

Reference

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■ Steel and Non-Ferrous Metal Symbols Chart

● Carbon Steels

JIS	AISI	DIN
S10C	1010	C10
S15C	1015	C15
S20C	1020	C22
S25C	1025	C25
S30C	1030	C30
S35C	1035	C35
S40C	1040	C40
S45C	1045	C45
S50C	1049	C50
S55C	1055	C55

● Ni-Cr-Mo Steels

SNCM220	8620	—
SNCM240	8640	—
SNCM415	—	—
SNCM420	4320	—
SNCM439	4340	—
SNCM447	—	—

● Cr Steels

SCr415	—	—
SCr420	—	—
SCr430	5130	34Cr4
SCr435	5135	37Cr4
SCr440	5140	41Cr4
SCr445	5147	—

● Cr-Mo Steels

SCM415	—	—
SCM420	—	—
SCM430	4130	—
SCM435	4135	34CrMo4
SCM440	4140	42CrMo4
SCM445	4145	—

● Mn Steels and Mn-Cr Steels for Structural Use

SMn420	1522	—
SMn433	1536	—
SMn438	1541	—
SMn443	1541	—
SMnC420	—	—
SMnC443	—	—

● Cr-Mo Steels

SK1	W1-13	—
SK2	W1-11 1/2	—
SK3	W1-10	C105W1
SK4	W1-9	—
SK5	W1-8	C80W1
SK6	W1-7	C80W1
SK7	—	C70W2

● High Speed Steels

JIS	AISI	DIN
SKH2	T1	—
SKH3	T4	—
SKH10	T15	—
SKH51	M2	S6-5-2
SKH52	M3-1	—
SKH53	M3-2	S6-5-3
SKH54	M4	—
SKH56	M36	—

● Alloy Tool Steels

SKS11	F2	—
SKS51	L6	—
SKS43	W2-9 1/2	—
SKS44	W2-8 1/2	—
SKD1	D3	X210Cr12
SKD11	D2	—

● Grey Cast Iron

FC100	20	GG-10
FC150	25	GG-15
FC200	30	GG-20
FC250	35	GG-25
FC300	40	GG-30
FC350	50	GG-35

● Nodular Cast Iron

FCD400	—	GGG-40
FCD450	60/40/8	GGG-40.3
FCD500	65/45/12	GGG-50
FCD600	80/55/06	GGG-60
FCD700	100/70/03	GGG-70

● Ferritic Stainless Steels

SUS405	AISI 405	DINX6CrAl13
SUS429	AISI 429	—
SUS430	AISI 430	DINX6Cr17
SUS430F	AISI 430F	DINX12CrMoS17
SUS434	AISI 434	—

● Martensitic Stainless Steels

SUS403	AISI 403	—
SUS410	AISI 410	DINX10Cr13
SUS416	AISI 416	—
SUS420JI	AISI 420	DINX20Cr13
SUS420F	AISI 420F	—
SUS431	AISI 431	DINX20CrNi172
SUS440A	AISI 440A	—
SUS440B	AISI 440B	—
SUS440C	AISI 440C	—

● Austenitic Stainless Steels

JIS	AISI	DIN
SUS201	AISI 201	—
SUS202	AISI 202	—
SUS301	AISI 301	—
SUS302	AISI 302	—
SUS302B	AISI 302B	—
SUS303	AISI 303	DINX10CrNiS189
SUS303Se	AISI 303Se	—
SUS304	AISI 304	DINX5CrNi1810
SUS304L	AISI 304L	DINX2CrNi1911
SUS304NI	AISI 304N	—
SUS305	AISI 305	DINX5CrNi1812
SUS308	AISI 308	—
SUS309S	AISI 309S	—
SUS310S	AISI 310S	—
SUS316	AISI 316	DINX5CrNiMo17122
SUS316L	AISI 316L	DINX2CrNiMo17132
SUS316N	AISI 316N	—
SUS317	AISI 317	DINX2CrNiMo18164
SUS317L	AISI 317L	—
SUS321	AISI 321	—
SUS347	AISI 347	DINX6CrNiNb1810
SUS384	AISI 384	—

● Heat Resisting Steels

SUH31	—	—
SUH35	—	—
SUH36	—	—
SUH37	—	—
SUH38	—	—
SUH309	AISI 309	—
SUH310	AISI 310	DINCrNi2520
SUH330	AISI 330	—

● Ferritic Heat Resisting Steels

SUH21	—	DINCrAl1205
SUH409	AISI 409	DINX6CrTi12
SUH446	AISI 446	—

● Martensitic Heat Resisting Steels

SUH1	—	—
SUH3	—	—
SUH4	—	—
SUH11	—	—
SUH600	—	—

■ Steel and Non-Ferrous Metal Symbols Chart

● Classifications and Symbols of Steels

Class	Material	Symbol	Symbol's Rationale	
Structural Steels	Rolled Steels for welded structures	SM	"M" for "Marine" - Usually used in welded marine structures	
	Re-rolled Steels	SRB	"R" for "Re-rolled" and "B" for "Bar"	
	Rolled Steels for general structures	SS	"S" for "Steel" and for "Structure"	
	Light gauge sections for general structures	SSC	"C" for "Cold"	
Steel Sheets	Hot rolled mild steel sheets / plates in coil form	SPH	"P" for "Plate" and "H" for "Hot"	
	Carbon steel tubes for piping	SGP	"GP" for "Gas Pipe"	
Steel Tubes	Carbon steel tubes for boiler and heat exchangers	STB	"T" for "Tube" and "B" for "Boiler"	
	Seamless steel tubes for high pressure gas cylinders	STH	"H" for "High Pressure"	
	Carbon steel tubes for general structures	STK	"K" for "Kozo" - Japanese word meaning "structure"	
	Carbon steel tubes for machine structural uses	STKM	"M" for "Machine"	
	Alloy steel tubes for structures	STKS	"S" for "Special"	
	Alloy steel tubes for pipings	STPA	"P" for "Piping" and "A" for "Alloy"	
	Carbon steel tubes for pressure pipings	STPG	"G" for "General"	
	Carbon steel tubes for high temperature pipings	STPT	"T" for "Temperatures"	
	Carbon steel tubes for high pressure pipings	SPS	"S" after "SP" is abbreviation for "Special"	
	Stainless steel tubes for pipings	SUS-TP	"T" for "Tube" and "P" for "Piping"	
	Steel for Machine Structures	Carbon steels for machine structural uses	SxC	"C" for "Carbon"
		Aluminium Chromium Molybdenum steels	SACM	"A" for "Al", "C" for "Cr" and "M" for "Mo"
		Chromium Molybdenum steels	SCM	"C" for "Cr" and "M" for "Mo"
Chromium steels		SCr	"Cr" for "Chromium"	
Nickel Chromium steels		SNC	"N" for "Nickel" and "C" for "Chromium"	
Nickel Chromium Molybdenum steels		SNCM	"M" for "Molybdenum"	
Manganese steels for structural use Manganese Chromium steels		SMn SMnC	"Mn" for "Manganese" "C" for "Chromium"	
Special Steels	Carbon tool steels	SK	"K" for "Kogu" - Japanese word meaning "tool"	
	Hollow drill steels	SKC	"C" for "Chisel"	
	Alloy tool steel	SKS SKD SKT	"S" for "Special" "D" for "Die" "T" for "Tanzo" - Japanese word for "forging"	
	High speed tool steels	SKH	"H" for "High speed"	
	Free cutting sulfuric steels	SUM	"M" for "Machinability"	
	High Carbon Chromium bearing steels	SUJ	"J" for "Jikuuke" - Japanese word meaning "bearing"	
	Spring steels	SUP	"P" for "Spring"	
	Stainless steels	SUS	"S" after "SU" is abbreviation for "Stainless"	
	Heat-resistant Steels	Heat-resistant steels	SUH	"U" for "Special Usage" and "H" for "Heat"
		Heat-resistant steel bars	SUHB	"B" for "Bar"
Heat-resistant steel sheets		SUHP	"P" for "Plate"	
Forged Steels	Carbon steel forgings for general use	SF	"F" for "Forging"	
	Carbon steel booms and billets for forgings	SFB	"B" for "Billet"	
	Chromium Molybdenum steel forgings	SFCM	"C" for "Chromium" and "M" for "Molybdenum"	
	Nickel Chromium Molybdenum steel forgings	SFNCM	"N" for "Nickel"	
Cast Irons	Grey cast irons	FC	"F" for "Ferrous" and "C" for "Casting"	
	Spherical graphite / Ductile cast irons	FCD	"D" for "Ductile"	
	Blackheart malleable cast irons	FCMB	"M" for "Malleable" and "B" for "Black"	
	Whiteheart malleable cast irons	FCMW	"W" for "White"	
	Pearlite malleable cast irons	FCMP	"P" for "Pearlite"	
Cast Steels	Carbon cast steels	SC	"C" for "Casting"	
	Stainless cast steels	SCS	"S" for "Stainless"	
	Heat-resistant cast steels	SCH	"H" for "Heat"	
	High Manganese cast steels	SCMnH	"Mn" for "Manganese" and "H" for "High"	

● Non-Ferrous Metals

Class	Material	Symbol	
Copper and Copper Alloys	Copper and Copper alloys - Sheets, plates and strips	CxxxxP	
		CxxxxPP	
		CxxxxR	
	Copper and Copper alloys - Welded pipes and tubes	CxxxxBD	
		CxxxxBDS	
		CxxxxBE CxxxxBF	
Aluminium and Aluminium Alloys	Aluminium and Al alloys - Sheets, plates and strips	AxxxxP AxxxxPC	
		AxxxxBE AxxxxBD AxxxxW	
	Aluminium and Al alloys - Rods, bars and wires	AxxxxS AxxxxFD AxxxxFH	
		Aluminium and Al alloys - Extruded shapes	
	Magnesium Alloys	Magnesium alloy sheets and plates	MP
	Nickel Alloys	Nickel-Copper alloy sheets and plates	NCuP
Nickel-Copper alloy rods and bars		NCuB	
Wrought Titanium	Titanium rods and bars	TB	
Castings	Brass castings	YBxCx	
	High strength Brass castings	HBxCx	
	Bronze castings	BCx	
	Phosphorus Bronze castings	PCBx	
	Aluminium Bronze castings	AIBCx	
	Aluminium alloy castings	AC	
	Magnesium alloy castings	MC	
	Zinc alloy die castings	ZDCx	
	Aluminium alloy die castings	ADC	
	Magnesium alloy die castings	MDC	
	White metals	WJ	
	Aluminium alloy castings for bearings	AJ	
Copper-Lead alloy castings for bearings	KJ		

■ Hardness Scale Comparison Chart

Brinell Hardness (HB) 3,000kgf	Rockwell Hardness				Vickers Hardness 50kgf	Shore Hardness	Traverse Rupture Strength (kg/mm ²)
	"A" Scale 60kgf (Brale)	"B" Scale 100kgf (1/10" Ball)	"C" Scale 150kgf (Brale)	"D" Scale 100kgf (Brale)			
—	85.6	—	68.0	76.9	940	97	—
—	85.3	—	67.5	76.5	920	96	—
—	85.0	—	67.0	76.1	900	95	—
767	84.7	—	66.4	75.7	880	93	—
757	84.4	—	65.9	75.3	860	92	—
745	84.1	—	65.3	74.8	840	91	—
733	83.8	—	64.7	74.3	820	90	—
722	83.4	—	64.0	73.8	800	88	—
712	—	—	—	—	—	—	—
710	83.0	—	63.3	73.3	780	87	—
698	82.6	—	62.5	72.6	760	86	—
684	82.2	—	61.8	72.1	740	—	—
682	82.2	—	61.7	72.0	737	84	—
670	81.8	—	61.0	71.5	720	83	—
656	81.3	—	60.1	70.8	700	—	—
653	81.2	—	60.0	70.7	697	81	—
647	81.1	—	59.7	70.5	690	—	—
638	80.8	—	59.2	70.1	680	80	—
630	80.6	—	58.8	69.8	670	—	—
627	80.5	—	58.7	69.7	667	79	—
601	79.8	—	57.3	68.7	640	77	—
578	79.1	—	56.0	67.7	615	75	—
555	78.4	—	54.7	66.7	591	73	210
534	77.8	—	53.5	65.8	569	71	202
514	76.9	—	52.1	64.7	547	70	193
495	76.3	—	51.0	63.8	528	68	186
477	75.6	—	49.6	62.7	508	66	177
461	74.9	—	48.5	61.7	491	65	170
444	74.2	—	47.1	60.8	472	63	162
429	73.4	—	45.7	59.7	455	61	154
415	72.8	—	44.5	58.8	440	59	149
401	72.0	—	43.1	57.8	425	58	142
388	71.4	—	41.8	56.8	410	56	136
375	70.6	—	40.4	55.7	396	54	129
363	70.0	—	39.1	54.6	383	52	124
352	69.3	(110.0)	37.9	53.8	372	51	120
341	68.7	(109.0)	36.6	52.8	360	50	115
331	68.1	(108.5)	35.5	51.9	350	48	112

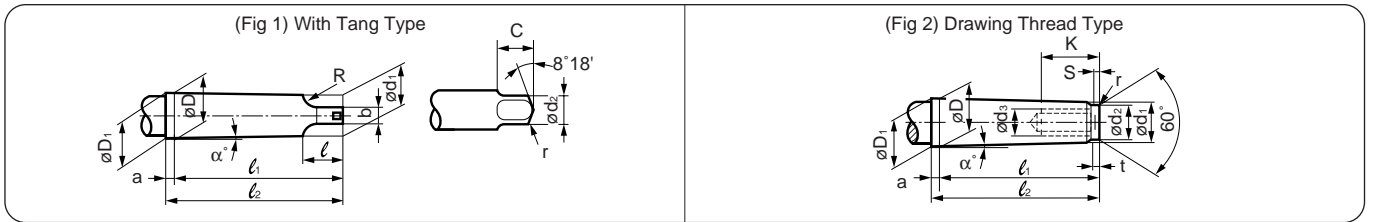
Brinell Hardness (HB) 3,000kgf	Rockwell Hardness				Vickers Hardness 50kgf	Shore Hardness	Traverse Rupture Strength (kg/mm ²)
	"A" Scale 60kgf (Brale)	"B" Scale 100kgf (1/10" Ball)	"C" Scale 150kgf (Brale)	"D" Scale 100kgf (Brale)			
321	67.5	(108.0)	34.3	50.1	339	47	108
311	66.9	(107.5)	33.1	50.0	328	46	105
302	66.3	(107.0)	32.1	49.3	319	45	103
293	65.7	(106.0)	30.9	48.3	309	43	99
285	65.3	(105.5)	29.9	47.6	301	—	97
277	64.6	(104.5)	28.8	46.7	292	41	94
269	64.1	(104.0)	27.6	45.9	284	40	91
262	63.6	(103.0)	26.6	45.0	276	39	89
255	63.0	(102.0)	25.4	44.2	269	38	86
248	62.5	(101.0)	24.2	43.2	261	37	84
241	61.8	100.0	22.8	42.0	253	36	82
235	61.4	99.0	21.7	41.4	247	35	80
229	60.8	98.2	20.5	40.5	241	34	78
223	—	97.3	(18.8)	—	234	—	—
217	—	96.4	(17.5)	—	228	33	74
212	—	95.5	(16.0)	—	222	—	72
207	—	94.6	(15.2)	—	218	32	70
201	—	93.8	(13.8)	—	212	31	69
197	—	92.8	(12.7)	—	207	30	67
192	—	91.9	(11.5)	—	202	29	65
187	—	90.7	(10.0)	—	196	—	63
183	—	90.0	(9.0)	—	192	28	63
179	—	89.0	(8.0)	—	188	27	61
174	—	87.8	(6.4)	—	182	—	60
170	—	86.8	(5.4)	—	178	26	58
167	—	86.0	(4.4)	—	175	—	57
163	—	85.0	(3.3)	—	171	25	56
156	—	82.9	(0.9)	—	163	—	53
149	—	80.8	—	—	156	23	51
143	—	78.7	—	—	150	22	50
137	—	76.4	—	—	143	21	47
131	—	74.0	—	—	137	—	46
126	—	72.0	—	—	132	20	44
121	—	69.8	—	—	127	19	42
116	—	67.6	—	—	122	18	41
111	—	65.7	—	—	117	15	39

1) Figures within the () are not commonly used

2) Rockwell A, C and D scales utilises a diamond brale

Standard of Tapers

Morse Taper



(Units in mm)

Morse Taper Number	Taper*	Taper Angle (α°)	Taper						Tang						Shape	
			D	d	D ₁ ⁺ (Estimated)	d ₁ ⁺ (Estimated)	l ₁ (Max)	l ₂ (Max)	d ₂ (Max)	b	C (Max)	e (Max)	R	r		
0	1/19.212	0.05205	1°29'27"	9.045	3	9.2	6.1	56.5	59.5	6.0	3.9	6.5	10.5	4	1	Fig 1
1	1/20.047	0.04988	1°25'43"	12.065	3.5	12.2	9.0	62.0	65.5	8.7	5.2	8.5	13.5	5	1.2	
2	1/20.020	0.04995	1°25'50"	17.780	5	18.0	14.0	75.0	80.0	13.5	6.3	10	16	6	1.6	
3	1/19.922	0.05020	1°26'16"	23.825	5	24.1	19.1	94.0	99.0	18.5	7.9	13	20	7	2	
4	1/19.245	0.05194	1°29'15"	31.267	6.5	31.6	25.2	117.5	124.0	24.5	11.9	16	24	8	2.5	
5	1/19.002	0.05263	1°30'26"	44.399	6.5	44.7	36.5	149.5	156.0	35.7	15.9	19	29	10	3	
6	1/19.180	0.05214	1°29'36"	63.348	8	63.8	52.4	210.0	218.0	51.0	19	27	40	13	4	
7	1/19.231	0.05200	1°29'22"	83.058	10	83.6	68.2	286.0	296.0	66.8	28.6	35	54	19	5	

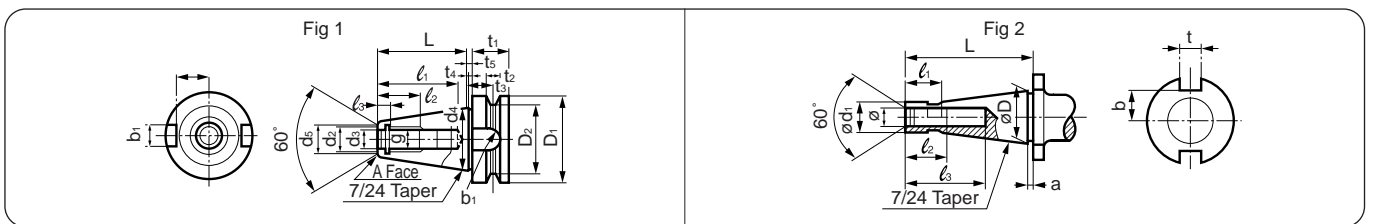
Morse Taper Number	Taper*	Taper Angle (α°)	Taper						Thread						Shape
			D	d	D ₁ ⁺ (Estimated)	d ₁ ⁺ (Estimated)	l ₁ (Max)	l ₂ (Max)	d ₂ (Max)	d ₃	K (Max)	t (Max)	r		
0	1/19.212	0.05205	1°29'27"	9.045	3	9.2	6.4	50	53	6	—	—	4	0.2	Fig 2
1	1/20.047	0.04988	1°25'43"	12.065	3.5	12.2	9.4	53.5	57	9	M 6	16	5	0.2	
2	1/20.020	0.04995	1°25'50"	17.780	5	18.0	14.6	64	69	14	M10	24	5	0.2	
3	1/19.922	0.05020	1°26'16"	23.825	5	24.1	19.8	81	86	19	M12	28	7	0.6	
4	1/19.254	0.05194	1°29'15"	31.267	6.5	31.6	25.9	102.5	109	25	M16	32	9	1	
5	1/19.002	0.05263	1°30'26"	44.399	6.5	44.7	37.6	129.5	136	35.7	M20	40	9	2.5	
6	1/19.180	0.05214	1°29'36"	63.348	8	63.8	53.9	182	190	51	M24	50	12	4	
7	1/19.231	0.05200	1°29'22"	80.058	10	86.6	70.0	250	260	65	M33	80	18.5	5	

* The fractional values are the taper standards.

* Diameters (D₁) and (d₁) are calculated from the values of (D) and other values of the taper. (Values are rounded up to one decimal place)

Bottle Grip Taper

American Standard Taper (National Taper)



(Units in mm)

Taper No.	D ₁	D ₂	t ₁	t ₂	t ₃	t ₄	t ₅	d ₁ (Standard)	d ₂	d ₃	d ₄	L	l ₂	l ₃	l ₄	g	b ₁	t ₇	Reference		Shape
																			d ₅	l ₁	
BT40	63	53	25	10	16.6	2	2	44.45	19	17	14	65.4	30	8	21	M16	16.1	22.6	25.3	70	Fig 1
BT45	85	73	30	12	21.2	3	3	57.15	23	21	17.5	82.8	38	9	26	M20	19.3	29.1	33.1	70	
BT50	100	85	35	15	23.2	3	3	69.85	27	25	21	101.8	45	11	31	M24	25.7	35.4	40.1	90	
BT60	155	135	45	20	28.2	3	3	107.95	33	31	26.5	161.8	56	12	34	M30	25.7	60.1	60.7	110	

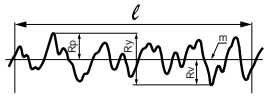
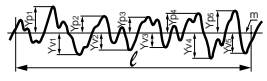
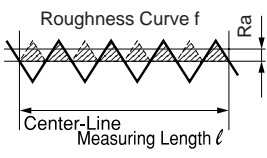
American Standard Taper (National Taper)

(Units in mm)





Taper No.	Nominal Diameter	D	d ₁	L	l ₁	l ₂	l ₃	g	a	t	b	Shape
30	1 1/4"	31.750	17.40	70	20	24	50	1/2"	1.6	15.9	16	Fig 2
40	1 3/4"	44.450	25.32	95	25	30	60	5/8"	1.6	15.9	22.5	
50	2 3/4"	69.850	39.60	130	25	45	90	1"	3.2	25.4	35	
60	4 1/4"	107.950	60.20	210	45	56	110	1 1/4"	3.2	25.4	60	

■ Finished Surface Roughness

● Types of Surface Roughness Measurements

Types	Symbol	Method of Determination	Descriptive Figure
Maximum Height	Ry	This is the value (expressed in μm) measured from the deepest valley to the highest peak of the reference line, ℓ , extracted from the profile. (Disregard unusually high peaks and deep valleys as they are considered as flaws.)	
Ten-point Mean Roughness	Rz	From the profile, extract a portion to be the reference line, ℓ . Select the 5 highest peak and 5 deepest valleys. Measure the distance between the two lines and express it in μm .	
Calculated Roughness	Ra	This method is to obtain a center line between the peaks and valleys within the reference line, ℓ . Fold along the center line to superimpose the valleys against the peaks. (Shaded portions with dashed outline on the right figure). Take the total shaded area and divided it by ℓ in μm .	

Designated values of the above types of surface roughness, standard reference length values and the triangular symbol classifications are shown on the table on the right.

Designated values for Ry	Designated values for Rz	Designated values for Ra	Standard reference length values, ℓ (mm)	Triangular Symbols
(0.05S) 0.1S 0.2S 0.4S	(0.05Z) 0.1Z 0.2Z 0.4Z	(0.013a) 0.025a 0.05a 0.10a	—	
0.8S	0.8Z	0.20a	0.25	
1.6S 3.2S 6.3S	1.6Z 3.2Z 6.3Z	0.40a 0.80a 1.6a	0.8	
12.5S (18S) 25S	12.5Z (18Z) 25Z	3.2a 6.3a	2.5	
(35S) 50S (70S) 100S	(35Z) 50Z (70Z) 100Z	12.5a 25a	—	
(140S) 200S (280S) 400S (560S)	(140Z) 200Z (280Z) 400Z (560Z)	(50a) (100a)	—	—

Remarks: The designated values in the brackets do not apply unless otherwise stated.

■ Tolerance Chart for Round Matching Parts

● Tolerance for Shank Sizes

Diameter, D(mm)		Tolerance Class (µm)																
>D	≤D	b9	c9	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9
-	3	-140 -165	-60 -85	-20 -34	-20 -45	-14 -24	-14 -28	-14 -39	-6 -12	-6 -16	-6 -20	-2 -6	-2 -8	0 -4	0 -6	0 -10	0 -14	0 -25
3	6	-140 -170	-70 -100	-30 -48	-30 -60	-20 -32	-20 -38	-20 -50	-10 -18	-10 -22	-10 -28	-4 -9	-4 -12	0 -5	0 -8	0 -12	0 -18	0 -30
6	10	-150 -186	-80 -116	-40 -62	-40 -76	-25 -40	-25 -47	-25 -61	-13 -22	-13 -28	-13 -35	-5 -11	-5 -14	0 -6	0 -9	0 -15	0 -22	0 -36
10	14	-150 -193	-95 -138	-50 -77	-50 -93	-32 -50	-32 -59	-32 -75	-16 -27	-16 -34	-16 -43	-6 -14	-6 -17	0 -8	0 -11	0 -18	0 -27	0 -43
14	18																	
18	24	-160 -212	-110 -162	-65 -98	-65 -117	-40 -61	-40 -73	-40 -92	-20 -33	-20 -41	-20 -53	-7 -16	-7 -20	0 -9	0 -13	0 -21	0 -33	0 -52
24	30																	
30	40	-170 -232	-120 -182	-80 -119	-80 -142	-50 -75	-50 -89	-50 -112	-25 -41	-25 -50	-25 -64	-9 -20	-9 -25	0 -11	0 -16	0 -25	0 -39	0 -62
40	50																	
50	65	-190 -264	-140 -214	-110 -146	-100 -174	-60 -90	-60 -106	-60 -134	-30 -49	-30 -60	-30 -76	-10 -23	-10 -29	0 -13	0 -19	0 -30	0 -46	0 -74
65	80																	
80	100	-220 -307	-170 -257	-120 -174	-120 -207	-72 -107	-72 -126	-72 -159	-36 -58	-36 -71	-36 -90	-12 -27	-12 -34	0 -15	0 -22	0 -35	0 -54	0 -87
100	120																	
120	140	-260 -360	-200 -300															
140	160	-280 -380	-210 -310	-145 -208	-145 -245	-85 -125	-85 -148	-85 -185	-43 -68	-43 -83	-43 -106	-14 -32	-14 -39	0 -18	0 -25	0 -40	0 -63	0 -100
160	180																	
180	200	-310 -410	-230 -330															
200	225	-340 -455	-240 -355	-170 -242	-170 -285	-100 -146	-100 -172	-100 -215	-50 -79	-50 -96	-50 -122	-15 -35	-15 -44	0 -20	0 -29	0 -46	0 -72	0 -115
225	250																	

● Tolerance for Hole Sizes

Diameter, D(mm)		Tolerance Class (µm)																		
>D	≤D	B10	C9	C10	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10
-	3	+180 +140	+85 +60	+100 +60	+34 +20	+45 +20	+60 +20	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0	+14 0	+25 0	+40 0
3	6	+188 +140	+100 +70	+118 +70	+48 +30	+60 +30	+78 +30	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0	+18 0	+30 0	+48 0
6	10	+208 +150	+116 +80	+138 +80	+62 +40	+76 +40	+98 +40	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0
10	14	+220 +150	+138 +95	+165 +95	+77 +50	+93 +50	+120 +50	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0	+27 0	+43 0	+70 0
14	18																			
18	24	+244 +160	+162 +110	+194 +110	+98 +65	+117 +65	+149 +65	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0	+33 0	+52 0	+84 0
24	30																			
30	40	+270 +170	+182 +120	+220 +120	+119 +80	+142 +80	+180 +80	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0	+39 0	+62 0	+100 0
40	50																			
50	65	+310 +190	+214 +140	+260 +140	+146 +146	+174 +100	+220 +146	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0	+46 0	+74 0	+120 0
65	80																			
80	100	+360 +220	+257 +170	+310 +170	+174 +120	+207 +120	+260 +120	+107 +72	+126 +72	+159 +72	+58 +36	+71 +36	+90 +36	+34 +12	+47 +12	+22 0	+35 0	+54 0	+87 0	+140 0
100	120																			
120	140	+420 +260	+300 +200	+360 +200																
140	160	+440 +280	+310 +210	+370 +210	+208 +145	+245 +145	+205 +145	+125 +85	+148 +85	+185 +85	+68 +43	+83 +43	+106 +43	+39 +14	+54 +14	+25 0	+40 0	+63 0	+100 0	+160 0
160	180																			
180	200	+470 +310	+330 +230	+390 +230																
200	225	+525 +340	+355 +240	+425 +240																
225	250	+565 +380	+375 +260	+445 +260	+242 +170	+285 +170	+355 +170	+146 +100	+172 +100	+215 +100	+79 +50	+96 +50	+122 +50	+44 +15	+61 +15	+29 0	+46 0	+72 0	+115 0	+185 0