



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"				

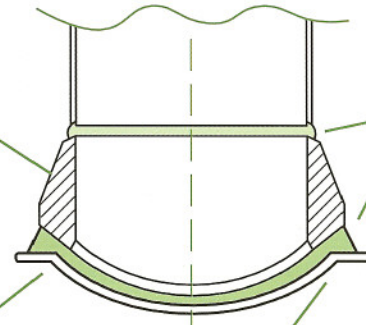
TRANS-O-CON® design provides 100% pipe strength and unrestricted fluid flow

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.

TRANS-O-CON® Applications

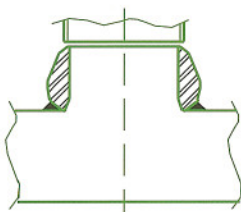
Use TRANS-O-CON connectors instead of

- Welding Tees
- Reinforced Branches
- Non-Reinforced Branches

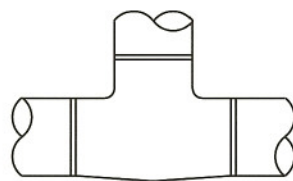
TRANS-O-CON transition pipe connections can be used in all of these applications to advantage. Not only is the cost lower, but consider the TRANS-O-CON benefits shown below.

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



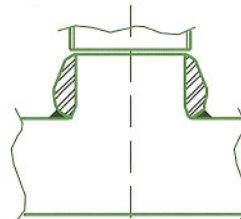
TRANS-O-CON



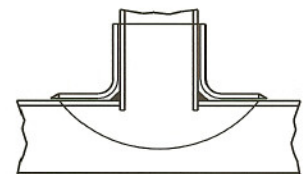
WELDING TEE

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



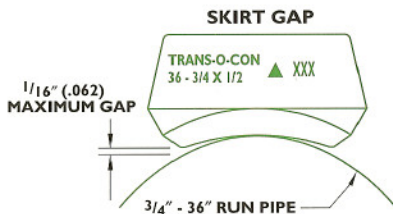
MITER BRANCH



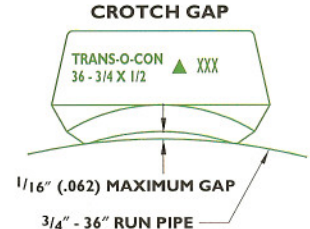
Phoenix Trans-O-Con®
Industry Standard Consolidation
Straight Bore Branch Connections

ASME SA105 / A 350-LF 2 / MSS SP-97 / POWER PIPING ASME B31.1
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 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" 1/4"	36 - 3/4" 1/2 - 3/8"	36 - 1 1/4" 1 - 1/2"	36 - 2 1/2" 2 - 3/4"	36 - 2" 3 1/2" - 1 1/4" 1"	36 - 8" 6 - 2 1/2" 2 - 1 1/2" 1 1/4"	36 - 4" 3 1/2" - 2" 1 1/2"	36 - 8" 6 - 3 1/2" 3 - 2 1/2" 2"	36 - 12" 10 - 5" 4 - 3" 2 1/2"	36 - 16" 14 - 8" 6 - 5" 4 - 3 1/2" 3"	36 - 22" 20 - 12" 10 - 8" 6 - 5" 4"	42 - 36" 34 - 26" 24 - 20" 18 - 16" 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" 3/8"	36 - 1" 3/4" - 1/2"	36 - 2" 1 1/2" - 3/4"	36 - 2" 3" - 1 1/4" 1"	36 - 6" 5 - 2 1/2" 2 - 1 1/4"	36 - 4" 3 1/2" - 2" 1 1/2"	36 - 8" 6 - 3 1/2" 3 - 2 1/2" 2"	36 - 12" 10 - 5" 4 - 3" 2 1/2"	36 - 16" 14 - 8" 6 - 5" 4 - 3 1/2" 3"	36 - 22" 20 - 12" 10 - 8" 6 - 5" 4"	42 - 36" 34 - 26" 24 - 20" 18 - 16" 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" 1/4"	36 - 3/4" 1/2 - 3/8"	36 - 3/4" 1/2"	36 - 1 1/2" 1 1/4 - 3/4"	36 - 3" 2 1/2" - 1 1/4" 1"	36 - 4" 3 1/2" - 2" 1 1/2" - 1 1/4"	36 - 6" 5 - 3" 2 1/2" - 2" 1 1/2"	36 - 8" 6 - 4" 3 1/2" - 2 1/2" 2"	36 - 10" 8 - 6" 5 - 4" 3 1/2" - 3" 2 1/2"	36 - 16" 14 - 8" 6 - 5" 4 - 3 1/2" 3"	36 - 22" 20 - 12" 10 - 8" 6 - 5" 4"	FLAT SIZES available 1/8" through 6" pipe outlet. Traditional line of run pipe size available on inquiry.
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" 1/2"	36 - 1 1/4" 1 - 3/4"	36 - 3" 2 1/2" - 1 1/4" 1"	36 - 5" 4 - 1 1/2" 1 1/4"	36 - 6" 5 - 3" 2 1/2" - 2" 1 1/2"	36 - 8" 6 - 4" 3 1/2" - 2 1/2" 2"	36 - 20" 18 - 6" 5 - 3 1/2" 3 - 2 1/2"	36 - 28" 26 - 12" 10 - 6" 5 - 4" 3 1/2" - 3"	36 - 16" 14 - 10" 8 - 6" 5" 4"	Size on Size are conventional funneled inlet design.
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" 3/8 - 1/4"	36 - 1 1/4" 1 - 3/8"	36 - 3/4" 1/2"	36 - 1 1/2" 1 1/4 - 3/4"	36 - 3" 2 1/2" - 1 1/4" 1"	36 - 4" 3 1/2" - 2" 1 1/2" - 1 1/4"	36 - 6" 5 - 3" 2 1/2" - 2" 1 1/2"	36 - 8" 6 - 4" 3 1/2" - 2 1/2" 2"	36 - 10" 8 - 6" 5 - 4" 3 1/2" - 3" 2 1/2"	36 - 16" 14 - 8" 6 - 5" 4 - 3 1/2" 3"	36 - 22" 20 - 12" 10 - 8" 6 - 5" 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" 3/8 - 1/4"	36 - 1 1/4" 1 - 3/8"	36 - 3/4" 1/2"	36 - 1 1/2" 2 1/2" - 1" 3/4"	36 - 3" 2 1/2" - 1 1/4" 1 1/4" - 1"	36 - 10" 8 - 4" 3 1/2" - 2" 1 1/2" - 1 1/4"	36 - 6" 5 - 3" 2 1/2" - 2" 1 1/2"	36 - 8" 6 - 4" 3 1/2" - 2 1/2" 2"	36 - 28" 26 - 12" 10 - 6" 5 - 4" 3 1/2" - 3" 2 1/2"	36 - 14" 12 - 8" 6 - 5" 4" 3 1/2" 3"	36 - 20" 18 - 12" 10 - 8" 6" 5" 4"	



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 WAREHOUSE INVENTORY





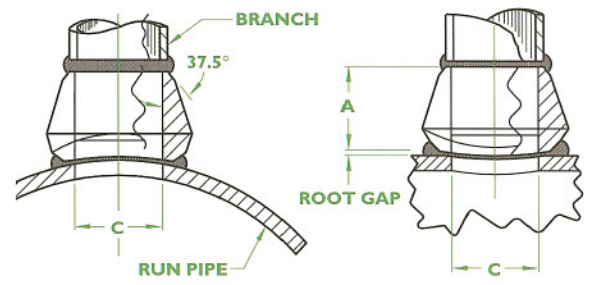
TRANS-O-CON® Butt-Weld Reducing Sizes

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

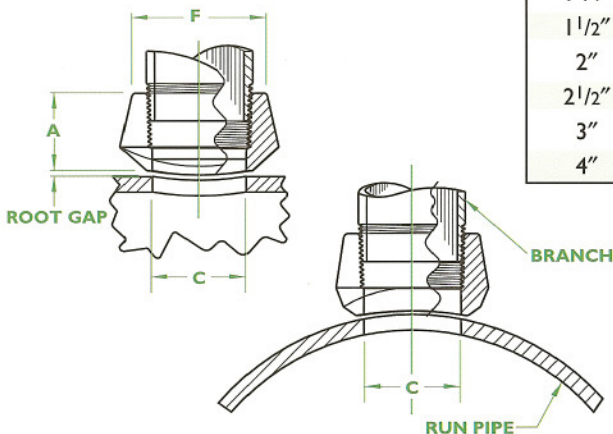


TRANS-O-CON® Threaded Reducing Sizes

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.

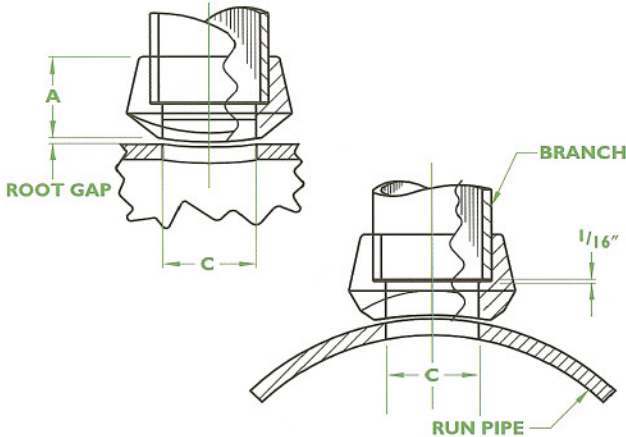


NEW FORGING TECHNOLOGY



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.

TRANS-O-CON® Elbow & Lateral Connections

3000# for 90° long radius pipe elbows

Butt Weld / Socket / Threaded

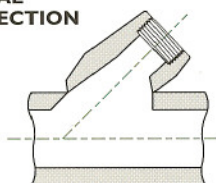
ELBOW SIZES (INCHES)	OUTLET SIZE (INCHES)	DIMENSIONS		APPROX. WEIGHT POUNDS
		C	E	
36 - 3/4"	1/2" *	1.500	1.594	.50
36 - 1"	3/4" *	1.813	1.875	.70
36 - 2"	1" *	2.250	2.188	1.15
36 - 2"	1 1/2"	3.125	2.625	2.65
36 - 3"	2"	4.188	3.185	5.25

45° LATERAL

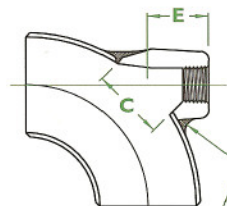
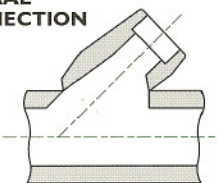
OUTLET SIZE (INCHES)	1/2" *	3/4" *	1" *	1 1/4"	1 1/2"	2"
SIZE RANGE (INCHES)	12 - 3	12 - 6	12 - 6	12 - 6	12 - 10	12 - 10
	2 1/2 - 1 1/4	5 - 3	5 - 3	5 - 3	8 - 6	8 - 6
		2 1/2 - 2	2 1/2 - 2	2 1/2 - 2	5 - 4	5 - 4

* Available in 6000#

THREADED LATERAL CONNECTION

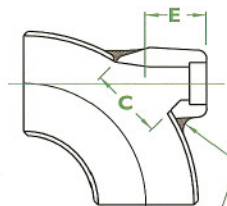


SOCKET LATERAL CONNECTION



THREADED

FULL PENETRATION WELD



SOCKET

FULL PENETRATION WELD

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