

# STAR™ Super Seal Fittings

(Product Data)



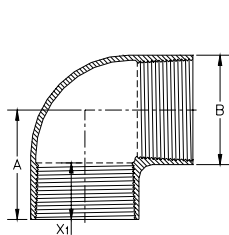
## 90° Elbow

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
2	50	SP	2500	17.2	6.6	166.0	4.5	113.2	4.5	114.3	10.5	4.8
3	80	SP	3000	20.7	7.3	190.5	6.0	152.9	4.5	114.3	22.0	10.0
4	100	SP	1500	10.3	8.5	215.9	6.7	169.2	4.5	114.3	25.1	11.4
4	100	SPH	2500	17.2	8.5	215.9	7.7	195.1	4.5	114.3	35.8	16.2
6	150	SPH	2000	13.8	11.0	279.8	10.7	271.4	6.0	152.4	88.0	39.9
8	200	SS	800	5.5	10.5	266.7	10.0	254.0	4.8	120.7	37.0	16.8
			1000	6.9	10.5	266.7	10.3	261.6	4.8	120.7	45.0	20.4
			1250	8.6	10.5	266.7	10.8	274.3	4.8	120.7	45.0	20.4
10	250	SS	500	3.4	10.0	254.0	12.6	320.0	5.4	137.2	62.0	28.1
			800	5.5	10.0	254.0	13.3	337.8	5.4	137.2	75.0	34.0
			1000	6.9	10.0	254.0	13.8	350.5	5.4	137.2	87.0	39.5
			1250	8.6	10.0	254.0	14.4	365.8	5.4	137.2	105.0	47.6
12	300	SS	500	3.4	13.3	336.6	14.6	370.8	6.1	154.9	74.0	33.6
			800	5.5	13.3	336.6	15.4	391.2	6.1	154.9	95.0	43.1
			1000	6.9	13.3	336.6	16.0	406.4	6.1	154.9	104.0	47.2
			1250	8.6	13.3	336.6	16.6	421.6	6.1	154.9	125.0	56.7

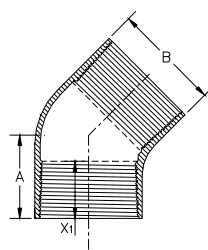
## 45° Elbow

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
2	50	SP	2500	17.2	6.6	166.0	4.3	109.4	4.5	114.3	8.8	4.0
3	80	SP	3000	20.7	7.3	190.5	5.8	147.8	4.5	114.3	16.8	7.6
4	100	SP	1500	10.3	8.5	215.9	6.5	165.4	4.5	114.3	18.2	8.3
4	100	SPH	2500	17.2	8.5	215.9	7.5	190.0	4.5	114.3	26.1	11.8
6	150	SPH	2000	13.8	11.0	279.8	10.4	263.8	6.0	152.4	66.3	30.1
6	150	SS HP	1500	10.3	13.4	340.4	9.0	228.6	8.8	222.3	42.5	19.3
			2000	13.8	13.4	340.4	9.7	246.4	8.8	222.3	64.0	29.0
			2500	17.2	13.4	340.4	10.3	261.6	8.8	222.3	83.7	38.0
			3000	20.7	13.4	340.4	10.9	276.9	8.8	222.3	104.5	47.4
			3750	25.9	13.4	340.4	11.9	302.3	8.8	222.3	141.9	64.4

### View of Fitting Illustrations



90° Elbow



45° Elbow

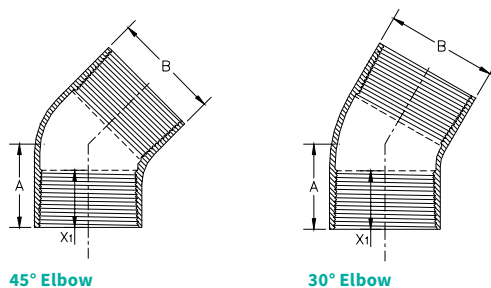
### 45° Elbow

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
8	200	SS	800	10.3	8.8	222.3	10.0	254.0	4.8	120.7	34.0	15.4
			1000	6.9	8.8	222.3	10.3	261.6	4.8	120.7	42.0	19.1
			1250	8.6	8.8	222.3	10.8	274.3	4.8	120.7	48.0	21.8
8	200	SS HP	1500	10.3	13.5	342.9	11.1	281.9	8.8	222.3	68.1	30.9
			2000	13.8	13.5	342.9	11.9	302.3	8.8	222.3	98.8	44.8
			2500	17.2	13.5	342.9	12.7	322.6	8.8	222.3	131.7	59.7
			3000	20.7	13.5	342.9	13.4	340.4	8.8	222.3	162.2	73.6
10	250	SS	500	3.4	10.0	254.0	12.4	315.0	5.4	137.2	38.0	17.2
			800	5.5	10.0	254.0	13.0	330.2	5.4	137.2	51.0	23.1
			1000	6.9	10.0	254.0	13.5	342.9	5.4	137.2	75.0	34.0
			1250	8.6	10.0	254.0	14.1	358.1	5.4	137.2	100.0	45.4
10	250	SS HP	1500	10.3	13.8	349.3	14.4	365.8	8.8	222.3	121.8	55.2
			2000	13.8	13.8	349.3	15.4	391.2	8.8	222.3	172.5	78.2
			2500	17.2	13.8	349.3	16.4	416.6	8.8	222.3	226.6	102.8
12	300	SS	500	3.4	11.5	292.1	14.6	370.8	6.1	154.9	55.0	25.0
			800	5.5	11.5	292.1	15.3	388.6	6.1	154.9	66.0	29.9
			1000	6.9	11.5	292.1	16.0	406.4	6.1	154.9	114.0	51.7
			1250	8.6	11.5	292.1	16.6	421.6	6.1	154.9	129.0	58.5
12	300	SS HP	1500	10.3	14.0	355.6	17.8	452.1	8.8	222.3	229.7	104.2
			2000	13.8	14.0	355.6	18.8	477.5	8.8	222.3	293.1	132.9
			2500	17.2	14.0	355.6	19.2	487.7	8.8	222.3	326.1	147.9

### 30° Elbow

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
2	50	SP	2500	17.2	5.9	150.4	4.3	109.4	4.5	114.3	8.6	3.9
3	80	SP	3000	20.7	6.1	154.9	5.6	147.8	4.5	114.3	14.0	6.4
4	100	SP	1500	10.3	6.4	163.3	5.9	149.9	4.5	114.3	11.4	5.2
4	100	SPH	2500	17.2	6.7	170.9	7.3	185.2	4.5	114.3	23.8	10.8
6	150	SPH	2000	13.8	8.5	216.4	10.4	263.8	6.0	152.4	63.0	28.6

View of Fitting Illustrations



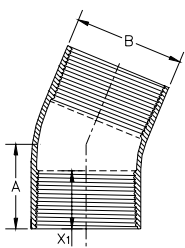
## 22.5° Elbow

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
2	50	SP	2500	17.2	5.8	148.1	4.3	109.4	4.5	114.3	8.5	3.9
3	80	SP	3000	20.7	6.0	153.5	5.6	141.5	4.5	114.3	13.7	6.2
4	100	SP	1500	10.3	6.3	161.2	5.9	150.9	4.5	114.3	11.2	5.1
4	100	SPH	2500	17.2	6.8	171.6	7.3	184.9	4.5	114.3	23.7	10.8
6	150	SPH	2000	13.8	8.4	212.8	10.2	258.7	6.0	152.4	57.3	26.0
8	200	SS	800	5.5	8.8	222.3	9.8	249.0	4.8	120.7	30.0	13.6
			1000	6.9	8.8	222.3	10.2	259.1	4.8	120.7	38.0	17.2
			1250	8.5	8.8	222.3	10.5	266.7	4.8	120.7	42.0	19.1
10	250	SS	500	3.4	8.2	208.0	12.5	317.5	5.4	137.2	25.5	11.6
			800	5.5	8.2	208.0	13.0	330.2	5.4	137.2	43.0	19.5
			1000	6.9	8.2	208.0	13.5	342.9	5.4	137.2	50.0	22.7
			1250	8.5	8.2	208.0	14.1	358.1	5.4	137.2	60.0	27.2
12	300	SS	500	3.4	11.4	288.9	14.5	368.3	6.1	154.9	30.5	13.8
			800	5.5	11.4	288.9	15.1	383.5	6.1	154.9	45.8	20.8
			1000	6.9	11.4	288.9	15.7	398.8	6.1	154.9	63.2	28.7
			1250	8.5	11.4	288.9	16.3	414.0	6.1	154.9	70.0	31.8

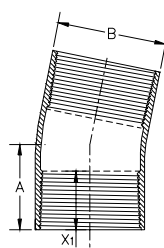
## 15° Elbow

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
6	150	SS HP	1500	10.3	11.8	299.7	9.0	228.6	8.8	222.3	33.5	15.2
			2000	13.8	11.8	299.7	9.7	246.4	8.8	222.3	50.4	22.9
			2500	17.2	11.8	299.7	10.3	261.6	8.8	222.3	65.9	29.9
			3000	20.7	11.8	299.7	10.9	276.9	8.8	222.3	82.3	37.3
			3750	25.9	11.8	299.7	11.9	302.3	8.8	222.3	111.7	50.7
8	200	SS HP	1500	10.3	13.5	342.9	11.1	281.9	8.8	222.3	53.6	24.3
			2000	13.8	13.5	342.9	11.9	302.3	8.8	222.3	77.8	35.3
			2500	17.2	13.5	342.9	12.7	322.6	8.8	222.3	103.7	47.0
			3000	20.7	13.5	342.9	13.4	340.4	8.8	222.3	127.7	57.9
10	250	SS HP	1500	10.3	13.8	349.3	14.4	365.8	8.8	222.3	95.9	43.5
			2000	13.8	13.8	349.3	15.4	391.2	8.8	222.3	135.8	61.6
			2500	17.2	13.8	349.3	16.4	416.6	8.8	222.3	178.4	80.9
12	300	SS HP	1500	10.3	14.0	355.6	17.8	452.1	8.8	222.3	180.9	82.1
			2000	13.8	14.0	355.6	18.8	477.5	8.8	222.3	230.8	104.7
			2500	17.2	14.0	355.6	19.2	487.7	8.8	222.3	256.8	116.5

### View of Fitting Illustrations



22° Elbow



15° Elbow

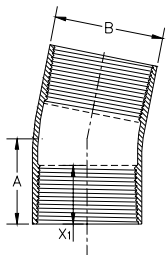
### 11.25° Elbow

Pipe Size		Thread Type	Pressure Rating		A		B		X <sub>1</sub>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
2	50	SP	2500	17.2	5.7	145.1	4.3	109.4	4.5	114.3	8.4	3.8
3	80	SP	3000	20.7	5.9	149.1	5.6	141.5	4.5	114.3	13.3	6.0
4	100	SP	1500	10.3	6.1	155.5	5.9	150.9	4.5	114.3	10.8	4.9
4	100	SPH	2500	17.2	6.5	165.8	7.2	183.6	4.5	114.3	23.1	10.5
6	150	SPH	2000	13.8	8.0	204.1	10.2	258.7	6.0	152.4	55.1	25.0
8	200	SS	800	5.5	8.8	222.3	9.8	248.9	4.8	120.7	27.0	12.2
			1000	6.9	8.8	222.3	10.1	256.5	4.8	120.7	35.0	15.9
			1250	8.5	8.8	222.3	10.5	248.9	4.8	120.7	35.0	15.9
10	250	SS	500	3.4	8.2	208.0	12.5	317.5	5.4	137.2	22.0	10.0
			800	5.5	8.2	208.0	13.2	335.3	5.4	137.2	39.0	17.7
			1000	6.9	8.2	208.0	13.5	342.9	5.4	137.2	46.0	20.9
			1250	8.5	8.2	208.0	14.0	355.6	5.4	137.2	58.0	26.3
12	300	SS	500	3.4	11.3	285.8	14.4	365.8	6.1	154.9	38.0	17.2
			800	5.5	11.3	285.8	15.2	386.1	6.1	154.9	66.0	29.9
			1000	6.9	11.3	285.8	15.6	396.2	6.1	154.9	83.0	37.7
			1250	8.5	11.3	285.8	16.2	411.5	6.1	154.9	106.0	48.1

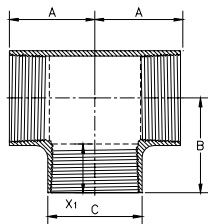
### Tee

Pipe Size		Thread Type	Pressure Rating		A		B		C		X <sub>1</sub>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	in	mm	lbs	kg
2	50	SP	2500	17.2	6.5	165.1	6.6	166.6	4.6	116.0	4.5	114.3	16.9	7.7
3	80	SP	3000	20.7	7.5	190.5	7.3	190.5	6.2	156.7	4.5	114.3	35.7	16.2
4	100	SP	1500	10.3	8.5	215.9	8.5	215.9	6.3	160.4	4.5	114.3	30.0	13.6
4	100	SPH	2500	15.5	8.4	214.4	8.5	215.9	7.9	201.4	4.5	114.3	59.0	26.8
6	150	SPH	2000	13.8	11.0	279.4	11.0	279.4	11.0	280.3	6.0	152.4	150.7	68.4
8	200	SS	800	5.5	11.5	292.1	12.5	317.5	10.1	256.5	4.8	120.7	50.0	22.7
			1000	6.9	11.5	292.1	12.5	317.5	10.5	266.7	4.8	120.7	65.0	19.5
			1250	8.5	11.5	292.1	12.5	317.5	10.9	276.9	4.8	120.7	65.0	19.5
10	250	SS	500	3.4	12.0	304.8	12.8	323.9	12.7	322.6	5.4	137.2	76.0	34.5
			800	5.5	12.0	304.8	12.8	323.9	13.5	342.9	5.4	137.2	90.0	40.8
			1000	6.9	12.0	304.8	12.8	323.9	14.0	355.6	5.4	137.2	122.0	55.3
			1250	8.5	12.0	304.8	12.8	323.9	14.6	370.8	5.4	137.2	160.0	72.6
12	300	SS	500	3.4	14.8	374.7	14.8	374.7	14.8	375.9	6.1	154.9	102.0	46.3
			800	5.5	14.8	374.7	14.8	374.7	15.6	396.2	6.1	154.9	145.0	65.8
			1000	6.9	14.8	374.7	14.8	374.7	16.2	411.5	6.1	154.9	210.0	95.3
			1250	8.5	14.8	374.7	14.8	374.7	16.9	429.3	6.1	154.9	240.0	108.9

View of Fitting Illustrations



11.25° Elbow

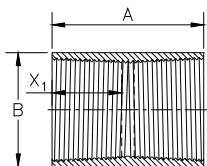


Tee

## Threaded Couplings

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		Weight	
in	mm		psi	MPa	in	mm	in	mm	in	mm	lbs	kg
2	50	SP	2500	17.2	9.1	231.6	3.8	96.7	4.50	114.3	4.1	1.9
3	80	SP	3000	20.7	9.0	228.6	5.2	131.3	4.50	114.3	6.7	3.0
4	100	SP	1500	10.3	9.0	228.6	5.7	145.1	4.50	114.3	5.0	2.3
4	100	SPH	2500	17.2	9.0	228.6	6.7	170.9	4.50	114.3	11.3	5.1
6	150	SPH	2000	13.8	12.0	304.8	9.3	235.8	6.00	152.4	24.2	11.0
6	150	SS HP	1500	10.3	18.5	469.9	8.7	221.0	6.00	152.4	21	9.5
			2000	13.8	18.5	469.9	9.2	233.7	6.00	152.4	31	14.1
			2500	17.2	18.5	469.9	9.7	246.4	6.00	152.4	40	18.1
			3000	20.7	18.5	469.9	10.2	259.1	6.00	152.4	51	23.1
			3750	25.9	18.5	469.9	11.2	284.5	6.00	152.4	71	32.2
8	200	SS	800	5.5	10.0	254.0	9.6	243.8	4.75	120.7	9.0	4.1
			1250	8.6	10.0	254.0	10.2	259.1	4.75	120.7	15.0	6.8
8	200	SS HP	1500	10.3	18.5	469.9	10.7	271.8	8.75	222.3	32.0	14.5
			2000	13.8	18.5	469.9	11.3	287.0	8.75	222.3	46.0	20.9
			2500	17.2	18.5	469.9	12.0	304.8	8.75	222.3	63.0	28.6
			3000	20.7	18.5	469.9	12.7	321.3	8.75	222.3	79.0	35.8
10	250	SS	800	5.5	11.375	288.9	12.8	325.1	5.40	137.2	18.0	8.16
			1250	8.6	11.375	288.9	13.6	345.4	5.40	137.2	30.0	13.6
10	250	SS HP	1500	10.3	18.5	469.9	13.9	353.1	8.75	222.3	59.0	26.8
			2000	13.8	18.5	469.9	14.7	373.4	8.75	222.3	83.0	37.6
			2500	17.2	18.5	469.9	15.6	396.2	8.75	222.3	111.0	50.3
12	300	SS	800	5.5	12.2	309.9	14.8	375.9	6.10	154.9	26.0	11.8
			1250	8.6	12.2	309.9	15.7	398.8	6.10	154.9	42.0	19.1
12	300	SS HP	1500	10.3	18.5	469.9	16.2	411.5	8.75	222.3	81.0	36.7
			2000	13.8	18.5	469.9	17.3	439.4	8.75	222.3	119.0	54.0
			2500	17.2	18.5	469.9	18.3	464.8	8.75	222.3	180.0	81.7

View of Fitting Illustrations

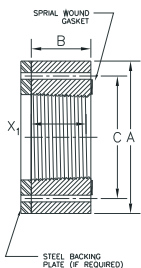


Threaded Coupling

## Flanges

Pipe Size		Thread Type	Pressure Rating				A - Flange O.D.		B - Flange Width		C - Bolt Circle		X <sub>1</sub>		No. of Bolts	Bolt Size Length <sup>(1)</sup>		Bolt Hole Size		Weight	
			100°F		200°F		in	mm	in	mm	in	mm				in	mm	in	mm	lbs	kg
in	mm		psi	MPa	psi	MPa															
<b>ANSI 150</b>																					
2	50	SP	300	2.1	260	1.8	6.0	152.4	4.5	114.3	4.75	120.7	4.5	114.3	4	.625 x 14	15.9 x 355.6	.75	19.1	7.0	3.2
3	80	SP	300	2.1	260	1.8	7.5	190.5	4.5	114.3	6.0	152.4	4.5	114.3	4	.625 x 14	15.9 x 355.6	.75	19.1	11.0	5.0
4	100	SP	300	2.1	260	1.8	9.0	228.6	4.5	114.3	7.5	190.5	4.5	114.3	8	.625 x 14	15.9 x 355.6	.75	19.1	14.0	6.4
4	100	SPH	300	2.1	260	1.8	9.0	228.6	4.5	114.3	7.5	190.5	4.5	114.3	8	.625 x 14	15.9 x 355.6	.75	19.1	14.0	6.4
6	150	SPH	300	2.1	260	1.8	11.0	279.4	6.0	152.4	9.5	241.3	6.0	152.4	8	.75 x 15.25	19.1 x 387.4	.875	22.2	23.0	10.4
8	200	SS	285	1.9	260	1.8	13.5	342.9	5.0	127.0	11.8	298.5	4.8	120.7	8	.75 x 14	19.1 x 355.6	.875	22.2	28.2	12.8
10	250	SS	285	1.9	260	1.8	16.0	406.4	5.8	146.1	14.3	362	5.4	137.2	12	.875 x 15	22.2 x 381.0	1.0	25.4	37.2	16.9
12	300	SS	285	1.9	260	1.8	19	482.6	6.4	163.3	17.0	431.8	6.1	154.9	12	.875 x 16	22.2 x 381.0	1.0	25.4	61.1	27.7
<b>ANSI 300</b>																					
2	50	SP	740	5.1	675	4.7	6.5	165.1	4.5	114.3	5.0	127.0	4.5	114.3	8	.625 x 14	15.9 x 355.6	.75	19.1	8.0	3.6
3	80	SP	740	5.1	675	4.7	8.2	208.3	4.5	114.3	6.62	168.1	4.5	114.3	8	.75 x 14	19.1 x 355.6	.875	22.2	12.0	5.4
4	100	SP	740	5.1	675	4.7	10.0	254.0	4.5	114.3	7.88	200.2	4.5	114.3	8	.75 x 14	19.1 x 355.6	.875	22.2	19.0	8.6
4	100	SPH	740	5.1	675	4.7	10.0	254.0	4.5	114.3	7.88	200.2	4.5	114.3	8	.75 x 14	19.1 x 355.6	.875	22.2	19.0	8.6
6	150	SPH	740	5.1	675	4.7	12.5	317.5	6.0	152.4	10.62	269.7	6.0	152.4	12	.75 x 15.25	19.1 x 387.4	.875	22.2	34.0	15.4
8	200	SS	740	5.1	675	4.7	15.0	381.0	5.0	127	13.0	330.2	4.8	120.7	12	.875 x 14	22.2 x 355.6	1.0	25.4	38.3	17.4
10	250	SS	740	5.1	675	4.7	17.5	444.5	5.8	146.1	15.3	387.4	5.4	137.2	16	1 x 15	25.4 x 381.0	1.125	28.6	50.4	22.9
12	300	SS	740	5.1	675	4.7	20.5	520.7	6.4	163.3	17.8	450.9	6.1	154.9	16	1.125 x 16	28.6 x 406.4	1.25	31.8	77.4	35.1
<b>ANSI 600<sup>(2)</sup></b>																					
2	50	SP	1480	10.2	1350	9.3	6.5	165.1	4.5	114.3	5.0	127.0	4.5	114.3	8	.625 x 14	15.9 x 355.6	.75	19.1	8.0	3.6
3	80	SP	1480	10.2	1350	9.3	8.2	208.3	4.5	114.3	6.62	168.1	4.5	114.3	8	.75 x 14	19.1 x 355.6	.875	22.2	12.0	5.4
4	100	SP	1480	10.2	1350	9.3	10.75	273.1	4.5	114.3	8.5	215.9	4.5	114.3	8	.875 x 14	22.2 x 355.6	.875	22.2	23.0	10.4
4	100	SPH	1480	10.2	1350	9.3	10.75	273.1	4.5	114.3	8.5	215.9	4.5	114.3	8	.875 x 14	22.2 x 355.6	1.0	25.4	22.0	10.0
6	150	SPH	1480	10.2	1350	9.3	14.0	355.6	6.0	152.4	11.5	292.1	6.0	152.4	12	1.0 x 15.25	25.4 x 387.4	1.125	28.6	46.0	20.9
6	150	SS HP	1480	10.2	1350	9.3	14.0	355.6	9.2	234.4	11.5	292.1	9.1	231.9	12	1.0 x 24	28.6 x 609.6	1.125	28.6	69.0	31.3
8	200	SS	1480	10.2	1350	9.3	16.5	419.1	5.0	127.0	13.8	349.3	4.8	120.7	12	1.125 x 14	28.6 x 355.6	1.25	31.8	49.4	22.4
8	200	SS HP	1480	10.2	1350	9.3	16.5	419.1	9.2	234.4	13.8	349.3	9.1	231.9	12	1.125 x 24	28.6 x 609.6	1.25	31.8	88.0	39.9
10	250	SS	1480	10.2	1350	9.3	20.0	508.0	5.8	146.1	17.0	431.8	5.4	137.2	16	1.25 x 15	31.8 x 381.0	1.375	34.9	76.9	34.9
10	250	SS HP	1480	10.2	1350	9.3	20.0	508.0	9.2	234.4	17.0	431.8	9.1	231.9	16	1.25 x 24	31.8 x 609.6	1.375	34.9	123.5	56.0
12	300	SS	1480	10.2	1350	9.3	22.0	558.8	6.4	163.3	19.3	489.0	6.1	154.9	20	1.25 x 16	31.8 x 406.4	1.375	34.9	95.4	43.3
12	300	SS HP	1480	10.2	1350	9.3	22.0	558.8	9.2	234.4	19.3	489.0	13.6	344.7	20	1.25 x 24	31.8 x 609.6	1.375	34.9	138.7	62.9

View of Fitting Illustrations



Flange

## Flanges

Pipe Size	Thread	Pressure Rating				A - Flange		B - Flange		C - Bolt		X <sub>1</sub>		No. of Bolts	Bolt Size Length <sup>(1)</sup>		Bolt Hole Size		Weight		
		100°F		200°F		O.D.		Width		Circle					in	mm	in	mm	lbs	kg	
in	mm	Type	psi	MPa	psi	MPa	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	lbs	kg	
<b>ANSI 900<sup>(2)</sup></b>																					
2	50	SP	2220	15.3	2025	14.0	8.5	215.9	4.5	114.3	6.5	165.1	4.5	114.3	8	.875 x 14	22.2 x 355.6	1.0	25.4	15.0	6.8
3	80	SP	2220	15.3	2025	14.0	9.5	241.3	4.5	114.3	7.5	190.5	4.5	114.3	8	.875 x 14	22.2 x 355.6	1.0	25.4	18.0	8.2
4	100	SP	2220	15.3	2025	14.0	11.5	292.1	4.5	114.3	9.25	235.0	4.5	114.3	8	1.125 x 14	28.6 x 355.6	1.25	31.8	25.0	11.3
4	100	SPH	2220	15.3	2025	14.0	11.5	292.1	4.5	114.3	9.25	235.0	4.5	114.3	8	1.125 x 14	28.6 x 355.6	1.25	31.8	25.0	11.3
6	150	SPH	2220	15.3	2025	14.0	15.0	381.0	6.0	152.4	12.5	317.5	6.0	152.4	12	1.125 x 15.25	28.6 x 387.4	1.25	31.8	54.0	24.5
6	150	SS HP	2200	15.2	2025	14.0	15.0	381.0	9.2	234.4	12.5	317.5	9.1	231.9	12	1.125 x 24	28.6 x 609.6	1.25	31.8	82.0	37.2
8	200	SS HP	2200	15.2	2025	14.0	18.5	469.9	9.2	234.4	15.5	393.7	9.1	231.9	12	1.375 x 24	34.925 x 609.6	1.5	38.1	119.3	54.1
10	250	SS HP	2200	15.2	2025	14.0	21.5	546.1	9.2	234.4	18.5	469.9	9.1	231.9	16	1.375 x 24	34.925 x 609.6	1.5	38.1	152.1	69.0
12	300	SS HP	2200	15.2	2025	14.0	24.0	609.6	9.2	234.4	21.0	533.4	9.1	231.9	20	1.375 x 24	34.925 x 609.6	1.5	38.1	181.7	82.4
<b>ANSI 1500<sup>(2)</sup></b>																					
2	50	SP	3705	25.5	3375	23.3	8.5	215.9	4.5	114.3	6.5	165.1	4.5	114.3	8	.875 x 14	22.2 x 355.6	1.0	25.4	15.0	6.8
3	80	SP	3705	25.5	3375	23.3	10.5	266.7	4.5	114.3	8.0	203.2	4.5	114.3	8	1.125 x 14	28.6 x 355.6	1.25	31.8	22.0	10.0
4	100	SPH	3705	25.5	3375	23.3	12.3	311.2	4.5	114.3	9.5	241.3	4.5	114.3	8	1.25 x 14	31.8 x 355.6	1.375	34.9	29.0	13.2
6	150	SS HP	3705	25.5	3375	23.3	15.5	393.7	9.2	234.4	12.5	317.5	9.1	231.9	12	1.375 x 24	34.6 x 609.6	1.5	38.1	86.0	39.0
8	200	SS HP	3705	25.5	3375	23.3	19.0	482.6	9.2	234.4	15.5	393.7	9.1	231.9	12	1.625 x 24	41.275 x 609.6	1.75	44.5	123.9	56.2
10	250	SS HP	3705	25.5	3375	23.3	23.0	584.2	9.2	234.4	19.0	482.6	9.1	231.9	12	1.875 x 24	47.625 x 609.6	2.0	50.8	179.2	81.3
12	300	SS HP	3705	25.5	3375	23.3	26.5	673.1	9.2	234.4	22.5	571.5	9.1	231.9	12	2.0 x 24	50.8 x 609.6	2.12	53.9	239.0	108.4

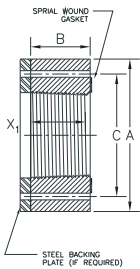
<sup>(1)</sup> Bolt lengths in table are for fiberglass-to-fiberglass flange connections. Consult with NOV Fiber Glass Systems Engineering for bolt lengths for fiberglass to steel connections.

<sup>(2)</sup> Spacer rings are required for make-up of ANSI 600-1500 when mated to steel raised face flanges.

**NOTE:**

- SS & SS HP - Spiral wound gaskets (Flexitalic®) are required in all flange joints.
- CEN, SP & SPH - Spiral wound gaskets are acceptable, however, Graph-Lock® gaskets (TC 3125) can be used up through ANSI 600.
- Steel backing plates are required for ALL SS and SS HP flanges, 4" SPH ANSI 1500 flanges and 6" SPH 900 flanges.
- Refer to page 12 for Bolt Torquing Sequence and Bolt Torque

**View of Fitting Illustrations**



**Flange**

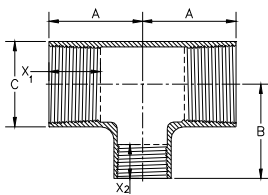
## Reducing Tee

Pipe Size	Pressure Rating		A		B		C		X <sub>1</sub>		X <sub>2</sub>		Weight	
	in	psi	MPa	in	mm	in	mm	in	mm	in	mm	in	mm	lbs
3 SP x 2 SP	3000	20.7	7.5	190.5	7.4	188.9	6.3	160.5	4.5	114.3	4.5	114.3	13.0	5.9
4 SP x 2 SP	1500	10.3	8.5	215.9	8.0	203.6	6.5	164.8	4.5	114.3	4.5	114.3	21.8	9.9
4 SP x 3 SP	1500	10.3	8.5	215.9	8.0	203.7	6.5	164.8	4.5	114.3	4.5	114.3	22.7	10.3
4 SPH x 2 SP	3000	20.7	8.4	214.4	8.0	203.6	8.1	206.5	4.5	114.3	4.5	114.3	45.8	20.8
4 SPH x 3 SP	3000	20.7	8.4	214.4	8.0	203.7	8.1	206.5	4.5	114.3	4.5	114.3	44.5	20.2
6 SPH x 4 SP	1500	10.3	11.0	279.4	9.4	239.0	9.5	241.0	6.0	152.4	6.0	152.4	53.5	24.3
10 SS x 6 $\frac{1}{8}$ 8rd	800	5.5	12.0	304.8	12.0	304.8	13.5	342.9	5.4	137.2	3.9	98.4	85	38.6
	1000	6.9	12.0	304.8	12.0	304.8	14.0	355.6	5.4	137.2	3.9	98.4	103.0	46.7
	1250	8.5	12.0	304.8	12.0	304.8	14.6	370.8	5.4	137.2	3.9	98.4	120.0	54.4
10 SS x 8 $\frac{1}{8}$ 8rd	800	5.5	12.0	304.8	12.0	304.8	13.5	342.9	5.4	137.2	4.5	114.3	90.0	40.8
	1000	6.9	12.0	304.8	12.0	304.8	14.0	355.6	5.4	137.2	4.5	114.3	125.0	56.7
	1250	8.5	12.0	304.8	12.0	304.8	14.6	370.8	5.4	137.2	4.5	114.3	160.0	72.6
10 SS x 8 SS	800	5.5	12.0	304.8	12.0	304.8	13.5	342.9	5.4	137.2	4.8	120.7	98.0	44.45
	1000	6.9	12.0	304.8	12.0	304.8	14.0	355.6	5.4	137.2	4.8	120.7	125.0	56.7
	1250	8.5	12.0	304.8	12.0	304.8	14.6	370.8	5.4	137.2	4.8	120.7	160.0	72.58
12 SS x 8 $\frac{1}{8}$ 8rd	1250	8.5	14.8	374.7	14.8	374.7	17.1	434.3	6.1	154.9	4.5	114.3	230.0	104.3
12 SS x 8 SS	1250	8.5	14.8	374.7	14.8	374.7	17.1	434.3	6.1	154.9	4.8	120.7	225.0	102.1
12 SS x 10 SS	1250	8.5	14.8	374.7	14.8	374.7	17.1	434.3	6.1	154.9	5.4	137.2	245.0	111.1

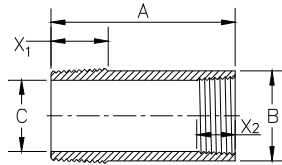
## Reducing Bushing

Pipe Size	Pressure Rating		A		B		C		X <sub>1</sub>		X <sub>2</sub>		Weight	
	in	psi	MPa	in	mm	in	mm	in	mm	in	mm	in	mm	lbs
10 SS x 6 $\frac{1}{8}$ 8rd	1000	6.9	12.0	304.8	11.3	285.8	6.0	151.1	5.4	137.2	3.9	98.4	65.0	29.5
10 SS x 8 $\frac{1}{8}$ 8rd	1000	6.9	12.0	304.8	11.3	285.8	7.7	196.6	5.4	137.2	4.5	114.3	50.0	22.7
10 SS x 8 SS	1000	6.9	12.0	304.8	11.3	285.8	7.7	196.6	5.4	137.2	4.8	120.7	50.0	22.7
12 SS x 8 $\frac{1}{8}$ 8rd	1000	6.9	12.0	304.8	14.4	365.8	7.7	196.6	6.1	154.9	4.5	114.3	80.0	36.3
12 SS x 8 SS	1000	6.9	12.0	304.8	14.4	365.8	7.7	196.6	6.1	154.9	4.8	120.7	80.0	36.3
12 SS x 10 SS	1000	6.9	12.0	304.8	14.4	365.8	11.8	300	6.1	154.9	5.4	137.2	70.0	31.8

View of Fitting Illustrations



Reducing Tee



Reducing Bushing



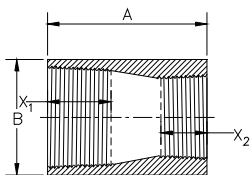
## Reducing Coupling

Pipe Size		Pressure Rating		A		B		X <sub>1</sub>		X <sub>2</sub>		Weight	
in		psi	MPa	in	mm	in	mm	in	mm	in	mm	lbs	kg
8 SS x 4½ 8rd		1250	8.5	16.5	419.1	10.0	254.0	6.1	154.9	3.5	88.9	57.0	84.8
8 SS x 6⅝ 8rd		1250	8.5	14.5	368.3	10.0	254.0	6.1	154.9	3.9	98.4	47.0	69.8
10 SS x 6⅝ 8rd		1250	8.5	19.5	495.3	13.8	350.5	5.4	137.2	3.9	98.4	68.0	30.8
10 SS x 8⅝ 8rd		1250	8.5	19.5	495.3	13.8	350.5	5.4	137.2	4.5	114.3	63	28.6
10 SS x 8 SS		1250	8.5	15.0	381.0	13.8	350.5	5.4	137.2	4.8	120.7	50.0	22.7
12 SS x 8⅝ 8rd		1250	8.5	18.3	464.8	16.0	406.4	6.1	154.9	4.5	114.3	90.0	40.8
12 SS x 9⅝ 8rd		1250	8.5	20.5	520.7	16.0	406.4	6.1	154.9	4.5	114.3	90.0	40.8
12 SS x 8 SS		1250	8.5	19.5	495.3	16.0	406.4	6.1	154.9	4.8	120.7	90.0	40.8
12 SS x 10 SS		1250	8.5	16.0	406.4	16.0	406.4	6.1	154.9	5.4	137.2	75.0	34.0

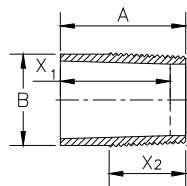
## Threaded Adapter

Pipe Size		Thread Type	Pressure Rating		A		B		X <sup>1</sup>		X <sup>2</sup>		Weight		Aliphatic Amine
in	mm		psi	MPa	in	mm	in	mm	in	mm	in	mm	lbs	kg	
8	200	SS	500	3.5	8.0	203.2	8.8	223.3	8.0	203.2	4.8	120.7	7.5	3.4	R
10	250	SS	500	3.5	10.0	254.0	11.3	286.3	7.0	177.8	5.4	137.2	8.7	3.9	R
12	300	SS	500	3.5	10.0	254.0	13.3	337.1	7.0	177.8	6.1	154.9	21.5	9.7	R

### View of Fitting Illustrations



Reducing Coupling



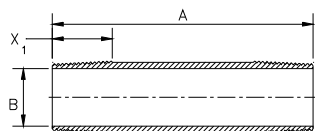
Threaded Adapter

### Threaded Nipples (9 ft. (2.74 m) through 15ft. (4.57 m) continued on next page)

Pipe Size		Thread Type	Pressure Rating		A - Standard Lengths ft (m)													
					2 (0.61)		3 (0.91)		4 (1.22)		5 (1.52)		6 (1.83)		7 (2.13)		8 (2.44)	
in	mm		psi	MPa	Weight													
					lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs
2	50	SP	2500 <sup>1</sup>	17.2	5.5	2.5	8.2	3.7	11	5.0	13.7	6.2	16.4	7.4	19.2	8.7	21.9	9.9
2	50	SP	2000 <sup>2</sup>	13.8	5.6	2.5	8.5	3.9	11.3	5.1	14.1	6.4	16.9	7.7	19.8	9.0	22.6	10.3
3	80	SP	3000 <sup>1</sup>	20.7	9.5	4.3	14.2	6.4	19	8.6	23.7	10.8	28.5	12.9	33.2	15.1	38	17.2
3	80	SP	2500 <sup>2</sup>	17.2	9.8	4.4	14.6	6.6	19.5	8.8	24.4	11.1	29.3	13.3	34.1	15.5	39.0	17.7
4	100	SP	1500 <sup>1</sup>	10.3	13.2	6.0	19.8	9.0	26.4	12.0	33	15.0	39.6	18.0	46.2	21.0	52.8	24.0
4	100	SP	1250 <sup>2</sup>	8.6	13.6	6.2	20.4	9.3	27.2	12.3	33.9	15.4	40.7	18.5	47.5	21.5	54.3	24.6
4	100	SPH	2500 <sup>1</sup>	17.2	14.2	6.4	21.3	9.7	28.4	12.9	35.5	16.1	42.6	19.3	49.7	22.5	56.8	25.8
4	100	SPH	1750 <sup>2</sup>	12.1	14.9	6.8	22.4	10.2	29.9	13.6	37.3	16.9	44.8	20.3	52.2	23.7	59.7	27.1
6	150	SPH	2000 <sup>1</sup>	17.2	24.6	11.2	36.9	16.7	49.2	22.3	61.5	27.9	73.7	33.4	86	39.0	98.3	44.6
6	150	SPH	1750 <sup>2</sup>	12.1	25.1	11.4	37.6	17.1	50.1	22.7	62.7	28.4	75.2	34.1	87.8	39.8	100.3	45.5
6	150	SS HP	3500 <sup>1</sup>	24.1	35.7	16.2	53.6	24.3	71.5	32.4	89.3	40.5	107.2	48.6	125	56.7	142.9	64.8
6	150	SS HP	2500 <sup>2</sup>	17.2	36.9	16.7	55.4	25.1	73.9	33.5	92.3	41.9	110.8	50.3	129.3	58.7	147.7	67.0
8	200	SS	1250 <sup>3</sup>	8.6	-	-	40.4	18.3	53.9	24.4	-	-	80.9	36.7	-	-	107.8	48.9
8	200	SS HP	3000 <sup>1</sup>	20.7	45.6	20.7	68.4	31.0	91.2	41.4	114	51.7	136.7	62.0	159.5	72.3	182.3	82.7
8	200	SS HP	2250 <sup>2</sup>	20.7	46.7	21.2	70.0	31.8	93.3	42.3	116.7	52.9	140.0	63.5	163.3	74.1	186.7	84.7
10	250	SS	1250 <sup>3</sup>	8.6	-	-	61.0	27.7	81.3	36.9	-	-	121.9	55.3	-	-	163.0	73.9
10	250	SS HP	2500 <sup>1</sup>	17.2	64.4	29.2	96.7	43.9	128.9	58.5	161.1	73.1	193.3	87.7	225.5	102.3	257.8	116.9
10	250	SS HP	2000 <sup>2</sup>	13.8	66.6	30.2	99.9	45.3	133.3	60.5	166.6	75.6	199.9	90.7	233.2	105.8	266.5	120.9
12	300	SS	1250 <sup>3</sup>	8.6	-	-	74.9	34.0	99.8	45.3	-	-	121.9	55.3	-	-	163.0	73.9
12	300	SS HP	2250 <sup>1</sup>	15.5	74.3	33.7	111.5	50.6	148.7	67.5	185.8	84.3	223	101.2	260.2	118.0	297.3	134.9
12	300	SS HP	1750 <sup>2</sup>	12.1	77.8	35.3	116.7	52.9	155.6	70.6	194.5	88.2	233.4	105.9	272.3	123.5	311.2	141.2

<sup>1</sup> - Anhydride  
<sup>2</sup> - Aromatic Amine  
<sup>3</sup> - Aliphatic Amine

View of Fitting Illustrations



Threaded Nipple

## Threaded Nipples

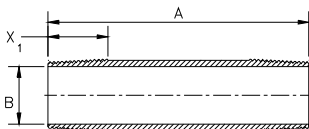
Pipe Size		Thread Type	Pressure Rating		A - Standard Lengths ft/m													
					9 (2.74)		10 (3.05)		11 (3.35)		12 (3.66)		13 (3.96)		14 (4.27)		15 (4.57)	
in	mm		psi	MPa	Weight													
					lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs	lbs	kgs
2	50	SP	2500 <sup>1</sup>	17.2	24.7	11.2	27.4	12.4	30.1	13.7	32.9	14.9	35.6	16.1	38.4	17.4	41.1	18.6
2	50	SP	2000 <sup>2</sup>	13.8	25.4	11.5	28.2	12.8	31.0	14.1	33.9	15.4	36.7	16.6	39.5	17.9	42.3	19.2
3	80	SP	3000 <sup>1</sup>	20.7	42.7	19.4	47.4	21.5	52.2	23.7	56.9	25.8	61.7	28.0	66.4	30.1	71.2	32.3
3	80	SP	2500 <sup>2</sup>	17.2	43.9	19.9	48.8	22.1	53.7	24.4	58.5	26.5	63.4	28.8	68.3	31.0	73.2	33.2
4	100	SP	1500 <sup>1</sup>	10.3	59.4	26.9	66.1	30.0	72.7	33.0	79.3	36.0	85.9	39.0	92.5	42.0	99.1	45.0
4	100	SP	1250 <sup>2</sup>	8.6	61.1	27.7	67.9	30.8	74.7	33.9	81.5	37.0	88.3	40.1	95.1	43.1	101.8	46.2
4	100	SPH	2500 <sup>1</sup>	17.2	63.9	29.0	71	32.2	78.1	35.4	85.2	38.6	92.2	41.8	99.3	45.0	106.4	48.3
4	100	SPH	1750 <sup>2</sup>	12.1	67.2	30.5	74.6	33.8	82.1	37.2	89.6	40.6	97.0	44.0	104.5	47.4	112.0	50.8
6	150	SPH	2000 <sup>1</sup>	17.2	110.6	50.2	122.9	55.7	135.2	61.3	147.5	66.9	159.8	72.5	172.1	78.1	184.4	83.6
6	150	SPH	1750 <sup>2</sup>	12.1	112.8	51.2	125.4	56.9	137.9	62.6	150.4	68.2	163.0	73.9	175.5	79.6	188.0	85.3
6	150	SS HP	3500 <sup>1</sup>	24.1	160.8	72.9	178.6	81.0	196.5	89.1	214.4	97.3	232.2	105.3	250.1	113.4	267.9	121.5
6	150	SS HP	2500 <sup>2</sup>	17.2	166.2	75.4	184.7	83.8	203.1	92.1	221.6	100.5	240.1	108.9	258.5	117.3	277.0	125.6
8	200	SS	1250 <sup>3</sup>	8.6	-	-	134.8	61.1	-	-	-	-	-	-	-	-	-	-
8	200	SS HP	3000 <sup>1</sup>	20.7	205.1	93.0	227.9	103.4	250.7	113.7	273.5	124.1	296.3	134.4	319.1	144.7	341.9	155.1
8	200	SS HP	2250 <sup>2</sup>	20.7	210.0	95.3	233.3	105.8	256.7	116.4	280.0	127.0	303.3	137.6	326.7	148.2	350.0	158.8
10	250	SS	1250 <sup>3</sup>	8.6	-	-	203.2	92.2	-	-	-	-	-	-	-	-	-	-
10	250	SS HP	2500 <sup>1</sup>	17.2	290.0	131.5	322.2	146.1	354.4	160.8	386.6	175.4	418.8	190.0	451.1	204.6	483.3	219.2
10	250	SS HP	2000 <sup>2</sup>	13.8	299.8	136.0	333.1	151.1	366.4	166.2	399.8	181.3	433.1	196.5	466.4	211.6	499.7	226.7
12	300	SS	1250 <sup>3</sup>	8.6	-	-	203.2	92.2	-	-	-	-	-	-	-	-	-	-
12	300	SS HP	2250 <sup>1</sup>	15.5	334.5	151.7	371.7	168.6	408.8	185.4	446	202.3	483.2	219.2	520.4	236.1	557.5	252.9
12	300	SS HP	1750 <sup>2</sup>	12.1	350.1	158.8	389.0	176.5	427.9	194.1	466.8	211.7	505.6	229.3	544.5	247.0	583.4	264.6

<sup>1</sup>- Anhydride

<sup>2</sup>- Aromatic Amine

<sup>3</sup>- Aliphatic Amine

### View of Fitting Illustrations



### Threaded Nipple

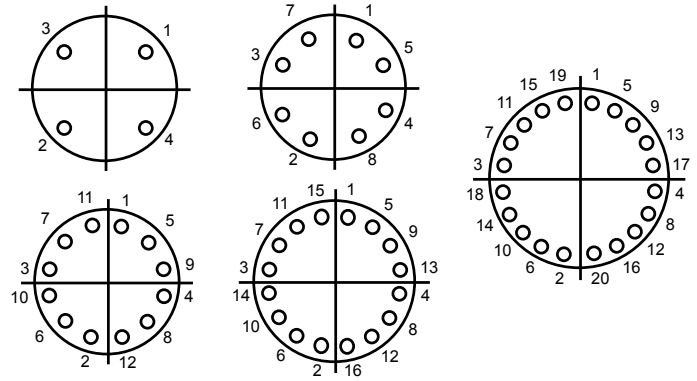
### Bolt Torque vs. Bolt Size

Bolt Size (inch)	Torque			
	Grade 2		Grade 5	
	ft•lb	N•m	ft•lb	N•m
5/8"	54	73	89	120
3/4"	96	130	160	216
7/8"	155	210	258	349
1"	230	311	386	523
1 1/8"	324	439	544	737
1 1/4"	460	623	776	1052
1 3/8"	595	806	1006	1363
1 1/2"	795	1077	1347	1826
1 5/8"	1003	1360	1694	2297
1 7/8"	1558	2112	2632	3569
2"	1873	2539	3164	4290

Multiply by 0.9 for plating

**NOTE:** Regardless of bolting material, do not exceed Grade 5 torque.

### Bolt Torquing Sequence



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 OG8950ENG April 2017