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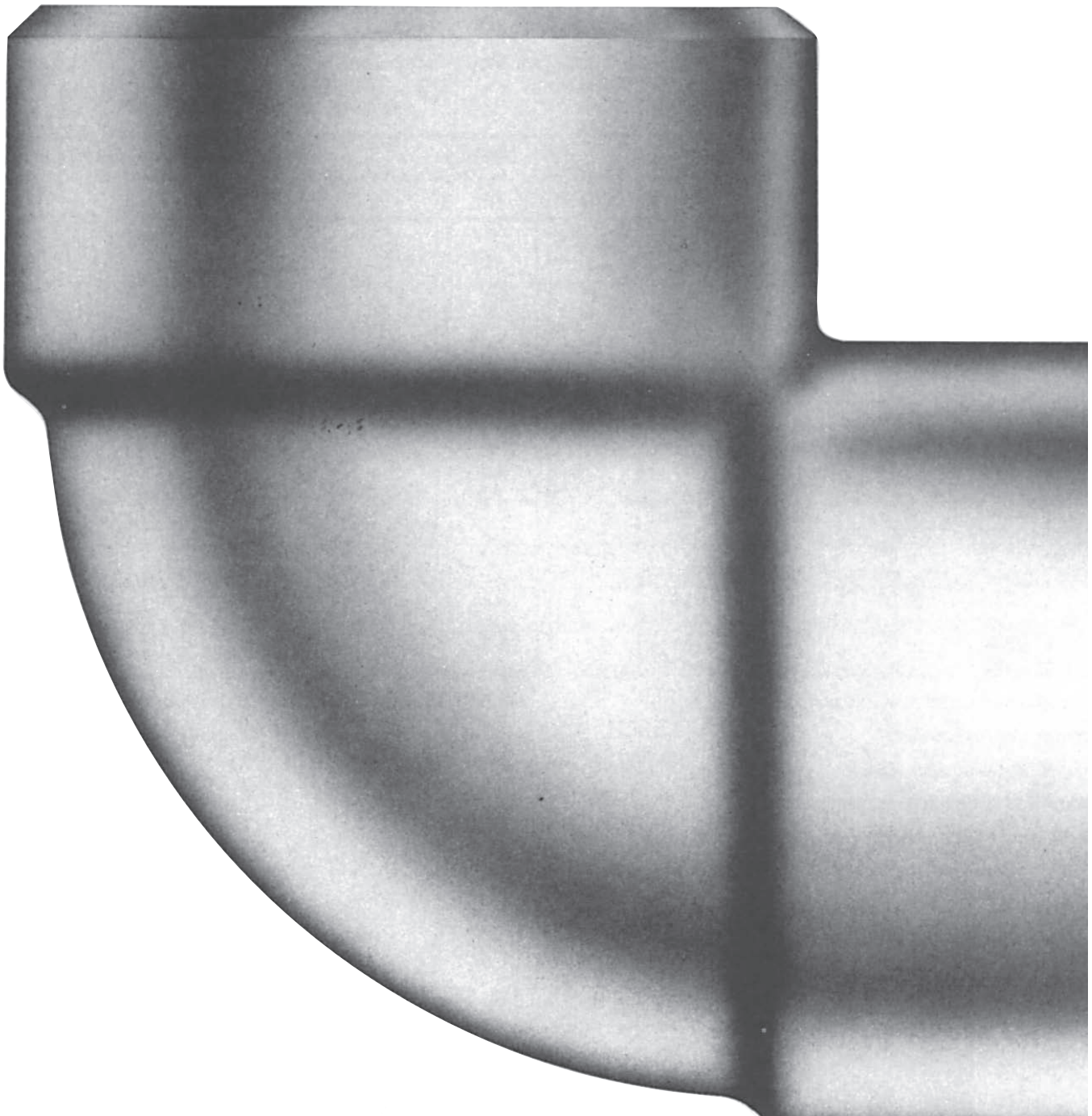
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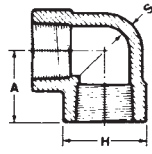
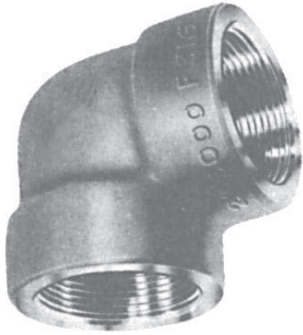
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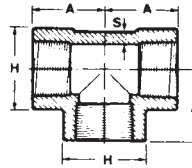
**FORGED STAINLESS & ALLOY STEEL
Threaded and Socket Welding
FITTINGS & UNIONS**



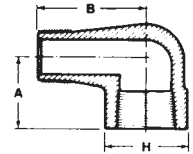
INCHES/METRIC



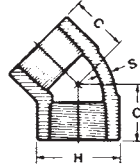
90° ELBOW



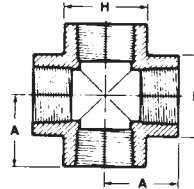
TEE



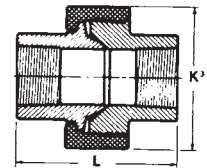
² STREET ELBOW



45° ELBOW



CROSS



² UNION

NPS	DN	ELBOWS				TEES	CROSSES					² UNIONS	
		CLASS 2000				CLASS 3000							
		A	C	H	S min.	A	B	C	H	S min.	L	K	
1/8	3	.81	.69	.88	.125	.81	1	.69	.88	.125	1.88	1.44	
1/4	6	.81	.69	.88	.125	.97	1.25	.75	1.00	.130	1.88	1.44	
3/8	10	.97	.75	1.00	.125	1.12	1.5	.88	1.31	.138	2.03	1.81	
1/2	15	1.12	.88	1.31	.125	1.31	1.62	1.00	1.50	.161	2.19	1.88	
3/4	20	1.31	1.00	1.50	.125	1.50	1.88	1.12	1.81	.170	2.31	2.19	
1	25	1.50	1.12	1.81	.145	1.75	2.25	1.31	2.19	.196	2.44	2.69	
1 1/4	32	1.75	1.31	2.19	.153	2.00	2.5	1.38	2.44	.208	2.78	3.16	
1 1/2	40	2.00	1.38	2.44	.158	2.38	2.81	1.69	2.97	.219	3.12	3.38	
2	50	2.38	1.69	2.97	.168	2.50	3.31	1.72	3.31	.281	3.56	4.12	
		60	43	75	4.5	64	84	45	84	7.0	90.4	104.6	

¹ Class 3000 Laterals are available on request.

² Not covered by ANSI B16.11

³ Measured across octagon flats

For weights of fittings, refer to back cover.

Sizes other than those shown are available on request.

CLASS 2000, 3000

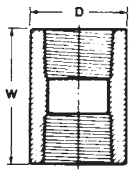
Approximate Weights

THREADED FITTINGS¹

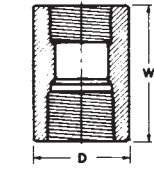
ASME B16.11

ANSI B2.1

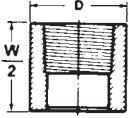
ASTM A-182



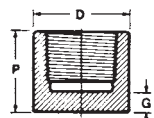
COUPLING



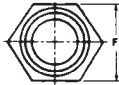
REDUCING COUPLING



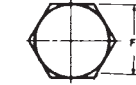
HALF COUPLING



CAP



HEX HEAD BUSHING



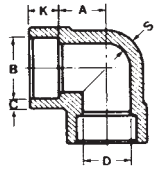
HEX HEAD PLUG



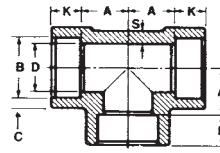
ROUND HEAD PLUG

NPS	DN	COUPLINGS, CAPS				BUSHINGS, PLUGS						THREAD LENGTH J min.
		CLASS 3000				HEX HEAD BUSHING		HEX HEAD PLUG		ROUND HEAD PLUG		
		W	D	P	G min.	F	M min.	F	R min.	T min.	E	
1/8	3	1.25	.62	.75	.19	.44	-	.44	.25	1.38	.41	.38
1/4	6	1.38	.75	1.00	.19	.62	.12	.62	.25	1.62	.53	.44
3/8	10	1.50	.88	1.00	.19	.69	.16	.69	.31	1.62	.69	.50
1/2	15	1.88	1.12	1.25	.25	.88	.19	.88	.31	1.75	.84	.56
3/4	20	2.00	1.38	1.44	.25	1.06	.22	1.06	.38	1.75	1.06	.62
1	25	2.38	1.75	1.62	.38	1.38	.25	1.38	.38	2.00	1.31	.75
1 1/4	32	2.62	2.25	1.75	.38	1.75	.28	1.75	.56	2.00	1.69	.81
1 1/2	40	3.12	2.50	1.75	.44	2.00	.31	2.00	.62	2.00	1.91	.81
2	50	3.38	3.00	1.88	.50	2.50	.34	2.50	.69	2.50	2.38	.88
		86	76	48	12.5	63.5	9	63.5	17	64	60	22.0

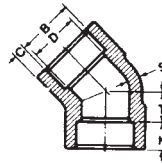
Note: ANSI does not assign any Class rating to Bushings and Plugs.



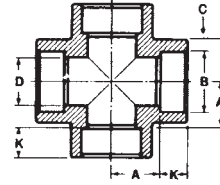
90° ELBOW



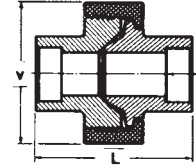
TEE



45° ELBOW



CROSS



* UNION

ELBOWS		TEES				CROSSES			UNIONS	
NPS	DN	² B min.	K min.	³ D min.	C min.	¹ A	T	S min.	L	†v
1/8	3	.420	.38	.239	.125	.44	.31	.095	1.88	1.44
		10.65	10	6.1	3.20	11.0	8.0	2.40	47.8	36.6
1/4	6	.555	.38	.334	.130	.44	.31	.119	1.88	1.44
		14.10	10	8.5	3.30	11.0	8.0	3.00	47.8	36.6
3/8	10	.690	.38	.463	.138	.53	.31	.126	2.03	1.81
		17.55	10	11.8	3.50	13.5	8.0	3.20	51.6	46.0
1/2	15	.855	.38	.592	.161	.62	.44	.147	2.19	1.88
		21.70	10	15.0	4.10	15.5	11.5	3.75	55.6	47.8
3/4	20	1.065	.50	.794	.168	.75	.50	.154	2.31	2.19
		27.05	13	20.2	4.25	19.5	12.5	3.90	58.7	55.6
1	25	1.330	.50	1.019	.196	.88	.56	.179	2.44	2.69
		33.80	13	25.9	5.00	22.0	14.0	4.55	62.0	68.3
1 1/4	32	1.675	.50	1.350	.208	1.06	.69	.191	2.78	3.16
		42.55	13	34.3	5.30	27.0	17.0	4.85	70.6	80.3
1 1/2	40	1.915	.50	1.580	.218	1.25	.81	.200	3.12	3.38
		48.65	13	40.1	5.55	32.0	21.0	5.10	79.2	85.8
2	50	2.406	.62	2.037	.238	1.25	1.00	.218	3.56	4.12
		61.10	16	51.7	6.05	32.0	25.0	5.55	90.4	104.6

* Not covered by ANSI.B16-11.
 † Measured across octagon flats.

Tolerances:

¹ A	NPS	1/8-1/4	± .03
	DN	3-6	± .8
¹ T	NPS	3/8-3/4	±.06
	DN	10-20	±1.5
	NPS	1-2	±.08
	DN	25-50	±2.0

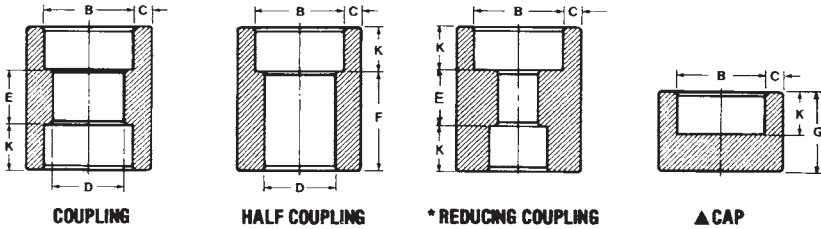
² B	NPS	1/8-2	+0.01-0
	DN	3-50	+0.25-0

³ D	NPS	1/8-2	+0.06-0
	DN	3-50	+1.5-0

INCHES
 MILLIMETRES

CLASS 3000 Forged Stainless & Alloy Steel

*SOCKET WELDING FITTINGS ANSI B16.11 ASTM A-182



COUPLING

HALF COUPLING

*REDUCING COUPLING

▲CAP

ELBOWS		TEES			CROSSES		UNIONS	
NPS	DN	$2B$ min.	$3E$	$4F$	K min.	$2D$ min.	C min.	G
1/8	3	.420	.25	.62	.38	.239	.125	.63
1/4	6	.555	.25	.62	.38	.334	.130	.69
3/8	10	.690	.25	.69	.38	.463	.138	.75
1/2	15	.855	.38	.88	.38	.592	.161	.88
3/4	20	1.065	.38	.94	.50	.794	.168	1.00
1	25	1.330	.50	1.12	.50	1.019	.196	1.06
1 1/4	32	1.675	.50	1.19	.50	1.350	.208	1.19
1 1/2	40	1.915	.50	1.25	.50	1.580	.218	1.25
2	50	2.406	.75	1.62	.62	2.037	.238	1.5
		61.10	19.0	41.0	16	51.7	6.05	38.1

* Class 6000 Socket Welding Fittings in grades A182-F11 and F22 are available from stock.

Class 3000 Laterals are available on request.

▲ Socket Welding Caps are not specified in ANSI B16.11.

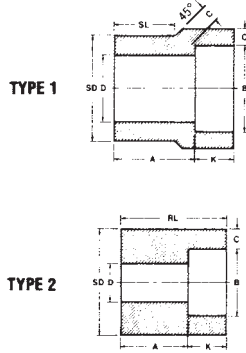
For weights refer to back cover.

Sizes other than those shown are available on request.

Tolerances:

$3E$	NPS	1/8-1/4	$\pm .06$	$4F$	NPS	1/8-1/4	$\pm .03$
	DN	3-6	± 1.5		DN	3-6+	± 1.0
	NPS	3/8-3/4	$\pm .12$		NPS	3/8-3/4	$\pm .06$
	DN	10-20	± 3.0		DN	10-20	± 1.5
	NPS	1-2	$\pm .16$		NPS	1-2+	$\pm .08$
	DN	25-50	± 4.0		DN	25-50	± 2.0

To minimize the possibility of cracking of the fillet welds, it is recommended that the pipe be withdrawn approximately .06 in. (1.5 mm) away from contact with the bottom of the socket before starting the weld.



Class 3000 Forged Stainless & Alloy Steel *SOCKET-WELDING REDUCER INSERTS MSS SP-79 ASTM A-182

NPS	DN	SOCKET		SHANK	CLASS 3000 FOR USE WITH SCH. 40 & 80 PIPE					
		DJA. 2B	DEPTH K min.	DIA. 4SD	TYPE	1A	3D	C min.	SL	RL
1/2 x 1/4		.560	.38	.840	1	.81	.36	.149	.62	-
15 x 6		14.22	9.52	21.34	1	20.6	9.14	3.78	15.75	-
3/4 x 1/2		.860	.38	1.050	1	.88	.62	.184	.69	-
20 x 15		21.84	9.52	26.67	1	22.2	15.75	4.67	17.53	-
3/4 x 1/4		.560	.38	1.050	2	.69	.36	.149	-	1.06
20 x 6		14.22	9.52	26.67	2	17.5	9.14	3.78	-	26.92
1 x 3/4		1.070	.50	1.315	1	.94	.82	.193	.75	-
25 x 20		27.18	12.70	33.40	1	23.8	20.83	4.90	19.05	-
1 x 1/2		.860	.38	1.315	2	.62	.62	.184	-	1.12
25 x 15		21.84	9.52	33.40	2	15.8	15.75	4.67	-	28.45
1 x 1/4		.560	.38	1.315	2	.75	.36	.149	-	1.12
25 x 6		14.22	9.52	33.40	2	19.0	9.14	3.78	-	28.45
1 1/4		1.335	.50	1.660	1	1.00	1.05	.224	.81	-
32 x 25		33.91	12.70	42.16	1	25.4	26.67	5.69	20.57	-
1 1/4 x 3/4		1.070	.50	1.660	2	.69	.82	.193	-	1.25
32 x 20		27.18	12.70	42.16	2	17.5	20.88	4.90	-	31.75
1 1/4 x 1/2		.860	.38	1.660	2	.75	.62	.184	-	1.25
32 x 15		21.84	9.52	42.16	2	19.0	15.75	4.67	-	31.75
1 1/2 x 1 1/4		1.680	.50	1.900	1	1.12	1.38	.239	.88	-
40 x 32		42.67	12.7	48.26	1	28.5	35.05	6.07	22.22	-
1 1/2 x 1		1.335	.50	1.900	2	.69	1.05	.224	-	1.31
40 x 25		33.91	12.7	48.26	2	17.5	26.67	5.69	-	33.27
1 1/2 x 3/4		1.070	.50	1.900	2	.75	.82	.193	-	1.31
40 x 20		27.18	12.7	48.26	2	19.0	20.83	4.90	-	33.27
1 1/2 x 1/2		.860	.38	1.900	2	.81	.62	.184	-	1.31
40 x 15		21.84	9.52	48.26	2	20.6	15.75	4.67	-	33.27
2 x 1 1/2		1.920	.50	2.375	1	1.25	1.61	.250	1.00	-
50 x 40		48.77	12.70	60.32	1	31.7	40.89	6.35	25.40	-
2 x 1 1/4		1.680	.50	2.375	2	.81	1.38	.239	-	1.50
50 x 32		42.67	12.70	60.32	2	20.6	35.05	6.07	-	38.1
2 x 1		1.335	.50	2.375	2	.88	1.05	.224	-	1.50
50 x 25		33.91	12.70	60.32	2	22.2	26.67	5.69	-	38.1
2 x 3/4		1.070	.50	2.375	2	.94	.82	.193	-	1.50
50 x 20		27.18	12.70	60.32	2	23.8	20.83	4.90	-	38.1
2 x 1/2		.860	.38	2.375	2	1.00	.62	.184	-	1.50
50 x 15		9.52	60.32	2	25.4	15.87	4.67	-	-	38.1

Note: Socket-Welding Reducer Inserts of sizes and reductions other than those shown are available on request.

Tolerances:

Laying Length ^{1A}

NPS	3/8 thru 3/4	-0 + .06
DN	1-2	-0 + 1.5
NPS	1-2	-0 + .08
DN	2-50	-0 + 2.0

Socket Diameter ^{2B}

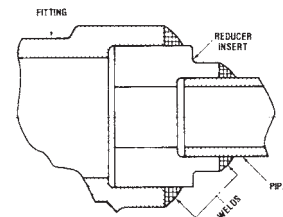
NPS	3/8 thru 2	± .005
DN	10-50	± .13

Socket Diameter ^{3D}

NPS	3/8 thru 2	± .03
DN	10-50	± .76

Shank Diameter ^{4SD}

NPS	1/4 thru 1 1/2	± .01
DN	6-40	± .26
NPS	2-3	± .02
DN	50-80	± .51



To minimize the possibility of cracking of the fillet welds, it is recommended that the shank portion of the reducer be withdrawn approximately 0.06 in (1.5 mm) away from contact with the bottom of the socket before starting the weld. Likewise the pipe is to be kept away from contacting the bottom of the reducer socket before welding.

INCHES
MILLIMETRES

MATERIAL AND MANUFACTURING SPECIFICATIONS

STANDARDS

WESTLUND FORGED AND ALLOY STEEL THREADED AND SOCKET WELDING FITTINGS are manufactured in accordance with the following industry standards:

MATERIAL: ASTM A-182 DIMENSIONS: ANSI B16.11 THREADS: ANSI/ASME ANSI B2.1
MSS SP-79

MATERIALS

The properties of the most widely used grades of stainless and alloy steels are shown in this chart. WESTLUND Fittings are also available in other grades of ASTM A-182.

ASTM A-182 GRADE	MECHANICAL				*CHEMICAL							
	TENSILE STRENGTH ksi min. (MPa min.)	YIELD STRENGTH ksi min. (MPa min.)	EL. 2 in. 50 MM min. %	REDUCTION OF AREA min. %	C	Mn	P	S	Si	Ni	Cr	Mo
F5	70 (483)	40 (276)	20	35	.15	.30-.60	.030	.030	.50	.50	4.0-6.0	.44-.65
F11	70 (483)	40 (276)	20	30	.10-.20	.30-.80	.040	.040	.50-1.0	-	1.0-1.5	.44-.65
F22	75 (517)	45 (310)	20	30	.15	.30-.60	.040	.040	.50	-	2.0-2.5	.87-1.13
F304	75 (517)	30 (207)	30	50	.08	2.0	.040	.030	1.0	8.0-11.0	18.0-20.0	-
F304H	75 (517)	30 (207)	30	50	.04-.10	2.0	.040	.030	1.0	8.0-11.0	18.0-20.0	-
F304L	70 (483)	25 (172)	30	50	.035	2.0	.040	.030	1.0	8.0-13.0	18.0-20.0	-
F316	75 (517)	30 (207)	30	50	.08	2.0	.040	.030	1.0	10.0-14.0	16.0-18.0	2.0-3.0
F316H	75 (517)	30 (207)	30	50	.04-.10	2.0	.040	.030	1.0	10.0-14.0	16.0-18.0	2.0-3.0
F316L	70 (483)	25 (172)	30	50	.035	2.0	.040	.030	1.0	10.0-15.0	16.0-18.0	2.0-3.0

* Maximum values except as indicated.

For the approximate grade of stainless or alloy steel for use with corrosive liquids and gases at various temperatures and pressures, consult your nearest WESTLUND office.

PRESSURE RATINGS

Correlation of Fittings Class with Schedule Number or Wall Designation of Pipe (for Calculation of Ratings)

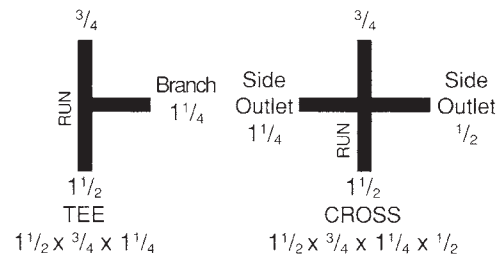
PRESSURE CLASS DESIGNATION OF FITTING	TYPE OF FITTING	PIPE USED FOR RATING BASIS		This table is not intended to restrict the use of pipe of thinner walls with fittings.
		SCHEDULE NO.	WALL DESIGNATION	
2000	Threaded	80	XS	
3000	Threaded	160	-	
3000	Socket-Welding	80	XS	

*REDUCED FITTINGS

Method of designating outlets of reducing Tees and Crosses.

In the case of reducing tees and crosses the size of the largest run opening shall be given first, followed by the size of the opening at the opposite end of the run. Where the fitting is a tee, the size of the branch is given last. Where the fitting is a cross, the largest side-outlet is the third dimension given, followed by the opening opposite.

*Reducing Tees, elbows and crosses, both Socket-Welding and Threaded, are available on request. Alternatively, reductions may be achieved with the use of Socket Welding Reducer inserts, or Hexagon (Threaded) Bushings.



IDENTIFICATION, MARKINGS

WESTLUND FORGED STAINLESS AND ALLOY STEEL FITTINGS are clearly marked, wherever the size and the nature of the fitting permits, for quick and accurate reference as to size, pressure class, and material.

Approximate Weights

THREADED FITTINGS pages 2 and 3

NPS	DN	CLASS 2000				CLASS 3000												
		90°	45°	TEE	CROSS	90°	45°	TEE	CROSS	STREET ELBOW	▲COUPLING	HALF COUPLING	CAP	UNION	HEX. HEAD PLUG	HEX.* BUSHING	ROUND HEAD PLUG	
1/8		.25	.19	.31	.5	.25	.19	.31	.5	.2	.13	.06	.06	.38	.03	-	.13	
	3	.1	.09	.14	.23	.1	.09	.14	.23	.09	.06	.03	.03	.17	.01	-	.06	
1/4		.25	.19	.25	.44	.31	.31	.44	.5	.25	.13	.06	.06	.45	.06	.02	.13	
	6	.1	.09	.1	.2	.14	.14	.2	.23	.1	.06	.03	.03	.2	.03	.01	.06	
3/8		.31	.25	.38	.56	.46	.5	.81	.94	.4	.19	.12	.12	.5	.10	.05	.18	
	10	.14	.1	.17	.25	.25	.23	.36	.42	.18	.09	.05	.05	.23	.05	.02	.08	
1/2		.5	.44	.63	.75	.88	.75	1.1	1.4	.6	.25	.13	.25	1	.17	.10	.25	
	15	.23	.2	.3	.34	.4	.34	.5	.6	.27	.11	.06	.11	.45	.08	.08	.11	
3/4		.69	.63	.94	1.1	1.4	1.2	1.8	2.4	.88	.45	.25	.38	1.3	.32	.20	.38	
	20	.3	.3	.42	.5	.6	.54	.8	1.1	.4	.2	.11	.17	.6	.14	.09	.17	
1		1	.88	1.4	1.6	2.2	1.9	2.6	3.6	1.7	.8	.44	.63	2	.48	.42	.75	
	25	.45	.4	.6	.7	1	.9	1.2	1.6	.8	.36	.2	.28	.9	.22	.19	.34	
1 1/4		1.5	1.4	2	2.5	2.8	2.2	3.4	4.3	2.3	1.6	.8	1.1	2.3	.95	.65	1.1	
	32	.7	.6	.9	1.1	1.3	1	1.5	1.9	1	.72	.36	.5	1.0	.43	.29	.5	
1 1/2		2.2	1.8	2.8	3.4	5.3	4	6.8	7.5	4.3	2.3	1.1	1.5	3.4	1.4	.8	1.6	
	40	1	.8	1.3	1.5	2.4	1.8	3.1	3.4	1.9	1	.5	.7	1.5	.6	.36	.7	
2		3.4	2.8	5.0	5.4	5.5	4.2	8.5	8.4	5.1	3.6			3.1	5.8	2.3	3	
	50	1.5	1.3	2.0	2.4	2.5	1.9	3.8	3.8	2.3	1.6			1.4	2.6	1	.8	1.4

*For smallest reduction

SOCKET WELDING FITTINGS pages 2 and 3

NPS	DN	CLASS 3000							
		90°	45°	TEE	CROSS	▲COUPLING	HALF COUPLING	CAP	UNION
1/8		.25	.13	.31	.44	.09	.12	.06	.38
	3	.1	.06	.14	.2	.04	.05	.03	.17
1/4		.19	.13	.25	.38	.12	.12	.12	.5
	6	.09	.06	.11	.17	.05	.05	.05	.23
3/8		.25	.19	.31	.5	.19	.19	.19	.63
	10	.11	.09	.14	.23	.09	.09	.09	.28
1/2		.5	.44	.63	.75	.38	.44	.25	1.2
	15	.23	.2	.28	.34	.17	.2	.11	.54
3/4		.69	.56	.88	1.1	.44	.56	.31	1.5
	20	.3	.25	.4	.5	.2	.25	.14	.7
1		1.1	.94	1.3	1.6	.63	.81	.56	2.3
	25	.5	.4	.6	.7	.28	.36	.25	1
1 1/4		1.6	1.3	2	2.6	1	1.2	.88	2.8
	32	.7	.6	.9	1.2	.45	.54	.4	1.3
1 1/2		2.3	1.8	2.6	3.8	1.2	1.4	1.2	4
	40	1	.8	1.2	1.7	.54	.63	.5	1.8
2		3.5	2.8	4.3	5.8	2.1	2.5	1.9	6.5
	50	1.6	1.3	1.9	2.6	.95	1.1	.9	2.9

The International System (SI) metric equivalent of

British units are shown throughout this catalogue.

NPS (Nominal Pipe Size) = DN* (Nominal Diameter)

Operating Pressure Class = PN* (Pressure Number)

1 inch = 25.4 millimetres

1 pound, weight = 0.4536 kilograms

1 pound, pressure = 0.06895 bars

*From the SI designations, Diamètre Nominal and Pression Nominale.

▲ For approximate weight of Reducing Couplings, use that of a full coupling equal to the large end size.

CATALOGUE SECTION 14

Although great care has been taken in compiling the information contained in this catalogue, WESTLUND does not accept responsibility for the consequences of any errors, nor for the effects of any subsequent changes made by the various sources of data.

POUNDS
KILOGRAMS