



Operational Procedure - Rev 0

NWP 01 - Rev 1

BMS 20 - ASME B16.21 For B16.5 Flanges  
Non-Metallic Gaskets Dimensions & Tolerances

Issued by:

A D Senior

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Class 150Lb - Dimensions in millimetres

Nominal Bore	Flat Ring and Full Face Gasket		Flat Ring Gasket		Full Face gasket						
	Inner Diameter		Outer Diameter		Outer Diameter		Bolt Circle Diameter		Diameter of Holes		Number of Bolt Holes
	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	
1/2	27/32	21.4	1 7/8	47.6	3 1/2	88.9	2 3/8	60.3	5/8	15.9	4
3/4	1 1/16	27.0	2 1/4	57.2	3 3/4	95.3	2 3/4	69.9	5/8	15.9	4
1	1 5/16	33.3	2 5/8	66.7	4 1/4	108.0	3 1/8	79.4	5/8	15.9	4
1 1/4	1 21/32	42.1	3	76.2	4 5/8	117.5	3 1/2	88.9	5/8	15.9	4
1 1/2	1 29/32	48.4	3 3/8	85.7	5	127.0	3 7/8	98.4	5/8	15.9	4
2	2 3/8	60.3	4 1/8	104.8	6	152.4	4 3/4	120.7	3/4	19.1	4
2 1/2	2 7/8	73.0	4 7/8	123.8	7	177.8	5 1/2	139.7	3/4	19.1	4
3	3 1/2	88.9	5 3/8	136.5	7 1/2	190.5	6	152.4	3/4	19.1	4
3 1/2	4	101.6	6 3/8	161.9	8 1/2	215.9	7	177.8	3/4	19.1	8
4	4 1/2	114.3	6 7/8	174.6	9	228.6	7 1/2	190.5	3/4	19.1	8
5	5 9/16	141.3	7 3/4	196.9	10	254.0	8 1/2	215.9	7/8	22.2	8
6	6 5/8	168.3	8 3/4	222.3	11	279.4	9 1/2	241.3	7/8	22.2	8
8	8 5/8	219.1	11	279.4	13 1/2	342.9	11 3/4	298.5	7/8	22.2	8
10	10 3/4	273.1	13 3/8	339.7	16	406.4	14 1/4	362.0	1	25.4	12
12	12 3/4	323.9	16 1/8	409.6	19	482.6	17	431.8	1	25.4	12
14	14	355.6	17 3/4	450.9	21	533.4	18 3/4	476.3	1 1/8	28.6	12
16	16	406.4	20 1/4	514.4	23 1/2	596.9	21 1/4	539.8	1 1/8	28.6	16
18	18	457.2	21 5/8	549.3	25	635.0	22 3/4	577.9	1 1/4	31.8	16
20	20	508.0	23 7/8	606.4	27 1/2	698.5	25	635.0	1 1/4	31.8	20
24	24	609.6	28 1/4	717.6	32	812.8	29 1/2	749.3	1 3/8	34.9	20

Class 300Lb - Dimensions in millimetres

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Nominal Bore	Flat Ring and Full Face Gasket		Flat Ring Gasket		Full Face gasket						Number of Bolt Holes
	Inner Diameter		Outer Diameter		Outer Diameter		Bolt Circle Diameter		Diameter of Holes		
	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	
1/2	27/32	21.4	2 1/8	54.0	3 3/4	95.3	2 5/8	66.7	5/8	15.9	4
3/4	1 1/16	27.0	2 5/8	66.7	4 5/8	117.5	3 1/4	82.6	3/4	19.1	4
1	1 5/16	33.3	2 7/8	73.0	4 7/8	123.8	3 1/2	88.9	3/4	19.1	4
1 1/4	1 21/32	42.1	3 1/4	82.6	5 1/4	133.4	3 7/8	98.4	3/4	19.1	4
1 1/2	1 29/32	48.4	3 3/4	95.3	6 1/8	155.6	4 1/2	114.3	7/8	22.2	4
2	2 3/8	60.3	4 3/8	111.1	6 1/2	165.1	5	127.0	3/4	19.1	8
2 1/2	2 7/8	73.0	5 1/8	130.2	7 1/2	190.5	5 7/8	149.2	7/8	22.2	8
3	3 1/2	88.9	5 7/8	149.2	8 1/4	209.6	6 5/8	168.3	7/8	22.2	8
3 1/2	4	101.6	6 1/2	165.1	9	228.6	7 1/4	184.2	7/8	22.2	8
4	4 1/2	114.3	7 1/8	181.0	10	254.0	7 7/8	200.0	7/8	22.2	8
5	5 9/16	141.3	8 1/2	215.9	11	279.4	9 1/4	235.0	7/8	22.2	8
6	6 5/8	168.3	9 7/8	250.8	12 1/2	317.5	10 5/8	269.9	7/8	22.2	12
8	8 5/8	219.1	12 1/8	308.0	15	381.0	13	330.2	1 1/8	28.6	12
10	10 3/4	273.1	14 1/4	362.0	17 1/2	444.5	15 1/4	387.4	1 1/8	28.6	16
12	12 3/4	323.9	16 5/8	422.3	20 1/2	520.7	17 3/4	450.9	1	25.4	16
14	14	355.6	19 1/8	485.8	23	584.2	20 1/4	514.4	1 1/4	31.8	20
16	16	406.4	21 1/4	539.8	25 1/2	647.7	22 1/2	571.5	1 3/8	34.9	20
18	18	457.2	23 1/2	596.9	28	711.2	24 3/4	628.7	1 3/8	34.9	24
20	20	508.0	25 3/4	654.1	30 1/2	774.7	27	685.8	1 3/8	34.9	24
24	24	609.6	30 1/2	774.7	36	914.4	32	812.8	1 5/8	41.3	24

Class 400Lb - Dimensions in millimetres

Flat Ring and Full Face Gasket	Flat Ring Gasket	Full Face gasket
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Nominal Bore	Inner Diameter		Outer Diameter		Outer Diameter		Bolt Circle Diameter		Diameter of Holes		Number of Bolt Holes
	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	
1/2	27/32	21.4	2.12	53.8	3.75	95.3	2.62	66.5	0.62	15.7	4
3/4	1 1/16	27.0	2.62	66.5	4.62	117.3	3.25	82.6	0.75	19.1	4
1	1 5/16	33.3	2.88	73.2	4.88	124.0	3.50	88.9	0.75	19.1	4
1 1/4	1 21/32	42.1	3.25	82.6	5.25	133.4	3.88	98.6	0.75	19.1	4
1 1/2	1 29/32	48.4	3.75	95.3	6.12	155.4	4.50	114.3	0.88	22.4	4
2	2 3/8	60.3	4.38	111.3	6.50	165.1	5.00	127.0	0.75	19.1	8
2 1/2	2 7/8	73.0	5.12	130.0	7.50	190.5	5.88	149.4	0.88	22.4	8
3	3 1/2	88.9	5.88	149.4	8.25	209.6	6.62	168.1	0.88	22.4	8
3 1/2	4	101.6	6.38	162.1	9.00	228.6	7.25	184.2	1.00	25.4	8
4	4 1/2	114.3	7.00	177.8	10.00	254.0	7.88	200.2	1.00	25.4	8
5	5 9/16	141.3	8.38	212.9	11.00	279.4	9.25	235.0	1.00	25.4	8
6	6 5/8	168.3	9.75	247.7	12.50	317.5	10.62	269.7	1.00	25.4	12
8	8 5/8	219.1	12.00	304.8	15.00	381.0	13.00	330.2	1.12	28.4	12
10	10 3/4	273.1	14.12	358.6	17.50	444.5	15.25	387.4	1.25	31.8	16
12	12 3/4	323.9	16.50	419.1	20.50	520.7	17.75	450.9	1.38	35.1	16
14	14	355.6	19.00	482.6	23.00	584.2	20.25	514.4	1.38	35.1	20
16	16	406.4	21.12	536.4	25.50	647.7	22.50	571.5	1.50	38.1	20
18	18	457.2	23.38	593.9	28.00	711.2	24.75	628.7	1.50	38.1	24
20	20	508.0	25.50	647.7	30.50	774.7	27.00	685.8	1.62	41.1	24
24	24	609.6	30.25	768.4	36.00	914.4	32.00	812.8	1.88	47.8	24

Class 600Lb - Dimensions in millimetres

Nominal Bore	Flat Ring and Full Face Gasket	Flat Ring Gasket	Full Face gasket			Number of Bolt Holes
	Inner Diameter	Outer Diameter	Outer Diameter	Bolt Circle Diameter	Diameter of Holes	



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Bore	Inches		mm		Inches		mm		Inches		mm		Number of Bolt Holes
1/2	27/32	21.4	2 1/8	54.0	3 3/4	95.3	2 5/8	66.7	5/8	15.9		4	
3/4	1 1/16	27.0	2 5/8	66.7	4 5/8	117.5	3 1/4	82.6	3/4	19.1		4	
1	1 5/16	33.3	2 7/8	73.0	4 7/8	123.8	3 1/2	88.9	3/4	19.1		4	
1 1/4	1 21/32	42.1	3 1/4	82.6	5 1/4	133.4	3 7/8	98.4	3/4	19.1		4	
1 1/2	1 29/32	48.4	3 3/4	95.3	6 1/8	155.6	4 1/2	114.3	7/8	22.2		4	
2	2 3/8	60.3	4 3/8	111.1	6 1/2	165.1	5	127.0	3/4	19.1		8	
2 1/2	2 7/8	73.0	5 1/8	130.2	7 1/2	190.5	5 7/8	149.2	7/8	22.2		8	
3	3 1/2	88.9	5 7/8	149.2	8 1/4	209.6	6 5/8	168.3	7/8	22.2		8	
3 1/2	4	101.6	6 3/8	161.9	9	228.6	7 1/4	184.2	1	25.4		8	
4	4 1/2	114.3	7 5/8	193.7	10 3/4	273.1	8 1/2	215.9	1	25.4		8	
5	5 9/16	141.3	9 1/2	241.3	13	330.2	10 1/2	266.7	1 1/8	28.6		8	
6	6 5/8	168.3	10 1/2	266.7	14	355.6	11 1/2	292.1	1 1/8	28.6		12	
8	8 5/8	219.1	12 5/8	320.7	16 1/2	419.1	13 3/4	349.3	1 1/4	31.8		12	
10	10 3/4	273.1	15 3/4	400.1	20	508.0	17	431.8	1 3/8	34.9		16	
12	12 3/4	323.9	18	457.2	22	558.8	19 1/4	489.0	1 3/8	34.9		20	
14	14	355.6	19 3/8	492.1	23 3/4	603.3	20 3/4	527.1	1 1/2	38.1		20	
16	16	406.4	22 1/4	565.2	27	685.8	23 3/4	603.3	1 5/8	41.3		20	
18	18	457.2	24 1/8	612.8	29 1/4	743.0	25 3/4	654.1	1 3/4	44.5		20	
20	20	508.0	26 7/8	682.6	32	812.8	28 1/2	723.9	1 3/4	44.5		24	
24	24	609.6	31 1/8	790.6	37	939.8	33	838.2	2	50.8		24	

Class 900Lb - Dimensions in millimetres

Nominal Bore	Flat Ring and Full Face Gasket		Flat Ring Gasket		Full Face gasket						Number of Bolt Holes
	Inner Diameter		Outer Diameter		Outer Diameter		Bolt Circle Diameter		Diameter of Holes		
	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	

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1/2	27/32	21.4	2 1/2	63.5	4 3/4	120.7	3 1/4	82.6	7/8	22.2	4
3/4	1 1/16	27.0	2 3/4	69.9	5 1/8	130.2	3 1/2	88.9	7/8	22.2	4
1	1 5/16	33.3	3 1/8	79.4	5 7/8	149.2	4	101.6	1	25.4	4
1 1/4	1 21/32	42.1	3 1/2	88.9	6 1/4	158.8	4 3/8	111.1	1	25.4	4
1 1/2	1 29/32	48.4	3 7/8	98.4	7	177.8	4 7/8	123.8	1 1/8	28.6	4
2	2 3/8	60.3	5 5/8	142.9	8 1/2	215.9	6 1/2	165.1	1	25.4	8
2 1/2	2 7/8	73.0	6 1/2	165.1	9 5/8	244.5	7 1/2	190.5	1 1/8	28.6	8
3	3 1/2	88.9	6 5/8	168.3	9 1/2	241.3	7 1/2	190.5	1	25.4	8
3 1/2	4 1/2	114.3	8 1/8	206.4	11 1/2	292.1	9 1/4	235.0	1 1/4	31.8	8
4	5 9/16	141.3	9 3/4	247.7	13 3/4	349.3	11	279.4	1 3/8	34.9	8
5	6 5/8	168.3	11 3/8	288.9	15	381.0	12 1/2	317.5	1 1/4	31.8	12
6	8 5/8	219.1	14 1/8	358.8	18 1/2	469.9	15 1/2	393.7	1 1/2	38.1	12
8	10 3/4	273.1	17 1/8	435.0	21 1/2	546.1	18 1/2	469.9	1 1/2	38.1	16
10	12 3/4	323.9	19 5/8	498.5	24	609.6	21	533.4	1 1/2	38.1	20
12	14	355.6	20 1/2	520.7	25 1/4	641.4	22	558.8	1 5/8	41.3	20
14	16	406.4	22 5/8	574.7	27 3/4	704.9	24 1/4	616.0	1 3/4	44.5	20
16	18	457.2	25 1/8	638.2	31	787.4	27	685.8	2	50.8	20
18	20	508.0	27 1/2	698.5	33 3/4	857.3	29 1/2	749.3	2 1/8	54.0	20
20	24	609.6	33	838.2	41	1041.4	35 1/2	901.7	2 5/8	66.7	20
24	27/32	21.4	2 1/2	63.5	4 3/4	120.7	3 1/4	82.6	7/8	22.2	4

Class 1500Lb - Dimensions in millimetres

Nominal Bore	Flat Ring and Full Face Gasket		Flat Ring Gasket		Full Face gasket						
	Inner Diameter		Outer Diameter		Outer Diameter		Bolt Circle Diameter		Diameter of Holes		Number of Bolt Holes
	Inches	mm	Inches	mm	Inches	mm	Inches	mm	Inches	mm	
1/2	27/32	21.4	2 1/2	63.5	4 3/4	120.7	3 1/4	82.6	7/8	22.2	4
3/4	1 1/16	27.0	2 3/4	69.9	5 1/8	130.2	3 1/2	88.9	7/8	22.2	4

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<b>1</b>	1 5/16	33.3	3 1/8	79.4	5 7/8	149.2	4	101.6	1	25.4	4
<b>1 1/4</b>	1 21/32	42.1	3 1/2	88.9	6 1/4	158.8	4 3/8	111.1	1	25.4	4
<b>1 1/2</b>	1 29/32	48.4	3 7/8	98.4	7	177.8	4 7/8	123.8	1 1/8	28.6	4
<b>2</b>	2 3/8	60.3	5 5/8	142.9	8 1/2	215.9	6 1/2	165.1	1	25.4	8
<b>2 1/2</b>	2 7/8	73.0	6 1/2	165.1	9 5/8	244.5	7 1/2	190.5	1 1/8	28.6	8
<b>3</b>	3 1/2	88.9	6 7/8	174.6	10 1/2	266.7	8	203.2	1 1/4	31.8	8
<b>3 1/2</b>	4 1/2	114.3	8 1/4	209.6	12 1/4	311.2	9 1/2	241.3	1 3/8	34.9	8
<b>4</b>	5 9/16	141.3	10	254.0	14 3/4	374.7	11 1/2	292.1	1 5/8	41.3	8
<b>5</b>	6 5/8	168.3	11 1/8	282.6	15 1/2	393.7	12 1/2	317.5	1 1/2	38.1	12
<b>6</b>	8 5/8	219.1	13 7/8	352.4	19	482.6	15 1/2	393.7	1 3/4	44.5	12
<b>8</b>	10 3/4	273.1	17 1/8	435.0	23	584.2	19	482.6	2	50.8	12
<b>10</b>	12 3/4	323.9	20 1/2	520.7	26 1/2	673.1	22 1/2	571.5	2 1/8	54.0	16
<b>12</b>	14	355.6	22 3/4	577.9	29 1/2	749.3	25	635.0	2 3/8	60.3	16
<b>14</b>	16	406.4	25 1/4	641.4	32 1/2	825.5	27 3/4	704.9	2 5/8	66.7	16
<b>16</b>	18	457.2	27 3/4	704.9	36	914.4	30 1/2	774.7	2 7/8	73.0	16
<b>18</b>	20	508.0	29 3/4	755.7	38 3/4	984.3	32 3/4	831.9	3 1/8	79.4	16
<b>20</b>	24	609.6	35 1/2	901.7	46	1168.4	39	990.6	3 5/8	92.1	16
<b>24</b>	27/32	21.4	2 1/2	63.5	4 3/4	120.7	3 1/4	82.6	7/8	22.2	4

Unless otherwise specified on the works order, tolerances shall be in accordance as follows:

- i.e. Outside Diameter < NPS 300mm - + 0 / - 1.50 mm  
> NPS 350mm - + 0 / - 3.00 mm
- Inside Diameter < NPS 300mm - + / - 1.50 mm  
> NPS 350mm - + / - 1.50 mm
- Bolt circle diameter + / - 1.50 mm
- Centre to centre of adjacent bolt holes + / - 0.76 mm