	33 15	40 15	45 27	52 27	68 43	88 63	117 92	132 92
140	160																					90	125	140	
160	180																					65	100	100	
180	200	-170 -285	-100 -172	-50 -96	-15 -44	0 -20	0 -29	0 -46	0 -72	0 -115	0 -290	10 -10	14.5 -14.5	360 -360	575 -575	24 4	33 4	37 17	46 17	51 31	60 31	79 50	106 77	151 122	168 122
200	225																					109	159	176	
225	250																					80	130	130	
250	280	-190 -320	-110 -191	-56 -108	-17 -49	0 -23	0 -32	0 -52	0 -81	0 -130	0 -320	11.5 -11.5	16 -16	405 -405	650 -650	27 4	36 4	43 20	52 20	57 34	66 34	88 56	126 94	190 158	210 158
280	315																					130	202	222	
315	355	-210 -350	-125 -214	-62 -119	-18 -54	0 -25	0 -36	0 -57	0 -89	0 -140	0 -360	12.5 -12.5	18 -18	445 -445	700 -700	29 4	40 4	46 21	57 21	62 37	73 37	98 62	144 108	226 190	247 190
355	400																					150	244	265	
																						114	208	208	



do not use N9 for nominal dimensions of 1 mm or below		
	recommended fits	
basic hole	clearance fits	basic shaft
H8/d9	loose running fit: clearance allows for loose fit of parts	D10/h9
H8/e8	free running fit: sufficient clearance is allowed for ease of assembly	E9/h9
H8/f7	close running fit: clearance allows for parts to be easily assembled by hand while maintaining location accuracy	F8/h9
H7/f7	sliding fit - free: clearance allows accurate location and free movement, including turning	F8/h6
H7/g6	sliding fit - constrained: clearance allows better location accuracy while still allowing sliding or turning movement	G7/h6
H8/h9	minimal clearance fit: allows location accuracy and hand force assembly without being a snug fit	H8/h9
H7/h6	locational clearance fit: Allows snug fit of stationary parts that may be assembled by hand force	H7/h6
	transition fits	
H7/j6	locational transition fit: for accurate location allowing more clearance than interference	not specified
H7/n6	locational transition fit - interference: For accurate location where interference is permissible	
	interference fits	
H7/r6	locational interference fit: for rigidity and alignment/accurate location without special bore requirements	not specified
H7/s6	medium drive fit: for ordinary steel parts or shrink fits of light sections, tightest fit possible for cast iron	
H8/u8	force fit: for parts fitting that can withstand high mechanical pressing force or shrink fitting	
H8/x8	extreme force fit: for parts that can only be assembled by stretching or shrinking	