

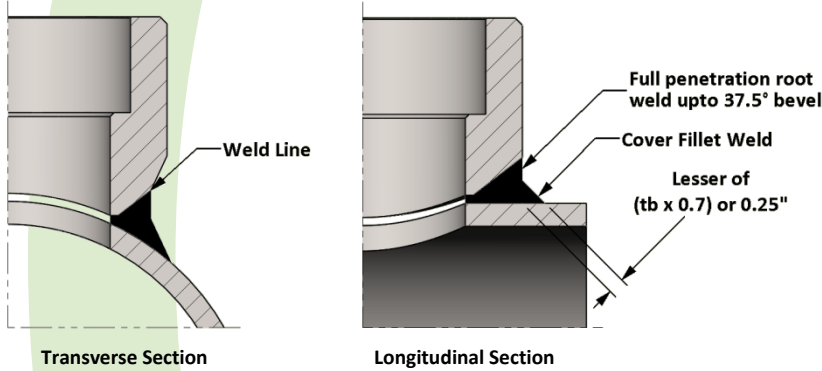
# Socket Weld Outlet

**Specification:** ASME B31.1 & MSS-SP97  
Also in ASME B31.3 and ASME BPVC Sec 1 & Sec 8 Div 2

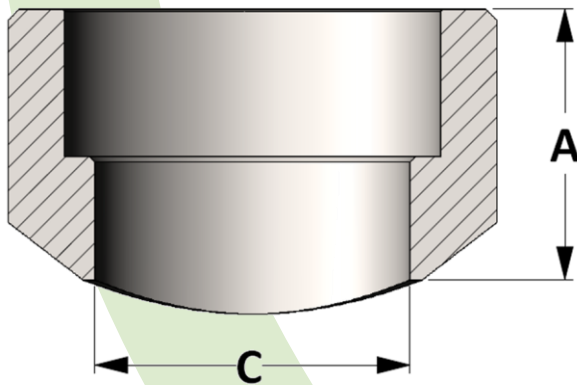
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 6" in Class 3000 and 6000  
1/2" - 4" in class 9000

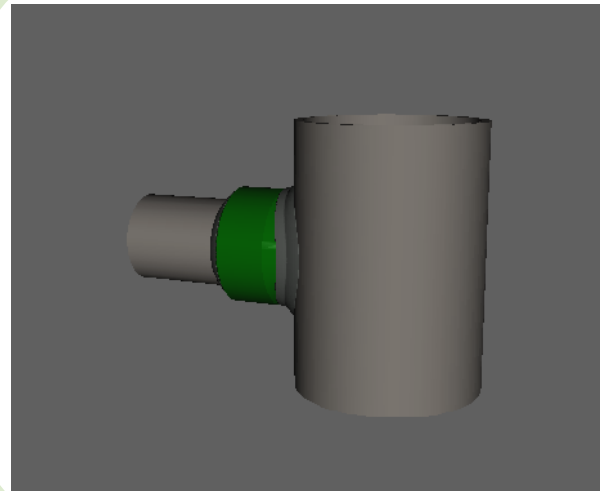
## Welding onto Header Pipe



Socket Weld Pressure Class	Pipe Schedule
Class 3000	S80/XH
Class 6000	S160
Class 9000	XXH



Active  
3D  
Model

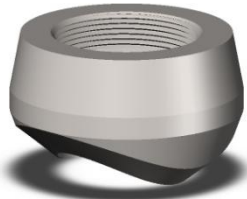


All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 13502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.750	0.813	1.000	1.063	1.313	1.313	1.375	1.500	1.813	2.000	2.125	2.250
C	0.269	0.364	0.493	0.622	0.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026
LBS	0.07	0.12	0.16	0.27	0.36	0.59	0.84	1.00	1.53	2.66	3.72	4.40	7.05

PIPE SIZE	CLASS 6000 – Figure No. 16502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.125	1.125	1.125	1.250	1.438	1.563	1.625	1.688	2.063	2.688	2.688	---	3.313
C	0.157	0.250	0.359	0.464	0.612	0.815	1.160	1.338	1.687	2.125	2.624	---	3.438
LBS	0.15	0.30	0.30	0.48	0.81	1.30	1.54	1.97	5.01	6.19	7.36	---	14.02

PIPE SIZE	CLASS 9000 – Figure No. 19502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	---	---	---	1.250	1.469	1.625	1.750	1.768	2.000	2.438	2.750	---	3.313
C	---	---	---	0.252	0.434	0.599	0.896	1.100	1.503	1.771	2.300	---	3.152
LBS	---	---	---	0.55	0.80	1.40	1.88	2.10	3.35	6.48	11.11	---	17.69



# Threaded Outlet

**Specification:** ASME B31.1 & MSS-SP97

Also in ASME B31.3 and ASME BPVC Sec I & Sec VIII Div 2

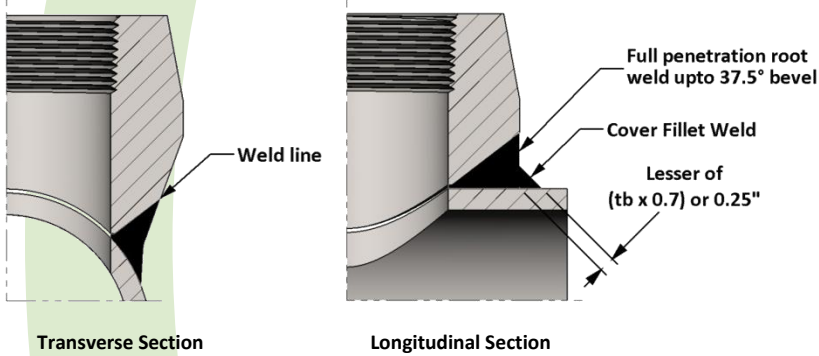
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" - 6" in Class 3000 and 6000  
Also available in class 9000

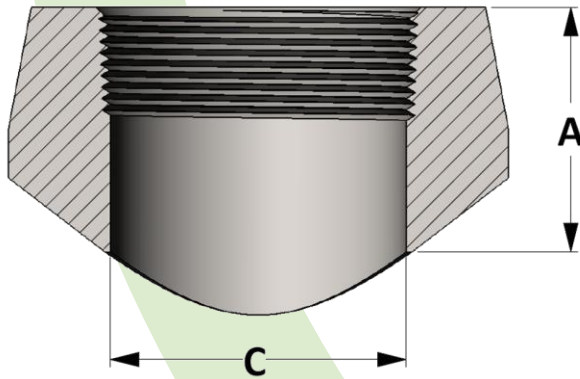
**Threads:** American National Standard Taper Pipe Threads  
NPT (ANSI/ASME B1.20.1-1983)

Also available in other thread forms: NPTF, NPSC, NPSM, NGT, SAE, BSPT, BSPP and in any combination.  
Left hand threads available upon request.

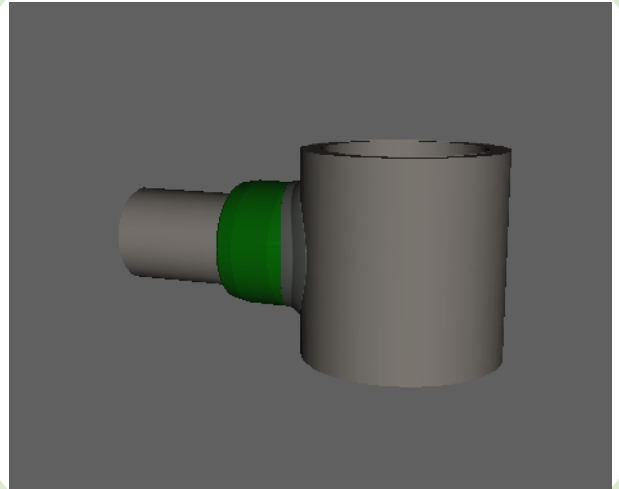
## Welding onto Header Pipe



Threaded Pressure Class	Pipe Schedule
Class 3000	XH
Class 6000	S160



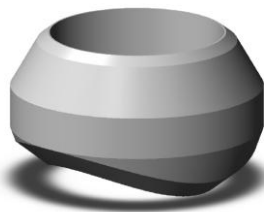
Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	CLASS 3000 – Figure No. 03502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.750	0.750	0.813	1.000	1.063	1.313	1.313	1.375	1.500	1.813	2.000	2.125	2.250
C	0.328	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188	2.563	3.188	3.688	4.188
LBS	0.07	0.12	0.16	0.21	0.36	0.59	0.84	1.00	1.72	2.90	4.24	4.40	6.91

PIPE SIZE	CLASS 6000 – Figure No. 06502												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	1.125	1.125	1.125	1.250	1.438	1.563	1.625	1.688	2.063	2.688	2.688	---	3.313
C	0.328	0.438	0.563	0.703	0.906	1.141	1.468	1.688	2.188	2.563	3.188	---	4.188
LBS	0.15	0.21	0.28	0.42	0.59	1.02	1.60	1.98	3.06	6.35	10.12	---	19.72



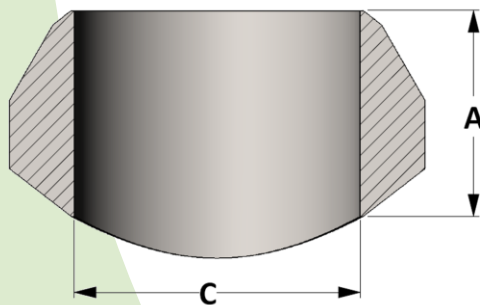
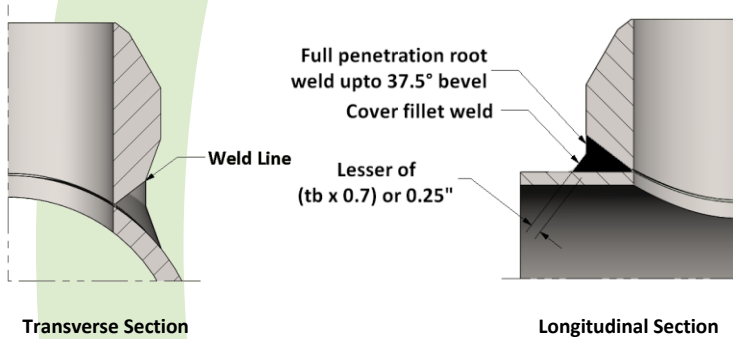
# Butt Weld Outlet

**Specification:** ASME B31.1 & MSS-SP97  
Also in ASME B31.3, ASME B31.8, and  
ASME BPVC Sec I & Sec VIII Div 2

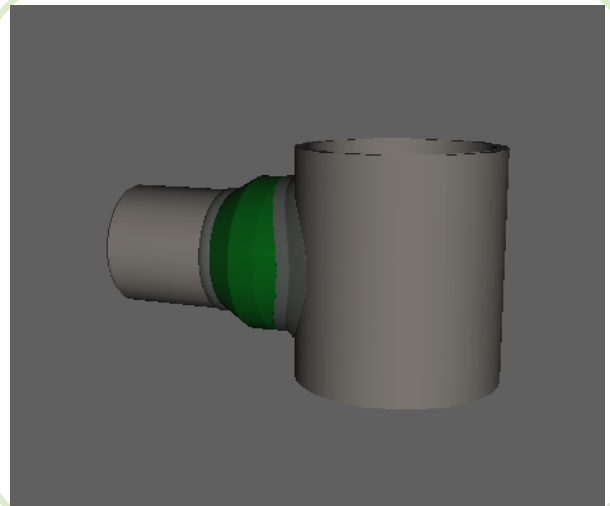
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/8" – 72" in all Schedules  
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness

## Welding onto Header Pipe

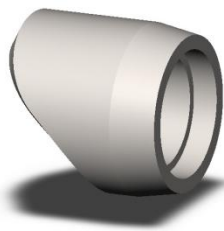


Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	STD – Figure No. 45502			XH – Figure No. 48502			S160 – Figure No. 52502			XXH – Figure No. 53502		
	A	C	LBS	A	C	LBS	A	C	LBS	A	C	LBS
1/8	0.625	0.269	0.08	0.625	0.215	0.10	1.000	0.157	0.12	---	---	---
1/4	0.625	0.364	0.08	0.625	0.302	0.08	1.125	0.250	0.15	---	---	---
3/8	0.750	0.493	0.15	0.750	0.423	0.15	1.125	0.359	0.20	---	---	---
1/2	0.750	0.622	0.18	0.750	0.546	0.20	1.125	0.466	0.23	1.125	0.252	0.23
3/4	0.875	0.824	0.25	0.875	0.742	0.31	1.250	0.614	0.65	1.250	0.434	0.65
1	1.063	1.049	0.50	1.063	0.957	0.55	1.500	0.815	0.78	1.500	0.599	0.78
1-1/4	1.250	1.380	0.80	1.250	1.278	0.90	1.750	1.160	1.16	1.750	0.896	1.16
1-1/2	1.313	1.610	1.00	1.313	1.500	1.10	2.000	1.338	1.60	2.000	1.100	1.60
2	1.500	2.067	1.75	1.500	1.939	1.75	2.188	1.689	1.95	2.188	1.503	1.95
2-1/2	1.625	2.469	2.50	1.625	2.323	2.28	2.438	2.125	3.02	2.438	1.771	3.02
3	1.750	3.068	3.82	1.750	2.900	3.50	2.875	2.624	5.75	2.875	2.300	5.75
3-1/2	1.875	3.548	5.10	1.875	3.364	4.75	---	---	---	---	---	---
4	2.000	4.026	6.20	2.000	3.826	5.00	3.438	3.438	9.56	3.438	3.152	9.56
5	2.250	5.047	8.00	2.250	4.813	8.50	3.688	4.313	12.65	3.688	4.063	12.65
6	2.375	6.065	11.50	3.063	5.761	15.00	4.125	5.189	25.25	4.125	4.897	25.25
8	2.750	7.981	22.00	3.875	7.625	35.00	The "A" dimension corresponds to the size and schedule of the Header pipe and is available upon request.			The "A" dimension corresponds to the size and schedule of the Header pipe and is available upon request.		
10	3.063	10.020	37.00	3.688	9.750	46.00						
12	3.375	12.000	44.00	4.063	11.750	63.00						
14	3.500	13.250	63.00	3.938	13.000	72.00						
16	3.688	15.250	76.00	4.188	15.000	102.00						
18	3.813	17.250	100.00	4.375	17.000	130.00						
20	4.000	19.250	112.00	4.688	19.000	163.00						
24	4.563	23.250	210.00	5.500	23.000	271.00						
26	4.688	25.250	245.00	5.750	25.000	325.00						
30	5.375	29.250	375.00	---	---	---						
36	5.375	35.250	498.00	---	---	---						
48	5.813	47.250	1125.00	---	---	---						



# Elbow Outlet

**Specification:** ASME B31.1

Also in ASME B31.3, ASME B31.8, and ASME BPVC Sec I & Sec VIII Div 2

Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

Socket Weld ends per B16.11

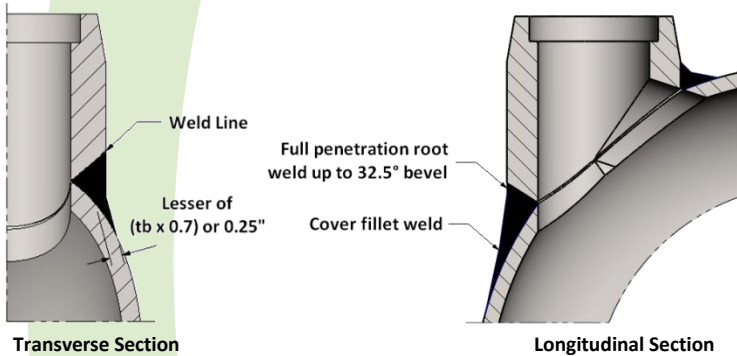
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/4" – 36" in all Schedules • 1/4" – 4" in Class 3000 & Class 6000

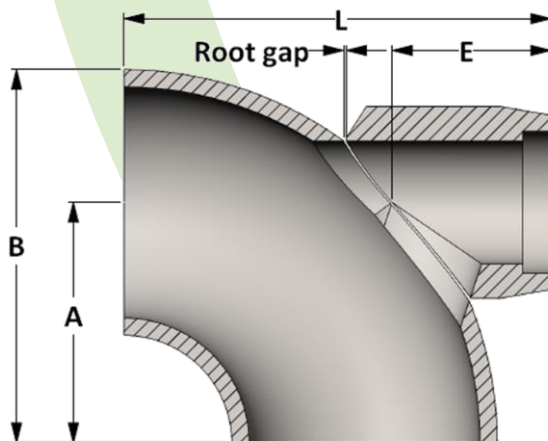
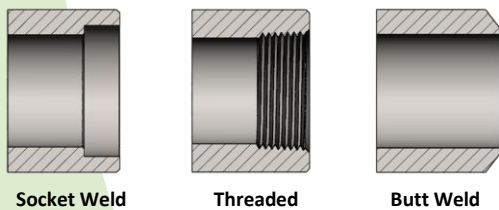
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness.

Elbow Outlets suited for short elbow radii & 3D elbows are available upon request.

## Welding onto Header Pipe



## End Preparations



Active  
**3D**  
Model



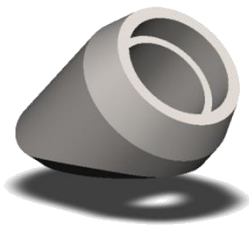
## Equation for overall length

$$L = E + \sqrt{B^2 - A^2} + \text{Root gap}$$

All dimensions are in inches • Weights are based on Carbon Steel

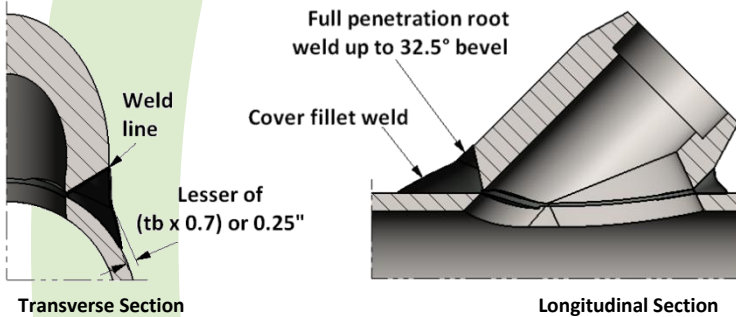
PIPE SIZE	STD / S40		XH / S80		Class 3000		Class 6000	
	E	LBS	E	LBS	E	LBS	E	LBS
1/4	1.625	0.21	1.625	0.25	1.593	0.23	1.813	0.54
3/8	1.625	0.29	1.625	0.31	1.625	0.37	1.813	0.82
1/2	1.625	0.40	1.625	0.45	1.625	0.45	2.125	1.00
3/4	1.875	0.75	1.875	0.90	1.875	0.70	2.438	1.40
1	2.250	1.25	2.250	1.40	2.250	1.35	2.781	2.55
1-1/4	2.500	1.84	2.500	1.99	2.500	2.00	3.000	3.40
1-1/2	2.688	2.05	2.688	2.25	2.688	2.60	3.313	5.55
2	3.125	3.60	3.125	3.95	3.125	4.85	4.063	9.38
2-1/2	3.438	4.36	3.438	4.92	3.438	5.50	5.125	17.99
3	3.906	6.50	3.906	7.46	4.375	10.60	---	---
4	4.750	13.50	4.750	13.91	5.125	16.34	---	---
6	6.375	32.52	7.063	40.60	---	---	---	---
8	7.750	53.38	9.125	88.04	---	---	---	---
10	9.188	99.00	10.500	157.41	---	---	---	---
12	10.875	167.37	12.063	261.47	---	---	---	---



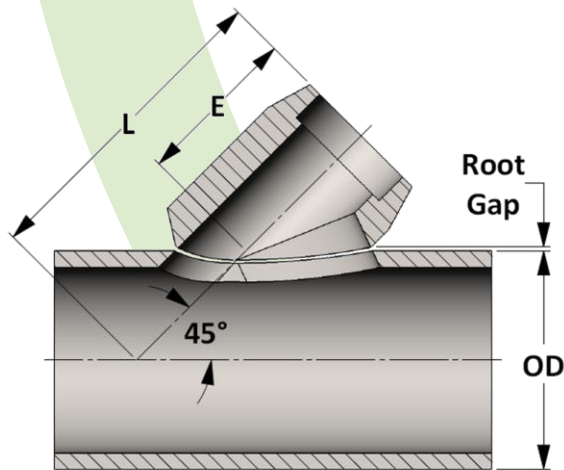
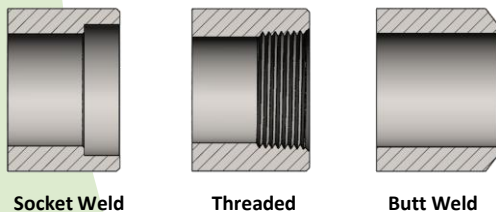


# Lateral Outlet

## Welding onto Header Pipe



## End Preparations



Active  
3D  
Model



**Equation for center to face**  
$$L = E + 1.414(OD/2 + \text{Root Gap})$$

All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	STD / S40		XH / S80		Class 3000		Class 6000	
	E	LBS	E	LBS	E	LBS	E	LBS
1/4	1.625	0.21	1.625	0.25	1.593	0.23	1.813	0.54
3/8	1.625	0.29	1.625	0.31	1.625	0.37	1.813	0.82
1/2	1.625	0.40	1.625	0.45	1.625	0.45	2.125	1.00
3/4	1.875	0.75	1.875	0.90	1.875	0.70	2.438	1.40
1	2.250	1.25	2.250	1.40	2.250	1.35	2.781	2.55
1-1/4	2.500	1.84	2.500	1.99	2.500	2.00	3.000	3.40
1-1/2	2.688	2.05	2.688	2.25	2.688	2.60	3.313	5.55
2	3.125	3.60	3.125	3.95	3.125	4.85	4.063	9.38
2-1/2	3.438	4.36	3.438	4.92	3.438	5.50	5.125	17.99
3	3.906	6.50	3.906	7.46	4.375	10.60	---	---
4	4.750	13.50	4.750	13.91	5.125	16.34	---	---
6	6.375	32.52	7.063	40.60	---	---	---	---
8	7.750	53.38	9.125	88.04	---	---	---	---
10	9.188	99.00	10.500	157.41	---	---	---	---
12	10.875	167.37	12.063	261.47	---	---	---	---



# Nipple Outlet

**Specification:** ASME B31.1

Also in ASME B31.3, ASME B31.8, and ASME BPVC Sec I & Sec VIII Div 2  
Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

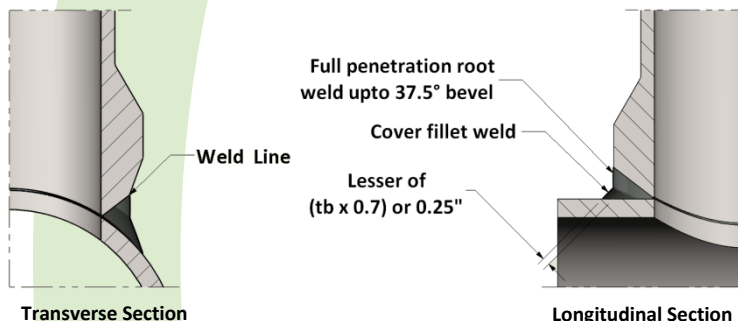
**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

**Sizes:** 1/2" – 6" in all Schedules

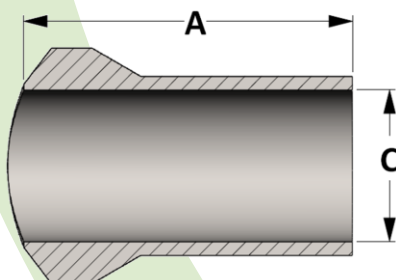
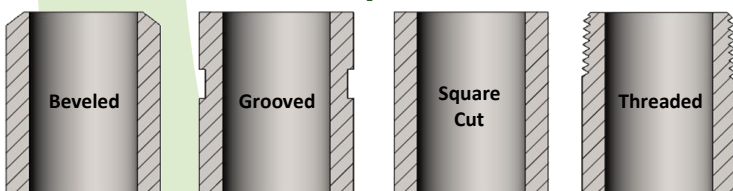
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness.

Available in standard lengths and **in any length the customer desires**

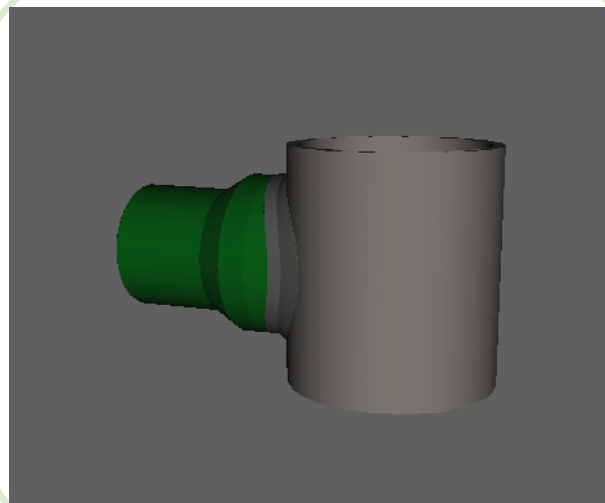
## Welding onto Header Pipe



## End Preparations



Active  
**3D**  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	STD – Figure No. 45535			XH – Figure No. 48535			S160 – Figure No. 52535			XXH – Figure No. 53535		
	A	C	LBS	A	C	LBS	A	C	LBS	A	C	LBS
1/2	3.500	0.622	0.33	3.500	0.546	0.39	3.500	0.466	0.55	3.500	0.252	0.57
3/4	3.500	0.824	0.44	3.500	0.742	0.53	3.500	0.614	0.82	3.500	0.434	0.83
1	3.500	1.049	0.70	3.500	0.957	0.81	3.500	0.815	1.32	3.500	0.599	1.39
1-1/4	3.500	1.380	1.036	3.500	1.278	1.22	3.500	1.160	1.83	3.500	0.896	1.86
1-1/2	3.500	1.610	1.23	3.500	1.500	1.45	3.500	1.338	2.73	3.500	1.100	2.37
2	3.500	2.067	1.72	3.500	1.939	2.08	3.500	1.689	3.71	3.500	1.503	3.57

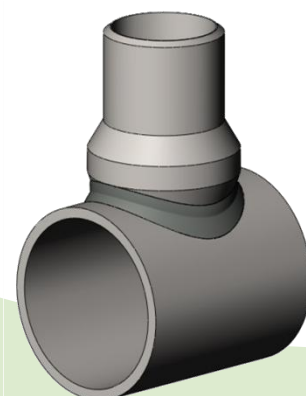
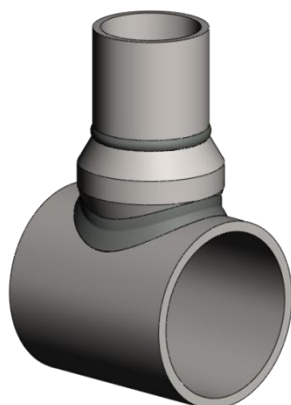
## Advantages of a Nipple Outlet

### Nipple & Branch Connection

- Two fittings
- Two MTR's
- Two welds
- Rough Transition
- More labor

### Nipple Outlet

- One fitting
- One MTR
- One weld
- Smooth Transition
- Less labor





# Braze On Outlet

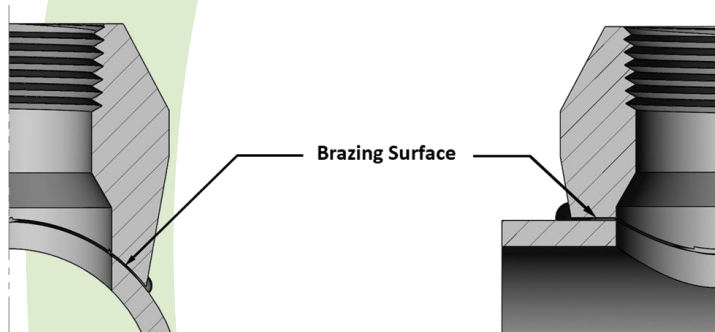
**Specification:** MIL-F-1183

**Material:** Available in all Bronze Alloys certified to ASTM, ASME and Military Standards

**Sizes:** 1/4" – 4" in all Pipe Schedules • 1/4" – 4" in Tube K, L, M

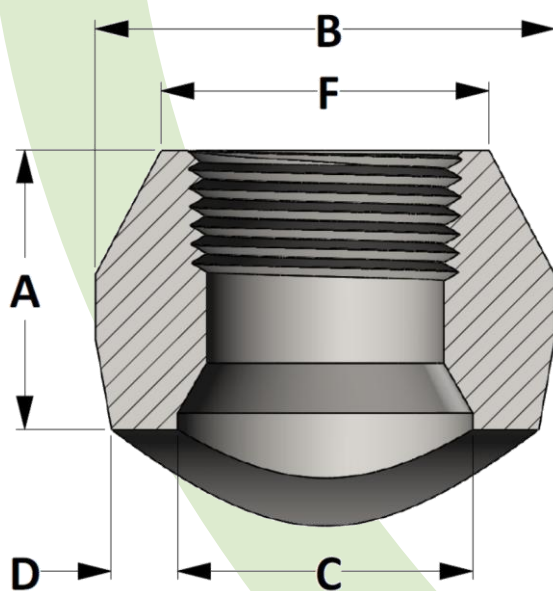
Available as Socket Weld or Threaded

## Brazing onto Header Pipe

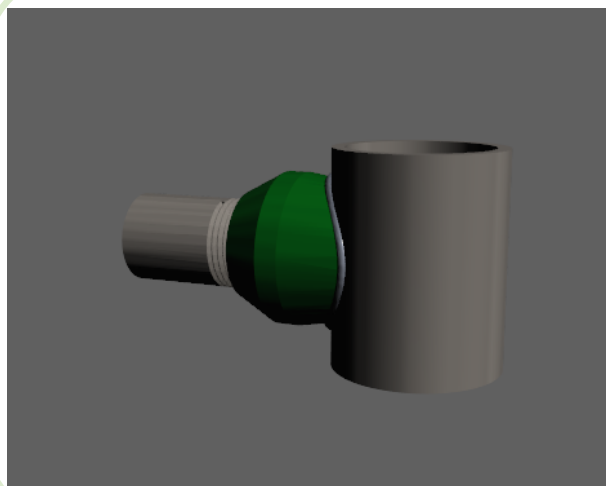


Transverse Section

Longitudinal Section



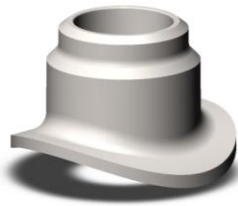
Active  
**3D**  
Model



All dimensions are in inches

PIPE SIZE	For Tubing Type K, L AND M										
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.688	0.813	0.813	1.000	1.063	1.250	1.313	1.375	1.500	1.813	2.125
B	1.000	1.250	1.250	1.438	1.750	2.125	2.563	2.875	3.500	4.125	5.500
C	0.563	0.750	0.750	0.875	1.125	1.438	1.750	2.000	2.563	3.000	4.313
D	0.188	0.190	0.190	0.220	0.240	0.270	0.300	0.330	0.360	0.384	0.437
F	0.700	0.855	0.855	1.020	1.250	1.535	1.900	2.160	2.675	3.215	4.400

PIPE SIZE	For IPS Pipe										
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.688	0.813	1.000	1.063	1.250	1.313	1.375	1.500	1.813	2.000	2.250
B	1.000	1.250	1.438	1.750	2.125	2.563	2.875	3.500	4.125	4.813	6.000
C	0.563	0.750	0.875	1.125	1.438	1.750	2.000	2.563	3.000	3.688	4.750
D	0.188	0.190	0.220	0.240	0.270	0.300	0.330	0.360	0.384	0.442	0.476
F	0.700	0.855	1.020	1.250	1.535	1.900	2.160	2.675	3.215	3.880	4.940



# Insert Outlet

**Specification:** ASME B31.3

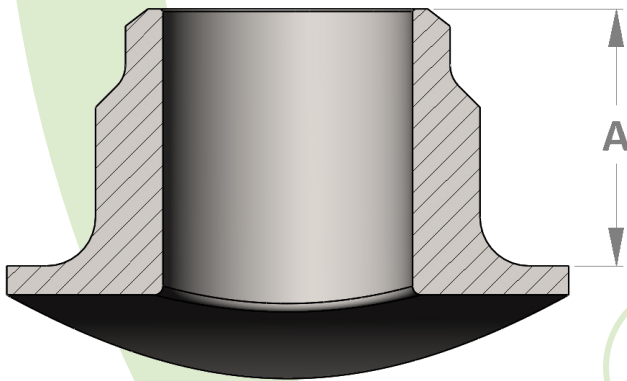
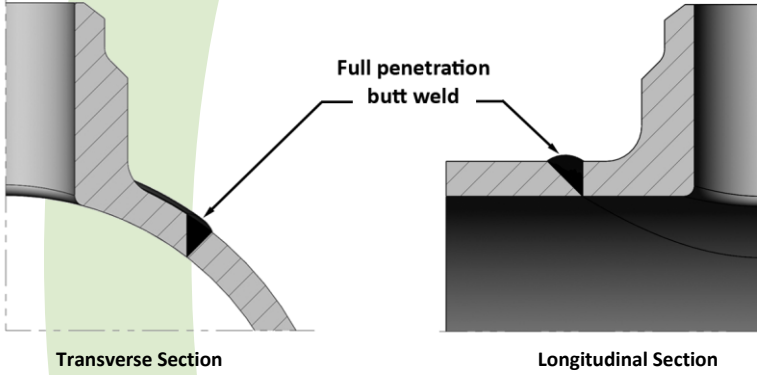
Also in ASME B31.1 and ASME BPVC Sec 1 & Sec 8 Div 2

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

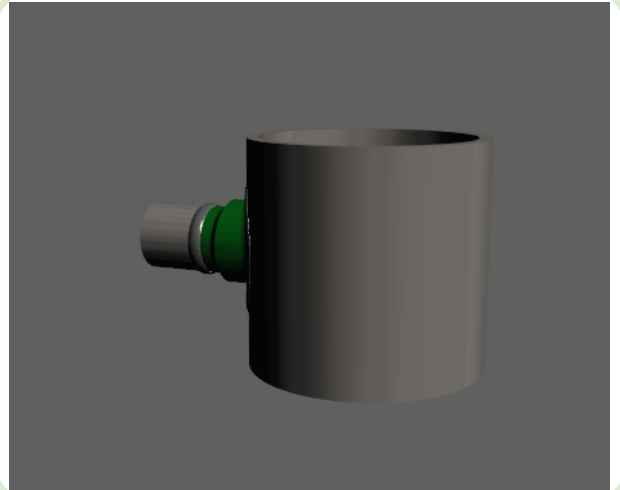
**Sizes:** 1/8" - 30" in all Schedules  
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness

Also available as socket weld and threaded

## Welding onto Header Pipe



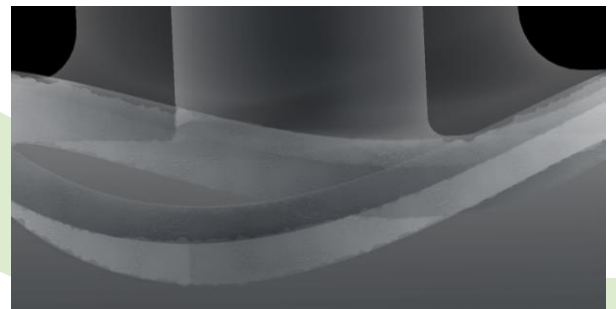
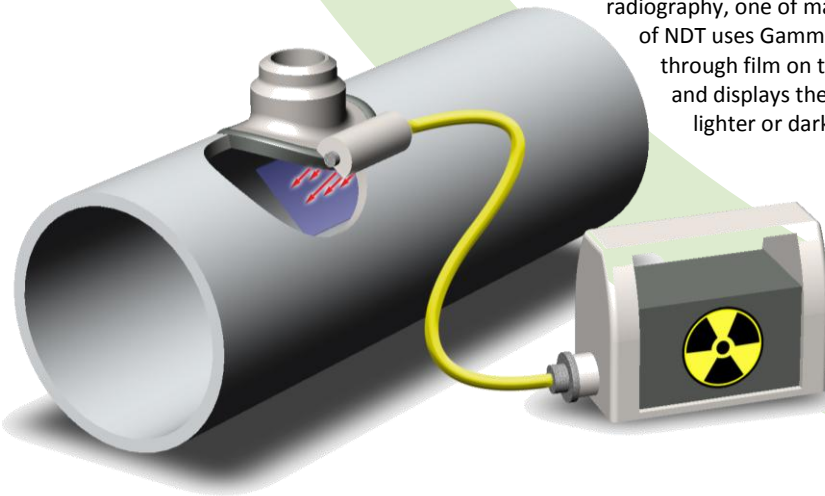
Active  
3D  
Model



All dimensions are in inches

PIPE SIZE	STD – Figure No. 45641 / XH – Figure No. 48641												
	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
A	0.625	0.625	0.750	0.750	0.875	1.063	1.250	1.500	1.500	1.625	1.750	1.875	2.000

An insert welded outlet is a type of integrally reinforced branch connection used to facilitate radiography, one of many non-destructive tests (NDT) used to inspect welds. This type of NDT uses Gamma or X-rays to penetrate material. The rays are then passed through film on the opposite side. The exposed film is examined as a negative and displays the internal features. The thickness of the weld is shown through lighter or darker areas on the film.





# Sweep Outlet

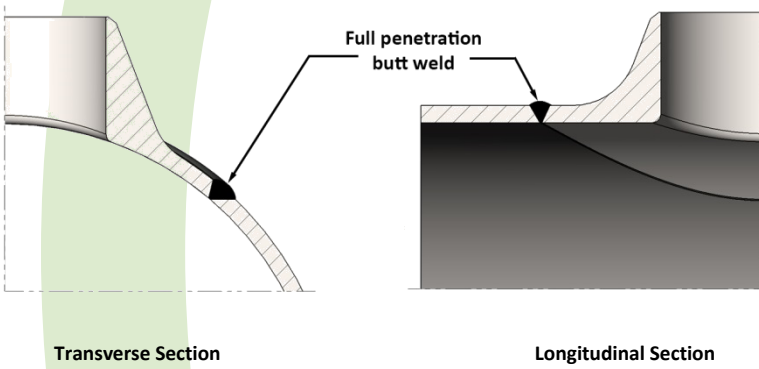
**Specification:** ASME B31.3

Also in ASME B31.1 and ASME BPVC Sec 1 & Sec 8 Div 2

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

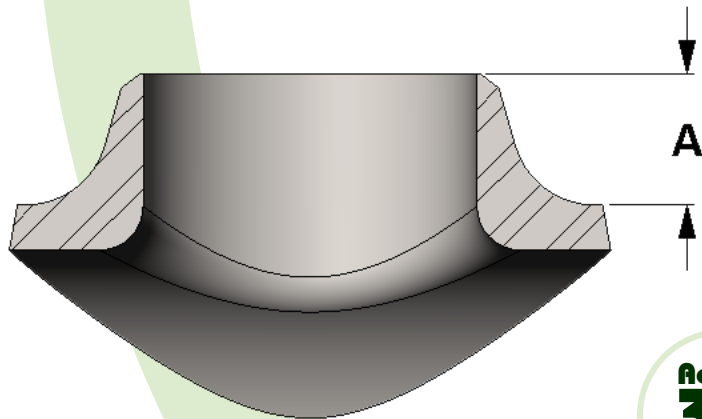
**Sizes:** 1/4" - 24" in all Schedules  
Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness

## Welding onto Header Pipe

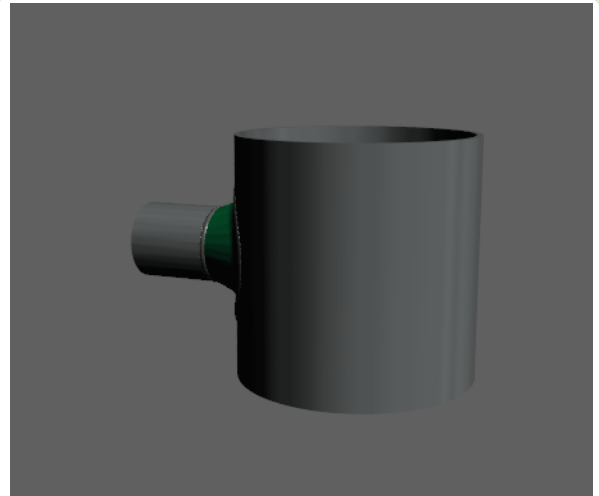


Transverse Section

Longitudinal Section



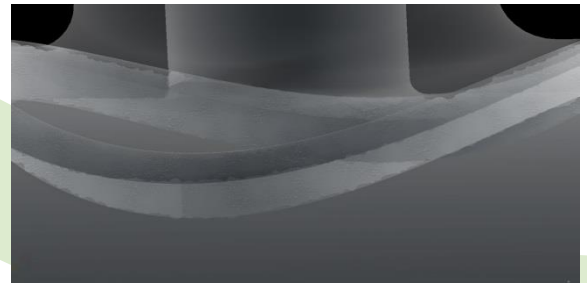
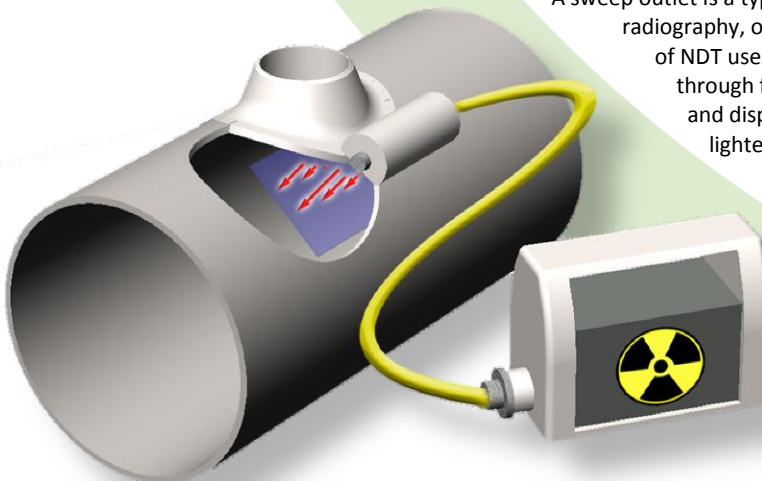
Active  
**3D**  
Model



All dimensions are in inches

PIPE SIZE	STD – Figure No. 45580 / XH – Figure No. 48580										
	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4
A	0.875	0.875	0.875	0.875	1.000	1.250	1.313	1.500	1.625	1.656	2.031

A sweep outlet is a type of integrally reinforced branch connection used to facilitate radiography, one of many non-destructive tests (NDT) used to inspect welds. This type of NDT uses Gamma or X-rays to penetrate material. The rays are then passed through film on the opposite side. The exposed film is examined as a negative and displays the internal features. The thickness of the weld is shown through lighter or darker areas on the film.







# Flanged Nipple Outlet

**Specification:** ASME B31.1 & ASME B16.5

Also in ASME B31.3, ASME B31.8, and ASME BPVC Sec I & Sec VIII Div 2  
Threaded ends per ASME B1.20.1 • Beveled ends per ASME B16.25

**Material:** Available in a complete range of Carbon Steels, Stainless Steels, Alloy Steels and Non-ferrous metals certified to ASTM, ASME, and Military standards.

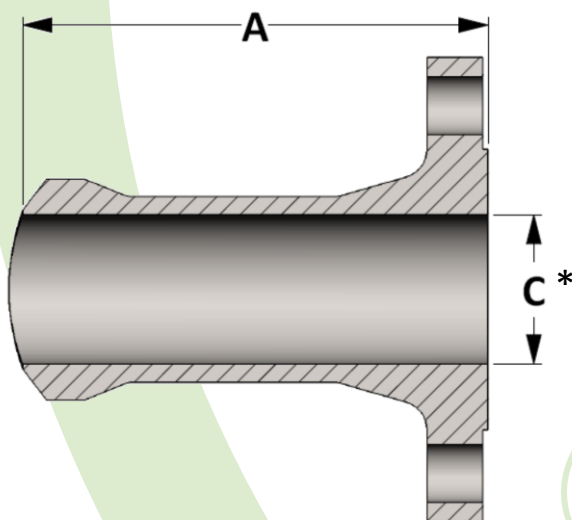
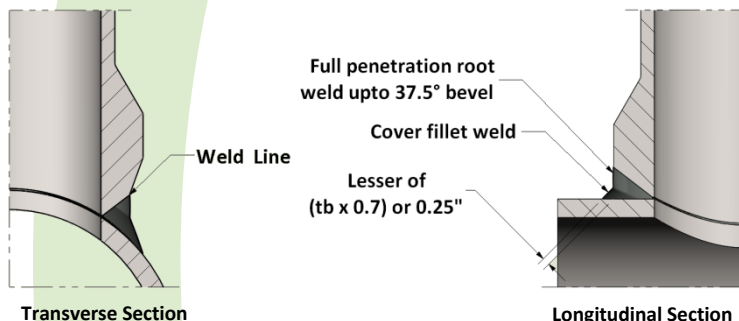
**Sizes:** 1/2" – 6" in all Schedules

Also available in other requirements such as pressure and temperature specifics and special header, branch wall thickness.

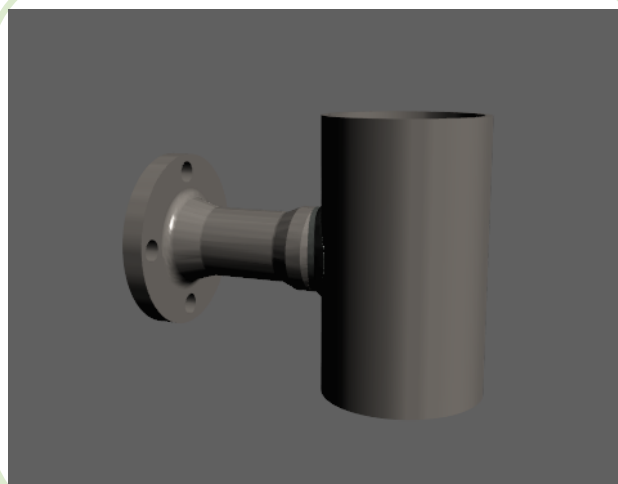
Available in standard lengths and **in any length the customer desires**

\* C dimension/waterway must be specified by the customer

## Welding onto Header Pipe



Active  
3D  
Model



All dimensions are in inches • Weights are based on Carbon Steel

PIPE SIZE	150#		300#		600#		1500#		2500#	
	A	C	A	C	A	C	A	C	A	C
1/2	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
3/4	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
1	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
1-1/4	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
1-1/2	5.906	---	5.906	---	5.906	---	5.906	---	5.906	---
2	5.906	---	5.906	---	5.906	---	5.906	---	6.496	---

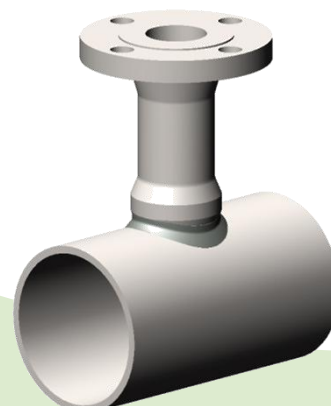
## Advantages of a Nipple Outlet

### Flange, Nipple & Branch Connection

- Three fittings
- Three MTR's
- Three welds
- Rough Transition
- More labor

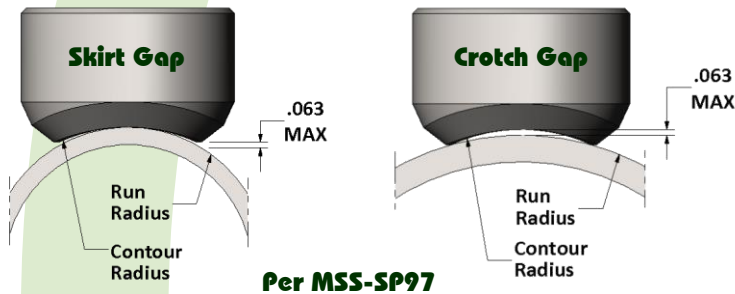
### Flanged Nipple Outlet

- One fitting
- One MTR
- One weld
- Smooth Transition
- Less labor





# Run Consolidations for Outlets

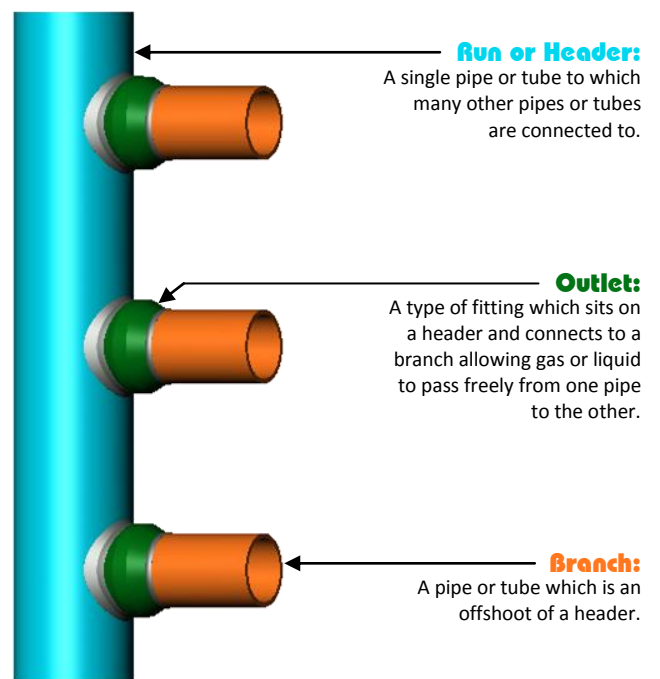
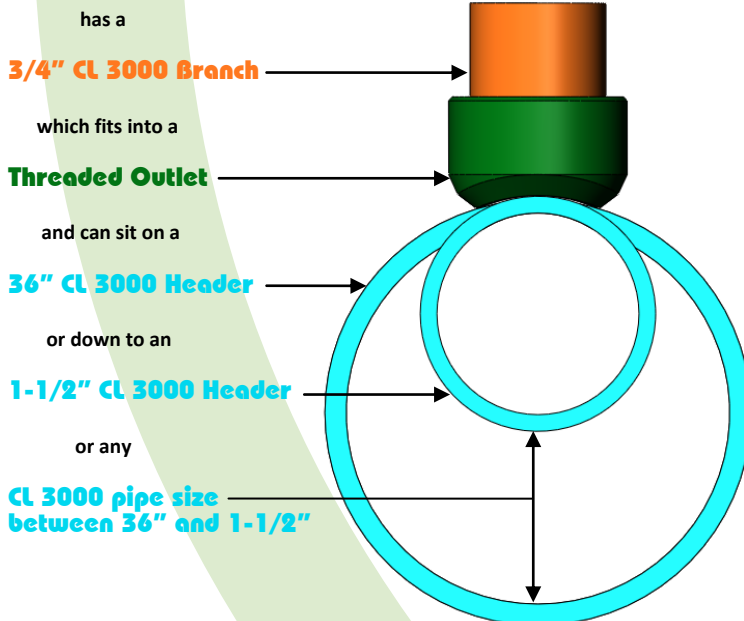


**What does Consolidation mean in the Piping Industry?**  
Consolidations are the merging of run pipes, which the outlet sits upon. The contour of the outlet will have a certain radius which is in between the largest and smallest radius of the run pipe consolidation. Therefore, the outlet will not sit precisely on any of the pipes within the consolidation. This is acceptable, as long as the gap distance between the top of the run pipe and the bottom of the outlet, at the center or the end, does not exceed 1/16" as per MSS-SP97 (see image on left).

**Why are Consolidations good for you?**  
Creating outlets to sit on a number of different pipe sizes rather than one specific size is beneficial to you for a few reasons. It gives a single, versatile product that simplifies your purchase as well as inventory when the project demands a variety of pipe sizes.

**Are you unfamiliar with piping terminology?**

## Example: 36" - 1-1/2" x 3/4" Class 3000 Threaded Outlet



## CL 3000 THREADED OUTLET • CL 3000 SOCKET WELD OUTLET STD/S40 BUTT WELD OUTLET • XH/S80 BUTT WELD OUTLET

BRANCH SIZE	RUN CONSOLIDATION									
1/8	36 - 1/8	FLAT								
1/4	3/8 - 1/4	36 - 1/2	FLAT							
3/8	1/2 - 3/8	36 - 3/4	FLAT							
1/2	1/2	36 - 3/4	FLAT							
3/4	1-1/4 - 3/4	36 - 1-1/2	FLAT							
1	1	2-1/2 - 1-1/4	36 - 3	FLAT						
1-1/4	1-1/2 - 1-1/4	3-1/2 - 2	36 - 4	FLAT						
1-1/2	1-1/2	2-1/2 - 2	5 - 3	36 - 6	FLAT					
2	2	3-1/2 - 2-1/2	6 - 4	36 - 8	FLAT					
2-1/2	2-1/2	3-1/2 - 3	5 - 4	8 - 6	36 - 10	FLAT				
3	3	4 - 3-1/2	6 - 5	14 - 8	38 - 16	FLAT				
3-1/2	3-1/2	4	5	8 - 6	14 - 10	36 - 16	52 - 38	FLAT		
4	4	5	6	10 - 8	18 - 12	36 - 20	68 - 38	FLAT		
5	5	6	8	10	14 - 12	22 - 16	36 - 24	114 - 38	FLAT	
6	6	8	10	14 - 12	18 - 16	24 - 20	36 - 26	56 - 38	156 - 60	FLAT

# Run Consolidations for Outlets Cont'd

## CL 6000 THREADED OUTLET • CL 6000 SOCKET WELD OUTLET S160 BUTT WELD OUTLET • XXH BUTTWELD OUTLET

BRANCH SIZE	RUN CONSOLIDATION							
1/8	36 - 1/8	FLAT						
1/4	36 - 1/4	FLAT						
3/8	36 - 3/8	FLAT						
1/2	1/2	36 - 3/4	FLAT					
3/4	1 - 3/4	36 - 1-1/4	FLAT					
1	1	2-1/2 - 1-1/4	36 - 3	FLAT				
1-1/4	1-1/4	4 - 1-1/2	36 - 5	FLAT				
1-1/2	1-1/2	2-1/2 - 2	5 - 3	36 - 6	FLAT			
2	2	3-1/2 - 2-1/2	6 - 4	36 - 8	FLAT			
2-1/2	3 - 2-1/2	5 - 3-1/2	18 - 6	36 - 20	FLAT			
3	3-1/2 - 3	5 - 4	10 - 6	26 - 12	36 - 28	FLAT		
4	4	5	8 - 6	14 - 10	36 - 16	46 - 38	FLAT	
5	5	6	10 - 8	18 - 12	36 - 20	72 - 38	FLAT	
6	6	8	10	14 - 12	20 - 16	36 - 22	102 - 38	FLAT

## CL 3000 & 6000 THREADED ELBOW OUTLET CL 3000 & 6000 SOCKET WELD ELBOW OUTLET STD, XH, S160 & XXH BUTTWELD ELBOW OUTLET

BRANCH SIZE	RUN
1/4	36 - 1-1/4
3/8	36 - 1-1/4
1/2	36 - 1-1/4
3/4	36 - 1-1/4
1	36 - 2
1-1/4	36 - 2
1-1/2	36 - 2
2	36 - 3

## CL 3000 THREADED LATERAL OUTLET CL 3000 SOCKET WELD LATERAL OUTLET STD & XH BUTTWELD LATERAL OUTLET

BRANCH SIZE	RUN CONSOLIDATION		
1/4	2-1/2 - 1-1/4	12 - 3	
3/8	2-1/2 - 1-1/4	12 - 3	
1/2	2-1/2 - 1-1/4	12 - 3	
3/4	1-1/2 - 1-1/4	5 - 2	12 - 6
1	2-1/2 - 2	5 - 3	12 - 6
1-1/4	2-1/2 - 2	5 - 3	12 - 6
1-1/2	2-1/2 - 2	5 - 3	12 - 6
2	5 - 4	8 - 6	12 - 10

## CL 6000 THREADED LATERAL OUTLET CL 6000 SOCKET WELD LATERAL OUTLET S160 & XXH BUTTWELD LATERAL OUTLET

BRANCH SIZE	RUN CONSOLIDATION		
1/4	2-1/2 - 1-1/4	12 - 3	
3/8	2-1/2 - 1-1/4	12 - 3	
1/2	1-1/2 - 1-1/4	5 - 2	12 - 6
3/4	2-1/2 - 2	5 - 3	12 - 6
1	2-1/2 - 2	5 - 3	12 - 6
1-1/4	2-1/2 - 2	5 - 3	12 - 6
1-1/2	5 - 4	8 - 6	12 - 10