

Bolt Reference Charts for ASME B16.5 Flanges

Class 150

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]	
						Raised Face 0.06 in	Ring Joint
1/2	3 1/2	2 3/8	5/8	4	1/2	2 1/4	-
3/4	3 7/8	2 3/4	5/8	4	1/2	2 1/2	-
1	4 1/4	3 1/8	5/8	4	1/2	2 1/2	3
1 1/4	4 5/8	3 1/2	5/8	4	1/2	2 3/4	3 1/4
1 1/2	5	3 7/8	5/8	4	1/2	2 3/4	3 1/4
2	6	4 3/4	3/4	4	5/8	3 1/4	3 3/4
2 1/2	7	5 1/2	3/4	4	5/8	3 1/2	4
3	7 1/2	6	3/4	4	5/8	3 1/2	4
3 1/2	8 1/2	7	3/4	8	5/8	3 1/2	4
4	9	7 1/2	3/4	8	5/8	3 1/2	4
5	10	8 1/2	7/8	8	3/4	3 3/4	4 1/4
6	11	9 1/2	7/8	8	3/4	4	4 1/2
8	13 1/2	11 3/4	7/8	8	3/4	4 1/4	4 3/4
10	16	14 3/4	1	12	7/8	4 1/2	5
12	19	17	1	12	7/8	4 3/4	5 1/4
14	21	18 3/4	1 1/8	12	1	5 1/4	5 3/4
16	23 1/2	21 1/4	1 1/8	16	1	5 1/4	5 3/4
18	25	22 3/4	1 1/4	16	1 1/8	5 3/4	6 1/4
20	27 1/2	25	1 1/4	20	1 1/8	6 1/4	6 3/4
24	32	29 1/2	1 1/4	20	1 1/4	6 3/4	7 1/4

Dimensions in Inches

Class 300

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]	
						Raised Face 0.06 in	Ring Joint
1/2	3 3/4	2 5/8	5/8	4	1/2	2 1/2	3
3/4	4 5/8	3 1/4	3/4	4	5/8	3	3 1/2
1	4 7/8	3 1/2	3/4	4	5/8	3	3 1/2
1 1/4	5 1/4	3 7/8	3/4	4	5/8	3 1/4	3 3/4
1 1/2	6 1/8	4 1/2	7/8	4	3/4	3 1/2	4
2	6 1/2	5	3/4	8	5/8	3 1/2	4
2 1/2	7 1/2	5 7/8	7/8	8	3/4	4	4 1/2
3	8 1/4	6 5/8	7/8	8	3/4	4 1/4	4 3/4
3 1/2	9	7 1/4	7/8	8	3/4	4 1/4	5
4	10	7 7/8	7/8	8	3/4	4 1/2	5
5	11	9 1/4	7/8	8	3/4	4 3/4	5 1/4
6	12 1/2	10 5/8	7/8	12	3/4	4 3/4	5 1/2
8	15	13	1	12	7/8	5 1/2	6
10	17 1/2	15 1/4	1 1/8	16	1	6 1/4	6 3/4
12	20 1/2	17 3/4	1 1/4	16	1 1/8	6 3/4	7 1/4
14	23	20 1/4	1 1/4	20	1 1/8	7	7 1/2
16	25 1/2	20 1/2	1 3/8	20	1 1/4	7 1/2	8
18	28	24 3/4	1 3/8	24	1 1/4	7 3/4	8 1/4
20	30 1/2	27	1 3/8	24	1 1/4	8	8 3/4
24	36	32	1 3/8	24	1 1/2	9	10

Dimensions in Inches

Class 600

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]	
						Raised Face 0.06 in	Ring Joint
1/2	3 3/4	2 5/8	5/8	4	1/2	3	3
3/4	4 5/8	3 1/4	3/4	4	5/8	3 1/2	3 1/2
1	4 7/8	3 1/2	3/4	4	5/8	3 1/2	3 1/2
1 1/4	5 1/4	3 7/8	3/4	4	5/8	3 3/4	3 3/4
1 1/2	6 1/8	4 1/2	7/8	4	3/4	4 1/4	4 1/4
2	6 1/2	5	3/4	8	5/8	4 1/4	4 1/4
2 1/2	7 1/2	5 7/8	7/8	8	3/4	4 3/4	4 3/4
3	8 1/4	6 5/8	7/8	8	3/4	5	5
3 1/2	9	7 1/7	1	8	7/8	5 1/2	5 1/2
4	10 3/4	8 1/2	1	8	7/8	5 3/4	5 3/4
5	13	10 1/2	1 1/8	8	1	6 1/2	6 1/2
6	14	11 1/2	1 1/8	12	1	6 3/4	6 3/4
8	16 1/2	13 3/4	1 1/4	12	1 1/8	7 1/2	7 1/2
10	20	17	1 3/8	16	1 1/4	8 1/2	8 1/2
12	22	19 1/4	1 3/8	20	1 1/4	8 3/4	8 3/4
14	23 3/4	20 3/4	1 1/2	20	1 3/8	9 1/4	9 1/4
16	27	23 3/4	1 5/8	20	1 1/2	10	10
18	29 3/4	25 3/4	1 3/4	20	1 5/8	10 3/4	10 3/4
20	32	28 1/2	1 3/4	24	1 5/8	11 1/4	11 1/2
24	37	33	2	24	1 7/8	13	13 1/4

Dimensions in Inches

Class 900

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]	
						Raised Face 0.06 in	Ring Joint
1/2	4 3/4	3 1/4	7/8	4	3/4	4 1/4	4 1/4
3/4	5 1/8	3 1/2	7/8	4	3/4	4 1/2	4 1/2
1	5 7/8	4	1	4	7/8	5	5
1 1/4	6 1/4	4 3/8	1	4	7/8	5	5
1 1/2	7	4 7/8	1 1/8	4	1	5 1/2	5 1/2
2	8 1/2	6 1/2	1	8	7/8	5 3/4	5 3/4
2 1/2	9 5/8	7 1/2	1 1/8	8	1	6 1/4	6 1/4
3	9 1/2	7 1/2	1	8	7/8	5 3/4	5 3/4
4	11 1/2	9 1/4	1 1/4	8	1 1/8	6 3/4	6 3/4
5	13 3/4	11	1 3/8	8	1 1/4	7 1/2	7 1/2
6	15	12 1/2	1 1/4	12	1 1/8	7 1/2	7 3/4
8	18 1/2	15 1/2	1 1/2	12	1 3/8	8 3/8	8 3/4
10	21 1/2	18 1/2	1 1/2	16	1 3/8	9 1/4	9 1/4
12	24	21	1 1/2	20	1 3/8	10	10
14	25 1/4	22	1 5/8	20	1 1/2	10 3/4	11
16	27 3/8	24 1/4	1 3/4	20	1 5/8	11 1/4	11 1/2
18	31	27	2	20	1 7/8	12 3/4	13 1/4
20	33 3/4	29 1/2	2 1/8	20	2	13 3/4	14 1/4
24	41	35 1/2	2 5/8	20	2 1/2	17 1/4	18

Dimensions in Inches

Bolt Dimension Charts for ASME B16.5 Flanges Cont.

Class 1500

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]	
						Raised Face 0.06 in	Ring Joint
1/2	4 3/4	3 1/4	7/8	4	3/4	4 1/4	4 1/4
3/4	5 1/8	3 1/2	7/8	4	3/4	4 1/2	4 1/2
1	5 7/8	4	1	4	7/8	5	5
1 1/4	6 1/4	4 3/8	1	4	7/8	5	5
1 1/2	7	4 7/8	1 1/8	4	1	5 1/2	5 1/2
2	8 1/2	6 1/2	1	8	7/8	5 3/4	5 3/4
2 1/2	9 5/8	7 1/2	1 1/8	8	1	6 1/4	6 1/4
3	10 1/2	8	1 1/4	8	1 1/8	7	7
4	12 1/4	9 1/2	1 3/8	8	1 1/4	7 3/4	7 3/4
5	14 3/4	11 1/2	1 5/8	8	1 1/2	9 3/4	9 3/4
6	15 1/2	12 1/2	1 1/2	12	1 3/8	10 1/4	10 1/2
8	19	15 1/2	1 3/4	12	1 5/8	11 1/2	12 3/4
10	23	19	2	12	1 7/8	13 1/4	13 1/2
12	26 1/2	22 1/2	2 1/8	16	2	14 3/4	15 1/4
14	29 1/2	25	2 3/8	16	2 1/4	16	16 3/4
16	32 1/2	27 3/4	2 5/8	16	2 1/2	17 1/2	18 1/2
18	36	30 1/2	2 7/8	16	2 3/4	19 1/2	20 3/4
20	38 3/4	32 3/4	3 1/8	16	3	21 1/4	22 1/4
24	46	39	3 5/8	16	3 1/2	24 1/4	25 1/2

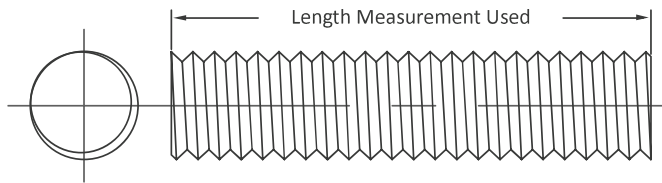
Dimensions in Inches

Class 2500

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]	
						Raised Face 0.06 in	Ring Joint
1/2	5 1/4	3 1/2	7/8	4	3/4	4 3/4	4 3/4
3/4	5 1/2	3 3/4	7/8	4	3/4	5	5
1	6 1/4	4 1/4	1	4	7/8	5 1/2	5 1/2
1 1/4	7 1/4	5 1/8	1 1/8	4	1	6	6
1 1/2	8	5 3/4	1 1/8	4	1 1/8	6 3/4	6 3/4
2	9 1/4	6 3/4	1 1/8	8	1	7	7
2 1/2	10 1/2	7 3/4	1 1/4	8	1 1/8	7 3/4	8
3	12	9	1 3/8	8	1 1/4	8 3/4	9
4	14	10 3/4	1 5/8	8	1 1/2	10	10 1/4
5	16 1/2	12 3/4	1 7/8	8	1 3/4	11 3/4	12 1/4
6	19	14 1/2	2 1/8	8	2	13 1/2	14
8	21 3/4	17 1/4	2 1/8	12	2	15	15 1/2
10	26 1/2	21 1/4	5 5/8	12	2 1/2	19 1/4	20
12	30	24 3/8	2 7/8	12	2 3/4	21 1/4	22

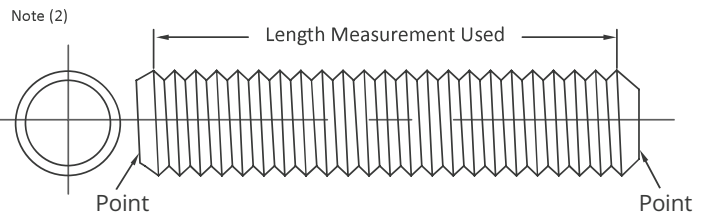
Dimensions in Inches

Standard Length Stud Bolt



Note: Reference the above diagrams to find length measurements used for the coordinating charts. Studs are measured using the effective thread length or measurement from first thread to first thread. All dimensions are in inches and measurements are based on ASME B 16.5 flange specifications.

Non-Standard Length Stud Bolt



Note: The length of the point on stud bolts or studs will be no less than one or more than two full threads as measured from the utmost end parallel to the axis. Typically this is 1/8" (3.175 mm).

Bolt Reference Charts for ASME B16.47 Series A Flanges

Class 150

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	34 1/4	31 3/4	1 3/8	24	1 1/4	8 3/4
28	36 1/2	34	1 3/8	28	1 1/4	9
30	38 3/4	36	1 3/8	28	1 1/4	9 1/4
32	41 3/4	38 1/2	1 5/8	28	1 1/2	10 1/2
34	43 3/4	40 1/2	1 5/8	32	1 1/2	10 1/2
36	46	42 3/4	1 5/8	32	1 1/2	11 1/4
38	48 3/4	45 1/4	1 5/8	32	1 1/2	11
40	50 3/4	47 1/4	1 5/8	36	1 1/2	11 1/4
42	53	49 1/2	1 5/8	36	1 1/2	11 3/4
44	55 1/4	51 3/4	1 5/8	40	1 1/2	12
46	57 1/4	53 3/4	1 5/8	40	1 1/2	12 1/4
48	59 1/2	56	1 5/8	44	1 1/2	12 3/4
50	61 3/4	58 1/4	1 7/8	44	1 3/4	13 1/2
52	64	60 1/2	1 7/8	44	1 3/4	13 3/4
54	66 1/4	62 3/4	1 7/8	44	1 3/4	14 1/4
56	68 3/4	65	1 7/8	48	1 3/4	14 1/2
58	71	67 1/4	1 7/8	48	1 3/4	14 3/4
60	73	69 1/4	1 7/8	52	1 3/4	15

Dimensions in Inches

Class 300

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	38 1/4	34 1/2	1 3/4	28	1 5/8	10 1/2
28	40 3/4	37	1 3/4	28	1 5/8	11
30	43	39 1/4	1 7/8	28	1 3/4	11 3/4
32	45 1/4	41 1/2	2	28	1 7/8	12 3/4
34	47 1/2	43 1/2	2	28	1 7/8	13
36	50	46	2 1/8	32	2	13 1/2
38	46	43	1 5/8	32	1 1/8	12 3/4
40	48 3/4	45 1/2	1 3/4	32	1 5/8	13 1/2
42	50 3/4	47 1/2	1 3/4	32	1 5/8	13 3/4
44	53 1/4	49 3/4	1 7/8	32	1 3/4	14 1/2
46	55 3/4	52	2	28	1 7/8	15
48	57 3/4	54	2	32	1 7/8	15 1/2
50	60 1/4	56 1/4	2 1/8	32	2	16 1/4
52	62 1/4	58 1/4	2 1/8	32	2	16 1/2
54	65 1/4	61	2 3/8	28	2 1/4	17 3/4
56	67 1/4	63	2 3/8	28	2 1/4	17 3/4
58	69 1/4	65	2 3/8	32	2 1/4	18 1/4
60	71 1/4	67	2 3/8	32	2 1/4	18 3/4

Dimensions in Inches

Class 400

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	38 1/4	34 1/2	1 7/8	28	1 3/4	12
28	40 3/4	37	2	28	1 7/8	13
30	43	39 1/4	2 1/8	28	2	13 1/2
32	45 1/4	41 1/2	2 1/8	28	2	14
34	47 1/2	43 1/2	2 1/8	28	2	14 1/4
36	50	46	2 1/8	32	2	14 1/2
38	47 1/2	44	1 7/8	32	1 3/4	15
40	50 3/4	46 1/4	2	32	1 7/8	15 1/2
42	52 1/2	48 1/4	2	32	1 7/8	16
44	54 1/2	50 1/2	2 1/8	32	2	16 1/2
46	56 3/4	52 3/4	2 1/8	36	2	17
48	59 1/2	55 1/4	2 3/8	28	2 1/4	18 1/4
50	61 3/4	57 1/2	2 3/8	32	2 1/4	1/3 3/4
52	63 3/4	59 1/2	2 3/8	32	2 1/4	19
54	67	62 1/4	2 5/8	28	2 1/2	20 1/4
56	69	64 1/4	2 5/8	32	2 1/2	20 1/2
58	71	66 1/4	2 5/8	32	2 1/2	20 3/4
60	74 1/4	69	2 7/8	32	2 3/4	22

Dimensions in Inches

Class 600

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	40	36	2	28	1 7/8	14
28	42 1/4	38	2 1/8	28	2	14 1/2
30	44 1/2	40 1/4	2 1/8	28	2	14 1/2
32	47	42 1/2	2 3/8	28	2 1/4	15 1/2
34	49	44 1/2	2 3/8	28	2 1/4	15 3/4
36	51 3/4	47	2 5/8	28	2 1/2	16 1/2
38	50	45 3/4	2 3/8	28	2 1/4	18 1/4
40	52	47 3/4	2 3/8	32	2 1/4	18 3/4
42	55 1/4	50 1/2	2 5/8	28	2 1/2	20 1/4
44	57 1/4	52 1/2	2 5/8	32	2 1/2	20 3/4
46	59 1/2	54 3/4	2 5/8	32	2 1/2	20 1/4
48	62 3/4	57 1/2	2 7/8	32	2 3/4	22 3/4
50	65 3/4	60	3 1/8	28	3	23 3/4
52	67 3/4	62	3 1/8	32	3	23 3/4
54	70	64 1/4	3 1/8	32	3	24 1/4
56	73	66 3/4	3 3/8	32	3 1/4	25 1/2
58	75	68 3/4	3 3/8	32	3 1/4	25 3/4
60	78 1/2	71 3/4	3 3/8	28	3 1/4	27 1/4

Dimensions in Inches

Class 900

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	42 3/4	37 1/2	2 7/8	20	2 3/4	18 1/4
28	46	40 1/4	3 1/8	20	3	19
30	48 1/2	42 3/4	3 1/8	20	3	19 1/2
32	51 3/4	45 1/2	3 3/8	20	3 1/4	20 3/4
34	55	48 1/4	3 5/8	20	3 1/2	21 3/4
36	57 1/2	50 3/4	3 5/8	20	3 1/2	22 1/4
38	57 1/2	50 3/4	3 5/8	20	3 1/2	23 3/4
40	59 1/2	52 3/4	3 5/8	24	3 1/2	1/424
42	61 1/2	54 3/4	3 5/8	24	3 1/2	25
44	64 7/8	57 5/8	3 7/8	24	3 3/4	26 1/4
46	68 1/4	60 1/2	4 1/8	24	4	27 1/2
48	70 1/4	62 1/2	4 1/8	24	4	28 1/4

Dimensions in Inches

Bolt Reference Charts for ASME B16.47 Series B Flanges

Class 150

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	30 15/16	29 5/16	7/8	36	3/4	5 1/2
28	32 15/16	31 5/16	7/8	40	3/4	5 3/4
30	34 15/16	33 5/16	7/8	44	3/4	5 3/4
32	37 1/16	35 7/16	7/8	48	3/4	5 3/4
34	39 9/16	37 11/16	1	40	7/8	6 1/4
36	41 5/8	39 3/4	1	44	7/8	6 3/4
38	44 1/4	42 1/8	1 1/8	40	1	7 1/4
40	46 1/4	44 1/8	1 1/8	44	1	7 1/4
42	48 1/4	46 1/8	1 1/8	48	1	7 1/2
44	50 1/4	48 1/8	1 1/8	52	1	7 3/4
46	52 13/16	50 9/16	1 1/4	40	1 1/8	8
48	54 13/16	52 9/16	1 1/4	44	1 1/8	8 1/4
50	56 13/16	54 9/16	1 1/4	48	1 1/8	8 1/2
52	58 13/16	56 9/16	1 1/4	52	1 1/8	8 3/4
54	61	58 3/4	1 1/4	56	1 1/8	8 3/4
56	63	60 3/4	1 1/4	60	1 1/8	9
58	65 15/16	63 7/16	1 3/8	48	1 1/4	9 1/4
60	67 15/16	65 7/16	1 3/8	52	1 1/4	9 1/2

Dimensions in Inches

Class 300

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	34 1/8	31 5/8	1 3/8	32	1 1/4	10 1/2
28	36 1/4	33 3/4	1 3/8	36	1 1/4	10 1/2
30	39	36 1/4	1 1/2	36	1 3/8	11 1/4
32	41 1/2	38 1/2	1 5/8	32	1 1/2	12 1/4
34	43 5/8	40 5/8	1 5/8	36	1 1/2	12 1/4
36	46 1/8	42 7/8	1 3/4	32	1 5/8	12 1/2
38	48 1/8	44 7/8	1 3/4	36	1 5/8	13 1/4
40	50 1/8	46 7/8	1 3/4	40	1 5/8	13 1/2
42	52 1/2	49	1 7/8	36	1 3/4	14
44	54 1/2	51	1 7/8	40	1 3/4	14 3/4
46	57 1/2	53 3/4	2	36	1 7/8	15
48	59 1/2	55 3/4	2	40	1 7/8	15
50	61 1/2	57 3/7	2	44	1 7/8	15 3/4
52	63 1/2	59 3/4	2	48	1 7/8	16
54	65 7/8	62 1/8	2	48	1 7/8	15 3/4
56	69 1/2	65	2 3/8	36	2 1/4	17 3/4
58	71 15/16	67 7/16	2 3/8	40	2 1/4	17 3/4
60	73 15/16	69 7/16	2 3/8	40	2 1/4	17 1/2

Dimensions in Inches

Class 400

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	33 1/2	30 3/4	1 1/2	28	1 3/8	11 1/4
28	36	33	1 5/8	24	1 1/2	12
30	38 1/4	35 1/4	1 5/8	28	1 1/2	12 1/2
32	40 3/4	37 1/2	1 3/4	28	1 5/8	13 1/2
34	42 3/4	39 1/2	1 3/4	32	1 5/8	13 3/4
36	45 1/2	42	1 7/8	28	1 3/4	15 1/2

Dimensions in Inches

Class 600

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	35	31 3/4	1 3/4	28	1 5/8	13 3/4
28	37 1/2	34	1 7/8	28	1 3/4	14 1/4
30	40 1/4	36 1/2	2	28	1 7/8	15 1/4
32	42 3/4	38 3/4	2 1/8	28	2	15 3/4
34	45 3/4	41 1/2	2 3/8	24	2 1/4	17 1/4
36	47 3/4	43 1/2	2 3/8	28	2 1/4	17 3/4

Dimensions in Inches

Class 900

NPS	Outside Diameter of Flange	Diameter of Bolt Circle	Diameter of Bolt Holes	Number of Bolts	Diameter of Bolts	Length of Stud Bolts [Note (1)]
26	40 1/4	35 1/2	2 5/8	20	2 1/2	17 1/4
28	43 1/2	38 1/4	2 7/8	20	2 3/4	19
30	46 1/2	40 3/4	3 1/8	20	3	20
32	48 3/4	43	3 1/8	20	3	20 1/4
34	51 3/4	45 1/2	3 3/8	20	3 1/4	21 3/4
36	53	47 1/4	3 8/8	24	3	21 1/4

Dimensions in Inches