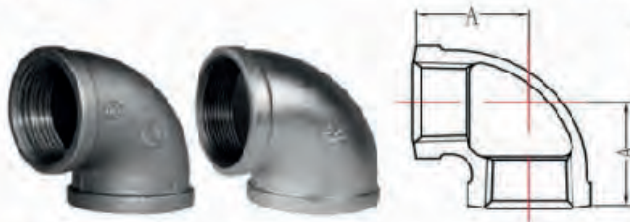


Elbows

90° Elbow


Unit:mm

90

Size	In	1/4	3/8	1/2	3/4	1	1 1/4
	mm	8	10	15	20	25	32
A		20	24	27	32	37	44.5
Size	In	1 1/2	2	2 1/2	3	4	6
	mm	40	50	65	80	100	150
A		48.5	57	68.5	77.5	96.5	129

90° M&F Elbow


Unit:mm

92

Size	In	1/4	3/8	1/2	3/4	1	1 1/4
	mm	8	10	15	20	25	32
A		20	25	28	33	38	45
B		28	33	38	44	52	60
Size	In	1 1/2	2	2 1/2	3	4	-
	mm	40	50	65	80	100	-
A		50	58	69	77.5	96.5	-
B		65	74	90	100	120	-

Elbow, Reducing


Unit:mm

90R

Size		A	B	Size		A	B
mm	in			mm	in		
15×10	1/2×3/8	25	25	65×25	2 1/2×1	47.5	59
20×15	3/4×1/2	29	30	65×32	2 1/2×1 1/4	51.5	61
25×10	1×3/8	29	31	65×40	2 1/2×1 1/2	54.5	61
25×15	1×1/2	31	33	65×50	2 1/2×2	59.5	64
25×20	1×3/4	34	35	80×15	3×1/2	42.5	64
32×10	1 1/4×3/8	31	36	80×20	3×3/4	45.5	65
32×15	1 1/4×1/2	34	37	80×25	3×1	49.5	67
32×20	1 1/4×3/4	36	40	80×32	3×1 1/4	54.5	69
32×25	1 1/4×1	40	41	80×40	3×1 1/2	57.5	71
40×15	1 1/2×1/2	35	41	80×50	3×2	61.5	71
40×20	1 1/2×3/4	37	43	80×65	3×2 1/2	71.5	74
40×25	1 1/2×1	41	45	100×15	4×1/2	49.5	78
40×32	1 1/2×1 1/4	45	47	100×20	4×3/4	53.5	79
50×15	2×1/2	37	47	100×25	4×1	56.5	82
50×20	2×3/4	40	49	100×32	4×1 1/4	60.5	85
50×25	2×1	43	51	100×40	4×1 1/2	62.5	85
50×32	2×1 1/4	47	53	100×50	4×2	68.5	86
50×40	2×1 1/2	51	54	100×65	4×2 1/2	77.5	89
65×15	2 1/2×1/2	40.5	56	100×80	4×3	82.5	90
65×20	2 1/2×3/4	43.5	57	-	-	-	-

45° Elbow


Unit:mm

120

Size	In	1/2	3/4	1	1 1/4	1 1/2	2
	mm	15	20	25	32	40	50
A		22	25	28	33	36	43
Size	In	2 1/2	3	4	6	-	-
	mm	65	80	100	150	-	-
A		48.5	53.5	64.5	129	-	-

Tee



Tee

130

Unit:mm

Size	In	1/4	3/8	1/2	3/4	1	1 1/4
	mm	8	10	15	20	25	32
A		20	24	27	32	37	44.5
Size	In	1 1/2	2	2 1/2	3	4	6
	mm	40	50	65	80	100	150
A		48.5	57	68.5	77.5	96.5	129

Tee,Reducing



130R

Unit:mm

Size	mm	15×20	15×25	20×25	20×32	25×32	25×40
	In	1/2×3/4	1/2×1	3/4×1	3/4×1 1/4	1×1 1/4	1×1 1/2
A		30	33	35	40	41	45
B		29	31	34	38	40	41
Size	mm	25×50	32×40	32×50	40×50	40×65	40×80
	In	1×2	1 1/4×1 1/2	1 1/4×2	1 1/2×2	1 1/2×2 1/2	1 1/2×3
A		51	47	53	54	61	71
B		43	45	47	51	54.5	57.5
Size	mm	50×65	50×80	65×80	80×100	-	-
	In	2×2 1/2	2×3	2 1/2×3	3×4	-	-
A		63	71	74	90	-	-
B		58	61.5	71.5	82.5	-	-

Union

Union, Taper Seat



340

Unit:mm

Size	In	1/2	3/4	1	1 1/4	1 1/2	2
	mm	15	20	25	32	40	50
L		47	51.5	57	65	71	79
Size	In	2 1/2	3	4	-	-	-
	mm	65	80	100	-	-	-
L		65.5	94.5	110.5	-	-	-

Coupling

Part Threaded Socket



220

Unit:mm

Size	In	1/4	3/8	1/2	3/4	1	1 1/4
	mm	8	10	15	20	25	32
L		26	29	35	38	44	49
Size	In	1 1/2	2	2 1/2	3	4	6
	mm	40	50	65	80	100	150
L		53	63	72	77	91	118

Sockets

Reducing Socket



Unit:mm

240

Size	mm	10×8	15×8	15×10	20×15	25×10	25×15
	In	3/8×1/4	1/2×1/4	1/2×3/8	3/4×1/2	1×3/8	1×1/2
A		29	35	36	38	44	44
Size	mm	32×15	32×20	32×25	40×15	40×20	40×25
	In	1¼×1/2	1¼×3/4	1¼×1	1½×1/2	1½×3/4	1½×1
A		49	49	49	53	53	53
Size	mm	40×32	50×15	50×20	50×25	50×32	50×40
	In	1½×1¼	2×1/2	2×3/4	2×1	2×1¼	2×1½
A		53	63	63	63	63	63
Size	mm	65×15	65×20	65×25	65×32	65×40	65×50
	In	2½×1/2	2½×3/4	2½×1	2½×1¼	2½×1½	2½×2
A		72	72	72	72	72	72
Size	mm	80×15	80×20	80×25	80×32	80×40	80×50
	In	3×1/2	3×3/4	3×1	3×1¼	3×1½	3×2
A		71	71	71	71	71	71
Size	mm	80×65	100×15	100×20	100×25	100×32	100×40
	In	3×2½	4×1/2	4×3/4	4×1	4×1¼	4×1½
A		71	84	84	84	84	84
Size	mm	100×50	100×65	100×80	25×20	-	-
	In	4×2	4×2½	4×3	1×3/4	-	-
A		84	84	84	44	-	-

Cross

Cross Female



Unit:mm

180

Size	In	1/2	3/4	1	1¼	1½	2
	mm	15	20	25	32	40	50
A		27	32	37	44.5	48.5	57
Size	In	2½	3	4	-	-	-
	mm	55	80	100	-	-	-
A		68.5	77.5	96.5	-	-	-

Bushing

Bushing



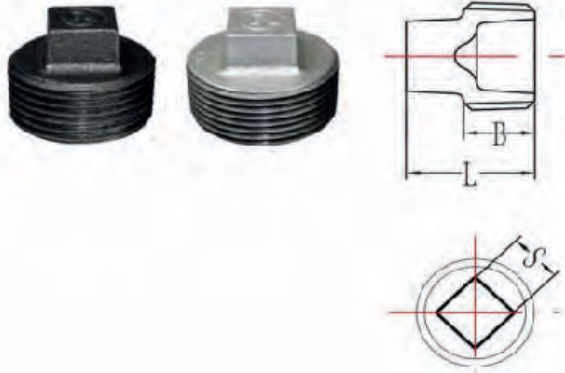
Unit:mm

241

Size	In	3/8×1/4	1/2×1/4	1/2×3/8	3/4×3/8	3/4×1/2	1×1/2
	mm	10×8	15×8	15×10	20×10	20×15	25×15
L		18.5	22.5	22.5	24.5	24.5	28
H		6	6	6	6	6	6.5
S		18.4	22	22	29.6	29.6	37.4

Plug/Caps

Plain Plug



Unit:mm

291

Size	In	1/4	3/8	1/2	3/4	1	1 1/4
	mm	8	10	15	20	25	32
L		15.5	17	22.5	24	27	30
B		10	10	13	14	16.5	20
S		6	7	10	12	15	18
Size	In	1 1/2	2	2 1/2	3	4	-
	mm	40	50	65	80	100	-
L		31	36	40.5	45.5	57	-
B		21	25	26.5	29.5	38	-
S		22	26	30	34	44	-

Round Cap



Unit:mm

301

Size	In	3/8	1/2	3/4	1	1 1/4	1 1/2
	mm	10	15	20	25	32	40
A		17	19	22	24	27	28
Size	In	2	2 1/2	3	4	-	-
	mm	50	65	80	100	-	-
A		32	36	39	46	-	-

Others

Backnut



Unit:mm

310

Size	In	1/2	3/4	1	1 1/4	1 1/2	2
	mm	15	20	25	32	40	50
A		9	10	11	11	12	13
S		29	36	45	56	63	77
Size	In	2 1/2	3	4	-	-	-
	mm	65	80	100	-	-	-
A		15	18	21	-	-	-
S		93	109	137	-	-	-

Round Flange, With 4 Bolt Holes



Unit:mm

329

Size	In	1 1/4	1 1/2	2	2 1/2	3	4
	mm	32	40	50	65	80	100
L		24	26	29	33	34	39
B		105	110	125	145	160	180
N-C		4-18	4-18	4-18	4-18	8-18	8-18
Size	In	6	-	-	-	-	-
	mm	150	-	-	-	-	-
L		42	-	-	-	-	-
B		240	-	-	-	-	-
N-C		8-22	-	-	-	-	-



Side Outlet Elbow



Unit:mm

1221

Size	In	1/2	3/4	1
	mm	15	20	25
A	27	32	37	

Lateral Y Branch,45°



Unit:mm

165

Size	In	1/2	3/4	1	1¼	1½	2	2½	3	4
	mm	15	20	25	32	40	50	65	80	100
A	42	-	62	75	82	-	-	140	-	
B	18	-	23	28	30	-	-	45	-	



STAINLESS STEEL WELD NECK FLANGE TECHNICAL DATA SHEET

TYPE:

- WELD NECK FLANGE
- SLIP-ON FLANGE
- LAP JOINT FLANGE
- SOCKET WELD FLANGE
- THREADED FLANGE
- BLIND FLANGE



FLANGE RATING:

- Specify the flange Standard:
 - ASTM-A182
- Determine the pressure requirements, for the flange PN rating, (e.g. PN 16
ANSI B16.5 Class150、300、600、900、1500 (WN、SO、BL、TH、LJ、SW)

DIAMETER:

- Nominate the nominal bore diameter in mm (DN), according to the applicable flange standard.

FLANGE BORE:

- Nominate the actual flange bore in mm.

For weld neck flanges, nominate the pipe, or branch, steel shell outside diameter.

FACE TYPE:

- - Flat face
- - Raised face
- - O-ring nut

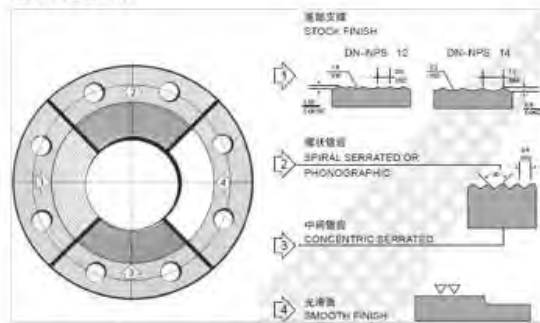
MATERIAL:

- - 304/304L
- - 316/316L

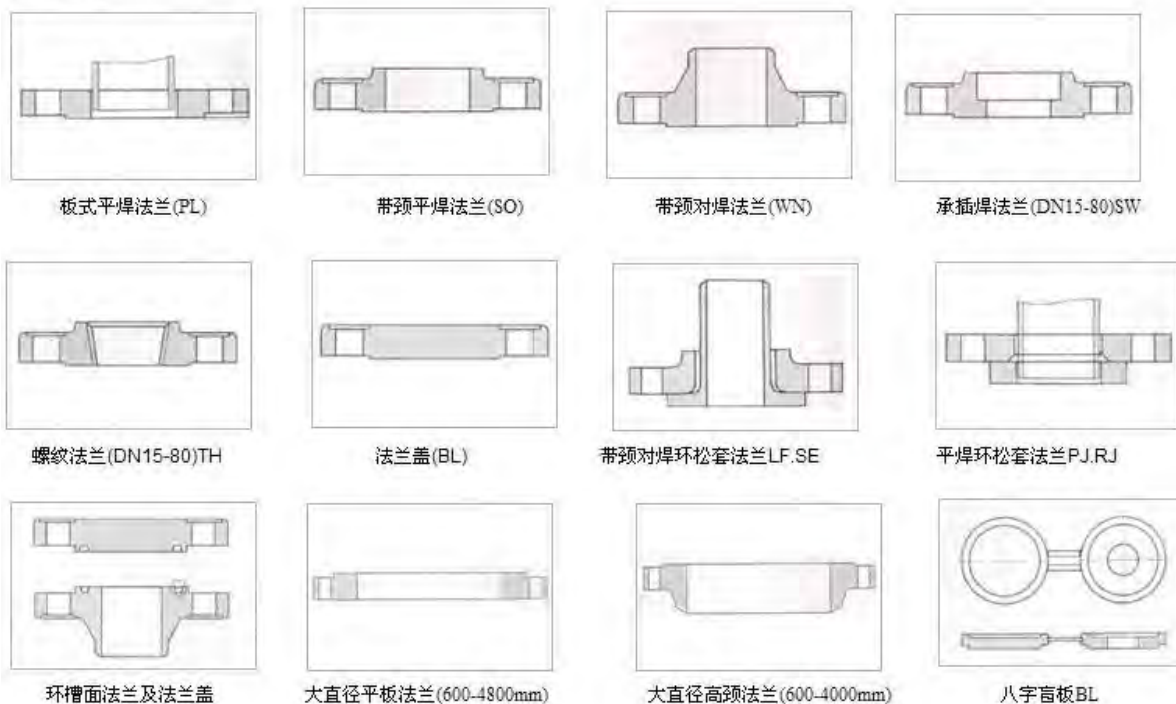
法兰剖面图



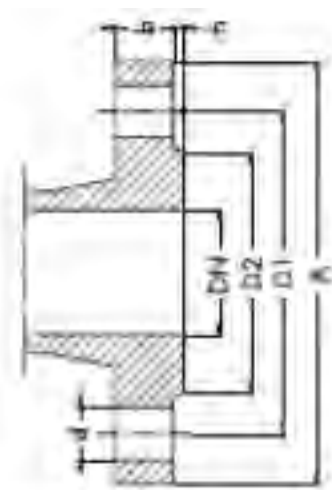
密封面参数



法兰结构图



flange dimensions and drilling to ANSI B 16.5



DN = diameter nominal (size)
 A = flange ?
 b = thickness of flange
 D₂ = diameter of raised face ?
 D₁ = diameter of bolt circle ?
 n = number of bolts
 d = diameter of bolt holes ?
 h = height of raised face (RF)

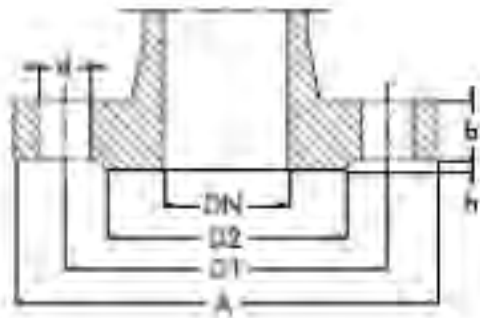
h* = 1/16" = 1.6 mm for ANSI Class 150 - 300
 h* = 1/4" = 6.4 mm for ANSI Class 400 - 2500
 * for steel flanges only

b = raised face included for ANSI Class 150 - 300
 b = raised face not included for ANSI Class 400 - 2500

DN		125/150 lbs		300 lbs		400 lbs		600 lbs		900 lbs		1500 lbs		2500 lbs	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
1/2"	A	3 1/2	88.9	3 3/4	95.2	3 3/4	95.2	3 3/4	95.2	4 3/4	121	4 3/4	121	5 1/4	133.4
	b	7/16	11.1	9/16	14.3	9/16	14.3	9/16	14.3	7/8	22.2	7/8	22.2	1 3/16	30.2
	D ₂	1 3/8	34.9	1 3/8	34.9	1 3/8	34.9	1 3/8	34.9	1 3/8	34.9	1 3/8	34.9	1 3/8	34.9
	D ₁	2 3/8	60.3	2 5/8	66.7	2 5/8	66.7	2 5/8	66.7	3 1/4	82.6	3 1/4	82.6	3 1/2	88.9
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	d	5/8	15.9	5/8	15.9	5/8	15.9	5/8	15.9	5/8	15.9	7/8	22.2	7/8	22.2
3/4"	A	3 7/8	98.4	4 5/8	117.5	4 5/8	117.5	4 5/8	117.5	5 1/8	130	5 1/8	130	5 1/2	139.7
	b	1/2	12.7	5/8	15.9	5/8	15.9	5/8	15.9	1	25.4	1	25.4	1 1/4	31.8
	D ₂	1 11/16	42.9	1 11/16	42.9	1 11/16	42.9	1 11/16	42.9	1 11/16	42.9	1 11/16	42.9	1 11/16	42.9
	D ₁	2 3/4	69.8	3 1/4	82.5	3 1/4	82.5	3 1/4	82.5	3 1/2	88.9	3 1/2	88.9	3 3/4	95.2
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	d	5/8	15.9	3/4	19	3/4	19	3/4	19	3/4	19	7/8	22.2	7/8	22.2
1"	A	4 1/4	108	4 7/8	123.8	4 7/8	123.8	4 7/8	123.8	5 7/8	149.2	5 7/8	149.2	6 1/4	159
	b	9/16	14.3	1 1/16	17.5	1 1/16	17.5	1 1/16	17.5	1 1/8	28.6	1 1/8	28.6	1 3/8	34.9
	D ₂	2	50.8	2	50.8	2	50.8	2	50.8	2	50.8	2	50.8	2	50.8
	D ₁	3 1/8	79.4	3 1/2	88.9	3 1/2	88.9	3 1/2	88.9	4	102	4	102	4 1/4	108
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	d	5/8	15.9	3/4	19	3/4	19	3/4	19	1	25.4	1	25.4	1	25.4
1 1/4"	A	4 5/8	117.5	5 1/4	133.4	5 1/4	133.4	5 1/4	133.4	6 1/4	159	6 1/4	159	7 1/4	184.2
	b	5/8	15.9	3/4	19	13/16	20.6	13/16	20.6	1 1/8	28.6	1 1/8	28.6	1 1/2	38.1
	D ₂	2 1/2	63.5	2 1/2	63.5	2 1/2	63.5	2 1/2	63.5	2 1/2	63.5	2 1/2	63.5	2 1/2	63.5
	D ₁	3 1/2	88.9	3 7/8	98.4	3 7/8	98.4	3 7/8	98.4	4 3/8	111	4 3/8	111	5 1/8	130
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	d	5/8	15.9	3/4	19	3/4	19	3/4	19	1	25.4	1	25.4	1 1/8	28.6
1 1/2"	A	5	127	6 1/8	155.6	6 1/8	155.6	6 1/8	155.6	7	177.8	7	177.8	8	203
	b	1 1/16	17.5	13/16	20.6	7/8	22.2	7/8	22.2	1 1/4	31.8	1 1/4	31.8	1 3/4	44.5
	D ₂	2 7/8	73	2 7/8	73	2 7/8	73	2 7/8	73	2 7/8	73	2 7/8	73	2 7/8	73
	D ₁	3 7/8	98.4	4 1/2	114	4 1/2	114	4 1/2	114	4 7/8	124	4 7/8	124	5 3/4	146
	n	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	d	5/8	15.9	7/8	22.2	7/8	22.2	7/8	22.2	1 1/8	28.6	1 1/8	28.6	1 1/4	31.8
2"	A	6	152.4	6 1/2	165.1	6 1/2	165.1	6 1/2	165.1	8 1/2	215.9	8 1/2	215.9	9 1/4	234.9
	b	3/4	19	7/8	22.2	1	25.4	1	25.4	1 1/2	38.1	1 1/2	38.1	2	50.8
	D ₂	3 5/8	92.1	3 5/8	92.1	3 5/8	92.1	3 5/8	92.1	3 5/8	92.1	3 5/8	92.1	3 5/8	92.1
	D ₁	4 3/4	121	5	127	5	127	5	127	6 1/2	165.1	6 1/2	165.1	6 3/4	171
	n	4	4	8	8	8	8	8	8	8	8	8	8	8	8
	d	3/4	19	3/4	19	3/4	19	3/4	19	1	25.4	1	25.4	1 1/8	28.6
2 1/2"	A	7	177.8	7 1/2	190.5	7 1/2	190.5	7 1/2	190.5	9 5/8	244	9 5/8	244	10 1/2	266.7
	b	7/8	22.2	1	25.4	1 1/8	28.6	1 1/8	28.6	1 5/8	41.3	1 5/8	41.3	2 1/4	57.2
	D ₂	4 1/8	104.8	4 1/8	104.8	4 1/8	104.8	4 1/8	104.8	4 1/8	105	4 1/8	105	4 1/8	105
	D ₁	5 1/2	139.7	5 7/8	149.2	5 7/8	149.2	5 7/8	149.2	7 1/2	190.5	7 1/2	190.5	7 3/4	197
	n	4	4	8	8	8	8	8	8	8	8	8	8	8	8
	d	3/4	19	7/8	22.2	7/8	22.2	7/8	22.2	1 1/8	28.6	1 1/8	28.6	1 1/4	31.8

flange dimensions and drilling to ANSI B 16.5

(continued)



DN = diameter nominal (size)
 A = flange ?
 b = thickness of flange
 D₂ = diameter of raised face ?
 D₁ = diameter of bolt circle ?
 n = number of bolts
 d = diameter of bolt holes ?
 h = height of raised face (RF)

h* = 1/16" = 1.6 mm for ANSI Class 150 - 300

h* = 1/4" = 6.4 mm for ANSI Class 400 - 2500

* for steel flanges only

b = raised face included for ANSI Class 150 - 300

b = raised face not included for ANSI Class 400 - 2500

DN		125/150 lbs		300 lbs		400 lbs		600 lbs		900 lbs		1500 lbs		2500 lbs	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
3"	A	7 1/2	190.5	8 1/4	209.6	8 1/4	209.6	8 1/4	209.6	9 1/2	241	10 1/2	267	12	305
	b	15/16	23.8	1 1/8	28.6	1 1/4	31.8	1 1/4	31.8	1 1/2	38.1	1 7/8	47.6	2 5/8	66.7
	D ₂	5	127	5	127	5	127	5	127	5	127	5	127	5	127
	D ₁	6	152.4	6 5/8	168.3	6 5/8	168.3	6 5/8	168.3	7 1/2	190.5	8	203	9	228.6
	n	4	4	8	8	8	8	8	8	8	8	8	8	8	8
	d	3/4	19	7/8	22.2	7/8	22.2	7/8	22.2	1	25.4	1 1/4	31.8	1 3/8	34.9
3 1/2"	A	8 1/2	215.9	9	228.6	9	228.6	9	228.6						
	b	15/16	23.8	1 3/16	30.2	1 3/8	34.9	1 3/8	34.9						
	D ₂	5 1/2	139.7	5 1/2	139.7	5 1/2	139.7	5 1/2	139.7						
	D ₁	7	177.8	7 1/4	184.2	7 1/4	184.2	7 1/4	184.2						
	n	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	d	3/4	19	7/8	22.2	1	25.4	1	25.4	1	25.4	1 1/4	31.8	1 3/8	34.9
4"	A	9	228.6	10	254	10	254	10 3/4	273	11 1/2	292	12 1/4	311	14	356
	b	15/16	23.8	1 1/4	31.7	1 3/8	34.9	1 1/2	38.1	1 3/4	44.4	2 1/8	54	3	76.2
	D ₂	6 3/16	157.2	6 3/16	157.2	6 3/16	157.2	6 3/16	157.2	6 3/16	157.2	6 3/16	157.2	6 3/16	157.2
	D ₁	7 1/2	190	7 7/8	200	7 7/8	200	8 1/2	215.9	9 1/4	235	9 1/2	241	10 3/4	273
	n	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	d	3/4	19	7/8	22.2	1	25.4	1	25.4	1 1/4	31.8	1 3/8	34.9	1 5/8	41.3
5"	A	10	254	11	279.4	11	279.4	13	330.2	13 3/4	349	14 3/4	375	16 1/2	419
	b	15/16	23.8	1 3/8	34.9	1 1/2	38.1	1 3/4	44.4	2	50.8	2 7/8	73	3 5/8	92.1
	D ₂	7 5/16	185.7	7 5/16	185.7	7 5/16	185.7	7 5/16	185.7	7 5/16	185.7	7 5/16	185.7	7 5/16	185.7
	D ₁	8 1/2	215.9	9 1/4	234.9	9 1/4	234.9	10 1/2	266.7	11	279	11 1/2	292	12 3/4	324
	n	8	8	8	8	8	8	8	8	8	8	8	8	8	8
	d	7/8	22.2	7/8	22.2	1	25.4	1 1/8	28.6	1 3/8	34.9	1 5/8	41.3	1 7/8	47.6
6"	A	11	279	12 1/2	317.5	12 1/2	317.5	14	355.6	15	381	15 1/2	394	19	483
	b	1	25.4	1 7/16	36.5	1 5/8	41.3	1 7/8	47.6	2 3/16	55.6	3 1/4	82.6	4 1/4	108
	D ₂	8 1/2	216	8 1/2	215.9	8 1/2	215.9	8 1/2	215.9	8 1/2	215.9	8 1/2	215.9	8 1/2	216
	D ₁	9 1/2	241	10 5/8	269.9	10 5/8	269.9	11 1/2	292.1	12 1/2	318	12 1/2	318	14 1/2	368
	n	8	8	12	12	12	12	12	12	12	12	12	12	8	8
	d	7/8	22.2	7/8	22.2	1	25.4	1 1/8	28.6	1 1/4	31.8	1 1/2	38.1	2 1/8	54
8"	A	13 1/2	342.9	15	381	15	381	16 1/2	419	18 1/2	470	19	482.6	21 3/4	552
	b	1 1/8	28.6	1 5/8	41.3	1 7/8	47.6	2 3/16	55.6	2 1/2	63.5	3 5/8	92.1	5	127
	D ₂	10 5/8	269.9	10 5/8	269.9	10 5/8	269.9	10 5/8	269.9	10 5/8	269.9	10 5/8	269.9	10 5/8	269.9
	D ₁	11 3/4	298.4	13	330.2	13	330.2	13 3/4	349.2	15 1/2	394.2	15 1/2	394.2	17 1/4	438
	n	8	8	12	12	12	12	12	12	12	12	12	12	12	12
	d	7/8	22.2	1	25.4	1 1/8	28.6	1 1/4	31.8	1 1/2	38.1	1 3/4	44.5	2 1/8	54
10"	A	16	406.4	17 1/2	444.5	17 1/2	444.5	20	508	21 1/2	546	23	584	26 1/2	673
	b	1 3/16	30.2	1 7/8	47.6	2 1/8	54	2 1/2	63.5	2 3/4	69.8	4 1/4	108	6 1/2	165
	D ₂	12 3/4	323.8	12 3/4	323.8	12 3/4	323.8	12 3/4	323.8	12 3/4	323.8	12 3/4	323.8	12 3/4	323.8
	D ₁	14 1/4	361.9	15 1/4	387.4	15 1/4	387.4	17	431.8	18 1/2	470	19	482.6	21 1/4	540
	n	12	12	16	16	16	16	16	16	16	16	12	12	12	12
	d	1	25.4	1 1/8	28.6	1 1/4	31.8	1 3/8	34.9	1 1/2	38.1	2	50.8	2 5/8	66.7



INTRODUCTION

BOTH-WELL is equivalent to Win-Win, existing in between both consumers and manufacturer, both devoted employers and valued employees, a bilateral satisfaction.

Ever since its establishment in 1985, with the spirit of pursuing most advanced technology and striving for the ultimate quality-oriented products, the company is continuously utilizing the most up-to-date hi-tech facilities and most sophisticated manufacturing techniques, on the basis of skilled manpower and accumulated experiences, BOTH-WELL has been well-recognized among customers worldwide for the excellence of Quality and Services which has enabled us to win the unrivalled reputation in our industries.

QUALITY ASSURANCE

It is our indelible belief in Quality First.

BOTH-WELL's Quality Management System has been certified with ISO 9001:2015, PED, together with all major international-recognized certificates and being granted as an approval vendor for ARAMCO, also being listed on the Approval Supplier List of major domestic refineries, petro-chemical factories in Taiwan.

BOTH-WELL prides itself in having the best service performance in our industries which can only attribute it to the quality of people we employ and the amicable relationship and close partnership we have built-up with all our customers, and the company will continue its ultimate efforts to satisfy all its customers' demands by providing top quality products and high efficient services by anticipating the continued encouragement and supports from all its customers in the years ahead.

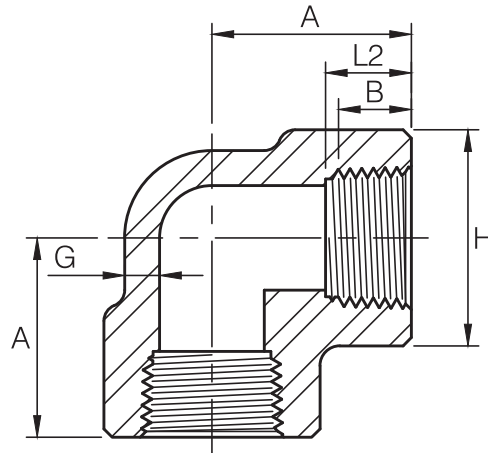
PRODUCTION RANGE AND SPECIFICATION :

TYPE	: A. ELBOW, TEE, COUPLING, HALF COUPLING, CAP, PLUG, BUSHING, UNION, OUTLET, SWAGE NIPPLE, BULL PLUG, REDUCER INSERT AND HEX. NIPPLE, STREET ELBOWS, BOSS,...ETC. B. SOCKET-WELD, THREADED (NPT, and PT, and BSP (ISO7-1, ISO228-1)), BUTT-WELDING.	
SIZE	: NPS 1/8" ~ 4". DN 6 ~ 100	
RATING	: PRESSURE : THREADED END - 2000 / 3000 / 6000 LBS. SOCKET-WELD END - 3000 / 6000 / 9000 LBS. BUTT WELD END - SCH40 / SCH80 / SCH160 / XXS.	
SPECIFICATIONS	: A. DIM. SPEC. : ASME B16.11 MSS SP - 79, 83, 95, 97 and BS3799. B. MATERIAL SPEC : ASME/ASTM SA/A105, SA/A350 LF2, SA/A106, SA/A312, SA/A234, SA/A403. ASME/ASTM SA/A182 (F304, F304L, F316, F316L, F304H, F316H, F317L, F321, F5, F9, F11, F22, F44, F51/60, F53, F91). C. SIZE of RAW MATERIAL : DIA. 19 ~ 120mm ROUND BAR.	
MARKING	: A. CARBON and ALLOY STEEL : MARKED BY STAMPING or LASER MARKING. B. STAINLESS STEEL : MARKED BY JET PRINTING or STAMPING or LASER MARKING. C. 3/8" UNDER : BRAND ONLY. D. 1/2" to 4" : MARKED WITH BRAND, MATERIAL, HEAT CODE, B16 (FOR ASME B16.11 PRODUCT), RATING and SIZE.	
FINISHING	: CARBON STEEL - GALVANIZED, PHOSPHATE, or ANTI-RUST OIL COATING. LOW ALLOY STEEL - PHOSPHATE, or ANTI-RUST OIL COATING. STAINLESS STEEL - PICKLED.	
PACKING	: CARTON / WOODEN CASE. PLYWOODEN CASE	





90° ELBOW



Dimensions are in millimeters.

Threaded						
DN	Nom. Pipe Size	Length of Thread. (Min)		A	G (Min)	H
		B ^(*)	L2 ^(*)			

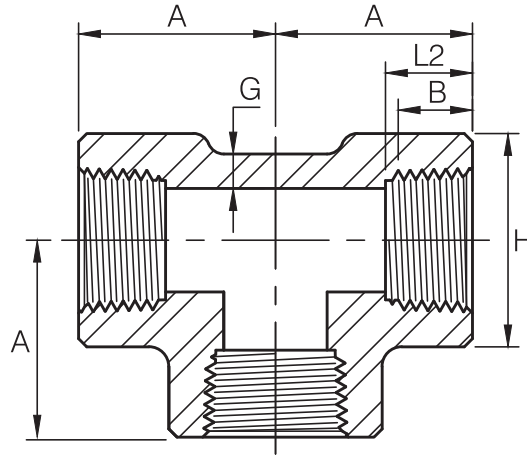
3000Lb

6	1/8	6.4	6.7	21	3.18	22
8	1/4	8.1	10.2	25	3.30	25
10	3/8	9.1	10.4	28	3.51	33
15	1/2	10.9	13.6	33	4.09	38
20	3/4	12.7	13.9	38	4.32	46
25	1	14.7	17.3	44	4.98	56
32	1-1/4	17.0	18.0	51	5.28	62
40	1-1/2	17.8	18.4	60	5.56	75
50	2	19.0	19.2	64	7.14	84
65	2-1/2	23.6	28.9	83	7.65	102
80	3	25.9	30.5	95	8.84	121
100	4	27.7	33.0	114	11.18	152

(*) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for pipe threads (ANSI / ASME B1.20.1) .



TEE



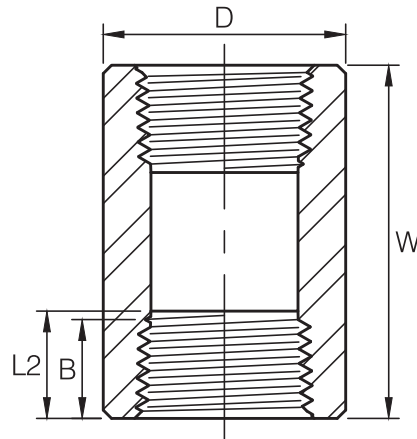
Dimensions are in millimeters.

Threaded						
DN	Nom. Pipe Size	Length of Thread. (Min)		A	G (Min)	H
		B ^(*)	L2 ^(*)			
3000Lb						
6	1/8	6.4	6.7	21	3.18	22
8	1/4	8.1	10.2	25	3.30	25
10	3/8	9.1	10.4	28	3.51	33
15	1/2	10.9	13.6	33	4.09	38
20	3/4	12.7	13.9	38	4.32	46
25	1	14.7	17.3	44	4.98	56
32	1-1/4	17.0	18.0	51	5.28	62
40	1-1/2	17.8	18.4	60	5.56	75
50	2	19.0	19.2	64	7.14	84
65	2-1/2	23.6	28.9	83	7.65	102
80	3	25.9	30.5	95	8.84	121
100	4	27.7	33.0	114	11.18	152

(*) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for pipe threads (ANSI / ASME B1.20.1) .



COUPLING



Dimensions are in millimeters.

Threaded					
DN	Nom. Pipe Size	Length of Thread. (Min)		W	D
		B ^(*)	L2 ^(*)		

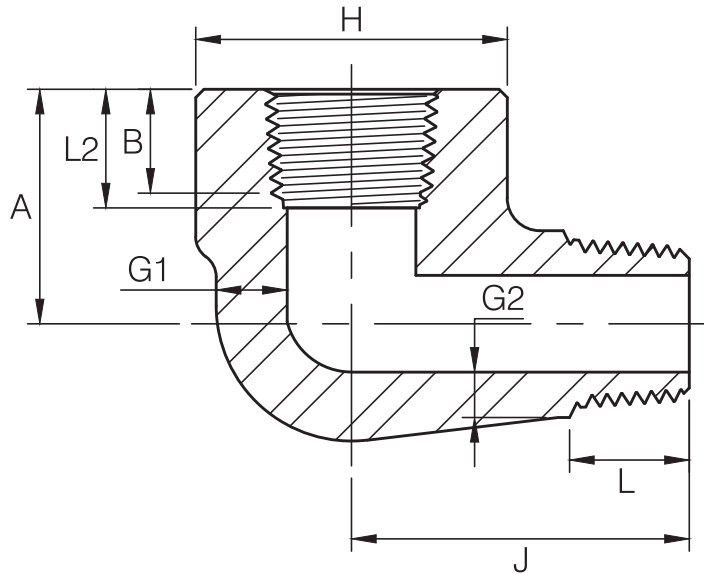
3000Lb

6	1/8	6.4	6.7	32	16
8	1/4	8.1	10.2	35	19
10	3/8	9.1	10.4	38	22
15	1/2	10.9	13.6	48	28
20	3/4	12.7	13.9	51	35
25	1	14.7	17.3	60	44
32	1-1/4	17.0	18.0	67	57
40	1-1/2	17.8	18.4	79	64
50	2	19.0	19.2	86	76
65	2-1/2	23.6	28.9	92	92
80	3	25.9	30.5	108	108
100	4	27.7	33.0	121	140

(*) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for pipe threads (ANSI / ASME B1.20.1) .



STREET ELBOW



Dimensions are in millimeters.

DN	Nom. Pipe Size	H	A	J	G1 (Min)	G2 ⁽¹⁾ (Min)	B ⁽²⁾ (Min)	L2 ⁽²⁾ (Min)	L (Min)
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3000Lb

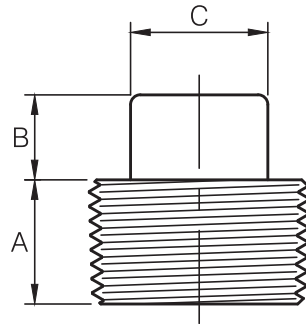
6	1/8	19	19	25	3.18	2.74	6.4	6.7	10.0
8	1/4	25	22	32	3.30	3.22	8.1	10.2	11.0
10	3/8	32	25	38	3.51	3.50	9.1	10.4	13.0
15	1/2	38	28	41	4.09	4.16	10.9	13.6	14.0
20	3/4	44	35	48	4.32	4.88	12.7	13.9	16.0
25	1	51	44	57	4.98	5.56	14.7	17.3	19.0
32	1-1/4	62	51	66	5.28	5.56	17.0	18.0	21.0
40	1-1/2	70	54	71	5.56	6.25	17.8	18.4	21.0
50	2	84	64	84	7.14	7.64	19.0	19.0	22.0

(1) Wall thickness before threading.

(2) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for pipe threads (ANSI / ASME B1.20.1) .



SQUARE HEAD PLUG

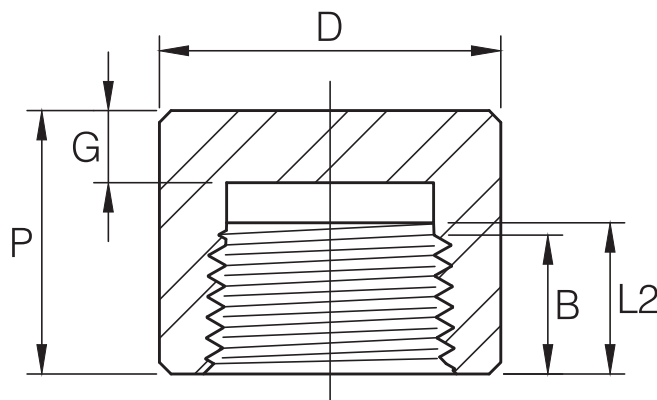


Dimensions are in millimeter

Square Head Plug				
<i>DN</i>	<i>Nom. Pipe Size</i>	<i>A (Min)</i>	<i>B (Min)</i>	<i>C (Min)</i>
6	1/8	10	6	7.15
8	1/4	11	6	9.55
10	3/8	13	8	11.11
15	1/2	14	10	14.29
20	3/4	16	11	15.88
25	1	19	13	20.64
32	1-1/4	21	14	23.81
40	1-1/2	21	16	28.58
50	2	22	18	33.27
65	2-1/2	27	19	38.10
80	3	28	21	42.86
100	4	32	25	63.50



CAP



Dimensions are in millimeters.

Threaded						
DN	Nom. Pipe Size	Length of Thread. (Min)		P	D	G (Min)
		B ^(*)	L2 ^(*)			

3000Lb

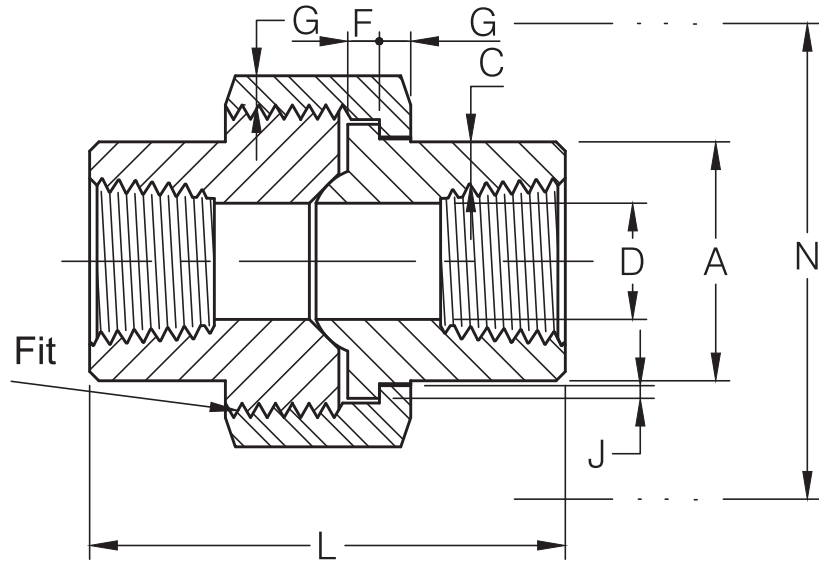
6	1/8	6.4	6.7	19	16	4.8
8	1/4	8.1	10.2	25	19	4.8
10	3/8	9.1	10.4	25	22	4.8
15	1/2	10.9	13.6	32	28	6.4
20	3/4	12.7	13.9	37	35	6.4
25	1	14.7	17.3	41	44	9.7
32	1-1/4	17.0	18.0	44	57	9.7
40	1-1/2	17.8	18.4	44	64	11.2
50	2	19.0	19.2	48	76	12.7
65	2-1/2	23.6	28.9	60	92	15.7
80	3	25.9	30.5	65	108	19.0
100	4	27.7	33.0	68	140	22.4

(*) Dimension B is minimum length of perfect thread. The length of useful thread (B plus threads with fully formed roots and flat crests) shall not be less than L2 (effective length of external thread) required by American National Standard for pipe threads (ANSI / ASME B1.20.1).



THREADED END UNION

H-Thrd's
 Minimum 4 Full Thrd's
 Engagement Class 2A / 2B Fit
 ANSI B1.1



3000Lb

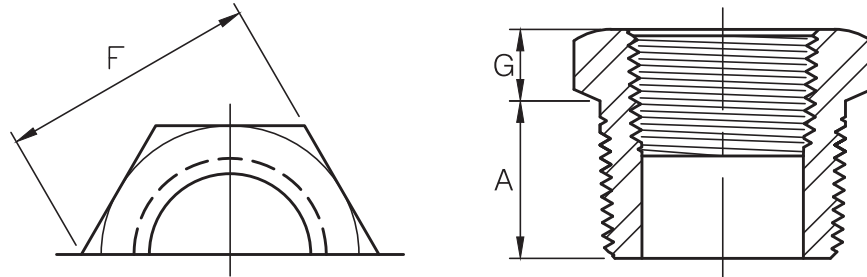
Dimensions are in millimeters.

Nom. Pipe Size	Pipe End (Min) A	Wall (Min) C	Water Way Bore D ⁽¹⁾	Male Flange (Min) F	Nut (Min) G	Thrds. Per 25.4mm H	Bearing (Min) J	Length Assem. Nom. L	Clear Assem. Nut N
1/8	14.7	2.41	8.43 6.43	3.18	3.18	16	1.24	41.4	50.8
1/4	19.0	3.02	11.13 9.45	3.18	3.18	16	1.24	41.4	50.8
3/8	22.9	3.20	14.27 13.51	3.43	3.43	14	1.37	46.0	55.9
1/2	27.7	3.73	17.86 17.07	3.68	3.68	14	1.50	49.0	58.4
3/4	33.5	3.91	23.01 21.39	4.06	4.06	11	1.68	56.9	66.0
1	41.4	4.55	28.98 27.74	4.57	4.45	11	1.85	62.0	78.7
1-1/4	50.5	4.85	37.69 35.36	5.33	5.21	10	2.13	71.1	94.0
1-1/2	57.2	5.08	43.54 41.20	5.84	5.59	10	2.31	76.5	111.8
2	70.1	5.54	55.58 52.12	6.60	6.35	10	2.69	86.1	132.1
2-1/2	85.3	7.01	66.27 64.31	7.49	7.11	8	3.07	102.4	149.9
3	102.4	7.62	82.55 77.27	8.26	8.00	8	3.53	109.0	175.3

(1) Upper and lower values for each size are the respective maximum and minimum dimensions.



HEX HEAD BUSHING



Dimensions are in millimeters.

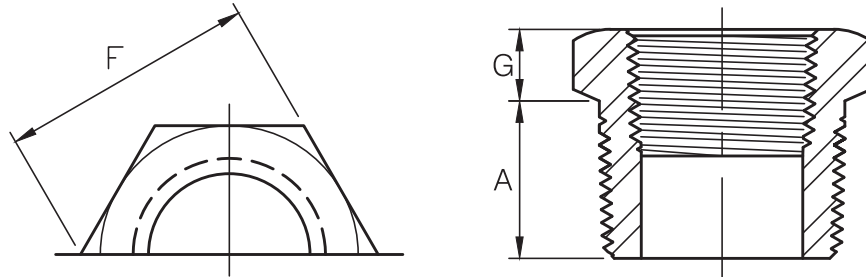
Hex Head Bushing				
DN	Nom. Pipe Size	A (Min)	F (Nom.)	G (Min)
8	1/4	11	15.88	3
10	3/8	13	17.46	4
15	1/2	14	22.23	5
20	3/4	16	26.99	6
25	1	19	34.93	6
32	1-1/4	21	44.45	7
40	1-1/2	21	50.80	8
50	2	22	63.50	9
65	2-1/2	27	76.20	10
80	3	28	88.90	10
100	4	32	117.48	13

(1) CAUTIONARY NOTE REGARDING HEX BUSHINGS.

Hex Head Bushings of one-size reduction should not be used in services where they might be subject to harmful loads and forces than internal pressures.



HEX HEAD BUSHING



Dimensions are in millimeters.

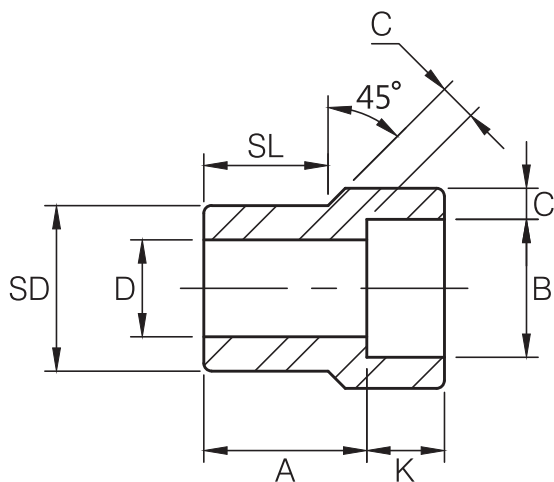
Hex Head Bushing				
DN	Nom. Pipe Size	A (Min)	F (Nom.)	G (Min)
8	1/4	11	15.88	3
10	3/8	13	17.46	4
15	1/2	14	22.23	5
20	3/4	16	26.99	6
25	1	19	34.93	6
32	1-1/4	21	44.45	7
40	1-1/2	21	50.80	8
50	2	22	63.50	9
65	2-1/2	27	76.20	10
80	3	28	88.90	10
100	4	32	117.48	13

(1) CAUTIONARY NOTE REGARDING HEX BUSHINGS.

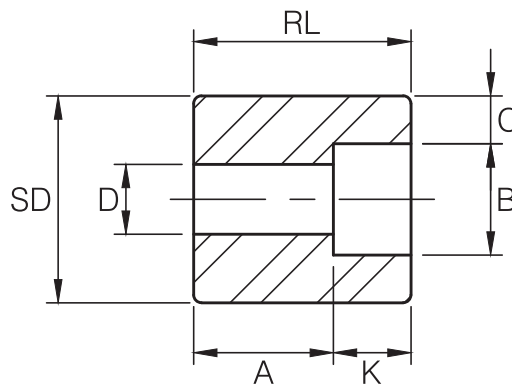
Hex Head Bushings of one-size reduction should not be used in services where they might be subject to harmful loads and forces than internal pressures.



REDUCER INSERT



TYPE 1



TYPE 2 ⁽¹⁾

Dimensions are in millimeters.

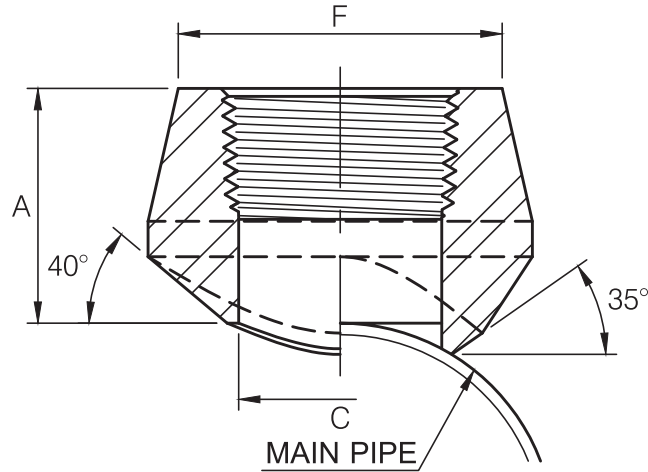
Nom. Pipe Size	Type ⁽²⁾		Socket		Shank Dia. SD	Laying Length A		Bore D		Wall (Min) C		Length			
	3M	6M	Dia. B	Depth (Min) K		3M	6M	3M	6M	3M	6M	SL		RL (Min)	
												3M	6M	3M	6M
3/8 x 1/4	1	1	14.4	9.5	17.1	19.0	21.3	9.2	6.3	3.78	4.60	14.2	15.7	—	—
1/2 x 3/8	1	1	17.8	9.5	21.3	20.6	23.1	12.5	9.1	4.01	5.03	15.7	15.7	—	—
1/2 x 1/4	1	1	14.4	9.5	21.3	20.6	20.6	9.2	6.3	3.78	4.60	15.7	15.7	—	—
3/4 x 1/2	1	1	22.0	9.5	26.7	22.4	25.4	15.8	11.7	4.67	5.97	17.5	19.0	—	—
3/4 x 3/8	2	1	17.8	9.5	26.7	15.7	22.4	12.5	9.1	4.01	5.03	—	19.0	26.9	—
3/4 x 1/4	2	2	14.4	9.5	26.7	17.5	22.4	9.2	6.3	3.78	4.60	—	—	26.9	32.0
1 x 3/4	1	1	27.4	12.5	33.4	23.9	28.4	20.9	15.5	4.90	6.96	19.0	20.6	—	—
1 x 1/2	2	1	22.0	9.5	33.4	15.7	28.4	15.8	11.7	4.67	5.97	—	20.6	28.4	—
1 x 3/8	2	2	17.8	9.5	33.4	17.5	22.4	12.5	9.1	4.01	5.03	—	—	28.4	33.2
1 x 1/4	2	2	14.4	9.5	33.4	19.0	23.9	9.2	6.3	3.78	4.60	—	—	28.4	33.2
1-1/4 x 1	1	1	34.1	12.5	42.2	25.4	30.2	26.6	20.7	5.69	7.92	20.6	22.4	—	—
1-1/4 x 3/4	2	2	27.4	12.5	42.2	17.5	20.6	20.9	15.5	4.90	6.96	—	—	31.7	34.7
1-1/4 x 1/2	2	2	22.0	9.5	42.2	19.0	22.4	15.8	11.7	4.67	5.97	—	—	31.7	34.7
1-1/4 x 3/8	2	2	17.8	9.5	42.2	20.6	23.9	12.5	9.1	4.01	5.03	—	—	31.7	34.7
1-1/4 x 1/4	2	2	14.4	9.5	42.2	22.4	25.4	9.2	6.3	3.78	4.60	—	—	31.7	34.7
1-1/2 x 1-1/4	1	1	42.9	12.5	48.2	28.4	35.0	35.0	29.4	6.07	7.92	22.4	25.4	—	—
1-1/2 x 1	2	1	34.1	12.5	48.2	17.5	29.2	26.6	20.7	5.69	7.92	—	25.4	33.2	—
1-1/2 x 3/4	2	2	27.4	12.5	48.2	19.0	25.4	20.9	15.5	4.90	6.96	—	—	33.2	39.6
1-1/2 x 1/2	2	2	22.0	9.5	48.2	20.6	26.9	15.8	11.7	4.67	5.97	—	—	33.2	39.6
1-1/2 x 3/8	2	2	17.8	9.5	48.2	22.4	28.4	12.5	9.1	4.01	5.03	—	—	33.2	39.6
2 x 1-1/2	1	1	49.0	12.5	60.3	31.8	38.9	40.8	33.9	6.35	8.92	25.4	28.7	—	—
2 x 1-1/4	2	2	42.9	12.5	60.3	20.6	23.9	35.0	29.4	6.07	7.92	—	—	38.1	41.1
2 x 1	2	2	34.1	12.5	60.3	22.4	25.4	26.6	20.7	5.69	7.92	—	—	38.1	41.1
2 x 3/4	2	2	27.4	12.5	60.3	23.9	26.9	20.9	15.5	4.90	6.96	—	—	38.1	41.1
2 x 1/2	2	2	22.0	9.5	60.3	25.4	28.4	15.8	11.7	4.67	5.97	—	—	38.1	41.1

(1) At the option of the manufacturer Type 2 Reducers may be furnished in Type 1 configuration.

(2) 3M & 6M symbols denote 3000 and 6000 classes.



THREADED END 90 BRANCH OUTLET



STRAIGHT WAY

Dimensions are in millimeters.

Straight way			
OutLet Pipe (in)	A	C	F
3000Lb			
1/4	19.0	11.5	22.0
3/8	20.6	14.5	25.9
1/2	25.4	16.5	31.4
3/4	26.9	21.5	37.1
1	33.3	27.2	45.5
1-1/4	33.3	36.0	57.0
1-1/2	35.0	42.0	64.0
2	38.1	53.0	76.0
2-1/2	46.0	65.0	92.0
3	50.8	80.0	109.2
4	57.2	104.0	140.0

(1) Thread in accordance with ASME B1.20.1.

DIMENSIONAL TOLERANCE

MSS SP-97-2012

Unit : mm

Item	1/8"~3/4"	1"~4"
Face of fitting to crotch (A)	± 0.8	± 1.6



CONVENTIONAL RUN PIPE SIZE COMBINATIONS

3000Lb THREAD/SOCKET-WELD END STD/XS BUTT WELDING END

		OUTLET SIZE										
		1/4"	3/8"	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
RUN SIZE (MAIN PIPE)	Reducing way	3/8"~3/4" 1"~36"	1/2" 3/4"~1-1/4" 1-1/2"~36"	3/4" 1" 1-1/4" 1-1/2"~3"	1" 1-1/4" 1-1/2" 2"~3" 3-1/2"~36"	1-1/4" 1-1/2" 2" 2-1/2" 3"~4" 5"~10" 12"~36"	1-1/2" 2" 2-1/2" 3" 3-1/2"~5" 6"~8" 10"~36"	1-1/2" 2" 2-1/2" 3" 3-1/2" 4"~5" 6"~10" 12"~36"	2" 2-1/2" 3" 3-1/2" 4" 5"~6" 8"~10" 12"~18" 20"~36"	3" 3-1/2" 4" 5" 6" 8" 10" 16"~36"	3-1/2" 4" 5" 6" 8" 10" 12"~16" 18"~36"	5" 6" 8" 10" 12"~14" 16"~18" 20"~24" 26"~36"
	Straight way	3/8"~36"	1/2"~36"	3/4"~36"	1"~36"	1-1/4"~1-1/2" 2"~36"	1-1/2" 2"~3" 3-1/2"~36"	2" 2-1/2"~4" 5"~36"	2-1/2" 3"~3-1/2" 4"~6" 8"~36"	3" 3-1/2"~4" 5"~8" 10"~36"	3-1/2" 4" 5" 6" 8"~12" 14"~36"	5" 6" 8" 10" 12"~16" 18"~36"

Each charted outlet size is designed to fit a number of run pipe sizes.