

## IP0019 | CGL - CAD Guide Lines

### Overview Nominal diameter

Metric ISO 2306-1972 threads, SMS 1724

(mm)

Rev. date: 2012-04-20

Thread description	Drill diam.	Pitch P	Major diameter D	Minor diameter D <sub>1</sub>
M1	0.75	0.25	1.0	0.729
M1.1	0.85	0.25	1.1	0.829
M1.2	0.95	0.25	1.2	0.929
M1.4	1.1	0.3	1.4	1.075
M1.6	1.25	0.35	1.6	1.221
M1.8	1.45	0.35	1.8	1.421
M2	1.6	0.4	2.0	1.567
M2,2	1.75	0.45	2.2	1.713
M2,5	2.05	0.45	2.5	2.013
M2,5x0.35	2.15	0.35	2.5	2.121
M3	2.5	0.5	3.0	2.459
M3x0.35	2.65	0.35	3.0	2.621
M3,5	2.9	0.6	3.5	2.85
M3,5x0.35	3.15	0.35	3.5	3.121
M4	3.3	0.7	4.0	3.242
M4x0.5	3.5	0.5	4.0	3.459
M4,5	3.7	0.75	4.5	3.688
M4,5x0.5	4	0.5	4.5	3.959
M5	4.2	0.8	5.0	4.134
M5x0.5	4.5	0.5	5.0	4.459
M5.5x0.5	5.0	0.5	5.5	4.959
M6	5.0	1.0	6.0	4.917
M6x0.75	5.2	0.75	6.0	5.188
M7	6.0	1.0	7.0	5.917
M7x0.75	6.2	0.75	7.0	6.188
M8	6.8	1.25	8.0	6.647
M8x0.75	7.2	0.75	8.0	7.188
M8x1	7	1.0	8.0	6.917
M9	7.8	1.25	9.0	7.647
M9x0.75	8.2	0.75	9.0	8.188
M9x1	8	1.0	9.0	7.917
M10	8.5	1.5	10.0	8.376

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M10x0.75	9.2	0.75	10.0	9.188
M10x1	9.0	1.0	10.0	8.917
M10x1.25	8.8	1.25	10.0	8.647
M11	9.5	1.5	11.0	9.376
M11x0.75	10.2	0.75	11.0	10.188
M11x1	10.0	1.0	11.0	9.197
M12	10.2	1.75	12.0	10.106
M12x1	11.0	1.0	12.0	10.917
M12x1.25	10.8	1.25	12.0	10.647
M12x1.5	10.5	1.5	12.0	10.376
M14	12	2.0	14.0	11.835
M14x1	13	1.0	14.0	12.917
M14x1.25	12.8	1.25	14.0	12.647
M14x1.5	12.5	1.5	14.0	12.376
M15x1	14	1.0	15.0	13.917
M15x1.5	13.5	1.5	15.0	13.376
M16	14	2.0	16.0	13.835
M16x1	15	1.0	16.0	14.917
M16x1.5	14.5	1.5	16.0	14.376
M17x1	16	1.0	17.0	15.917
M17x1.5	15.5	1.5	17.0	15.376
M18	15.5	2.5	18.0	15.294
M18x1	17	1.0	18.0	16.917
M18x1.5	16.5	1.5	18.0	16.376
M18x2	16	2.0	18.0	15.835
M20	17.5	2.5	20.0	17.294
M20x1	19	1.0	20.0	18.917
M20x1.5	18.5	1.5	20.0	18.376
M20x2	18.0	2.0	20.0	17.835
M22	19.5	2.5	22.0	19.294
M22x1.5	20.5	1.5	22.0	20.376
M22x2	20	2.0	22.0	19.835
M24	21	3.0	24.0	20.752
M24x1.5	22.5	1.5	24.0	22.376
M24x2	22	2.0	24.0	21.835

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Thread description	Drill diam.	Pitch P	Major diameter D	Minor diameter D <sub>1</sub>
M27	24	3.0	27.0	23.752
M27x2	25	2.0	27.0	24.835
M30	26.5	3.5	30.0	26.211
M30x1.5	28.5	1.5	30.0	28.376
M30x2	28	2.0	30.0	27.835
M30x3	27	3.0	30.0	26.752
M33	29.5	3.5	33.0	29.211
M33x2	31	2.0	33.0	30.835
M33x3	30	3.0	33.0	29.752
M35x1.5	33.5	1.5	35.0	33.376
M36	32	4.0	36.0	31.67
M36x1.5	34.5	1.5	36.0	34.376
M36x2	34	2.0	36.0	33.835
M36x3	33	3.0	36.0	32.752
M39	35	4.0	39.0	34.67
M39x2	37	2.0	39.0	36.835
M39x3	36	3.0	39.0	35.752
M40x1.5	38.5	1.5	40.0	38.376
M40x2	38	2.0	40.0	37.835
M40x3	37	3.0	40.0	36.752
M42	37.5	4.5	42.0	37.129
M42x2	40	2.0	42.0	39.835
M42x3	39	3.0	42.0	38.752
M42x4	38	4.0	42.0	37.670
M45	40.5	4.5	45.0	40.129
M45x1.5	43.5	1.5	45.0	43.376
M45x3	42	3.0	45.0	41.752
M45x4	41	4.0	45.0	40.670
M48	43	5.0	48.0	42.587
M48x2	46	2.0	48.0	45.835
M48x3	45	3.0	48.0	44.752
M48x4	44	4.0	48.0	43.670
M52	47	5.0	52.0	46.587
M56	50.5	5.5	56.0	50.046

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### Overview Nominal diameter

*Unified threads UNC, ISO 2306-1972, SMS1724*

Rev. date: 2012-04-20

Thread description	Drill diam.		Pitch P	Major diameter D	Minor diameter D <sub>1</sub>
Nr 1 - 64 UNC	1.55	0.397	1.854	1.425	
Nr 2 - 56 UNC	1.85	0.454	2.184	1.694	
Nr 3 - 48 UNC	2.1	0.529	2.515	1.941	
Nr 4 - 40 UNC	2.35	0.635	2.845	2.156	
Nr 5 - 40 UNC	2.65	0.635	3.175	2.487	
Nr 6 - 32 UNC	2.85	0.794	3.505	2.642	
Nr 8 - 32 UNC	3.5	0.794	4.166	3.302	
Nr 10 - 24 UNC	3.9	1.058	4.826	3.683	
Nr 12 - 24 UNC	4.5	1.058	5.486	4.343	
1/4 - 20 UNC	5.1	1.27	6.35	4.976	
5/16 - 18 UNC	6.6	1.411	7.938	6.411	
3/8 - 16 UNC	8	1.588	9.525	7.805	
7/16 - 14 UNC	9.4	1.814	11.112	9.149	
1/2 - 13 UNC	10.8	1.954	12.700	10.584	
9/16 - 12 UNC	12.2	2.117	14.288	11.996	
5/8 - 11 UNC	13.5	2.309	15.875	13.376	
3/4 - 10 UNC	16.5	2.540	19.050	16.299	
7/8 - 9 UNC	19.5	2.822	22.225	19.169	
1 - 8 UNC	22.25	3.175	25.400	21.963	
1 1/8 - 7 UNC	25	3.629	28.575	24.648	
1 1/4 - 7 UNC	28	3.629	31.750	27.823	
1 3/8 - 6 UNC	30.75	4.233	34.925	30.343	
1 1/2 - 6 UNC	34	4.233	38.100	33.518	
1 3/4 - 5 UNC	39.5	5.080	44.45	38.951	
2 - 4 1/2 UNC	45	5.644	50.8	44.689	

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### Overview Nominal diameter

*Unified threads UNF, ISO 2306-1972, SMS1724*

Rev. date: 2012-04-20

Thread description	Drill diam.	Pitch P	Major diameter D	Minor diameter D <sub>1</sub>
Nr 0 - 80 UNF	1.25	0.318	1.524	1.181
Nr 1 - 72 UNF	1.55	0.353	1.854	1.473
Nr 2 - 64 UNF	1.85	0.397	2.184	1.755
Nr 3 - 56 UNF	2.15	0.454	2.515	2.024
Nr 4 - 48 UNF	2.4	0.529	2.845	2.271
Nr 5 - 44 UNF	2.7	0.577	3.175	2.550
Nr 6 - 40 UNF	2.95	0.635	3.505	2.819
Nr 8 - 36 UNF	3.5	0.706	4.166	3.404
Nr 10 - 32 UNF	4.1	0.794	4.826	3.962
Nr 12 - 28 UNF	4.6	0.907	5.486	4.496
1/4 - 28 UNF	5.5	0.907	6.35	5.367
5/16 - 24 UNF	6.9	1.058	7.938	6.792
3/8 - 24 UNF	8.5	1.058	9.525	8.379
7/16 - 20 UNF	9.9	1.270	11.112	9.738
1/2 - 20 UNF	11.5	1.270	12.700	11.326
9/16 - 18 UNF	12.9	1.411	14.288	12.761
5/8 - 18 UNF	14.5	1.411	15.875	14.348
3/4 - 16 UNF	17.5	1.588	19.050	17.330
7/8 - 14 UNF	20.4	1.814	22.225	20.262
1 - 12 UNF	23.25	2.117	25.400	23.109
1 - 14 UNF	23.6	1.814	25.400	23.109
1 1/8 - 12 UNF	26.5	2.117	28.575	26.284
1 1/4 - 12 UNF	29.5	2.117	31.750	29.459
1 3/8 - 12 UNF	32.75	2.117	34.925	32.634
1 1/2 - 12 UNF	36	2.117	38.100	35.809

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### Overview Nominal diameter

*Pipe threads G, SS-ISO 228/1*

Rev. date: 2012-04-20

Thread description	Drill diam.	Pitch P	Major diameter D	Minor diameter D <sub>1</sub>
<b>G 1/16</b>	6.8	0.907	7.723	6.561
<b>G 1/8</b>	8.8	0.907	9.728	8.566
<b>G 1/4</b>	11.8	1.337	13.157	11.445
<b>G 3/8</b>	15.25	1.337	16.662	14.950
<b>G 1/2</b>	19.0	1.814	20.955	18.631
<b>G 5/8</b>	21.0	1.814	22.911	20.587
<b>G 3/4</b>	24.5	1.814	26.441	24.117
<b>G 7/8</b>	28.25	1.814	30.201	27.877
<b>G 1</b>	30.75	2.309	33.249	30.291
<b>G 1 1/8</b>	35.5	2.309	37.897	34.939
<b>G 1 1/4</b>	39.5	2.309	41.910	38.952
<b>G 1 1/2</b>	45	2.309	47.803	44.845
<b>G 1 3/4</b>	51	2.309	53.746	50.788
<b>G 2</b>	57	2.309	59.614	56.656
<b>G 2 1/4</b>	63	2.309	65.710	62.752
<b>G 2 1/2</b>	72	2.309	75.184	72.226

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### Overview Nominal diameter

*American Standard Taper Pipe threads NPTF, SMS 1706, 1707*

Rev. date: 2012-04-20

<b>Thread description</b>	<b>Drill diam.</b>	<b>Pitch P</b>	<b>Major diameter D</b>
<b>1/16-27 NPTF</b>	6.1	0.941	7.142
<b>1/8-27 NPTF</b>	8.4	0.941	9.489
<b>1/4-18 NPTF</b>	10.9	1.411	12.487
<b>3/8-18 NPTF</b>	14.25	1.411	15.926
<b>1/2-14 NPTF</b>	17.75	1.814	19.772
<b>3/4-14 NPTF</b>	23.0	1.814	25.117
<b>1-11 1/2 NPTF</b>	29.0	2.209	31.461
<b>1 1/4-11 1/2 NPTF</b>	37.75	2.209	40.218
<b>1 1/2-11 1/2 NPTF</b>	43.75	2.209	46.287
<b>2-11 1/2 NPTF</b>	55.75	2.209	58.325
<b>2 1/2-8 NPTF</b>	66.5	3.175	70.159
<b>3-8 NPTF</b>	82.5	3.175	86.068

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## Holes, Threaded metric / inch

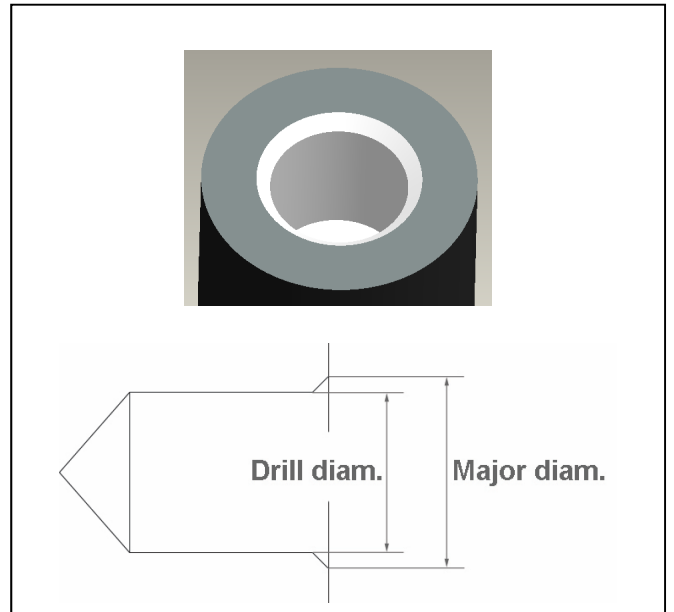
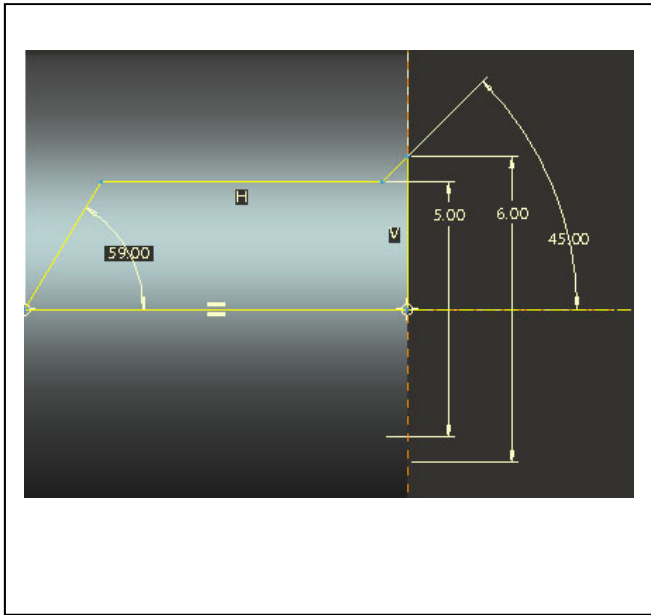
Rev. date: 2012-04-20

### Internal thread:

Use Drill diam, Major diameter. (Example of M6 hole)

Drill diam. = 5

Major diameter = 6



### External thread:

Use Minor diameter, Major diameter. (Example of M6 threaded piston)

Minor diameter = 4.917

Major diameter = 6

