

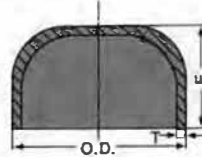
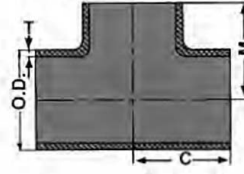
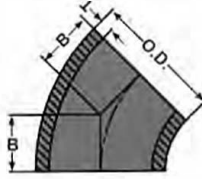
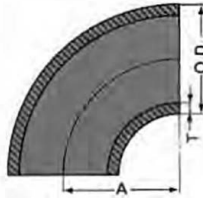
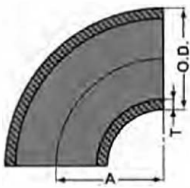
**90° ELBOW  
LONG RADIUS**

**90° ELBOW  
SHORT RADIUS**

**45° ELBOW  
LONG RADIUS**

**TEE**

**CAP**

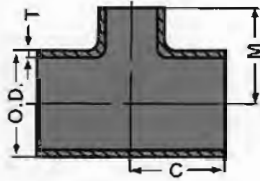


DIMENSION ANSI B16.9 (S/R ANSI B16.28)

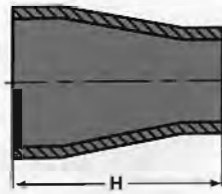
UNIT: INCH/mm

NOMINAL PIPE SIZE	OUTSIDE DIAMETER	WALL THICKNESS SCHEDULE				ELBOW			TEE	CAP	NOMINAL PIPE SIZE
						90°		45°			
		INCH	O.D.	T				L/R	S/R	L/R	C, M
				5S	10S	40S	80S	A	A	B	
1/2	0.840 21.30	0.065 1.65	0.083 2.11	0.109 2.77	0.147 3.73	1.50 38.1	— —	0.62 16	1.00 25.4	1.00 25.4	1/2
3/4	1.050 26.70	0.065 1.65	0.083 2.11	0.113 2.87	0.154 3.91	1.12 28.5	— —	0.75 11	1.125 28.6	1.00 25.4	3/4
1	1.315 33.40	0.065 1.65	0.109 2.77	0.133 3.38	0.179 4.55	1.50 38.1	1.00 25.4	0.88 22	1.50 38.1	1.50 38.0	1
1 1/4	1.660 42.2	0.065 1.65	0.109 2.77	0.140 3.56	0.191 4.85	1.88 47.5	1.25 32	1.00 25	1.88 47.6	1.50 38	1 1/4
1 1/2	1.90 48.3	0.065 1.65	0.109 2.77	0.145 3.68	0.200 5.08	2.25 57.0	1.50 38	1.12 29	2.25 57.2	1.50 38	1 1/2
2	2.375 60.3	0.065 1.65	0.109 2.77	0.154 3.91	0.218 5.54	3.00 76.0	2.00 51	1.38 35	2.50 63.5	1.50 38	2
2 1/2	2.875 73.0	0.083 2.11	0.120 3.05	0.203 5.16	0.276 7.01	3.75 95.0	2.50 63.5	1.75 45	3.00 76.2	1.50 38	2 1/2
3	3.50 88.9	0.083 2.11	0.120 3.05	0.216 5.49	0.300 7.62	4.50 114.5	3.00 76	2.00 51	3.38 85.7	2.00 51	3
3 1/2	4.00 101.6	0.083 2.11	0.120 3.05	0.226 5.74	0.318 8.08	5.25 133.5	3.50 89	2.25 57	3.75 95.3	2.50 64	3 1/2
4	4.50 114.3	0.083 2.11	0.120 3.05	0.237 6.02	0.337 8.56	6.00 152.5	4.00 101.5	2.50 64	4.12 104.8	2.50 64	4
5	5.563 141.3	0.109 2.77	0.134 3.40	0.258 6.55	0.375 9.52	7.50 190.5	5.00 127	3.12 79	4.88 123.8	3.00 76	5
6	6.625 168.3	0.109 2.77	0.134 3.40	0.280 7.11	0.432 10.97	9.00 228.5	6.00 152.5	3.75 95	5.62 142.9	3.50 89	6
8	8.625 219.1	0.109 2.77	0.148 3.76	0.322 8.18	0.50 12.70	12.00 305	8.00 203	5.00 127	7.00 177.8	4.00 102	8
10	10.75 273	0.134 3.40	0.165 4.19	0.365 9.27	0.500 12.70	15.00 381	10.00 254	6.25 159	8.50 215.9	5.00 127	10
12	12.75 323.9	0.156 3.96	0.180 4.57	0.375 9.52	0.500 12.70	18.00 457	12.00 305	7.50 191	10.00 254	6.00 152	12

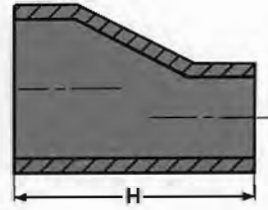
### REDUCING TEE



### CONCENTRIC REDUCER



### ECCENTRIC REDUCER



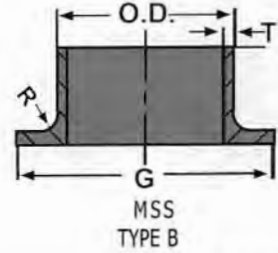
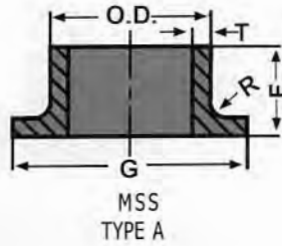
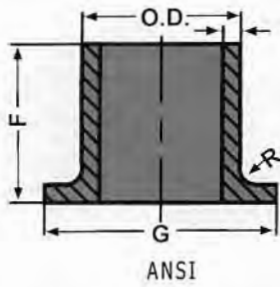
DIMENSION ANSI B16.9

UNIT: INCH/mm

NOMINAL PIPE SIZE INCH	REDUCING TEE		REDUCERS CONCENTRIC ECCENTRIC
	C	M	H
3/4 x 1/2	1.125 28.6	1.125 28.6	1.500 38.1
1 x 3/4	1.500 38.1	1.500 38.1	2.000 50.80
		1.500 38.1	
1 1/4 x 3/4	1.875 47.6	1.875 47.6	2.000 50.8
		1.875 47.6	
1 1/2 x 1	2.250 57.2	2.250 57.2	2.500 63.5
		2.250 57.2	
2 x 1	2.500 63.5	2.375 60.3	3.000 76.2
		2.250 57.2	
2 1/2 x 1 1/4	3.000 76.2	2.000 50.8	3.500 88.9
		1.752 44.5	
3 x 1 1/2	3.375 85.7	2.750 69.9	3.500 88.9
		2.625 66.7	
3 1/2 x 2 1/2	3.752 95.3	2.500 63.5	4.000 101.6
		2.250 57.2	
4 x 3	4.126 104.8	3.250 82.6	4.000 101.6
		3.000 76.2	
4 1/2 x 2 1/2	4.500 114.3	2.875 73.0	4.000 101.6
		2.752 69.9	
5 x 2	4.874 123.8	2.626 66.7	4.000 101.6
		2.626 66.7	
6 x 2	5.250 133.0	2.500 63.5	4.000 101.6
		2.250 57.2	
7 x 2	5.626 142.9	2.375 60.3	4.000 101.6
		2.250 57.2	
8 x 2	6.000 152.4	2.250 57.2	4.000 101.6
		2.000 50.8	
9 x 2	6.375 162.9	2.125 53.7	4.000 101.6
		2.000 50.8	
10 x 2	6.750 171.5	2.000 50.8	4.000 101.6
		1.875 47.6	
12 x 2	7.500 190.5	1.875 47.6	4.000 101.6
		1.752 44.5	

NOMINAL PIPE SIZE INCH	REDUCING TEE		REDUCERS CONCENTRIC ECCENTRIC
	C	M	H
4 x 3 1/2	4.126 104.8	4.00 101.6	4.000 101.6
		3.750 95.3	
5 x 3	4.874 123.8	4.626 117.5	5.000 127.0
		4.50 114.3	
6 x 3	5.626 142.9	5.00 127.0	5.500 139.7
		4.874 123.8	
8 x 3	7.000 178	6.625 168	6.000 152
		6.125 155	
10 x 3	8.500 216	8.000 203	7.000 178
		7.625 194	
12 x 3	10.000 254	9.500 241	8.000 203
		9.000 229	

## STUB ENDS



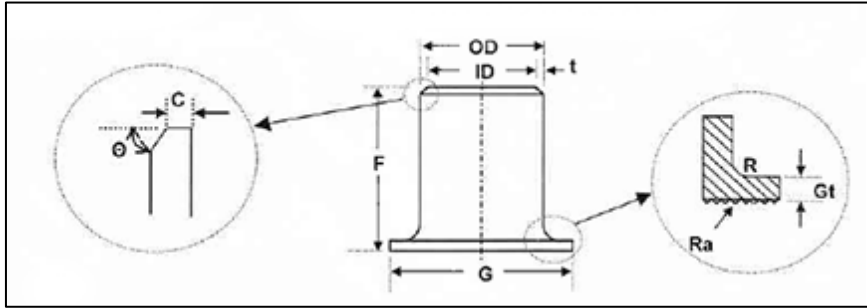
DIMENSION B16.9, MSS SP-43

UNIT: INCH/mm

NOMINAL PIPE SIZE	OUTSIDE DIAMETER	STUB END						NOMINAL PIPE SIZE
		G	ANSI		MSS			
			F	R	F	TYPE A R	TYPE B R	
INCH	O.D.						INCH	
1/2	0.840	1.38	3.00	0.125	2.00	0.125	0.031	1/2
	21.30	35	76	3	51	3	0.8	
3/4	1.050	1.69	3.00	0.125	2.00	0.125	0.031	3/4
	26.70	43	76	3	51	3	0.8	
1	1.315	2.00	4.00	0.125	2.00	0.125	0.031	1
	33.40	51	102	3	51	3	0.8	
1 1/4	1.660	2.50	4.00	0.188	2.00	0.187	0.031	1 1/4
	42.2	64	102	5	51	5	0.8	
1 1/2	1.90	2.88	4.00	0.250	2.00	0.250	0.031	1 1/2
	48.3	73	102	6	51	6	0.8	
2	2.375	3.62	6.00	0.313	2.50	0.313	0.031	2
	60.3	92	152	8	64	8	0.8	
2 1/2	2.875	4.12	6.00	0.313	2.50	0.313	0.031	2 1/2
	73.0	105	152	8	64	8	0.8	
3	3.50	5.00	6.00	0.375	2.50	0.375	0.031	3
	88.9	127	152	10	64	10	0.8	
3 1/2	4.00	5.50	6.00	0.375	3.00	0.375	0.031	3 1/2
	101.6	140	152	10	76	10	0.8	
4	4.50	6.19	6.00	0.438	3.00	0.438	0.063	4
	114.3	157	152	11	76	11	1.6	
5	5.563	7.31	8.00	0.438	3.00	0.438	0.063	5
	141.3	186	203	11	76	11	1.6	
6	6.625	8.50	8.00	0.5	3.50	0.500	0.063	6
	168.3	216	203	13	89	13	1.6	
8	8.625	10.625	8.00	0.5	4.0	0.500	0.063	8
	219.1	270	203	13	102	13	1.6	
10	10.75	12.75	10.00	0.5	5.0	0.500	0.063	10
	273	324	254	13	127	13	1.6	
12	12.75	15.00	10.00	0.5	6.0	0.500	0.063	12
	323.9	381	254	13	152	13	1.6	



Product Specification For Lap Joint  
Type C MSS SP-43 Schedule:10S



Size	OD		ID		Thickness "t"		G		Gt		F		C		O		R		Ra			
	Std		Std		Std		Std		Std		Std		Std		Std							
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
1/2	0.8385		0.6724		0.083		1.374		0.083		2		0.0629		1.4763		0.059		0.157		Not Required	
	0.807	0.87	0.642	0.701	0.0748	0.0905	1.343	1.406	0.075	0.147	1.941	2.059										
3/4	1.0511		0.885		0.083		1.6889		0.083		2											
	1.02	1.083	0.854	0.913	0.0748	0.0905	1.657	1.72	0.075	0.147	1.941	2.059										
1	1.3149		1.0968		0.109		2		0.109		2											
	1.283	1.346	1.067	1.126	0.0984	0.122	1.969	2.031	0.098	0.165	1.941	2.059										
1-1/4	1.6614		1.4433		0.109		2.5		0.109		2											
	1.63	1.693	1.413	1.472	0.0984	0.122	2.469	2.531	0.098	0.165	1.941	2.059										
1-1/2	1.9015		1.6834		0.109		2.874		0.109		2											
	1.87	1.933	1.654	1.713	0.0984	0.122	2.843	2.906	0.098	0.165	1.941	2.059										
2	2.374		2.1559		0.109		3.6259		0.109		2.5											
	2.343	2.421	2.126	2.201	0.0984	0.122	3.594	3.657	0.098	0.165	2.441	2.559										
2-1/2	2.874		2.6338		0.12		4.1062		0.12		2.5											
	2.843	2.921	2.602	2.681	0.1062	0.1338	4.075	4.138	0.106	0.177	2.441	2.559										
3	3.5		3.2598		0.12		5		0.122		2.5											
	3.469	3.547	3.197	3.323	0.1062	0.1338	4.969	5.031	0.106	0.177	2.441	2.559										
4	4.5		4.2598		0.12		6.1889		0.12		3											
	4.469	4.547	4.197	4.323	0.1062	0.1338	6.157	6.22	0.106	0.177	2.941	3.059										
5	5.5629		5.2952		0.1338		7.3149		0.1338		3											
	5.531	5.622	5.232	5.358	0.1181	0.1496	7.283	7.349	0.118	0.193	2.941	3.059										
6	6.6259		6.3582		0.1338		8.5		0.1338		3.5											
	6.594	6.685	6.295	6.421	0.1181	0.1496	8.469	8.531	0.118	0.193	3.441	3.559										
8	8.6259		8.3299		0.148		10.6259		0.148		4											
	8.594	8.72	8.268	8.39	0.1299	0.1653	10.59	10.66	0.13	0.204	3.909	4.091										
10	10.7519		10.422		0.1649		12.7519		0.1649		5											
	10.72	10.85	10.3	10.54	0.1456	0.185	12.72	12.78	0.146	0.224	4.909	5.091										
12	12.7519		12.3921		0.1799		15		0.1799		6											
	12.72	12.85	12.27	12.51	0.1574	0.2007	14.97	15.03	0.157	0.236	5.909	6.091										