



**COPPER & CUNI 90/10
PIPES, FITTINGS, FLANGES
FOR OFFSHORE**



Company Overview

Established in 1974, TTS Ind. Co., Ltd is one of the leading manufacturer of Copper and Copper Alloy materials used in Onshore & Offshore Oil Industries, Shipbuilding and allied Industries. TTS Ind. Co., Ltd is proud of its qualified technical team to assist its valued customers and project partners in selection and providing technical assistance, whenever required.

Our extensive experience and flexibility allows us to cater for single piece replacement requirement or complete project requirement of Pipes, Fittings and Flanges of Copper & Copper Alloys and ensuring execution to an agreed time frame. TTS Ind. Co., Ltd's mission is to remain a leading manufacturer & supplier, utilizing technical innovation, and a positive contributor to the community, we serve.



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Certificate



ABS

BV

DNV

LR

RMRS

CCS



RINA

ISO 9001

ISO 14001

CE-PED

Customer Approval



BOROUGE

NPCC

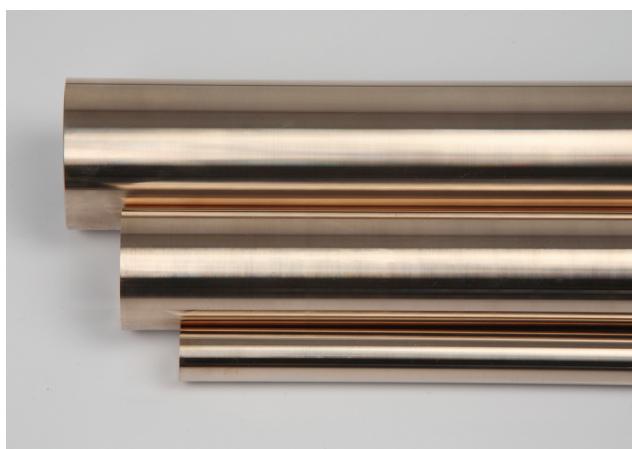
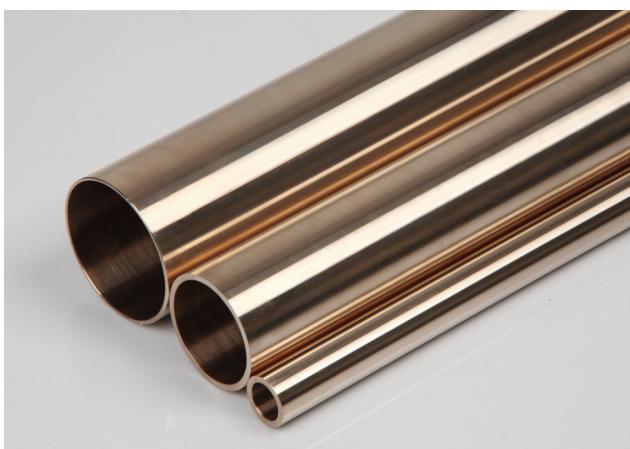
TAKREER

ADGAS

DRYDOCKS WORLD DUBAI

Pipe European Standards

Outside Diameter of pipe OD		10 bar		14 bar		16 bar		20 bar		
		Wall Thickness	Approx. Weight							
Nominal inch	Actual mm	Actual mm	kg/m	Actual mm	kg/m	Actual mm	kg/m	Actual mm	kg/m	
SEAMLESS										
1/8		10	1.0	0.26	1.0	0.26	1.0	0.26	1.0	0.26
1/4		12	1.0	0.31	1.0	0.31	1.0	0.31	1.0	0.31
3/8	10	16	1.0	0.42	1.0	0.42	2.0	0.79	2.0	0.79
1/2	15	20	1.0	0.53	1.5	0.53	2.0	1.01	2.0	1.01
3/4	20	25	1.5	0.99	1.5	0.99	2.0	1.30	2.0	1.30
1	25	30	1.5	1.20	1.5	1.20	2.5	1.93	2.5	1.93
1 1/4	32	38	1.5	1.54	1.5	1.54	2.5	2.50	2.5	2.50
1 1/2	40	44.5	1.5	1.81	1.5	1.81	2.5	2.95	2.5	2.95
2	50	57	1.5	2.34	1.5	2.34	2.5	3.83	2.5	3.83
2 1/2	65	76.1	2.0	4.16	2.0	4.16	2.5	5.17	2.5	5.17
3	80	88.9	2.0	4.88	2.5	6.07	2.5	6.07	2.5	6.07
4	100	108	2.5	7.41	2.5	7.41	3.0	8.85	3.0	8.85
5	125	133	2.5	9.16	2.5	9.16	3.0	10.95	3.0	10.95
6	150	159	2.5	10.99	2.5	10.99	3.0	13.14	3.5	15.29
7	175	193.7	3.0	16.07	3.5	18.70	3.5	18.70	3.5	18.70
8	200	219.1	3.0	18.21	3.5	21.19	4.0	24.17	4.5	27.12
10	250	267	3.0	22.24	4.0	29.55	4.5	33.18	5.5	40.39
12	300	323.9	4.0	35.94	5.0	44.78	5.5	49.18	7.0	62.30
14	350	368	4.0	40.89	5.5	56.00	6.5	65.99	8.0	80.89
SEAM WELDED										
16	400	419	4.0	46.62	6.0	69.60	7.0	81.00	9.0	103.64
18	450	457.2	4.0	50.91	7.0	88.20	8.0	100.93	9.5	119.45
20	500	508	4.5	63.63	7.5	105.10	8.5	119.24	11.0	153.54
24	600	610	5.0	84.96	9.0	151.40	10.5	176.79	13.0	217.97
28	700	711	6.0	118.80	10.5	205.90	12.0	235.58	15.0	293.22
32	800	813	6.0	135.99	12.0	269.10	13.5	303.14	17.0	380.06
36	900	914	8.0	203.57	13.5	340.40	15.5	391.14	19.0	477.60



Pipe U.S Standards

Outside Diameter of pipe OD			Schedule 5S				Schedule 10S			
			Wall Thickness		Approx. Weight		Wall Thickness		Approx. Weight	
Nominal inch	Actual inch	Actual mm	Actual		Lb/Ft	kg/m	Actual		Lb/Ft	kg/m
			inch	mm			inch	mm		
SEAMLESS										
1/8	0.405	10.29					0.049	1.24	0.19	0.28
1/4	0.540	13.72					0.065	1.65	0.33	0.49
3/8	0.675	17.15					0.065	1.65	0.42	0.63
1/2	0.840	21.34	0.065	1.65	0.54	0.80	0.083	2.11	0.67	1.00
3/4	1.050	26.67	0.065	1.65	0.69	1.03	0.083	2.11	0.86	1.28
1	1.315	33.40	0.065	1.65	0.87	1.30	0.109	2.77	1.40	2.09
1 1/4	1.660	42.16	0.065	1.65	1.11	1.65	0.109	2.77	1.81	2.70
1 1/2	1.900	48.26	0.065	1.65	1.28	1.91	0.109	2.77	2.09	3.11
2	2.375	60.32	0.065	1.65	1.61	2.40	0.109	2.77	2.64	3.93
2 1/2	2.875	73.03	0.083	2.11	2.48	3.69	0.120	3.05	3.53	5.26
3	3.500	88.90	0.083	2.11	3.03	4.51	0.120	3.05	4.33	6.45
3 1/2	4.000	101.60	0.083	2.11	3.48	5.18	0.120	3.05	4.97	7.40
4	4.500	114.30	0.083	2.11	3.92	5.84	0.120	3.05	5.61	8.36
5	5.563	141.30	0.109	2.77	6.36	9.47	0.134	3.40	7.77	11.57
6	6.625	168.30	0.109	2.77	7.60	11.32	0.134	3.40	9.29	13.84
8	8.625	219.10	0.109	2.77	9.93	14.79	0.148	3.76	13.40	19.96
10	10.750	273.05	0.134	3.40	15.19	22.63	0.165	4.19	18.65	27.78
12	12.750	323.90	0.156	3.96	20.98	31.25	0.180	4.57	24.17	36.00

Outside Diameter of pipe OD			Schedule 40S				Schedule 80S			
			Wall Thickness		Approx. Weight		Wall Thickness		Approx. Weight	
Nominal inch	Actual inch	Actual mm	Actual		Lb/Ft	kg/m	Actual		Lb/Ft	kg/m
			inch	mm			inch	mm		
SEAMLESS										
1/8	0.405	10.29	0.068	1.73	0.24	0.37	0.095	2.41	0.31	0.47
1/4	0.540	13.72	0.088	2.24	0.42	0.63	0.119	3.02	0.54	0.80
3/8	0.675	17.15	0.091	2.31	0.57	0.84	0.126	3.20	0.74	1.10
1/2	0.840	21.34	0.109	2.77	0.85	1.27	0.147	3.73	1.09	1.62
3/4	1.050	26.67	0.113	2.87	1.13	1.69	0.154	3.91	1.47	2.20
1	1.315	33.40	0.133	3.38	1.68	2.50	0.179	4.55	2.17	3.24
1 1/4	1.660	42.16	0.140	3.56	2.27	3.39	0.191	4.85	3.00	4.47
1 1/2	1.900	48.26	0.145	3.68	2.72	4.05	0.200	5.08	3.63	5.41
2	2.375	60.32	0.154	3.91	3.65	5.44	0.218	5.54	5.02	7.48
2 1/2	2.875	73.03	0.203	5.16	5.79	8.63	0.276	7.01	7.66	11.41
3	3.500	88.90	0.216	5.49	7.58	11.29	0.300	7.62	10.25	15.27
3 1/2	4.000	101.60	0.226	5.74	9.11	13.57	0.318	8.08	12.51	18.63
4	4.500	114.30	0.237	6.02	10.79	16.07	0.337	8.56	14.98	22.32
5	5.563	141.30	0.258	6.55	14.62	21.77	0.375	9.53	20.78	30.97
6	6.625	168.30	0.280	7.11	18.97	28.26	0.432	10.97	28.57	42.56
8	8.625	219.10	0.322	8.18	28.55	42.55	0.500	12.70	43.39	64.64
10	10.750	273.05	0.365	9.27	40.48	60.31	0.500	12.70	54.74	96.01
12	12.750	323.90	0.375	9.53	49.56	73.88	0.500	12.70	65.42	132.08

Elbows

Type and Construction

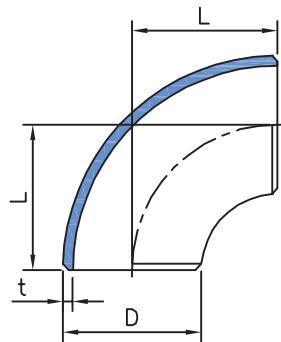
Seamless : up to 14inch / 368.0mmOD
 Seam Welded : from 16inch / 419.1mmOD

Dimensions

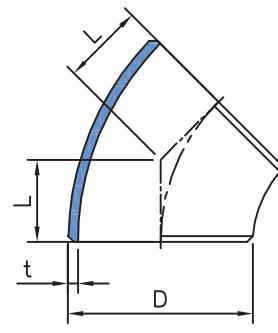
EEMUA 146 Section 1, Long Radius
 Other dimensions are available on request

Weld Preparation

For wall thickness less than 3 mm,
 the elbows are supplied with plain weld
 ends. Larger thicknesses are supplied with
 the weld bevel of $37\frac{1}{2}^\circ \pm 2\frac{1}{2}^\circ$



90° ELBOW



45° ELBOW

Nominal Size	Specified Size OD(D)	Wall Thickness(t)		Center to Face(L)		Approx. Weight (kg)			
		16 bar	20 bar	45°	90°	45°	45°	90°	90°
inch	mm	mm	mm			16 bar	20 bar	16 bar	20 bar
1	30	2.5	2.5	22	38	0.06	0.06	0.12	0.12
1 ¹ / ₄	38	2.5	2.5	25	48	0.09	0.09	0.13	0.13
1 ¹ / ₂	44.5	2.5	2.5	29	57	0.15	0.15	0.30	0.30
2	57	2.5	2.5	35	76	0.25	0.25	0.52	0.52
2 ¹ / ₂	76.1	2.5	2.5	44	95	0.45	0.45	0.90	0.90
3	88.9	2.5	2.5	51	114	0.65	0.65	1.25	1.25
4	108	3.0	3.0	64	152	1.00	1.00	2.10	2.10
6	159	3.0	3.5	95	229	2.30	2.70	4.70	5.50
8	219.1	4.0	4.5	127	305	6.00	6.50	12.00	13.00
10	267	4.5	5.5	159	381	10.00	12.00	20.00	24.00
12	323.9	5.5	7.0	190	457	17.00	23.00	35.00	45.00
14	368	6.5	8.0	222	533	27.00	34.00	55.00	67.00
16	419	7.0	9.0	254	610	38.00	50.00	77.00	99.00
18	457.2	8.0	9.5	286	686	54.00	64.00	109.00	128.00
20	508	8.5	11.0	318	762	71.00	92.00	142.00	184.00
24	610	10.5	13.0	381	914	126.00	156.00	252.00	312.00
28	711	12.0	15.0	438	1067	197.00	245.00	394.00	490.00
32	813	13.5	17.0	502	1219	289.00	362.00	579.00	725.00
36	914	15.5	19.0	565	1372	420.00	513.00	841.00	1026.00

Equal Tees

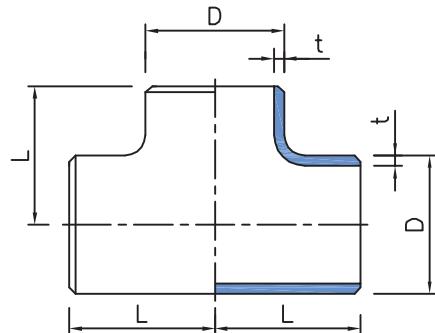
Type and Construction

Seamless : up to 14inch / 368.0mmOD
 Seam Welded : from 16inch / 419.1mmOD

Dimensions

EEMUA 146 Section 1

Other dimensions are available on request



Weld Preparation

For wall thickness less than 3mm, the tees are supplied with plain weld ends. Larger thicknesses are supplied with the weld bevel of $37\frac{1}{2}^\circ \pm 2\frac{1}{2}^\circ$

Nominal Size	Specified Size OD(D)	Wall Thickness (t)		Center to Face(L)	Approx. Weight	
		16 bar	20 bar		16 bar	20 bar
in	mm	mm	mm	kg	kg	kg
1	30	2.5	2.5	38	0.30	0.30
1 ¹ / ₄	38	2.5	2.5	48	0.50	0.50
1 ¹ / ₂	44.5	2.5	2.5	57	0.75	0.75
2	57	2.5	2.5	64	1.00	1.00
2 ¹ / ₂	76.1	2.5	2.5	76	1.60	1.60
3	88.9	2.5	2.5	86	2.00	2.00
4	108	3.0	3.0	105	3.25	3.25
6	159	3.0	3.5	143	6.00	7.20
8	219.1	4.0	4.5	178	11.25	12.70
10	267	4.5	5.5	216	22.50	27.50
12	323.9	5.5	7.0	254	39.50	50.30
14	368	6.5	8.0	279	62.00	76.00
16	419	7.0	9.0	305	88.00	119.00
18	457.2	8.0	9.5	343	128.00	152.00
20	508	8.5	11.0	381	165.00	214.00
24	610	10.5	13.0	432	266.00	330.00
28	711	12.0	15.0	521	388.00	458.00
32	813	13.5	17.0	597	508.00	606.00
36	914	15.5	19.0	673	650.00	794.00

Reducing Tees

Type and Construction

Seamless : up to 14inch / 368.0mmOD

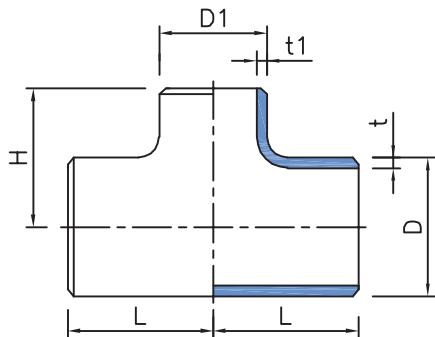
Seam Welded : from 16inch / 419.1mmOD

Dimensions

EEMUA 146 Section 1

Other dimensions are available on request

Specified Size OD(D x D ₁) mm	Wall Thickness(t x t ₁)		Center to Face		Approx. Weight kg	
	16 bar mm	20 bar mm	L mm	H mm	16 bar kg	20 bar kg
	2.5×2.0	2.5×2.0	38	38	0.18	0.18
30×25	2.5×2.0	2.5×2.0	38	38	0.18	0.18
38×30	2.5×2.5	2.5×2.5	48	48	0.29	0.29
38×25	2.5×2.0	2.5×2.0	48	48	0.28	0.28
44.5×38	2.5×2.5	2.5×2.5	57	57	0.42	0.42
44.5×30	2.5×2.5	2.5×2.5	57	57	0.40	0.40
44.5×25	2.5×2.5	2.5×2.5	57	57	0.38	0.38
57×44.5	2.5×2.5	2.5×2.5	64	60	0.58	0.58
57×38	2.5×2.5	2.5×2.5	64	57	0.56	0.56
57×30	2.5×2.5	2.5×2.5	64	51	0.53	0.53
76.1×57	2.5×2.5	2.5×2.5	76	70	0.90	0.90
76.1×44.5	2.5×2.5	2.5×2.5	76	67	0.87	0.87
76.1×38	2.5×2.5	2.5×2.5	76	64	0.85	0.85
88.9×76.1	2.5×2.5	2.5×2.5	86	83	1.24	1.24
88.9×57	2.5×2.5	2.5×2.5	86	76	1.16	1.16
88.9×44.5	2.5×2.5	2.5×2.5	86	73	1.12	1.12
108×88.9	3.0×2.5	3.0×2.5	105	98	2.12	2.12
108×76.1	3.0×2.5	3.0×2.5	105	95	2.06	2.06
108×57	3.0×2.5	3.0×2.5	105	89	1.98	1.98
159×108	3.0×3.0	3.5×3.0	143	130	4.19	4.80
159×88.9	3.0×2.5	3.5×2.5	143	124	4.01	4.62
159×76.1	3.0×2.5	3.5×2.5	143	121	3.96	4.57
219.1×159	4.0×3.0	4.5×3.5	178	168	9.33	10.50
219.1×108	4.0×3.0	4.5×3.0	178	156	8.97	10.02
219.1×88.9	4.0×2.5	4.5×2.5	178	152	8.82	9.87
267×219.1	4.5×4.0	5.5×4.5	216	203	15.94	19.25
267×159	4.5×3.0	5.5×3.5	216	194	15.06	18.29
267×108	4.5×2.5	5.5×3.0	216	184	14.71	17.82
323.9×267	5.5×4.5	7.0×5.5	254	241	27.48	34.69
323.9×219.1	5.5×4.0	7.0×4.5	254	229	26.49	33.32
323.9×159	5.5×3.0	7.0×3.5	254	219	25.62	32.38



Specified Size OD(D x D ₁) mm	Wall Thickness(t x t ₁)		Center to Face		Approx. Weight kg	
	16 bar mm	20 bar mm	L mm	H mm	16 bar kg	20 bar kg
368×323.9	6.5×5.5	8.0×7.0	279	270	40.87	50.27
368×267	6.5×4.5	8.0×5.5	279	257	39.07	47.87
368×219.1	6.5×4.0	8.0×4.5	279	248	38.02	46.66
419×368	7.0×6.5	9.0×8.0	305	305	55.46	70.63
419×323.9	7.0×5.5	9.0×7.0	305	295	53.38	68.24
419×267	7.0×4.5	9.0×5.5	305	283	51.62	65.89
457.2×419	8.0×7.0	9.5×9.0	343	330	77.10	92.04
457.2×368	8.0×6.5	9.5×8.0	343	330	75.59	89.72
457.2×323.9	8.0×5.5	9.5×7.0	343	321	73.45	87.31
508×457.2	8.5×8.0	11.0×9.5	381	368	101.91	130.03
508×419	8.5×7.0	11.0×9.0	381	356	98.68	127.00
508×368	8.5×6.5	11.0×8.0	381	356	97.16	124.69
610×508	10.5×8.5	13.0×11.0	432	432	167.14	206.90
610×457.2	10.5×8.0	13.0×9.5	432	419	163.52	201.40
610×419	10.5×7.0	13.0×9.0	432	406	160.21	197.91
711×610	12.0×10.5	15.0×13.0	521	508	271.22	337.26
711×508	12.0×8.5	15.0×11.0	521	483	259.52	323.69
711×457.2	12.0×8.0	15.0×9.5	521	470	255.88	317.78
813×711	13.5×12.0	17.0×15.0	597	572	399.14	500.07
813×610	13.5×10.5	17.0×13.0	597	559	387.17	484.85
813×508	13.5×8.5	17.0×11.0	597	533	357.34	471.09
914×813	15.5×13.5	19.0×17.0	673	648	581.77	712.24
914×711	15.5×12.0	19.0×15.0	673	622	562.82	688.14
914×610	15.5×10.5	19.0×13.0	673	610	551.05	673.17

Concentric & Eccentric Reducers

Type and Construction

Seamless : up to 12inch / 323.9mmOD
 Seam Welded : from 14inch / 368.0mmOD

Dimensions

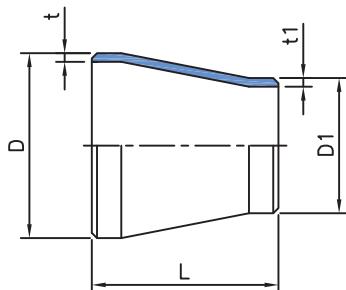
EEMUA 146 Section 1

Other dimensions are available on request

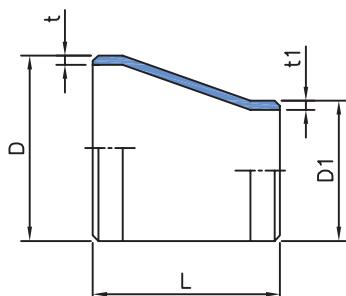
Weld Preparation

For wall thickness less than 3 mm, the reducers are supplied with plain weld ends. Larger thicknesses are supplied with the weld bevel of $37\frac{1}{2}^\circ \pm 2\frac{1}{2}^\circ$

Concentric Reducers



Eccentric Reducers



Specified Size OD (D x D1)	Length (L)	Wall Thickness (t x t1)		Approx. Weight	
		16 bar	20 bar	16 bar	20 bar
mm	mm	mm	mm	kg	kg
57×30	76	2.5×2.5	2.5×2.5	0.29	0.29
57×38	76	2.5×2.5	2.5×2.5	0.29	0.29
57×44.5	76	2.5×2.5	2.5×2.5	0.29	0.29
76.1×57	89	2.5×2.5	2.5×2.5	0.40	0.40
88.9×57	89	2.5×2.5	2.5×2.5	0.44	0.44
88.9×76.1	89	2.5×2.5	2.5×2.5	0.50	0.50
108×57	102	3.0×2.5	3.0×2.5	0.67	0.67
108×76.1	102	3.0×2.5	3.0×2.5	0.75	0.75
108×88.9	102	3.0×2.5	3.0×2.5	0.80	0.80
159×57	140	3.0×2.5	3.5×2.5	0.32	1.54
159×76.1	140	3.0×2.5	3.5×2.5	1.44	1.68
159×88.9	140	3.0×2.5	3.5×2.5	1.52	1.77
159×108	140	3.0×3.0	3.5×3.0	1.64	1.91
219.1×76.1	152	4.0×2.5	4.5×2.5	2.49	2.79
219.1×88.9	152	4.0×2.5	4.5×2.5	2.60	2.92
219.1×108	152	4.0×3.0	4.5×3.0	2.77	3.11
219.1×159	152	4.0×3.0	4.5×3.5	3.21	3.60
267×108	178	4.5×3.0	5.5×3.0	4.84	5.89
267×159	178	4.5×3.0	5.5×3.5	5.52	6.71
267×219.1	178	4.5×4.0	5.5×4.5	6.31	7.68
323.9×159	203	5.5×3.0	7.0×3.5	7.63	9.65
323.9×219.1	203	5.5×4.0	7.0×4.5	8.60	10.89
323.9×267	203	5.5×4.5	7.0×5.5	9.38	11.87
368×219.1	330	6.5×4.0	8.0×4.5	17.24	21.50
368×267	330	6.5×4.5	8.0×5.5	18.68	23.00
368×323.9	330	6.5×5.5	8.0×7.0	20.39	25.00

Specified Size OD (D x D1)	Length (L)	Wall Thickness (t x t1)		Approx. Weight	
		16 bar	20 bar	16 bar	20 bar
mm	mm	mm	mm	kg	kg
419×267	356	7.0×4.5	9.0×5.5	23.44	30.00
419×323.9	356	7.0×5.5	9.0×7.0	25.43	32.50
419×368	356	7.0×6.5	9.0×8.0	26.97	34.50
457.2×323.9	381	8.0×5.5	9.5×7.0	30.70	37.03
457.2×368	381	8.0×6.5	9.5×8.0	34.06	41.50
457.2×419	381	8.0×7.0	9.5×9.0	37.90	46.50
508×368	508	8.5×6.5	11.0×8.0	50.80	64.10
508×419	508	8.5×7.0	11.0×9.0	55.40	71.10
508×457.2	508	8.5×8.0	11.0×9.5	61.20	75.70
610×419	508	10.5×7.0	13.0×9.0	70.00	87.50
610×457.2	508	10.5×8.0	13.0×9.5	76.30	92.50
610×508	508	10.5×8.5	13.0×11.0	81.80	102.80
711×457.2	610	12.0×8.0	15×9.5	109.30	133.60
711×508	610	12.0×8.5	15×11.0	116.30	146.70
711×610	610	12.0×10.5	15×13.0	137.30	170.10
813×508	610	13.5×8.5	17.0×11.0	136.40	172.60
813×610	610	13.5×10.5	17.0×13.0	158.40	197.30
813×711	610	13.5×12.0	17.0×15.0	179.50	224.20
914×610	610	15.5×10.5	19.0×13.0	185.00	226.70
914×711	610	15.5×12.0	19.0×15.0	207.10	255.00
914×813	610	15.5×13.5	19.0×17.0	231.30	285.80

Caps

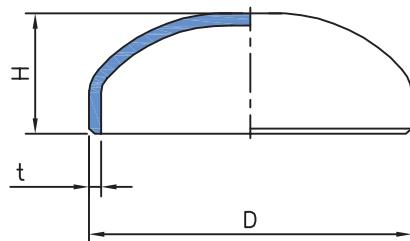
Type and Construction

Seamless

Dimensions

EEMUA 146 Section 1

Other dimensions are available on request



Weld Preparation

For wall thickness less than 3mm, the caps are supplied with plain weld ends. Larger thicknesses are supplied with the weld bevel of $37\frac{1}{2}^\circ \pm 2\frac{1}{2}^\circ$

Specified Size OD(D)	Wall Thickness (t)		H		Approx. Weight	
	16bar	20bar	16bar	20bar	16 bar	20 bar
	mm	mm	mm	mm	kg	kg
44.5	2.5	2.5	19.6	19.6	0.08	0.08
57	2.5	2.5	22.0	22.0	0.11	0.11
76.1	2.5	2.5	25.7	25.7	0.18	0.18
88.9	2.5	2.5	28.2	28.2	0.24	0.24
108	3.0	3.0	31.7	31.7	0.40	0.40
159	3.0	3.5	41	44	0.8	0.97
219.1	4.0	4.5	55	60	2.0	2.40
267	4.5	5.5	69	69	3.4	4.10
323.9	5.5	7.0	80	85	5.9	7.70
368	6.5	8.0	93	103	9.1	11.90
419	7.0	9.0	102	112	12.4	16.90
457.2	8.0	9.5	119	119	17.6	20.90
508	8.5	11.0	129	139	22.7	30.80
610	10.5	13.0	148	163	39.2	51.60
711	12.0	15.0	176	191	61.8	81.40
813	13.5	17.0	200	210	90.5	117.40
914	15.5	19.0	221	231	132.2	166.20

Saddles

Saddles

Seamless : up to 12inch / 323.9mmOD
 Seam Welded : from 14inch / 368.0mmOD

Dimensions

EEMUA 146 Section 7

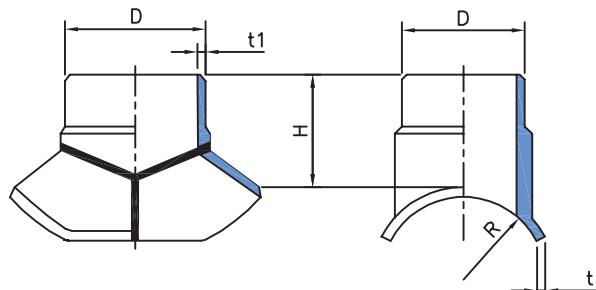
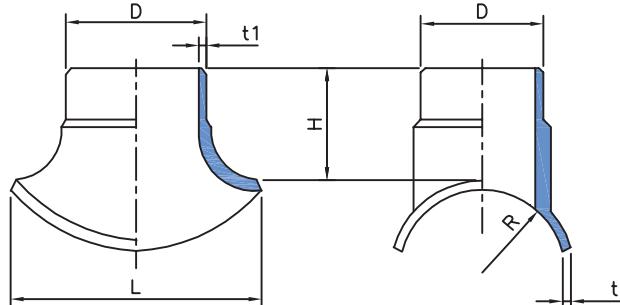
Other dimensions are available on request

Weld Preparation

Wall thicknesses of 3 mm and greater are chamfered to $37\frac{1}{2}^\circ \pm 2\frac{1}{2}^\circ$ with a root face of $1.6 \text{ mm} \pm 0.8 \text{ mm}$.

Inspection of Welds

100% radiographic inspection to ASME Code, Section VIII, UW51.



R = Radius of Header Pipe

Specified Size OD (D x D1)	Wall Thickness (t x t1)		Center to Face		Approx. Weight	
	16 bar	20 bar	L	H	16 bar	20 bar
mm	mm	mm	mm	mm	kg	kg
38×38	2.5×2.5	2.5×2.5	64	35	0.18	0.18
44.5×38	2.5×2.5	2.5×2.5	64	35	0.23	0.23
44.5×44.5	2.5×2.5	2.5×2.5	74	35	0.25	0.25
57×38	2.5×2.5	2.5×2.5	64	35	0.25	0.25
57×44.5	2.5×2.5	2.5×2.5	74	35	0.28	0.28
57×57	2.5×2.5	2.5×2.5	97	40	0.40	0.40
76.1×38	2.5×2.5	2.5×2.5	64	35	0.37	0.37
76.1×44.5	2.5×2.5	2.5×2.5	74	35	0.42	0.42
76.1×57	2.5×2.5	2.5×2.5	97	40	0.60	0.60
76.1×76.1	2.5×2.5	2.5×2.5	126	50	0.65	0.65
88.9×38	2.5×2.5	2.5×2.5	64	35	0.45	0.45
88.9×44.5	2.5×2.5	2.5×2.5	74	35	0.55	0.55
88.9×57	2.5×2.5	2.5×2.5	97	40	0.62	0.62
88.9×76.1	2.5×2.5	2.5×2.5	126	50	0.70	0.70
88.9×88.9	2.5×2.5	2.5×2.5	149	55	0.95	0.95
108×44.5	3.0×2.5	3.0×2.5	74	35	0.38	0.38
108×57	3.0×2.5	3.0×2.5	97	40	0.48	0.48
108×76.1	3.0×2.5	3.0×2.5	126	50	0.78	0.78
108×88.9	3.0×2.5	3.0×2.5	149	55	0.94	0.94
108×108	3.0×3.0	3.0×3.0	188	75	1.56	1.56
159×76.1	3.0×2.5	3.5×2.5	126	50	0.78	0.91
159×88.9	3.0×2.5	3.5×3.0	149	55	1.20	1.40
159×108	3.0×3.0	3.5×3.0	188	75	1.44	1.68
159×159	3.0×3.0	3.5×3.5	279	95	3.12	3.64
219.1×88.9	4.0×2.5	4.5×2.5	149	55	1.73	1.94
219.1×108	4.0×3.0	4.5×3.0	188	75	2.40	2.70
219.1×159	4.0×3.0	4.5×3.5	279	95	5.06	5.69
219.1×219.1	4.0×4.0	4.5×4.5	379	125	7.60	8.55

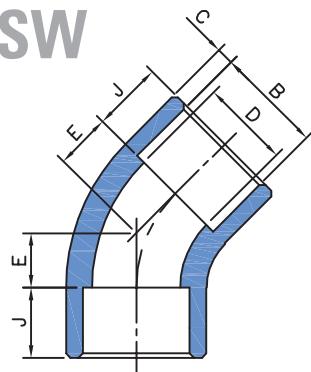
Specified Size OD (D x D1)	Wall Thickness (t x t1)		Center to Face		Approx. Weight	
	16 bar	20 bar	L	H	16 bar	20 bar
mm	mm	mm	mm	mm	kg	kg
267×108	4.5×3.0	5.5×3.0	188	75	2.70	3.30
267×159	4.5×3.0	5.5×3.5	279	95	5.54	6.77
267×219.1	4.5×4.0	5.5×4.5	379	125	9.14	11.17
267×267	4.5×4.5	5.5×5.5	447	155	13.05	15.95
323.9×159	5.5×3.0	7.0×3.5	279	95	5.22	6.64
323.9×219.1	5.5×4.0	7.0×4.5	379	125	10.58	13.46
323.9×267	5.5×4.5	7.0×5.5	447	155	13.75	17.50
323.9×323.9	5.5×5.5	7.0×7.0	560	185	17.87	22.74
368×219.1	6.5×4.0	8.0×4.5	379	125	7.10	8.75
368×267	6.5×4.5	8.0×5.5	447	155	11.80	14.55
368×323.9	6.5×5.5	8.0×7.0	560	185	15.40	18.95
368×368	6.5×6.5	8.0×8.0	613	200	20.10	24.75
419×267	7.0×4.5	9.0×5.5	447	155	11.65	15.00
419×323.9	7.0×5.5	9.0×7.0	560	185	16.35	21.00
419×368	7.0×6.5	9.0×8.0	613	200	19.50	25.10
419×419	7.0×7.0	9.0×9.0	680	225	28.20	36.25
457.2×323.9	8.0×5.5	9.5×7.0	560	185	16.00	19.00
457.2×368	8.0×6.5	9.5×8.0	613	200	19.45	23.10
457.2×419	8.0×7.0	9.5×9.0	680	225	29.70	35.25
457.2×457	8.0×8.0	9.5×9.5	800	250	43.40	51.55
508×368	8.5×6.5	11.0×8.0	613	200	20.40	26.40
508×419	8.5×7.0	11.0×9.0	680	225	31.75	41.10
508×457.2	8.5×8.0	11.0×9.5	800	250	43.10	55.80
508×508	8.5×8.5	11.0×11.0	880	275	54.40	70.40
610×419	10.5×7.0	13.0×9.0	680	225	36.15	44.75
610×457.2	10.5×8.0	13.0×9.5	800	250	47.85	59.25
610×508	10.5×8.5	13.0×11.0	880	275	56.00	69.30
610×610	10.5×10.5	13.0×13.0	1020	300	99.20	122.80

Socket Welding Elbow 45° / 90° Capillary Braze Elbow 45° / 90°

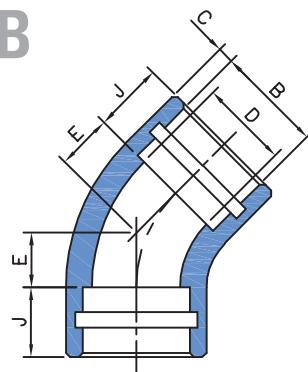
Elbow 45°

16 mm - 57 mm

SW



CB

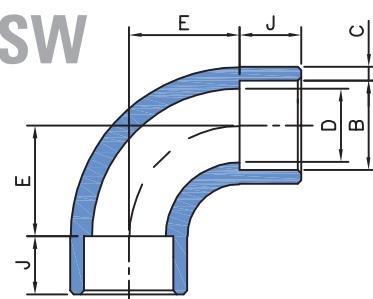


Nominal Size	Specified Size OD	B		C	D	E		J	Approx. Weight	
		max.	min.	min.	min.	SR	LR	min.	SR	LR
inch	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg
1/2	16	16.121	16.070	3.2	12.0	5.0	12.0	10.0	0.17	0.20
3/4	25	25.131	25.080	3.2	21.0	8.0	15.5	13.0	0.28	0.33
1	30	30.131	30.080	3.2	25.0	12.0	18.6	13.0	0.38	0.44
1 1/4	38	38.146	38.095	3.2	33.0	15.0	23.6	13.0	0.70	0.80
1 1/2	44.5	44.646	44.595	3.2	39.5	18.0	27.6	13.0	0.90	1.10
2	57	57.276	57.225	3.2	52.0	21.0	35.3	16.0	1.30	1.88

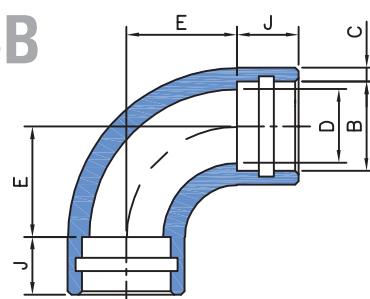
Elbow 90°

16 mm - 57 mm

SW



CB



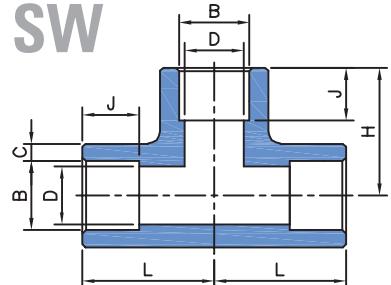
Nominal Size	Specified Size OD	B		C	D	E		J	Approx. Weight	
		max.	min.	mm	mm	SR	LR	min.	SR	LR
inch	mm	mm	mm	mm	mm	mm	mm	kg	kg	kg
1/2	16	16.121	16.070	3.2	12.0	17.0	30.0	10.0	0.25	0.30
3/4	25	25.131	25.080	3.2	21.0	24.0	37.5	13.0	0.34	0.44
1	30	30.131	30.080	3.2	25.0	25.0	45.0	13.0	0.50	0.64
1 1/4	38	38.146	38.095	3.2	33.0	30.0	57.0	13.0	0.76	0.85
1 1/2	44.5	44.646	44.595	3.2	39.5	39.0	66.8	13.0	0.93	1.17
2	57	57.276	57.225	3.2	52.0	49.0	85.5	16.0	1.44	2.09

Socket Welding Tees Capillary Braze Tees

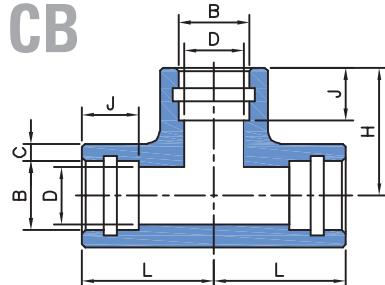
Equal Tees

16 mm - 57 mm

SW



CB



Nominal Size	Specified Size OD	B		C	D	J	L	H	Approx. Weight
		max.	min.	min.	min.	min.			
inch	mm	mm	mm	mm	mm	mm	mm	mm	kg
1/2	16	16.121	16.070	3.2	12.0	10.0	23	23	0.170
3/4	25	25.131	25.080	3.2	21.0	13.0	26	26	0.193
1	30	30.131	30.080	3.2	25.0	13.0	30	30	0.261
1 1/4	38	38.146	38.095	3.2	33.0	13.0	38	38	0.428
1 1/2	44.5	44.646	44.595	3.2	39.5	13.0	40	40	0.567
2	57	57.276	57.225	3.2	52.0	16.0	50	50	0.804



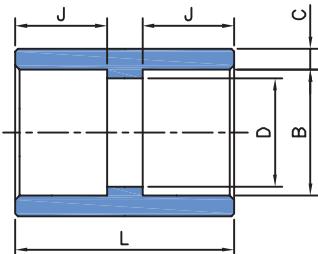
Socket Welding Couplings

Capillary Braze Couplings

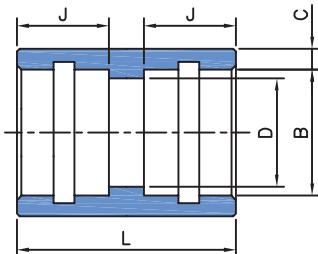
Couplings

29 mm - 76 mm

SW



CB

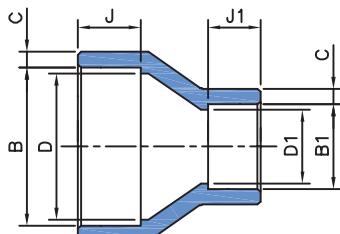


Nominal Size	Specified Size OD	B		C min.	D min.	J min.	L	Approx. Weight
		max.	min.					
inch	mm	mm	mm	mm	mm	mm	mm	kg
1/2	16	16.121	16.070	3.2	12.0	10.0	22	0.039
3/4	25	25.131	25.080	3.2	21.0	13.0	28	0.073
1	30	30.131	30.080	3.2	25.0	13.0	30	0.087
1 1/4	38	38.146	38.095	3.2	33.0	13.0	30	0.108
1 1/2	44.5	44.646	44.595	3.2	39.5	13.0	30	0.132
2	57	57.276	57.225	3.2	52.0	16.0	36	0.201

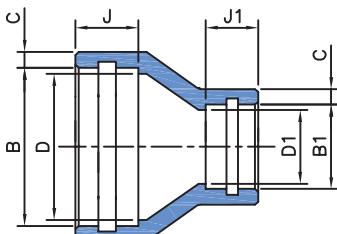
Reducing Couplings

25 mm - 57 mm

SW



CB



Nominal Size	Specified Size OD	B		B ₁		C min.	D min.	D ₁	J min.	J ₁ min.	Approx. Weight
		max.	min.	max.	min.						
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
3/4×1/2	25×16	25.131	25.080	16.121	16.070	3.2	21.0	12.0	13.0	10.0	0.092
1×1/2	30×16	30.131	30.080	16.121	16.070	3.2	25.0	12.0	13.0	10.0	0.018
1×3/4	30×25	30.131	30.080	25.131	25.080	3.2	25.0	21.0	13.0	13.0	0.012
1 1/4×1/2	38×16	38.146	38.095	16.121	16.070	3.2	33.0	12.0	13.0	10.0	0.152
1 1/4×3/4	38×25	38.146	38.095	25.131	25.080	3.2	33.0	21.0	13.0	13.0	0.136
1 1/4×1	38×30	38.146	38.095	30.131	30.080	3.2	33.0	25.0	13.0	13.0	0.126
1 1/2×1/2	44.5×16	44.646	44.595	16.121	16.070	3.2	39.5	12.0	13.0	10.0	0.199
1 1/2×3/4	44.5×25	44.646	44.595	25.131	25.080	3.2	39.5	21.0	13.0	13.0	0.182
1 1/2×1	44.5×30	44.646	44.595	30.131	30.080	3.2	39.5	25.0	13.0	13.0	0.174
1 1/2×1 1/4	44.5×38	44.646	44.595	38.146	38.095	3.2	39.5	33.0	13.0	13.0	0.144
2×1/2	57×16	57.276	57.225	16.121	16.070	3.2	52.0	12.0	16.0	10.0	0.322
2×3/4	57×25	57.276	57.225	25.131	25.080	3.2	52.0	21.0	16.0	13.0	0.310
2×1	57×30	57.276	57.225	30.131	30.080	3.2	52.0	25.0	16.0	13.0	0.298
2×1 1/4	57×38	57.276	57.225	38.146	38.095	3.2	52.0	33.0	16.0	13.0	0.268
2×1 1/2	57×44.5	57.276	57.225	44.646	44.595	3.2	52.0	39.5	16.0	13.0	0.234

Socket Welding End Caps

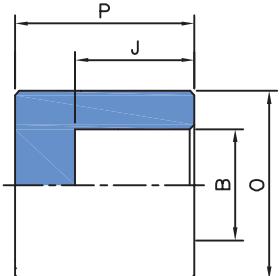
Capillary Braze End Caps

NPT End Caps

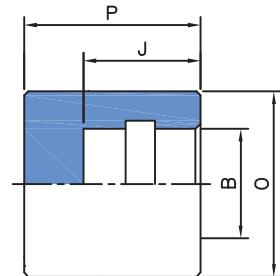
End Caps

16 mm - 57 mm

SW



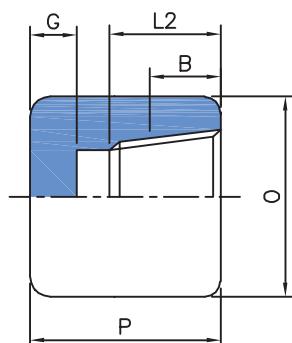
CB



Nominal Size	Specified Size OD (B)	B		O	J	P	Approx. Weight
		max.	min.				
inch	mm	mm	mm	mm	mm	mm	kg
1/2	16	16.121	16.070	23.0	10.0	14.5	0.050
3/4	25	25.131	25.080	32.0	13.0	15.0	0.070
1	30	30.131	30.080	37.0	13.0	16.0	0.080
1 1/4	38	38.146	38.095	45.0	13.0	20.0	0.130
1 1/2	44.5	44.646	44.595	52.0	13.0	20.5	0.190
2	57	57.276	57.225	64.0	16.0	20.5	0.220

NPT End Caps

1/2" - 2"



Nominal Size		O	P	G	B	L ₂	Weight
				min	min	min	
inch	mm	mm	mm	mm	mm	mm	kg
1/2	16	29	32	6.5	11.0	13.5	0.149
3/4	25	35	37	6.5	12.5	14.0	0.216
1	30	44	38	6.5	14.5	17.5	0.363
1 1/4	38	57	41	6.5	17.0	18.0	0.665
1 1/2	44.5	64	41	6.5	18.0	18.5	0.814
2	57	76	42	6.5	17.0	19.0	1.098

Weldolets

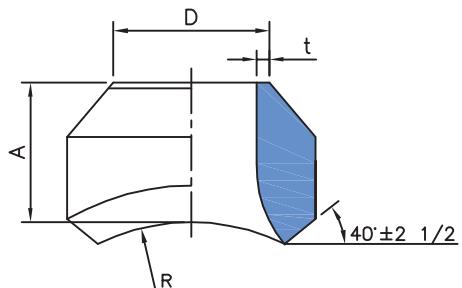
Type and Construction

By hot forging and machining from extruded bars

Dimensions

EEMUA 146 Section 6

Other dimensions are available on request



Weld Preparation

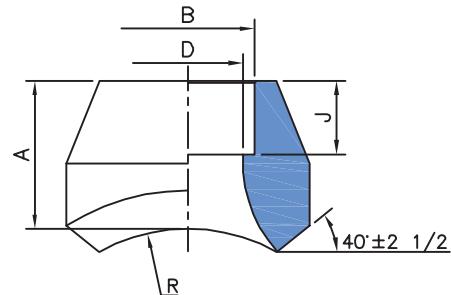
For wall thickness less than 3mm, the elbows are supplied with plain weld ends. Larger thicknesses are supplied with the weld bevel of $37\frac{1}{2}^\circ \pm 2\frac{1}{2}^\circ$

Branch Pipe OD (D) mm	Header Size Range(R) mm	A mm	t		Approx. Weight kg
			16 bar min. mm	20 bar min. mm	
16	16 to 44.5	19.05	2.0	2.0	0.07
16	57 to 610	17.50	2.0	2.0	0.11
25	25 to 44.5	22.20	2.0	2.0	0.11
25	57 to 610	20.60	2.0	2.0	0.21
30	30 to 44.5	27.00	2.5	2.5	0.16
30	57 to 610	22.20	2.5	2.5	0.26
38	38 to 44.5	30.20	2.5	2.5	0.24
38	57 to 610	25.40	2.5	2.5	0.39
44.5	44.5	33.30	2.5	2.5	0.45
44.5	57 to 610	28.60	2.5	2.5	0.45
57	57 to 76.1	38.10	2.5	2.5	0.48
57	88.9 to 610	33.30	2.5	2.5	0.88
76.1	76.1 to 108	47.60	2.5	2.5	1.85
76.1	159 to 610	44.50	2.5	2.5	1.60
88.9	88.9 to 108	47.60	2.5	2.5	2.39
88.9	159 to 610	44.50	2.5	2.5	2.05
108	108	46.80	3.0	3.0	2.82
108	159	52.40	3.0	3.0	3.57
108	219.1 to 610	49.20	3.0	3.0	2.71
159	159 to 610	60.30	3.0	3.5	6.25
219.1	219.1 to 610	69.90	4.0	4.5	12.00
267	267 to 610	77.80	4.5	5.5	20.00
323.9	323.9 to 610	85.70	5.5	7.0	26.10
368	368 to 610	88.90	6.5	8.0	39.40
419	419 to 610	93.70	7.0	9.0	60.50

Sockolets

Sockolets

16 mm - 57 mm

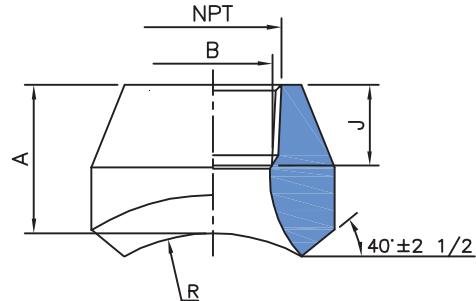


Branch Pipe OD (B)	Header Size Range (R)	A	D	J	Approx. Weight
mm	mm	mm	mm	mm	kg
16	25 to 44.5	25.40	12.0	10.0	0.10
16	57 to 914	23.80	12.0	10.0	0.10
25	30 to 44.5	26.90	21.0	13.0	0.13
25	57 to 914	25.40	21.0	13.0	0.13
30	38 to 44.5	33.30	25.0	13.0	0.22
30	57 to 914	28.60	25.0	13.0	0.22
38	57 to 914	33.30	33.0	13.0	0.35
44.5	57 to 914	30.20	39.5	13.0	0.50
57	76.1 to 914	38.10	52.0	16.0	0.90

Threadolets

Threadolets

1/2" - 2"



Branch Pipe OD (D)	Header Size Range (R)	A	B	J	Approx. Weight	
mm	NPT	mm	mm	mm	kg	
16	1/2"	25 to 44.5	25.40	11.74	13.5	0.10
16	1/2"	57 to 914	23.80	11.74	13.5	0.10
25	3/4"	30 to 44.5	26.90	15.58	14.0	0.13
25	3/4"	57 to 914	25.40	15.58	14.0	0.13
30	1"	38 to 44.5	33.30	20.70	17.5	0.22
30	2"	57 to 914	28.60	20.70	17.5	0.22
38	1 1/4"	57 to 914	33.30	29.50	18.0	0.35
44.5	1 1/2"	57 to 914	30.20	34.02	18.5	0.50
57	2"	76.1 to 914	38.10	42.82	19.0	0.90



Composite Weld Neck Flanges: Weld Neck Stub Ends

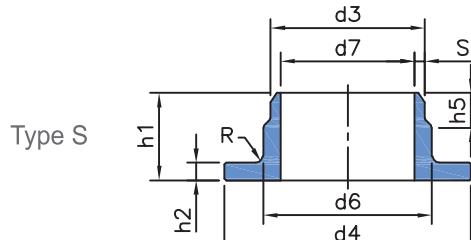
Type and Construction

Short Type(Type S)

Based on DIN 86037 but modified to suit the appropriate tube wall dimensions

Long Type(Type L)

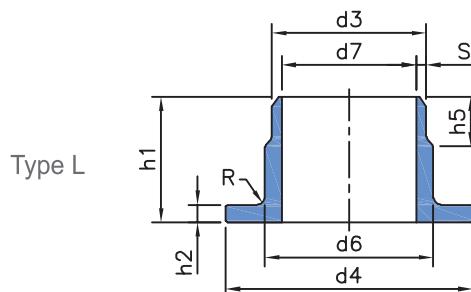
Based on MSS SP-43 to suit the appropriate tube wall dimensions



Dimensions

EEMUA 145 section 1

Other dimensions are available on request



Tolerances

EEMUA 145 section 1

Weld Preparation

The stub ends with $S \leq 3\text{mm}$ are supplied with plain weld ends. Larger dimension are supplied with the weld bevel of $37\frac{1}{2}^\circ \pm 2\frac{1}{2}^\circ$

Nominal Size		d ₃	d ₄	d ₆	d ₇		h ₁		h ₂	h ₅	S		Approx. Weight			
					16 bar	20 bar	Type S	Type L			16 bar	20 bar	Type S	Type L	Type S	Type L
inch	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	min. mm	min. mm	kg	kg	kg	kg
1/2	16	16.0	40.0	18.0	12.00	12.00	35.0	51.0	4.0	15.0	2.0	2.0	0.07	0.09	0.07	0.09
3/4	25	25.0	50.0	27.0	21.00	21.00	40.0	51.0	5.0	15.0	2.0	2.0	0.16	0.19	0.16	0.19
1	30	30.0	60.0	32.0	25.00	25.00	40.0	51.0	5.0	15.0	2.5	2.5	0.20	0.23	0.20	0.23
1 1/4	38	38.0	70.0	40.0	33.03	33.03	40.0	51.0	5.0	15.0	2.5	2.5	0.25	0.29	0.25	0.29
1 1/2	44.5	44.5	80.0	46.5	39.53	39.53	45.0	51.0	6.0	15.0	2.5	2.5	0.42	0.44	0.42	0.44
2	57	57.0	99.0	59.0	52.16	52.16	45.0	64.0	6.0	15.0	2.5	2.5	0.50	0.61	0.50	0.61
2 1/2	76.1	76.1	120.0	78.0	71.23	71.23	45.0	64.0	6.0	15.0	2.5	2.5	0.67	0.80	0.67	0.80
3	88.9	88.9	130.0	91.0	84.08	84.08	50.0	64.0	7.0	15.0	2.5	2.5	0.86	0.97	0.86	0.97
4	108	108.0	158.0	110.0	102.13	102.13	50.0	76.0	7.0	15.0	3.0	3.0	1.18	1.50	1.20	1.50
6	159	159.0	212.0	161.5	153.75	152.38	50.0	89.0	9.0	15.0	3.0	3.5	2.20	2.90	2.20	2.90
8	219.1	219.1	270.0	222.0	211.10	210.10	50.0	102.0	9.0	15.0	4.0	4.5	3.20	5.10	3.30	5.20
10	267	267.0	320.0	270.0	257.97	255.93	50.0	127.0	9.0	15.0	4.5	5.5	3.90	8.90	4.20	9.80
12	323.9	323.9	370.0	327.0	312.83	309.74	50.0	152.0	11.0	16.0	5.5	7.0	6.50	13.80	6.80	15.40
14	368	368.0	430.0	371.0	354.22	351.00	50.0	152.0	11.0	16.0	6.5	8.0	7.45	16.60	8.20	19.00
16	419	419.0	482.0	422.0	404.17	399.84	50.0	152.0	12.0	16.0	7.0	9.0	9.20	20.25	10.35	23.95
18	457.2	457.2	530.0	460.0	441.50	438.50	50.0	152.0	12.0	16.0	8.0	9.5	11.45	23.60	12.40	26.40
20	508	508.0	585.0	511.0	490.50	486.50	50.0	152.0	12.0	20.0	8.5	11.0	13.40	28.65	15.10	33.85
24	610	610.0	685.0	613.0	589.50	584.50	60.0	152.0	14.0	20.0	10.5	13.0	20.75	39.25	23.25	45.50
28	711	711.0	800.0	719.0	687.50	681.50	60.0	190.0	19.0	24.0	12.0	15.0	33.35	75.30	36.80	86.20
32	813	813.0	905.0	821.0	786.50	779.50	60.0	190.0	20.5	24.0	13.5	17.0	42.25	94.60	46.85	100.15
36	914	914.0	1000.0	922.0	883.50	876.50	60.0	190.0	22.0	32.0	15.5	19.0	49.35	115.55	54.55	131.95

Composite Slip-On Flanges: Slip-On Stub Ends

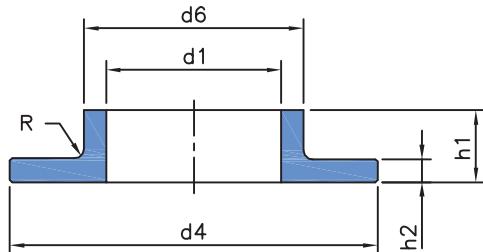
Type and Construction

Suitable for both 16 and 20 bar

Dimensions

EEMUA 145 section 2

Other dimensions are available on request



Tolerances

EEMUA 145 section 2

Nominal Size		d ₁	d ₆	d ₄	h ₁	h ₂	Approx. Weight
inch	mm	mm	mm	mm	mm	mm	kg
1/2	16	16.07	21.0	40.0	16.0	5.0	0.10
3/4	25	25.08	31.0	53.0	16.0	5.0	0.10
1	30	30.08	36.0	60.0	18.0	5.0	0.13
1 1/4	38	38.10	45.0	70.0	18.0	5.0	0.13
1 1/2	44.5	44.60	51.0	80.0	19.0	5.0	0.22
2	57	57.23	67.0	99.0	19.0	6.0	0.22
2 1/2	76.1	76.33	87.0	120.0	19.0	6.0	0.35
3	88.9	89.18	100.0	130.0	21.0	7.0	0.50
4	108	108.38	120.0	158.0	23.0	7.0	0.90

Backing Flanges

Type and Construction

Manufactured from forged carbon steel to ASTM A105.

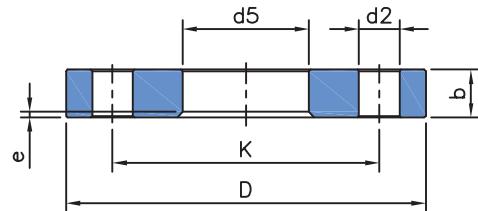
Generally the flanges are protected by galvanising.

Polyamid epoxy coatings are available on request.

Drilling and outside diameter dimensions of flange

- $\frac{1}{2}'' \sim 24''$ are in accordance with ASME B16.5

- $28'' \sim 36''$ are in accordance with MSS SP 44



Dimensions

EEMUA 145 section 1

Other dimensions are available on request

Tolerances

EEMUA 145 section 1

Class 150

Nominal Size		D	b	d ₂	d ₅		K	e	No. of Holes	Approx. Weight
					Weld Neck	Slip On				
inch	mm	mm	min. mm	mm	mm	mm	mm	mm	kg	
1/2	16	89.0	14.0	15.9	19.0	23.0	60.3	2.0	4	0.60
3/4	25	98.0	14.0	15.9	28.0	33.0	69.8	3.0	4	0.80
1	30	108.0	14.0	15.9	33.0	38.0	79.4	3.0	4	0.90
1 1/4	38	117.0	14.0	15.9	41.0	47.0	88.9	3.0	4	1.10
1 1/2	44.5	127.0	14.0	15.9	48.0	53.0	98.4	3.0	4	1.20
2	57	152.0	18.0	19.0	62.0	69.0	120.6	3.0	4	2.10
2 1/2	76.1	178.0	18.0	19.0	81.0	89.0	139.7	3.0	4	2.60
3	88.9	190.0	19.0	19.0	94.0	103.0	152.4	3.0	4	2.90
4	108	229.0	24.0	19.0	113.0	123.0	190.5	3.0	8	5.90
6	159	279.0	27.0	22.2	164.0		241.3	4.0	8	8.40
8	219.1	343.0	31.0	22.2	225.0		298.4	5.0	8	12.35
10	267	406.0	38.0	25.4	273.0		362.0	5.0	12	19.70
12	323.9	483.0	41.0	25.4	330.0		431.8	7.0	12	32.20
14	368	533.0	45.0	28.6	374.0		476.2	7.0	12	38.20
16	419	597.0	51.0	28.6	426.0		539.8	7.0	16	52.15
18	457.2	635.0	52.0	31.8	465.0		577.8	7.0	16	54.05
20	508	698.0	58.0	31.8	517.0		635.0	7.0	20	73.20
24	610	813.0	71.0	34.9	618.0		749.0	9.0	20	114.25
28	711	927.0	81.0	34.9	727.0		864.0	9.0	28	151.80
32	813	1060.0	95.0	41.1	829.0		978.0	9.0	28	233.50
36	914	1168.0	105.0	41.1	931.0		1086.0	9.0	32	294.10

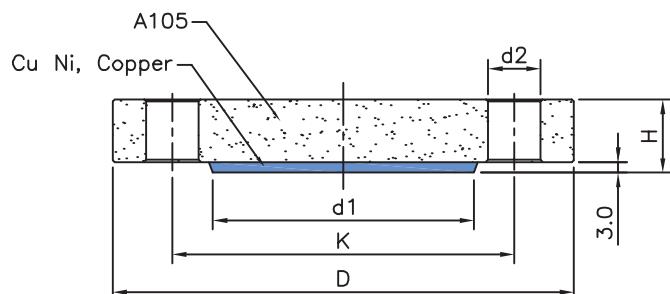
Composite Blind Flanges

Type and Construction

Manufactured from forged carbon steel to ASTM A105 overlaid with CuNi disk plate. Generally the flanges are protected by galvanising. Polyamid epoxy coatings are available on request.

Dimensions

ASME B16.5



Tolerances

ASME B16.5

Class 150

Nominal Size		D	K	d ₂	H	d ₁	No. of Holes	Approx. Weight kg
inch	mm	mm	mm	mm	min. mm	mm		
1/2	16	90	60.3	15.9	12.5	34.9	4	0.82
3/4	25	100	69.9	15.9	14.1	42.9	4	1.04
1	30	110	79.4	15.9	15.7	5.8	4	1.31
1 1/4	38	115	88.9	15.9	17.3	63.5	4	1.58
1 1/2	44.5	125	98.4	15.9	18.9	73	4	1.90
2	57	150	120.7	19.0	20.5	92.1	4	3.01
2 1/2	76.1	180	139.7	19.0	23.7	104.8	4	4.68
3	88.9	190	152.4	19.0	25.3	127	4	5.70
4	108	230	190.5	19.0	25.3	157.2	8	8.67
6	159	280	241.3	22.2	26.9	215.9	8	15.46
8	219.1	345	298.5	22.2	30	268.9	8	24.90
10	267	405	362.0	25.4	31.6	323.8	12	41.23
12	323.9	485	431.8	25.4	33.2	381	12	70.55
14	368	535	476.3	28.6	36.4	412.8	12	93.16
16	419	595	539.8	28.6	38	469.9	16	123.99
18	457.2	635	577.9	31.8	41.1	533.4	16	147.55
20	508	700	635.0	31.8	44.3	584.2	20	191.00
24	610	815	749.3	34.9	49.1	692.2	20	285.74

Solid Weld Neck Flanges

Type and Construction

Drilling and outside diameter dimensions of flange

- 1/2 " ~ 24" are in accordance with ASME B16.5
- 28" ~ 36" are in accordance with MSS SP 44

The recommended bolting is in accordance with
ASTM B150 UNS C63000

Dimensions

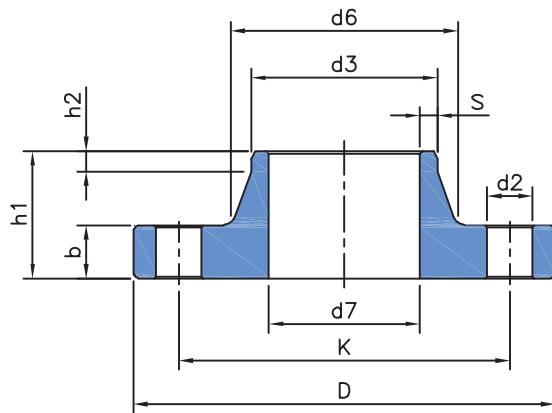
EEMUA 145 section 3

Other dimensions are available on request

Tolerances

EEMUA 145 section 3

Nominal Size		D	b	d ₆	d ₃	h ₁	d ₇	
							16 bar	20 bar
inch	mm	mm	mm	mm	mm	mm	mm	mm
1/2	16	89.0	14.0	23.0	16.0	48.0	12.00	12.00
3/4	25	98.0	16.0	32.0	25.0	52.0	21.00	21.00
1	30	108.0	16.0	42.0	30.0	56.0	25.00	25.00
1 1/4	38	117.0	17.0	51.0	38.0	57.0	33.03	33.03
1 1/2	44.5	127.0	20.0	61.0	44.5	62.0	39.53	39.53
2	57	152.0	25.0	73.0	57.0	64.0	52.16	52.16
2 1/2	76.1	178.0	27.0	91.0	76.1	70.0	71.23	71.23
3	88.9	190.0	27.0	105.0	88.9	70.0	84.08	84.08
4	108	229.0	27.0	135.0	108.0	76.0	102.13	102.13
6	159	279.0	27.0	192.0	159.0	89.0	153.75	152.38
8	219.1	343.0	31.0	246.0	219.1	98.0	211.10	210.10
10	267	406.0	31.0	305.0	267.0	98.0	257.97	255.93
12	323.9	483.0	35.0	365.0	323.9	98.0	312.83	309.74
14	368	533.0	41.0	400.0	368.0	99.0	354.22	351.00
16	419	597.0	43.0	457.0	419.0	106.0	404.17	399.84
18	457.2	635.0	45.0	505.0	457.2	113.0	441.50	438.50
20	508	698.0	45.0	559.0	508.0	118.0	490.50	486.50
24	610	813.0	49.0	664.0	610.0	137.0	589.50	584.50
28	711	927.0	72.0	748.0	711.0	145.0	687.50	681.40
32	813	1060.0	72.0	876.0	813.0	160.0	786.50	779.50
36	914	1168.0	72.0	984.0	914.0	175.0	883.50	876.50



Class 150

S		h_2	K	d_2	No. of Holes	Approx. Weight	
16 bar	20 bar					16 bar	20 bar
min. mm	min. mm	min. mm	min. mm	kg	kg	kg	kg
2.0	2.0	8.0	60.3	15.9	4	0.72	0.72
2.0	2.0	7.0	69.8	15.9	4	1.04	1.04
2.5	2.5	8.0	79.4	15.9	4	1.30	1.30
2.5	2.5	8.0	88.9	15.9	4	1.70	1.70
2.5	2.5	7.0	98.4	15.9	4	2.30	2.30
2.5	2.5	9.0	120.6	19.0	4	4.10	4.10
2.5	2.5	8.0	139.7	19.0	4	6.10	6.10
2.5	2.5	8.0	152.4	19.0	4	7.10	7.10
3.0	3.0	8.0	190.5	19.0	8	10.20	10.20
3.0	3.5	8.0	241.3	22.2	8	15.50	15.80
4.0	4.5	8.0	298.4	22.2	8	27.70	28.00
4.5	5.5	8.0	362.0	25.4	12	38.50	39.30
5.5	7.0	8.0	431.8	25.4	12	61.60	62.90
6.5	8.0	8.0	476.2	28.6	12	86.80	88.40
7.0	9.0	8.0	539.8	28.6	16	114.20	115.60
8.0	9.5	8.0	577.8	31.8	16	136.00	140.70
8.5	11.0	8.0	635.0	31.8	20	164.60	168.40
10.5	13.0	8.0	749.3	34.9	20	247.70	253.70
12.0	15.0	8.0	864.0	34.9	28	453.00	461.10
13.5	17.0	8.0	978.0	41.1	28	599.00	611.10
15.5	19.0	8.0	1086.0	41.1	32	741.00	755.70

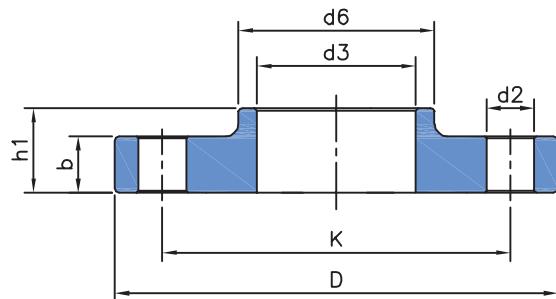
Solid Slip-On Flanges

Type and Construction

Suitable for both 16 and 20bar.

Drilling and outside diameter dimensions are in accordance with ASME B16.5.

The recommended bolting is in accordance with ASTM B150 UNS C63000.



Dimensions

EEMUA 145 section 4

Other dimensions are available on request

Tolerances

EEMUA 145 section 4

Class 150

Nominal Size		D	d ₃	b	h ₁	d ₆	No. of Holes	d ₂	K	Approx. Weight
inch	mm	mm	mm	mm	mm	mm		mm	mm	kg
1/2	16	89	16.07	14	20	23	4	15.9	60.3	0.66
3/4	25	98	25.08	16	24	32	4	15.9	69.8	0.91
1	30	108	30.08	16	24	47	4	15.9	79.4	1.16
1 1/4	38	117	38.10	17	26	51	4	15.9	88.9	1.4
1 1/2	44.5	127	44.60	20	26	61	4	15.9	98.4	1.9
2	57	152	57.23	25	28	73	4	19.0	120.6	3.3
2 1/2	76.1	178	76.33	27	32	91	4	19.0	139.7	4.7
3	88.9	190	89.18	27	34	105	4	19.0	152.4	5.2
4	108	229	108.38	27	40	135	8	19.0	190.5	7.7

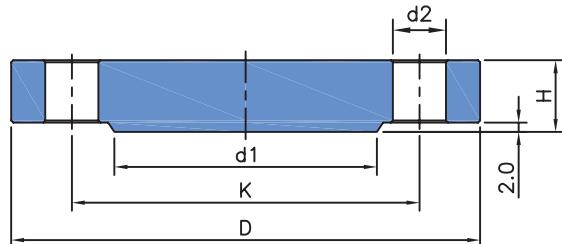
Solid Blind Flanges

Type and Construction

Manufactured from forged Round Bar or Plate.

Dimensions

ASME B16.5



Tolerances

ASME B16.5

Class 150

Nominal Size		D	K	d ₂	H	d ₁	No. of Holes	Approx. Weight kg
inch	mm	mm	mm	mm	min. mm	mm		
1/2	16	90	60.3	15.9	11.6	34.9	4	0.82
3/4	25	100	69.9	15.9	13.2	42.9	4	1.04
1	30	110	79.4	15.9	14.7	5.8	4	1.31
1 1/4	38	115	88.9	15.9	16.3	63.5	4	1.58
1 1/2	44.5	125	98.4	15.9	17.9	73	4	1.90
2	57	150	120.7	19.0	19.5	92.1	4	3.01
2 1/2	76.1	180	139.7	19.0	22.7	104.8	4	4.68
3	88.9	190	152.4	19.0	24.3	127	4	5.70
4	108	230	190.5	19.0	24.3	157.2	8	8.67
6	159	280	241.3	22.2	25.9	215.9	8	15.46
8	219.1	345	298.5	22.2	29	268.9	8	24.90
10	267	405	362.0	25.4	30.6	323.8	12	41.23
12	323.9	485	431.8	25.4	32.2	381	12	70.55
14	368	535	476.3	28.6	35.4	412.8	12	93.16
16	419	595	539.8	28.6	37	469.9	16	123.99
18	457.2	635	577.9	31.8	40.1	533.4	16	147.55
20	508	700	635.0	31.8	43.3	584.2	20	191.00
24	610	815	749.3	34.9	48.1	692.2	20	285.74

Seamless Copper Pipes(A13 / ASME B31.3)

Copper Pipes - SPS(Standard Pipe Sizes)

Preferred Wall Thickness for Drawn Seamless Pipes Based on SPS Diameter

Preferred Sizes according to ASTM B 466 / B 466M - 03

APPENDIX (nonmandatory Information)

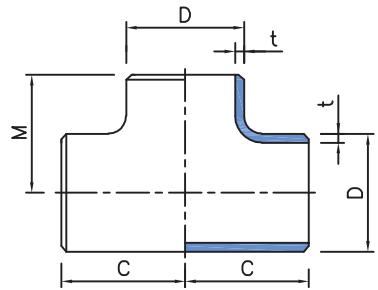
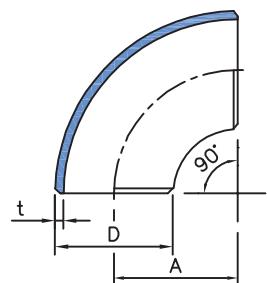
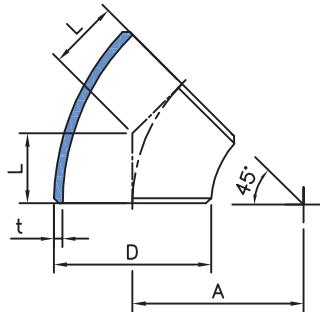
Ref : Material Standard : A13(EIL)/Code : ASME B31.3

Nominal Size inch	Outside Diameter		Wall Thickness		Material mm
	inch	mm	inch	mm	
1/8	0.405	10.3	0.062	1.57	Seamless Hard Drawn(H80) Regular Copper to ASTM B42 UNS No.C12200
1/4	0.540	13.7	0.082	2.08	
3/8	0.675	17.1	0.090	2.29	
1/2	0.840	21.3	0.107	2.72	
3/4	1.050	26.7	0.114	2.90	
1	1.315	33.4	0.126	3.20	
1 1/4	1.660	42.2	0.146	3.71	
1 1/2	1.900	48.3	0.150	3.81	
2	2.375	60.3	0.156	3.96	
2 1/2	2.875	73.0	0.187	4.75	
3	3.500	88.9	0.219	5.56	
3 1/2	4.000	101.6	0.250	6.35	
4	4.500	114.3	0.250	6.35	Seamless Light Drawn(H55) Regular Copper to ASTM B42 UNS No.C12200
5	5.563	141.3	0.250	6.35	
6	6.625	168.3	0.250	6.35	

- It is recommended that wherever possible, product purchased to this specification be ordered to the Diameters and Wall Thickness indicated in the above Table.
- Service for Potable Water(Hot, Cold)
- CDA 102 / 110 for Electrical Applications ASTM B188 and B42
- Brazed upto 2" / Forged to ASTM B124 UNS No.C11000 / Butt Welded to ASTM B42 UNS No.C12200

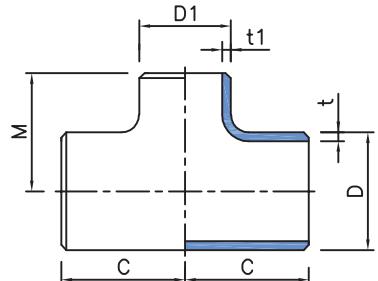
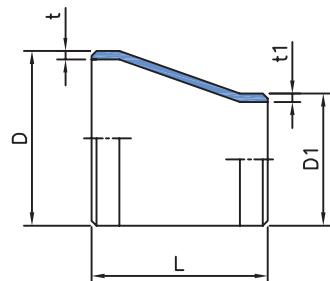
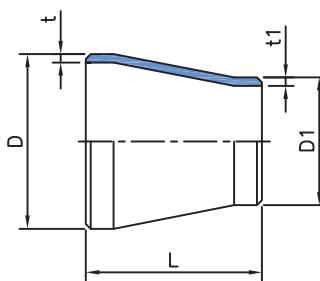


Butt Welding Copper Fittings(ASME B16.9)



Outside Diameter of pipe D		Wall Thickness		45°, 90° Elbow		Equal Tee	
				Radius	Length	Center-to-End	Run
Nominal inch	Actual mm	t	A	L	C	M	
3"	88.9	5.56	114	51	86	86	
4"	114.3	6.35	152	64	105	105	

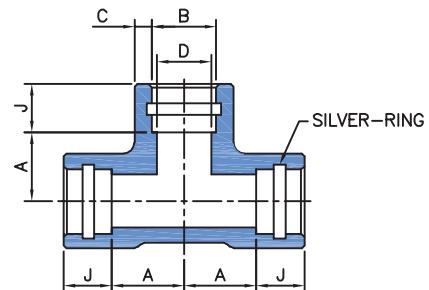
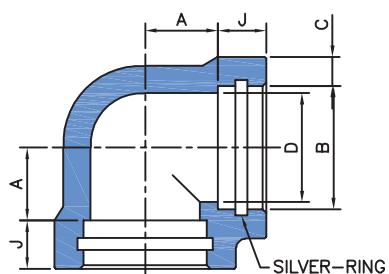
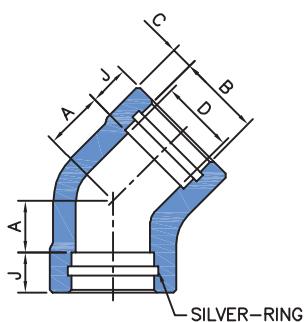
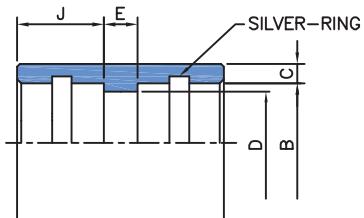
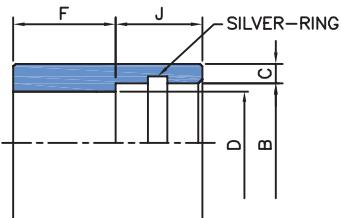
* Dimensions are in millimeters



Outside Diameter of pipe DxD ₁				Wall Thickness		Con, Ecc Reducer Length	UnEqual Tee			
							Center-to-End			
Nominal inch		Actual mm		t	t ₁		Run	Outlet		
3"	X	1 1/2"	88.9	x	48.3	5.56	3.81	89	86	73
	X	2"		x	60.3	5.56	3.96	89	86	76
4"	X	1 1/2"	114.3	x	48.3	6.35	3.81	102	105	86
	X	2"		x	60.3	6.35	3.96	102	105	89
	X	3"		x	88.9	6.35	5.56	102	105	98

* Dimensions are in millimeters

#3000 Forged Silver-Brazed Copper Fittings(ASME B16.11)



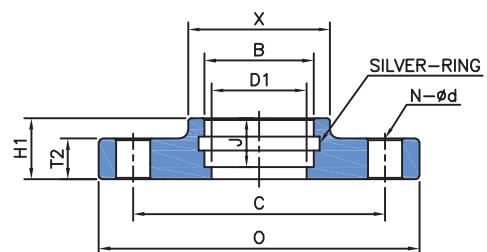
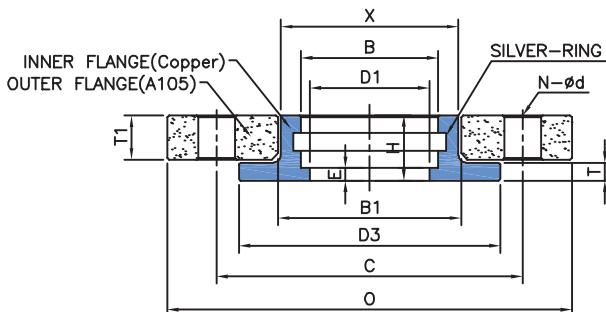
#3000

Outside Diameter of pipe		Depth of Socket (min.)	Depth of Socket (min.)	Depth of Socket (min.)	Depth of Socket (min.)	Center To Bottom of Socket		Center To Bottom of Socket	
Nominal inch	Actual mm	B	D	C	J	Full Coupling	Half Coupling	90° Elbow, Tee	45° Elbow
1/2"	21.3	21.4	15.9	4.09	10	9.5	22.5	15.5	11
3/4"	26.7	26.8	20.9	4.27	13	9.5	24	19	13
1"	33.4	33.5	27	4.98	13	12.5	28.5	22.5	14
1 1/2"	48.3	48.4	40.7	5.54	13	12.5	32	32	20.5
2"	60.3	60.5	52.4	6.04	16	19	41	38	25.5

* Dimensions are in millimeters



Silver-Brazed Copper Flanges(BS EN 1759-3)

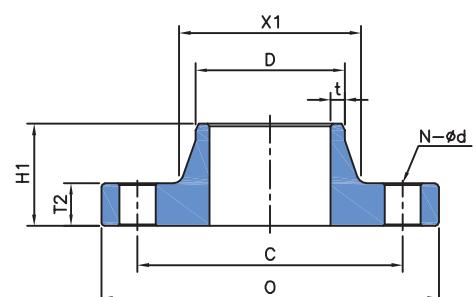
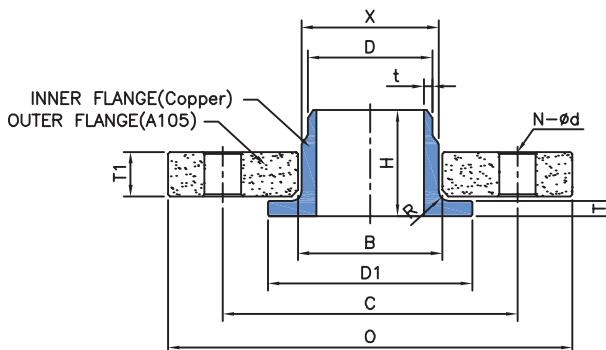


Class 150

Outside Diameter of pipe		Socket Bore Dia.	Bore Dia.of Flange	Dia. of Hub	Outside Dia.of Flange	Dia.of Bolt Circle	Num. of Bolts	Dia.of Bolt Holes	Composite S/B Flange					Solid S/B Flange			
Nominal inch	Actual mm	B	D1	X	O	C	N	Ød	H	E	T	D3	T1	B1	H1	T2	J
1/2"	21.3	21.4	15.9	28	89	60.3	4	15.9	16	3	5	40	11.1	30	21	10	10
3/4"	26.7	26.8	20.9	33	98	69.8	4	15.9	16	3	5	53	12.7	35	24	10	11
1"	33.4	33.5	27	40	108	79.4	4	15.9	18	3	5	60	14.3	42	24	11	13
1 1/2"	48.3	48.4	40.7	55	127	98.4	4	15.9	19	3	5	80	17.5	57	26	13	16
2"	60.3	60.5	52.4	70	152	120.6	4	19	19	3	6	99	19	72	28	15	17

* Dimensions are in millimeters

Weld-Neck Copper Flanges(BS EN 1759-3)



Class 150

Outside Diameter of pipe D		Socket Bore Dia.	Bore Dia.of Flange	Dia. of Hub	Outside Dia.of Flange	Dia.of Bolt Circle	Composite W/N Flange						Solid W/N Flange			
Nominal inch	Actual mm	t	O	C	N	Ød	X	H	R	T	D1	T1	B	H1	T2	X1
3"	88.9	5.56	190	152.4	4	19	91	50	5	7	130	24	94	70	22	103
4"	114.3	6.35	229	190.5	8	19	116	50	5	7	158	24	119	76	22	134

* Dimensions are in millimeters



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