ISO Tolerances for Shafts and Bores

OUTSIDE DIAMETERS:

Tolerance Dimensions in µm = 0,001 mm

Range in mm		f6	f7	g6	h3	h4	h5	h6	h8	h9	j6	js6	js9	js14	js15	k6	m5	m6	n6
from	0	- 6	- 6	- 2	0	0	0	0	0	0	+ 4	+ 3	+ 12,5	+ 125	+ 200	+ 6	+ 6	+ 8	+ 10
to	3	- 12	- 16	- 8	- 2	- 3	- 4	- 6	- 14	- 25	- 2	- 3	- 12,5	- 125	- 200	0	+ 2	+ 2	+ 4
from	3,1	- 10	- 10	- 4	0	0	0	0	0	0	+ 6	+ 4	+ 15	+ 150	+ 240	+ 9	+ 9	+ 12	+ 16
to	6	- 18	- 22	- 12	- 2,5	- 4	- 5	- 8	- 18	- 30	- 2	- 4	- 15	- 150	- 240	+ 1	+ 4	+ 4	+ 8
from	6,1	- 13	- 13	- 5	0	0	0	0	0	0	+ 7	+ 4,5	+ 18	+ 180	+ 290	+ 10	+ 12	+ 15	+ 19
to	10	- 22	- 28	- 14	- 2,5	- 4	- 6	- 9	- 22	- 36	- 2	- 4,5	- 18	- 180	- 290	+ 1	+ 6	+ 6	+ 10
from	10,1	- 16	- 16	- 6	0	0	0	0	0	0	+ 8	+ 5,5	+ 21,5	+ 215	+ 350	+ 12	+ 15	+ 18	+ 23
to	18	- 27	- 34	- 17	- 3	- 5	- 8	- 11	- 27	- 43	- 3	- 5,5	- 21,5	- 215	- 350	+ 1	+ 7	+ 7	+ 12
from	18,1	- 20	- 20	- 7	0	0	0	0	0	0	+ 9	+ 6,5	+ 26	+ 260	+ 420	+ 15	+ 17	+ 21	+ 28
to	30	- 33	- 41	-20	- 4	- 6	- 9	- 13	- 33	- 52	- 4	- 6,5	- 26	- 260	- 420	+ 1	+ 8	+ 8	+ 15
from	30,1	- 25	- 25	- 9	0	0	0	0	0	0	+ 11	+ 8	+ 31	+ 310	+ 500	+ 18	+ 20	+ 25	+ 33
to	50	- 41	- 50	- 25	- 4	- 7	- 11	- 16	- 39	- 62	- 5	- 8	- 31	- 310	- 500	+ 2	+ 9	+ 9	+ 17
from	50,1	- 30	- 30	- 10	0	0	0	0	0	0	+ 12	+ 9,5	+ 37	+ 370	+ 600	+ 21	+ 24	+ 30	+ 39
to	80	- 49	- 60	- 29	- 5	- 8	- 13	- 19	- 46	- 74	- 7	- 9,5	- 37	- 370	- 600	+ 2	+ 11	+ 11	+ 20
from	80,1	- 36	- 36	- 12	0	0	0	0	0	0	+ 13	+ 11	+ 43,5	+ 435	+ 700	+ 25	+ 28	+ 35	+ 45
to	120	- 58	- 71	- 34	- 6	- 10	- 15	- 22	- 54	- 87	- 9	- 11	- 43,5	- 435	- 700	+ 3	+ 13	+ 13	+ 23

INSIDE DIAMETERS:

Tolerance Dimensions in µm = 0,001 mm

Range in mm		E8	F7	G7	H5	H6	H7	H8	H9	H10	H11	J7	JS5	K6	K7	M6	M7	P6	P7
from	0	+ 28	+ 16	+ 12	+ 4	+ 6	+ 10	+ 14	+ 25	+ 40	+ 60	+ 4	+ 2	0	0	- 2	- 2	- 6	- 6
to	3	+ 14	+ 6	+ 2	0	0	0	0	0	0	0	- 6	- 2	- 6	- 10	- 8	- 12	- 12	- 16
from	3,1	+ 38	+ 22	+ 16	+ 5	+ 8	+ 12	+ 18	+ 30	+ 48	+ 75	+ 6	+ 2,5	+ 2	+ 3	- 1	0	- 9	- 8
to	6	+ 20	+ 10	+ 4	0	0	0	0	0	0	0	- 6	- 2,5	- 6	- 9	- 9	- 12	- 17	- 20
from	6,1	+ 47	+ 28	+ 20	+ 6	+ 9	+ 15	+ 22	+ 36	+ 58	+ 90	+ 8	+ 3	+ 2	+ 5	- 3	0	- 12	- 9
to	10	+ 25	+ 13	+ 5	0	0	0	0	0	0	0	- 7	- 3	- 7	- 10	- 12	- 15	- 21	- 24
from	10,1	+ 59	+ 34	+ 24	+ 8	+ 11	+ 18	+ 27	+ 43	+ 70	+110	+ 10	+ 4	+ 2	+ 6	- 4	0	- 15	- 11
to	18	+ 32	+ 16	+ 6	0	0	0	0	0	0	0	- 8	- 4	- 9	- 12	- 15	- 18	- 26	- 29
from	18,1	+ 73	+ 41	+ 28	+ 9	+ 13	+ 21	+ 33	+ 52	+ 84	+130	+ 12	+ 4,5	+ 2	+ 6	- 4	0	- 18	- 14
to	30	+ 40	+ 20	+ 7	0	0	0	0	0	0	0	- 9	- 4,5	- 11	- 15	- 17	- 21	- 31	- 35
from	30,1	+ 89	+ 50	+ 34	+ 11	+ 16	+ 25	+ 39	+ 62	+100	+160	+ 14	+ 5,5	+ 3	+ 7	- 4	0	- 21	- 17
to	50	+ 50	+ 25	+ 9	0	0	0	0	0	0	0	- 11	- 5,5	- 13	- 18	- 20	- 25	- 37	- 42
from	50,1	+106	+ 60	+ 40	+ 13	+ 19	+ 30	+ 46	+ 74	+120	+190	+ 18	+ 6,5	+ 4	+ 9	- 5	0	- 26	- 21
to	80	+ 60	+ 30	+ 10	0	0	0	0	0	0	0	- 12	- 6,5	- 15	- 21	- 24	- 30	- 45	- 51
from	80,1	+125	+ 71	+ 47	+ 15	+ 22	+ 35	+ 54	+ 87	+140	+220	+ 22	+ 7,5	+ 4	+ 10	- 6	0	- 30	- 24
to	120	+ 72	+ 36	+ 12	0	0	0	0	0	0	0	- 13	- 7,5	- 18	- 25	- 28	- 35	- 52	- 59

MATERIAL APPLICATIONS

Applications

1.1730
Unhardened: for the construction of moulds and tools of big dimensions, clamping-plates, leader pins etc.

1.2083
Mould inserts.

1.2085
Moulds and mould components for the plastic injection. Not indicated for inserts.

1.2312
Core parts for pressing injection dies, moulds assemblies. For blacking tools; built on parts with increased stressing, baseplates, frames, die sets.
For diecasting dies: frames and assembling parts with low operating stress.

1.2316
Larger plastic moulds and inserts for the manufacture of chemically sensitive materials, such as P.V.C. , amino plastics and similar materials, in particular for extrusion tools for production of window profiles, sizing tools blowing moulds, sheet dies.

1.2344
Dies for the extrusion of tubes and profiles.
Plastic mouls for large productions, mould inserts exposed to abrasion as in the case of the transformation of hards plastics, thermoplastics and compounds.
Die casting, mould inserts, slides, core parts, ejector pins and filling bushes.

1.2711
Tools for pressure and injection moulds with high mechanical and thermal stress.
Special qualities as excelllent high-polishable. Mould tools for thermohardenables subject to abrasion. Forging dies. Hardening and tempering is only indicated after roughing.

1.2738
Pressure and plastic injection moulds of big dimensions as for bumpers, panels and instruments, chairs, rubbish containers. Bottle cases, TV-boxes, frames for aluminium injection moulds.

Characteristics

1.1730
Unalloyed tool steel, easy mechanization, high tensile-strength.

1.2083
Stainless steel, corrosion resistant for moulds working with chemical aggressive materials. Excellent polishing and machining properties.

1.2085
Stainless steel, corrosion resistant for moulds with high sulphur contents compared to 1.2316 ISO-B MOD. Excellent machining properties.

1.2312
Hardened and tempered steel for moulds for the plastic industry, sulphur alloy, easy mechanization.
Not indicated for polishing, acid engraving and hardchrome.

1.2316
Stainless steel, resistant to corrosion, hardened and tempered. Good resistance to wear and polishing, high tensile strength.

1.2344
Chromium-molybdenum-vanadium based special-alloy hot working steel. Very good retentivity of hardeness, good toughness; good hardeness at elevated temperatures, very good compression strength, insensitive to thermal shocks, better resistance to wear than 1.2343, good machinability in the annealed condition, can be cooled in water with limitations.

1.2711
High tensile strength, resistant to compression, excellent polishing qualities. Nitratable, indicated for hard platable, high-polishable with capacity for textures.

1.2738
Hardened and tempered steel for high pressure and plastic injection moulds with thicknesses over 400mm. Same properties as 1.2311 ISO-BM but better hardening qualities.
Homogeneous hardening structure all over the section, indicated for grain-reliable, polishing, hard platable. Easy mechanization. Nitratable.