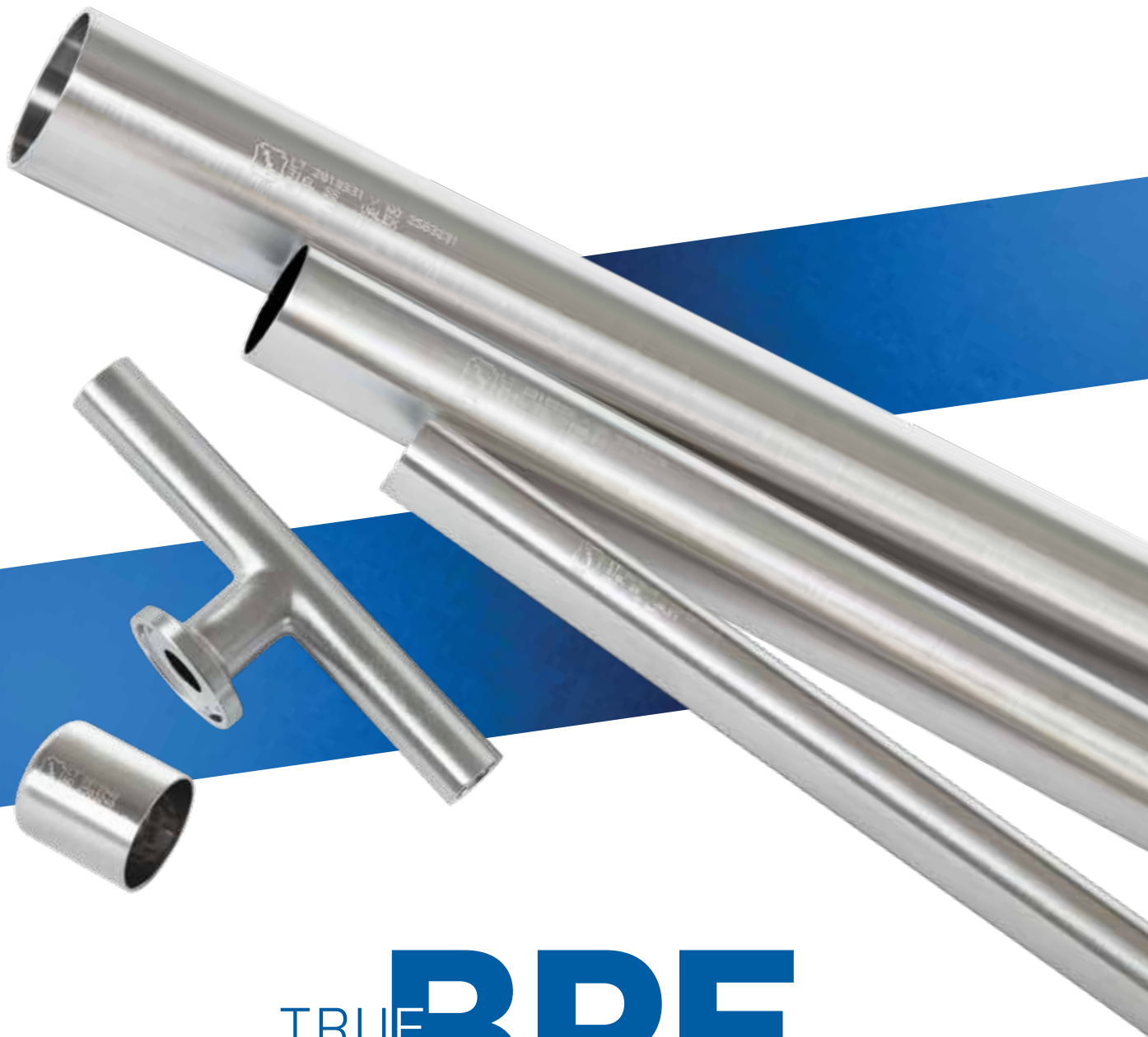


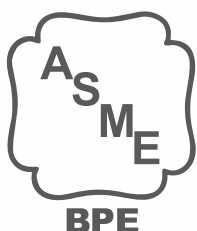


TRUE **BPE**

STAINLESS STEEL

Tube & Fittings





TRUE BPE. UNCOMPROMISING QUALITY FROM THE START

Since introduced in 1997, the ASME BPE standards for bioprocessing equipment have undergone regular upgrades, driving improvements in quality, safety, and productivity for the biotech and pharmaceutical industries.

As an industry leader, Valex was one of the first global stainless steel component manufacturers to offer “True BPE” – voluntarily meeting or exceeding all new BPE design and manufacturing standards. More than just BPE compliance, every Valex product is ASME-certified, built and inspected to the latest design and manufacturing standards.

Fast forward to today: industries are more competitive, processes more advanced, and standards more demanding and tightly regulated. Continuing to provide industry leadership, Valex reinvests in cutting-edge manufacturing equipment and technologies that enable us to produce the next generation of ASME-certified, BPE-compliant products at competitive prices – so our clients can do the same.

For over half a century, Valex has been the leading global manufacturer of stainless steel tubes, fittings, valves, and assemblies for critical industries with the most stringent tolerances for imperfection. We pioneered advances in fitting design, electro-polishing, precision cleaning, and integrated assemblies. Today, with multiple manufacturing facilities worldwide, meeting or exceeding industry guidelines and specifications, Valex consistently delivers the highest quality stainless steel components – without compromise.

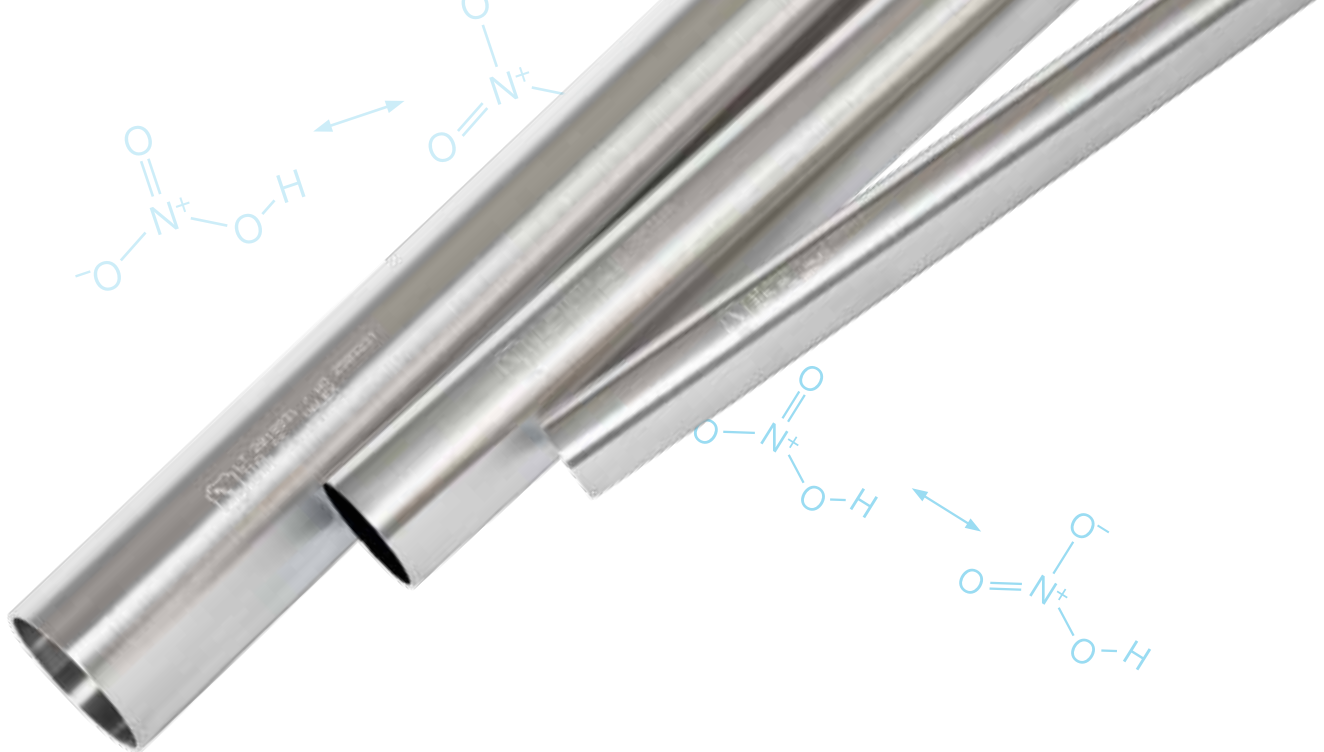
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* Dimensional charts are subject to change. Please visit Valex.com or call your local Valex representative for the latest information.



Passivation



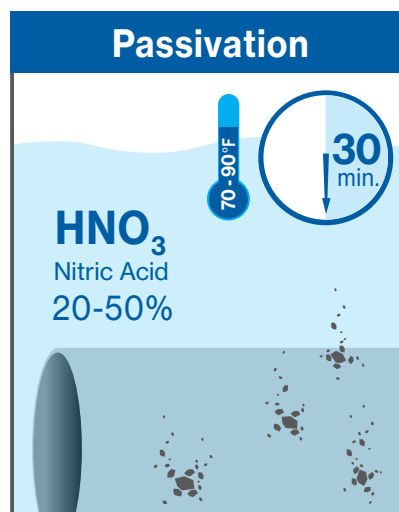
Good Enough is Not Enough

Passivation is a process for assuring the long-term integrity of stainless steel by removing exogenous iron particles and iron compounds left on the surface from the production process. Unremoved, these particles can “activate” over time, initiating galvanic corrosion, and producing rust.

The Valex passivation process is done in-house prior to final cleaning, in accordance with ASTM A967 industry standards. Parts are treated in a nitric acid solution, at spec temperatures and concentrations, for a minimum of 30 minutes. A chemically inert, and highly corrosion-resistant, protective surface oxide layer is formed on inner and outer surfaces when the process is complete.

Left exposed to air, stainless steel naturally will form some degree of passivation as the surface “cures” over time. And some manufacturers consider that good enough.

Passivation
an
Essential
STEP
in the
Valex
Tube/Fittings
Production Process





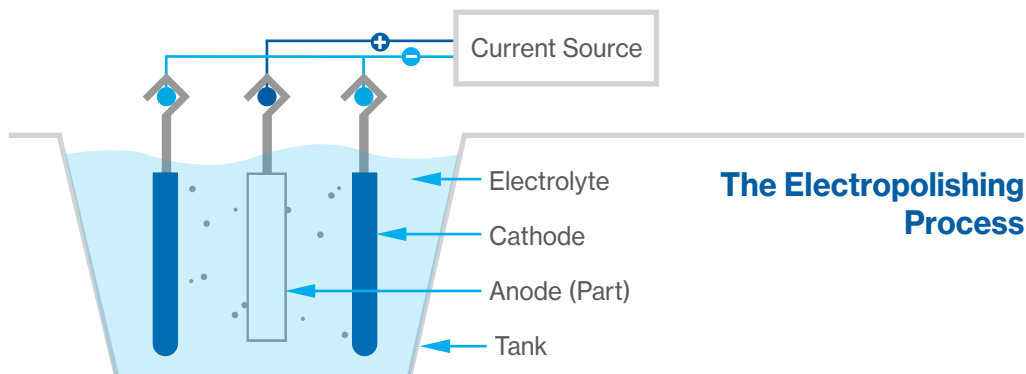
Smoothing Out the Peaks & Valleys

Finishing tube and fittings to the required surface finish for an application is key to achieving performance and cleanliness goals.

As an established leader in electropolishing, Valex provides electropolished (EP) finishes to complement our mechanically polished offerings. Polishing is performed in-house, where we can assure the highest quality.

Under magnification, raw material surfaces appear rough, and composed of many “peaks” and “valleys”. During the EP process, parts are subjected to a controlled current in an electrolytic bath. Surface metal and contaminants are removed, while the micro-peaks and valleys are dissolved, and the surface is leveled. The result is a degree of smoothness and purity, inside and out, best seen through an electron microscope.

Our EP process has advanced over many years of development in fixturing, electrolytic bath tuning, and refining of process variables to produce the most consistent, repeatable, and uniform surface qualities required for electropolished BPE applications.



The Electropolishing Process

Electropolishing

Tolerances

Dimensions &

- Tube
- Fittings



Tube

Dimensional Tolerances: ASTM A269/A270-S2

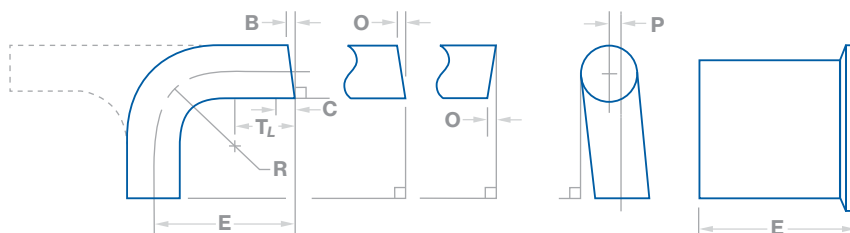


Dimensions in Inches & Millimeters

Nominal Size		Wall Thickness		O.D. Tolerance*		Wall Thickness Tolerance*
inch	mm	inch	mm	inch	mm	
1/4"	6.35	0.04	0.89	±0.005	±0.127	±10%
3/8"	9.53	0.04	0.89	±0.005	±0.127	±10%
1/2"	12.70	0.07	1.65	±0.005	±0.127	±10%
3/4"	19.05	0.07	1.65	±0.005	±0.127	±10%
1"	25.40	0.07	1.65	±0.005	±0.127	±10%
1-1/2"	38.10	0.07	1.65	±0.008	±0.203	±10%
2"	50.80	0.07	1.65	±0.008	±0.203	±10%
2-1/2"	63.50	0.07	1.65	±0.010	±0.254	±10%
3"	76.20	0.07	1.65	±0.010	±0.254	±10%
4"	101.60	0.08	2.11	±0.015	±0.381	±10%
6"	152.40	0.110	2.77	±0.030	±0.762	±10%

* Tolerance's are in accordance with ASTM A269/A270-S2 specifications.

ASTM A 270 S2.7.2. The cut length shall not vary over the specified length by more than 2 in. (50 mm) or less than 0 in. (0 mm).



Fittings

Fittings Specifications: ASME BPE-2019 Part DT-3.1

Tolerances in Inches

Nominal Size	O.D.	Wall Thickness	Squareness Face to Tangent, <i>B</i>	Length, <i>E</i>	Off Angle, <i>O</i>	Equivalent Angle (for <i>O</i>) degree	Off Plane, <i>P</i>	Centerline Radius (CLR), <i>R</i>
1/4"	±0.005	+0.003/-0.004	0.005	±0.05	0.009	2.1	0.030	0.563
3/8"	±0.005	+0.003/-0.004	0.005	±0.05	0.012	1.8	0.030	1.125
1/2"	±0.005	+0.005/-0.008	0.005	±0.05	0.014	1.6	0.030	1.125
3/4"	±0.005	+0.005/-0.008	0.005	±0.05	0.018	1.4	0.030	1.125
1"	±0.005	+0.005/-0.008	0.008	±0.05	0.025	1.4	0.030	1.500
1-1/2"	±0.008	+0.005/-0.008	0.008	±0.05	0.034	1.3	0.050	2.250
2"	±0.008	+0.005/-0.008	0.008	±0.05	0.043	1.2	0.050	3.000
2-1/2"	±0.010	+0.005/-0.008	0.010	±0.05	0.054	1.2	0.050	3.750
3"	±0.010	+0.005/-0.008	0.016	±0.05	0.068	1.3	0.050	4.500
4"	±0.015	+0.008/-0.010	0.016	±0.05	0.086	1.2	0.060	6.000
6"	±0.030	+0.015/-0.015	0.030	±0.05	0.135	1.3	0.060	9.000

Tolerances in Millimeters

Nominal Size		O.D.	Wall Thickness	Squareness Face to Tangent, <i>B</i>	Length, <i>E</i>	Off Angle, <i>O</i>	Equivalent Angle (for <i>O</i>) degree	Off Plane, <i>P</i>	Centerline Radius (CLR), <i>R</i>
inch	mm								
1/4"	6.35	±0.13	+0.08/-0.10	0.13	1.27	0.23	2.1	0.76	14.30
3/8"	9.53	±0.13	+0.08/-0.10	0.13	1.27	0.30	1.8	0.76	28.58
1/2"	12.70	±0.13	+0.13/-0.20	0.13	1.27	0.36	1.6	0.76	28.58
3/4"	19.05	±0.13	+0.13/-0.20	0.13	1.27	0.46	1.4	0.76	28.58
1"	25.40	±0.13	+0.13/-0.20	0.20	1.27	0.64	1.4	0.76	38.10
1-1/2"	38.10	±0.20	+0.13/-0.20	0.20	1.27	0.86	1.3	1.27	57.15
2"	50.80	±0.20	+0.13/-0.20	0.20	1.27	1.09	1.2	1.27	76.20
2-1/2"	63.50	±0.25	+0.13/-0.20	0.25	1.27	1.37	1.2	1.27	95.25
3"	76.20	±0.25	+0.13/-0.20	0.41	1.27	1.73	1.3	1.27	114.30
4"	101.60	±0.38	+0.20/-0.25	0.41	1.27	2.18	1.2	1.52	152.40
6"	152.40	±0.76	+0.38/-0.38	0.76	1.27	3.43	1.3	1.52	228.60

Elbows

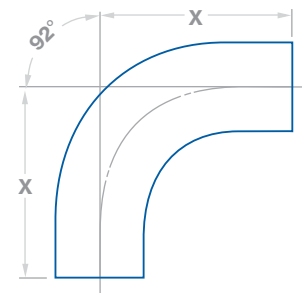
- 90° Elbows
- 45° Elbows



CONFIGURATION
2B

92° Elbow

Automatic Tube Weld: 92° Elbow



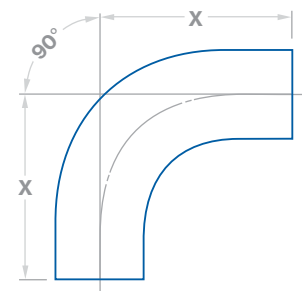
Dimensions in Inches & Millimeters

Nominal Size		X	
インチ	mm	インチ	mm
1/4"	6.35	2.530	64.26
3/8"	9.53	2.530	64.26
1/2"	12.70	2.930	74.42
3/4"	19.05	2.930	74.42
1"	25.40	2.950	74.93
1-1/2"	38.10	3.690	93.73
2"	50.80	4.690	119.13
2-1/2"	63.50	5.440	138.18
3"	76.20	6.190	157.23
4"	101.60	7.930	201.42
6"	152.40	11.410	289.81

CONFIGURATION
2

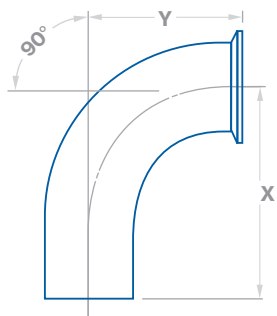
90° Elbow

Automatic Tube Weld: 90° Elbow



Dimensions in Inches & Millimeters

Nominal Size		X	
インチ	mm	インチ	mm
1/4"	6.35	2.625	66.68
3/8"	9.53	2.625	66.68
1/2"	12.70	3.000	76.20
3/4"	19.05	3.000	76.20
1"	25.40	3.000	76.20
1-1/2"	38.10	3.750	95.25
2"	50.80	4.750	120.65
2-1/2"	63.50	5.500	139.70
3"	76.20	6.250	158.75
4"	101.60	8.000	203.20
6"	152.40	11.500	292.10



Dimensions



90° Elbow

Automatic Tube Weld: Hygienic Clamp Joint, 90° Elbow



Ferrules



Type A

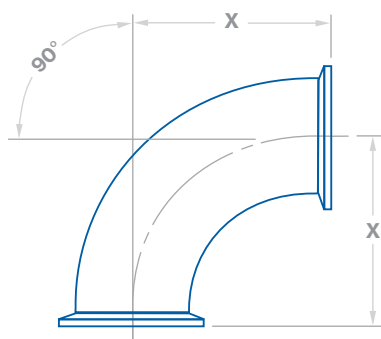


Type B

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Dimensions in Inches & Millimeters

Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/4"	6.35	2.625	66.68	1.625	41.28
3/8"	9.53	2.625	66.68	1.625	41.28
1/2"	12.70	3.000	76.20	1.625	41.28
3/4"	19.05	3.000	76.20	1.625	41.28
1"	25.40	3.000	76.20	2.000	50.80
1-1/2"	38.10	3.750	95.25	2.750	69.85
2"	50.80	4.750	120.65	3.500	88.90
2-1/2"	63.50	5.500	139.70	4.250	107.95
3"	76.20	6.250	158.75	5.000	127.00
4"	101.60	8.000	203.20	6.625	168.28
6"	152.40	11.500	292.10	10.500	266.70



90° Elbow

Hygienic Clamp Joint: 90° Elbow



Ferrules



Type A



Type B

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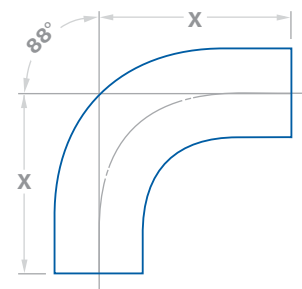
Dimensions in Inches & Millimeters

Nominal Size		X	
inch	mm	inch	mm
1/4"	6.35	1.625	41.28
3/8"	9.53	1.625	41.28
1/2"	12.70	1.625	41.28
3/4"	19.05	1.625	41.28
1"	25.40	2.000	50.80
1-1/2"	38.10	2.750	69.85
2"	50.80	3.500	88.90
2-1/2"	63.50	4.250	107.95
3"	76.20	5.000	127.00
4"	101.60	6.625	168.28
6"	152.40	10.500	266.70



88° Elbow

Automatic Tube Weld: 88° Elbow



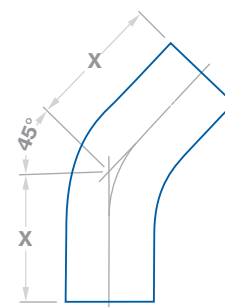
インチ単位とミリ単位寸法

Nominal Size		X	
inch	mm	inch	mm
1/4"	6.35	2.700	68.58
3/8"	9.53	2.700	68.58
1/2"	12.70	3.065	77.85
3/4"	19.05	3.065	77.85
1"	25.40	3.050	77.47
1-1/2"	38.10	3.800	96.52
2"	50.80	4.810	122.17
2-1/2"	63.50	5.560	141.22
3"	76.20	6.310	160.27
4"	101.60	8.065	204.85
6"	152.40	11.580	294.13



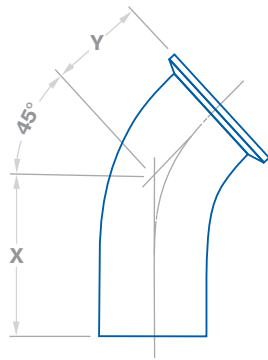
45° Elbow

Automatic Tube Weld: 45° Elbow



Dimensions in Inches & Millimeters

Nominal Size		X	
inch	mm	inch	mm
1/4"	6.35	2.000	50.80
3/8"	9.53	2.000	50.80
1/2"	12.70	2.250	57.15
3/4"	19.05	2.250	57.15
1"	25.40	2.250	57.15
1-1/2"	38.10	2.500	63.50
2"	50.80	3.000	76.20
2-1/2"	63.50	3.375	85.73
3"	76.20	3.625	92.08
4"	101.60	4.500	114.30
6"	152.40	6.250	158.75



45° Elbow

Automatic Tube Weld: Hygienic Clamp Joint, 45° Elbow

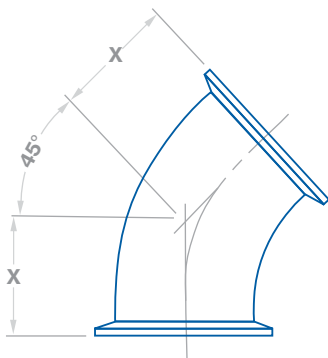


Ferrules

Type A	Type B
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Dimensions in Inches & Millimeters

Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/4"	6.35	2.000	50.80	1.000	25.40
3/8"	9.53	2.000	50.80	1.000	25.40
1/2"	12.70	2.250	57.15	1.000	25.40
3/4"	19.05	2.250	57.15	1.000	25.40
1"	25.40	2.250	57.15	1.125	28.58
1-1/2"	38.10	2.500	63.50	1.438	36.53
2"	50.80	3.000	76.20	1.750	44.45
2-1/2"	63.50	3.375	85.73	2.063	52.40
3"	76.20	3.625	92.08	2.375	60.33
4"	101.60	4.500	114.30	3.125	79.38
6"	152.40	6.250	158.75	5.250	133.35



45° Elbow

Hygienic Clamp Joint: 45° Elbow



Ferrules

Type A	Type B
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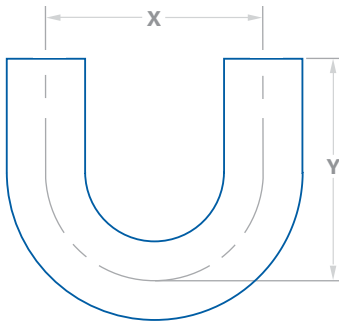
Dimensions in Inches & Millimeters

Nominal Size		X	
inch	mm	inch	mm
1/4"	6.35	1.000	25.40
3/8"	9.53	1.000	25.40
1/2"	12.70	1.000	25.40
3/4"	19.05	1.000	25.40
1"	25.40	1.125	28.58
1-1/2"	38.10	1.438	36.53
2"	50.80	1.750	44.45
2-1/2"	63.50	2.063	52.40
3"	76.20	2.375	60.33
4"	101.60	3.125	79.38
6"	152.40	5.250	133.35

Bends

- 180° Bends





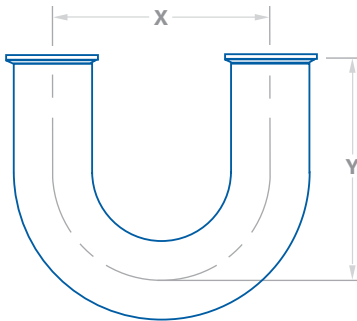
180° Return Bend

Automatic Tube Weld: 180° Return Bend



Dimensions in Inches & Millimeters

Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/4"	6.35	4.500	114.30	2.625	66.68
3/8"	9.53	4.500	114.30	2.625	66.68
1/2"	12.70	4.500	114.30	3.000	76.20
3/4"	19.05	4.500	114.30	3.000	76.20
1"	25.40	3.000	76.20	3.000	76.20
1-1/2"	38.10	4.500	114.30	4.500	114.30
2"	50.80	6.000	152.40	5.000	127.00
2-1/2"	63.50	7.500	190.50	5.750	146.05
3"	76.20	9.000	228.60	6.500	165.10
4"	101.60	12.000	304.80	8.500	215.90
6"	152.40	18.000	457.20	11.500	292.10



180° Return Bend

Hygienic Clamp Joint: 180° Return Bend



Ferrules

Type A	Type B
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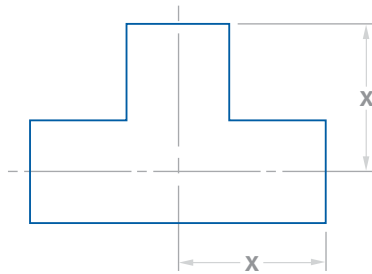
Dimensions in Inches & Millimeters

Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/4"	6.35	4.500	114.30	3.125	79.38
3/8"	9.53	4.500	114.30	3.125	79.38
1/2"	12.70	4.500	114.30	3.500	88.90
3/4"	19.05	4.500	114.30	3.500	88.90
1"	25.40	3.000	76.20	3.500	88.90
1-1/2"	38.10	4.500	114.30	5.000	127.00
2"	50.80	6.000	152.40	5.500	139.70
2-1/2"	63.50	7.500	190.50	6.250	158.75
3"	76.20	9.000	228.60	7.000	177.80
4"	101.60	12.000	304.80	9.125	231.78
6"	152.40	18.000	457.20	13.000	330.20

Tees

- Straight Tees
- Reducing Tees
- Instrument Tees





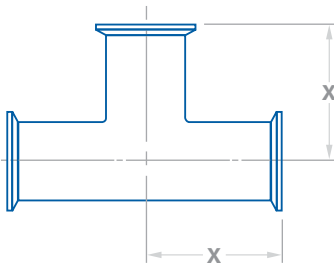
Straight Tee

Automatic Tube Weld: Straight (Equal) Tee



Dimensions in Inches & Millimeters

Nominal Size		X	
inch	mm	inch	mm
1/4"	6.35	1.750	44.45
3/8"	9.53	1.750	44.45
1/2"	12.70	1.875	47.63
3/4"	19.05	2.000	50.80
1"	25.40	2.125	53.98
1-1/2"	38.10	2.375	60.33
2"	50.80	2.875	73.03
2-1/2"	63.50	3.125	79.38
3"	76.20	3.375	85.73
4"	101.60	4.125	104.78
6"	152.40	5.625	142.88



Straight Tee

Hygienic Clamp Joint: Straight (Equal) Tee

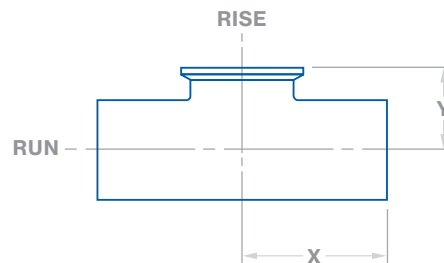


Ferrules

Type A	Type B
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Dimensions in Inches & Millimeters

Nominal Size		X	
inch	mm	inch	mm
1/4"	6.35	2.250	57.15
3/8"	9.53	2.250	57.15
1/2"	12.70	2.375	60.33
3/4"	19.05	2.500	63.50
1"	25.40	2.625	66.68
1-1/2"	38.10	2.875	73.03
2"	50.80	3.375	85.73
2-1/2"	63.50	3.625	92.08
3"	76.20	3.875	98.43
4"	101.60	4.750	120.65
6"	152.40	7.125	180.98



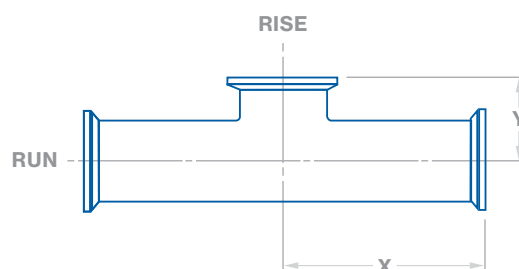
Ferrules	
Type A	Type B
•	
•	
•	
•	
•	•
	•
	•
	•
	•
	•

Dimensions in Inches & Millimeters					
Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/4"	6.35	1.750	44.45	1.000	25.40
3/8"	9.53	1.750	44.45	1.000	25.40
1/2"	12.70	1.875	47.63	1.000	25.40
3/4"	19.05	2.000	50.80	1.125	28.58
1"	25.40	2.125	53.98	1.125	28.58
1-1/2"	38.10	2.375	60.33	1.375	34.93
2"	50.80	2.875	73.03	1.625	41.28
2-1/2"	63.50	3.125	79.38	1.875	47.63
3"	76.20	3.375	85.73	2.125	53.98
4"	101.60	4.125	104.78	2.750	69.85
6"	152.40	5.625	142.88	4.625	117.48



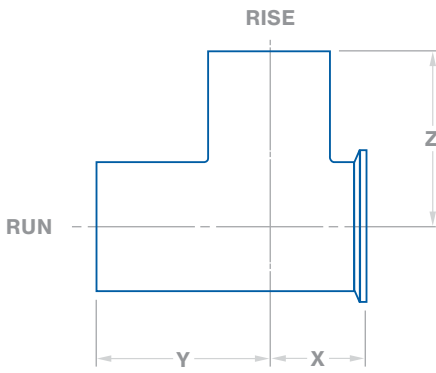
Short-Outlet Tee

Hygienic Clamp Joint: Short-Outlet Tee



Ferrules	
Type A	Type B
•	
•	
•	•
	•
	•
	•
	•
	•

Dimensions in Inches & Millimeters					
Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/2"	12.70	2.375	60.33	1.000	25.40
3/4"	19.05	2.500	63.50	1.125	28.58
1"	25.40	2.625	66.68	1.125	28.58
1-1/2"	38.10	2.875	73.03	1.375	34.93
2"	50.80	3.375	85.73	1.625	41.28
2-1/2"	63.50	3.625	92.08	1.875	47.63
3"	76.20	3.875	98.43	2.125	53.98
4"	101.60	4.750	120.65	2.750	69.85
6"	152.40	7.125	180.98	4.625	117.48



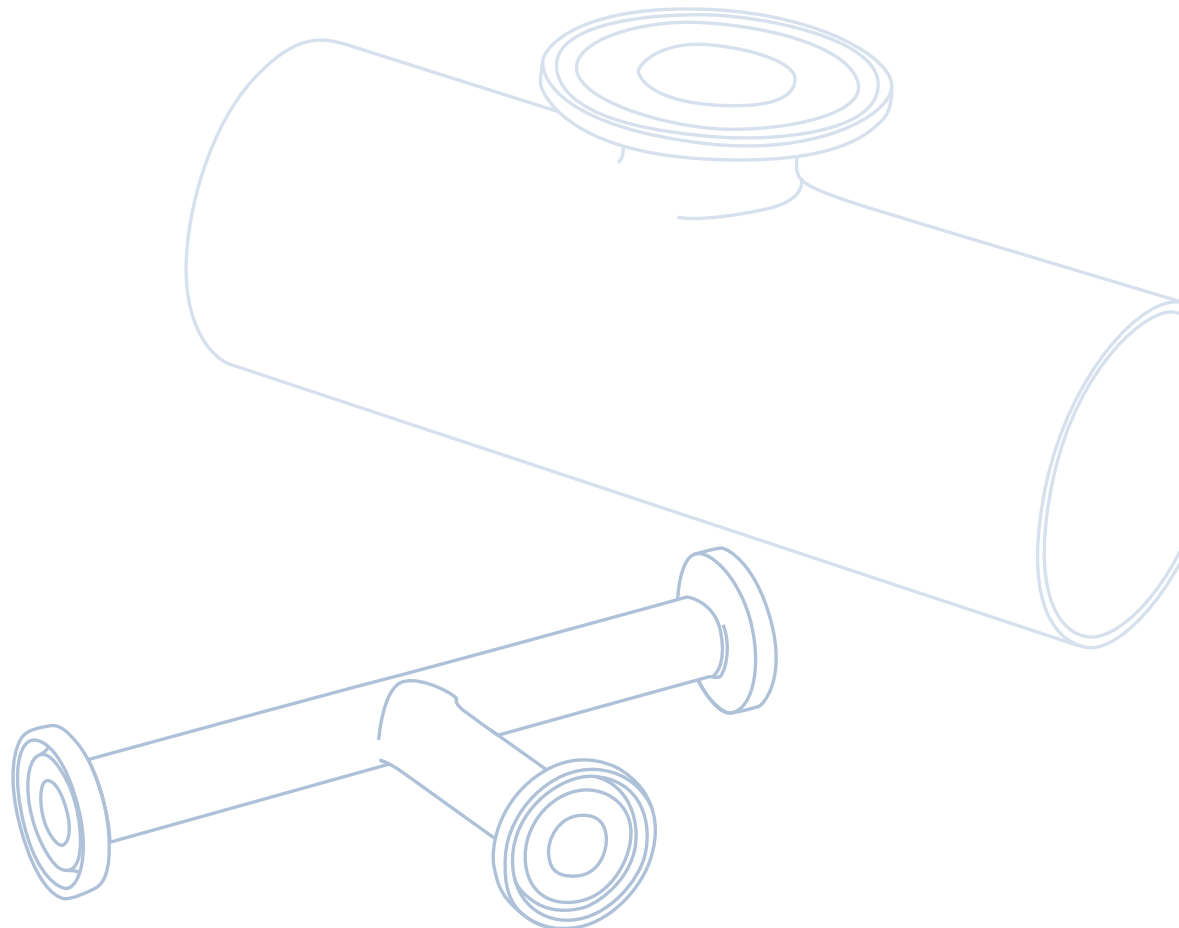
Short-Outlet Run Tee

Hygienic Mechanical Joint: Short-Outlet Run Tee

CONFIGURATION
8M

Ferrules	
Type A	Type B
•	
•	
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	•
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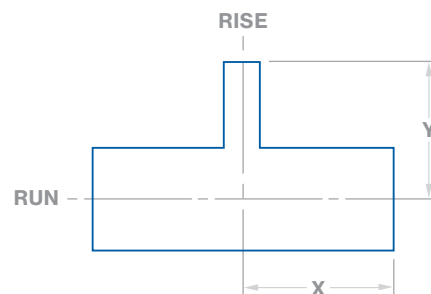
Dimensions in Inches & Millimeters								
Nominal Size		X		Y		Z		
inch	mm	inch	mm	inch	mm	inch	mm	
1/4"	6.35	0.875	22.23	1.750	44.45	1.750	44.45	
3/8"	9.53	0.875	22.23	1.750	44.45	1.750	44.45	
1/2"	12.70	0.875	22.23	1.875	47.63	1.875	47.63	
3/4"	19.05	1.000	25.40	2.000	50.80	2.000	50.80	
1"	25.40	1.125	28.58	2.125	53.98	2.125	53.98	
1-1/2"	38.10	1.375	34.93	2.375	60.33	2.375	60.33	
2"	50.80	1.625	41.28	2.875	73.03	2.875	73.03	
2-1/2"	63.50	1.875	47.63	3.125	79.38	3.125	79.38	
3"	76.20	2.125	53.98	3.375	85.73	3.375	85.73	
4"	101.60	2.750	69.85	4.125	104.78	4.125	104.78	
6"	152.40	4.625	117.48	5.625	142.88	5.625	142.88	





Reducing Tee

Automatic Tube Weld: Reducing Tee



Dimensions in Inches & Millimeters

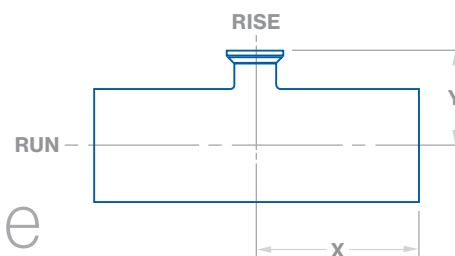
Nominal Size inch		Nominal Size mm		X		Y	
RUN	RISE	RUN	RISE	inch	mm	inch	mm
3/8"	1/4"	9.53	6.35	1.750	44.45	1.750	44.45
1/2"	1/4"	12.70	6.35	1.875	47.63	1.875	47.63
1/2"	3/8"	12.70	9.53	1.875	47.63	1.875	47.63
3/4"	1/4"	19.05	6.35	2.000	50.80	2.000	50.80
3/4"	3/8"	19.05	9.53	2.000	50.80	2.000	50.80
3/4"	1/2"	19.05	12.70	2.000	50.80	2.000	50.80
1"	1/4"	25.40	6.35	2.125	53.98	2.125	53.98
1"	3/8"	25.40	9.53	2.125	53.98	2.125	53.98
1"	1/2"	25.40	12.70	2.125	53.98	2.125	53.98
1"	3/4"	25.40	19.05	2.125	53.98	2.125	53.98
1-1/2"	1/2"	38.10	12.70	2.375	60.33	2.375	60.33
1-1/2"	3/4"	38.10	19.05	2.375	60.33	2.375	60.33
1-1/2"	1"	38.10	25.40	2.375	60.33	2.375	60.33
2"	1/2"	50.80	12.70	2.875	73.03	2.625	66.68
2"	3/4"	50.80	19.05	2.875	73.03	2.625	66.68
2"	1"	50.80	25.40	2.875	73.03	2.625	66.68
2"	1-1/2"	50.80	38.10	2.875	73.03	2.625	66.68
2-1/2"	1/2"	63.50	12.70	3.125	79.38	2.875	73.03
2-1/2"	3/4"	63.50	19.05	3.125	79.38	2.875	73.03
2-1/2"	1"	63.50	25.40	3.125	79.38	2.875	73.03
2-1/2"	1-1/2"	63.50	38.10	3.125	79.38	2.875	73.03
2-1/2"	2"	63.50	50.80	3.125	79.38	2.875	73.03
3"	1/2"	76.20	12.70	3.375	85.73	3.125	79.38
3"	3/4"	76.20	19.05	3.375	85.73	3.125	79.38
3"	1"	76.20	25.40	3.375	85.73	3.125	79.38
3"	1-1/2"	76.20	38.10	3.375	85.73	3.125	79.38
3"	2"	76.20	50.80	3.375	85.73	3.125	79.38
3"	2-1/2"	76.20	63.50	3.375	85.73	3.125	79.38
4"	1/2"	101.60	12.70	4.125	104.78	3.625	92.08
4"	3/4"	101.60	19.05	4.125	104.78	3.625	92.08
4"	1"	101.60	25.40	4.125	104.78	3.625	92.08
4"	1-1/2"	101.60	38.10	4.125	104.78	3.625	92.08
4"	2"	101.60	50.80	4.125	104.78	3.875	98.43
4"	2-1/2"	101.60	63.50	4.125	104.78	3.875	98.43
4"	3"	101.60	76.20	5.625	142.88	3.875	98.43
6"	1/2"	152.40	12.70	5.625	142.88	4.625	117.48
6"	3/4"	152.40	19.05	5.625	142.88	4.625	117.48
6"	1"	152.40	25.40	5.625	142.88	4.625	117.48
6"	1-1/2"	152.40	38.10	5.625	142.88	4.625	117.48
6"	2"	152.40	50.80	5.625	142.88	4.875	123.83
6"	2-1/2"	152.40	63.50	5.625	142.88	4.875	123.83
6"	3"	152.40	76.20	5.625	142.88	4.875	123.83
6"	4"	152.40	101.60	5.625	142.88	5.125	130.18



Ferrules

Dimensions in Inches & Millimeters

21



Short-Outlet Reducing Tee

Automatic Tube Weld: Short-Outlet Hygienic Clamp, Joint Reducing Tee

CONFIGURATION

8RJ

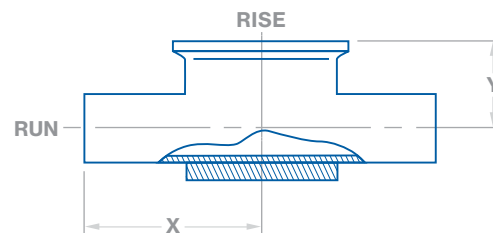
[illegible]

Dimensions in Inches & Millimeters							
Nominal Size inch		Nominal Size mm		X		Y	
RUN	RISE	RUN	RISE	inch	mm	inch	mm
3/8"	1/4"	9.53	6.35	1.750	44.45	1.000	25.40
1/2"	1/4"	12.70	6.35	1.875	47.63	1.000	25.40
1/2"	3/8"	12.70	9.53	1.875	47.63	1.000	25.40
3/4"	1/4"	19.05	6.35	2.000	50.80	1.000	25.40
3/4"	3/8"	19.05	9.53	2.000	50.80	1.000	25.40
3/4"	1/2"	19.05	12.70	2.000	50.80	1.000	25.40
1"	1/4"	25.40	6.35	2.125	53.98	1.125	28.58
1"	3/8"	25.40	9.53	2.125	53.98	1.125	28.58
1"	1/2"	25.40	12.70	2.125	53.98	1.125	28.58
1"	3/4"	25.40	19.05	2.125	53.98	1.125	28.58
1-1/2"	1/2"	38.10	12.70	2.375	60.33	1.375	34.93
1-1/2"	3/4"	38.10	19.05	2.375	60.33	1.375	34.93
1-1/2"	1"	38.10	25.40	2.375	60.33	1.375	34.93
2"	1/2"	50.80	12.70	2.875	73.03	1.625	41.28
2"	3/4"	50.80	19.05	2.875	73.03	1.625	41.28
2"	1"	50.80	25.40	2.875	73.03	1.625	41.28
2"	1-1/2"	50.80	38.10	2.875	73.03	1.625	41.28
2-1/2"	1/2"	63.50	12.70	3.125	79.38	1.875	47.63
2-1/2"	3/4"	63.50	19.05	3.125	79.38	1.875	47.63
2-1/2"	1"	63.50	25.40	3.125	79.38	1.875	47.63
2-1/2"	1-1/2"	63.50	38.10	3.125	79.38	1.875	47.63
2-1/2"	2"	63.50	50.80	3.125	79.38	1.875	47.63
3"	1/2"	76.20	12.70	3.375	85.73	2.125	53.98
3"	3/4"	76.20	19.05	3.375	85.73	2.125	53.98
3"	1"	76.20	25.40	3.375	85.73	2.125	53.98
3"	1-1/2"	76.20	38.10	3.375	85.73	2.125	53.98
3"	2"	76.20	50.80	3.375	85.73	2.125	53.98
3"	2-1/2"	76.20	63.50	3.375	85.73	2.125	53.98
4"	1/2"	101.60	12.70	4.125	104.78	2.625	66.68
4"	3/4"	101.60	19.05	4.125	104.78	2.625	66.68
4"	1"	101.60	25.40	4.125	104.78	2.625	66.68
4"	1-1/2"	101.60	38.10	4.125	104.78	2.625	66.68
4"	2"	101.60	50.80	4.125	104.78	2.625	66.68
4"	2-1/2"	101.60	63.50	4.125	104.78	2.625	66.68
4"	3"	101.60	76.20	4.125	104.78	2.625	66.68
6"	1/2"	152.40	12.70	5.625	142.88	3.625	92.08
6"	3/4"	152.40	19.05	5.625	142.88	3.625	92.08
6"	1"	152.40	25.40	5.625	142.88	3.625	92.08
6"	1-1/2"	152.40	38.10	5.625	142.88	3.625	92.08
6"	2"	152.40	50.80	5.625	142.88	3.625	92.08
6"	2-1/2"	152.40	63.50	5.625	142.88	3.625	92.08
6"	3"	152.40	76.20	5.625	142.88	3.625	92.08
6"	4"	152.40	101.60	5.625	142.88	3.750	95.25



CONFIGURATION
8RH

Dimensions in Inches & Millimeters							
Nominal Size inch		Nominal Size mm		X		Y	
Run	Rise	Run	Rise	inch	mm	inch	mm
3/8"	1/4"	9.53	6.35	2.250	57.15	1.000	25.40
1/2"	1/4"	12.70	6.35	2.375	60.33	1.000	25.40
1/2"	3/8"	12.70	9.53	2.375	60.33	1.000	25.40
3/4"	1/4"	19.05	6.35	2.500	63.50	1.000	25.40
3/4"	3/8"	19.05	9.53	2.500	63.50	1.000	25.40
3/4"	1/2"	19.05	12.70	2.500	63.50	1.000	25.40
1"	1/4"	25.40	6.35	2.625	66.68	1.125	28.58
1"	3/8"	25.40	9.53	2.625	66.68	1.125	28.58
1"	1/2"	25.40	12.70	2.625	66.68	1.125	28.58
1"	3/4"	25.40	19.05	2.625	66.68	1.125	28.58
1-1/2"	1/2"	38.10	12.70	2.875	73.03	1.375	34.93
1-1/2"	3/4"	38.10	19.05	2.875	73.03	1.375	34.93
1-1/2"	1"	38.10	25.40	2.875	73.03	1.375	34.93
2"	1/2"	50.80	12.70	3.375	85.73	1.625	41.28
2"	3/4"	50.80	19.05	3.375	85.73	1.625	41.28
2"	1"	50.80	25.40	3.375	85.73	1.625	41.28
2"	1-1/2"	50.80	38.10	3.375	85.73	1.625	41.28
2-1/2"	1/2"	63.50	12.70	3.625	92.08	1.875	47.63
2-1/2"	3/4"	63.50	19.05	3.625	92.08	1.875	47.63
2-1/2"	1"	63.50	25.40	3.625	92.08	1.875	47.63
2-1/2"	1-1/2"	63.50	38.10	3.625	92.08	1.875	47.63
2-1/2"	2"	63.50	50.80	3.625	92.08	1.875	47.63
3"	1/2"	76.20	12.70	3.875	98.43	2.125	53.98
3"	3/4"	76.20	19.05	3.875	98.43	2.125	53.98
3"	1"	76.20	25.40	3.875	98.43	2.125	53.98
3"	1-1/2"	76.20	38.10	3.875	98.43	2.125	53.98
3"	2"	76.20	50.80	3.875	98.43	2.125	53.98
3"	2-1/2"	76.20	63.50	3.875	98.43	2.125	53.98
4"	1/2"	101.60	12.70	4.750	120.65	2.625	66.68
4"	3/4"	101.60	19.05	4.750	120.65	2.625	66.68
4"	1"	101.60	25.40	4.750	120.65	2.625	66.68
4"	1-1/2"	101.60	38.10	4.750	120.65	2.625	66.68
4"	2"	101.60	50.80	4.750	120.65	2.625	66.68
4"	2-1/2"	101.60	63.50	4.750	120.65	2.625	66.68
4"	3"	101.60	76.20	4.750	120.65	2.625	66.68
6"	1/2"	152.40	12.70	7.125	180.98	3.625	92.08
6"	3/4"	152.40	19.05	7.125	180.98	3.625	92.08
6"	1"	152.40	25.40	7.125	180.98	3.625	92.08
6"	1-1/2"	152.40	38.10	7.125	180.98	3.625	92.08
6"	2"	152.40	50.80	7.125	180.98	3.625	92.08
6"	2-1/2"	152.40	63.50	7.125	180.98	3.625	92.08
6"	3"	152.40	76.20	7.125	180.98	3.625	92.08
6"	4"	152.40	101.60	7.125	180.98	3.750	95.25

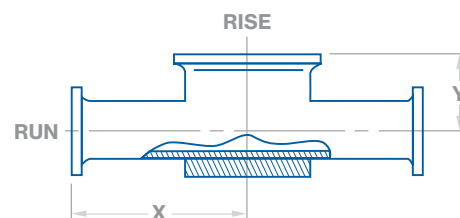


Instrument Tee

Automatic Tube Weld: Instrument Tee

Ferrules	
Rise	
Type A	Type B
	●
	●
	●
	●
	●
	●
	●

Dimensions in Inches & Millimeters							
Nominal Size inch		Nominal Size mm		X		Y	
RUN	RISE	RUN	RISE	inch	mm	inch	mm
1/2"	1-1/2"	12.70	38.10	2.500	63.50	0.875	22.23
3/4"	1-1/2"	19.05	38.10	2.500	63.50	1.000	25.40
1"	1-1/2"	25.40	38.10	2.500	63.50	1.125	28.58
1/2"	2"	12.70	50.80	2.750	69.85	1.000	25.40
3/4"	2"	19.05	50.80	2.750	69.85	1.125	28.58
1"	2"	25.40	50.80	2.750	69.85	1.250	31.75
1-1/2"	2"	38.10	50.80	2.750	69.85	1.500	38.10



Instrument Tee

Hygienic Clamp Joint: Instrument Tee

Ferrules			
Run		Rise	
Type A	Type B	Type A	Type B
●			●
●			●
●	●		●
	●		●
	●		●
	●		●
	●		●

Dimensions in Inches & Millimeters							
Nominal Size inch		Nominal Size mm		X		Y	
RUN	RISE	RUN	RISE	inch	mm	inch	mm
1/2"	1-1/2"	12.70	38.10	3.000	76.20	0.875	22.23
3/4"	1-1/2"	19.05	38.10	3.000	76.20	1.000	25.40
1"	1-1/2"	25.40	38.10	3.000	76.20	1.125	28.58
1/2"	2"	12.70	50.80	3.250	82.55	1.000	25.40
3/4"	2"	19.05	50.80	3.250	82.55	1.125	28.58
1"	2"	25.40	50.80	3.250	82.55	1.250	31.75
1-1/2"	2"	38.10	50.80	3.250	82.55	1.500	38.10

Crosses

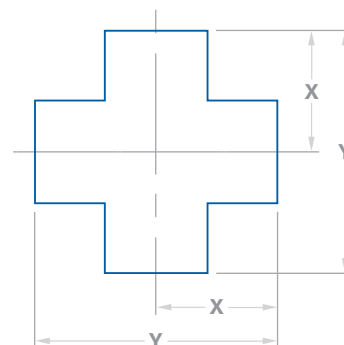
- Straight Crosses



CONFIGURATION
9

Straight Cross

Automatic Tube Weld: Straight Cross



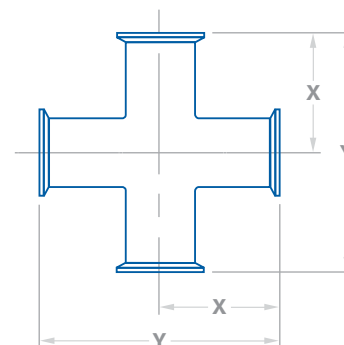
Dimensions in Inches & Millimeters

Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/4"	6.35	1.750	44.45	3.500	88.90
3/8"	9.53	1.750	44.45	3.500	88.90
1/2"	12.70	1.875	47.63	3.750	95.25
3/4"	19.05	2.000	50.80	4.000	101.60
1"	25.40	2.125	53.98	4.250	107.95
1-1/2"	38.10	2.375	60.33	4.750	120.65
2"	50.80	2.875	73.03	5.750	146.05
2-1/2"	63.50	3.125	79.38	6.250	158.75
3"	76.20	3.375	85.73	6.750	171.45
4"	101.60	4.125	104.78	8.250	209.55
6"	152.40	5.625	142.88	11.250	285.75

CONFIGURATION
9H

Straight Cross

Hygienic Clamp Joint: Straight Cross



Ferrules

Type A	Type B
•	
•	
•	
•	
•	•
	•
	•
	•
	•
	•

Dimensions in Inches & Millimeters

Nominal Size		X		Y	
inch	mm	inch	mm	inch	mm
1/4"	6.35	2.250	57.15	4.500	114.30
3/8"	9.53	2.250	57.15	4.500	114.30
1/2"	12.70	2.375	60.33	4.750	120.65
3/4"	19.05	2.500	63.50	5.000	127.00
1"	25.40	2.625	66.68	5.250	133.35
1-1/2"	38.10	2.875	73.03	5.750	146.05
2"	50.80	3.375	85.73	6.750	171.45
2-1/2"	63.50	3.625	92.08	7.250	184.15
3"	76.20	3.875	98.43	7.750	196.85
4"	101.60	4.750	120.65	9.500	241.30
6"	152.40	7.125	180.98	14.250	361.95

Reducers

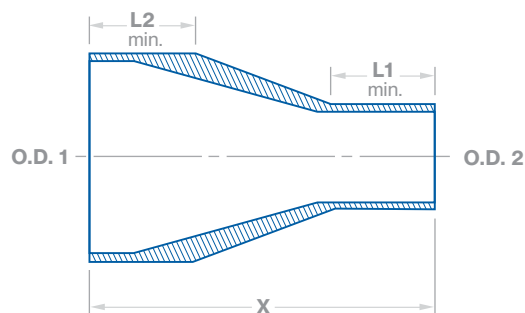
- Concentric Reducers
- Cap Reducers



CONFIGURATION
31

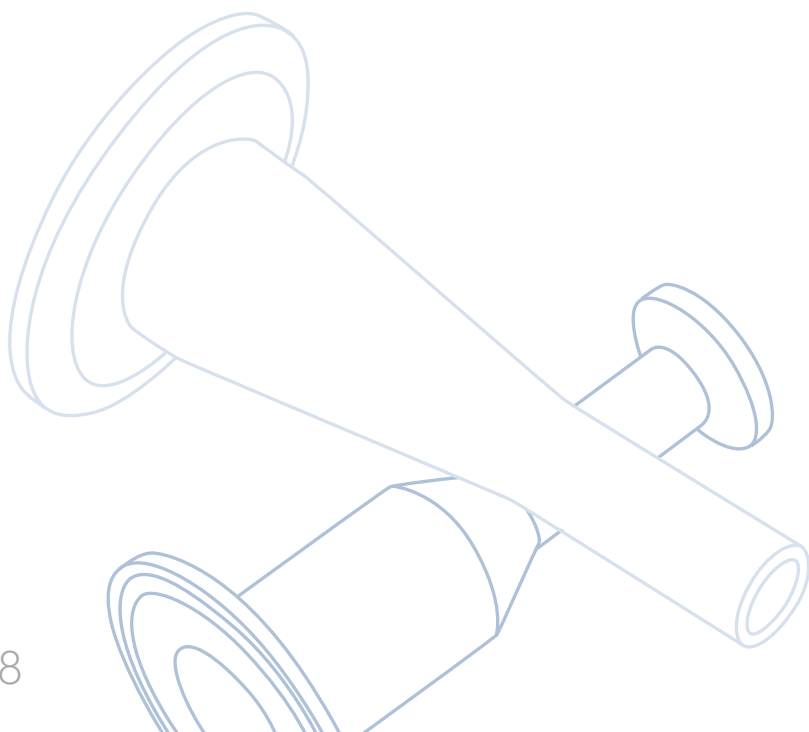
Concentric Reducer

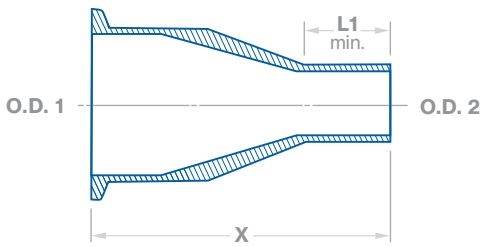
Automatic Tube Weld: Concentric Reducer



Dimensions in Inches & Millimeters

Nominal Size inch		Nominal Size mm		Overall Length, X		O.D., Small End, L1		O.D., Large End, L2	
O.D. 1	O.D. 2	O.D. 1	O.D. 2	inch	mm	inch	mm	inch	mm
3/8"	1/4"	9.53	6.35	1.625	41.28	0.750	19.05	0.750	19.05
1/2"	1/4"	12.70	6.35	1.875	47.63	0.750	19.05	1.000	25.40
1/2"	3/8"	12.70	9.53	1.875	47.63	0.750	19.05	1.000	25.40
3/4"	3/8"	19.05	9.53	2.000	50.80	0.750	19.05	1.000	25.40
3/4"	1/2"	19.05	12.70	2.125	53.98	1.000	25.40	1.000	25.40
1"	1/2"	25.40	12.70	2.500	63.50	1.000	25.40	1.000	25.40
1"	3/4"	25.40	19.05	2.125	53.98	1.000	25.40	1.000	25.40
1-1/2"	3/4"	38.10	19.05	3.000	76.20	1.000	25.40	1.000	25.40
1-1/2"	1"	38.10	25.40	2.500	63.50	1.000	25.40	1.000	25.40
2"	1"	50.80	25.40	3.375	85.73	1.000	25.40	1.000	25.40
2"	1-1/2"	50.80	38.10	2.500	63.50	1.000	25.40	1.000	25.40
2-1/2"	1-1/2"	63.50	38.10	3.375	85.73	1.000	25.40	1.000	25.40
2-1/2"	2"	63.50	50.80	2.500	63.50	1.000	25.40	1.000	25.40
3"	1-1/2"	76.20	38.10	4.250	107.95	1.000	25.40	1.500	38.10
3"	2"	76.20	50.80	3.375	85.73	1.000	25.40	1.500	38.10
3"	2-1/2"	76.20	63.50	2.625	66.68	1.000	25.40	1.500	38.10
4"	2"	101.60	50.80	5.125	130.18	1.000	25.40	1.500	38.10
4"	2-1/2"	101.60	63.50	4.250	107.95	1.000	25.40	1.500	38.10
4"	3"	101.60	76.20	3.875	98.43	1.500	38.10	1.500	38.10
6"	3"	152.40	76.20	7.250	184.15	1.500	38.10	2.000	50.80
6"	4"	152.40	101.60	5.625	142.88	1.500	38.10	2.000	50.80





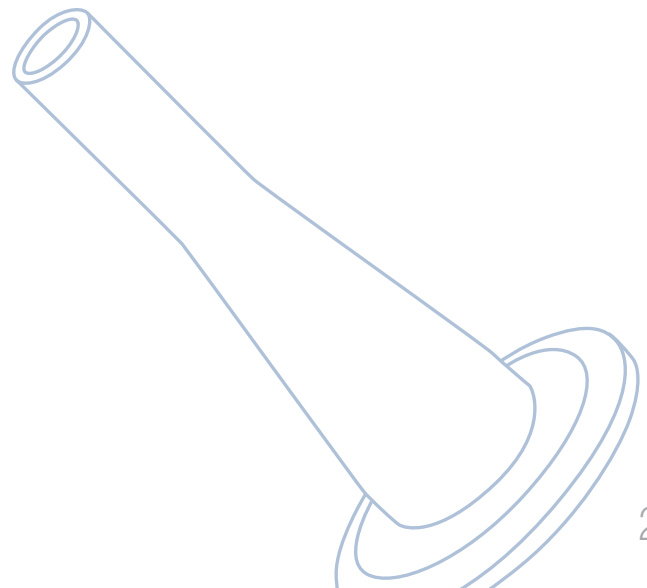
Concentric Reducer

Hygienic Clamp Joint: Tube Weld Concentric Reducer

CONFIGURATION
31J

Ferrules	
O.D. 1	
Type A	Type B
●	
●	
●	
●	
●	
●	●
●	●
	●
	●
	●
	●
	●
	●
	●
	●
	●
	●
	●

Dimensions in Inches & Millimeters							
Nominal Size inch		Nominal Size mm		X		L1	
O.D. 1	O.D. 2	O.D. 1	O.D. 2	inch	mm	inch	mm
3/8"	1/4"	9.53	6.35	2.125	53.98	0.750	19.05
1/2"	1/4"	12.70	6.35	2.375	60.33	0.750	19.05
1/2"	3/8"	12.70	9.53	2.375	60.33	0.750	19.05
3/4"	3/8"	19.05	9.53	2.500	63.50	0.750	19.05
3/4"	1/2"	19.05	12.70	2.625	66.68	1.000	25.40
1"	1/2"	25.40	12.70	3.000	76.20	1.000	25.40
1"	3/4"	25.40	19.05	2.625	66.68	1.000	25.40
1-1/2"	3/4"	38.10	19.05	3.500	88.90	1.000	25.40
1-1/2"	1"	38.10	25.40	3.000	76.20	1.000	25.40
2"	1"	50.80	25.40	3.875	98.43	1.000	25.40
2"	1-1/2"	50.80	38.10	3.000	76.20	1.000	25.40
2-1/2"	1-1/2"	63.50	38.10	3.875	98.43	1.000	25.40
2-1/2"	2"	63.50	50.80	3.000	76.20	1.000	25.40
3"	1-1/2"	76.20	38.10	4.750	120.65	1.000	25.40
3"	2"	76.20	50.80	3.875	98.43	1.000	25.40
3"	2-1/2"	76.20	63.50	3.125	79.38	1.000	25.40
4"	2"	101.60	50.80	5.750	146.05	1.000	25.40
4"	2-1/2"	101.60	63.50	4.875	123.83	1.000	25.40
4"	3"	101.60	76.20	4.500	114.30	1.500	38.10
6"	3"	152.40	76.20	8.000	203.20	1.500	38.10
6"	4"	152.40	101.60	6.375	161.93	1.500	38.10



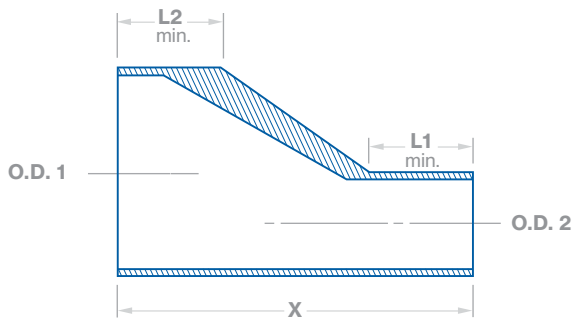
CONFIGURATION
31H

Concentric Reducer

Hygienic Clamp Joint: Concentric Reducer

[illegible]

Dimensions in Inches & Millimeters					
Nominal Size inch		Nominal Size mm		X	
O.D. 1	O.D. 2	O.D. 1	O.D. 2	inch	mm
3/8"	1/4"	9.53	6.35	2.625	66.68
1/2"	1/4"	12.70	6.35	2.875	73.03
1/2"	3/8"	12.70	9.53	2.875	73.03
3/4"	3/8"	19.05	9.53	3.000	76.20
3/4"	1/2"	19.05	12.70	3.125	79.38
1"	1/2"	25.40	12.70	3.500	88.90
1"	3/4"	25.40	19.05	3.125	79.38
1-1/2"	3/4"	38.10	19.05	4.000	101.60
1-1/2"	1"	38.10	25.40	3.500	88.90
2"	1"	50.80	25.40	4.375	111.13
2"	1-1/2"	50.80	38.10	3.500	88.90
2-1/2"	1-1/2"	63.50	38.10	4.375	111.13
2-1/2"	2"	63.50	50.80	3.500	88.90
3"	1-1/2"	76.20	38.10	5.250	133.35
3"	2"	76.20	50.80	4.375	111.13
3"	2-1/2"	76.20	63.50	3.625	92.08
4"	2"	101.60	50.80	6.250	158.75
4"	2-1/2"	101.60	63.50	5.375	136.53
4"	3"	101.60	76.20	5.000	127.00
6"	3"	152.40	76.20	8.500	215.90
6"	4"	152.40	101.60	7.000	177.80



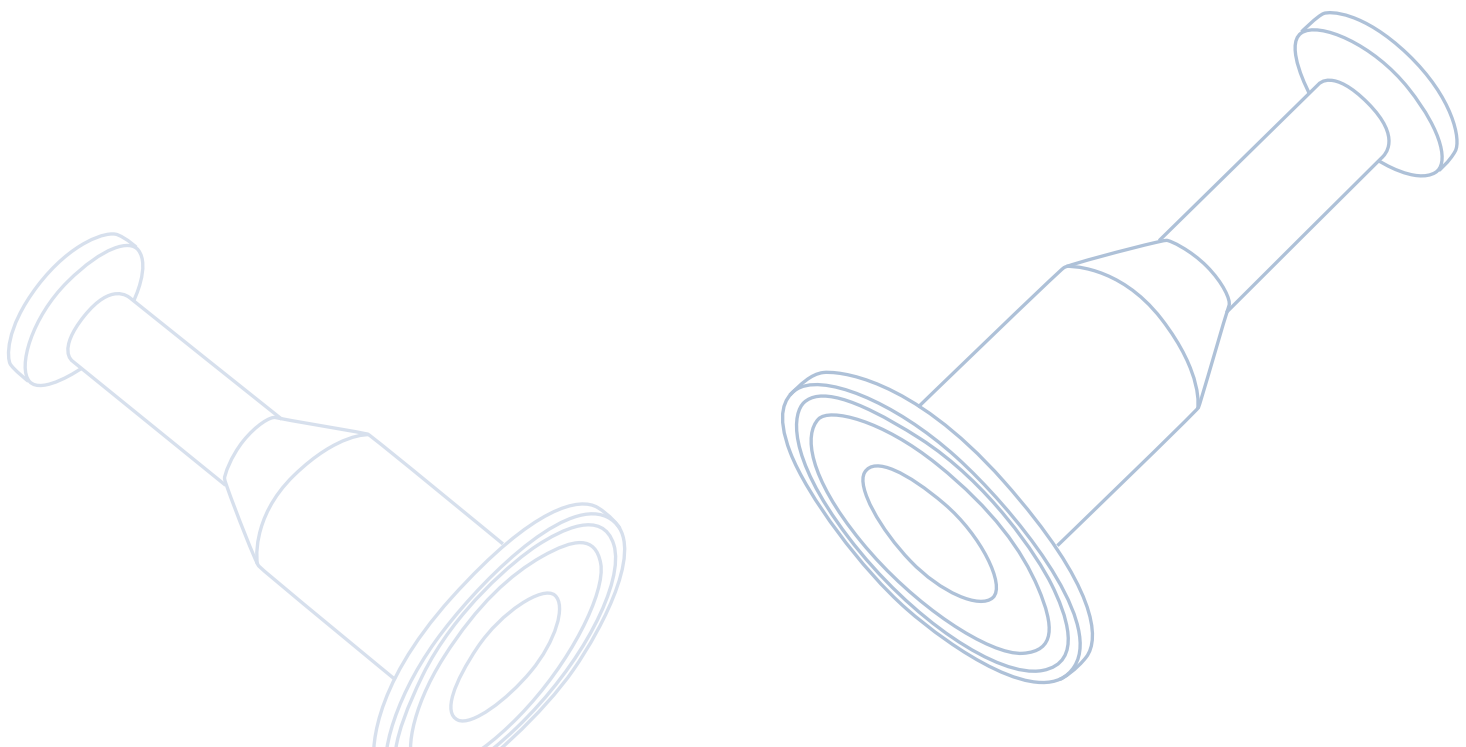
Eccentric Reducer

Automatic Tube Weld: Eccentric Reducer

CONFIGURATION
32

Dimensions in Inches & Millimeters

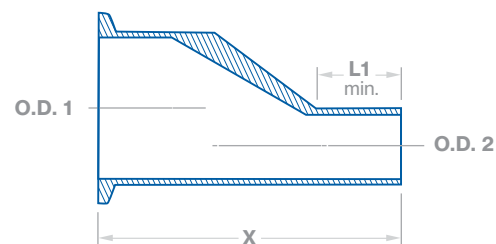
Nominal Size inch		Nominal Size mm		Overall Length, X		O.D., Small End, L1		O.D., Large End, L2	
O.D. 1	O.D. 2	O.D. 1	O.D. 2	inch	mm	inch	mm	inch	mm
3/8"	1/4"	9.53	6.35	1.625	41.28	0.750	19.05	0.750	19.05
1/2"	1/4"	12.70	6.35	1.875	47.63	0.750	19.05	1.000	25.40
1/2"	3/8"	12.70	9.53	1.875	47.63	0.750	19.05	1.000	25.40
3/4"	3/8"	19.05	9.53	2.000	50.80	0.750	19.05	1.000	25.40
3/4"	1/2"	19.05	12.70	2.125	53.98	1.000	25.40	1.000	25.40
1"	1/2"	25.40	12.70	2.500	63.50	1.000	25.40	1.000	25.40
1"	3/4"	25.40	19.05	2.125	53.98	1.000	25.40	1.000	25.40
1-1/2"	3/4"	38.10	19.05	3.000	76.20	1.000	25.40	1.000	25.40
1-1/2"	1"	38.10	25.40	2.500	63.50	1.000	25.40	1.000	25.40
2"	1"	50.80	25.40	3.375	85.73	1.000	25.40	1.000	25.40
2"	1-1/2"	50.80	38.10	2.500	63.50	1.000	25.40	1.000	25.40
2-1/2"	1-1/2"	63.50	38.10	3.375	85.73	1.000	25.40	1.000	25.40
2-1/2"	2"	63.50	50.80	2.500	63.50	1.000	25.40	1.000	25.40
3"	1-1/2"	76.20	38.10	4.250	107.95	1.000	25.40	1.500	38.10
3"	2"	76.20	50.80	3.375	85.73	1.000	25.40	1.500	38.10
3"	2-1/2"	76.20	63.50	2.625	66.68	1.000	25.40	1.500	38.10
4"	2"	101.60	50.80	5.125	130.18	1.000	25.40	1.500	38.10
4"	2-1/2"	101.60	63.50	4.250	107.95	1.000	25.40	1.500	38.10
4"	3"	101.60	76.20	3.875	98.43	1.500	38.10	1.500	38.10
6"	3"	152.40	76.20	7.250	184.15	1.500	38.10	2.000	50.80
6"	4"	152.40	101.60	5.625	142.88	1.500	38.10	2.000	50.80



CONFIGURATION
32J

Eccentric Reducer

Hygienic Clamp Joint: Tube Weld Eccentric Reducer



Ferrules

O.D. 1

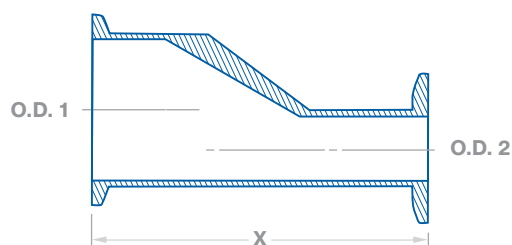
Type A

Type B

•	
•	
•	
•	
•	
•	•
•	•
	•
	•
	•
	•
	•
	•
	•
	•
	•
	•
	•

Dimensions in Inches & Millimeters

Nominal Size inch		Nominal Size mm		X		L1	
O.D. 1	O.D. 2	O.D. 1	O.D. 2	inch	mm	inch	mm
3/8"	1/4"	9.53	6.35	2.125	53.98	0.750	19.05
1/2"	1/4"	12.70	6.35	2.375	60.33	0.750	19.05
1/2"	3/8"	12.70	9.53	2.375	60.33	0.750	19.05
3/4"	3/8"	19.05	9.53	2.500	63.50	0.750	19.05
3/4"	1/2"	19.05	12.70	2.625	66.68	1.000	25.40
1"	1/2"	25.40	12.70	3.000	76.20	1.000	25.40
1"	3/4"	25.40	19.05	2.625	66.68	1.000	25.40
1-1/2"	3/4"	38.10	19.05	3.500	88.90	1.000	25.40
1-1/2"	1"	38.10	25.40	3.000	76.20	1.000	25.40
2"	1"	50.80	25.40	3.875	98.43	1.000	25.40
2"	1-1/2"	50.80	38.10	3.000	76.20	1.000	25.40
2-1/2"	1-1/2"	63.50	38.10	3.875	98.43	1.000	25.40
2-1/2"	2"	63.50	50.80	3.000	76.20	1.000	25.40
3"	1-1/2"	76.20	38.10	4.750	120.65	1.000	25.40
3"	2"	76.20	50.80	3.875	98.43	1.000	25.40
3"	2-1/2"	76.20	63.50	3.125	79.38	1.000	25.40
4"	2"	101.60	50.80	5.750	146.05	1.000	25.40
4"	2-1/2"	101.60	63.50	4.875	123.83	1.000	25.40
4"	3"	101.60	76.20	4.500	114.30	1.500	38.10
6"	3"	152.40	76.20	8.000	203.20	1.500	38.10
6"	4"	152.40	101.60	6.375	161.93	1.500	38.10



Eccentric Reducer

Hygienic Clamp Joint: Eccentric Reducer

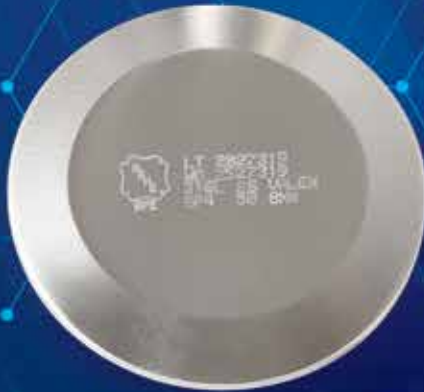
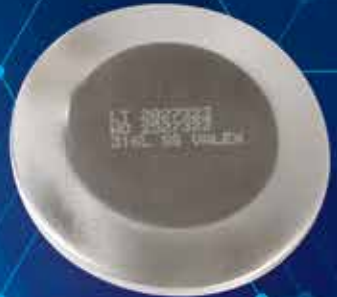
CONFIGURATION
32H

[illegible]

Dimensions in Inches & Millimeters					
Nominal Size inch		Nominal Size mm		X	
O.D. 1	O.D. 2	O.D. 1	O.D. 2	inch	mm
3/8"	1/4"	9.53	6.35	2.625	66.68
1/2"	1/4"	12.70	6.35	2.875	73.03
1/2"	3/8"	12.70	9.53	2.875	73.03
3/4"	3/8"	19.05	9.53	3.000	76.20
3/4"	1/2"	19.05	12.70	3.125	79.38
1"	1/2"	25.40	12.70	3.500	88.90
1"	3/4"	25.40	19.05	3.125	79.38
1-1/2"	3/4"	38.10	19.05	4.000	101.60
1-1/2"	1"	38.10	25.40	3.500	88.90
2"	1"	50.80	25.40	4.375	111.13
2"	1-1/2"	50.80	38.10	3.500	88.90
2-1/2"	1-1/2"	63.50	38.10	4.375	111.13
2-1/2"	2"	63.50	50.80	3.500	88.90
3"	1-1/2"	76.20	38.10	5.250	133.35
3"	2"	76.20	50.80	4.375	111.13
3"	2-1/2"	76.20	63.50	3.625	92.08
4"	2"	101.60	50.80	6.250	158.75
4"	2-1/2"	101.60	63.50	5.375	136.53
4"	3"	101.60	76.20	5.000	127.00
6"	3"	152.40	76.20	8.500	215.90
6"	4"	152.40	101.60	7.000	177.80

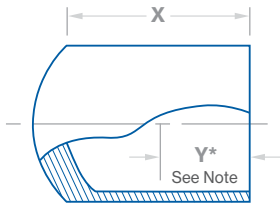
Caps

- Cap
- End Cap, Solid



Cap

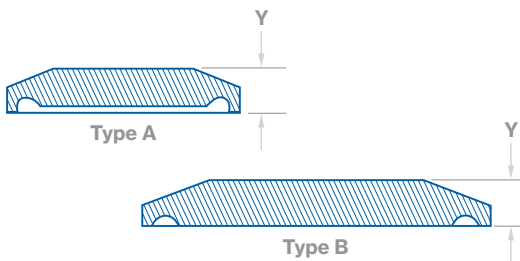
Automatic Tube Weld: Cap

CONFIGURATION
16


Dimensions in Inches & Millimeters

Nominal Size		Overall Length, X	
inch	mm	inch	mm
1/2"	12.70	1.500	38.10
3/4"	19.05	1.500	38.10
1"	25.40	1.500	38.10
1-1/2"	38.10	1.500	38.10
2"	50.80	1.500	38.10
2-1/2"	63.50	1.500	38.10
3"	76.20	1.750	44.45
4"	101.60	2.000	50.80
6"	152.40	2.500	63.50

* Minimum I.D. control portion length, Y, is 0.375 in. (9.53 mm) for all sizes.



End Cap, Solid

Hygienic Clamp Joint: End Cap, Solid

CONFIGURATION
16H

Ferrules

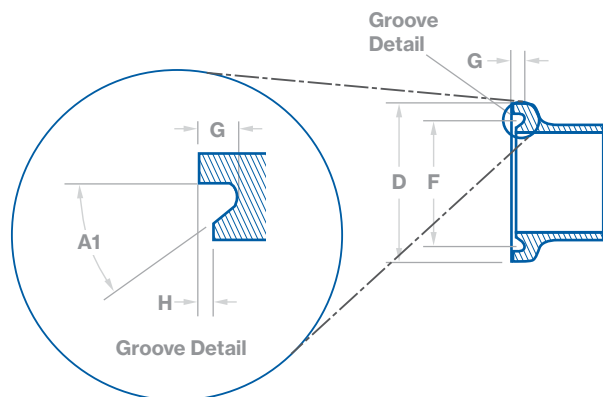
Type A	Type B
●	
●	
●	
●	
●	●
	●
	●
	●
	●
	●

Dimensions in Inches & Millimeters

Nominal Size		Y	
inch	mm	inch	mm
1/4"	6.35	0.187	4.75
3/8"	9.53	0.187	4.75
1/2"	12.70	0.187	4.75
3/4"	19.05	0.187	4.75
1"	25.40	0.250	6.35
1-1/2"	38.10	0.250	6.35
2"	50.80	0.250	6.35
2-1/2"	63.50	0.250	6.35
3"	76.20	0.250	6.35
4"	101.60	0.312	7.92
6"	152.40	0.437	11.10

Ferrules





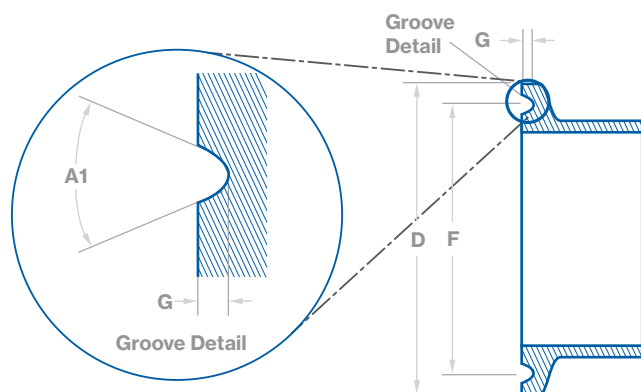
Hygienic Clamp Ferrule

Standard Dimensions & Tolerance: Type A

Dimensions in Inches & Millimeters

Nominal Size		Flange Diameter, D		Groove Diameter, F		Groove Depth, G		Face Offset, H		Groove Detail, A1
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	
1/4"	6.35	0.984	25.0	0.800	20.32	0.085	2.16	0.031	0.79	35
3/8"	9.53	0.984	25.0	0.800	20.32	0.085	2.16	0.031	0.79	35
1/2"	12.70	0.984	25.0	0.800	20.32	0.085	2.16	0.031	0.79	35
3/4"	19.05	0.984	25.0	0.800	20.32	0.085	2.16	0.031	0.79	35
1"	25.40	1.339	34.0	1.160	29.46	0.085	2.16	0.031	0.79	35

For more dimensional information please refer to ASME BPE standard table DT-7-1.



Hygienic Clamp Ferrule

Standard Dimensions & Tolerance: Type B

Dimensions in Inches & Millimeters

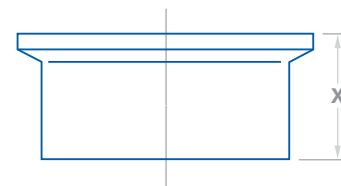
Nominal Size		Flange Diameter, D		Groove Diameter, F		Groove Depth, G		Groove Detail, A1
inch	mm	inch	mm	inch	mm	inch	mm	
1	25.40	1.984	50.39	1.718	43.64	0.063	1.60	46
1-1/2	38.10	1.984	50.39	1.718	43.64	0.063	1.60	46
2	50.80	2.516	63.91	2.218	56.34	0.063	1.60	46
2-1/2	63.50	3.047	77.39	2.781	70.64	0.063	1.60	46
3	76.20	3.579	90.91	3.281	83.34	0.063	1.60	46
4	101.60	4.682	118.92	4.344	110.34	0.063	1.60	46
6	152.40	6.570	166.88	6.176	156.87	0.063	1.60	46

For more dimensional information please refer to ASME BPE standard table DT-7-1.

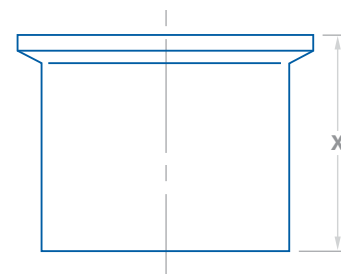
CONFIGURATION
14S

Clamp Ferrule Short

Automatic Tube Weld: Ferrule



Ferrules		Dimensions in Inches & Millimeters			
Type A	Type B	Nominal Size		X	
		inch	mm	inch	mm
•		1/4"	6.35	0.500	12.70
•		3/8"	9.53	0.500	12.70
•		1/2"	12.70	0.500	12.70
•		3/4"	19.05	0.500	12.70
•	•	1"	25.40	0.500	12.70
	•	1-1/2"	38.10	0.500	12.70
	•	2"	50.80	0.500	12.70
	•	2-1/2"	63.50	0.500	12.70
	•	3"	76.20	0.500	12.70
	•	4"	101.60	0.625	15.88
	•	6"	152.40	0.750	19.05

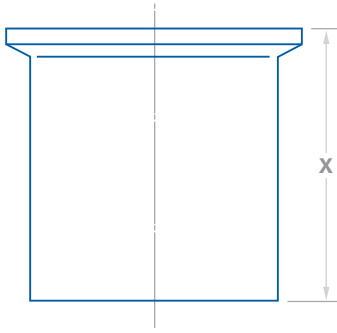


CONFIGURATION
14M

Clamp Ferrule Medium

Automatic Tube Weld: Ferrule

Ferrules		Dimensions in Inches & Millimeters			
Type A	Type B	Nominal Size		X	
		inch	mm	inch	mm
•		1/4"	6.35	1.125	28.58
•		3/8"	9.53	1.125	28.58
•		1/2"	12.70	1.125	28.58
•		3/4"	19.05	1.125	28.58
•	•	1"	25.40	1.125	28.58
	•	1-1/2"	38.10	1.125	28.58
	•	2"	50.80	1.125	28.58
	•	2-1/2"	63.50	1.125	28.58
	•	3"	76.20	1.125	28.58
	•	4"	101.60	1.125	28.58
	•	6"	152.40	1.500	38.10



Dimensions



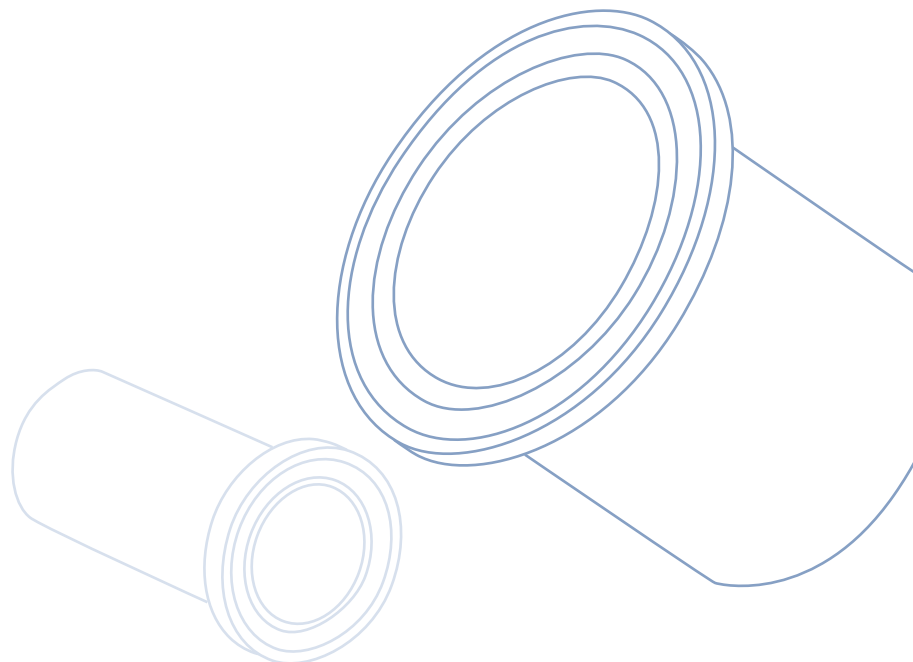
Clamp Ferrule Long

Automatic Tube Weld: Ferrule



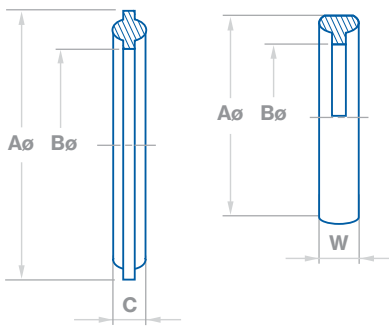
Ferrules	
Type A	Type B
•	
•	
•	
•	
•	•
	•
	•
	•
	•
	•

Dimensions in Inches & Millimeters			
Nominal Size		X	
inch	mm	inch	mm
1/4"	6.35	1.750	44.45
3/8"	9.53	1.750	44.45
1/2"	12.70	1.750	44.45
3/4"	19.05	1.750	44.45
1"	25.40	1.750	44.45
1-1/2"	38.10	1.750	44.45
2"	50.80	2.250	57.15
2-1/2"	63.50	2.250	57.15
3"	76.20	2.250	57.15
4"	101.60	2.250	57.15
6"	152.40	3.000	76.20



Gaskets





Dimensions



Gasket
Hygienic Gasket



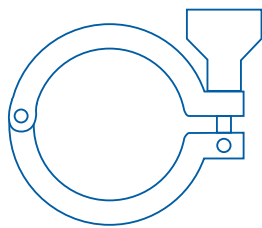
Dimensions in Inches & Millimeters

Nominal Size		A		B		C		W	
inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
1/2"	12.70	1.000	25.40	0.370	9.40	N/A	N/A	0.22	5.50
3/4"	19.05	1.000	25.40	0.618	15.70	N/A	N/A	0.22	5.50
1"	25.40	1.975	50.17	0.900	22.86	0.20	5.08	N/A	N/A
1-1/2"	38.10	1.975	50.17	0.900	35.56	0.20	5.08	N/A	N/A
2"	50.80	2.500	63.50	1.900	48.26	0.20	5.08	N/A	N/A
2-1/2"	63.50	3.000	76.20	2.400	60.96	0.20	5.08	N/A	N/A
3"	76.20	3.575	90.81	2.900	73.66	0.20	5.08	N/A	N/A
4"	101.60	4.690	119.13	3.875	98.43	0.20	5.08	N/A	N/A
6"	152.40	6.600	167.64	5.840	148.34	0.20	5.08	N/A	N/A

* Gasket materials include: PTFE®, VITON®, Envelope type-TEFLON® with EPDM Filler, TEFLON with VITON Filler, Silicon, BUNA, EPDM & TEF-STEEL®

Clamps





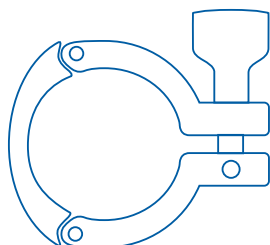
Hygienic Clamp

Heavy Duty

CONFIGURATION
13H

Ferrule Size & Type		
Nominal Size		Type
inch	mm	
1/4"	6.35	A
3/8"	9.53	A
1/2"	12.70	A
3/4"	19.05	A
1"	25.40	A
1"	25.40	B
1-1/2"	38.10	B
2"	50.80	B
2-1/2"	63.50	B
3"	76.20	B
4"	101.60	B
6"	152.40	B

Corresponding Hygienic Clamp	
Nominal Size	
inch	mm
3/4"	19.05
3/4"	19.05
3/4"	19.05
3/4"	19.05
ISO DN15	ISO DN15
1-1/2"	38.10
1-1/2"	38.10
2"	50.80
2-1/2"	63.50
3	76.20
4	101.60
6	152.40



Hygienic Clamp

Heavy Duty, 3-Piece

CONFIGURATION
13H

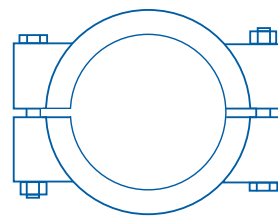
Ferrule Size & Type		
Nominal Size		Type
inch	mm	
1/4"	6.35	A
3/8"	9.53	A
1/2"	12.70	A
3/4"	19.05	A
1"	25.40	A
1"	25.40	B
1-1/2"	38.10	B
2"	50.80	B
2-1/2"	63.50	B
3"	76.20	B
4"	101.60	B
6"	152.40	B

Corresponding Hygienic Clamp	
Nominal Size	
inch	mm
3/4"	19.05
3/4"	19.05
3/4"	19.05
3/4"	19.05
ISO DN15	ISO DN15
1-1/2"	38.10
1-1/2"	38.10
2"	50.80
2-1/2"	63.50
3	76.20
4	101.60
6	152.40

CONFIGURATION
13H

Hygienic Clamp

High Pressure, 2-Bolt

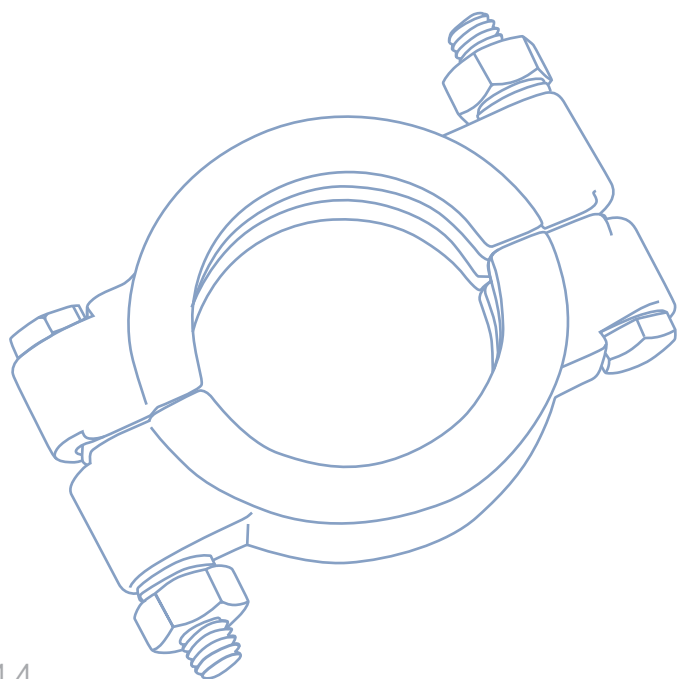


Ferrule Size & Type

Nominal Size		Type
inch	mm	
1/4"	6.35	A
3/8"	9.53	A
1/2"	12.70	A
3/4"	19.05	A
1"	25.40	A
1"	25.40	B
1-1/2"	38.10	B
2"	50.80	B
2-1/2"	63.50	B
3"	76.20	B
4"	101.60	B
6"	152.40	B

Corresponding Hygienic Clamp

Nominal Size	
inch	mm
3/4"	19.05
3/4"	19.05
3/4"	19.05
3/4"	19.05
ISO DN15	ISO DN15
1-1/2"	38.10
1-1/2"	38.10
2"	50.80
2-1/2"	63.50
3	76.20
4	101.60
6	152.40



Ordering Info.

- Tube
- Fittings

TV

0S
0W
2S
2W

Size

.25"
.375"
.50"
.75"
1.0"
...

V0
V2

Process
/ Alloy

TUBE

Ferrule
Clamp
Gasket

Tube

Per Valex Specification SP-9225 (BPE)

Example 1:

T V - 0 S - 0 5 0 0 D - 6 M - S 4

T | V

Process

TV = Per SP-9225 (BPE)

0 | S

Alloy

0S = 316L Seamless
0W = 316L Welded
2S = 304L Seamless
2W = 304L Welded
HS = UNS N06022 Alloy
H7 = UNS N10276 Alloy

0 | 5 | 0 | 0

Size

0250 = .25" Diameter
0375 = .375" Diameter
0500 = .5" Diameter
0750 = .75" Diameter
1000 = 1" Diameter
1500 = 1.5" Diameter
2000 = 2" Diameter
2500 = 2.5" Diameter
3000 = 3" Diameter
4000 = 4" Diameter
6000 = 6" Diameter

D

Wall

B = .035" Wall
D = .049" Wall
F = .065" Wall
G = .083" Wall
J = .109" Wall

6 | M

Length

4M = 4 Meter
6M = 6 Meter

S | 4

I.D. Surface Finish

(See Note 1)

S0 = No Finish Requirement
S1 = 20µin Ra Max, Mechanically Polished
S2 = 25µin Ra Max, Mechanically Polished
S3 = 30µin Ra Max, Mechanically Polished
S4 = 15µin Ra Max, Electropolished
S5 = 20µin Ra Max, Electropolished
S6 = 25µin Ra Max, Electropolished

Notes:

1. For finish codes S1, S2 & S3 (mechanical polish), any surface finish method is acceptable that meets the Ra max.

Fittings

Per Valex Specification SP-9225 (BPE)

Example:

V 2 7 R J - 2 4 F W (0 8 D A) - 1

Used Only for Reducing Fittings & Instrument Tees

V | 2

Process / Alloy

- V1 = SP-9225 (BPE) 0S/0W (316L)
- V2 = SP-9225 (BPE) 2S/2W (304L)
- V3 = SP-9225 (BPE) AS/AW (304)
- VP = Polymer (See Note 5)
- V4 = SP-9225 (BPE) NS/NW (316L)
- V5 = SP-9225 (BPE) 1S/1W (304L)
- V6 = SP-9225 (BPE) UNS N06022
- V7 = SP-9225 (BPE) UNS N10276

7 | R | J

Configuration

- 2 = 90° Elbow, Tube Weld
- 2J = 90° Elbow, Tube Weld x Hygienic Joint
- 2H = 90° Elbow, Hygienic Joint
- 2K = 45° Elbow, Tube Weld
- 2KJ = 45° Elbow, Tube Weld x Hygienic Joint
- 2KH = 45° Elbow, Hygienic Joint
- 2A = 88° Elbow, Tube Weld
- 2B = 92° Elbow, Tube Weld
- 2U = 180° Return Bend, Tube Weld
- 2UH = 180° Return Bend, Hygienic Joint
- 7 = Straight Tee, Tube Weld
- 7H = Straight Tee, Hygienic Joint
- 7N = Instrument Tee, Tube Weld
- 7NH = Instrument Tee, Hygienic Joint
- 7R = Reducing Tee, Tube Weld
- 7U = 180° Return Bend Tee
- 7RH = Reducing Tee, Hygienic Joint
- 8J = Short-Outlet Tee, Tube Weld x Hygienic Joint
- 8H = Short-Outlet Tee, Hygienic Joint
- 8M = Short-Outlet Run Tee, Hygienic Mechanical Joint
- 8RJ = Short-Outlet Reducing Tee, Tube Weld x Hygienic Joint
- 8RH = Short-Outlet Reducing Tee, Hygienic Joint
- 9 = Straight Cross, Tube Weld
- 9H = Straight Cross, Hygienic Joint
- 13H = Hygienic Clamp
- 13G = Hygienic Gasket
- 14S = Ferrule, Tube Weld, Short
- 14M = Ferrule, Tube Weld, Medium
- 14L = Ferrule, Tube Weld, Long

- 16 = Cap, Tube Weld
- 16H = End Cap Solid, Hygienic Joint
- 31 = Conc. Reducer, Tube Weld
- 31J = Conc. Reducer, Hygienic Joint x Tube Weld
- 31H = Conc. Reducer, Hygienic Joint
- 32 = Eccentric Reducer, Tube Weld
- 32J = Eccentric Reducer, Hygienic Joint x Tube Weld
- 32H = Eccentric Reducer, Hygienic Joint

2 | 4

Size

- 04 = .25" Diameter
- 06 = .375" Diameter
- 08 = .5" Diameter
- 12 = .75" Diameter
- 16 = 1" Diameter
- 24 = 1.5" Diameter
- 32 = 2" Diameter
- 40 = 2.5" Diameter
- 48 = 3" Diameter
- 64 = 4" Diameter
- 96 = 6" Diameter

F

Wall

- X = N/A
- B = .035" Wall
- D = .049" Wall
- F = .065" Wall
- G = .083" Wall
- J = .109" Wall

W

Type:

Tube

- X = Machined or N/A
- S = Seamless
- W = Welded

Fitting Ferrule

- A = Type A Ferrule
- B = Type B Ferrule

Clamp

- 0 = ISO DN 15 (1" DIA, TYPE A)
- 1 = Heavy Duty
- 2 = Heavy Duty, 3-Piece
- 3 = High Pressure, 2-Bolt

Gasket

(See Note 4)

- C = PTFE (I.E. "Teflon®", etc.)
- D = FKM (I.E. "Viton®", etc.)
- E = NBR (I.E. "Buna-N®", etc.)
- F = EPDM

(0 8 D A)

Used Only for Reducing Fittings, Instrument Tees & Multi Type

Refer to size, wall & type codes if applicable

1

Finish or Connection Details

I.D. Surface Finish

(See Note 3)

- 0 = Surface Finish Requirement -OR- N/A
- 1 = 20µin Ra Max, Mechanically Polished
- 2 = 25µin Ra Max, Mechanically Polished
- 3 = 30µin Ra Max, Mechanically Polished
- 4 = 15µin Ra Max, Electropolished
- 5 = 20µin Ra Max, Electropolished
- 6 = 25µin Ra Max, Electropolished

Gasket Ferrule Type

(See Note 6)

- A = Type A Ferrule
- B = Type B Ferrule

Notes:

1. Per Valex Specification SP-9225 (BPE)
2. Process Codes may not be available for all part number combinations.
3. For finish codes 1, 2 & 3 (Mechanical Polish), any surface finish method is acceptable that meets the Ra max.
4. "Teflon®" and "Viton®" are registered trademarks of Chemours company. "Buna-N®" is a registered trademark of ARLANXEO.
5. Polymer materials include rubber and various other plastics such as PTFE, FKM, NBR, EPDM, and more.
6. For ferrule type: Type A is only valid when size is ≤ 1". Type B is only valid when size is ≥ 1".



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