

SPECIFICATIONS — Steel Pipe , Fitting & Flange

Flange

Specification	MS SS400, SS304, SS316
Product	Slip On, Blind
Face	Plain/Flat Face
Bore	Pipe Schedule
Grade	Mild Steel, Stainless Steel



DIMENSIONS - JIS 5K

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	60	60	12	10	4
20	3/4	85	65	12	10	4
25	1	95	75	12	10	4
32	1-1/4	115	90	15	12	4
40	1-1/2	120	95	15	12	4
50	2	130	105	15	12	4
65	2-1/2	155	130	15	12	4
80	3	180	145	19	16	4
100	4	200	165	19	16	8
125	5	235	200	19	16	8
150	6	265	230	19	16	8
200	8	320	280	23	20	8
250	10	385	345	23	20	12
300	12	430	390	23	22	12
350	14	480	435	25	22	12
400	16	540	495	25	22	16
450	18	605	555	25	22	16
500	20	655	605	25	24	20
550	22	720	665	27	24	20
600	24	770	715	27	24	20

DIMENSIONS - JIS 10K

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	95	70	15	12	4
20	3/4	100	75	15	12	4
25	1	125	90	19	16	4
32	1-1/4	135	100	19	16	4
40	1-1/2	140	105	19	16	4
50	2	155	120	19	16	4
65	2-1/2	175	140	19	16	4
80	3	185	150	19	16	8
100	4	210	175	19	16	8
125	5	250	210	23	20	8
150	6	280	240	23	20	8
200	8	330	290	23	20	12
250	10	400	355	25	22	12
300	12	445	400	25	22	16
350	14	490	445	25	22	16
400	16	560	510	27	25	16
450	18	620	565	27	25	20
500	20	675	620	27	25	20
550	22	745	680	33	27	20
600	24	795	730	33	27	24

Notes: **D** Flange Diameter
n Number of Bolt Holes
Pcd Pit Circle Diameter
d Diameter of bolt holes

SPECIFICATIONS — Steel Pipe , Fitting & Flange

Flange

Specification	MS SS400, SS304, SS316
Product	Slip On, Blind
Face	Plain/Flat Face
Bore	Pipe Schedule
Grade	Mild Steel, Stainless Steel



DIMENSIONS - JIS 16K

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	95	70	15	12	4
20	3/4	100	75	15	12	4
25	1	125	90	19	16	4
32	1-1/4	135	100	19	16	4
40	1-1/2	140	105	19	16	4
50	2	155	120	19	16	8
65	2-1/2	175	140	19	16	8
80	3	200	170	23	20	8
100	4	225	185	23	20	8
125	5	270	225	25	22	8
150	6	305	260	25	22	12
200	8	350	305	25	22	12
250	10	430	380	27	25	12
300	12	480	430	27	25	16
350	14	540	480	33	27	16
400	16	604	540	33	27	16
450	18	675	605	33	27	20
500	20	730	660	33	27	20
550	22	795	720	39	36	20
600	24	895	770	39	36	24

DIMENSIONS - ANSI 150

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	88	60	16	14	4
20	3/4	98	69	16	14	4
25	1	107	79	16	14	4
32	1-1/4	117	88	16	14	4
40	1-1/2	127	98	16	14	4
50	2	152	120	19	16	4
65	2-1/2	177	139	19	16	4
80	3	190	152	19	16	8
100	4	228	190	19	16	8
125	5	254	215	22	20	8
150	6	279	241	22	20	8
200	8	342	298	22	20	8
250	10	4006	361	25	22	12
300	12	482	431	25	22	12
350	14	533	476	28	25	12
400	16	596	539	28	25	16
450	18	635	577	31	27	16
500	20	698	635	31	27	20
550	22	749	692	35	32	20
600	24	812	749	35	32	20

Notes: **D** Flange Diameter
n Number of Bolt Holes
Pcd Pit Circle Diameter
d Diameter of bolt holes

SPECIFICATIONS — Steel Pipe , Fitting & Flange

Flange

Specification	MS SS400, SS304, SS316
Product	Slip On, Blind
Face	Plain/Flat Face
Bore	Pipe Schedule
Grade	Mild Steel, Stainless Steel



DIMENSIONS - DIN PN16

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	95	65	14	12	4
20	3/4	105	75	14	12	4
25	1	115	85	14	12	4
32	1-1/4	140	100	14	12	4
40	1-1/2	150	110	18	14	4
50	2	165	125	18	16	4
65	2-1/2	185	145	18	16	4
80	3	200	160	18	16	8
100	4	220	180	18	16	8
125	5	250	210	18	20	8
150	6	285	240	22	20	8
200	8	340	295	22	20	12
250	10	405	355	26	22	12
300	12	460	410	26	22	12
350	14	520	470	26	25	16
400	16	580	525	30	25	16
450	18					
500	20	715	650	33	27	20
550	22					
600	24	780	770	36	32	20

DIMENSIONS - DIN PN40

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	95	65	14	12	4
20	3/4	105	75	14	12	4
25	1	115	85	14	12	4
32	1-1/4	140	100	14	14	4
40	1-1/2	150	110	18	16	4
50	2	165	125	18	16	4
65	2-1/2	185	145	18	16	8
80	3	200	160	18	16	8
100	4	235	190	22	19	8
125	5	270	220	26	24	8
150	6	300	250	26	24	8
200	8	375	320	30	27	12
250	10	450	385	33	27	12
300	12	515	450	33	27	16
350	14	580	510	36	32	16
400	16	660	585	39	35	16
450	18					
500	20	755	670	42	38	20
550	22					
600	24	890	795	48	45	20

Notes: **D** Flange Diameter
n Number of Bolt Holes
Pcd Pit Circle Diameter
d Diameter of bolt holes

SPECIFICATIONS — Steel Pipe , Fitting & Flange

Forged Flange

Specification	ASTM A105N
	ASTM A182 F304/304L
	ASTM A182 F316/316L
Product	Slip On, Lap Joint, Weld-Neck, Socket Weld, Blind
Face	Raised Face, Ring Joint



ASTM Standard

ASTM specifications are, basically, materials specifications. They regulate approved raw materials from which flanges can be made - ingots, or blooms, billets, slabs or bars. In addition, they govern the methods of manufacture, quality control procedures and markings of forged steel flanges. ASTM specifications are divided into five categories:

A105 - Carbon grades for high temperature service

A181 - Carbon grades for general service

A182 - Alloy and stainless grades for high temperature service

A350 - Carbon and alloy grades for low temperature service

ANSI, MSS and API Standard

ANSI, MSS and API standards govern flange dimensions and tolerances. ASME/ANSI B16.5, titled "Steel Pipe Flanges and Flanged Fittings", is the basic standard. It covers forged steel flanges, sizes NPS 1/2 (DN 15) through NPS 24 (DN 600). CSA standard CAN3-Z245 12-M96 covers the manufacture, dimensions, tolerances and material requirements for pipe line flanges. ASME/ANSI B16.36 covers Orifice flanges. The following MSS, API and AWWA standards are written to supplement B16.5:

MSS SP-6: Flange facings

MSS SP-9: Spot facing for bronze, iron and steel flanges

MSS SP-25: Marking of flanges

MSS SP-39: Bolts and nuts for flanges

API6A: Wellhead equipment

AWWA C207: Hub flanges

The following codes are not flange specifications, but they influence the manufacture of forged steel flanges:

ASME: Boiler and Pressure Vessel Code

ASME/ANSI B31.1: Power Piping

ASME/ANSI B31.3: Petroleum and refinery piping

ASME/ANSI B31.4: Liquid petroleum transportation piping systems

ASME/ANSI B31.5: Refrigeration piping

ASME/ANSI B31.8: Gas transmission and distribution piping systems

ANSI/ASME B36.10M: Standard for wrought steel pipe

ANSI/ASME B36.19M: Standard for stainless steel pipe

ANSI/ASME B16.47: Large diameter pipe line flanges NPS 22 (DN 550) and NPS 26 (DN 650) through NPS 36 (DN900)

SPECIFICATIONS — Steel Pipe , Fitting & Flange

Forged Flange

Specification	ASTM A105N
	ASTM A182 F304/304L
	ASTM A182 F316/316L
Product	Slip On, Lap Joint, Weld-Neck, Socket Weld, Blind
Face	Raised Face, Ring Joint



DIMENSIONS - ANSI 150

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	88	60	16	14	4
20	3/4	98	69	16	14	4
25	1	107	79	16	14	4
32	1-1/4	117	88	16	14	4
40	1-1/2	127	98	16	14	4
50	2	152	120	19	16	4
65	2-1/2	177	139	19	16	4
80	3	190	152	19	16	8
100	4	228	190	19	16	8
125	5	254	215	22	20	8
150	6	279	241	22	20	8
200	8	342	298	22	20	8
250	10	400	361	25	22	12
300	12	482	431	25	22	12
350	14	533	476	28	25	12
400	16	596	539	28	25	16
450	18	635	577	31	27	16
500	20	698	635	31	27	20
550	22	749	692	35	32	20
600	24	812	749	35	32	20

DIMENSIONS - ANSI 300

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	95	67	16	14	4
20	3/4	118	83	19	16	4
25	1	124	89	19	16	4
32	1-1/4	133	98	19	16	4
40	1-1/2	156	114	22	20	4
50	2	165	127	19	16	8
65	2-1/2	191	149	22	20	8
80	3	210	168	22	20	8
100	4	254	200	22	20	8
125	5	279	235	22	20	8
150	6	318	270	22	20	12
200	8	381	330	25	22	12
250	10	445	387	28	24	16
300	12	521	451	31	27	16
350	14	584	514	31	27	20
400	16	648	572	35	32	20
450	18	711	629	35	32	24
500	20	775	686	35	32	24
550						
600	24	914	813	41	37	24

Notes: **D** Flange Diameter
n Number of Bolt Holes
Pcd Pit Circle Diameter
d Diameter of bolt holes



WELD NECK



SLIP-ON



SOCKET WELD



LAP JOINT



THREADED



BLIND

SPECIFICATIONS — Steel Pipe , Fitting & Flange

Forged Flange

Specification	ASTM A105N
	ASTM A182 F304/304L
	ASTM A182 F316/316L
Product	Slip On, Lap Joint, Weld-Neck, Socket Weld, Blind
Face	Raised Face, Ring Joint



DIMENSIONS - ANSI 600

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	95	67	16	14	4
20	3/4	118	83	19	16	4
25	1	124	89	19	16	4
32	1-1/4	133	98	19	16	4
40	1-1/2	156	114	22	20	4
50	2	165	127	19	16	8
65	2-1/2	191	149	22	20	8
80	3	210	168	22	20	8
100	4	273	216	25	22	8
125	5	330	267	28	24	8
150	6	356	292	28	24	12
200	8	419	349	32	27	12
250	10	508	432	35	32	16
300	12	559	489	35	32	20
350	14	603	527	38	35	20
400	16	686	603	41	38	20
450	18	743	654	44	40	20
500	20	813	724	44	40	24
550	22					
600	24	940	838	50	47	24

DIMENSIONS - ANSI 900

DN	NPS	D (mm)	Pcd (mm)	d (mm)	Bolt (mm)	N (mm)
15	1/2	121	83	22	20	4
20	3/4	130	89	22	20	4
25	1	149	102	25	22	4
32	1-1/4	159	111	25	22	4
40	1-1/2	118	124	29	24	4
50	2	216	165	25	22	8
65	2-1/2	245	191	29	24	8
80	3	241	191	25	22	8
100	4	292	235	32	28	8
125	5	349	279	35	32	8
150	6	381	318	32	28	12
200	8	470	393	38	35	12
250	10	546	470	38	35	16
300	12	610	533	38	35	20
350	14	641	559	41	38	20
400	16	705	616	44	40	20
450	18	787	686	51	47	20
500	20	857	749	54	50	20
550						
600	24	1041	902	67	63	20

Notes: **D** Flange Diameter
n Number of Bolt Holes
Pcd Pit Circle Diameter
d Diameter of bolt holes



WELD NECK



SLIP-ON



SOCKET WELD



LAP JOINT



THREADED



BLIND