

Your Trusted Partner For Quality, Reliability & Dependability



An ISO 9001 certified company SOONSteel International Pte Ltd, is a master stockist and prime leader for the highest quality and most reliable line-pipes, fittings and flanges. SOONSteel has been in business since 1983, serving major international clients in the global oil and gas, petrochemical and energy industries, and had been an authorised distributor for the major mills recognised by the industries since then. SOONSteel's dedication and total commitment to serve the industries is shown through the diversified and comprehensive inventory with a value close to S\$45,000,000, housed in the upgraded 170,000 sq.ft. office, and warehouse facility equipped with the latest innovation in material handling managements. Material grade commonly available would be in Carbon Steel, Stainless Steel and Low Temperature Carbon Steel. The information herein would provide you with an indication of the comprehensiveness of the piping components available.

Whatever your piping needs be, SOONSteel is able to meet and cater to your requirements, irrespective of the material grades or piping specification.

SOONSteel, your one-stop piping solution and partner for quality, reliability and dependability.

MISSION

To Be A World-Class Stockist and Distributor Of Renowned High Quality Piping Products.

VISION

To Establish Ourselves In The Global Energy Industry As A Trusted Name Synonymous With Products Of The Highest Performance Standards.

Italy

USA

Germany

Austria

Spain

France

Japan

UK

Korea

Thailand





ANSI B36.10/B36.19

STOCK AVAILABILITY

Carbon Steel – 1/2" to 24" (Seamless)
 Stainless Steel – 1/2" to 12" (Seamless)
 Low Temperature – 1/2" to 24" (Seamless)



Wall Thickness

Sch.10, 20, 30, 40, 80, 100, 120, 160, STD, XS and XXS Sch.10S, 40S, 80S, 160, XXS

Material Grades Available

- ASME/ASTM SA/A53 / 106 Gr.B / API 5L Gr.B / X42
- ASME/ASTM SA/A333 Gr.6
- ASME/ASTM SA/A312 TP304/304L
- ASME/ASTM SA/A312 TP316/316L
- ASME/ASTM SA/A312 TP321
- API 5L Gr. X52



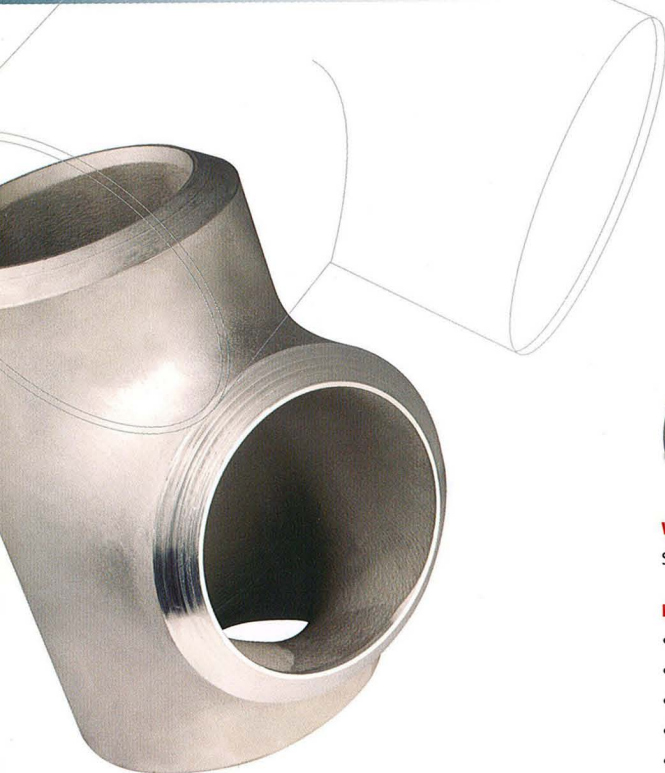


BUTT-WELD FITTINGS

ANSI B16.9/B16.28

STOCK AVAILABILITY

1/2" to 42" Elbows 45 & 90 Degree Long & Short Radius
 1/2" to 42" Tees Equal & Reducing
 1/2" to 8" 180 Degree Return Bends Long & Short Radius
 1/2" to 36" Reducers Concentric and Eccentric
 1/2" to 42" Caps



Wall Thickness

Sch.10, 20, 30, 40, 80, 100, 120, 160, STD, X5 and XXS

Material Grades Available

- ASME/ASTM SA/A234 WPB
- ASME/ASTM SA/A420 WPL6
- ASME/ASTM SA/A403 WP304/L
- ASME/ASTM SA/A403 WP316/L
- ASME/ASTM SA/A860 WPHY52 MSS-SP75



FORGED FLANGES

ANSI B16.5/BS3293/B16.47 – "A or B"/API-6A (Type 6B & 6BX)

STOCK AVAILABILITY

1/2" to 36" – Class 150 1/2" to 36" – Class 300
 1/2" to 30" – Class 600 1/2" to 24" – Class 900
 1/2" to 24" – Class 1500 1/2" to 12" – Class 2500
 3.1/8" to 7.1/16" – API 3000# to API 10,000#



Wall Thickness

Sch.10, 20, 30, 40, 80, 100, 120, 160, STD, XS and XXS

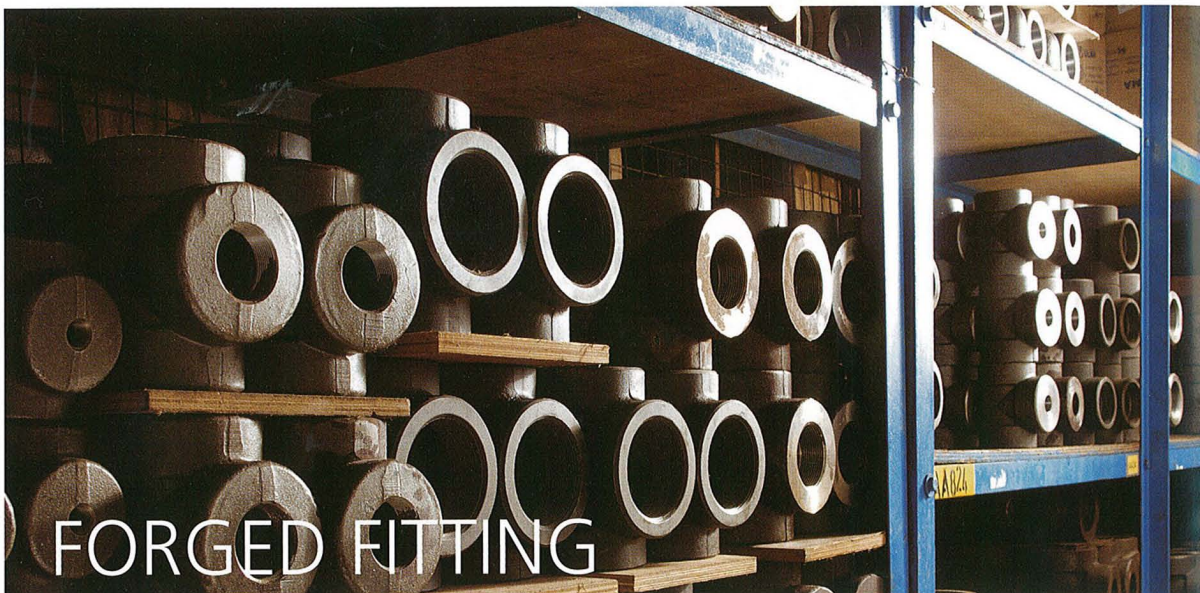
Type

Welding Neck – Blind – Slip On – Threaded – Socket Weld – Lap Joint – Hanger – Reducing Cover – Long Weld Neck – Swivel Ring – Spectacle Blind – Spade Blind – Spacer Ring

Material Grades Available

- ASME/ASTM SA/A105N
- ASME/ASTM SA/A350 LF2
- ASME/ASTM SA/A182 F304/L
- ASME/ASTM SA/A182 F316/L





FORGED FITTING

ANSI B16.11/Threading To ANSI B1.20.1

STOCK AVAILABILITY

Elbow 45 & 90 Degree – Street Elbow – Coupling Full, Half & Reducing – Tee Equals & Reducing – Union – Union Male x Female – Cap – Boss – Plug Hex Head, Round Head & Square Head – Hex Nipple & Reducing – Hex Bushing – Cross – Reducing Insert – Bull Plug – Swage Nipples – Concentric & Eccentric as per B53799 and Mfrs. Standard (1/2" to 4" PBE/TBE, Sch80/160/XXS) – Pipe Nipples Seamless.

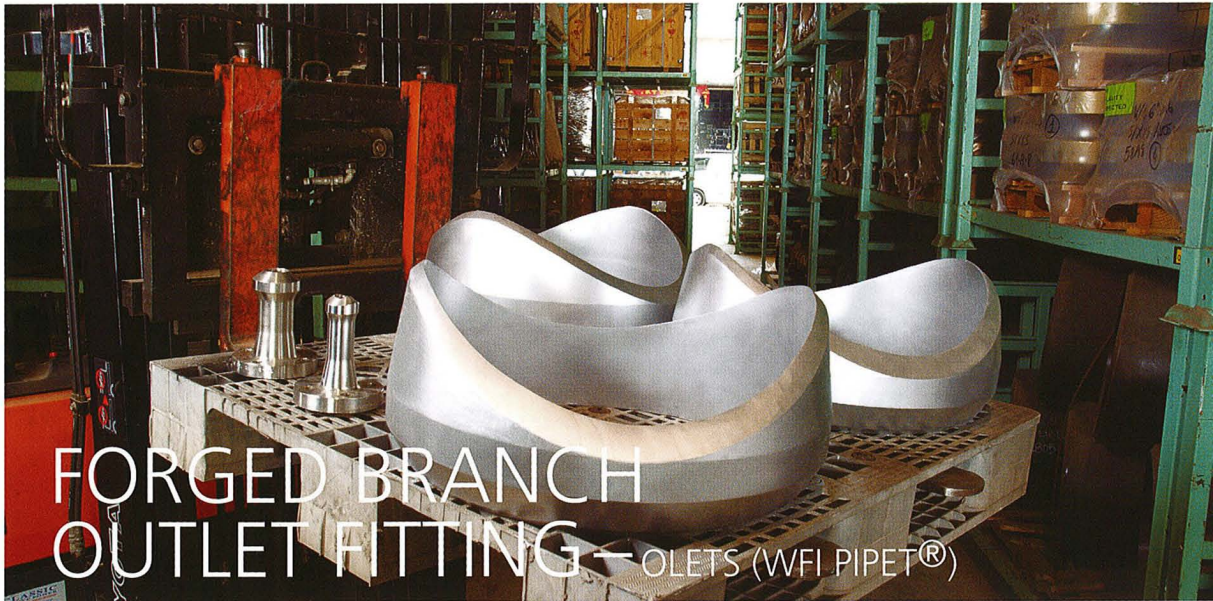


Rating

3000# NPT & SW – 1/4" thru 4"
6000# NPT & SW – 1/4" thru 4"
9000# SW – 1/2" thru 2"

Material Grades Available

- ASME/ASTM SA/A105N
- ASME/ASTM SA/A350 LF2
- ASME/ASTM SA/A182 F304/L
- ASME/ASTM SA/A182 F316/L



FORGED BRANCH OUTLET FITTING — OLETS (WFI PIPE®)

As Per MSS-SP-97

STOCK AVAILABILITY

1/2" to 24" For Carbon Steel (A105N), Low Temperature (A350 LF2)

1/2" to 6" For Stainless Steel (A182 F304L & F316L)



Wall Thickness

Sch.10, 20, 30, 40, 80, 100, 120, 160, STD, XS, XXS, 3000#, 6000#, 9000#

Type

Pipet available in Butt-Weld, Threaded, Socket Weld

Elbow Pipet available in Butt-Weld, Threaded, Socket Weld

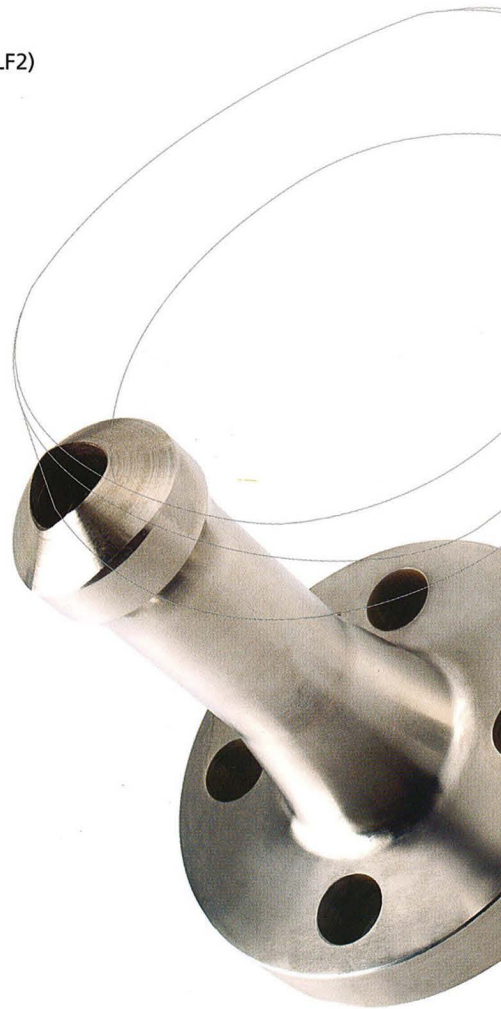
Lateral Pipet available in Butt-Weld, Threaded, Socket Weld

Nipple Pipet available in Threaded, Plain End, Bevel End, Flanged

Material Grades Available

- ASME/ASTM SA/A105N
- ASME/ASTM SA/A350 LF2
- ASME/ASTM SA/A182 F304/L
- ASME/ASTM SA/A182 F316/L

■ SOONSteel is the exclusive agent and stockist in ASEAN for WFI International Inc.



COMMON DEFINITION OF TERMS USED IN THE STEEL INDUSTRY

Bright Annealing

Annealing in a protective medium to prevent discolouration of the bright surface.

Brinell Hardness Test

A test for determining the hardness of a material by forcing a hard steel or carbide ball of specified diameter into it under a specified load.

Charpy Test

A pendulum-type single-blow impact test in which the specimen usually notched, is supported at both ends as a simple beam and broken by a falling pendulum. The energy absorbed, as determined by the subsequent rise of the pendulum is a measure of impact.

Check Analysis

An analysis of the metal after it has been rolled or forged into semi-finished or finished forms. It is not a check on the ladle analysis, but is a check against the chemistry ordered.

Duplex Steel

The designation used for certain chromium/nickel/moly steels which exhibit microstructures consisting of ferrite zones in an austenitic matrix at ordinary temperatures. Duplex steels retain much of the formability of the austenitic grades but may have twice the yield strength and the chloride stress cracking resistance of the ferritic grades.

Dye Penetrant Inspection

A simple sensitive non-destructive test employing dye or a fluorescent chemical and sometimes black light to detect defects open to the surface.

Eddy Current Testing

Nondestructive testing method in which eddy-current flow is induced in the test object. Changes in the flow caused by variations in the object are reflected into a nearby coil or coils for subsequent analysis by suitable instrumentation and techniques.

Hardness

A measure of the degree of a material's resistance to indentation. It is usually determined by measuring resistance to penetration, by such tests as Brinell (ASTM E10), Rockwell (ASTM E18) and Vickers (ASTM E92).

Hydrostatic Test

A test in which a liquid, usually water, under pressure, is used internally to detect and locate leaks in a tubular product of a fabricated structure.

Impact Test

There are several methods of determining the toughness of a steel, but the Izod and Charpy notched-bar tests (ASTM E23) are used quite widely. In both tests, notched samples are cooled or heated to the desired test temperature, then struck once with a pendulum which fractures the specimen. The energy required to fracture the specimen, the impact strength, is measured in foot-pounds.

Intergranular Corrosion

A type of electrochemical corrosion that progresses preferentially along the grain boundaries of an alloy, usually because the grain boundary regions contain material anodic to the central regions of the grain. The corrosion test is described in – Practice E of Practices A262 or Practices A763.

Killed Steel

Steel deoxidized with an agent such as silicon or aluminium used to react with (kill) the gases escaping during solidification. All continuous cast steels and other than low carbon steels are killed.

Ladle Analysis

Chemical analysis obtained from a sample taken during the pouring of the steel.

Magnetic Particles Test (Magnaflux Test)

This test is conducted by suitably magnetizing a ferrous material and applying a prepared wet or dry magnetic powder or fluid which adheres to it along lines of flux leakage. It shows the existence of surface and slight subsurface non-uniformities.

Material Test Report/Certificate

Definition of a document released by a manufacturer reporting test results uniquely related to the product supplied for a specific purchase order.

Mechanical Properties

Those properties of a material that reveal the elastic and plastic reactions when force is applied, or that involve the relationship between stress and strain – for example, the modulus of elasticity, hardness, tensile strength and fatigue limit. These properties have often been referred to as "physical properties", but the term "mechanical properties" is correct.

Non-Destructive Testing

Methods of detecting defects without destroying or permanently changing the material being tested. Test methods include ultrasonic, eddy current, magnetic particle, liquid penetrant, x-ray, hardness testing and all kinds of positive material identification systems.

Normalizing

Heating a ferrous alloy to a suitable temperature above the transformation range and then cooling in air to a temperature substantially below the transformation range.

Positive Material Identification

The definition used for any kind of non-destructive chemical analysis capable to positively identify a grade of steel.

Quenching

A process of rapid cooling from an elevated temperature, by contact with liquids or gases.

Random Length

Tubing produced to a permissible variation in length, viz: Single Random (5 – 7 meter range)/Double Random (9 – 12 meter range).

Tempering

Reheating, quenched or normalized steel to a temperature below the transformation range (lower critical) followed by any desired rate of cooling.

Tensile Strength

The maximum load per square inch of original cross-sectional area carried during a tension test to failure of the specimen. This term is preferred over the formerly-used ultimate strength. The tensile test is described in ASTM E6 and E8.

Ultrasonic Testing

The method of detecting defects in tubes or welds by passing high frequency sound waves into a material then monitoring and evaluating the reflected signals.

Yield Strength

The stress at which a material exhibits a specified deviation from proportionality of stress and strain. An offset of 0.2% is most frequently used.

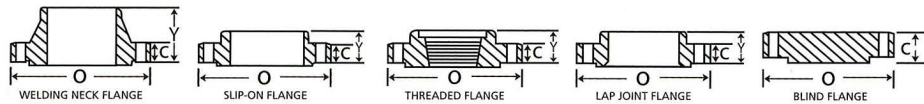
ASTM Standards - Chemical And Mechanical Requirements

Chemical Requirements Per Cent (%)															Mechanical Requirements					
Steel Type	Product	Material Grade	C	Mn	P max	S max	Si	Ni	Cr	Mo	Cu	V	Nb/Cb	Others	Tensile Strength Range (MPa) - Min	Min Yield Strength (MPa) - Min	Elongation - Min %	Red. of Area min %	Max Hardness Brinell	Impact Test @ Deg.
Carbon Steel	Pipes	A106 Gr.B	0.30	0.29 - 1.06	0.035	0.035	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	-	-	415	240	L30 / T16.5	-	-	-
	Pipes	A106 Gr.C	0.35	0.29 - 1.06	0.035	0.035	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08 max	-	-	485	275	L30 / T16.5	-	-	-
	BW Fittings	A234 WPB	0.30	0.29 - 1.06	0.050	0.058	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08max	-	Cb 0.02% max	415 - 585	240	L30 / T20	-	197 max HB	-
	BW Fittings	A234 WPC	0.35	0.29 - 1.06	0.050	0.058	0.10 min	0.40 max	0.40 max	0.15 max	0.40 max	0.08max	-	Cb 0.02% max	485 - 655	275	L30 / T20	-	197 max HB	-
	Forging	A105N	0.35 max	0.60 - 1.05	0.035	0.040	0.10 - 0.35	0.40 max	0.30 max	0.12 max	0.40 max	0.08max	0.02 max	-	485	250	30	30	187 max HB	-
Low Temperature Carbon Steel	Pipes	A333 Gr.3	0.19 max	0.31-0.64	0.025	0.025	0.18 - 0.37	3.18 - 3.82	-	-	-	-	-	-	450	240	L30 / T20	-	-	-100 C / 150 F
	Pipes	A333 Gr.6	0.30 max	0.29 - 1.06	0.025	0.025	0.10 min	-	-	-	-	-	-	-	415	240	L30 / T16.5	-	-	-45 C / -50 F
	BW Fittings	A420 WPL3	0.20	0.31 - 0.64	0.050	0.050	0.13 - 0.37	3.20 - 3.80	-	-	-	-	-	-	450 - 620	240	L30 / T20	-	-	-100 C / 150 F
	BW Fittings	A420 WPL6	0.30	0.50 - 1.35	0.035	0.040	0.15 - 0.40	0.4 max	0.30 max	0.12 max	0.40 max	0.08 max	0.02 max	-	415 - 585	240	L30 / T16.5	-	-	-45 C / -50 F
	Forging	A350 LF3	0.20 max	0.90 max	0.035	0.040	0.20 - 0.35	3.30 - 3.70	0.30 max	0.12 max	0.40 max	0.03 max	-	Cb 0.02% max	485 - 655	260	30	35	197 max HB	-101.1 C / -150 F
	Forging	A350 LF2	0.30	0.60 - 1.35	0.035	0.040	0.15 - 0.30	0.40 max	0.30 max	0.12 max	0.40 max	0.08 max	-	Cb 0.02% max	485 - 655	250	30	30	197 max HB	-45.6 C / -50 F
Alloy Steel	Pipes	A335 P5	0.15 max	0.30 - 0.60	0.025	0.025	0.50 max	-	4.00 - 6.00	0.45 - 0.65	-	-	-	-	415	205	L30 / T20	-	-	-
	Pipes	A335 P9	0.15 max	0.30 - 0.60	0.025	0.025	0.25 - 10.0	-	8.0-10.0	0.90 - 1.10	-	-	-	-	415	205	L30 / T20	-	-	-
	Pipes	A335 P11	0.05 - 0.15	0.30 - 0.60	0.025	0.025	0.50 - 1.00	-	1.00 - 1.50	0.44 - 0.65	-	-	-	-	415	205	L30 / T20	-	-	-
	Pipes	A335 P22	0.05 - 0.15	0.30 - 0.60	0.025	0.025	0.50 max	-	1.90 - 2.60	0.87 - 1.13	-	-	-	-	415	205	L30 / T20	-	-	-
	Pipes	A335 P91	0.08 - 0.12	0.30 - 0.60	0.020	0.010	0.20 - 0.50	0.40 max	8.00 - 9.50	0.85 - 1.05	-	0.18 - 0.25	0.06 - 0.10	N: 0.03 - 0.07% Al: 0.04% max	585	415	L20	-	-	-
	BW Fittings	A234 WP5	0.15 max	0.30 - 0.60	0.040	0.030	0.50 max	-	4.00 - 6.00	0.44 - 0.65	-	-	-	-	415 - 585	205	L30 / T20	-	217 max HB	-
	BW Fittings	A234 WP9	0.15 max	0.30 - 0.60	0.030	0.030	0.25 - 1.00	-	8.00 - 10.0	0.90 - 1.10	-	-	-	-	415 - 585	205	L30 / T20	-	217 max HB	-
	BW Fittings	A234 WP11	0.05 - 0.15	0.30 - 0.60	0.030	0.030	0.50 - 1.00	-	1.00 - 1.50	0.44 - 0.65	-	-	-	-	415 - 585	205	L30 / T20	-	197 max HB	-
	BW Fittings	A234 WP22	0.05 - 0.15	0.30 - 0.60	0.040	0.040	0.50 max	-	1.90 - 2.60	0.87 - 1.13	-	-	-	-	415 - 585	205	L30 / T20	-	197 max HB	-
	BW Fittings	A234 WP91	0.08 - 0.12	0.30 - 0.60	0.020	0.010	0.20 - 0.50	0.40 max	8.00 - 9.50	0.85 - 1.05	-	0.18 - 0.25	0.06 - 0.10	N: 0.03 - 0.07% Al: 0.04% max	585 - 760	415	L20	-	248 max HB	-
	Forging	A182 F5	0.15 max	0.30 - 0.60	0.030	0.030	0.50 max	0.50 max	4.0 - 6.0	0.44 - 0.65	-	-	-	-	485	275	20	35	143-217 HB	-
	Forging	A182 F9	0.15 max	0.30 - 0.60	0.030	0.030	0.50 - 1.00	-	8.00 - 10.0	0.90 - 1.10	-	-	-	-	585	380	20	40	179-217 HB	-
	Forging	A182 F11 Cl.1	0.05 - 0.15	0.30 - 0.60	0.030	0.030	0.50 - 1.00	-	1.00 - 1.50	0.44 - 0.65	-	-	-	-	415	205	20	30	121-174 HB	-
	Forging	A182 F22 Cl.1	0.05 - 0.15	0.30 - 0.60	0.040	0.040	0.50	-	2.00 - 2.50	0.87 - 1.13	-	-	-	-	415	205	20	35	170 max HB	-
	Forging	A182 F91	0.08 - 0.12	0.30 - 0.60	0.020	0.010	0.20 - 0.50	0.40	8.00 - 9.50	0.85 - 1.05	-	-	0.06 - 0.10	N: 0.03 - 0.07% Al: 0.04% max	585	415	20	40	248 max HB	-
Austenitic Stainless Steel	Pipes	A312 TP304	0.080 max	2.00 max	0.045	0.030	1.00	8.00 - 11.0	18.0 - 20.0	-	-	-	-	-	515	205	L35 / T25	-	-	-
	Pipes	A312 TP304/L	0.035 max	2.00 max	0.045	0.030	1.00 max	8.00 - 13.0	18.0 - 20.0	-	-	-	-	-	485	170	L35 / T25	-	-	-
	Pipes	A312 TP316	0.080 max	2.00 max	0.045	0.030	1.00 max	11.0 - 14.0	16.0 - 18.0	2.00 - 3.00	-	-	-	-	515	205	L35 / T25	-	-	-
	Pipes	A312 TP316/L	0.035 max	2.00 max	0.045	0.030	1.00 max	10.0 - 14.0	16.0 - 18.0	2.00 - 3.00	-	-	-	-	485	170	L35 / T25	-	-	-
	Pipes	A312 TP321	0.080 max	2.00 max	0.045	0.030	1.00 max	9.00 - 12.0	17.0 - 19.0	-	-	-	-	N: 0.10%	515	205	L35 / T25	-	-	-
	Pipes	A312 TP347	0.080 max	2.00 max	0.045	0.030	1.00 max	9.00 - 13.0	17.0 - 19.0	-	-	-	-	-	515	205	L35 / T25	-	-	-
	Pipes	A790-UNS31803	0.030 max	2.00 max	0.030	0.020	1.00 max	4.50 - 6.50	21.0 - 23.0	2.50 - 3.50	-	-	-	N: 0.08 - 0.20%	620	450	25	-	290 max HB	-
	BW Fittings	A403 WP304	0.080 max	2.00 max	0.045	0.030	1.00 max	8.00 - 11.0	18.0 - 20.0	-	-	-	-	-	515	205	L28 / T20	-	-	-
	BW Fittings	A403 WP304/L	0.030 max	2.00 max	0.045	0.030	1.00 max	8.00 - 12.0	18.0 - 20.0	-	-	-	-	-	485	170	L28 / T20	-	-	-
	BW Fittings	A403 WP316	0.080 max	2.00 max	0.045	0.030	1.00 max	10.0 - 14.0	16.0 - 18.0	-	-	-	-	-	515	205	L28 / T20	-	-	-
	BW Fittings	A403 WP316/L	0.035 max	2.00 max	0.045	0.030	1.00 max	10.0 - 14.0	16.0 - 18.0	2.00 - 3.00	-	-	-	-	485	170	L28 / T20	-	-	-
	BW Fittings	A403 WP321	0.080 max	2.00 max	0.045	0.030	1.00 max	9.0 - 12.0	17.0 - 19.0	-	-	-	-	-	515	205	L28 / T20	-	-	-
	BW Fittings	A403 WP347	0.080 max	2.00 max	0.045	0.030	1.00 max	9.0 - 12.0	17.0 - 19.0	-	-	-	-	-	515	205	L28 / T20	-	-	-
	BW Fittings	A815-UNS31803	0.030 max	2.00 max	0.030	0.020	1.00 max	4.50 - 6.50	21.0 - 23.0	2.50 - 3.50	-	-	-	N: 0.08 - 0.20%	620	450	20	-	290 max HB	-
	Forging	A182 F304	0.080 max	2.00 max	0.045	0.030	1.00 max	8.00 - 11.0	18.0 - 20.0	-	-	-	-	-	515	205	30	50	-	-
	Forging	A182 F304/L	0.030 max	2.00 max	0.045	0.030	1.00 max	8.00 - 13.0	18.0 - 20.0	-	-	-	-	-	485	170	30	50	-	-
	Forging	A182 F316	0.080 max	2.00 max	0.045	0.030	1.00 max	10.0 - 14.0	16.0 - 18.0	-	-	-	-	-	515	205	30	50	-	-
	Forging	A182 F316/L	0.030 max	2.00 max	0.045	0.030	1.00 max	10.0 - 15.0	16.0 - 18.0	2.0 - 3.0	-	-	-	-	485	170	30	50	-	-
	Forging	A182 F321	0.080 max	2.00 max	0.045	0.030	1.00 max	9.00 - 12.0	17.0 - 19.0	-	-	-	-	-	515	205	30	50	-	-
	Forging	A182 F347	0.080 max	2.00 max	0.045	0.030	1.00 max	9.00 - 13.0	17.0 - 20.0	-	-	-	-	-	515	205	30	50	-	-
	Forging	A182 F51	0.030 max	2.00 max	0.030	0.020	1.00 max	4.50 - 6.50	21.0 - 23.0	2.50 - 3.5	-	-	-	N: 0.08 - 0.20%	620	450	25	45	-	-

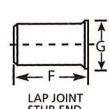
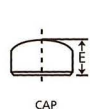
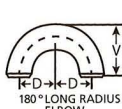
PIPE CHART

ANSI B 36.10															ANSI B 36.19			
Nominal Pipe Size	Outside Diameter	Schedule 10 mm kg/m	Schedule 20 mm kg/m	Schedule 30 mm kg/m	Schedule STD mm kg/m	Schedule 40 mm kg/m	Schedule 60 mm kg/m	Schedule XS mm kg/m	Schedule 80 mm kg/m	Schedule 100 mm kg/m	Schedule 120 mm kg/m	Schedule 140 mm kg/m	Schedule 160 mm kg/m	Schedule XXS mm kg/m	Schedule 55 mm kg/m	Schedule 105 mm kg/m	Schedule 405 mm kg/m	Schedule 805 mm kg/m
1/4"	13.7	-	-	-	2.24 0.63	2.24 0.63	-	3.02 0.80	3.02 0.80	-	-	-	-	-	-	1.65 0.50	2.24 0.64	3.02 0.81
3/8"	17.1	-	-	-	2.31 0.84	2.31 0.84	-	3.20 1.10	3.20 1.10	-	-	-	-	-	-	1.65 0.64	2.31 0.86	3.20 1.12
1/2"	21.3	-	-	-	2.77 1.27	2.77 1.27	-	3.73 1.62	3.73 1.62	-	-	-	4.78 1.95	7.47 2.55	1.65 0.81	2.11 1.02	2.77 1.29	3.73 1.65
3/4"	26.7	-	-	-	2.87 1.69	2.87 1.69	-	3.91 2.20	3.91 2.20	-	-	-	5.56 2.90	7.82 3.64	1.65 1.03	2.11 1.30	2.87 1.71	3.91 2.23
1"	33.4	-	-	-	3.38 2.50	3.38 2.50	-	4.55 3.24	4.55 3.24	-	-	-	6.35 4.24	9.09 5.45	1.65 1.31	2.77 2.13	3.38 2.54	4.55 3.29
1.1/4"	42.2	-	-	-	3.56 3.39	3.56 3.39	-	4.85 4.47	4.85 4.47	-	-	-	6.35 5.61	9.70 7.77	1.65 1.68	2.77 2.73	3.56 3.44	4.85 4.53
1.1/2"	48.3	-	-	-	3.68 4.05	3.68 4.05	-	5.08 5.41	5.08 5.41	-	-	-	7.14 7.25	10.15 9.56	1.65 1.93	2.77 3.16	3.68 4.11	5.08 5.49
2"	60.3	-	-	-	3.91 5.44	3.91 5.44	-	5.54 7.48	5.54 7.48	-	-	-	8.74 11.11	11.07 13.44	1.65 2.42	2.77 3.99	3.91 5.52	5.54 7.60
2.1/2"	73.0	-	-	-	5.16 8.63	5.16 8.63	-	7.01 11.41	7.01 11.41	-	-	-	9.53 14.92	14.02 20.39	2.11 3.75	3.05 5.35	5.16 8.77	7.01 11.59
3"	88.9	-	-	-	5.49 11.29	5.49 11.29	-	7.62 15.27	7.62 15.27	-	-	-	11.13 21.35	15.24 27.68	2.11 4.59	3.05 6.56	5.49 11.47	7.62 15.51
3.1/2"	101.6	-	-	-	5.74 13.57	5.74 13.57	-	8.08 18.63	8.08 18.63	-	-	-	-	-	2.11 5.26	3.05 7.53	5.74 13.78	8.08 18.92
4"	114.3	-	-	-	6.02 16.07	6.02 16.07	-	8.56 22.32	8.56 22.32	-	11.13 28.32	-	13.49 33.54	17.12 41.03	2.11 5.93	3.05 8.50	6.02 16.32	8.56 22.67
5"	141.3	-	-	-	6.55 21.77	6.55 21.77	-	9.53 30.97	9.53 30.97	-	12.70 40.28	-	15.88 49.11	19.05 57.43	2.77 9.61	3.40 11.74	6.55 22.10	9.53 31.44
6"	168.3	-	-	-	7.11 28.26	7.11 28.26	-	10.97 42.56	10.97 42.56	-	14.27 54.20	-	18.26 67.56	21.95 79.22	2.77 11.48	3.40 14.04	7.11 28.70	10.97 43.22
8"	219.1	-	6.35 33.31	7.04 36.81	8.18 42.55	8.18 42.55	10.31 53.08	12.70 64.64	12.70 64.64	15.09 75.92	18.26 90.44	20.62 100.90	23.01 111.20	22.23 107.90	2.77 14.90	3.80 20.12	8.18 43.20	12.70 65.64
10"	273.0	-	6.35 41.77	7.80 51.03	9.27 60.31	9.27 60.31	12.70 81.55	12.70 81.55	15.09 96.01	18.26 114.70	21.44 133.00	25.40 155.10	28.58 172.30	25.40 155.10	3.40 22.95	4.19 28.20	9.27 61.22	12.70 82.78
12"	323.8	-	6.35 49.73	8.38 65.20	9.53 73.88	10.31 79.73	14.27 108.90	12.70 97.46	17.48 132.00	21.44 159.90	25.40 186.90	28.58 208.10	33.32 238.70	25.40 186.90	3.96 31.71	4.57 36.53	9.53 74.94	12.70 98.96
14"	355.6	6.35 54.69	7.92 67.90	9.53 81.33	9.53 81.33	11.13 94.55	15.09 126.70	12.70 107.30	19.05 158.10	23.83 194.90	27.79 224.60	31.75 253.50	35.71 281.70	-	3.96 34.87	4.78 41.99	9.53 82.50	12.70 109.05
16"	406.4	6.35 62.64	7.92 77.83	9.53 93.27	9.53 93.27	12.70 123.30	16.66 160.10	12.70 123.30	21.44 203.50	26.19 245.50	30.96 286.60	36.53 333.10	40.49 365.30	-	4.19 42.20	4.78 48.07	9.53 94.61	12.70 125.20
18"	457.2	6.35 70.57	7.92 87.71	11.13 122.30	9.53 105.10	14.27 155.80	19.05 205.70	12.70 139.10	23.83 254.50	29.36 309.60	34.93 363.50	39.67 408.20	45.24 459.30	-	4.19 47.53	4.78 54.15	9.53 106.83	12.70 141.35
20"	508.0	6.35 78.55	9.53 117.10	12.70 155.10	9.53 117.10	15.09 183.40	20.62 247.80	12.70 155.10	26.19 311.10	32.54 381.50	38.10 441.40	44.45 508.10	50.01 564.80	-	4.78 60.23	5.54 69.70	9.53 118.95	12.70 157.51
22"	558.8	6.35 86.54	9.53 129.10	12.70 171.00	9.53 129.10	-	22.23 294.20	12.70 171.00	28.58 373.80	34.93 451.40	41.28 527.00	47.63 600.60	53.90 672.20	-	4.78 66.31	5.54 76.75	9.53 131.07	12.70 173.66
24"	609.6	6.35 94.53	9.53 141.10	14.27 209.60	9.53 141.10	17.48 255.40	24.61 355.20	12.70 187.00	30.96 442.00	38.89 547.70	46.02 640.00	52.37 720.10	59.54 808.20	-	5.54 83.80	6.35 95.92	9.53 143.20	12.70 189.82
26"	660.4	7.92 127.30	12.70 202.70	-	9.53 152.80	-	-	12.70 202.70	-	-	-	-	-	-	-	-	9.53 155.22	12.70 205.85
28"	711.2	7.92 137.30	12.70 218.60	15.88 271.20	9.53 164.80	-	-	12.70 218.60	-	-	-	-	-	-	-	-	9.53 167.39	12.70 222.06
30"	762.0	7.92 147.20	12.70 234.60	15.88 291.10	9.53 176.80	-	-	12.70 234.60	-	-	-	-	-	-	6.35 120.15	7.92 149.55	9.53 179.56	12.70 238.28
32"	812.8	7.92 157.20	12.70 250.60	15.88 312.10	9.53 188.80	17.48 342.90	-	12.70 250.60	-	-	-	-	-	-	-	-	9.53 191.73	12.70 254.50
34"	863.6	7.92 167.20	12.70 266.60	15.88 332.10	9.53 200.30	17.48 364.90	-	12.70 266.00	-	-	-	-	-	-	-	-	9.53 203.90	12.70 270.72
36"	914.4	7.92 176.90	12.70 282.20	15.88 351.70	9.53 212.50	19.05 420.40	-	12.70 282.20	-	-	-	-	-	-	-	-	9.53 215.83	12.70 286.62

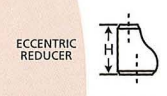
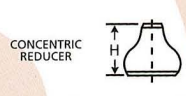
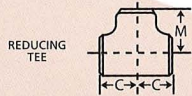
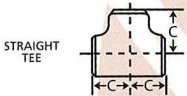
FLANGE DIMENSION - ANSI B16.5



Nom. Pipe Size	150 LB						300 LB						400 LB						Nom. Pipe Size			
	O	C ²	Y ²			Bolt Circle	No. & Size of Holes	O	C ²	Y ²			Bolt Circle	No. & Size of Holes	O	C ²	Y ²			Bolt Circle	No. & Size of Holes	
			Weld Neck	Slip On Thrd	Lap Joint					Weld Neck	Slip On Thrd	Lap Joint					Weld Neck	Slip On Thrd				Lap Joint
1/2	88.9	11.1	47.6	15.9	15.9	60.3	4 - 5/8	95.2	14.3	52.4	22.2	22.2	66.7	4 - 5/8	95.2	14.3	52.4	22.2	22.2	66.7	4 - 5/8	1/4
3/4	98.4	12.7	52.4	15.9	15.9	69.8	4 - 5/8	117.5	15.9	57.1	25.4	25.4	82.5	4 - 3/4	117.5	15.9	57.1	25.4	25.4	82.5	4 - 3/4	3/4
1	107.9	14.3	55.6	17.5	17.5	79.4	4 - 5/8	123.8	17.5	61.9	27.0	27.0	88.9	4 - 3/4	123.8	17.5	61.9	27.0	27.0	88.9	4 - 3/4	1
1.1/4	117.5	15.9	57.1	20.6	20.6	88.9	4 - 5/8	133.4	19.0	65.1	27.0	27.0	98.4	4 - 3/4	133.4	20.6	66.7	28.6	28.6	98.4	4 - 3/4	1.1/4
1.1/2	127	17.5	61.9	22.2	22.2	98.4	4 - 5/8	155.6	20.6	68.3	30.2	30.2	114.3	4 - 7/8	155.6	22.2	69.8	31.7	31.7	114.3	4 - 7/8	1.1/2
2	152.4	19.1	63.5	25.4	25.4	120.6	4 - 3/4	165.1	22.2	69.8	33.3	33.3	127.0	8 - 3/4	165.1	25.4	73.0	36.5	36.5	127.0	8 - 3/4	2
2.1/2	177.8	22.2	69.8	28.6	28.6	139.7	4 - 3/4	190.5	25.4	76.2	38.1	38.1	149.2	8 - 7/8	190.5	28.6	79.4	41.3	41.3	149.2	8 - 7/8	2.1/2
3	190.5	23.8	69.8	30.2	30.2	152.4	4 - 3/4	209.6	28.6	79.4	42.9	42.9	168.3	8 - 7/8	209.6	31.8	82.5	46.0	46.0	168.3	8 - 7/8	3
3.1/2	215.9	23.8	71.4	31.7	31.7	177.8	8 - 3/4	228.6	30.2	81.0	44.4	44.4	184.15	8 - 7/8	228.6	34.9	85.7	49.2	49.2	184.1	8 - 1	3.1/2
4	228.6	23.8	76.2	33.3	33.3	190.5	8 - 3/4	254.0	31.8	85.7	47.6	47.6	200.0	8 - 7/8	254.0	34.9	88.9	50.8	50.8	200.0	8 - 1	4
5	254.0	23.8	88.9	36.5	36.5	215.9	8 - 7/8	279.4	34.9	98.4	50.8	50.8	234.9	8 - 7/8	279.4	38.1	101.6	54.0	54.0	234.9	8 - 1	5
6	279.4	25.4	88.9	39.7	39.7	241.3	8 - 7/8	317.5	36.5	98.4	52.4	52.4	269.9	12 - 7/8	317.5	41.3	103.2	57.1	57.1	269.9	12 - 1	6
8	342.9	28.6	101.6	44.4	44.4	298.4	8 - 7/8	381.0	41.3	111.1	61.9	61.9	330.2	12 - 1	381.0	47.6	117.5	68.3	68.3	330.2	12 - 1.1/8	8
10	406.4	30.2	101.6	49.2	49.2	361.9	12 - 1	444.5	47.6	117.5	66.7	95.2	387.3	16 - 1.1/8	444.5	54.0	123.8	73.0	101.6	387.3	16 - 1.1/4	10
12	482.6	31.8	114.3	55.6	55.6	431.8	12 - 1	520.7	50.8	130.2	73.0	101.6	450.8	16 - 1.1/4	520.7	57.2	136.5	79.4	107.95	450.8	16 - 1.3/8	12
14	533.4	34.9	127.0	57.1	79.4	476.2	12 - 1.1/8	584.2	54.0	142.9	76.2	111.1	514.3	20 - 1.1/4	584.2	60.3	149.2	84.1	117.5	514.3	20 - 1.3/8	14
16	596.9	36.5	127.0	63.5	87.3	539.7	16 - 1.1/8	647.7	57.2	146.05	82.5	120.7	571.5	20 - 1.3/8	647.7	63.5	152.4	93.7	127.0	571.5	20 - 1.1/2	16
18	635	39.7	139.7	68.3	96.8	577.8	16 - 1.1/4	711.2	60.3	158.75	88.9	130.2	628.6	24 - 1.3/8	711.2	66.7	165.1	98.4	136.5	628.6	24 - 1.1/2	18
20	695.5	42.9	144.5	73.0	103.2	635.0	20 - 1.1/4	774.7	63.5	161.9	95.2	139.7	685.8	24 - 1.3/8	774.7	69.9	168.3	101.6	146.1	685.8	24 - 1.5/8	20
24	812.8	47.6	152.4	82.5	111.1	749.3	20 - 1.3/8	914.4	69.8	168.3	106.4	152.4	812.8	24 - 1.5/8	914.4	76.2	174.6	114.3	158.75	812.8	24 - 1.7/8	24
600 LB						900 LB						1500 LB										
1/2	95.2	14.3	52.4	22.2	22.2	66.7	4 - 5/8	120.65	22.2	60.3	31.7	31.7	82.5	4 - 7/8	120.65	22.2	60.3	31.7	31.7	82.5	4 - 7/8	1/2
3/4	117.5	15.9	57.1	25.4	25.4	82.5	4 - 3/4	130.2	25.4	69.8	34.9	34.9	88.9	4 - 7/8	130.2	25.4	69.8	34.9	34.9	88.9	4 - 7/8	3/4
1	123.8	17.5	61.9	27.0	27.0	88.9	4 - 3/4	149.2	28.6	73.0	41.3	41.3	101.6	4 - 1	149.2	28.6	73.0	41.3	41.3	101.6	4 - 1	1
1.1/4	133.35	20.6	66.7	28.6	28.6	98.4	4 - 3/4	158.75	28.6	73.0	41.3	41.3	111.1	4 - 1	158.7	28.6	73.0	41.3	41.3	111.1	4 - 1	1.1/4
1.1/2	155.6	22.2	69.8	31.7	31.7	114.3	4 - 7/8	177.8	31.8	82.5	44.4	44.4	123.8	4 - 1.1/8	177.8	31.8	82.5	44.4	44.4	123.8	4 - 1.1/8	1.1/2
2	165.1	25.4	73.0	36.6	36.5	127.0	8 - 3/4	215.9	38.1	101.6	57.1	57.1	165.1	8 - 1	215.9	38.1	101.6	57.1	57.1	165.1	8 - 1	2
2.1/2	190.5	28.6	79.4	41.3	41.3	149.2	8 - 7/8	244.5	41.3	104.8	63.5	63.5	190.5	8 - 1.1/8	244.5	41.3	104.8	63.5	63.5	190.5	8 - 1.1/8	2.1/2
3	209.55	31.8	82.5	46.0	46.0	168.3	8 - 7/8	241.3	38.1	101.6	54.0	54.0	190.5	8 - 1	266.7	47.6	117.5	73.0	73.0	203.2	8 - 1.1/4	3
3.1/2	228.6	34.9	85.7	49.2	49.2	184.15	8 - 1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.1/2
4	273.05	38.1	101.6	54.0	54.0	215.9	8 - 1	292.1	44.5	114.3	69.8	69.8	234.9	8 - 1.1/4	311.1	54.0	123.8	90.5	90.5	241.3	8 - 1.3/8	4
5	330.2	44.4	114.3	60.3	60.3	266.7	8 - 1.1/8	349.2	50.8	127.0	79.4	79.4	279.4	8 - 1.3/8	374.6	73.0	155.6	104.8	104.8	292.1	8 - 1.5/8	5
6	355.6	47.6	117.5	66.7	66.7	292.1	12 - 1.1/8	381.0	55.6	139.7	85.7	85.7	317.5	12 - 1.1/4	393.7	82.6	171.4	119.1	119.1	317.5	12 - 1.1/2	6
8	419.1	55.6	133.35	76.2	76.0	349.2	12 - 1.1/4	469.9	63.5	161.9	101.6	114.3	393.7	12 - 1.1/2	482.6	92.1	212.7	142.9	142.9	393.7	12 - 1.3/4	8
10	508.0	63.5	152.4	85.7	111.1	431.8	16 - 1.3/8	546.1	69.9	184.15	107.9	127.0	469.9	16 - 1.1/2	584.2	107.9	254.0	158.7	177.8	482.6	12 - 2	10
12	558.8	66.7	155.6	92.1	117.5	488.9	20 - 1.3/8	609.6	79.4	200.0	117.5	142.9	533.4	20 - 1.1/2	673.1	123.8	282.5	181.0	219.1	571.5	16 - 2.1/8	12
14	603.2	69.9	165.1	93.7	127.0	527.0	20 - 1.1/2	641.3	85.7	21.7	130.2	155.6	558.8	20 - 1.5/8	749.3	133.4	298.4	...	241.3	635.0	16 - 2.3/8	14
16	685.8	76.2	177.8	106.4	139.7	603.2	20 - 1.5/8	704.8	88.9	215.9	133.3	165.1	615.9	20 - 1.3/4	825.5	146.1	311.1	...	260.4	704.8	16 - 2.5/8	16
18	742.9	82.6	184.2	117.5	152.4	654.0	20 - 1.3/4	787.4	101.6	228.6	152.4	190.5	685.8	20 - 2	914.4	161.9	327.0	...	276.3	774.7	16 - 2.7/8	18
20	812.8	88.9	190.5	127.0	165.1	723.9	24 - 1.3/4	857.2	108.0	247.65	158.7	209.6	749.3	20 - 2.1/8	984.2	177.8	355.6	...	292.1	831.9	16 - 3.1/8	20
24	939.8	101.6	203.2	139.7	184.2	838.2	24 - 2	1041.4	139.7	292.1	203.2	266.7	901.7	20 - 2.5/8	1168.4	203.2	406.4	...	330.2	990.9	16 - 3.5/8	24
2500 LB							WELDING NECK FLANGE BORES (INSIDE DIAMETER)															
1/2	133.35	30.2	73.0	39.7	39.7	88.9	4 - 7/8	Nom Pipe Size	Outside Diam	Light Wall	Sched. 20	Sched. 30	Std. Wall	Sched. 40	Sched. 60	Extra Stg	Sched. 80	Sched. 100	Sched. 120	Sched. 140	Sched. 160	Double Extra Stg
3/4	139.7	31.7	79.4	42.9	42.9	95.2	4 - 7/8	1/2	21.30	17.08	...	...	15.70	15.70	...	14.00	14.00	...	...	...	11.84	6.40
1	158.75	34.9	88.9	47.6	47.6	107.95	4 - 1	3/4	26.70	22.48	...	...	20.80	20.80	...	18.80	18.80	...	...	...	15.60	11.00
1.1/4	184.15	38.1	95.2	52.4	52.4	130.2	4 - 1.1/8	1	33.40	27.86	...	...	26.70	26.70	...	24.40	24.40	...	...	...	20.80	15.00
1.1/2	203.2	44.4	111.1	60.3	60.3	146.05	4 - 1.1/4	1.1/4	42.20	36.66	...	...	35.10	35.10	...	32.50	32.50	...	...	...	28.00	22.80
2	234.95	50.8	127.0	69.8	69.8	171.45	8 - 1.1/8	1.1/2	48.30	42.76	...	...	40.90	40.90	...	38.10	38.10	...	...	...	34.00	27.90
2.1/2	266.7	57.1	142.9	79.4	79.4	196.9	8 - 1.1/4	2	60.30	54.76	...	...	52.60	52.60	...	49.30	49.30	...	...	...	42.90	38.20
3	304.8	66.7	168.3	92.1	92.1	228.6	8 - 1.3/8	2.1/2	73.30	66.90	...	...	62.70	62.70	...	58.90	58.90	...	...	...	54.00	45.00
3.1/2	...	...	...	...	...	...	...	3	88.90	82.80	...	...	78.00	78.00	...	73.70	73.70	...	...	...	66.60	58.40
4	355.6	76.2	190.5	107.95	108.0	273.1	8 - 1.5/8	3.1/2	101.60	95.50	...	...	90.20	90.20	...	85.30	85.30	...	...	...	...	...
5	419.1	92.1	228.6	130.2	130.2	323.8	8 - 1.7/8	4	114.30	108.20	...	...	102.40	102.40	...	97.30	97.30	...	92.04	...	87.30	

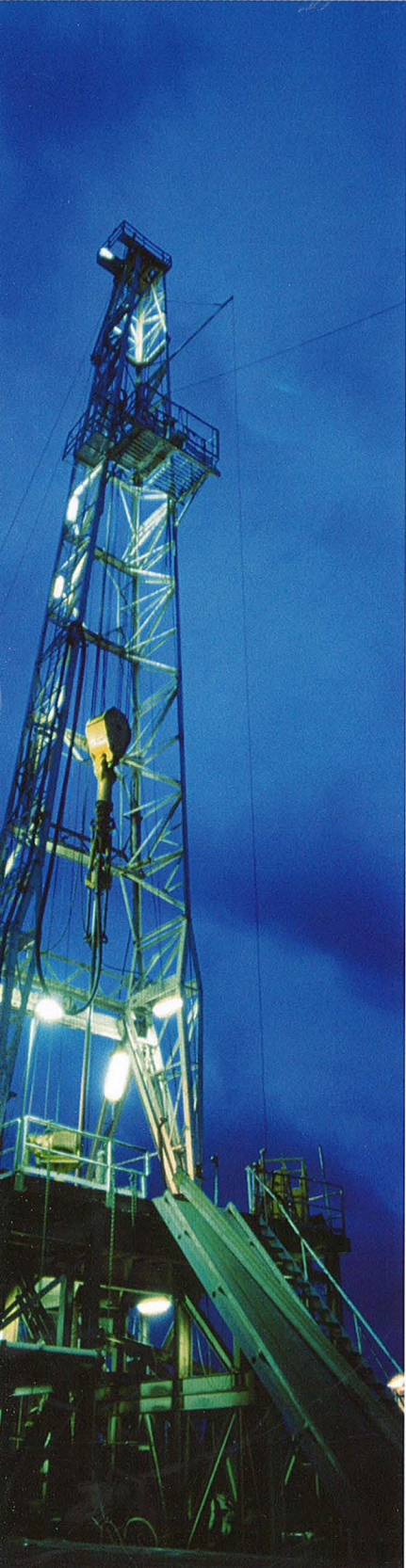


Nom Pipe Size	Pipe O.D.	WALL THICKNESS (Imperial)													A	B	K	D	V	E	F		Nom Pipe Size
		Light Wall	Sch 20	Sch 30	STD	Sch 40	Sch 60	X-STG	Sch 80	Sch 100	Sch 120	Sch 140	Sch 160	XX-STG							ASA MSS	G	
1/2	0.840	0.083	–	–	0.109	0.109	–	0.147	0.147	–	–	–	0.188	0.294	38.1	15.7	47.8	–	–	25.4	76 50.8	35.0	1/2
3/4	1.050	0.083	–	–	0.113	0.113	–	0.154	0.154	–	–	–	0.219	0.308	38.1	19.0	50.5	–	–	25.4	76 50.8	43.0	3/4
1	1.315	0.109	–	–	0.133	0.133	–	0.179	0.179	–	–	–	0.250	0.358	38.1	22.4	55.6	25.4	41.1	38.1	102 50.8	51.0	1
1.1/4	1.660	0.109	–	–	0.140	0.140	–	0.191	0.191	–	–	–	0.250	0.382	47.8	25.4	69.8	31.8	52.3	38.1	102 50.8	64.0	1.1/4
1.1/2	1.900	0.109	–	–	0.145	0.145	–	0.200	0.200	–	–	–	0.281	0.400	57.2	28.4	82.6	38.1	62.0	38.1	102 50.8	73.0	1.1/2
2	2.375	0.109	–	–	0.154	0.154	–	0.218	0.218	–	–	–	0.344	0.436	76.2	35.0	106.4	50.8	81.0	44.4	152 63.5	92.0	2
2.1/2	2.875	0.120	–	–	0.203	0.203	–	0.276	0.276	–	–	–	0.375	0.552	95.2	44.4	131.8	63.5	100.1	50.8	152 63.5	105.0	2.1/2
3	3.500	0.120	–	–	0.216	0.216	–	0.300	0.300	–	–	–	0.438	0.600	114.3	50.8	158.8	76.2	120.9	63.5	152 63.5	127.0	3
3.1/2	4.000	0.120	–	–	0.226	0.226	–	0.318	0.318	–	–	–	0.636	133.4	57.2	184.2	88.9	139.7	76.2	152 76.2	140.0	3.1/2	
4	4.500	0.120	–	–	0.237	0.237	–	0.337	0.337	–	0.438	–	0.531	0.674	152.4	63.5	209.6	101.6	158.8	76.2	152 76.2	157.0	4
5	5.563	0.134	–	–	0.258	0.258	–	0.375	0.375	–	0.500	–	0.625	0.875	190.5	79.2	261.9	127.0	196.9	88.9	203 76.2	186.0	5
6	6.625	0.134	–	–	0.280	0.280	–	0.432	0.432	–	0.562	–	0.719	1.000	228.6	95.2	312.7	152.4	236.5	101.6	203 89.0	216.0	6
8	8.625	0.148	0.250	0.277	0.322	0.322	0.406	0.500	0.500	0.594	0.719	0.812	0.906	1.000	304.8	127.0	414.3	203.2	312.7	127.0	203 102.0	270.0	8
10	10.750	0.165	0.250	0.307	0.365	0.365	0.500	0.500	0.594	0.719	0.844	1.000	1.125	–	381.0	158.8	517.6	254.0	390.7	152.4	254 127	324.0	10
12	12.750	0.180	0.250	0.330	0.375	0.406	0.562	0.500	0.688	0.844	1.000	1.125	1.312	–	457.2	190.5	619.0	304.8	467.0	177.8	254 152	381.0	12
14	14.000	0.250	0.312	0.375	0.375	0.438	0.594	0.500	0.750	0.938	1.094	1.250	1.406	–	533.4	222.2	709.7	355.6	532.8	190.5	305 152	413.0	14
16	16.000	0.250	0.312	0.375	0.375	0.500	0.656	0.500	0.844	1.031	1.219	1.438	1.594	–	609.6	254.0	813.0	406.4	609.8	203.2	305 152	470.0	16
18	18.000	0.250	0.312	0.438	0.375	0.562	0.750	0.500	0.938	1.156	1.375	1.562	1.781	–	685.8	285.8	913.5	457.2	686.2	228.6	305 152	533.0	18
20	20.000	0.250	0.375	0.500	0.375	0.594	0.812	0.500	1.031	1.281	1.500	1.750	1.969	–	762.0	317.5	1016.2	508.0	762.0	254.0	305 152	584.0	20
24	24.000	0.250	0.375	0.562	0.375	0.688	0.969	0.500	1.219	1.531	1.812	2.062	2.344	–	914.4	381.0	1117.8	609.6	914.0	305.0	305 152	692.2	24
30	30.000	0.312	0.500	0.625	0.375	–	–	0.500	–	–	–	–	–	–	1143.0	469.9	1219.0	762.0	–	–	–	–	30
36	36.000	0.312	0.500	0.625	0.375	0.750	–	0.500	–	–	–	–	–	–	1371.6	565.2	–	914.4	–	266.7	–	–	36
42	42.000	–	–	–	0.375	–	–	0.500	–	–	–	–	–	–	1600.2	660.4	–	1066.8	–	304.8	–	–	42
48	48.000	–	–	–	0.375	–	–	0.500	–	–	–	–	–	–	1828.8	758.83	–	1219.2	–	342.9	–	–	48



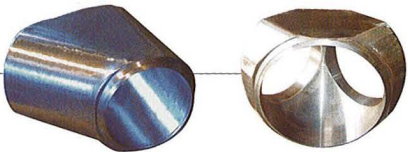
Nom Pipe Size	Outlet	C	M	H	Nom Pipe Size	Outlet	C	M	H	Nom Pipe Size	Outlet	C	M	H	Nom Pipe Size	Outlet	C	M	H			
3/4	3/4	28.4	–	–	3.1/2	3.1/2	95.2	–	–	10	10	215.9	–	–	20	20	381.0	–	–			
1/2	1/2	28.4	38.1	38.1		3	95.2	92.0	101.6		8	215.9	203.2	177.8		18	381.0	368.3	508.0			
1	1	38.1	...	...		2.1/2	95.2	88.9	101.6		6	215.9	193.5	177.8		16	381.0	355.6	508.0			
	3/4	38.1	38.1	50.8		2	95.2	82.55	101.6		5	215.9	190.5	177.8		14	381.0	355.6	508.0			
1/2	1/2	38.1	38.1	50.8	1.1/2	95.2	79.4	101.6	4	215.9	184.2	177.8	12	381.0	346.1	508.0						
1.1/4	1.1/4	47.8	–	–	4	4	104.6	–	–	12	12	254.0	–	–	24	10	381.0	333.4	508.0			
	1	47.8	47.8	50.8		3.1/2	104.6	101.6	101.6		10	254.0	241.3	203.2		8	391.0	323.8	508.0			
	3/4	47.8	47.8	50.8		3	104.6	98.6	101.6		8	254.0	228.6	203.2		24	431.8	–	–			
	1/2	47.8	47.8	50.8		2.1/2	104.6	95.2	101.6		6	254.0	218.9	203.2		20	431.8	431.8	508.0			
1.1/2	1.1/2	57.2	–	–	5	2	104.6	88.9	101.6	14	5	254.0	215.9	203.2	30	18	431.8	419.1	508.0			
	1.1/4	57.2	57.2	63.5		1.1/2	104.6	85.8	101.6		14	279.4	–	–		16	431.8	406.4	508.0			
	1	57.2	57.2	63.5		4	124.0	114.3	127		12	279.4	269.7	330.2		14	431.8	406.4	508.0			
	3/4	57.2	57.2	63.5			10	279.4	257.0		330.2	12	431.8	396.8		508.0						
1/2	57.2	57.2	63.5	6	279.4	238.1	330.2	8	279.4	247.6	330.2	10	431.8	384.2	508.0							
2	2	63.5	–	–	6	4	124.0	114.3	127	16	6	279.4	238.1	330.2	36	30	558.8	–	–			
	1.1/2	63.5	60.5	76.2		3.1/2	124.0	108.0	127		24	558.8	533.4	609.6								
	1.1/4	63.5	57.2	76.2		3	124.0	108.0	127		20	558.8	508.0	609.6								
	1	63.5	50.8	76.2		2.1/2	124.0	108.0	127		18	558.8	495.3	609.3								
3/4	63.5	44.4	76.2	2	124.0	104.6	127	14	304.8	304.8	355.6	16	558.8	482.6	609.6							
2.1/2	2.1/2	76.2	–	–	8	6	142.7	–	–	18	12	304.8	295.1	355.6	42	14	558.8	482.6	609.6			
	2	76.2	69.8	88.9		5	142.7	136.7	139.7		8	10	304.8	282.4		355.6	36	36	673.1	–	–	
		1.1/2	76.2	66.5		88.9	4	142.7	127.0			139.7	6	304.8		273.1		355.6	30	673.1	635.0	609.6
		1.1/4	76.2	63.5		88.9	3.1/2	142.7	127.0			139.7	24	673.1		609.6		609.6				
1	76.2	57.2	88.9	2.1/2	142.7	120.6	139.7	16	342.9	–	–	18	673.1	571.5	609.6							
3	3	85.8	–	–	8	6	177.8	162.1	152.4	18	16	342.9	330.2	381.0	42	16	673.1	558.8	609.6			
	2.1/2	85.8	82.6	88.9		5	177.8	155.4	152.4		14	342.9	330.2	381.0		20	18	762.0	711.2	–		
	2	85.8	76.2	88.9		4	177.8	155.4	152.4		12	342.9	320.5	381.0			36	762.0	711.2	609.6		
	1.1/2	85.8	73.2	88.9		3.1/2	177.8	152.4	152.4		10	342.9	307.9	381.0			30	762.0	660.4	609.6		
	1.1/4	85.8	69.8	88.9		10	342.9	298.5	381.0		8	342.9	298.5	381.0			24	762.0	660.4	609.6		
	1/2	85.8	69.8	88.9		8	342.9	298.5	381.0		20	762.0	660.4	609.6								
NOTES:															48	48	889.0	838.2	–			
[1] Light Wall thickness are identical to stainless steel Schedule 10S in size thru 12" and to Schedule 10 in sizes 14" and larger																42	889.0	812.8	711.2			
[2] Standard Wall thickness are identical to stainless steel Schedule 40S in sizes thru 12"																36	889.0	787.4	711.2			
[3] Extra Strong Wall thickness are identical to stainless steel Schedule 80S in sizes thru 12"																30	889.0	762.0	711.2			
[4] See ANSI B16.9 for cap lengths when wall thicknesses are greater than X-Stg																30	889.0	762.0	711.2			

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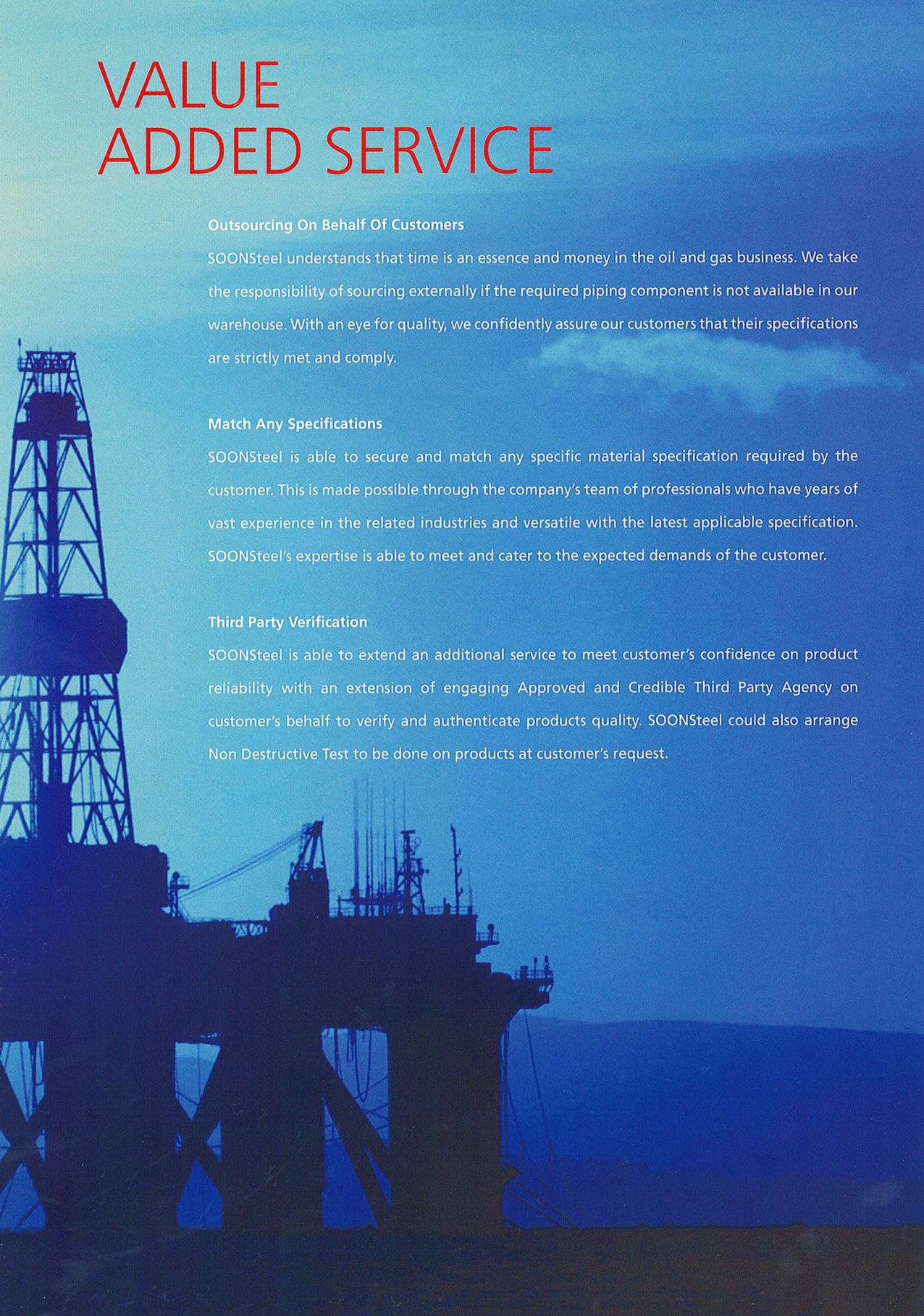


TARGET TEE

STUDDED BRANCH TEE



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This is to certify that

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Singapore 639442

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