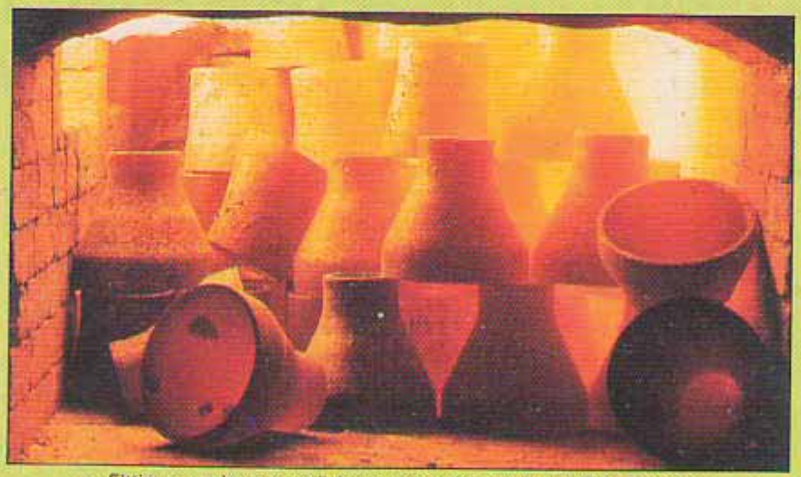
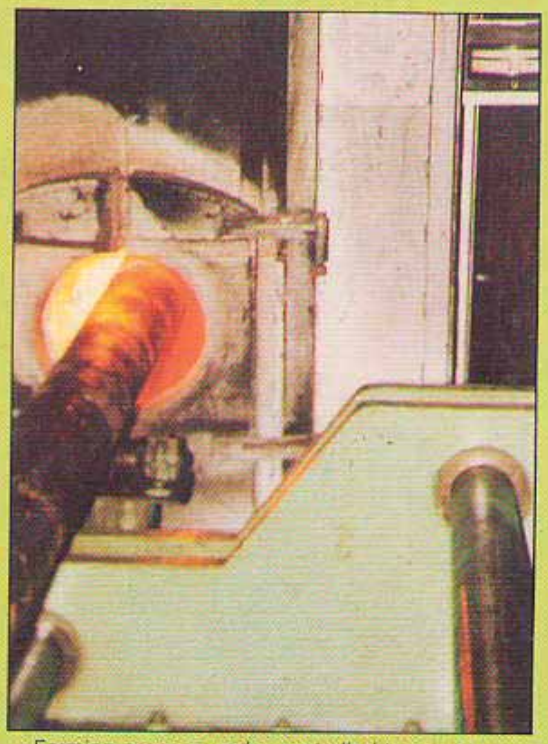
FORGED STEEL & SEAMLESS WELDING FITTINGS AND FLANGES

M. S. Fittings Manufacturing Co. PVT. LTD.

CALCUTTA-700 013 □ INDIA



Fittings under normalizing as per the requirement of code



Forming process under controlled temperature

M. S. FITTINGS MANUFACTURING CO. PVT. LTD.

17, WESTON STREET

CALCUTTA-700 013, INDIA

Manufacturers of all types of quality Forged, Seamless and Welded Pipe Fittings & Flanges in Carbon Steel, Stainless Steel and Alloy Steel

1996 EDITION

Plant : RAMPUR, P.O. GOBINDPUR,
BUDGE BUDGE ROAD,
24, PARGANAS (SOUTH)
(WEST BENGAL) INDIA
PHONE : 24014807, 24010078

Gram : FREEFLOW • Fax : 091-033-2225 2103 • Phone : 22362902/3, 22362869 • E-mail : msfittings@vsnl.com

Profile

THE COMPANY

M. S. FITTINGS MFG. CO. PVT. LTD., formally known as M. S. FITTINGS MFG. CO., was established by a group of vastly experienced and enterprising founder partners in May, 1957 as a partnership firm and subsequently it was registered as a S.S.I. unit and, thereafter, it was also enlisted with N.S.I.C. Name and Style of M. S. FITTINGS MFG. CO. have changed to M. S. FITTINGS MANUFACTURING CO. PVT. LTD. w.e.f. 01-04-95.

It was a humble start with a machine shop at 17, Weston Street, Calcutta 700 013 which is still existing and where the Company is having its registered office.

Slowly and steadily the firm kept on progressing but, in the last more than two (2) decades it progressed by leaps and bounds.

M. S. Fittings Mfg. Co. Pvt. Ltd. now has forging and bending shops at Rampur, P.O. Gobindpur, Budge Budge Road, 24-Parganas(S), W.B. with all the necessary machineries and equipments required for producing quality pipe fittings and flanges. The Company enjoys the reputation in manufacturing quality Forged Carbon Steel/Stainless Steel Pipe Fittings and flanges of all types and various sizes conforming to national and international specifications and also as per IBR Code of inspection to meet the requirements of number of valued and reputed customers.

Administration

M. S. Fittings Mfg. Co. Pvt. Ltd. has qualified engineers, technicians and office staff headed by a chief and a deputy chief executives both of whom are actively involved in the day to day activities and progress of the Company. The Company has the services of qualified, professional and efficient personnels.

Raw materials

Raw materials are procured either direct from the mills or from the dealers after thorough verification and inspection to determine the correctness of material.

To meet the eventualities and to maintain delivery schedules, substantial quantities of raw materials are normally kept in stock.

Engineering & Inspection

Since M. S. Fittings Mfg. Co. Pvt. Ltd. is basically manufacturers involved in quality products, the Company has its fully equipped Engineering and Inspection department manned by qualified and proficient engineers and technicians.

Forging and Bending Units at Rampur are also headed by a qualified and competent Engineer vastly experienced in the line. He has competent Foremen to assist him. The foremen are associated with the Company for quite a long period. All the items produced by the company are checked and inspected at every stage of manufacture.

Each and every individual piece of finished product is checked and after satisfactory observation identification marks are put on each piece.

All the Dies and Tools are made by M. S. Fittings Mfg. Co. Pvt. Ltd. themselves under close supervision by their experts. Since Dies and Tools play very vital role to produce quality products, no sub-letting whatsoever is practiced. Hence, M. S. Fittings Mfg. Co. Pvt. Ltd. has a full fledged Tool room facilities.

Material Testing and checking

Ultrasonic, Hardness, D.P. and Zinc Tests are some of the tests carried out by the company. Since the use of correct raw material is the basic need in manufacturing quality fittings, M. S. Fittings Mfg. Co. Pvt. Ltd. has the system to get the incoming raw materials chemically and physically checked as per their relevant specifications and only after the results are found satisfactory, the raw materials are offered to third party inspection whenever called for and are finally used for the manufacture of the products.

Apart from mandatory tests, some times supplementary tests are also carried out to ensure quality and reliability of the products. The supplementary tests are micro/macro structure, magnetic particle test, intergranular corrosion test, hydro test etc.

Some Important Customers

M. S. Fittings Mfg. Co Pvt. Ltd. has to the credit the clientele of highly reputed customers who are Government, Semi Government and private units. M/s. Bharat Heavy Electricals Ltd., M/s. Bharat Petroleum Corpn. Ltd., M/s. Bharat Pumps & Compressors Ltd., M/s. Bokaro Steel Plant (SAIL), M/s. Gujarat Narmada State Fertilizer Corpn. Ltd., M/s. Gujarat State Fertilizer

Co. Ltd., M/s. Hindustan Levers Ltd., M/s. Hindustan Petroleum Corpn. Ltd., M/s. Hindustan Shipyard Ltd., M/s. Indian Oil Corporation Ltd., M/s. Indian Petrochemicals Corpn. Ltd., M/s. Larsen & Toubro Ltd., M/s. Mc Dowell & Co. Ltd., M/s. McNally Bharat Engg. Co. Ltd., M/s. Metallurgical & Engg. Consultance (I) Ltd., M/s. Nuclear Power Corporation of India Ltd., M/s. National Thermal Power Corpn., M/s. Oil & Natural Gas Commission, M/s. Oil India Ltd., M/s. Reliance Industries Ltd., M/s. Rolls Royce Industrial Power India Ltd., M/s. Siemens Ltd., M/s. Tata Iron & Steel Co. Ltd., M/s. Visakhapatnam Steel Project are some of them to name.

Third Party Inspection

Apart from being approved by IBR for the manufacture of IBR Pipe Fittings and Flanges and also being in the approved list of Technical Development Committee, some of the third party inspection agencies with whom the Company normally works are M/s. Bax Council, M/s. BVIS, M/s. DNV, M/s. EIL, M/s. FEDO, M/s. H & G, M/s. ICB, M/s. IRS, M/s. Kothari Dalal Consultants, M/s. MND, M/s. NPCIL, M/s. PDIL, M/s. Tata Consultants, M/s. TIPL and M/s. UIL.

Packing

Duly inspected and accepted stores are once again thoroughly checked by the despatch department prior to shipment to ensure correct quantities and sizes. Small items are normally packed in cartons which have proper identifications. Subsequently, the cartons are packed in wooden cases.

Medium and large size items are generally packed in laminated double gunny bags to avoid any damage or injury to the products in transit.

Progress, Development & Capacity

To meet the ever growing demand, M. S. Fittings Mfg. Co. Pvt. Ltd. has successfully installed one more Extrusion bending machine capable of producing 1D & 1.5D Bends/Returns in 45 Deg./90 Deg./180 Deg. in sizes upto and including 500 mm NB. With the progressive outlook and approach of the management, M. S. Fittings Mfg. Co. Pvt. Ltd. is always inclined to keep pace with the time as far as practicable and has acquired a number of modern and sophisticated equipments to have better and more effective control on maintaining the quality of the products.

Shifts

Normally the firm has only one Extended shift but, to cope with the urgency of the customers, 2/3 shifts can also be practiced.

A SYMBOL OF QUALITY & RELIABILITY

is the symbol of quality consciousness for almost four decades in the field of Weldable and Screwed Fittings manufactured out of Carbon Steel, Stainless Steel and Alloy Steel materials.

is the symbol of reliability and perfection to all the leading Industries consuming quality fittings only.

fittings are available conforming to almost all the International Specifications such as ANSI, BS, IS and others.

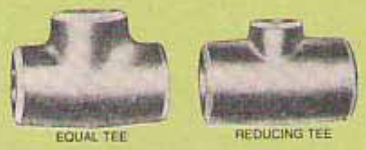
fittings are produced under strict quality control complying with all the International Code of Inspection and also as per Indian Boiler Regulation for IBR Fittings.

is the symbol of sophisticated and expertised manufacturing/shipping practices and has earned the reputation of keeping pace with the rigorous requirements and proven suitability in neuclear, Petro-Chemicals, Fertilisers, Refineries and Thermal power generation applications.

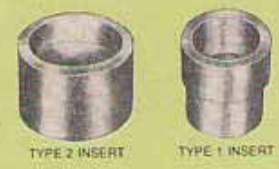
is the symbol of trustworthiness and the Inspection Authorities throughout the Country are familiar with this symbol which stands for quality and reliability.

RANGE OF PRODUCTS

BUTT-WELD FITTINGS



SOCKETWELD FITTINGS



SCREWED FITTINGS

FLANGES

FORMING DETAILS

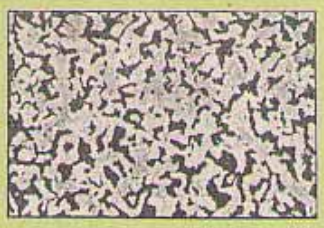
Fittings have identification marks as required by the code

Fittings with uniformly smooth inner surface minimises resistance to flow of liquid, reduces friction and turbulance.

Fittings have full effective radius which minimises pressure loss and provides gradual change of direction of flow without turbulance.

Fittings have accurately machined bevel at each end and exact included angles facilitate fabrication of large and complicated installations permitting accurate alignments with full contacts throughout the entire circumference.

Fittings have uniform thickness with true circularity and accurately machined bevel ends help true alignment of inner surfaces when outside surfaces are lined up.



Refined grain of fitting

Fittings manufactured by controlled hot forming process impart refined grain structure which produces uniformity free from internal defects. It also provides maximum dynamic strength and toughness. Rigid control of metal properties gives added protection and increases resistance to withstand all types of stresses and strains resulting from higher temperatures and pressures of modern piping systems.

A SYMBOL OF QUALITY AND RELIABILITY

DIMENSIONS OF WELDED AND SEAMLESS PIPE

CARBON and ALLOY STEEL PIPE

ANSI B36.10

Nominal Pipe Size	Outside Diameter (Nom)	Wall Thickness (Nom)											
		Sch. 10	Sch. 20	Sch. 30	Std. Wall	Sch. 40	Sch. 60	Extra Strong	Sch. 80	Sch. 100	Sch. 120	Sch. 140	Sch. 160	XX Strong
6	10	—	—	—	1.7	1.7	—	2.4	2.4	—	—	—	—	—
8	14	—	—	—	2.2	2.2	—	3.0	3.0	—	—	—	—	—
10	17	—	—	—	2.3	2.3	—	3.2	3.2	—	—	—	—	—
15	21	—	—	—	2.8	2.8	—	3.7	3.7	—	—	—	4.8	7.5
20	27	—	—	—	2.9	2.9	—	3.9	3.9	—	—	—	5.5	7.8
25	33	—	—	—	3.4	3.4	—	4.6	4.6	—	—	—	6.4	9.1
32	42	—	—	—	3.6	3.6	—	4.9	4.9	—	—	—	6.4	9.7
40	48	—	—	—	3.7	3.7	—	5.1	5.1	—	—	—	7.1	10.2
50	60	—	—	—	3.9	3.9	—	5.5	5.5	—	—	—	8.7	11.1
65	73	—	—	—	5.2	5.2	—	7.0	7.1	—	—	—	9.5	14.0
80	89	—	—	—	5.5	5.5	—	7.6	7.6	—	—	—	11.1	15.2
90	102	—	—	—	5.7	5.7	—	8.1	8.1	—	—	—	—	16.2†
100	114	—	—	—	6.0	6.0	—	8.6	8.6	—	11.1	—	13.5	17.1
125	141	—	—	—	6.6	6.6	—	9.5	9.5	—	12.7	—	15.7	19.1
150	168	—	—	—	7.1	7.1	—	11.0	11.0	—	14.3	—	18.2	22.0
200	219	—	6.4	7.0	8.2	8.2	10.3	12.7	12.7	15.1	18.2	20.6	23.0	22.2
250	273	—	6.4	7.8	9.3	9.3	12.7	12.7	15.1	18.2	21.4	25.4	28.6	—
300	324	—	6.4	8.4	9.5	10.3	14.3	12.7	17.5	21.4	25.4	28.6	33.3	—
350	356	6.4	7.9	9.5	9.5	11.1	15.1	12.7	19.1	23.8	27.7	31.8	35.7	—
400	406	6.4	7.9	9.5	9.5	12.7	16.7	12.7	21.4	26.2	30.9	36.5	40.5	—
450	457	6.4	7.9	11.1	9.5	14.3	19.1	12.7	23.8	29.4	34.9	39.7	45.2	—
500	508	6.4	9.5	12.7	9.5	15.1	20.7	12.7	26.2	32.5	38.1	44.5	50.0	—
600	610	6.4	9.5	14.3	9.5	17.5	24.6	12.7	30.9	33.9	46.0	52.4	59.5	—
750	762	7.9	12.7	15.9	9.5†	—	—	12.7†	—	—	—	—	—	—

NOTES All dimensions given in millimetre.

† Not covered by this specification.

The wall thickness shown represent nominal or average wall dimensions which are subject to − 12.5% mill tolerance.

DIMENSIONS OF WELDED AND SEAMLESS PIPE

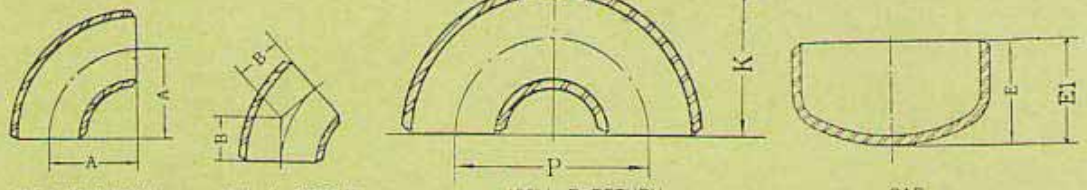
CARBON and ALLOY STEEL PIPE

ASA B36.10

Nominal Pipe Size	Outside Diameter (Nom)	Inside Diameter (Nom)												
		Sch. 10	Sch. 20	Sch. 30	Std. Wall	Sch. 40	Sch. 60	Extra Strong	Sch. 80	Sch. 100	Sch. 120	Sch. 140	Sch. 160	XX Strong
6	10	—	—	—	6.8	6.8	—	5.5	5.5	—	—	—	—	—
8	14	—	—	—	9.3	9.3	—	7.7	7.7	—	—	—	—	—
10	17	—	—	—	12.5	12.5	—	10.7	10.7	—	—	—	—	—
15	21	—	—	—	15.8	15.8	—	13.9	13.9	—	—	—	11.8	6.4
20	27	—	—	—	20.9	20.9	—	18.9	18.9	—	—	—	15.6	11.0
25	33	—	—	—	26.6	26.6	—	24.3	24.3	—	—	—	20.7	15.2
32	42	—	—	—	35.1	35.1	—	32.5	32.5	—	—	—	29.5	22.8
40	48	—	—	—	40.9	40.7	—	38.1	38.1	—	—	—	34.0	27.9
50	60	—	—	—	52.5	52.5	—	49.3	49.3	—	—	—	42.9	38.2
65	73	—	—	—	62.7	62.7	—	59.0	59.0	—	—	—	54.0	45.0
80	89	—	—	—	77.9	77.9	—	73.7	73.7	—	—	—	66.7	58.4
90	102	—	—	—	90.1	90.1	—	85.5	85.5	—	—	—	—	69.3 †
100	114	—	—	—	102.3	102.3	—	97.2	97.2	—	92.1	—	87.3	80.2
125	141	—	—	—	128.2	128.2	—	122.3	122.3	—	115.9	—	109.6	103.2
150	168	—	—	—	154.1	154.1	—	146.3	146.3	—	139.7	—	131.8	124.4
200	219	—	206.4	205.0	202.7	202.7	198.5	193.7	193.6	189.0	182.6	177.8	173.1	174.6
250	273	—	260.4	257.5	254.5	254.5	247.7	247.7	242.9	236.6	230.2	222.3	215.9	—
300	324	—	311.2	307.1	304.8	303.2	295.3	298.5	289.0	281.0	273.1	266.7	257.2	—
350	356	342.9	339.8	336.6	336.6	333.4	325.5	330.2	317.5	308.0	300.1	292.1	284.2	—
400	406	393.7	390.6	387.4	387.4	381.0	373.0	381.0	363.6	354.0	344.5	333.4	325.5	—
450	457	444.5	441.4	435.0	438.2	428.7	419.1	431.8	409.6	398.5	387.4	377.9	366.7	—
500	508	495.3	489.0	482.6	489.0	477.9	466.8	482.6	455.6	442.9	431.8	419.1	408.0	—
600	610	596.9	590.6	581.1	590.6	574.7	560.4	584.2	547.7	531.8	517.6	504.9	490.6	—
750	762	746.2	736.6	730.3	743.0†	—	—	736.6†	—	—	—	—	—	—

NOTES - All dimensions given in millimetre.
† Not covered by this specification.
Dimensional tolerances on Page 29 (tolerances of O/D and I/D same as these of Butt weld Fittings)

SEAMLESS BUTT-WELDING FITTINGS



90° L. R. ELBOW | 45° L. R. ELBOW | 180° L. R. RETURN | CAP

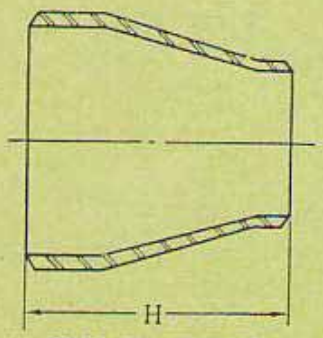
ANSI B 16.9

Nominal Pipe Size	90° L.R. Elbow	45° Long Radius Elbow		180° L. R. Return		Cap	Cap
	Centre to Face A	Centre to Face B	Centre line Radius	Centre to Centre P	Back to Face K	Length E	Length E_1
15	38	16	38	76	48	25	25
* 20	29	11	29	57	43	25	25
25	38	22	38	76	56	38	38
32	48	25	48	95	70	38	38
40	57	29	57	114	83	38	38
50	76	35	76	152	106	38	44
65	95	44	95	191	132	38	51
80	114	51	114	229	159	51	64
90	133	57	133	267	184	64	76
100	152	64	152	305	210	64	76
125	190	79	190	381	262	76	89
150	229	95	229	457	313	89	102
200	305	127	305	610	414	102	127
250	381	159	381	762	518	127	152
300	457	190	457	914	619	152	178
350	533	222	533	1067	711	165	191
400	610	254	610	1219	813	178	203
450	686	286	686	1372	914	203	229
500	762	318	762	1524	1016	229	254

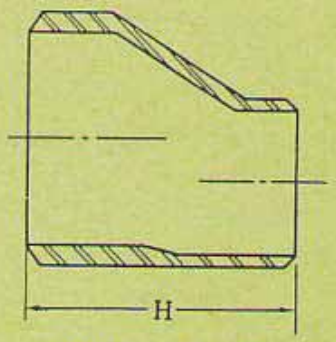
NOTES: All dimensions given in millimetre. Thickness and outside diameter of above Butt—Welding Fittings shall correspond to those of appropriate nominal pipe size.
E Length of caps applicable to that of Sch 40 and XS wall thickness.
E_1 Length of caps applicable to all other Sch/wall thickness other then Sch 40 and XS.
For Standard Welding bevels refer to **Page 29**

* A and B dimension for NPS 20 may be 38 and 19 respectively at the manufacturer's option
All dimensions herein above are nominal. For tolerances please refer page 29 & 30

SEAMLESS BUTT—WELDING FITTINGS



CONCENTRIC REDUCERS



ECCENTRIC REDUCERS

ANSI B 16.9

Nominal Pipe Size	Length H
20 × 10	38
20 × 15	38
25 × 10†	51
25 × 15	51
25 × 20	51
32 × 15	51
32 × 20	51
32 × 25	51
40 × 15	64
40 × 20	64
40 × 25	64
40 × 32	64
50 × 20	76
50 × 25	76
50 × 32	76
50 × 40	76
65 × 25	89
65 × 32	89
65 × 40	89
65 × 50	89
80 × 25†	89
80 × 32	89

Nominal Pipe Size	Length H
80 × 40	89
80 × 50	89
80 × 65	89
90 × 32	102
90 × 40	102
90 × 50	102
90 × 65	102
90 × 80	102
100 × 25†	102
100 × 32†	102
100 × 40	102
100 × 50	102
100 × 65	102
100 × 80	102
100 × 90	102
125 × 50	127
125 × 65	127
125 × 80	127
125 × 90	127
125 × 100	127
150 × 50†	140
150 × 65	140
150 × 80	140
150 × 90	140
150 × 100	140
150 × 125	140

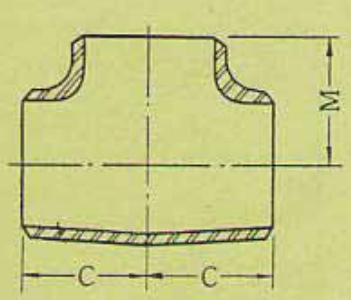
Nominal Pipe Size	Length H
200 × 80†	152
200 × 90	152
200 × 100	152
200 × 125	152
200 × 150	152
250 × 80†	178
250 × 100	178
250 × 125	178
250 × 150	178
250 × 200	178
300 × 100†	203
300 × 125	203
300 × 150	203
300 × 200	203
300 × 250	203
350 × 150	330
350 × 200	330
350 × 250	330
350 × 300	330
400 × 200	356
400 × 250	356
400 × 300	356
400 × 350	356

Nominal Pipe Size	Length H
450 × 250	381
450 × 300	381
450 × 350	381
450 × 400	381
500 × 300	508
500 × 350	508
500 × 400	508
500 × 450	508

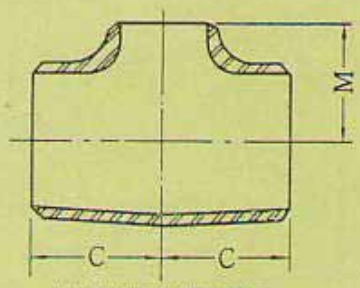
NOTES

All dimensions given in millimetre.
Drawings of reducers are representations only and do not necessarily reflect actual geometry of the fitting.
Thickness and outside diameter of reducers shall correspond to those of the appropriate nominal pipe size.
Special Reducers are manufactured as per customers drawing.
† Not covered by the specification
For Standard welding bevels please refer page 29
All dimensions herein above are nominal. For tolerance please refer page 29.

SEAMLESS BUTT-WELDING FITTINGS



EQUAL TEE



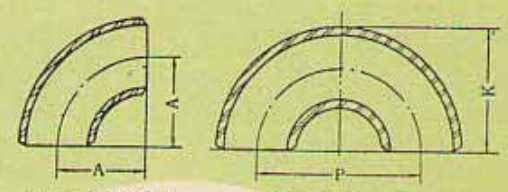
REDUCING OUTLET TEE

ANSI B.16.9

EQUAL TEE			REDUCING OUTLET TEE								
Nominal Pipe Size	Centre to End C	Centre to End M	Nominal Pipe Size	Centre to End C	Centre to End M	Nominal Pipe Size	Centre to End C	Centre to End M	Nominal Pipe Size	Centre to End C	Centre to End M
15	25	25	15 × 15 × 8	25	25	80 × 80 × 25†	86	67	200 × 200 × 80 †	178	152
20	29	29	15 × 15 × 10	25	25	80 × 80 × 32	86	70	200 × 200 × 90	178	152
25	38	38				80 × 80 × 40	86	73	200 × 200 × 100	178	156
32	48	48	20 × 20 × 10	29	29	80 × 80 × 50	86	76	200 × 200 × 125	178	162
40	57	57				80 × 80 × 65	86	83	200 × 200 × 150	178	168
50	64	64	20 × 20 × 15	29	29	90 × 90 × 40	95	79	250 × 250 × 80 †	216	184
						90 × 90 × 50	95	83	250 × 250 × 90 †	216	184
65	76	76	25 × 25 × 10 †	38	38	90 × 90 × 65	95	79	250 × 250 × 100	216	184
80	86	86	25 × 25 × 15	38	38	90 × 90 × 80	95	92	250 × 250 × 125	216	191
90	95	95	25 × 25 × 20	38	38	100 × 100 × 40	105	86	250 × 250 × 150	216	194
100	105	105	32 × 32 × 15	48	48	100 × 100 × 50	105	89	250 × 250 × 200	216	203
125	124	124	32 × 32 × 20	48	48	100 × 100 × 65	105	95	300 × 300 × 100†	254	216
150	143	143	32 × 32 × 25	48	48	100 × 100 × 80	105	98	300 × 300 × 125	254	216
200	178	178	40 × 40 × 15	57	57	100 × 100 × 90	105	102	300 × 300 × 150	254	219
250	216	216	40 × 40 × 20	57	57	125 × 125 × 50	124	105	300 × 300 × 200	254	229
300	254	254	40 × 40 × 25	57	57	125 × 125 × 65	124	108	300 × 300 × 250	254	241
350	279	279	40 × 40 × 32	57	57	125 × 125 × 80	124	111	350 × 350 × 150	279	238
400	305	305	50 × 50 × 20	64	44	125 × 125 × 90	124	114	350 × 350 × 200	279	248
450	343	343	50 × 50 × 25	64	51	125 × 125 × 100	124	117	350 × 350 × 250	279	257
500	381	381	50 × 50 × 32	64	57	150 × 150 × 50†	143	121	350 × 350 × 300	279	270
			50 × 50 × 40	64	60	150 × 150 × 65	143	121	400 × 400 × 150	305	264
			65 × 65 × 25	76	57	150 × 150 × 80	143	124	400 × 400 × 200	305	273
			65 × 65 × 32	76	64	150 × 150 × 90	143	127	400 × 400 × 250	305	283
			65 × 65 × 40	76	67	150 × 150 × 100	143	130	400 × 400 × 300	305	295
			65 × 65 × 50	76	70	150 × 150 × 125	143	137	400 × 400 × 350	305	305

NOTES : All dimensions given in millimetre.
Thickness and outside diameters of Tee shall correspond to those of the appropriate nominal pipe size.
For Standard Welding bevels please refer page 29
† Not covered by the specification.
All dimensions here in above are nominal. For tolerances please refer page 29 & 30

SEAMLESS BUTT-WELDING FITTINGS



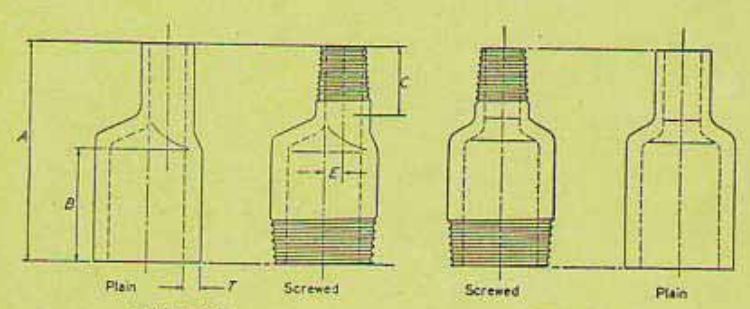
90° S. R. ELBOW 180° S. R. RETURN

ANSI B—16.28

Nominal Pipe Size	90° S. R. Elbow	180° S. R. Return	
	Centre to Face A	Centre to Centre P	Back to Face K
25	25	51	41
32	32	64	52
40	38	76	62
50	51	102	81
65	64	127	100
80	76	152	121
90	89	178	140
100	102	203	159
125	127	254	197
150	152	305	237
200	203	406	313
250	254	508	391
300	305	610	467
350	356	711	533
400	406	813	610
450	457	914	686
500	508	1016	762

NOTES : All dimensions given in millimetre
Thickness and outside diameter of above Butt-Welding fittings shall correspond to those of appropriate nominal pipe size.
For Standard Welding bevels refer page 25.
All dimensions herein above are nominal. For tolerance please refer page 29 & 30

SWAGE NIPPLES

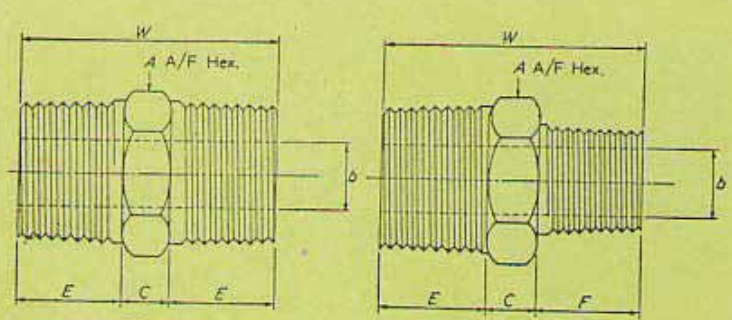


BS 3799

Nominal Pipe size	Parallel length			Eccentricity E	
	(min.) A	(min.) B	(min.) C	3000	6000
10 X 8	76	48	16	1.6	—
15 X 10	89	56	19	1.6	—
15 X 8	89	56	19	3.2	—
20 X 15	95	57	22	2.4	2.4
20 X 10	95	57	22	4.0	—
25 X 20	102	64	22	2.8	2.0
25 X 15	102	64	22	5.2	4.4
40 X 25	114	70	25	6.7	6.4
40 X 20	114	70	25	9.5	8.3
40 X 15	114	70	25	11.9	10.7
50 X 40	165	108	29	5.6	5.2
50 X 25	165	108	29	12.7	11.5
50 X 20	165	108	29	15.5	13.5
40 X 15	165	108	29	17.5	15.9
65 X 50	178	114	32	4.8	3.2
65 X 40	178	114	32	10.3	8.3
80 X 65	203	133	41	7.1	6.7
80 X 50	203	133	41	11.9	9.9
80 X 40	203	133	41	17.5	15.5
100 X 80	229	140	48	11.9	10.7
100 X 65	229	140	48	19.1	17.5

NOTES : All dimensions given in millimetre.
Thickness and outside diameters of swage nipples shall correspond to those of the appropriate nominal pipe size.
All dimensions herein above are nominal and subject to normal manufacturing tolerances.

HEXAGONAL NIPPLES



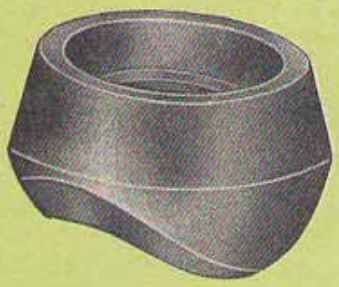
BS 3799

Nominal Pipe size		A	W	E	b		C	F
Equal	Reducing	(min.)	(min.)	(min.)	3000	6000	(min.)	(min.)
6	—	11	26	10	5	2	6	—
8	—	15	36	15	8	6	6	—
—	8 × 6	15	31	15	5	2	6	10
10	—	18	40	16	11	8	8	—
—	10 × 8	18	39	16	8	6	8	15
15	—	22	48	20	14	11	8	—
—	15 × 10	22	44	20	11	8	8	16
—	15 × 8	22	43	20	8	6	8	15
20	—	27	52	21	19	13	10	—
—	20 × 15	27	50	21	14	11	9	20
—	20 × 10	27	46	21	11	8	9	16
25	—	35	60	25	24	17	10	—
—	25 × 20	35	56	25	19	13	10	21
—	25 × 15	35	55	25	14	11	10	20
40	—	50	68	26	38	30	16	—
—	40 × 25	50	67	26	24	17	16	25
—	40 × 20	50	63	26	19	13	16	21
—	40 × 15	50	62	26	14	11	16	20
50	—	62	71	27	49	39	17	—
—	50 × 40	62	70	27	38	30	17	26
—	50 × 25	62	70	27	24	17	18	25
—	50 × 20	62	65	27	19	13	17	21
—	50 × 15	62	65	27	14	11	18	20

NOTE : All dimensions given in millimetre.
All dimensions herein above are nominal and subject to normal manufacturing tolerances.

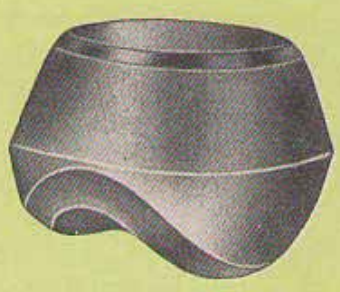
OUR SPECIAL PRODUCTS

Dimensions on Application



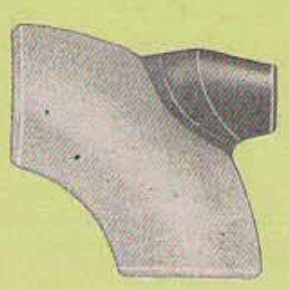
SOKOLET

WELLDOLET

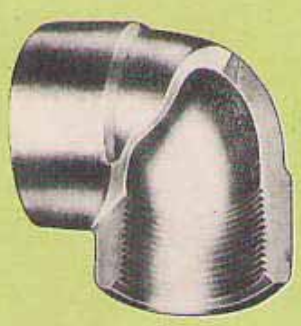


THREADOLET

ELBOWLET

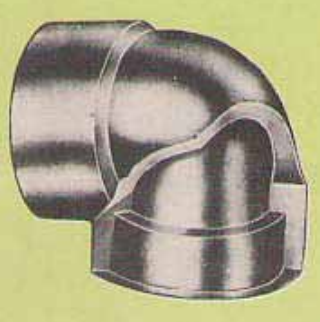


FORGING ADDS STRENGTH



Forged Steel Fittings give users the added assurance of Quality and Reliability, as the process of hot working of the metal in forging the material to the required shape developes maximum resistance in the metal to all types of stresses and strains.

Fittings made from tested quality steel have their inherent physical properties enhanced and improved in all aspects by controlled forging technique, rigid quality control and high standard workmanship.



Fittings by controlled forging operations, further refine to a measurable degree the already uniform grain structure of tested quality steel used in the process.

Fittings have both static and dynamic strength augmented along with toughness, yield point and fatigue resistance due to the improved grain refinement by controlled forging technique.

Fittings with these increased strength and toughness are, therefore, better able to resist shocks, loads, stresses, strains and fatigues imposed on modern piping installations due to temperature extremes, sudden concentration of impact stresses resulting from hydraulic shocks or alternate stress and load cycles characteristic of vibration, and strains where piping change direction.

Grain size before forging

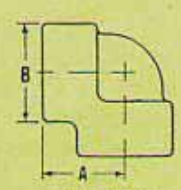
Fittings are accurately machined and are subjected to exacting inspections. Close dimensional accuracy simplifies fabrication, alignment and make up, thereby saving time during erection.

Grain size after forging

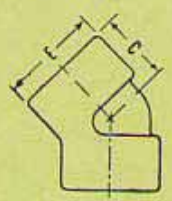
Fittings have smooth inner surface, uniform thickness, circularity and are accurately machined. These factors ensure easy and accurate adjustments and facilitate fabrication of large complicated installations.

A SYMBOL OF QUALITY AND RELIABILITY

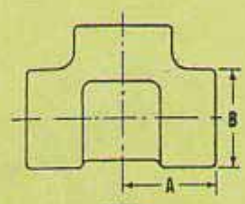
SCREWED FITTINGS



90° ELBOW



45° ELBOW



TEE

2000 POUND

Nominal Pipe Size	90° ELBOW A	B	Approx Weight	45° ELBOW C	E	Approx Weight	TEE A	B	Approx Weight
6	21	22	0.11	17	22	0.06	21	22	0.11
8	21	22	0.11	17	22	0.06	21	22	0.11
10	25	25	0.14	19	25	0.11	25	25	0.14
15	29	33	0.25	22	33	0.20	29	33	0.25
20	33	38	0.31	25	38	0.29	33	38	0.43
25	38	46	0.51	29	46	0.43	38	46	0.65
32	44	56	0.77	33	56	0.63	44	56	0.91
40	51	62	1.02	35	62	0.74	51	62	1.25
50	60	75	1.59	43	75	1.22	60	75	2.10
65	76	92	2.95	52	92	3.52	76	92	3.94
80	86	110	4.76	64	110	5.13	86	110	5.98
100	106	146	10.31	79	146	8.68	106	146	12.36

3000 POUND

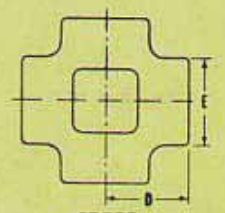
6	21	22	0.11	17	22	0.11	21	22	0.11
8	25	25	0.17	19	25	0.11	25	25	0.17
10	29	33	0.29	22	33	0.23	29	33	0.37
15	33	38	0.60	25	38	0.34	33	38	0.54
20	38	46	0.63	29	46	0.54	38	46	0.85
25	44	56	1.02	33	56	0.85	44	56	1.13
32	51	62	1.25	35	62	0.97	51	62	1.42
40	60	75	1.59	43	75	1.36	60	75	2.27
50	64	84	2.47	45	84	1.93	64	84	3.06
65	83	102	4.86	52	102	3.35	83	102	5.96
80	95	121	6.56	64	121	4.76	95	121	9.24
100	114	152	13.78	79	152	8.65	114	152	17.92

6000 POUND

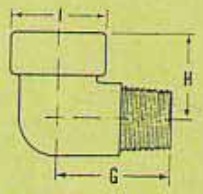
6	25	25	0.11	19	25	0.11	25	25	0.23
8	29	33	0.29	22	33	0.23	29	33	0.45
10	33	38	0.48	25	38	0.23	33	38	0.63
15	38	46	0.74	29	46	0.65	38	46	0.97
20	44	56	1.19	33	56	0.99	44	56	1.65
25	51	62	1.59	35	62	1.22	51	62	2.10
32	60	75	3.06	43	75	2.13	60	75	3.46
40	64	84	3.40	44	84	2.61	64	84	4.37
50	83	102	6.10	52	102	4.31	83	102	8.56
65	95	121	9.47	64	121	6.80	95	121	12.73
80	106	146	15.68	79	146	13.86	106	146	20.70
100	114	152	15.78	79	152	18.65	114	152	27.92

NOTES - All dimensions given in millimetre. Approx. weights given in Kg. 2000 pound fittings may be rated the same as Schedule 40 threaded pipe. 3000 pound fittings may be rated the same as Schedule 80 threaded pipe. 6000 pound fittings may be rated the same as double Extra Strong threaded pipe.
Reducing fittings are furnished by boring and tapping straight size blanks.
All dimensions herein above are nominal. For tolerance please refer page 31.

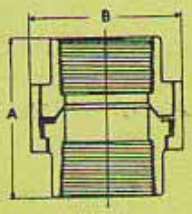
SCREWED FITTINGS



CROSS



STREET ELBOW



UNION

2000 POUND

Nominal Pipe Size	CROSS			STREET ELBOW				UNION		
	D	E	Approx Weight	G	H	I	Approx Weight	A	B	Approx Weight
6	21	22	0.23					42	32	0.14
8	21	22	0.23					44	32	0.14
10	25	25	0.23					51	38	0.20
15	29	33	0.40					54	46	0.34
20	33	38	0.51					57	51	0.43
25	38	46	0.77					69	60	0.65
32	44	56	1.13					72	72	0.97
40	51	62	1.45					80	80	1.25
50	60	75	2.38					89	95	2.01
65	76	92	7.46					113	125	5.50
80	86	110	8.85					130	144	8.00
100	106	146	14.83					150	170	12.80

3000 POUND

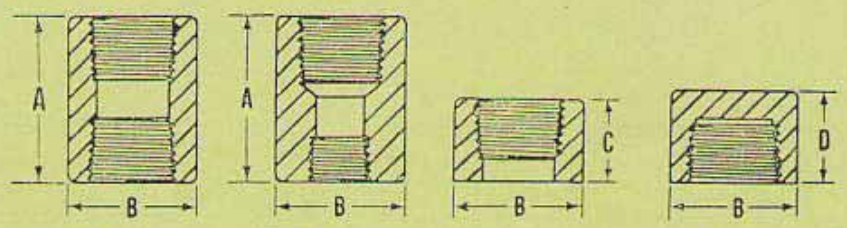
6	21	22	0.20	32	22	27	0.11	42	32	0.14
8	25	25	0.27	32	22	27	0.11	44	32	0.14
10	29	33	0.45	38	25	32	0.17	51	38	0.20
15	33	38	0.68	41	29	38	0.23	54	46	0.34
20	38	46	1.13	48	35	44	0.40	57	51	0.43
25	44	56	1.61	57	44	51	0.65	69	60	0.65
32	51	62	1.87	67	51	62	1.02	72	72	0.97
40	60	75	2.95	71	54	70	1.36	80	80	1.25
50	64	84	3.69	84	64	84	2.35	89	95	2.01
65	83	102	7.60					118	125	5.50
80	95	121	8.96	—	—	—	—	130	144	8.00
100	114	152	14.52	—	—	—	—	150	176	12.80

6000 POUND

6	25	25	0.25	—	—	—	—	44	32	0.45
8	29	33	0.54	38	25	32	0.17	51	38	0.45
10	33	38	0.68	41	29	38	0.20	54	46	0.59
15	38	46	1.25	48	35	44	0.45	57	51	0.85
20	44	56	1.96	57	44	51	0.74	69	60	1.39
25	51	62	2.55	67	51	62	1.13	72	72	1.76
32	60	75	4.88	71	54	70	1.67	80	80	3.01
40	64	84	5.22	84	64	84	2.92	89	95	4.00
50	83	102	10.07	—	—	—	—	118	125	6.10
65	95	121	12.47	—	—	—	—	130	144	9.40
80	106	146	24.50	—	—	—	—	150	176	15.50
100	114	152	34.52	—	—	—	—	—	—	—

NOTES : All dimensions given in millimetre. Approx. weights given in Kg. 2000 pound fittings may be rated the same as Schedule 40 threaded pipe. 3000 pound fittings may be rated the same as Schedule 80 threaded pipe. 6000 pound fittings may be rated the same as Double Extra Strong threaded pipe.
Reducing fittings are furnished by boring and tapping straight size blanks.
All dimensions herein above are nominal. For tolerance please refer page 31

SCREWED FITTINGS



COUPLING | REDUCING COUPLING | HALF COUPLING | CAP

3000 POUND

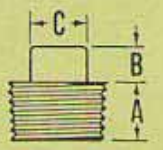
Nominal Pipe Size	Common Diameter	COUPLING		REDUCING COUPLING		HALF COUPLING		CAP	
	B	A	Approx Weight	A	Approx Weight	C	Approx Weight	D	Approx Weight
6	16	32	0.06	—	—	16	0.03	19	0.02
8	19	35	0.06	35	0.06	18	0.03	25	0.03
10	22	38	0.11	38	0.11	19	0.09	25	0.06
15	29	48	0.11	48	0.11	24	0.09	32	0.11
20	35	51	0.20	51	0.20	26	0.11	37	0.14
25	44	60	0.29	60	0.29	30	0.14	41	0.23
32	57	67	0.71	67	0.71	34	0.34	44	0.45
40	64	79	0.99	79	0.99	40	0.51	44	0.74
50	76	86	1.42	86	1.42	43	0.71	48	1.42
65	92	92	1.81	92	1.81	46	0.91	60	2.27
80	108	108	3.06	108	3.06	54	1.53	65	3.86
100	140	121	7.60	121	7.60	61	3.80	68	6.35

6000 POUND

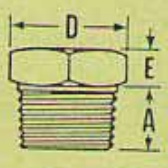
6	22	32	0.09	—	—	16	0.04	—	0.03
8	25	35	0.09	35	0.09	18	0.04	27	0.06
10	32	38	0.11	38	0.11	19	0.06	27	0.11
15	38	48	0.23	48	0.23	24	0.11	33	0.14
20	44	51	0.45	51	0.45	26	0.23	38	0.23
25	57	60	0.97	60	0.97	30	0.48	43	0.48
32	64	67	1.08	67	1.08	34	0.54	46	0.75
40	76	79	1.99	79	1.99	40	0.99	48	1.42
50	92	86	3.52	86	3.52	43	1.76	51	2.27
65	108	92	4.88	92	4.88	46	2.44	64	3.86
80	127	108	6.12	108	6.12	54	3.06	68	6.35
100	159	121	11.11	121	11.11	61	5.56	75	10.43

NOTES . All dimensions given in millimetre. Approx. weights given in Kg.
3000 pound fittings may be rated the same at schedule 80 threaded pipe.
6000 pound fittings may be rated the same as Double Extra Strong threaded pipe.
Screwed Couplings, Reducing Couplings, Half Couplings and Caps are manufactured in 3000 & 6000 Pound classes only.
All items on this page are manufactured from bar stock or forgings, depending upon size and type of fitting.
All dimensions herein above are nominal. For tolerances please refer page 31.

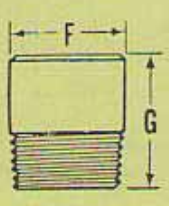
SCREWED FITTINGS



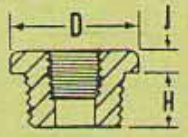
SQUARE HEAD PLUG



HEXAGON HEAD PLUG



ROUND HEAD PLUG



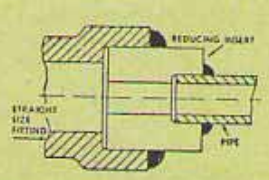
HEXAGON HEAD BUSHING

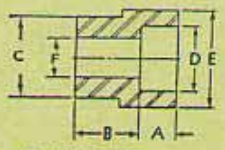
Nominal Pipe Size	Square Head Plug A (Min)	B (Min)	C (Min)	Hexagon Head Plug A (Min)	D (Nom)	E (Min)	Round Head Plug F (Nom)	G (Min)	Hexagon Head Bushing D (Nom)	H (Min)	J (Min)
6	9.5	6	7.0	9.5	11.0	6	10	35	—	—	—
8	11.0	6	9.5	11.0	16.0	6	13	41	16.0	11.0	3
10	12.5	8	11.0	12.5	17.5	8	17	41	17.5	12.5	4
15	14.5	10	14.5	14.5	22.0	8	21	44	22.0	14.5	5
20	16.0	11	16.0	16.0	27.0	10	27	44	27.0	16.0	6
25	19.0	13	20.5	19.0	35.0	10	33	51	35.0	19.0	6
32	20.5	14	24.0	20.5	44.5	14	43	51	44.5	20.5	7
40	20.5	16	28.5	20.5	51.0	16	48	51	51.0	20.5	8
50	22.0	17	33.5	22.0	63.5	17	60	64	63.5	22.0	9
65	27.0	19	38.0	27.0	76.0	19	73	70	76.0	27.0	10
80	28.5	21	43.0	28.5	89.0	21	89	70	89.0	28.5	10
100	32.0	32	63.5	32.0	117.5	25	114	76	117.5	32.0	13

Nominal Pipe Size	APPROX. WEIGHTS			
	Square Head Plug	Hex. Head Plug	Round Head Plug	Hex. Head Bushing
6	0.01	0.03	0.06	—
8	0.01	0.03	0.06	0.03
10	0.03	0.06	0.09	0.03
15	0.06	0.09	0.11	0.03
20	0.09	0.14	0.17	0.06
25	0.14	0.23	0.34	0.09
32	0.25	0.51	0.51	0.17
40	0.40	0.63	0.71	0.31
50	0.68	1.02	1.36	0.74
65	1.02	1.76	2.15	1.08
80	1.31	2.67	3.46	1.59
100	3.26	5.90	5.84	3.77

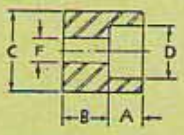
NOTES : All dimensions given in millimetre. Approx weights given in kg.
All items on this page are manufacturered from bar stock or forgings, depending upon size and type of fitting.

SOCKET WELDING REDUCING INSERTS





INSERT TYPE 1

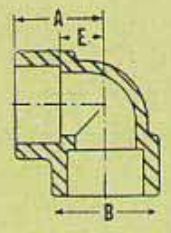


INSERT TYPE 2

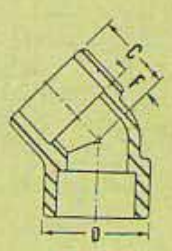
Nominal Pipe Size		Common Dimensions Diameter		3000 POUND					6000 POUND				
				Insert Type	Diameter				Insert Type	Diameter			
		C	D		A	B	E	F		A	B	E	F
15	x 10	21.60	17.55	1	11	24	25	12	1	13	33	29	9
	x 8	21.60	14.10	2	10	16	—	9	1	11	33	29	7
	x 6	21.60	10.65	2	10	16	—	7	1	10	33	29	4
20	x 15	26.90	21.70	1	13	25	32	16	1	14	37	41	12
	x 10	26.90	17.55	2	11	14	—	12	1	13	37	29	9
	x 8	26.90	14.10	2	10	16	—	9	2	11	37	—	7
	x 6	26.90	10.65	2	10	16	—	7	2	10	22	—	4
25	x 20	33.70	27.05	1	14	24	38	21	1	16	41	48	16
	x 15	33.70	21.70	2	13	21	—	16	1	14	43	41	12
	x 10	33.70	17.55	2	11	22	—	12	2	13	22	—	9
	x 8	33.70	14.10	2	10	24	—	9	2	11	24	—	7
32	x 25	42.40	33.80	1	16	27	44	27	1	17	46	57	21
	x 20	42.40	27.05	2	14	21	—	21	1	16	44	51	16
	x 15	42.40	21.70	2	13	22	—	16	2	14	22	—	12
40	x 32	48.50	42.55	1	17	30	54	35	1	19	54	67	29
	x 25	48.50	33.80	2	16	21	—	27	1	17	54	57	21
	x 20	48.50	27.05	2	14	22	—	21	2	16	27	—	16
	x 15	48.50	21.70	2	13	24	—	16	2	14	29	—	12
50	x 40	61.00	48.65	2	19	21	—	41	1	22	51	76	34
	x 32	61.00	42.55	2	17	22	—	35	1	19	51	68	29
	x 25	61.00	33.80	2	16	24	—	27	2	17	22	—	21
	x 20	61.00	27.05	2	14	25	—	21	2	16	24	—	16
	x 15	61.00	21.70	2	13	27	—	16	2	14	25	—	12
65	x 50	73.70	61.10	1	22	49	75	52	1	22	68	89	43
	x 40	73.70	48.65	2	19	44	—	41	2	22	35	—	34
	x 32	73.70	42.55	2	17	46	—	35	2	19	38	—	29
	x 25	73.70	33.80	2	16	44	—	27	2	17	40	—	21
80	x 65	89.70	73.80	1	22	46	92	63	1	25	76	111	54
	x 50	89.70	61.10	2	22	41	—	52	2	22	40	—	43
	x 40	89.70	48.65	2	19	40	—	41	2	22	40	—	34
	x 32	89.70	42.55	2	17	40	—	35	2	19	43	—	29
	x 25	89.70	33.80	2	16	38	—	27	2	17	44	—	21
100	x 80	115.10	89.80	2	29	54	—	78	1	32	86	127	67
	x 65	115.10	73.80	2	22	52	—	63	2	25	44	—	54
	x 50	115.10	61.10	2	22	54	—	52	2	22	48	—	43
	x 40	115.10	48.65	2	19	54	—	41	2	22	48	—	34

NOTES All dimensions given in millimetre. 3000 pound inserts are regularly used for both Schedule 40 and Schedule 80 pipe and warrant the Schedule 80 rating. 6000 pound inserts are regularly used for both Schedule 160 and Double Extra Strong pipe and warrant the Double Extra Strong rating.
All dimensions herein above are nominal. For tolerance please refer page 31

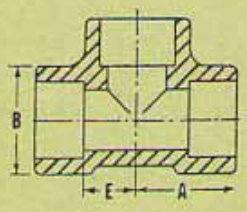
SOCKET WELDING FITTINGS



90° ELBOW



45° ELBOW



TEE

3000 POUND

Nominal Pipe size	Comm. Diameter of Socket Min	Comm. Diameter of Bore Min.	Comm. Diameter of Bore Max.	90° ELBOW A	90° ELBOW B	90° ELBOW E	90° ELBOW Approx. Weight	45° ELBOW C	45° ELBOW D	45° ELBOW F	45° ELBOW Approx. Weight	Tee A	Tee B	Tee E	Tee Approx. Weight
6	10.65	6.1	7.6	21	22	11	0.06	17	22	8	0.06	21	22	11	0.11
8	14.10	8.5	10.0	21	22	11	0.06	17	22	8	0.06	21	22	11	0.11
10	17.55	11.8	13.3	25	25	14	0.11	19	25	8	0.09	25	25	14	0.14
15	21.70	15.0	16.6	29	33	16	0.23	22	33	11	0.20	29	33	16	0.31
20	27.05	20.2	21.7	33	38	19	0.31	25	38	12	0.23	33	38	19	0.40
25	33.80	25.9	27.4	38	46	22	0.48	29	46	14	0.40	38	46	22	0.65
32	42.55	34.3	35.8	44	56	27	0.74	33	56	18	0.59	44	56	27	0.97
40	48.65	40.1	41.7	51	62	32	0.97	35	62	21	0.79	51	62	32	1.11
50	61.10	51.7	53.5	60	75	38	1.61	43	75	25	1.30	60	75	38	2.01
65	73.80	61.2	64.2	76	92	41	2.89	52	92	29	3.35	76	92	41	4.03
80	89.80	76.4	79.5	86	110	57	4.94	64	110	32	5.22	86	110	57	6.21
100	115.45	100.7	103.8	106	146	67	10.75	79	146	41	8.96	106	146	67	12.90

6000 POUND

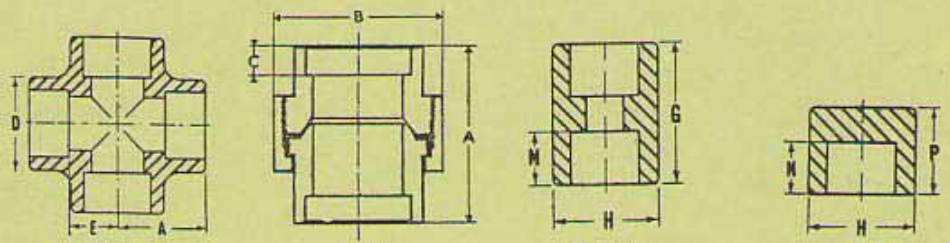
6	10.65	3.2	4.8	21	22	11	0.23	17	22	8	0.25	21	22	11	0.45
8	14.10	5.6	7.1	25	25	14	0.40	19	25	8	0.31	25	25	14	0.48
10	17.55	8.4	9.9	29	33	16	0.23	22	33	11	0.25	29	33	16	0.45
15	21.70	11.0	12.5	33	38	19	0.40	25	38	12	0.31	33	38	19	0.48
20	27.05	14.8	16.3	38	46	22	0.65	29	46	14	0.59	38	46	22	0.93
25	33.80	19.9	21.5	44	56	27	1.13	33	56	18	0.91	44	56	27	1.53
32	42.55	28.7	30.2	51	62	32	1.47	35	62	21	1.19	51	62	32	1.96
40	48.65	33.2	34.7	60	75	38	2.36	43	75	25	2.15	60	75	38	3.54
50	61.10	42.1	43.6	64	84	41	2.89	45	84	29	267	64	84	41	3.94

9000 POUND

15	21.70	5.6	7.2	33	38	19	0.60	25	38	12	0.47	33	38	19	0.72
20	27.05	10.3	11.8	38	46	22	0.95	29	46	14	0.89	38	46	22	1.40
25	33.80	14.5	16.0	44	56	27	1.70	33	56	18	1.37	44	56	27	2.30
32	42.55	22.0	23.5	51	62	32	2.20	35	62	21	2.79	51	62	32	2.94
40	48.65	27.2	28.7	60	75	38	3.54	43	75	25	3.23	60	75	38	5.31
50	61.10	37.4	38.9	64	84	41	4.34	45	84	29	4.00	64	84	41	5.91

NOTES : All dimensions given in millimetre. Approx. weights given in Kg.
3000 pound fittings are regularly used for both Schedule 40 and Schedule 80 pipe and warrant the Schedule 80 rating.
6000 pound fittings are regularly used for Schedule 160 pipe and warrant the Schedule 160 rating.
9000 pound fittings are regularly used for Schedule XXS pipe and warrant the Schedule XXS rating.
Reducing fittings are furnished by boring straight size blanks.
For tolerance please refer page 31.

SOCKET WELDING FITTINGS



CROSS UNION COUPLING CAP

3000 POUND

Nominal Pipe size	CROSS				UNION				COUPLING*				CAP			
	A	D	E	Approx. Weight	A	B**	C	Approx. Weight	G	H	N	Approx. Weight	H	N	P	Approx. Weight
6	21	22	11	0.14	42	32	10	0.15	25	19	10	0.06	19	10	16	0.06
8	21	22	11	0.14	44	32	10	0.15	25	22	10	0.06	22	10	17	0.06
10	25	25	14	0.14	51	38	10	0.28	29	25	11	0.09	25	11	19	0.09
15	29	33	16	0.37	54	46	10	0.38	35	32	13	0.11	32	13	22	0.11
20	33	38	19	0.51	57	51	13	0.45	38	38	14	0.17	38	14	25	0.17
25	38	46	22	0.71	69	60	13	0.71	44	45	16	0.34	45	16	27	0.20
32	44	56	27	1.11	72	72	13	1.20	46	56	17	0.51	56	17	30	0.48
40	51	62	32	1.47	80	80	13	1.50	51	63	19	0.59	63	19	33	0.54
50	60	75	38	2.49	89	95	16	2.58	64	75	22	0.91	75	22	40	0.91
65	76	92	41	7.17	118	125	16	6.10	64	92	22	1.49	92	22	43	1.36
80	86	110	57	9.16	130	144	16	8.79	70	110	25	2.07	110	25	49	2.10
100	106	146	67	14.29	150	176	20	13.49	76	138	29	3.91	138	29	55	3.86

6000 POUND

6	21	22	11	0.45	44	32	10	0.51	25	19	10	0.05	19	11	24	0.05
8	25	25	14	0.45	51	38	10	0.51	25	25	10	0.10	25	11	24	0.10
10	29	33	16	0.45	54	46	10	0.65	29	28	11	0.17	28	11	24	017
15	33	38	19	0.54	57	51	10	0.91	35	34	13	0.23	34	13	25	017
20	38	46	22	1.13	69	60	13	1.81	38	40	14	0.34	40	14	27	0.29
25	44	56	27	1.81	72	72	13	2.00	44	50	16	0.71	50	16	32	0.54
32	51	62	32	2.33	80	80	13	2.49	48	59	17	0.82	59	17	35	0.63
40	60	75	38	4.08	89	95	13	3.90	51	67	19	1.36	67	19	38	1.02
50	64	84	41	4.31	118	125	16	6.49	64	83	22	2.15	83	22	46	1.31

9000 POUND

15	33	38	19	1.24	57	51	10	0.98	35	40	13	0.23	40	13	27	0.30
20	38	46	22	2.04	69	60	13	1.90	38	48	14	0.34	48	14	32	0.55
25	44	56	27	2.60	72	72	13	2.10	44	56	16	0.71	56	16	35	0.65
32	51	62	32	4.17	80	80	13	2.60	48	67	17	0.82	67	17	38	1.05
40	60	75	38	5.25	89	95	13	4.10	51	74	19	1.36	74	19	46	1.35
50	64	84	41	10.05	118	125	16	6.60	64	90	22	2.15	90	22	51	2.95

NOTES : All dimensions given in milimetre. Approx-weights given in Kg.

Half Couplings and Reducing couplings are available with same overall dimensions as straight couplings.

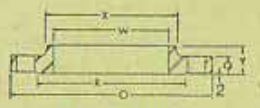
3000 pound fittings are regularly used for both Schedule 40 and Schedule 80 pipe and warrant the Schedule 80 rating.

6000 pound fittings are regularly used for Schedule 160 pipe and warrant the Schedule 160 rating.

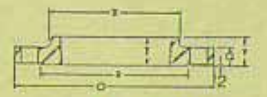
9000 pound fittings are regularly used for Schedule XXS pipe and warrant the Schedule XXS rating.

All Unions are with Octagonal Nuts. For common dimensions see Page 23

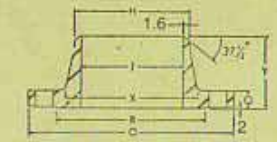
FORGED SLIPON RAISED FACE, SCREWED, SOCKET WELD WELDING NECK OR BLANK FLANGES



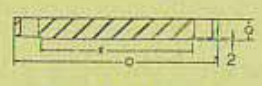
SLIPON FLANGE



SCREWED FLANGE



WELDING NECK FLANGE



BLANK FLANGE

ANSI B 16.5 **150 Lb.**

Nominal Pipe Size	Slipon, Screwed, Welding Neck or Blank Flange			Slipon, Screwed, Socket Weld and Welding Neck Flange				Welding Neck Flange			Drilling Template				
	Outside Dia. of flange	Minimum Thickness of flange *	Dia. of Raised Face	Dia. of hub at base	Length thru hub or total length (Incase of slipon, scrd. & SW flanges) *	Minimum thrd. length (In case of scrd. flange)	Minimum Dia. of bore (In case of Slipon flange)	Dia. of hub at point of Welding	Length thru hub or total length *	Dia of Bore **	No. of holes	Dia. of Bolt Holes	Dia. of Bolt circle	Length of Stud Bolts***	
	O	Q	R	X	Y	T	W	H	Y	J				2 Raised face	Ring joint
15	89	11.2	35	30	15.7	15.7	22.4	21	47.8	15.7	4	15.7	60.5	57.2	—
20	99	12.7	43	38	15.7	15.7	27.7	27	52.3	20.8	4	15.7	69.9	63.5	—
25	108	14.2	51	49	17.5	17.5	34.5	33	55.6	26.7	4	15.7	79.2	63.5	76.2
32	117	15.7	64	59	20.6	20.6	43.2	42	57.2	35.1	4	15.7	88.9	69.9	82.5
40	127	17.5	73	65	22.4	22.4	49.5	48	62.0	40.9	4	15.7	98.5	69.9	82.5
50	152	19.1	92	78	25.4	25.4	62.0	60	63.5	52.6	4	19.1	120.7	82.6	95.3
65	178	22.4	105	90	28.4	28.4	74.7	73	69.9	62.7	4	19.1	139.7	88.9	101.6
80	191	23.9	127	108	30.2	30.2	90.7	89	69.9	78.0	4	19.1	152.4	88.9	101.6
90	216	23.9	140	122	31.8	31.8	103.4	102	71.4	90.2	8	19.1	177.8	88.9	101.6
100	229	23.9	157	135	33.3	33.3	116.1	114	76.0	102.4	8	19.1	190.5	88.9	108.0
125	254	23.9	186	164	36.6	36.6	143.8	141	88.9	128.3	8	22.4	215.9	95.3	114.3
150	279	25.4	216	192	39.6	39.6	170.7	168	88.9	154.2	8	22.4	241.3	101.6	114.3
200	343	28.4	270	246	44.5	44.5	221.5	219	101.6	202.7	8	22.4	298.5	108.0	120.7
250	406	30.2	324	305	49.3	49.3	276.4	273	101.6	254.5	12	25.4	362.0	127.0	114.3
300	483	31.8	381	365	55.6	56.5	327.2	324	114.3	304.8	12	25.4	431.8	120.7	133.4
350	533	35.1	413	400	57.2	57.2	359.2	356	127.0	To be specified by buyer	12	28.4	476.3	133.4	146.1
400	597	36.6	470	457	63.5	63.5	410.5	406	127.0		16	28.4	539.8	133.4	146.1

Notes : All dimensions given in millimetre.

* The 2 mm Raised Face is included in the Thickness.

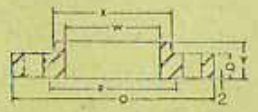
** Unless otherwise ordered, Flanges are bored to these dimensions which correspond to the I.D. of standard weight pipe as listed in American Standard B-36.10.

*** These lengths include thickness of two nuts but not height of crown.
No counter bore is required on 150 lb threaded flange.
Unless otherwise mentioned all dimensions herein above are nominal. For tolerance please refer page 32

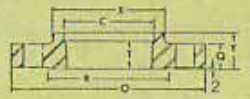
In case of **Socket Weld Flanges** the following dimensions to be considered, All other dimensions remain unchanged.

Size (NPS)	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**
Socket Depth	10	11	13	14	16	18	19	21
Socket Bore (min)	21.70	27.05	33.80	42.55	48.65	61.01	73.80	89.80
Inside Drill (Nom)	16	21	27	35	41	52	63	78

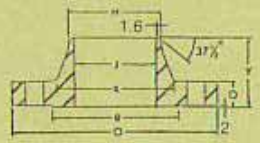
FORGED SLIPON RAISED FACE, SCREWED, SOCKET WELD WELDING NECK OR BLANK FLANGES



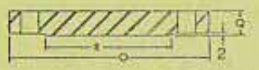
SLIPON FLANGE



SCREWED FLANGE



WELDING NECK FLANGE



BLANK FLANGE

ANSI B 16.5 **300 Lb.**

Nominal Pipe Size	Slipon, Screwed, Welding Neck or Blank Flange			Slipon, Screwed, Socket Weld and Welding Neck Flange					Welding Neck Flange			Dia of Bolt Holes Drilling Template				
	Outside Dia of flange	Minimum thickness of flange	Dia. of Raised Face	Dia. of hub at base	Length thru hub or total length (In case of slipon scrd. and SW flanges) *	Dia of Counter bore (In case of scrd. flange)	Minimum thrd. length (In case of scrd. flange)	Minimum Dia. of bore (In case of Slipon flange)	Dia. of hub at point of Welding	Length thru hub or total length *	Dia of Bore **	No. of holes	Dia. of Bolts Holes	Dia. of Bolt circle	Length of Stud Bolts***	
															2 Raised face	Ring joint
	D	Q	R	X	Y	C	T	W	H	Y	J					
15	95	14.2	35	38	22.4	23.6	15.7	22.3	21	52.3	15.7	4	15.7	66.5	63.5	76.2
20	117	15.7	43	48	25.4	29.0	15.7	27.7	27	57.2	20.8	4	19.1	82.6	76.2	88.9
25	124	17.5	51	54	26.9	35.8	17.5	34.5	33	62.0	26.7	4	19.1	88.9	76.2	88.9
32	133	19.1	64	64	26.9	44.5	20.6	43.2	42	65.0	35.1	4	19.1	98.6	82.6	95.3
40	155	20.6	73	70	30.2	50.5	22.4	59.5	48	68.3	40.9	4	22.4	114.3	88.9	101.6
50	165	22.4	92	84	33.3	63.5	28.4	62.0	60	69.9	52.6	8	19.1	127.0	88.9	101.6
65	191	25.4	105	100	38.1	76.2	31.8	74.7	73	76.2	62.7	8	22.4	149.4	101.6	114.3
80	210	28.4	127	117	42.9	92.2	31.8	90.7	89	79.2	78.0	8	22.4	168.1	108.0	120.7
90	229	30.2	140	133	44.5	104.9	36.8	103.4	102	81.0	90.2	8	22.4	184.2	108.0	127.0
100	254	31.8	157	146	47.8	117.6	36.8	116.1	114	85.9	102.4	8	22.4	200.2	114.3	127.0
125	279	35.1	106	178	50.8	144.5	42.9	143.8	141	98.6	128.3	8	22.4	235.0	120.7	133.4
150	318	36.6	216	206	52.3	171.5	46.0	170.7	168	98.6	154.2	12	22.4	269.7	120.7	139.7
200	381	41.1	270	260	62.0	222.3	50.8	221.5	219	111.3	202.7	12	25.4	330.2	139.7	152.4
250	445	47.8	324	321	66.5	276.4	55.6	276.4	273	117.3	254.5	16	28.4	387.4	158.8	171.5
300	521	50.8	381	375	73.2	328.7	60.5	327.2	324	130.0	304.8	16	31.8	450.9	171.5	184.2
350	584	53.8	413	425	76.2	360.4	63.5	359.2	356	142.7	To be specified by buyer	20	31.8	514.6	177.8	190.1
400	648	57.2	470	583	82.6	411.2	68.3	410.5	406	146.1		20	35.0	571.5	190.5	203.2

Notes : All dimensions are in millimetre. * The 2 mm Raised Face is included in the Thickness.
Thread lengths are proportionately longer than required for API Line Pipe threads (API-6A) and American Standard pipe threads (B-2.1) and satisfy the general requirements for longer threads for the higher pressures.

** Unless otherwise mentioned Flanges are bored to these dimensions which correspond to the I.D. of standard weight pipe as listed in American Standard B-36.10.

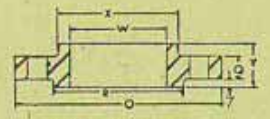
*** These lengths include thickness of two nuts but not height of crown.

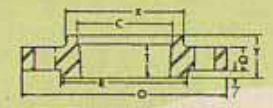
unless otherwise mentioned all dimensions herein above are nominal. For tolerance please refer page 32.

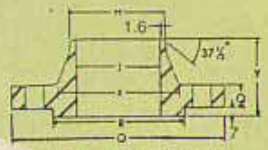
In case of **Socket Weld Flanges** the following dimensions to be considered, All other dimensions remain unchanged.

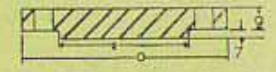
Size (NPS)	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**
Socket Depth	10	11	13	14	16	18	19	21
Socket Bore (min)	21.70	27.05	33.80	42.55	48.65	61.10	73.80	89.80
Inside Drill (Nom)	16	21	27	35	41	52	63	78

FORGED SLIPON RAISED FACE, SCREWED, SOCKET WELD WELDING NECK OR BLANK FLANGES


SLIPON FLANGE


SCREWED FLANGE


WELDING NECK FLANGE


BLANK FLANGE

ANSI B 16.5 **600 Lb.**

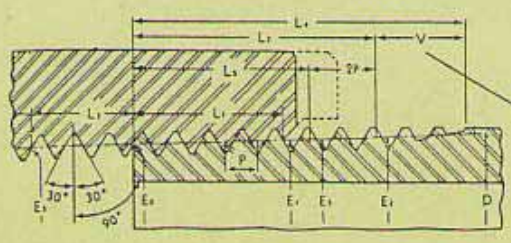
Nominal Pipe Size	Slipon, Screwed, Welding Neck or Blank Flange			Slipon, Screwed, Socket Weld and Welding Neck Flange					Welding Neck Flange			Dia of Bolt Holes Drilling Template				
	Outside Dia. of flange	Minimum Thickness of flange *	Dia. of Raised Face	Dia. of hub at base	Length thru hub or total length (In case of slipon scrd. and SW flanges) *	Dia of Counter bore (In case of scrd. flange)	Minimum thrd. length (In case of scrd. flange)	Minimum Dia. of bore (In case of Slipon flange)	Dia. of hub at point of Welding	Length thru hub or total length *	Dia of Bore	No. of holes	Dia. of Bolts Holes	Dia. of Bolt circle	Length of Stud Bolts**	
															7 Raised face	Ring joint
	O	Q	R	X	Y	C	T	W	H	Y	J					
15	95	14.2	35	38	22.4	23.6	15.7	22.4	21	52.3	To be specified by the purchaser	4	15.8	66.6	76	76
20	117	15.7	43	48	25.4	29.0	15.7	27.7	27	57.2		4	19.1	82.6	89	89
25	124	17.5	51	54	26.9	35.8	17.5	34.5	33	62.0		4	19.1	88.9	89	89
32	133	20.6	64	64	28.4	44.5	20.6	43.2	42	66.5		4	19.1	98.6	95	95
40	155	22.4	73	70	31.8	50.6	22.4	49.5	48	69.9		4	22.4	114.3	108	108
50	165	25.4	92	84	36.6	63.5	28.4	62.0	60	73.2		8	19.1	127.0	108	108
65	191	28.4	105	100	41.1	76.2	31.8	74.7	73	79.2		8	22.4	149.4	121	121
80	210	31.8	127	117	46.0	92.2	35.1	90.7	89	82.6		8	22.4	168.1	127	127
90	229	35.1	140	133	49.3	104.9	39.6	103.4	102	85.9		8	25.4	184.2	140	140
100	273	38.1	157	152	53.9	117.6	41.1	116.1	114	101.6		8	25.4	215.9	146	146
125	330	44.5	186	189	60.5	144.5	47.8	143.8	141	114.3		8	28.4	266.7	165	165
150	356	47.8	216	222	66.5	171.5	50.8	170.7	168	117.3		12	28.4	292.1	172	172
200	419	55.6	270	273	76.2	222.2	57.2	221.5	219	133.4		12	31.8	349.3	191	197
250	508	63.5	324	343	85.9	276.4	65.0	276.4	273	152.4		16	35.1	431.8	216	216
300	559	66.5	381	400	92.0	328.7	69.9	327.2	324	155.4		20	35.1	489.0	222	222
350	603	69.9	413	432	93.7	360.4	73.2	359.2	356	165.1		20	38.1	527.1	235	235
400	686	76.2	470	495	106.4	411.2	77.7	410.5	406	177.8		20	41.1	603.3	254	254

Notes : All dimensions are in millimetre. * The 7 mm Raised Face is **not** included in the Thickness (Q).
Thread lengths are proportionately longer than required for API Line Pipe threads (API-6A) and American Standard pipe threads (B-2.1) and satisfy the general requirements for longer threads for the higher pressures.
** These lengths include thickness of two nuts but not height of crown.
unless otherwise mentioned all dimensions herein above are nominal. For tolerance please refer page 32.

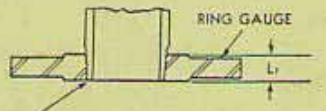
In case of **Socket Weld Flanges** the following dimensions to be considered, All other dimensions remain unchanged.

Size (NPS)	**15**	**20**	**25**	**32**	**40**	**50**	**65**	**80**
Socket Depth	10	11	13	14	16	18	19	21
Socket Bore (min)	21.70	27.05	33.80	42.55	48.65	61.10	73.80	89.80
Inside Drill (Nom)	12	16	21	30	34	43	To be specifid by the purchaser	

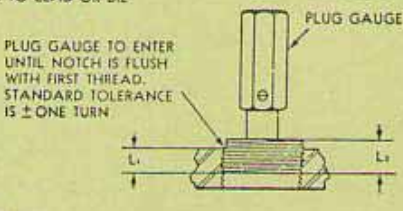
THREAD STANDARDS FOR FORGED STEEL FITTINGS



IMPERFECT THREADS DUE TO LEAD OR DIE



GAUGE TO GO ON FLUSH BY HAND. STANDARD TOLERANCE IS ± ONE TURN



0.8P = THREAD DEPTH – AMER. STD.
0.760P = THREAD DEPTH – A.P.I. STD.
TOTAL TAPER 19.1 PER 304.8 mm
(MEASURED ON DIAMETER)

Nominal Pipe Size (NPS)	Outside Diametre of Pipe (NOM) D	Threads per 25.4 mm N	Pitch of Thread P	Pitch Diameter at beginning of external Threads E_0	Handtight Engagement		Effective Thread External		Wrench Make-up length for internal thread		Overall length external Thread
					Length L_1*	Pitch Diameter E_1	Length L_2†	Pitch Diameter E_2	Length L_3	Pitch Diameter E_3	L_4
6	10	27	.9398	9.2329	4.572	9.5199	6.7031	9.6520	2.8219	9.0576	9.9670
8	14	18	1.4122	12.1260	5.080	12.4435	10.2057	12.7635	4.2342	11.8618	15.1028
10	17	18	1.4122	15.5448	6.096	15.9258	10.3581	16.1925	4.2342	15.2806	15.2552
15	21	14	1.8136	19.2634	7.620	19.7714	13.5560	20.1117	5.4432	18.9230	19.8501
20	27	14	1.8136	24.5796	8.611	25.1181	13.8608	25.4457	5.4432	24.2392	20.1549
25	33	11½	2.2098	30.8254	10.160	31.4604	17.3431	31.9100	6.6269	30.4114	25.0063
32	42	11½	2.2098	39.5503	10.668	40.2184	17.9527	40.6730	6.6269	39.1363	25.6159
40	48	11½	2.2098	45.6209	10.668	46.2864	18.3769	46.7690	6.6269	45.2069	26.0401
50	60	11½	2.2098	57.6326	11.074	58.3260	19.2100	58.8340	6.6269	57.2186	26.8783
65	73	8	3.175	69.0753	17.323	70.1599	28.8925	70.8812	6.3500	68.6791	39.9085
80	89	8	3.175	84.8512	19.456	86.0679	30.4800	86.7562	6.3500	84.4550	41.4960
90	102	8	3.175	97.4725	20.853	98.7755	31.7500	99.4562	6.3500	97.0763	42.7660
100	114	8	3.175	110.0938	21.438	111.4323	33.0200	112.1410	6.3500	109.6975	44.0360

NOTES : Data per American Standard B 2.1 — 1945 (For Taper Pipe Threads) and API Standard 6-A (for line pipe threads). † Also Length lof Plug Guage. *Length of ring gauge and length from gauging notch to small end of plug gauge. The American Standard Pipe Thread and the API Standard Line Pipe Thread and interchangeable.
All dimensions given in millimetre

DIMENSIONAL TOLERANCES

For Seamless Steel Butt-Welding Fittings to ANSI B16.9 & B16.28

WALL THICKNESS

The wall thickness of fitting at any point shall not be less than 87½% of the nominal thickness.

OUTSIDE DIAMETER

The outside diameter of fittings at beginning of bevel :

For sizes up to and including 90 NPS		+ 1.0	—	1.0
For sizes	100 NPS	+ 2.0	—	1.0
For sizes	125 NPS and 150 NPS	+ 3.0	—	1.0
For sizes	200 NPS	+ 2.0	—	2.0
For sizes	250 NPS to 450 NPS	+ 4.0	—	3.0
For size	500 NPS to 600 NPS	+ 6.0	—	5.0

INSIDE DIAMETER

The inside diameter of fittings at welding ends :

For sizes up to and including 65 mm	± 0.8
For size 80 NPS to 200 NPS	± 1.6
For sizes 250 NPS to 450 NPS	± 3.2
For sizes 500 NPS to 600 NPS	± 4.8

CENTRE TO END OF 90° & 45° ELBOWS & TEES, END TO END OF REDUCERS

For sizes up to and including 250 NPS	± 2.0
For sizes 300 NPS through 600 NPS	± 3.0

OVERALL LENGTH OF WELDING CAPS

Overall length dimension :

For sizes up to and including 100 NPS	± 4.0
For sizes 125 NPS through 600 NPS	± 7.0

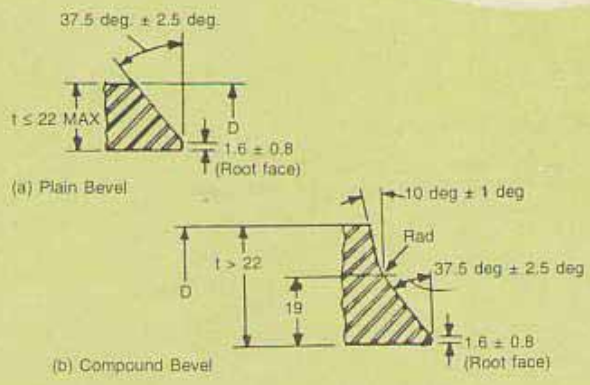
BACK TO FACE, ALIGNMENT OF ENDS, CENTRE TO CENTRE OF 180° RETURNS

Back-to-face dimension :	
For all sizes	± 7.0
Alignment of ends :	
For sizes up through 200 NPS	± 1.0
For sizes 250 NPS through 600 NPS	± 2.0
Centre-to-centre dimension :	
For sizes up to and including 200 NPS	± 7.0
For sizes 250 NPS through 600 NPS	± 10.0

END TO END, FILLET RADIUS, LAP THICKNESS & OUTSIDE DIAMETER OF LAP JOINT STUB ENDS

End-to-end dimension :			
For sizes up to and including 250 NPS	± 2.0		
For sizes 300 NPS through 600 NPS	± 3.0		
Fillet radius :			
For sizes up to and including 90 NPS	+ 0	—	1.0
For sizes 100 NPS through 600 NPS	+ 0	—	2.0
Thickness of lap :			
For all sizes	+ 2.0	—	0
Outside diameter of lap :			
For sizes up to and including 200 NPS	+ 0	—	1.0
For sizes 250 NPS through 600 NPS	+ 0	—	2.0
Outside diameter of barrel :			
For sizes 25 NPS through 40	+ 0.40	—	0.80
For sizes 50 NPS through 100 NPS	+ 0.80	—	0.80
For sizes 125 NPS through 200 NPS	+ 1.60	—	0.80
For sizes 250 NPS through 450 NPS	+ 2.40	—	0.80
For size 500 NPS through 600 NPS	+ 3.20	—	0.80

WELDING BEVEL STANDARDS

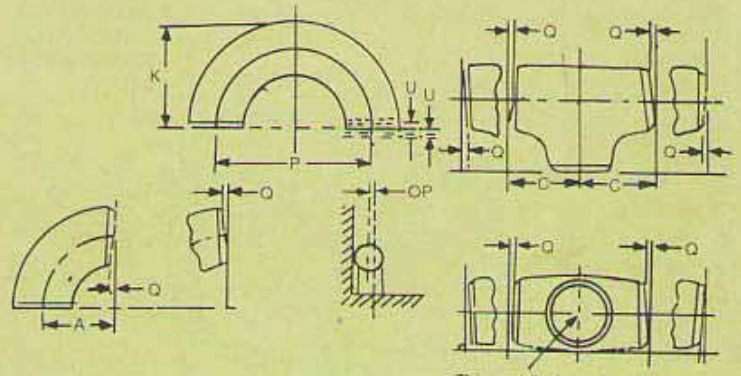


Nominal Wall thickness	End Preparation
Less than x [Note (2)]	Cut square or slightly Chamfer, at manufacturer's option.
x to incl. 22 [Note (2)]	Plain bevel as in sketch (a) above.
More than 22	Compound bevel as in sketch (b) above.

NOTES : (1) Dimensions are in millimetres.

(2) x = 3 for carbon steel or ferritc alloy steel and for austenitic alloy steel and 4 for austenitic alloy steel.

TOLERANCES (CONT'D)



Nominal Pipe size (NPS)			Angularity Tol.	
			Off Angle *Q*	Off Plane *OP*
15	to	100	1	2
125	to	200	2	4
250	to	300	3	5
350	to	400	3	7
450	to	600	4	10

GENERAL NOTE : Dimensions are in millimetres. Tolerances are equal plus and minus except as noted.

NOTES : (1) Out-of-round is the sum of absolute values of plus and minus tolerance.
(2) The inside diameter at ends and the nominal wall thicknesses are to be specified by the purchaser.
(3) Unless otharwise specified by the purchaser, these tolerances apply to the nominals inside diameter which equals the difference between the nominal outside diameter and twice the nominal wall thickness.
(4) 'U' Alignments of Ends, for tolerance please refer page 29.

DIMENSIONAL TOLERANCES

For Forged Steel Screwed and socket Welding Fittings to ANSI B 16.11

CENTRE TO BOTTOM OF SOCKET

For Sizes 6 NPS and 8 NPS	± 0.8
For Sizes 10 NPS 15 NPS and 20 NPS	± 1.5
For Sizes 25 NPS 32 NPS 40 NPS and 50 NPS	± 2
For Sizes 65 NPS and larger	± 2.5

BOTTOM TO BOTTOM OF SOCKETS COUPLINGS

For Sizes 6 NPS and 8 NPS	± 1.5
For Sizes 10 NPS, 15 NPS and 20 NPS	± 3
For Sizes 25 NPS, 40 NPS, and 50 NPS	± 4
For Sizes 65 NPS and larger	± 5

BOTTOM OF SOCKET TO OPPOSITE FACE HALF COUPLINGS

For Sizes 6 NPS and 8 NPS	± 0.8
For Sizes 10 NPS, 15 NPS and 20 NPS	± 1.5
For Sizes 25 NPS, 32 NPS, 40 NPS and 50 NPS	± 2
For Sizes 65 NPS and larger	± 2.5

AMERICAN STANDARD B-16.11

This standard covers the following range of sizes for use with Schedules 40 and 80 pipe as of the publication date of this catalogue.

90° and 45° Elbows	6 NPS through 100 NPS
Tees	6 NPS through 100 NPS
Crosses	6 NPS through 100 NPS
Couplings	6 NPS through 100 NPS

Sizes 15 NPS through 80 NPS are included for use with Schedule 160 pipe. Fittings for use with Double Extra Strong pipe are not included in this standard.

BORE DIAMETER OF SOCKET

For Sizes 50 NPS and smaller	— 0 + 0.25
For Sizes 65 NPS and larger	— 0 + 0.35

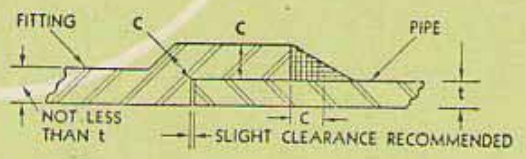
CONCENTRICITY OF BORES

The socket and fitting bores shall be concentric within a tolerance of ± 0.8 for all sizes.

COINCIDENCE OF AXES

The maximum allowable variation in the alignment of the socket and fitting bore axes shall be 1.5 mm in 304.8 mm.

FILLET WELD DIMENSIONS



C—Minimum = 1.25t (but not less than 4.0 mm.)
t = Minimum Pipe Wall Thickness.

Minimum requirements for socket and fillet weld dimensions as prescribed in the American Standard Code for Pressure Piping, ASA B31.1.

DIMENSIONAL TOLERANCES

For Forged Steel Flanges to ANSI B 16.5

OUTSIDE DIAMETER

When O.D. is 610 mm or less	± 2
When O.D. is over 610 mm	± 3

INSIDE DIAMETER

Threaded

To Standard Gauge Limits

Slip-On, Lap Joint

250 NPS and smaller	+ 1	—	0
300 NPS and larger	+ 2	—	0

Welding Neck,

250 NPS and smaller	± 0.8		
300 NPS to 450 mm	± 1.6		
500 NPS and larger	+ 3.2	—	1.6

DIAMETER OF CONTACT FACE

2 mm Raised Face	± 1
7 mm Raised face, Tongue and Groove Male or Female	± 0.5

DIAMETER OF COUNTERBORE

Threaded

250 NPS and smaller	+ 1	—	0
300 NPS and larger	+ 2	—	0

FLANGE THICKNESS

450 NPS and smaller	+ 3	—	0
Over 450 NPS	+ 5	—	0

HUB

Welding Neck

Outside Diameter of Hub at Point of Weld

125 NPS and smaller	+ 2.4	—	0.8
150 NPS and larger	+ 4	—	0.8

Thickness of Hub at Point of Weld

Not less than 871/2% of the nominal thickness of the pipe to which the flange is to be attached.

DRILLING

Bolt Circle	± 2
Bolt Hole Spacing	± 0.8

Eccentricity of Bolt Circle and Facing

With respect to bore

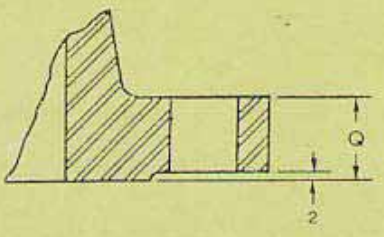
65 NPS and smaller	± 1
80 NPS and larger	± 2

OVERALL HEIGHT

Threaded, Slip-On, Lap Joint, Blind, Socket Welding	
All sizes	± 2
Welding Neck	
250 NPS and smaller	± 2
300 NPS and larger	± 3

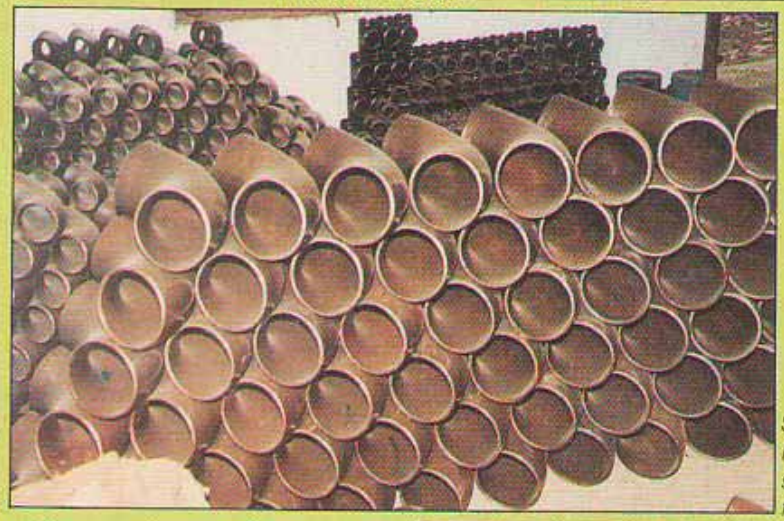
FACING

150 and 300 lb. Standard



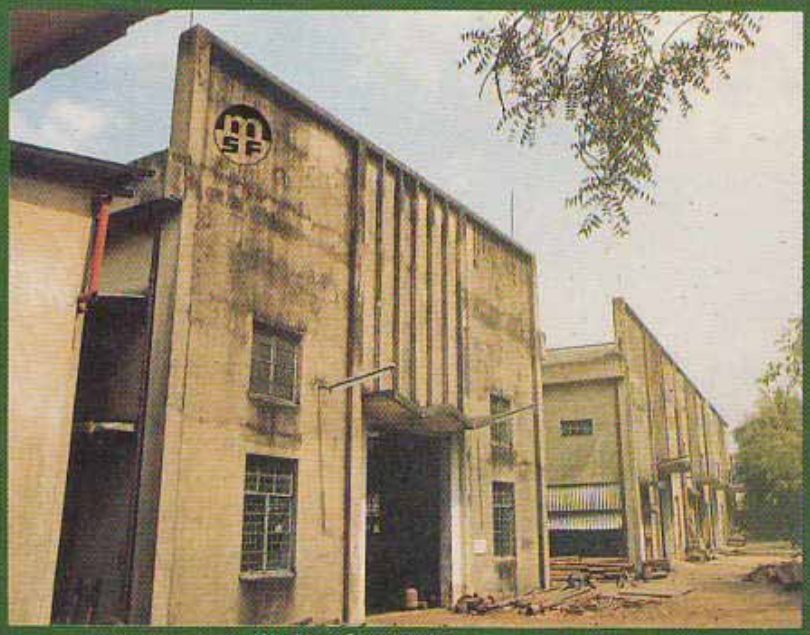
2 mm raised face is standard for class 150 lb & 300 lb only and is included in the flange thickness "Q".

Perfect angle, correct centre to face & contour are ensured to facilitate easy installation at Site



Symmetrical Bore, Uniform Thickness, Proper Bevelled angle beside smooth surface finish are some of the salient features of our fittings

Stores available of the shelves



Working Sheds of the Factory

A SYMBOL OF QUALITY AND RELIABILITY

ESTABLISHED-1957