



Technical Standards and Safety Authority
 345 Carlingview Drive
 Toronto, Ontario M9W 6N9
 www.tssa.org

Show facsimile of manufacturer's logo or trademark, as it will appear on the fitting, in the space below

See attached.

STATUTORY DECLARATION Registration of Fittings

I, Kevin Miller, Quality Manager
(Name and Position, e.g. President, Plant Manager, Chief Engineer)

of The Phoenix Forge Group
(Name of Manufacturer)

Located at 800 Front St., Catasauqua, PA 18032 610-264-2861 610-266-0530
(Plant Address) (Telephone No.) (Fax No.)

do solemnly declare that the fittings listed hereunder, which are subject to the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, comply with all of the requirements of MSS SP-97 and excerpts of ASME B36.10, B31.1, B16.11, B16.9, and B16.25

(Title of recognized North American Standard)

which specifies the dimensions, materials of construction, pressure/temperature ratings, identification marking the fittings and service;

or are not covered by the provisions of a recognized North American standard and are therefore manufactured to comply with _____ as supported by the attached data which identifies the dimensions, material of construction, pressure/temperature ratings and the basis for such ratings, the marking of the fitting for identification and service.

I further declare that the manufacture of these fittings is controlled by a quality system meeting the requirements of ISO 9001:2015 which has been verified by the following authority, DNV-GL Business Assurance

The items covered by this declaration, for which I seek registration, are category A type fittings. In support of this application, the following information and/or test data are attached as follows:

Trade name: Trans-O-Con, see attached catalog pages 14-19, and lab report from Fritz Engineering Laboratory
(drawings, calculations, test reports, etc.)

Declared before me at Catasauqua in the County of Lehigh
 the 24 day of June AD 2019.

Commonwealth of Pennsylvania - Notary Seal
 Melissa A. Reimer, Notary Public
 Lehigh County
 My commission expires April 11, 2022
 Commission number 1282898
 Member, Pennsylvania Association of Notaries

Commissioner for Oaths:
Melissa A. Reimer
(Printed name)
Melissa A. Reimer
(Signature)

[Signature]
(Signature of Declarer)

FOR OFFICE USE ONLY

To the best of my knowledge and belief, the application meets the requirements of the **Technical Standards and Safety Act**, Boilers and Pressure Vessels Regulation, and CSA Standard B51 and is accepted for registration in Category A.

CRN: DA0683.95R2

Registered by: Amir Hariri

Dated: 16 Oct 2019

NOTE: This registration expires on: 16 Oct 2029

Technical Standards and Safety Authority
 Boilers and Pressure Vessels Safety Program

REGISTERED

C.R.N.: DA0683.95R2

Signed: [Signature]

Date: 16 Oct 2019

*Information provided in this application is releasable under the Freedom of Information and Privacy Protection Act and may be disclosed upon request.

Notes: For scope of registration see stamped Catalogue Pages 14-19. A.H. 16 Oct 2019



Commanding a Higher StandardSM

PHOENIX FORGING COMPANY, INC.

800 FRONT STREET, CATASAUQUA, PA 18032-2343
(610) 264-2861 • FAX: (610) 266-0530
www.phoenixforge.com

Phoenix Hotform



Phoenix Forging Co



Capitol Manufacturing



or



Camco Fittings



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Trans-O-Con[®] Forged Branch Connections

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PHOENIX TRANS-O-CON® transition pipe connections are used successfully in numerous types of product distribution installations. The structurally reinforced design of our products insures a connection that is equal in strength to the original pipe. Material costs and installation time can be greatly reduced by using TRANS-O-CON connections in new construction as well as for plant conversions and in maintenance operations.

Facilities now using our branch connections include: power generating stations, commercial & industrial buildings, chemical & petrochemical plants and refineries.

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STRENGTH RATINGS

TRANS-O-CON connections have strength ratings equal to seamless steel pipe.

These ratings are based on the ASME Code for Pressure Piping, B31, the ASME Boiler Construction Code and ANSI/ASME B36.10.

For example, an extra-strong TRANS-O-CON applied to extra-strong pipe of the equivalent material provides 100% pipe strength. A standard weight TRANS-O-CON provides 100% pipe strength when used on standard weight pipe.

SPECIFICATIONS

TRANS-O-CON connections are manufactured according to the requirements of the ANSI standard for Steel Butt Welding Fittings (B16.9, latest modification); the ASME standard for Forged Fittings, Socket Welding and Threaded Fittings (B16.11, latest modification), the ANSI standard for Pressure Piping (B31, latest modification), and MSS SP-97.

When TRANS-O-CON connections are installed as recommended, their bursting strength exceeds the computed bursting strength of pipe or the designated weight or schedule number and material.

Certifications are provided upon request. 24-hour access to specifications through electronic MTR's on our web site.

Approval listings on file.

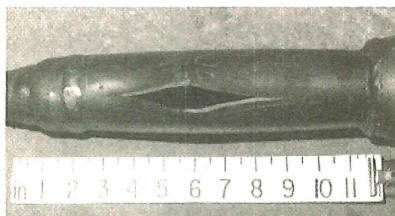
IDENTIFICATION AND MARKING

TRANS-O-CON connections are forged from carbon steel hot rolled bar to meet A-105 material specifications.

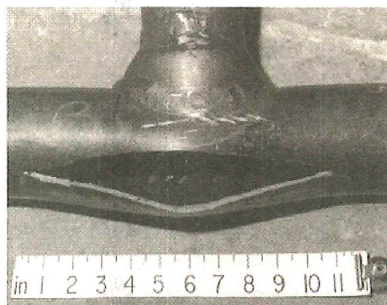
Every connection is individually inspected and stamped with header size, outlet size, material specification, pressure rating, manufacturer's symbol and identification number.

LABORATORY RESEARCH

TRANS-O-CON connections have been tested to insure the strength of the branch connection equals or exceeds the actual bursting strength of the unpenetrated base material. See a test example below.



2 x 2 Header



3 x 3 Header



6 x 8 Header

QUALITY IDENTIFICATION MARKING

To insure the material integrity of our fittings, every heat of steel is analyzed by the originating mill for proper chemistry from which the steel supplier provides us with a chemistry report. A forged test bar is prepared from each heat of steel by our forge plants and is analyzed by an independent testing laboratory for compliance of mechanical properties.

Each fitting is marked per MSS SP-25 for complete traceability in order that certification can be provided as required.



Phoenix Trans-O-Con® Conventional Butt-Weld Size Range

ASME SA105 / A 350-LF 2 / MSS SP-97 / POWER PIPING ASME B31.1
 LIQUID TRANSPORTATION ASME B31.4 / ASTM A105 / NACE MRO175
 REFINING ASME B31.3 / GAS TRANSMISSION ASME B31.8
 ASME B16.9 / ASME B16.11 / ASME B1.20.1

BUTT-WELD (STD & X STRONG)					OUTLET SIZE - INCHES		
5"	6"	8"	10"	12"	14"	16"	18"
14 - 12"	36 - 24"	24 - 20"	36"	36"	36"	36"	36"
10	20 - 16	18 - 16	24"	24"	24"	30"	30"
8	14 - 12	14 - 12	20"	20"	20"	24"	24"
6	10	10	18"	18"	18"	20"	20"
5	8	8	16"	16"	16"	18"	18"
	6		14"	14"	14"	16"	
			12"	12"			
			10"				

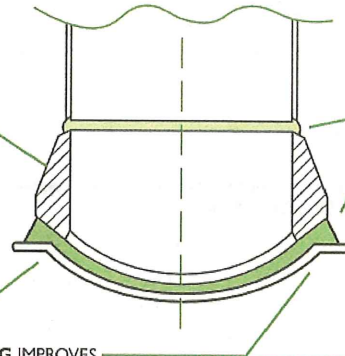
TRANS-O-CON® design provides 100% pipe strength and unrestricted fluid flow

TRANS-O-CON connections maintain the strength of the run pipe and optimize flow characteristics of the entire system. The cutaway drawing shows exactly how this is accomplished.

Additional TRANS-O-CON Advantages:

- Low Initial Cost
- Fast, Easy Installation
- No Cutting, Shaping or Beveling
- Easy to Align
- Strength and quality Properties Found **Only** in a Forged Product

• **TAPERED TRANSITION** FROM BRANCH TO HEADER AND HEAVY JUNCTURE MINIMIZES STRESS CONCENTRATIONS.



• **SHORT HEIGHT** PERMITS ACCESS TO INSIDE SURFACE TO INSPECT FOR FULL-PENETRATION WELD.

• **WIDE FOOTING** IMPROVES MECHANICAL STRENGTH TO WITHSTAND VIBRATIONAL STRESSES.

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TRANS-O-CON® Applications

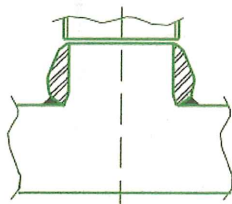
Use TRANS-O-CON connectors instead of

- Welding Tees
- Reinforced Branches
- Non-Reinforced Branches

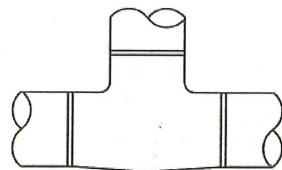
TRANS-O-CON transition pipe connections can be used in all of these applications to advantage. Not only is the cost lower, but consider the TRANS-O-CON benefits shown below.

Why TRANS-O-CON connections are better than welding tees:

- Quicker Fabrication time
- Pipe can be run before branch connections are attached
- Gradual transition from header to branch improves stress distribution
- Lower material costs



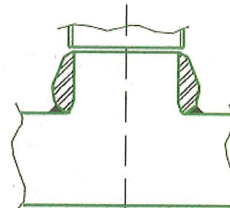
TRANS-O-CON



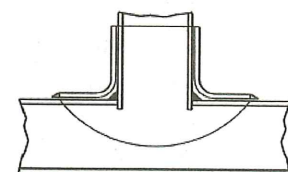
WELDING TEE

Why TRANS-O-CON connections are better than Reinforced and Non-Reinforced Miter Branches:

- Quicker installation
- Provides perfectly contoured internal joint
- Requires no shaping
- Requires less cutting and welding
- Eliminates metal-to-metal lapped surfaces and sharp corners
- Reduces overall cost of installation



TRANS-O-CON



MITER BRANCH

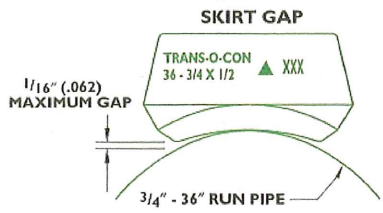
Phoenix Trans-O-Con® Industry Standard Consolidation Straight Bore Branch Connections

ASME SA105 / A 350-LF 2 / MSS SP-97 / POWER PIPING ASME B31.1
LIQUID TRANSPORTATION ASME B31.4 / ASTM A105 / NACE MRO175
REFINING ASME B31.3 / GAS TRANSMISSION ASME B31.8
ASME B16.9 / ASME B16.11 / ASME B1.20.1



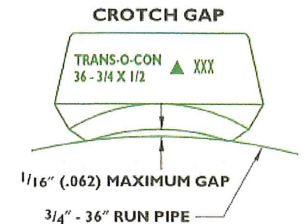
PIPE SIZES	BUTT-WELD (STD) OUTLET SIZE - INCHES											
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"
36 - 3/8"	36 - 3/4"	36 - 1 1/4"	36 - 2 1/2"	36 - 2"	36 - 8"	36 - 4"	36 - 8"	36 - 12"	36 - 16"	36 - 22"	42 - 36"	
1/4"	1/2 - 3/8"	1 1/2"	2 - 3/4"	3 1/2" - 1 1/4"	6 - 2 1/2"	3 1/2" - 2"	6 - 3 1/2"	10 - 5"	14 - 8"	20 - 12"	34 - 26"	
				1"	2 - 1 1/2"	1 1/2"	3 - 2 1/2"	4 - 3"	6 - 5"	10 - 8"	24 - 20"	
					1 1/4"		2"	2 1/2"	4 - 3 1/2"	6 - 5"	18 - 16"	
									3"	4"	14 - 12"	
											10"	
											8"	
											6"	
PIPE SIZES	BUTT-WELD (EXTRA STRONG) OUTLET SIZE - INCHES											
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"
36 - 1/4"	36 - 1/2"	36 - 1"	36 - 2"	36 - 2"	36 - 6"	36 - 4"	36 - 8"	36 - 12"	36 - 16"	36 - 22"	42 - 36"	
	3/8"	3/4" - 1/2"	1 1/2" - 3/4"	3" - 1 1/4"	5 - 2 1/2"	3 1/2" - 2"	6 - 3 1/2"	10 - 5"	14 - 8"	20 - 12"	34 - 26"	
				1"	2 - 1 1/4"	1 1/2"	3 - 2 1/2"	4 - 3"	6 - 5"	10 - 8"	24 - 20"	
							2"	2 1/2"	4 - 3 1/2"	6 - 5"	18 - 16"	
									3"	4"	14 - 12"	
											10"	
											8"	
											6"	
PIPE SIZES	SOCKET-WELD (3000#) OUTLET SIZE - INCHES											
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
36 - 3/8"	36 - 3/4"	36 - 3/4"	36 - 1 1/2"	36 - 3"	36 - 4"	36 - 6"	36 - 8"	36 - 10"	36 - 16"	36 - 22"		
1/4"	1/2 - 3/8"	1/2"	1 1/4 - 3/4"	2 1/2 - 1 1/4"	3 1/2 - 2"	5 - 3"	6 - 4"	8 - 6"	14 - 8"	20 - 12"		
				1"	1 1/2 - 1 1/4"	2 1/2 - 2"	3 1/2 - 2 1/2"	5 - 4"	6 - 5"	10 - 8"		
						1 1/2"	2"	3 1/2 - 3"	4 - 3 1/2"	6 - 5"		
								2 1/2"	3"	4"		
PIPE SIZES	SOCKET-WELD (6000#) OUTLET SIZE - INCHES											
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
36 - 1/4"	36 - 3/8"	36 - 3/4"	36 - 1 1/4"	36 - 3"	36 - 5"	36 - 6"	36 - 8"	36 - 20"	36 - 28"	36 - 16"		
		1/2"	1 - 3/4"	2 1/2 - 1 1/4"	4 - 1 1/2"	5 - 3"	6 - 4"	18 - 6"	26 - 12"	20 - 12"		
				1"	1 1/4"	2 1/2 - 2"	3 1/2 - 2 1/2"	5 - 3 1/2"	10 - 6"	8 - 6"		
						1 1/2"	2"	3 - 2 1/2"	5 - 4"	5"		
								3 1/2 - 3"	3 1/2"	4"		
PIPE SIZES	THREADED (3000#) OUTLET SIZE - INCHES											
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
36 - 1/2"	36 - 1 1/4"	36 - 3/4"	36 - 1 1/2"	36 - 3"	36 - 4"	36 - 6"	36 - 8"	36 - 10"	36 - 16"	36 - 22"		
3/8 - 1/4"	1 - 3/8"	1/2"	1 1/4 - 3/4"	2 1/2 - 1 1/4"	3 1/2 - 2"	5 - 3"	6 - 4"	8 - 6"	14 - 8"	20 - 12"		
				1"	1 1/2 - 1 1/4"	2 1/2 - 2"	3 1/2 - 2 1/2"	5 - 4"	6 - 5"	10 - 8"		
						1 1/2"	2"	3 1/2 - 3"	4 - 3 1/2"	6 - 5"		
								2 1/2"	3"	4"		
PIPE SIZES	THREADED (6000#) OUTLET SIZE - INCHES											
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	
36 - 1/2"	36 - 1 1/4"	36 - 3/4"	36 - 1 1/2"	36 - 3"	36 - 10"	36 - 6"	36 - 8"	36 - 28"	36 - 14"	36 - 20"		
3/8 - 1/4"	1 - 3/8"	1/2"	2 1/2 - 1"	2 1/2 - 1 1/4"	8 - 4"	5 - 3"	6 - 4"	26 - 12"	12 - 8"	18 - 12"		
			3/4"	1 1/4 - 1"	3 1/2 - 2"	2 1/2 - 2"	3 1/2 - 2 1/2"	10 - 6"	6 - 5"	10 - 8"		
					1 1/2 - 1 1/4"	1 1/2"	2"	5 - 4"	4"	6"		
								3 1/2 - 3"	3 1/2"	5"		
								2 1/2"	3"	4"		

FLAT SIZES available 1/8" through 6" pipe outlet. Traditional line of run pipe size available on inquiry. Size on Size are conventional funneled inlet design.



HOW CONDENSED SIZE WORKS:
Each forged outlet size listed on the chart is designed to fit a range of pipe run sizes. For example: The 1/2" fitting marked 36-3/4" will fit each pipe run size from 3/4" to 36". There will be a maximum 1/16" gap as illustrated in diagrams. This gap is negligible when welding and has no adverse effect on the integrity of the connection.

MINIMIZE WARHOUSE INVENTORY

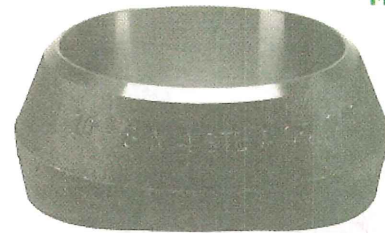




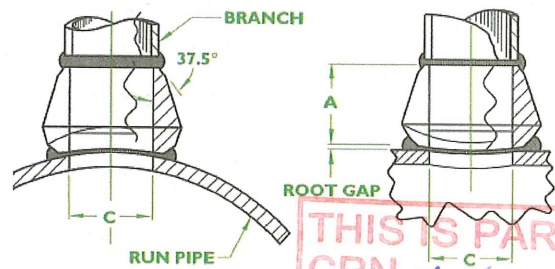
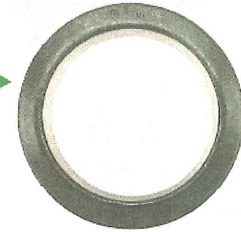
TRANS-O-CON® Butt-Weld Reducing Sizes

MSS SP-97

OUTLET SIZE (INCHES)	DIMENSIONS				APPROX. WEIGHT POUNDS	
	STANDARD		EXTRA STRONG		STANDARD	EXTRA STRONG
	A	C	A	C		
1/4"	.652	.364	.625	.302	.08	.10
3/8"	.750	.493	.750	.423	.09	.15
1/2"	.750	.622	.750	.546	.35	.40
3/4"	.875	.824	.875	.742	.40	.45
1"	1.063	1.049	1.063	.957	.50	.60
1 1/4"	1.250	1.380	1.250	1.278	.70	.80
1 1/2"	1.313	1.610	1.313	1.500	.75	.85
2"	1.500	2.067	1.500	1.939	1.29	1.35
2 1/2"	1.625	2.469	1.625	2.323	1.75	1.82
3"	1.750	3.068	1.750	2.900	2.63	2.75
4"	3.000	4.026	2.000	3.826	4.30	4.45
5"	2.125	5.047	2.125	4.813	9.59	6.39
6"	2.375	6.065	2.375	5.761	12.00	17.60
8"	2.750	7.981	3.875	7.625	23.00	34.80
10"	3.06	10.02	3.69	9.750	27.22	36.19
12"	3.38	12.00	4.06	11.750	34.00	67.00
14"	3.50	13.25	3.94	13.000	56.00	72.25
16"	3.69	15.25	4.18	15.000	76.00	102.10
18"	3.81	17.25	4.38	17.000	97.00	129.75
20"	4.00	19.25	4.69	19.000	120.00	166.00
24"	4.56	23.25	5.50	23.000	194.61	262.00



STRAIGHT THRU BORE



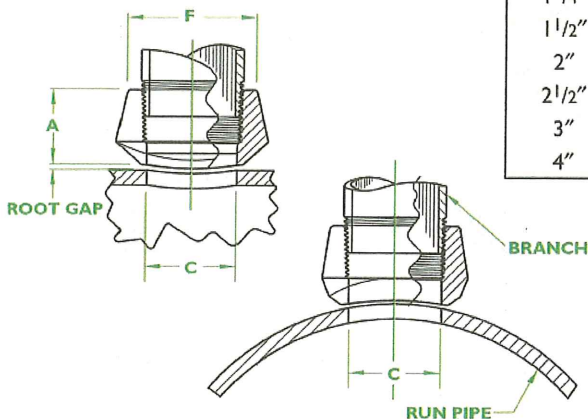
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TRANS-O-CON® Threaded Reducing Sizes

MSS SP-97



OUTLET SIZE (INCHES)	DIMENSIONS						APPROX. WEIGHT POUNDS	
	3000 #			6000 #			3000 #	6000 #
	A	C	F	A	C	F		
1/8"	.750	.328	.875				.10	
1/4"	.750	.437	.875				.10	
3/8"	.813	.562	1.000				.16	
1/2"	1.000	.703	1.250	1.250	.703	1.563	.25	.40
3/4"	1.063	.906	1.438	1.438	.906	1.813	.38	.70
1"	1.313	1.141	1.813	1.563	1.141	2.250	.70	1.20
1 1/4"	1.359	1.469	2.188		1.469		.90	1.50
1 1/2"	1.375	1.719	2.436	1.688	1.719	3.000	1.40	1.90
2"	1.531	2.188	2.938	2.063	2.188	3.625	1.80	5.00
2 1/2"	1.813	2.528	3.438				3.00	
3"	2.000	3.203	4.125				4.35	
4"	2.250	4.203	5.125				7.10	



NOTE: NPT Threads to B1.20.1.

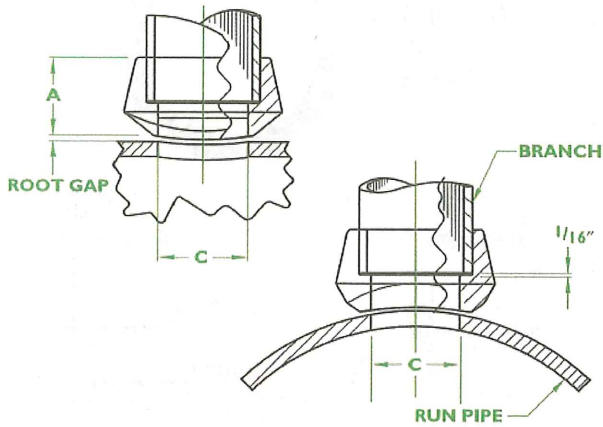


NEW FORGING TECHNOLOGY



TRANS-O-CON® Socket Reducing Sizes

MSS SP-97



OUTLET SIZE (INCHES)	DIMENSIONS				APPROX. WEIGHT POUNDS	
	3000 #		6000 #		3000 #	6000 #
	A	C	A	C		
1/8"	.750	.364			.10	
1/4"	.750	.364			.10	
3/8"	.813	.493			.16	
1/2"	1.000	.622	1.250	.464	.25	.45
3/4"	1.063	.824	1.438	.612	.38	.70
1"	1.313	1.049	1.563	.8153	.70	1.10
1 1/4"	1.359	1.380	1.625	1.160	.90	1.50
1 1/2"	1.375	1.610	1.668	1.338	1.40	1.80
2"	1.531	2.067	2.063	1.687	1.80	4.70
2 1/2"	1.563	2.469			2.75	
3"	1.750	3.068			3.80	
4"	1.875	4.026			7.25	

NOTE: Socket minimum depth per ANSI B16.11.

THIS IS PART OF
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TRANS-O-CON® Elbow & Lateral Connections

3000# for 90° long radius pipe elbows

Butt Weld / Socket / Threaded

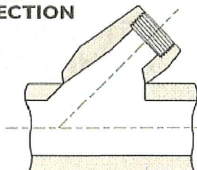
ELBOW SIZES (INCHES)	OUTLET SIZE (INCHES)	DIMENSIONS		APPROX. WEIGHT POUNDS
		C	E	
36 - 3/4"	1/2" *	1.500	1.594	.50
36 - 1"	3/4" *	1.813	1.875	.70
36 - 2"	1" *	2.250	2.188	1.15
36 - 2"	1 1/2"	3.125	2.625	2.65
36 - 3"	2"	4.188	3.185	5.25

45° LATERAL

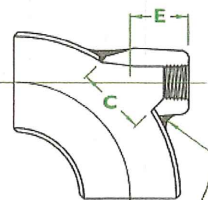
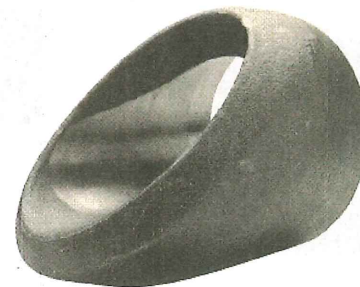
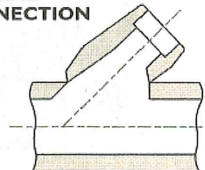
OUTLET SIZE (INCHES)	1/2" *	3/4" *	1" *	1 1/4"	1 1/2"	2"
SIZE RANGE (INCHES)	12 - 3	12 - 6	12 - 6	12 - 6	12 - 10	12 - 10
	2 1/2 - 1 1/4	5 - 3	5 - 3	5 - 3	8 - 6	8 - 6
		2 1/2 - 2	2 1/2 - 2	2 1/2 - 2	5 - 4	5 - 4

* Available in 6000#

THREADED LATERAL CONNECTION

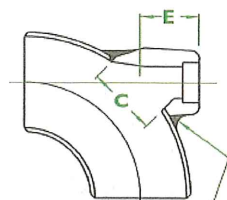


SOCKET LATERAL CONNECTION



THREADED

FULL PENETRATION WELD



SOCKET

FULL PENETRATION WELD

NOTE: Butt-Welding end dimensions to ANSI B16.9 and ANSI B 16.25.