



DIMENSIONAL STANDARDS CHART

Complete dimensional reference for metric fasteners, flanges and pipe fittings
All dimensions in millimetres (mm) · DIN · ISO · ASME · BS EN standards

2025 – 2026 EDITION

Hex Bolt Dimensions

DIN 931/933 · ISO 4014/4017
M3–M100 · AF · Head height

Washer Dimensions

DIN 125 · DIN 9021 · ISO 7089
ID · OD · Thickness

Stud Bolt Dimensions

ASME B16.5 · ASTM A193
All NPS · Bolt length · BC

Pipe Fitting Dimensions

ASME B16.9 · B16.11
BW · SW · THD end dims

Hex Nut Dimensions

DIN 934 · ISO 4032
M3–M100 · AF · Nut height

Socket Cap Screw

DIN 912 · ISO 4762 · ASME B18.3
M2–M36 · Socket size

Flange Bolt Circles

ASME B16.5 Class 150–2500
Bolt circle dia · Bolt count

Thread Forms Reference

ISO 261 · ASME B1.1
Coarse & fine · UNC · BSP

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Hex Bolt — Full Dimensional Table (M3 – M100)

DIN 931 (Part Thread) · DIN 933 (Full Thread) · ISO 4014 / 4017 · All dimensions in mm

Size	Pitch (mm)	AF s (mm)	Head Ht k (mm)	Min L Part Thr	Min L Full Thr	d Minor (mm)	Clearance Hole (mm)	Tensile Area mm ²
M3	0.50	5.5	2.0	12	20	2.387	3.4	4.7
M4	0.70	7.0	2.8	14	20	3.141	4.5	8.3
M5	0.80	8.0	3.5	16	20	4.018	5.5	13.4
M6	1.00	10.0	4.0	18	20	4.773	6.6	19.0
M8	1.25	13.0	5.3	22	20	6.466	9.0	34.7
M10	1.50	17.0	6.4	26	20	8.160	11.0	55.1
M12	1.75	19.0	7.5	30	20	9.853	13.5	80.2
M14	2.00	22.0	8.8	34	20	11.546	15.5	110.0
M16	2.00	24.0	10.0	38	25	13.546	17.5	150.3
M18	2.50	27.0	11.5	42	25	14.933	20.0	183.7
M20	2.50	30.0	12.5	46	30	16.933	22.0	234.9
M22	2.50	32.0	14.0	50	35	18.933	24.0	292.4
M24	3.00	36.0	15.0	54	35	20.319	26.0	338.2
M27	3.00	41.0	17.0	60	40	23.319	30.0	443.1
M30	3.50	46.0	18.7	66	45	25.706	33.0	539.6
M33	3.50	50.0	21.0	72	50	28.706	36.0	670.2
M36	4.00	55.0	22.5	78	55	31.092	39.0	787.7
M39	4.00	60.0	25.0	84	60	34.092	42.0	944.0
M42	4.50	65.0	26.0	90	65	36.479	45.0	1082.7
M45	4.50	70.0	28.0	96	70	39.479	48.0	1264.7
M48	5.00	75.0	30.0	102	70	41.865	52.0	1424.4
M52	5.00	80.0	33.0	110	80	45.865	56.0	1704.6
M56	5.50	85.0	35.0	118	85	49.252	62.0	1967.1
M60	5.50	90.0	38.0	126	90	53.252	66.0	2294.1
M64	6.00	95.0	40.0	134	95	56.639	70.0	2597.2
M72	6.00	105.0	45.0	150	110	64.639	78.0	3370.1
M80	6.00	115.0	50.0	166	120	72.639	86.0	4243.5
M90	6.00	130.0	56.0	186	135	82.639	96.0	5476.6
M100	6.00	145.0	63.0	206	150	92.639	107.0	6866.9

Hex Nut & Flat Washer — Full Dimensional Table (M3 – M100)

DIN 934 Hex Nut · DIN 125A Flat Washer · DIN 9021 Large Washer · All dimensions in mm

HEX NUT DIMENSIONS — DIN 934 / ISO 4032 (M3 – M100)

Size	Pitch (mm)	AF s (mm)	Nut Height m (mm)	Across Corners e	Class 5 H (mm)	Class 8 H (mm)	Class 10 H (mm)	Proof Stress (MPa)
M3	0.50	5.5	2.4	6.35	1.9	2.4	2.4	520
M4	0.70	7.0	3.2	8.08	2.6	3.2	3.2	520
M5	0.80	8.0	4.0	9.24	3.2	4.0	4.0	520
M6	1.00	10.0	5.0	11.55	4.0	5.0	5.0	580
M8	1.25	13.0	6.5	15.01	5.2	6.5	6.5	580
M10	1.50	17.0	8.0	19.63	6.4	8.0	8.0	600
M12	1.75	19.0	10.0	21.94	8.0	10.0	10.0	600
M14	2.00	22.0	11.0	25.40	8.8	11.0	11.0	600
M16	2.00	24.0	13.0	27.71	10.4	13.0	13.0	670
M18	2.50	27.0	15.0	31.18	12.0	15.0	15.0	600
M20	2.50	30.0	16.0	34.64	12.8	16.0	16.0	670
M22	2.50	32.0	18.0	36.95	14.4	18.0	18.0	600
M24	3.00	36.0	19.0	41.57	15.2	19.0	19.0	670
M27	3.00	41.0	22.0	47.34	17.6	22.0	22.0	600
M30	3.50	46.0	24.0	53.12	19.2	24.0	24.0	700
M33	3.50	50.0	26.0	57.74	20.8	26.0	26.0	600
M36	4.00	55.0	29.0	63.51	23.2	29.0	29.0	700
M39	4.00	60.0	31.0	69.28	24.8	31.0	31.0	600
M42	4.50	65.0	34.0	75.06	27.2	34.0	34.0	720
M45	4.50	70.0	36.0	80.83	28.8	36.0	36.0	600
M48	5.00	75.0	38.0	86.60	30.4	38.0	38.0	720
M52	5.00	80.0	42.0	92.38	33.6	42.0	42.0	600
M56	5.50	85.0	45.0	98.15	36.0	45.0	45.0	750
M60	5.50	90.0	48.0	103.92	38.4	48.0	48.0	600
M64	6.00	95.0	51.0	109.70	40.8	51.0	51.0	750
M72	6.00	105.0	58.0	121.24	46.4	58.0	58.0	600
M80	6.00	115.0	64.0	132.79	51.2	64.0	64.0	780
M90	6.00	130.0	72.0	150.11	57.6	72.0	72.0	600
M100	6.00	145.0	80.0	167.43	64.0	80.0	80.0	780

FLAT WASHER DIMENSIONS — DIN 125A / DIN 9021 / ISO 7089 (M3 – M100)

Size	DIN 125A ID (mm)	DIN 125A OD (mm)	DIN 125A Thk (mm)	DIN 9021 OD (mm)	DIN 9021 Thk (mm)	Spr Wshr OD (mm)	Spr Wshr Thk (mm)
M3	3.4	7	0.5	12	0.5	6.5	1.0
M4	4.5	9	0.8	15	0.8	8.4	1.2
M5	5.5	10	1.0	18	1.0	9.6	1.5
M6	6.6	12	1.6	21	1.6	11.8	1.8
M8	9.0	16	1.6	28	1.6	15.2	2.2

Socket Head Cap Screw — DIN 912 / ISO 4762 / ASME

M2 to M36 · Grades 8.8 / 12.9 / A2-70 / A4-70 · All dimensions in mm

Size	Pitch (mm)	Head Dia d_h (mm)	Head Ht k (mm)	Socket Key s (mm)	Clear. Hole (mm)	Min Length (mm)	d Minor (mm)	Tensile Area (mm ²)
M2	0.400	3.8	2.0	1.5	2.4	16	1.509	1.93
M2.5	0.450	4.5	2.5	2.0	2.9	16	1.948	3.18
M3	0.500	5.5	3.0	2.5	3.4	16	2.387	4.75
M4	0.700	7.0	4.0	3.0	4.5	16	3.141	8.26
M5	0.800	8.5	5.0	4.0	5.5	20	4.018	13.42
M6	1.000	10.0	6.0	5.0	6.6	20	4.773	18.99
M8	1.250	13.0	8.0	6.0	9.0	30	6.466	34.70
M10	1.500	16.0	10.0	8.0	11.0	35	8.160	55.11
M12	1.750	18.0	12.0	10.0	13.5	40	9.853	80.21
M14	2.000	21.0	14.0	12.0	15.5	50	11.546	110.00
M16	2.000	24.0	16.0	14.0	17.5	55	13.546	150.33
M18	2.500	27.0	18.0	14.0	20.0	65	14.933	183.70
M20	2.500	30.0	20.0	17.0	22.0	70	16.933	234.89
M22	2.500	33.0	22.0	17.0	24.0	75	18.933	292.36
M24	3.000	36.0	24.0	19.0	26.0	85	20.319	338.23
M27	3.000	40.0	27.0	19.0	30.0	95	23.319	443.10
M30	3.500	45.0	30.0	22.0	33.0	105	25.706	539.59
M33	3.500	50.0	33.0	24.0	36.0	115	28.706	670.17
M36	4.000	54.0	36.0	27.0	39.0	125	31.092	787.73

SOCKET SET SCREW (GRUB SCREW) — DIN 914/916/913 (M3 – M24)

Size	Pitch (mm)	Socket Key s (mm)	Max Length (mm)	Point Types Available	Property Class
M3	0.50	1.5	25	Cup / Cone / Flat / Dog / Half-dog	45H / 14H
M4	0.70	2.0	30	Cup / Cone / Flat / Dog	45H / 14H
M5	0.80	2.5	35	Cup / Cone / Flat / Dog	45H / 14H
M6	1.00	3.0	45	Cup / Cone / Flat / Dog	45H / 14H

Stud Bolt Dimensions — ASME B16.5 (Class 150 – 2500)

ASTM A193 B7 studs + A194 2H heavy hex nuts · All dimensions in mm · NPS ½" to 24"

NPS / DN	CL 150 Stud Ø	CL 150 # Bolts	CL 150 L (mm)	CL 300 Stud Ø	CL 300 # Bolts	CL 300 L (mm)	CL 600 Stud Ø	CL 600 # Bolts	CL 600 L (mm)
½"/DN15	Ø12.7	4	80	Ø12.7	4	100	Ø15.9	4	110
¾"/DN20	Ø12.7	4	90	Ø15.9	4	110	Ø15.9	4	120
1"/DN25	Ø12.7	4	90	Ø15.9	4	115	Ø15.9	4	125
1½"/DN40	Ø12.7	4	100	Ø15.9	4	125	Ø19.1	4	145
2"/DN50	Ø15.9	4	110	Ø15.9	8	130	Ø19.1	8	155
3"/DN80	Ø15.9	4	115	Ø19.1	8	145	Ø25.4	8	185
4"/DN100	Ø15.9	8	125	Ø19.1	8	160	Ø28.6	8	210
6"/DN150	Ø19.1	8	140	Ø22.4	12	175	Ø31.8	12	240
8"/DN200	Ø19.1	8	150	Ø25.4	12	195	Ø38.1	12	280
10"/DN250	Ø25.4	12	165	Ø28.6	16	215	Ø44.5	16	320
12"/DN300	Ø25.4	12	175	Ø31.8	16	235	Ø50.8	20	355
14"/DN350	Ø28.6	12	185	Ø35.1	20	260	Ø54.0	20	385
16"/DN400	Ø28.6	16	195	Ø38.1	20	275	Ø57.2	20	415
18"/DN450	Ø31.8	16	215	Ø38.1	24	295	Ø63.5	20	455
20"/DN500	Ø31.8	20	225	Ø41.3	24	315	Ø63.5	24	490
24"/DN600	Ø35.1	20	245	Ø47.6	24	355	Ø76.2	24	560

STUD BOLT DIMENSIONS — CLASS 900 / 1500 / 2500 (Key sizes)

NPS/DN	CL 900 Ø	CL 900 #	CL 900 L (mm)	CL 1500 Ø	CL 1500 #	CL 1500 L (mm)	CL 2500 Ø	CL 2500 #	CL 2500 L (mm)
2"/DN50	Ø19.1	8	165	Ø38.1	8	240	Ø50.8	8	300
4"/DN100	Ø25.4	8	185	Ø50.8	8	310	Ø73.0	8	410
6"/DN150	Ø31.8	12	230	Ø63.5	12	390	Ø88.9	12	530
8"/DN200	Ø44.5	12	285	Ø73.0	12	470	Ø104.0	12	650
10"/DN250	Ø50.8	16	340	Ø82.6	12	555	Ø120.0	12	765
12"/DN300	Ø63.5	20	385	Ø88.9	16	610	Ø136.0	12	880

Flange Bolt Circle & Bolt Hole Dimensions — ASME B10.2

All classes CL 150–2500 · BC = Bolt Circle dia (mm) · BH = Bolt Hole dia (mm) · n = Number of bolts

NPS / DN	CL 150 BC/BH/n	CL 300 BC/BH/n	CL 600 BC/BH/n	CL 900 BC/BH/n	CL 1500 BC/BH/n	CL 2500 BC/BH/n
½"/DN15	60/16/4	67/16/4	73/22/4	83/22/4	83/25/4	89/32/4
¾"/DN20	70/16/4	83/19/4	83/22/4	89/25/4	89/29/4	102/35/4
1"/DN25	79/16/4	89/19/4	89/22/4	102/25/4	102/32/4	114/38/4
1½"/DN40	98/16/4	114/22/4	114/25/4	127/32/4	152/38/4	160/51/4
2"/DN50	121/19/4	127/19/8	127/25/8	165/32/8	190/38/8	190/51/8
3"/DN80	152/19/4	168/22/8	168/32/8	168/38/8	241/51/8	267/64/8
4"/DN100	190/19/8	200/22/8	216/35/8	216/38/8	292/57/8	318/73/8
6"/DN150	241/22/8	254/25/12	279/38/12	279/44/12	368/64/12	444/89/12
8"/DN200	298/22/8	305/29/12	343/44/12	343/51/12	444/73/12	549/104/12
10"/DN250	362/25/12	368/32/16	406/51/16	406/57/16	530/83/12	648/120/12
12"/DN300	432/25/12	432/35/16	470/51/20	470/64/20	610/89/16	749/136/12
14"/DN350	476/29/12	476/35/20	508/54/20	533/67/20	749/104/16	N/A
16"/DN400	540/29/16	540/38/20	572/57/20	597/73/20	749/104/16	N/A
18"/DN450	578/32/16	603/38/24	635/64/20	635/76/20	N/A	N/A
20"/DN500	635/32/20	654/41/24	698/64/24	698/76/24	876/120/16	N/A
24"/DN600	749/35/20	779/48/24	813/76/24	813/89/24	1003/136/16	N/A

Pipe Fitting Dimensions — ASME B16.9 & B16.11

Butt Weld (BW) · Socket Weld (SW) · Threaded (THD) · All key dimensions in mm

BUTT WELD FITTINGS — ASME B16.9 (Centre-to-Face & End-to-End dimensions)

NPS/DN	Pipe OD (mm)	Elbow 90° LR A (mm)	Elbow 45° LR B (mm)	Equal Tee C (mm)	Reducer H (mm)	End Cap E (mm)	Sch 40 Wall (mm)	Sch 80 Wall (mm)
½"/DN15	21.3	38	16	38	57	25	2.77	3.73
¾"/DN20	26.7	48	19	48	64	29	2.87	3.91
1"/DN25	33.4	57	22	57	76	38	3.38	4.55
1½"/DN40	48.3	76	29	76	95	51	3.68	5.08
2"/DN50	60.3	95	35	95	114	64	3.91	5.54
3"/DN80	88.9	143	51	143	152	76	5.49	7.62
4"/DN100	114.3	190	64	190	190	102	6.02	8.56
6"/DN150	168.3	286	95	286	267	140	7.11	10.97
8"/DN200	219.1	381	127	381	305	178	8.18	12.70
10"/DN250	273.1	470	159	470	419	216	9.27	15.09
12"/DN300	323.9	559	190	559	457	254	9.53	17.48
14"/DN350	355.6	610	210	610	533	279	9.53	19.05
16"/DN400	406.4	711	241	711	610	305	9.53	21.44
18"/DN450	457.2	762	267	762	686	330	9.53	23.83
20"/DN500	508.0	914	305	914	762	356	9.53	26.19
24"/DN600	609.6	1067	356	1067	914	406	9.53	30.96

FORGED SW & THD FITTINGS — ASME B16.11 (½" – 4", Class 3000/6000)

NPS/DN	90° Elbow C-to-F (mm)	45° Elbow C-to-F (mm)	Tee C-to-F (mm)	Full Coupling End-to-End	Half Coupling End-to-End	CL 3000 Wall (mm)	CL 6000 Wall (mm)
½"/DN15	21	14	21	44	26	3.9	6.4
¾"/DN20	25	17	25	51	30	4.0	7.1
1"/DN25	29	19	29	57	35	4.6	8.1
1½"/DN40	38	25	38	70	44	5.1	9.7
2"/DN50	48	32	48	83	54	5.5	11.1
3"/DN80	70	46	70	108	76	7.6	14.3
4"/DN100	86	57	86	133	92	9.5	17.1



Thread Dimensions — Metric Coarse, Fine & Inch

ISO 261 Metric · ASME B1.1 Unified · Tapping drills · Clearance holes · All dimensions in mm

METRIC COARSE THREAD — ISO 261 / DIN 13 (M1 to M100)

Size	Pitch (mm)	d Pitch Dia (mm)	d Minor Dia (mm)	Tensile Area (mm ²)	Tap Drill (mm)	Medium Clr (mm)	TPI (approx)
M1	0.250	0.8376	0.6933	0.460	0.75	1.1	≈101.6
M1.2	0.250	1.0376	0.8933	0.732	0.95	1.3	≈101.6
M1.4	0.300	1.2051	1.0319	0.983	1.10	1.5	≈84.7
M1.6	0.350	1.3727	1.1706	1.270	1.25	1.7	≈72.6
M2	0.400	1.7402	1.5092	2.073	1.60	2.2	≈63.5
M2.5	0.450	2.2077	1.9479	3.391	2.05	2.7	≈56.4
M3	0.500	2.6753	2.3865	5.031	2.50	3.4	≈50.8
M4	0.700	3.5454	3.1412	8.779	3.30	4.5	≈36.3
M5	0.800	4.4804	4.0185	14.183	4.20	5.5	≈31.7
M6	1.000	5.3505	4.7731	20.123	5.00	6.6	≈25.4
M8	1.250	7.1881	6.4664	36.608	6.75	9.0	≈20.3
M10	1.500	9.0258	8.1596	57.989	8.50	11.0	≈16.9
M12	1.750	10.8634	9.8529	84.266	10.20	13.5	≈14.5
M16	2.000	14.7010	13.5462	156.668	14.00	17.5	≈12.7
M20	2.500	18.3762	16.9327	244.793	17.50	22.0	≈10.2
M24	3.000	22.0515	20.3193	352.503	21.00	26.0	≈8.5
M30	3.500	27.7267	25.7058	560.584	26.50	33.0	≈7.3
M36	4.000	33.4020	31.0924	816.721	32.00	39.0	≈6.3
M42	4.500	39.0772	36.4789	1120.905	37.50	45.0	≈5.6
M48	5.000	44.7525	41.8655	1473.147	43.00	52.0	≈5.1
M56	5.500	52.4278	49.2520	2030.015	50.50	62.0	≈4.6
M64	6.000	60.1030	56.6386	2675.970	58.00	70.0	≈4.2
M72	6.000	68.1030	64.6386	3459.744	66.00	78.0	≈4.2
M80	6.000	76.1030	72.6386	4344.050	74.00	86.0	≈4.2
M100	6.000	96.1030	92.6386	6994.637	94.00	107.0	≈4.2

UNIFIED INCH THREAD — ASME B1.1 (Selected UNC / UNF sizes)

Size	UNC TPI	UNC Tap Drill	UNF TPI	UNF Tap Drill	UNC Tensile Area (mm ²)	UNF Tensile Area (mm ²)	ISO Metric Equivalent
#4	40	2.85mm	48	2.97mm	8.9	9.8	M3
#6	32	3.51mm	40	3.66mm	14.3	15.5	M3.5
#8	32	4.17mm	36	4.27mm	20.5	22.0	M4
#10	24	4.72mm	32	5.07mm	28.3	31.0	M5
¼"	20	5.16mm	28	5.56mm	32.5	36.7	M6
5/16"	18	6.63mm	24	7.03mm	51.6	57.4	M8
3/8"	16	8.10mm	24	8.64mm	92.6	99.2	M10
7/16"	14	9.40mm	20	9.94mm	119	127	M11
½"	13	10.72mm	20	11.28mm	162	174	M12

Recommended Torque Tightening Values (N·m)

Dry condition (K=0.20) · 60% of proof load · Property class 4.6 · 8.8 · 10.9 · 12.9 · SS A2/A4

Size	At (mm ²)	Cl 4.6 (N·m)	Cl 5.8 (N·m)	Cl 8.8 (N·m)	Cl 10.9 (N·m)	Cl 12.9 (N·m)	A2-70 SS (N·m)	A4-70 SS (N·m)	Lubric. Cl 8.8
M3	4.75	0.4	0.6	1.0	1.4	1.7	0.8	0.8	0.8
M4	8.26	0.9	1.3	2.3	3.3	3.8	1.8	1.8	1.7
M5	13.42	1.8	2.7	4.7	6.7	7.8	3.6	3.6	3.5
M6	18.99	3.1	4.6	7.9	11.3	13.3	6.2	6.2	5.9
M8	34.70	7.5	11.3	19.3	27.6	32.3	15.0	15.0	14.5
M10	55.11	14.9	22.5	38.4	54.9	64.1	29.8	29.8	28.8
M12	80.21	26.0	39.3	67.0	95.9	112.0	52.0	52.0	50.2
M14	110.00	41.6	62.8	107.2	153.4	179.3	83.2	83.2	80.4
M16	150.33	64.9	98.1	167.4	239.6	280.0	129.9	129.9	125.6
M18	183.70	89.3	134.9	230.1	329.3	384.9	178.6	178.6	172.6
M20	234.89	126.8	191.7	327.0	467.9	546.8	253.7	253.7	245.2
M22	292.36	173.7	262.4	447.7	640.6	748.7	347.3	347.3	335.8
M24	338.23	219.2	331.2	565.0	808.5	944.9	438.3	438.3	423.8
M27	443.10	323.0	488.1	832.7	1191.6	1392.6	646.0	646.0	624.5
M30	539.59	437.1	660.5	1126.7	1612.3	1884.2	874.1	874.1	845.0
M33	670.17	597.1	902.3	1539.2	2202.7	2574.3	1194.2	1194.2	1154.4
M36	787.73	765.7	1157.0	1973.7	2824.5	3300.9	1531.3	1531.3	1480.3
M39	944.03	994.1	1502.1	2562.5	3667.0	4285.5	1988.1	1988.1	1921.9
M42	1082.69	1227.8	1855.3	3164.9	4529.1	5293.1	2455.5	2455.5	2373.7
M45	1264.73	1536.6	2322.0	3961.1	5668.5	6624.7	3073.3	3073.3	2970.8
M48	1424.44	1846.1	2789.6	4758.8	6810.0	7958.6	3692.1	3692.1	3569.1

IMPORTANT: All torque values are theoretical (K=0.20, 60% proof load) for DRY, unlubricated, non-galvanized fasteners. Actual torque depends on lubrication (reduce 20–30%), plating, surface finish, joint stiffness and re-use cycle. Structural bolts (EN 14399 / AISC): use torque method or Turn-of-Nut as specified by the structural engineer. Lubricated column assumes MoS2 grease or equivalent (K≈0.15). Always calibrate torque wrench before use. For critical joints: verify first-off tightening against direct tension indicator (DTI) or clamp force measurement.



Clearance Holes, Tapping Drills & Pipe Schedule Reference

ISO 273 clearance holes · Metric tapping drills · ASME/ANSI pipe schedule wall thickness in mm

BOLT CLEARANCE HOLES — ISO 273 (Fine / Medium / Coarse) & TAPPING DRILL SIZES (M3 – M100)

Size	Fine Fit (mm)	Medium Fit (mm)	Coarse Fit (mm)	Tap Drill Coarse (mm)	Tap Drill Fine (mm)	CSK Dia 90° (mm)	CSK Depth (mm)
M3	3.2	3.4	3.6	2.50	2.5	6.0	1.7
M4	4.3	4.5	4.8	3.30	3.5	8.0	2.3
M5	5.3	5.5	5.8	4.20	4.5	10.0	2.9
M6	6.4	6.6	7.0	5.00	5.5	12.0	3.5
M8	8.4	9.0	10.0	6.75	7.0	16.0	4.6
M10	10.5	11.0	12.0	8.50	9.0	20.0	5.8
M12	13.0	13.5	14.5	10.20	10.5	24.0	6.9
M14	15.0	15.5	16.5	12.00	12.5	28.0	8.1
M16	17.0	17.5	18.5	14.00	14.5	32.0	9.2
M18	19.0	20.0	21.0	15.50	16.5	36.0	10.4
M20	21.0	22.0	24.0	17.50	18.0	40.0	11.5
M22	23.0	24.0	26.0	19.50	20.0	44.0	12.7
M24	25.0	26.0	28.0	21.00	22.0	48.0	13.8
M27	28.0	30.0	32.0	24.00	25.0	54.0	15.6
M30	31.0	33.0	35.0	26.50	28.0	60.0	17.3
M33	34.0	36.0	38.0	29.50	31.0	66.0	19.0
M36	37.0	39.0	42.0	32.00	33.0	72.0	20.8
M39	40.0	42.0	45.0	35.00	36.0	78.0	22.5
M42	43.0	45.0	48.0	37.50	39.0	84.0	24.2
M45	46.0	48.0	52.0	40.50	42.0	90.0	26.0
M48	50.0	52.0	56.0	43.00	45.0	96.0	27.7
M52	54.0	56.0	60.0	47.00	—	104.0	30.0
M56	58.0	62.0	66.0	50.50	—	112.0	32.3
M60	62.0	66.0	70.0	54.00	—	120.0	34.6
M64	66.0	70.0	74.0	58.00	—	128.0	36.9
M72	74.0	78.0	82.0	66.00	—	144.0	41.5
M80	82.0	86.0	90.0	74.00	—	160.0	46.2
M90	93.0	96.0	100.0	84.00	—	180.0	51.9
M100	104.0	107.0	112.0	94.00	—	200.0	57.7

PIPE SCHEDULE WALL THICKNESS — ASME B36.10 / B36.19 (mm) Key NPS sizes

NPS / DN	OD (mm)	Sch 5S (mm)	Sch 10S (mm)	Sch 10 (mm)	Sch 40S (mm)	Sch 40 (mm)	Sch 80S (mm)	Sch 80 (mm)	Sch 160 (mm)	XXS (mm)
½"/DN15	21.3	1.65	2.11	2.77	2.77	2.77	3.73	3.73	4.78	7.47
¾"/DN20	26.7	1.65	2.11	2.87	2.87	2.87	3.91	3.91	5.56	7.82
1"/DN25	33.4	1.65	2.77	3.38	3.38	3.38	4.55	4.55	6.35	9.09
1½"/DN40	48.3	1.65	2.77	3.68	3.68	3.68	5.08	5.08	7.14	10.16
2"/DN50	60.3	1.65	2.77	3.91	3.91	3.91	5.54	5.54	8.74	11.07