Steel & O'Brien® Manufacturing

Sanitary Simplified™

BPE PRODUCTS CATALOG

Simplifying Sanitary Through Superior Service™

Home of

TOP-FLO®



GLOSSARY OF TERMS

Automatic Weld	Uses equipment which welds without the constant adjusting of controls by the welder or operator. Equipment controls joint alignment by using an automatic sensing device.
Bioprocessing	Specific process that uses complete living cells or their components (e.g., bacteria, enzymes, chloroplasts) to obtain desired products.
Borescope	An optical device consisting of a rigid or flexible tube with an eyepiece on one end, an objective lens on the other, linked together by a relay optical system. Used to inspect difficult access locations.
Clean-In-Place (CIP)	A method of cleaning the interior surfaces of pipes, vessels, process equipment, typically with acid, caustic or a combination of both, without disassembly.
Compendial Water	Water that complies with USP and/or other acknowledged body related to the quality, manufacture or distribution of high purity water.
Dead Leg	An area of entrapment in a vessel or piping run that could lead to contamination of the product.
Electropolishing	An electrochemical process that removes material from a metallic workpiece. It is used to polish, passivate, and deburr metal parts.
Fixture Mark	An area on an electropolished component where the electrical connection was made for processing the component.
Full Penetration Weld	A weld joint where the depth of the weld extends from its face into the weld joint so that the joint is fully fused.
Gasket	A static seal which fills the space between two or more mating surfaces, generally to prevent leakage from or into the joined objects while under compression.
Heat Number	The identification number that is stamped on a material plate after it is removed from the ladle and rolled at a steel mill.
Hydrotest	A pressure test of vessels, piping or components performed by pressurizing the internal volume with water at a pressure defined by applicable code.
Hygienic	Describes equipment and piping systems that, by design, construction and operation, provide for cleanliness so products produced will not adversely affect human or animal health.
Lay	One of the three components of surface finish. Lay is the direction of the predominant surface pattern ordinarily determined by the production method used.
Manual Welding	Welding in which the entire welding operation is performed and controlled by hand.
Maximum Working Temperature/Pressure	The temperature/pressure at which the system is capable of operating for a sustained period of time.
Mechanical Seal	A device used for sealing fluids with rotating shafts.
Orbital Welding	Automatic welding whereby the arc is rotated mechanically through 360° (180° in double up welding) around a static work piece, such as a pipe, in a continuous process, with or without filler material.
O-Ring	A static seal of circular cross section.
Passivation	The removal of free iron from the surface of stainless steel by means of a chemical dissolution usually by acid which enhance the formation of the passive layer.
Product Contact Surface	Any surface that contacts raw materials, process materials and/or product.
Profilometer	A measuring instrument used to measure a surface's profile, in order to quantify its roughness.
Ra	Log of the arithmetic mean of the surface profile.
Steam-In-Place (SIP)	The use of steam to sterilize a piece of equipment without the use of an autoclave.
Sterile	Free from living organisms.
Surface Finish	The description of the surface expressed in Ra.
Validation	Documented evidence that the system does what it purports to do.
WFI	A classification of compendial water suitable for human injection.

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Headquartered in Arcade, NY, Steel & O'Brien is a manufacturer of stainless-steel process equipment, including sanitary and BPE fittings, tubing and valves for industries with strict hygienic and high-purity standards. Steel & O'Brien is also an ISO-certified custom stainless steel manufacturer. Our experienced team of engineers, machinists, welders and polishers specialize in finding the best solutions for our customers.

Steel & O'Brien offers a full line of ASME-BPE compliant fittings for the Pharmaceutical and Biotech Industries, ranging in sizes from 1/2" - 6" with weld and clamp end connections, in 316L material.

Traceability All fittings are marked according to the latest ASME-BPE specifications. Permanently marking each fitting allows for full traceability back to the original stainless steel used to make the part. All Material Test Reports are available upon request or online at steelobrien.com.

Quality Every BPE fitting is inspected by a highly trained staff to the latest ASME-BPE specifications.

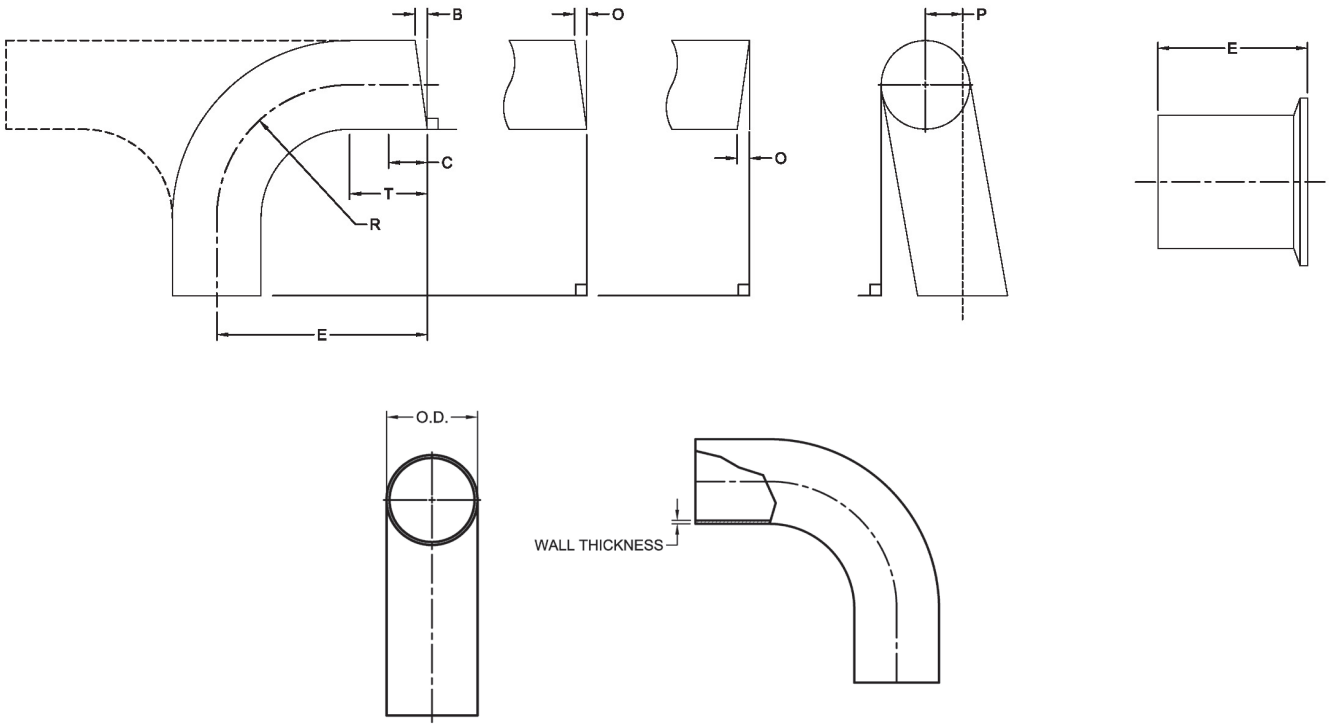
Packaging All BPE fittings are capped and bagged in transparent bags to prevent damage and contamination

Borescoped Our high resolution borescope gives Steel & O'Brien the ability to inspect for ASME-BPE weld discoloration acceptance. We can inspect and record welds with an inside diameter of .370 and larger with a reach of up to 76" from access port.

Polishing Polishing is an important component for BPE fittings. Polish offerings are shown below and comply to the latest ASME-BPE requirements.

Surface Finish Code	BPE Designation	Inside Surface			Outside Surface
		Ra Max.		Polish Method	Polish Method
		μ-in.	μm		
PU	SF0			Unpolished	Unpolished
PC	SF1	20	0.51	Mechanical Polish	Unpolished
PL	SF1	20	0.51	Mechanical Polish	Mechanical Polish (32Ra)
PD	SF4	15	0.38	Mechanical Polish & Electropolish	Unpolished
PM	SF4	15	0.38	Mechanical Polish & Electropolish	Mechanical Polish (32Ra)

DIMENSIONS & TOLERANCES
AS SPECIFIED IN ASME BPE PART DT-3-1



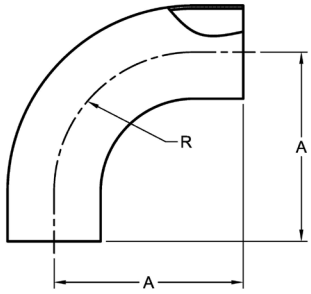
Nominal Size	O.D.		Wall Thickness (Mechanical Polish)		Wall Thickness (Electropolish)		Squareness Face to Tangent, B (max.)		Off Angle O (max.)		Equivalent Angle (O) (max.)	Off Plane, P (max.)		Centerline Radius (CLR), R	
in.	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.		in.	mm.	in.	mm.
1/4	±0.005	±0.13	+0.003/-0.004	+0.08/-0.10	+0.003/-0.006	+0.08/-0.15	0.005	0.13	0.009	0.23	2.1	0.030	0.76	0.563	14.30
3/8	±0.005	±0.13	+0.003/-0.004	+0.08/-0.10	+0.003/-0.006	+0.08/-0.15	0.005	0.13	0.012	0.30	1.8	0.030	0.76	1.125	28.58
1/2	±0.005	±0.13	+0.005/-0.008	+0.13/-0.20	+0.005/-0.010	+0.13/-0.25	0.005	0.13	0.014	0.36	1.6	0.030	0.76	1.125	28.58
3/4	±0.005	±0.13	+0.005/-0.008	+0.13/-0.20	+0.005/-0.010	+0.13/-0.25	0.005	0.13	0.018	0.46	1.4	0.030	0.76	1.125	28.58
1	±0.005	±0.13	+0.005/-0.008	+0.13/-0.20	+0.005/-0.010	+0.13/-0.25	0.008	0.20	0.025	0.64	1.4	0.030	0.76	1.500	38.10
1-1/2	±0.008	±0.20	+0.005/-0.008	+0.13/-0.20	+0.005/-0.010	+0.13/-0.25	0.008	0.20	0.034	0.86	1.3	0.050	1.27	2.250	57.15
2	±0.008	±0.20	+0.005/-0.008	+0.13/-0.20	+0.005/-0.010	+0.13/-0.25	0.008	0.20	0.043	1.09	1.2	0.050	1.27	3.000	76.20
2-1/2	±0.010	±0.25	+0.005/-0.008	+0.13/-0.20	+0.005/-0.010	+0.13/-0.25	0.010	0.25	0.054	1.37	1.2	0.050	1.27	3.750	95.25
3	±0.010	±0.25	+0.005/-0.008	+0.13/-0.20	+0.005/-0.010	+0.13/-0.25	0.016	0.41	0.068	1.73	1.3	0.050	1.27	4.500	114.30
4	±0.015	±0.38	+0.008/-0.010	+0.38/-0.38	+0.008/-0.012	+0.20/-0.30	0.016	0.41	0.086	2.18	1.2	0.060	1.52	6.000	152.40
6	±0.030	±0.76	+0.015/-0.015	+0.38/-0.20	+0.015/-0.017	+0.38/-0.43	0.030	0.76	0.135	3.43	1.3	0.060	1.52	9.000	228.60

GENERAL NOTES:

1 Tolerances for “E” end-to-end and center-to-end = .050 in (1.27mm)
2 Tolerance for centerline radius (CLR) = ±10% of the nominal O.D. Dimension
3 “C” is the control portion as defined by ASME-BPE Section DT-7
4 “T” is the minimum tangent length per ASME-BPE Table DT-4.1-1

S2S - 90 DEGREE ELBOW, TANGENT WELD ENDS



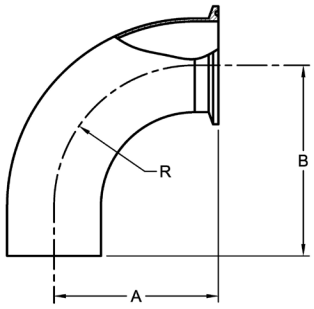


PART NUMBER	SIZE	A	R
S2S-.50	1/2	3.000	1.125
S2S-.75	3/4	3.000	1.125
S2S-1	1	3.000	1.500
S2S-1.5	1-1/2	3.750	2.250
S2S-2	2	4.750	3.000
S2S-2.5	2-1/2	5.500	3.750
S2S-3	3	6.250	4.500
S2S-4	4	8.000	6.000
S2S-6	6	11.500	9.000

BPE TABLE DT-4.1.1-1

S2CKW - 90 DEGREE ELBOW, TANGENT WELD END X CLAMP



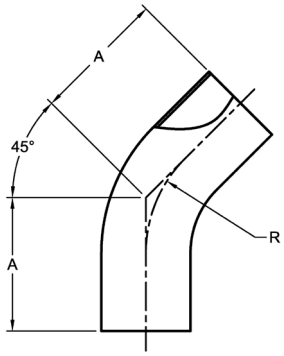


PART NUMBER	SIZE	A	B	R
S2CKW-.50	1/2	1.625	3.000	1.125
S2CKW-.75	3/4	1.625	3.000	1.125
S2CKW-1	1	2.000	3.000	1.500
S2CKW-1.5	1-1/2	2.750	3.750	2.250
S2CKW-2	2	3.500	4.750	3.000
S2CKW-2.5	2-1/2	4.250	5.500	3.750
S2CKW-3	3	5.000	6.250	4.500
S2CKW-4	4	6.625	8.000	6.000
S2CKW-6	6	10.500	11.500	9.000

BPE TABLE DT-4.1.1-2

S2KS - 45 DEGREE ELBOW, TANGENT WELD ENDS



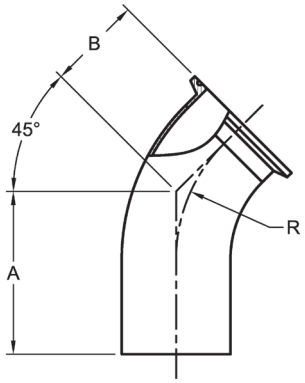


PART NUMBER	SIZE	A	R
S2KS-.50	1/2	2.250	1.125
S2KS-.75	3/4	2.250	1.125
S2KS-1	1	2.250	1.500
S2KS-1.5	1-1/2	2.500	2.250
S2KS-2	2	3.000	3.000
S2KS-2.5	2-1/2	3.375	3.750
S2KS-3	3	3.625	4.500
S2KS-4	4	4.500	6.000
S2KS-6	6	6.250	9.000

BPE TABLE DT-4.1.1-4

S2KKW - 45 DEGREE ELBOW, TANGENT WELD END X CLAMP



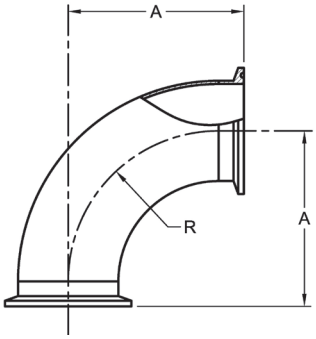


PART NUMBER	SIZE	A	B	R
S2KKW-.50	1/2	2.250	1.000	1.125
S2KKW-.75	3/4	2.250	1.000	1.125
S2KKW-1	1	2.250	1.125	1.500
S2KKW-1.5	1-1/2	2.500	1.438	2.250
S2KKW-2	2	3.000	1.750	3.000
S2KKW-2.5	2-1/2	3.375	2.063	3.750
S2KKW-3	3	3.625	2.375	4.500
S2KKW-4	4	4.500	3.125	6.000
S2KKW-6	6	6.250	5.250	9.000

BPE TABLE DT-4.1.1-5

S2CMP - 90 DEGREE ELBOW, CLAMP ENDS



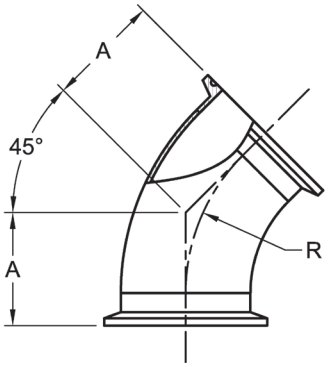


PART NUMBER	SIZE	A	R
S2CMP-.50	1/2	1.625	1.125
S2CMP-.75	3/4	1.625	1.125
S2CMP-1	1	2.000	1.500
S2CMP-1.5	1-1/2	2.750	2.250
S2CMP-2	2	3.500	3.000
S2CMP-2.5	2-1/2	4.250	3.750
S2CMP-3	3	5.000	4.500
S2CMP-4	4	6.625	6.000
S2CMP-6	6	10.500	9.000

BPE TABLE DT-4.1.1-3

S2KMP - 45 DEGREE ELBOW, CLAMP ENDS



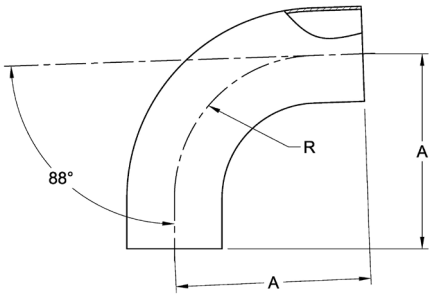


PART NUMBER	SIZE	A	R
S2KMP-.50	1/2	1.000	1.125
S2KMP-.75	3/4	1.000	1.125
S2KMP-1	1	1.125	1.500
S2KMP-1.5	1-1/2	1.438	2.250
S2KMP-2	2	1.750	3.000
S2KMP-2.5	2-1/2	2.063	3.750
S2KMP-3	3	2.375	4.500
S2KMP-4	4	3.125	6.000
S2KMP-6	6	5.250	9.000

BPE TABLE DT-4.1.1-6

S2S88 - 88 DEGREE ELBOW TANGENT WELD ENDS



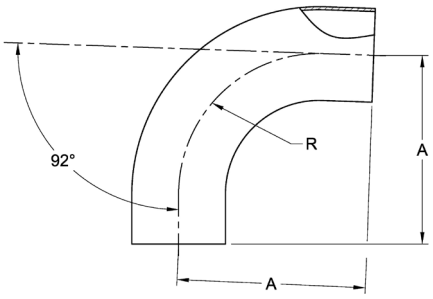


PART NUMBER	SIZE	A	R
S2S88-.50	1/2	3.065	1.125
S2S88-.75	3/4	3.065	1.125
S2S88-1	1	3.051	1.500
S2S88-1.5	1-1/2	3.801	2.250
S2S88-2	2	4.809	3.000
S2S88-2.5	2-1/2	5.559	3.750
S2S88-3	3	6.308	4.500
S2S88-4	4	8.066	6.000
S2S88-6	6	11.582	9.000

BPE TABLE DT-4.1.1-9

S2S92 - 92 DEGREE ELBOW TANGENT WELD ENDS



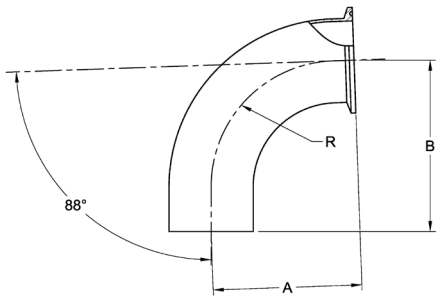


PART NUMBER	SIZE	A	R
S2S92-.50	1/2	2.934	1.125
S2S92-.75	3/4	2.934	1.125
S2S92-1	1	2.947	1.500
S2S92-1.5	1-1/2	3.696	2.250
S2S92-2	2	4.687	3.000
S2S92-2.5	2-1/2	5.437	3.750
S2S92-3	3	6.186	4.500
S2S92-4	4	7.930	6.000
S2S92-6	6	11.407	9.000

BPE TABLE DT-4.1.1-10

S2CKW88 - 88 DEGREE ELBOW, TANGENT WELD END X CLAMP END

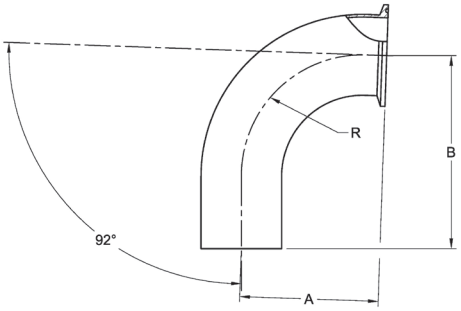




PART NUMBER	SIZE	A	B	R
S2CKW88-.50	1/2	1.690	3.017	1.125
S2CKW88-.75	3/4	1.725	3.018	1.125
S2CKW88-1	1	2.051	3.017	1.500
S2CKW88-1.5	1-1/2	2.801	3.766	2.250
S2CKW88-2	2	3.559	4.766	3.000
S2CKW88-2.5	2-1/2	4.309	5.515	3.750
S2CKW88-3	3	5.058	6.265	4.500
S2CKW88-4	4	6.691	8.018	6.000

S2CKW92 - 92 DEGREE ELBOW, TANGENT WELD END X CLAMP END

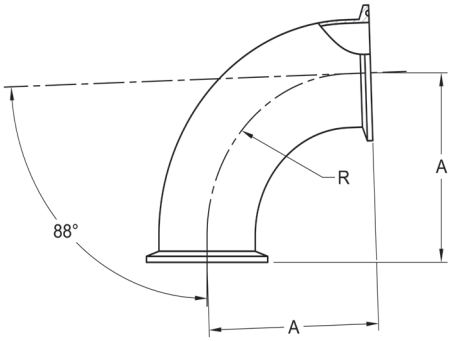




PART NUMBER	SIZE	A	B	R
S2CKW92-.50	1/2	1.607	2.980	1.125
S2CKW92-.75	3/4	1.607	2.980	1.125
S2CKW92-1	1	1.877	2.983	1.500
S2CKW92-1.5	1-1/2	2.696	3.731	2.250
S2CKW92-2	2	3.298	4.736	3.000
S2CKW92-2.5	2-1/2	4.012	5.486	3.750
S2CKW92-3	3	4.727	6.232	4.500
S2CKW92-4	4	6.272	7.988	6.000

S2CMP88 - 88 DEGREE ELBOW CLAMP ENDS

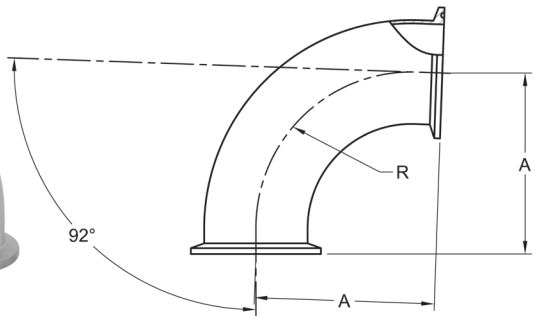




PART NUMBER	SIZE	A	R
S2CMP88-.50	1/2	1.642	1.125
S2CMP88-.75	3/4	1.647	1.125
S2CMP88-1	1	2.017	1.500
S2CMP88-1.5	1-1/2	2.766	2.250
S2CMP88-2	2	3.516	3.000
S2CMP88-2.5	2-1/2	4.265	3.750
S2CMP88-3	3	5.015	4.500
S2CMP88-4	4	6.644	6.000

S2CMP92 - 92 DEGREE ELBOW CLAMP ENDS

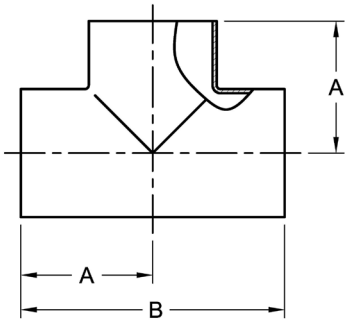




PART NUMBER	SIZE	A	R
S2CMP92-.50	1/2	1.607	1.125
S2CMP92-.75	3/4	1.667	1.125
S2CMP92-1	1	1.982	1.500
S2CMP92-1.5	1-1/2	2.731	2.250
S2CMP92-2	2	3.476	3.000
S2CMP92-2.5	2-1/2	4.226	3.750
S2CMP92-3	3	4.975	4.500
S2CMP92-4	4	6.592	6.000

S7WWW - TEE, TANGENT WELD ENDS



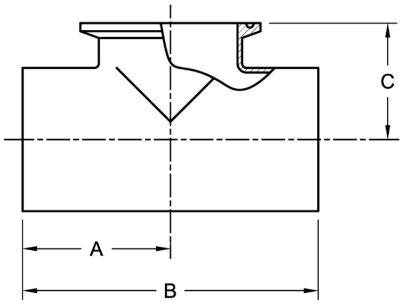


PART NUMBER	SIZE	A	B
S7WWW-.50	1/2	1.875	3.750
S7WWW-.75	3/4	2.000	4.000
S7WWW-1	1	2.125	4.250
S7WWW-1.5	1-1/2	2.375	4.750
S7WWW-2	2	2.875	5.750
S7WWW-2.5	2-1/2	3.125	6.250
S7WWW-3	3	3.375	6.750
S7WWW-4	4	4.125	8.250
S7WWW-6	6	5.625	11.250

BPE TABLE DT-4.1.2-1

S7SWWK - TEE, TANGENT WELD ENDS x SHORT CLAMP OUTLET



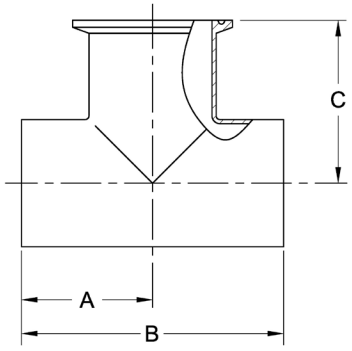


PART NUMBER	SIZE	A	B	C
S7SWWK-.50	1/2	1.875	3.750	1.000
S7SWWK-.75	3/4	2.000	4.000	1.125
S7SWWK-1	1	2.125	4.250	1.125
S7SWWK-1.5	1-1/2	2.375	4.750	1.375
S7SWWK-2	2	2.875	5.750	1.625
S7SWWK-2.5	2-1/2	3.125	6.250	1.875
S7SWWK-3	3	3.375	6.750	2.125
S7SWWK-4	4	4.125	8.250	2.750
S7SWWK-6	6	5.625	11.250	4.625

BPE TABLE DT-4.1.2-2

S7WWK - TEE, TANGENT WELD ENDS x CLAMP OUTLET



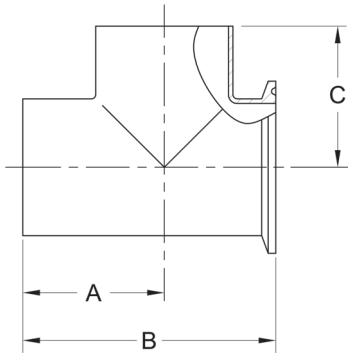


PART NUMBER	SIZE	A	B	C
S7WWK-.50	1/2	1.875	3.750	2.375
S7WWK-.75	3/4	2.000	4.000	2.500
S7WWK-1	1	2.125	4.250	2.625
S7WWK-1.5	1-1/2	2.375	4.750	2.875
S7WWK-2	2	2.875	5.750	3.375
S7WWK-2.5	2-1/2	3.125	6.250	3.625
S7WWK-3	3	3.375	6.750	3.875
S7WWK-4	4	4.125	8.250	4.750
S7WWK-6	6	5.625	11.250	7.125

BPE TABLE DT-4.1.2-12

S7WSKW - TEE, TANGENT WELD ENDS x CLAMP SHORT RUN



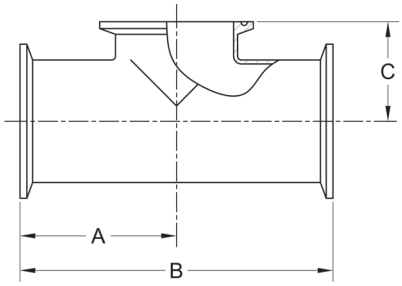


PART NUMBER	SIZE	A	B	C
S7WSKW-.50	1/2	1.875	2.750	1.875
S7WSKW-.75	3/4	2.000	3.000	2.000
S7WSKW-1	1	2.125	3.250	2.125
S7WSKW-1.5	1-1/2	2.375	3.750	2.375
S7WSKW-2	2	2.875	4.500	2.875
S7WSKW-2.5	2-1/2	3.125	5.000	3.125
S7WSKW-3	3	3.375	5.500	3.375
S7WSKW-4	4	4.125	6.875	4.125
S7WSKW-6	6	5.625	10.250	5.625

BPE TABLE DT-4.1.2-3

S7MPS - TEE, CLAMP ENDS x SHORT CLAMP OUTLET



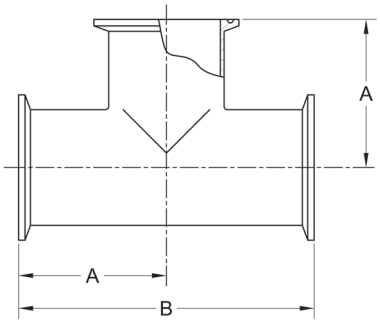


PART NUMBER	SIZE	A	B	C
S7MPS-.50	1/2	2.375	4.750	1.000
S7MPS-.75	3/4	2.500	5.000	1.125
S7MPS-1	1	2.625	5.250	1.125
S7MPS-1.5	1-1/2	2.875	5.750	1.375
S7MPS-2	2	3.375	6.750	1.625
S7MPS-2.5	2-1/2	3.625	7.250	1.875
S7MPS-3	3	3.875	7.750	2.125
S7MPS-4	4	4.750	9.500	2.750
S7MPS-6	6	7.125	14.250	4.625

BPE TABLE DT-4.1.2-5

S7MP - TEE, CLAMP ENDS



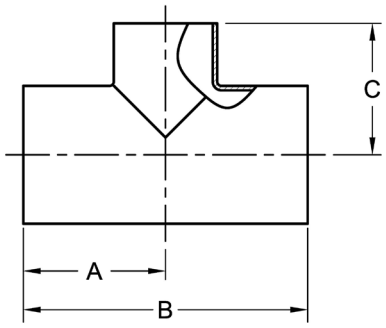


PART NUMBER	SIZE	A	B
S7MP-.50	1/2	2.375	4.750
S7MP-.75	3/4	2.500	5.000
S7MP-1	1	2.625	5.250
S7MP-1.5	1-1/2	2.875	5.750
S7MP-2	2	3.375	6.750
S7MP-2.5	2-1/2	3.625	7.250
S7MP-3	3	3.875	7.750
S7MP-4	4	4.750	9.500
S7MP-6	6	7.125	14.250

BPE TABLE DT-4.1.2-4

S7RWWW - REDUCING TEE, TANGENT WELD ENDS



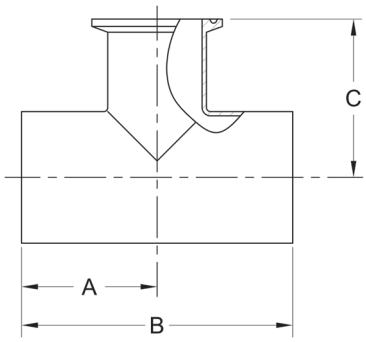


PART NUMBER	SIZE	A	B	C
S7RWWW-.75X.50	3/4 X 1/2	2.000	4.000	2.000
S7RWWW-1X.50	1 X 1/2	2.125	4.250	2.125
S7RWWW-1X.75	1 X 3/4	2.125	4.250	2.125
S7RWWW-1.5X.50	1-1/2 X 1/2	2.375	4.750	2.375
S7RWWW-1.5X.75	1-1/2 X 3/4	2.375	4.750	2.375
S7RWWW-1.5X1	1-1/2 X 1	2.375	4.750	2.375
S7RWWW-2X.50	2 X 1/2	2.875	5.750	2.625
S7RWWW-2X.75	2 X 3/4	2.875	5.750	2.625
S7RWWW-2X1	2 X 1	2.875	5.750	2.625
S7RWWW-2X1.5	2 X 1-1/2	2.875	5.750	2.625
S7RWWW-2.5X.50	2-1/2 X 1/2	3.125	6.250	2.875
S7RWWW-2.5X.75	2-1/2 X 3/4	3.125	6.250	2.875
S7RWWW-2.5X1	2-1/2 X 1	3.125	6.250	2.875
S7RWWW-2.5X1.5	2-1/2 X 1-1/2	3.125	6.250	2.875
S7RWWW-2.5X2	2-1/2 X 2	3.125	6.250	2.875
S7RWWW-3X.50	3 X 1/2	3.375	6.750	3.125
S7RWWW-3X.75	3 X 3/4	3.375	6.750	3.125
S7RWWW-3X1	3 X 1	3.375	6.750	3.125
S7RWWW-3X1.5	3 X 1-1/2	3.375	6.750	3.125
S7RWWW-3X2	3 X 2	3.375	6.750	3.125
S7RWWW-3X2.5	3 X 2-1/2	3.375	6.750	3.125
S7RWWW-4X.50	4 X 1/2	4.125	8.250	3.625
S7RWWW-4X.75	4 X 3/4	4.125	8.250	3.625
S7RWWW-4X1	4 X 1	4.125	8.250	3.625
S7RWWW-4X1.5	4 X 1-1/2	4.125	8.250	3.625
S7RWWW-4X2	4 X 2	4.125	8.250	3.875
S7RWWW-4X2.5	4 X 2-1/2	4.125	8.250	3.875
S7RWWW-4X3	4 X 3	4.125	8.250	3.875
S7RWWW-6X.50	6 X 1/2	5.625	11.250	4.625
S7RWWW-6X.75	6 X 3/4	5.625	11.250	4.625
S7RWWW-6X1	6 X 1	5.625	11.250	4.625
S7RWWW-6X1.5	6 X 1-1/2	5.625	11.250	4.625
S7RWWW-6X2	6 X 2	5.625	11.250	4.875
S7RWWW-6X2.5	6 X 2-1/2	5.625	11.250	4.875
S7RWWW-6X3	6 X 3	5.625	11.250	4.875
S7RWWW-6X4	6 X 4	5.625	11.250	5.125

BPE TABLE DT-4.1.2-6

S7RWWK - REDUCING TEE, TANGENT WELD ENDS x CLAMP END BRANCH



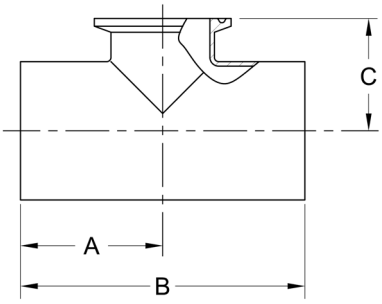


PART NUMBER	SIZE	A	B	C
S7RWWK-.75X.50	3/4 X 1/2	2.000	4.000	2.500
S7RWWK-1X.50	1 X 1/2	2.125	4.250	2.625
S7RWWK-1X.75	1 X 3/4	2.125	4.250	2.625
S7RWWK-1.5X.50	1-1/2 X 1/2	2.375	4.750	2.875
S7RWWK-1.5X.75	1-1/2 X 3/4	2.375	4.750	2.875
S7RWWK-1.5X1	1-1/2 X 1	2.375	4.750	2.875
S7RWWK-2X.50	2 X 1/2	2.875	5.750	3.125
S7RWWK-2X.75	2 X 3/4	2.875	5.750	3.125
S7RWWK-2X1	2 X 1	2.875	5.750	3.125
S7RWWK-2X1.5	2 X 1-1/2	2.875	5.750	3.125
S7RWWK-2.5X.50	2-1/2 X 1/2	3.125	6.250	3.375
S7RWWK-2.5X.75	2-1/2 X 3/4	3.125	6.250	3.375
S7RWWK-2.5X1	2-1/2 X 1	3.125	6.250	3.375
S7RWWK-2.5X1.5	2-1/2 X 1-1/2	3.125	6.250	3.375
S7RWWK-2.5X2	2-1/2 X 2	3.125	6.250	3.375
S7RWWK-3X.50	3 X 1/2	3.375	6.750	3.625
S7RWWK-3X.75	3 X 3/4	3.375	6.750	3.625
S7RWWK-3X1	3 X 1	3.375	6.750	3.625
S7RWWK-3X1.5	3 X 1-1/2	3.375	6.750	3.625
S7RWWK-3X2	3 X 2	3.375	6.750	3.625
S7RWWK-3X2.5	3 X 2-1/2	3.375	6.750	3.625
S7RWWK-4X.50	4 X 1/2	4.125	8.250	4.125
S7RWWK-4X.75	4 X 3/4	4.125	8.250	4.125
S7RWWK-4X1	4 X 1	4.125	8.250	4.125
S7RWWK-4X1.5	4 X 1-1/2	4.125	8.250	4.125
S7RWWK-4X2	4 X 2	4.125	8.250	4.375
S7RWWK-4X2.5	4 X 2-1/2	4.125	8.250	4.375
S7RWWK-4X3	4 X 3	4.125	8.250	4.375
S7RWWK-6X.50	6 X 1/2	5.625	11.250	5.125
S7RWWK-6X.75	6 X 3/4	5.625	11.250	5.125
S7RWWK-6X1	6 X 1	5.625	11.250	5.125
S7RWWK-6X1.5	6 X 1-1/2	5.625	11.250	5.125
S7RWWK-6X2	6 X 2	5.625	11.250	5.375
S7RWWK-6X2.5	6 X 2-1/2	5.625	11.250	5.375
S7RWWK-6X3	6 X 3	5.625	11.250	5.375
S7RWWK-6X4	6 X 4	5.625	11.250	5.750

BPE TABLE DT-4.1.2-13

S7RSWWK - REDUCING TEE, TANGENT WELD ENDS x SHORT CLAMP BRANCH

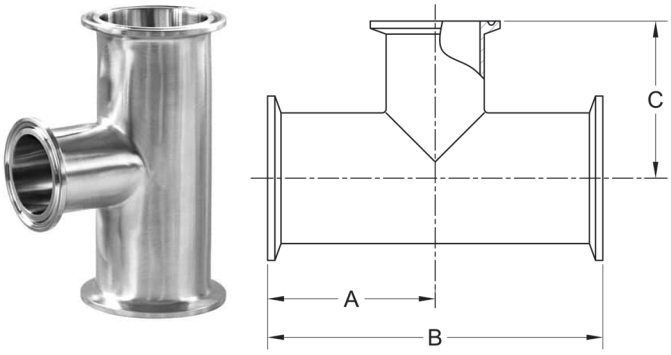




PART NUMBER	SIZE	A	B	C
S7RSWWK-.75X.50	3/4 X 1/2	2.000	4.000	1.000
S7RSWWK-1X.50	1 X 1/2	2.125	4.250	1.125
S7RSWWK-1X.75	1 X 3/4	2.125	4.250	1.125
S7RSWWK-1.5X.50	1-1/2 X 1/2	2.375	4.750	1.375
S7RSWWK-1.5X.75	1-1/2 X 3/4	2.375	4.750	1.375
S7RSWWK-1.5X1	1-1/2 X 1	2.375	4.750	1.375
S7RSWWK-2X.50	2 X 1/2	2.875	5.750	1.625
S7RSWWK-2X.75	2 X 3/4	2.875	5.750	1.625
S7RSWWK-2X1	2 X 1	2.875	5.750	1.625
S7RSWWK-2X1.5	2 X 1-1/2	2.875	5.750	1.625
S7RSWWK-2.5X.50	2-1/2 X 1/2	3.125	6.250	1.875
S7RSWWK-2.5X.75	2-1/2 X 3/4	3.125	6.250	1.875
S7RSWWK-2.5X1	2-1/2 X 1	3.125	6.250	1.875
S7RSWWK-2.5X1.5	2-1/2 X 1-1/2	3.125	6.250	1.875
S7RSWWK-2.5X2	2-1/2 X 2	3.125	6.250	1.875
S7RSWWK-3X.50	3 X 1/2	3.375	6.750	2.125
S7RSWWK-3X.75	3 X 3/4	3.375	6.750	2.125
S7RSWWK-3X1	3 X 1	3.375	6.750	2.125
S7RSWWK-3X1.5	3 X 1-1/2	3.375	6.750	2.125
S7RSWWK-3X2	3 X 2	3.375	6.750	2.125
S7RSWWK-3X2.5	3 X 2-1/2	3.375	6.750	2.125
S7RSWWK-4X.50	4 X 1/2	4.125	8.250	2.625
S7RSWWK-4X.75	4 X 3/4	4.125	8.250	2.625
S7RSWWK-4X1	4 X 1	4.125	8.250	2.625
S7RSWWK-4X1.5	4 X 1-1/2	4.125	8.250	2.625
S7RSWWK-4X2	4 X 2	4.125	8.250	2.625
S7RSWWK-4X2.5	4 X 2-1/2	4.125	8.250	2.625
S7RSWWK-4X3	4 X 3	4.125	8.250	2.625
S7RSWWK-6X3	6 X 3	5.625	11.250	3.625
S7RSWWK-6X4	6 X 4	5.625	11.250	3.750

BPE TABLE DT-4.1.2-7

S7RMP - REDUCING TEE, CLAMP ENDS

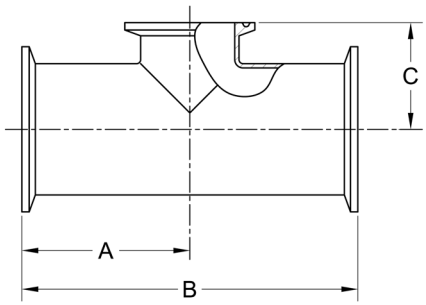


PART NUMBER	SIZE	A	B	C
S7RMP-.75X.50	3/4 X 1/2	2.500	5.000	2.500
S7RMP-1X.50	1 X 1/2	2.625	5.250	2.625
S7RMP-1X.75	1 X 3/4	2.625	5.250	2.625
S7RMP-1.5X.50	1-1/2 X 1/2	2.875	5.750	2.875
S7RMP-1.5X.75	1-1/2 X 3/4	2.875	5.750	2.875
S7RMP-1.5X1	1-1/2 X 1	2.875	5.750	2.875
S7RMP-2X.50	2 X 1/2	3.375	6.750	3.125
S7RMP-2X.75	2 X 3/4	3.375	6.750	3.125
S7RMP-2X1	2 X 1	3.375	6.750	3.125
S7RMP-2X1.5	2 X 1-1/2	3.375	6.750	3.125
S7RMP-2.5X.50	2-1/2 X 1/2	3.625	7.250	3.375
S7RMP-2.5X.75	2-1/2 X 3/4	3.625	7.250	3.375
S7RMP-2.5X1	2-1/2 X 1	3.625	7.250	3.375
S7RMP-2.5X1.5	2-1/2 X 1-1/2	3.625	7.250	3.375
S7RMP-2.5X2	2-1/2 X 2	3.625	7.250	3.375
S7RMP-3X.50	3 X 1/2	3.875	7.750	3.625
S7RMP-3X.75	3 X 3/4	3.875	7.750	3.625
S7RMP-3X1	3 X 1	3.875	7.750	3.625
S7RMP-3X1.5	3 X 1-1/2	3.875	7.750	3.625
S7RMP-3X2	3 X 2	3.875	7.750	3.625
S7RMP-3X2.5	3 X 2-1/2	3.875	7.750	3.625
S7RMP-4X.50	4 X 1/2	4.750	9.500	4.125
S7RMP-4X.75	4 X 3/4	4.750	9.500	4.125
S7RMP-4X1	4 X 1	4.750	9.500	4.125
S7RMP-4X1.5	4 X 1-1/2	4.750	9.500	4.125
S7RMP-4X2	4 X 2	4.750	9.500	4.375
S7RMP-4X2.5	4 X 2-1/2	4.750	9.500	4.375
S7RMP-4X3	4 X 3	4.750	9.500	4.375
S7RMP-6X.75	6 X 3/4	7.125	14.250	5.375
S7RMP-6X1	6 X 1	7.125	14.250	5.375
S7RMP-6X1.5	6 X 1-1/2	7.125	14.250	5.375
S7RMP-6X2	6 X 2	7.125	14.250	5.375
S7RMP-6X2.5	6 X 2-1/2	7.125	14.250	5.375
S7RMP-6X3	6 X 3	7.125	14.250	5.375
S7RMP-6X4	6 X 4	7.125	14.250	5.750

BPE TABLE DT-4.1.2-8

S7RMPS - REDUCING TEE, SHORT OUTLET CLAMP ENDS



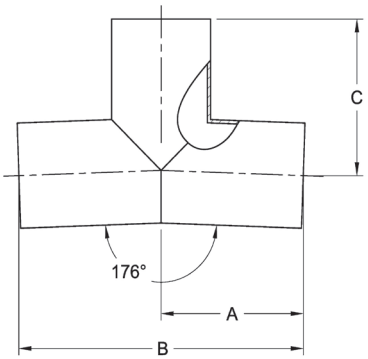


PART NUMBER	SIZE	A	B	C
S7RMPS-.75X.50	3/4 X 1/2	2.500	5.000	1.000
S7RMPS-1X.50	1 X 1/2	2.625	5.250	1.125
S7RMPS-1X.75	1 X 3/4	2.625	5.250	1.125
S7RMPS-1.5X.50	1-1/2 X 1/2	2.875	5.750	1.375
S7RMPS-1.5X.75	1-1/2 X 3/4	2.875	5.750	1.375
S7RMPS-1.5X1	1-1/2 X 1	2.875	5.750	1.375
S7RMPS-2X.50	2 X 1/2	3.375	6.750	1.625
S7RMPS-2X.75	2 X 3/4	3.375	6.750	1.625
S7RMPS-2X1	2 X 1	3.375	6.750	1.625
S7RMPS-2X1.5	2 X 1-1/2	3.375	6.750	1.625
S7RMPS-2.5X.50	2-1/2 X 1/2	3.625	7.250	1.875
S7RMPS-2.5X.75	2-1/2 X 3/4	3.625	7.250	1.875
S7RMPS-2.5X1	2-1/2 X 1	3.625	7.250	1.875
S7RMPS-2.5X1.5	2-1/2 X 1-1/2	3.625	7.250	1.875
S7RMPS-2.5X2	2-1/2 X 2	3.625	7.250	1.875
S7RMPS-3X.50	3 X 1/2	3.875	7.750	2.125
S7RMPS-3X.75	3 X 3/4	3.875	7.750	2.125
S7RMPS-3X1	3 X 1	3.875	7.750	2.125
S7RMPS-3X1.5	3 X 1-1/2	3.875	7.750	2.125
S7RMPS-3X2	3 X 2	3.875	7.750	2.125
S7RMPS-3X2.5	3 X 2-1/2	3.875	7.750	2.125
S7RMPS-4X.50	4 X 1/2	4.750	9.500	2.625
S7RMPS-4X.75	4 X 3/4	4.750	9.500	2.625
S7RMPS-4X1	4 X 1	4.750	9.500	2.625
S7RMPS-4X1.5	4 X 1-1/2	4.750	9.500	2.625
S7RMPS-4X2	4 X 2	4.750	9.500	2.625
S7RMPS-4X2.5	4 X 2-1/2	4.750	9.500	2.625
S7RMPS-4X3	4 X 3	4.750	9.500	2.625
S7RMPS-6X.75	6 X 3/4	7.125	14.250	3.625
S7RMPS-6X1	6 X 1	7.125	14.250	3.625
S7RMPS-6X1.5	6 X 1-1/2	7.125	14.250	3.625
S7RMPS-6X2	6 X 2	7.125	14.250	3.625
S7RMPS-6X2.5	6 X 2-1/2	7.125	14.250	3.625
S7RMPS-6X3	6 X 3	7.125	14.250	3.625
S7RMPS-6X4	6 X 4	7.125	14.250	3.750

BPE TABLE DT-4.1.2-9

S7WWW176 - 176 DEGREE TEE, TANGENT WELD ENDS

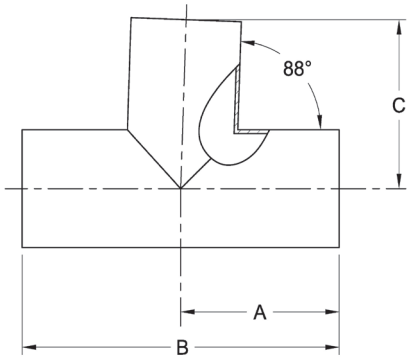




PART NUMBER	SIZE	A	B	C
S7WWW176-.50	1/2	1.874	3.748	1.940
S7WWW176-.75	3/4	1.999	3.998	2.070
S7WWW176-1	1	2.124	4.247	2.199
S7WWW176-1.5	1-1/2	2.374	4.747	2.458
S7WWW176-2	2	2.873	5.746	2.967
S7WWW176-2.5	2-1/2	3.123	6.246	3.234
S7WWW176-3	3	3.373	6.746	3.493
S7WWW176-4	4	4.123	8.245	4.269

S7WWW88 - 88 DEGREE TEE, TANGENT WELD ENDS

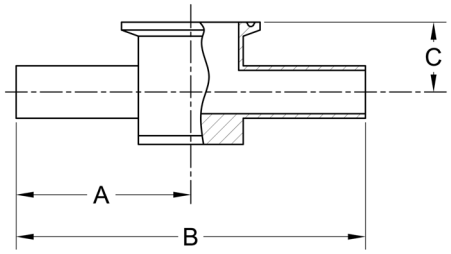




PART NUMBER	SIZE	A	B	C
S7WWW88-.50	1/2	1.875	3.750	1.874
S7WWW88-.75	3/4	2.000	4.000	1.999
S7WWW88-1	1	2.125	4.250	2.124
S7WWW88-1.5	1-1/2	2.375	4.750	2.374
S7WWW88-2	2	2.875	5.750	2.873
S7WWW88-2.5	2-1/2	3.125	6.250	3.123
S7WWW88-3	3	3.375	6.750	3.373
S7WWW88-4	4	4.125	8.250	4.122
S7WWW88-6	6	5.625	11.250	5.626

S7IWWKS - INSTRUMENT TEE, WELD ENDS x CLAMP END



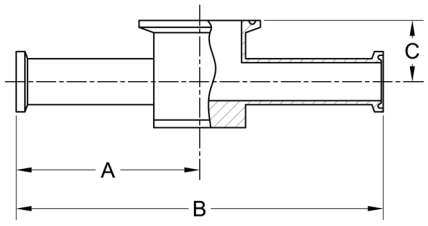


PART NUMBER	SIZE	A	B	C
S7IWWKS-.50X.75	1/2 x 3/4	2.500	5.000	.875
S7IWWKS-.50X1.5	1/2 x 1-1/2	2.500	5.000	.875
S7IWWKS-.75X1.5	3/4 x 1-1/2	2.500	5.000	1.000
S7IWWKS-1X1.5	1 x 1-1/2	2.500	5.000	1.125
S7IWWKS-.50X2	1/2 x 2	2.750	5.500	1.000
S7IWWKS-.75X2	3/4 x 2	2.750	5.500	1.125
S7IWWKS-1X2	1 x 2	2.750	5.500	1.250
S7IWWKS-1.5X2	1-1/2 x 2	2.750	5.500	1.500
S71WWKS-1.5X3	1-1/2 x 3	3.250	6.500	1.500

BPE TABLE DT-4.1.2-10

S7IMPS - INSTRUMENT TEE, CLAMP ENDS



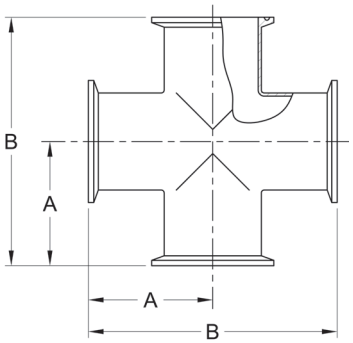


PART NUMBER	SIZE	A	B	C
S71MPS-.50X.75	1/2 x 3/4	3.000	6.000	.875
S7IMPS-.50X1.5	1/2 x 1-1/2	3.000	6.000	.875
S7IMPS-.75X1.5	3/4 x 1-1/2	3.000	6.000	1.000
S7IMPS-1X1.5	1 x 1-1/2	3.000	6.000	1.125
S7IMPS-.50X2	1/2 x 2	3.250	6.500	1.000
S7IMPS-.75X2	3/4 x 2	3.250	6.500	1.125
S7IMPS-1X2	1 x 2	3.250	6.500	1.250
S7IMPS-1.5X2	1-1/2 x 2	3.250	6.500	1.500

BPE TABLE DT-4.1.2-11

S9MP - CROSS, CLAMP ENDS



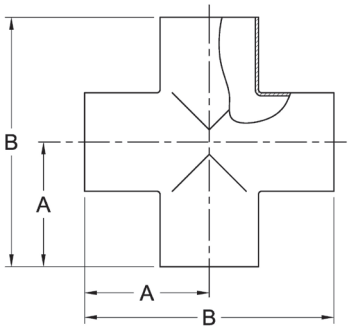


PART NUMBER	SIZE	A	B
S9MP-.50	1/2	2.375	4.750
S9MP-.75	3/4	2.500	5.000
S9MP-1	1	2.625	5.250
S9MP-1.5	1-1/2	2.875	5.750
S9MP-2	2	3.375	6.750
S9MP-2.5	2-1/2	3.625	7.250
S9MP-3	3	3.875	7.750
S9MP-4	4	4.750	9.500
S9MP-6	6	6.375	12.750

BPE TABLE DT-4.1.2-4

S9WWWW - CROSS, TANGENT WELD ENDS



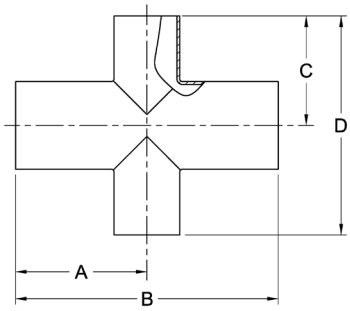


PART NUMBER	SIZE	A	B
S9WWWW-.50	1/2	1.875	3.750
S9WWWW-.75	3/4	2.000	4.000
S9WWWW-1	1	2.125	4.250
S9WWWW-1.5	1-1/2	2.375	4.750
S9WWWW-2	2	2.875	5.750
S9WWWW-2.5	2-1/2	3.125	6.250
S9WWWW-3	3	3.375	6.750
S9WWWW-4	4	4.125	8.250
S9WWWW-6	6	5.625	11.250

BPE TABLE DT-4.1.2-1

S9RWWWW - REDUCING CROSS, TANGENT WELD ENDS

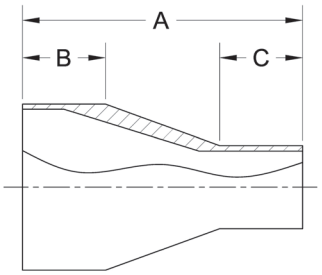




PART NUMBER	SIZE	A	B	C	D
S9RWWWW-.75X.50	3/4 X 1/2	2.000	4.000	2.000	4.000
S9RWWWW-1X.50	1 X 1/2	2.125	4.250	2.125	4.250
S9RWWWW-1X.75	1 X 3/4	2.125	4.250	2.125	4.250
S9RWWWW-1.5X.50	1-1/2 X 1/2	2.375	4.750	2.375	4.750
S9RWWWW-1.5X.75	1-1/2 X 3/4	2.375	4.750	2.375	4.750
S9RWWWW-1.5X1	1-1/2 X 1	2.375	4.750	2.375	4.750
S9RWWWW-2X.50	2 X 1/2	2.875	5.750	2.625	5.250
S9RWWWW-2X.75	2 X 3/4	2.875	5.750	2.625	5.250
S9RWWWW-2X1	2 X 1	2.875	5.750	2.625	5.250
S9RWWWW-2X1.5	2 X 1-1/2	2.875	5.750	2.625	5.250
S9RWWWW-2.5X1	2-1/2 X 1	3.125	6.250	2.875	5.750
S9RWWWW-2.5X1.5	2-1/2 X 1-1/2	3.125	6.250	2.875	5.750
S9RWWWW-2.5X2	2-1/2 X 2	3.125	6.250	2.875	5.750
S9RWWWW-3X1	3 X 1	3.375	6.750	3.125	6.250
S9RWWWW-3X1.5	3 X 1-1/2	3.375	6.750	3.125	6.250
S9RWWWW-3X2	3 X 2	3.375	6.750	3.125	6.250
S9RWWWW-3X2.5	3 X 2-1/2	3.375	6.750	3.125	6.250
S9RWWWW-4X1	4 X 1	4.125	8.250	3.625	7.250
S9RWWWW-4X1.5	4 X 1-1/2	4.125	8.250	3.625	7.250
S9RWWWW-4X2	4 X 2	4.125	8.250	3.875	7.750
S9RWWWW-4X2.5	4 X 2-1/2	4.125	8.250	3.875	7.750
S9RWWWW-4X3	4 X 3	4.125	8.250	3.875	7.750
S9RWWWW-6X3	6 X 3	5.625	11.250	4.875	9.750
S9RWWWW-6X4	6 X 4	5.625	11.250	5.125	10.250

S31S - SHORT CONCENTRIC REDUCER, WELD ENDS

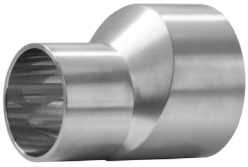


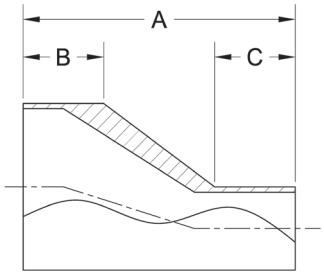


PART NUMBER	SIZE	A	B (min.)	C (min.)
S31S-.75X.50	3/4 X 1/2	2.125	1.000	1.000
S31S-1X.50	1 X 1/2	2.500	1.000	1.000
S31S-1X.75	1 X 3/4	2.125	1.000	1.000
S31S-1.5X.75	1-1/2 X 3/4	3.000	1.000	1.000
S31S-1.5X1	1-1/2 X 1	2.500	1.000	1.000
S31S-2X1	2 X 1	3.375	1.000	1.000
S31S-2X1.5	2 X 1-1/2	2.500	1.000	1.000
S31S-2.5X1.5	2-1/2 X 1-1/2	3.375	1.000	1.000
S31S-2.5X2	2-1/2 X 2	2.500	1.000	1.000
S31S-3X1.5	3 X 1-1/2	4.250	1.500	1.000
S31S-3X2	3 X 2	3.375	1.500	1.000
S31S-3X2.5	3 X 2-1/2	2.625	1.500	1.000
S31S-4X2	4 X 2	5.125	1.500	1.000
S31S-4X2.5	4 X 2-1/2	4.250	1.500	1.000
S31S-4X3	4 X 3	3.875	1.500	1.500
S31S-6X3	6 X 3	7.250	2.000	1.500
S31S-6X4	6 X 4	5.625	2.000	1.500

BPE TABLE DT-4.1.3-1

S32S - SHORT ECCENTRIC REDUCER, WELD ENDS

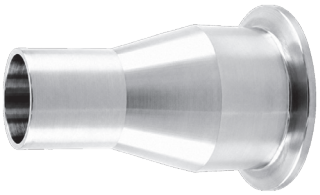


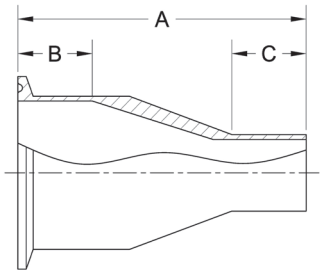


PART NUMBER	SIZE	A	B (min.)	C (min.)
S32S-.75X.50	3/4 X 1/2	2.125	1.000	1.000
S32S-1X.50	1 X 1/2	2.500	1.000	1.000
S32S-1X.75	1 X 3/4	2.125	1.000	1.000
S32S-1.5X.75	1-1/2 X 3/4	3.000	1.000	1.000
S32S-1.5X1	1-1/2 X 1	2.500	1.000	1.000
S32S-2X1	2 X 1	3.375	1.000	1.000
S32S-2X1.5	2 X 1-1/2	2.500	1.000	1.000
S32S-2.5X1.5	2-1/2 X 1-1/2	3.375	1.000	1.000
S32S-2.5X2	2-1/2 X 2	2.500	1.000	1.000
S32S-3X1.5	3 X 1-1/2	4.250	1.500	1.000
S32S-3X2	3 X 2	3.375	1.500	1.000
S32S-3X2.5	3 X 2-1/2	2.625	1.500	1.000
S32S-4X2	4 X 2	5.125	1.500	1.000
S32S-4X2.5	4 X 2-1/2	4.250	1.500	1.000
S32S-4X3	4 X 3	3.875	1.500	1.500
S32S-6X3	6 X 3	7.250	2.000	1.500
S32S-6X4	6 X 4	5.625	2.000	1.500

BPE TABLE DT-4.1.3-1

S31SK - SHORT CONCENTRIC REDUCER, CLAMP x WELD END

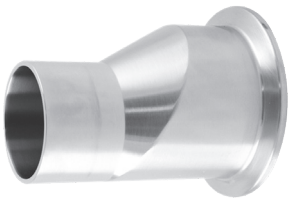


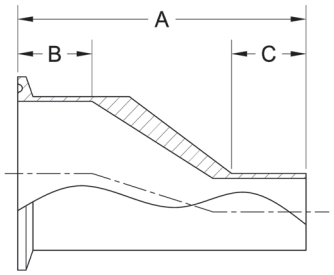


PART NUMBER	SIZE	A	B (I.D.) (min.)	C (min.)
S31SK-.75X.50	3/4 X 1/2	2.625	.375	1.000
S31SK-1X.50	1 X 1/2	3.000	.375	1.000
S31SK-1X.75	1 X 3/4	2.625	.375	1.000
S31SK-1.5X.75	1-1/2 X 3/4	3.500	.375	1.000
S31SK-1.5X1	1-1/2 X 1	3.000	.375	1.000
S31SK-2X1	2 X 1	3.875	.375	1.000
S31SK-2X1.5	2 X 1-1/2	3.000	.375	1.000
S31SK-2.5X1.5	2-1/2 X 1-1/2	3.875	.375	1.000
S31SK-2.5X2	2-1/2 X 2	3.000	.375	1.000
S31SK-3X1.5	3 X 1-1/2	4.750	.375	1.000
S31SK-3X2	3 X 2	3.875	.375	1.000
S31SK-3X2.5	3 X 2-1/2	3.125	.375	1.000
S31SK-4X2	4 X 2	5.750	.375	1.000
S31SK-4X2.5	4 X 2-1/2	4.875	.375	1.000
S31SK-4X3	4 X 3	4.500	.375	1.500
S31SK-6X3	6 X 3	8.000	.375	1.500
S31SK-6X4	6 X 4	6.375	.375	1.500

BPE TABLE DT-4.1.3-2

S32SK - SHORT ECCENTRIC REDUCER, CLAMP x WELD END

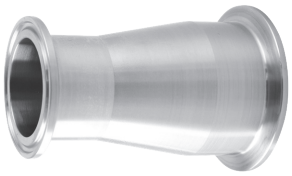


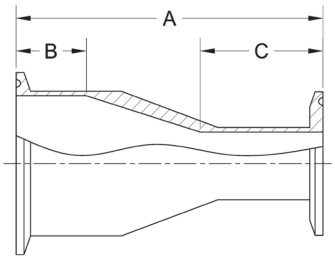


PART NUMBER	SIZE	A	B (I.D.) (min.)	C (min.)
S32SK-.75X.50	3/4 X 1/2	2.625	.375	1.000
S32SK-1X.50	1 X 1/2	3.000	.375	1.000
S32SK-1X.75	1 X 3/4	2.625	.375	1.000
S32SK-1.5X.75	1-1/2 X 3/4	3.500	.375	1.000
S32SK-1.5X1	1-1/2 X 1	3.000	.375	1.000
S32SK-2X1	2 X 1	3.875	.375	1.000
S32SK-2X1.5	2 X 1-1/2	3.000	.375	1.000
S32SK-2.5X1.5	2-1/2 X 1-1/2	3.875	.375	1.000
S32SK-2.5X2	2-1/2 X 2	3.000	.375	1.000
S32SK-3X1.5	3 X 1-1/2	4.750	.375	1.000
S32SK-3X2	3 X 2	3.875	.375	1.000
S32SK-3X2.5	3 X 2-1/2	3.125	.375	1.000
S32SK-4X2	4 X 2	5.750	.375	1.000
S32SK-4X2.5	4 X 2-1/2	4.875	.375	1.000
S32SK-4X3	4 X 3	4.500	.375	1.500
S32SK-6X3	6 X 3	8.000	.375	1.500
S32SK-6X4	6 X 4	6.375	.375	1.500

BPE TABLE DT-4.1.3-2

S31S-14MP - SHORT CONCENTRIC REDUCER, CLAMP x CLAMP

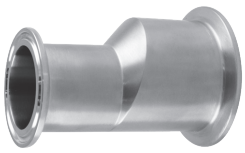


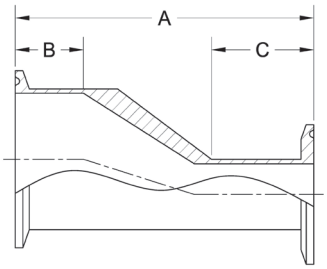


PART NUMBER	SIZE	A	B (I.D.) (min.)	C (I.D.) (min.)
S31S-14MP-.75X.50	3/4 X 1/2	3.125	.375	1.125
S31S-14MP-1X.50	1 X 1/2	3.500	.375	1.125
S31S-14MP-1X.75	1 X 3/4	3.125	.375	1.125
S31S-14MP-1.5X.75	1-1/2 X 3/4	4.000	.375	1.125
S31S-14MP-1.5X1	1-1/2 X 1	3.500	.375	1.125
S31S-14MP-2X1	2 X 1	4.375	.375	1.125
S31S-14MP-2X1.5	2 X 1-1/2	3.500	.375	1.125
S31S-14MP-2.5X1.5	2-1/2 X 1-1/2	4.375	.375	1.125
S31S-14MP-2.5X2	2-1/2 X 2	3.500	.375	1.125
S31S-14MP-3X1.5	3 X 1-1/2	5.250	.375	1.125
S31S-14MP-3X2	3 X 2	4.375	.375	1.125
S31S-14MP-3X2.5	3 X 2-1/2	3.625	.375	1.125
S31S-14MP-4X2	4 X 2	6.250	.375	1.125
S31S-14MP-4X2.5	4 X 2-1/2	5.375	.375	1.125
S31S-14MP-4X3	4 X 3	5.000	.375	1.625
S31S-14MP-6X3	6 X 3	8.500	.375	1.625
S31S-14MP-6X4	6 X 4	7.000	.375	1.625

BPE TABLE DT-4.1.3-3

S32S-14MP - SHORT ECCENTRIC REDUCER, CLAMP x CLAMP



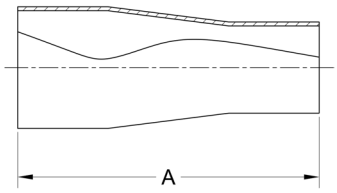


PART NUMBER	SIZE	A	B (I.D.) (min.)	C (I.D.) (min.)
S32S-14MP-.75X.50	3/4 X 1/2	3.125	.375	1.125
S32S-14MP-1X.50	1 X 1/2	3.500	.375	1.125
S32S-14MP-1X.75	1 X 3/4	3.125	.375	1.125
S32S-14MP-1.5X.75	1-1/2 X 3/4	4.000	.375	1.125
S32S-14MP-1.5X1	1-1/2 X 1	3.500	.375	1.125
S32S-14MP-2X1	2 X 1	4.375	.375	1.125
S32S-14MP-2X1.5	2 X 1-1/2	3.500	.375	1.125
S32S-14MP-2.5X1.5	2-1/2 X 1-1/2	4.375	.375	1.125
S32S-14MP-2.5X2	2-1/2 X 2	3.500	.375	1.125
S32S-14MP-3X1.5	3 X 1-1/2	5.250	.375	1.125
S32S-14MP-3X2	3 X 2	4.375	.375	1.125
S32S-14MP-3X2.5	3 X 2-1/2	3.625	.375	1.125
S32S-14MP-4X2	4 X 2	6.250	.375	1.125
S32S-14MP-4X2.5	4 X 2-1/2	5.375	.375	1.125
S32S-14MP-4X3	4 X 3	5.000	.375	1.625
S32S-14MP-6X3	6 X 3	8.500	.375	1.625
S32S-14MP-6X4	6 X 4	7.000	.375	1.625

BPE TABLE DT-4.1.3-3

S31 - CONCENTRIC REDUCER, TANGENT WELD ENDS



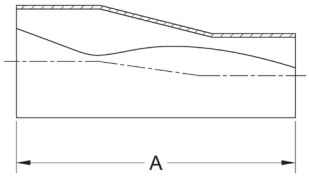


PART NUMBER	SIZE	A
S31-.75X.50	3/4 X 1/2	4.000
S31-1X.50	1 X 1/2	4.500
S31-1X.75	1 X 3/4	4.000
S31-1.5X.50	1-1/2 X 1/2	5.500
S31-1.5X.75	1-1/2 X 3/4	5.000
S31-1.5X1	1-1/2 X 1	5.000
S31-2X.50	2 X 1/2	7.750
S31-2X.75	2 X 3/4	7.250
S31-2X1	2 X 1	7.250
S31-2X1.5	2 X 1-1/2	5.250
S31-2.5X.50	2-1/2 X 1/2	9.750
S31-2.5X.75	2-1/2 X 3/4	9.250
S31-2.5X1	2-1/2 X 1	9.250
S31-2.5X1.5	2-1/2 X 1-1/2	7.250
S31-2.5X2	2-1/2 X 2	5.500
S31-3X.50	3 X 1/2	12.750
S31-3X.75	3 X 3/4	11.250
S31-3X1	3 X 1	11.250
S31-3X1.5	3 X 1-1/2	9.250
S31-3X2	3 X 2	7.500
S31-3X2.5	3 X 2-1/2	5.500
S31-4X1	4 X 1	15.500
S31-4X1.5	4 X 1-1/2	13.500
S31-4X2	4 X 2	11.750
S31-4X2.5	4 X 2-1/2	9.750
S31-4X3	4 X 3	7.750
S31-6X3	6 X 3	10.000
S31-6X4	6 X 4	10.000

Per ASME BPE-2012

S32 - ECCENTRIC REDUCER, TANGENT WELD ENDS



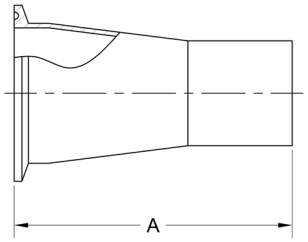


PART NUMBER	SIZE	A
S32-.75X.50	3/4 X 1/2	4.000
S32-1X.50	1 X 1/2	4.500
S32-1X.75	1 X 3/4	4.000
S32-1.5X.50	1-1/2 X 1/2	5.500
S32-1.5X.75	1-1/2 X 3/4	5.000
S32-1.5X1	1-1/2 X 1	5.000
S32-2X.50	2 X 1/2	7.750
S32-2X.75	2 X 3/4	7.250
S32-2X1	2 X 1	7.250
S32-2X1.5	2 X 1-1/2	5.250
S32-2.5X.50	2-1/2 X 1/2	9.750
S32-2.5X.75	2-1/2 X 3/4	9.250
S32-2.5X1	2-1/2 X 1	9.250
S32-2.5X1.5	2-1/2 X 1-1/2	7.250
S32-2.5X2	2-1/2 X 2	5.500
S32-3X.50	3 X 1/2	11.750
S32-3X.75	3 X 3/4	11.250
S32-3X1	3 X 1	11.250
S32-3X1.5	3 X 1-1/2	9.250
S32-3X2	3 X 2	7.500
S32-3X2.5	3 X 2-1/2	5.500
S32-4X1	4 X 1	15.500
S32-4X1.5	4 X 1-1/2	13.500
S32-4X2	4 X 2	11.750
S32-4X2.5	4 X 2-1/2	9.750
S32-4X3	4 X 3	7.750
S32-6X3	6 X 3	9.750
S32-6X4	6 X 4	10.000

PER ASME BPE-2012

S31K - CONCENTRIC REDUCER, CLAMP x TANGENT WELD END



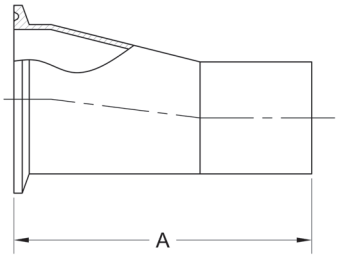


PART NUMBER	SIZE	A
S31K-.75X.50	3/4 X 1/2	3.000
S31K-1X.50	1 X 1/2	3.500
S31K-1X.75	1 X 3/4	3.000
S31K-1.5X.50	1-1/2 X 1/2	4.500
S31K-1.5X.75	1-1/2 X 3/4	4.000
S31K-1.5X1	1-1/2 X 1	4.000
S31K-2X.50	2 X 1/2	6.500
S31K-2X.75	2 X 3/4	6.000
S31K-2X1	2 X 1	6.000
S31K-2X1.5	2 X 1-1/2	4.000
S31K-2.5X.50	2-1/2 X 1/2	8.500
S31K-2.5X.75	2-1/2 X 3/4	9.000
S31K-2.5X1	2-1/2 X 1	8.000
S31K-2.5X1.5	2-1/2 X 1-1/2	6.000
S31K-2.5X2	2-1/2 X 2	4.250
S31K-3X.50	3 X 1/2	12.000
S31K-3X.75	3 X 3/4	11.000
S31K-3X1	3 X 1	10.000
S31K-3X1.5	3 X 1-1/2	8.000
S31K-3X2	3 X 2	6.250
S31K-3X2.5	3 X 2-1/2	4.250
S31K-4X1	4 X 1	14.125
S31K-4X1.5	4 X 1-1/2	12.125
S31K-4X2	4 X 2	10.375
S31K-4X2.5	4 X 2-1/2	8.375
S31K-4X3	4 X 3	6.375
S31K-6X3	6 X 3	9.000
S31K-6X4	6 X 4	9.000

PER ASME BPE-2012

S32K - ECCENTRIC REDUCER, CLAMP x TANGENT WELD END



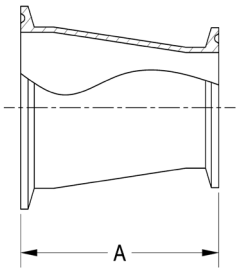


PART NUMBER	SIZE	A
S32K-.75X.50	3/4 X 1/2	3.000
S32K-1X.50	1 X 1/2	3.500
S32K-1X.75	1 X 3/4	3.000
S32K-1.5X.50	1-1/2 X 1/2	4.500
S32K-1.5X.75	1-1/2 X 3/4	4.000
S32K-1.5X1	1-1/2 X 1	4.000
S32K-2X.50	2 X 1/2	6.500
S32K-2X.75	2 X 3/4	6.000
S32K-2X1	2 X 1	6.000
S32K-2X1.5	2 X 1-1/2	4.000
S32K-2.5X.50	2-1/2 X 1/2	9.500
S32K-2.5X.75	2-1/2 X 3/4	9.000
S32K-2.5X1	2-1/2 X 1	8.000
S32K-2.5X1.5	2-1/2 X 1-1/2	6.000
S32K-2.5X2	2-1/2 X 2	4.250
S32K-3X.50	3 X 1/2	12.000
S32K-3X.75	3 X 3/4	11.000
S32K-3X1	3 X 1	10.000
S32K-3X1.5	3 X 1-1/2	8.000
S32K-3X2	3 X 2	6.250
S32K-3X2.5	3 X 2-1/2	4.250
S32K-4X1	4 X 1	14.125
S32K-4X1.5	4 X 1-1/2	12.125
S32K-4X2	4 X 2	10.375
S32K-4X2.5	4 X 2-1/2	8.375
S32K-4X3	4 X 3	6.375
S32K-6X3	6 X 3	8.750
S32K-6X4	6 X 4	9.000

PER ASME BPE-2012

S31-14MP - CONCENTRIC REDUCER, CLAMP ENDS



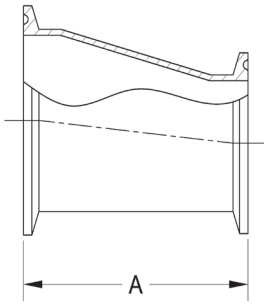


PART NUMBER	SIZE	A
S31-14MP-.75X.50	3/4 X 1/2	2.000
S31-14MP-1X.50	1 X 1/2	2.500
S31-14MP-1X.75	1 X 3/4	2.000
S31-14MP-1.5X.50	1-1/2 X 1/2	3.500
S31-14MP-1.5X.75	1-1/2 X 3/4	3.000
S31-14MP-1.5X1	1-1/2 X 1	3.000
S31-14MP-2X.50	2 X 1/2	7.000
S31-14MP-2X.75	2 X 3/4	6.000
S31-14MP-2X1	2 X 1	5.000
S31-14MP-2X1.5	2 X 1-1/2	3.000
S31-14MP-2.5X.50	2-1/2 X 1/2	9.000
S31-14MP-2.5X.75	2-1/2 X 3/4	8.000
S31-14MP-2.5X1	2-1/2 X 1	7.000
S31-14MP-2.5X1.5	2-1/2 X 1-1/2	5.000
S31-14MP-2.5X2	2-1/2 X 2	3.000
S31-14MP-3X.50	3 X 1/2	10.500
S31-14MP-3X.75	3 X 3/4	10.000
S31-14MP-3X1	3 X 1	9.000
S31-14MP-3X1.5	3 X 1-1/2	7.000
S31-14MP-3X2	3 X 2	5.000
S31-14MP-3X2.5	3 X 2-1/2	3.000
S31-14MP-4X1	4 X 1	13.125
S31-14MP-4X1.5	4 X 1-1/2	11.125
S31-14MP-4X2	4 X 2	9.125
S31-14MP-4X2.5	4 X 2-1/2	7.125
S31-14MP-4X3	4 X 3	5.125
S31-14MP-6X3	6 X 3	7.625
S31-14MP-6X4	6 X 4	7.625

PER ASME BPE-2012

S32-14MP - ECCENTRIC REDUCER, CLAMP ENDS



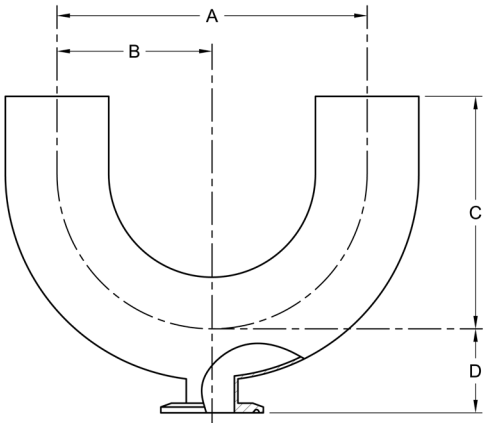


PART NUMBER	SIZE	A
S32-14MP-.75X.50	3/4 X 1/2	2.000
S32-14MP-1X.50	1 X 1/2	2.500
S32-14MP-1X.75	1 X 3/4	2.000
S32-14MP-1.5X.50	1-1/2 X 1/2	3.500
S32-14MP-1.5X.75	1-1/2 X 3/4	3.000
S32-14MP-1.5X1	1-1/2 X 1	3.000
S32-14MP-2X.50	2 X 1/2	6.500
S32-14MP-2X.75	2 X 3/4	6.000
S32-14MP-2X1	2 X 1	5.000
S32-14MP-2X1.5	2 X 1-1/2	3.000
S32-14MP-2.5X.50	2-1/2 X 1/2	8.500
S32-14MP-2.5X.75	2-1/2 X 3/4	8.000
S32-14MP-2.5X1	2-1/2 X 1	7.000
S32-14MP-2.5X1.5	2-1/2 X 1-1/2	5.000
S32-14MP-2.5X2	2-1/2 X 2	3.000
S32-14MP-3X.50	3 X 1/2	10.500
S32-14MP-3X.75	3 X 3/4	10.000
S32-14MP-3X1	3 X 1	9.000
S32-14MP-3X1.5	3 X 1-1/2	7.000
S32-14MP-3X2	3 X 2	5.000
S32-14MP-3X2.5	3 X 2-1/2	3.000
S32-14MP-4X1	4 X 1	13.125
S32-14MP-4X1.5	4 X 1-1/2	11.125
S32-14MP-4X2	4 X 2	9.125
S32-14MP-4X2.5	4 X 2-1/2	7.125
S32-14MP-4X3	4 X 3	5.125
S32-14MP-6X3	6 X 3	7.500
S32-14MP-6X4	6 X 4	7.625

PER ASME BPE-2012

S2UBWWK - BOTTOM OUTLET USE POINT

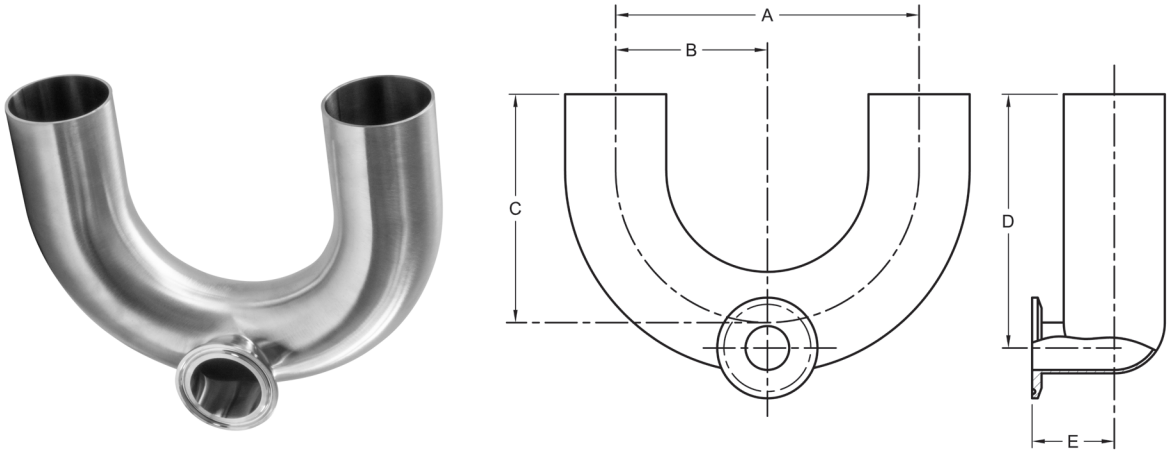




PART NUMBER	SIZE	A	B	C	D
S2UBWWK-.75X.50	3/4 X 1/2	4.500	2.250	3.750	.875
S2UBWWK-1X.50	1 X 1/2	3.000	1.500	3.000	1.125
S2UBWWK-1X.75	1 X 3/4	3.000	1.500	3.000	1.125
S2UBWWK-1.5X.50	1-1/2 X 1/2	4.500	2.250	4.500	1.375
S2UBWWK-1.5X.75	1-1/2 X 3/4	4.500	2.250	4.500	1.375
S2UBWWK-1.5X1	1-1/2 X 1	4.500	2.250	4.500	1.375
S2UBWWK-2X.50	2 X 1/2	6.000	3.000	5.000	1.625
S2UBWWK-2X.75	2 X 3/4	6.000	3.000	5.000	1.625
S2UBWWK-2X1	2 X 1	6.000	3.000	5.000	1.625
S2UBWWK-2X1.5	2 X 1-1/2	6.000	3.000	5.000	1.625
S2UBWWK-2.5X.50	2-1/2 X 1/2	7.500	3.750	5.750	1.875
S2UBWWK-2.5X.75	2-1/2 X 3/4	7.500	3.750	5.750	1.875
S2UBWWK-2.5X1	2-1/2 X 1	7.500	3.750	5.750	1.875
S2UBWWK-2.5X1.5	2-1/2 X 1-1/2	7.500	3.750	5.750	1.875
S2UBWWK-2.5X2	2-1/2 X 2	7.500	3.750	5.750	1.875
S2UBWWK-3X.50	3 X 1/2	9.000	4.500	6.500	2.125
S2UBWWK-3X.75	3 X 3/4	9.000	4.500	6.500	2.125
S2UBWWK-3X1	3 X 1	9.000	4.500	6.500	2.125
S2UBWWK-3X1.5	3 X 1-1/2	9.000	4.500	6.500	2.125
S2UBWWK-3X2	3 X 2	9.000	4.500	6.500	2.125
S2UBWWK-3X2.5	3 X 2-1/2	9.000	4.500	6.500	2.125
S2UBWWK-4X.50	4 X 1/2	12.000	6.000	8.500	2.625
S2UBWWK-4X.75	4 X 3/4	12.000	6.000	8.500	2.625
S2UBWWK-4X1	4 X 1	12.000	6.000	8.500	2.625
S2UBWWK-4X1.5	4 X 1-1/2	12.000	6.000	8.500	2.625
S2UBWWK-4X2	4 X 2	12.000	6.000	8.500	2.625
S2UBWWK-4X2.5	4 X 2-1/2	12.000	6.000	8.500	2.625
S2UBWWK-4X3	4 X 3	12.000	6.000	8.500	2.625

ALSO AVAILABLE WITH BUTT-WELD OUTLET

S2USWWK - SIDE OUTLET USE POINT

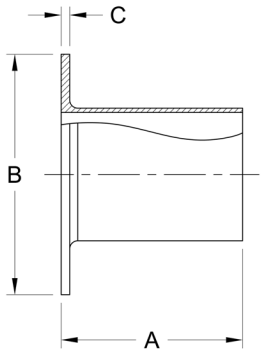


PART NUMBER	SIZE	A	B	C	D	E
S2USWWK -.75X.50	3/4 X 1/2	4.500	2.250	3.750	3.875	.875
S2USWWK-1X.50	1 X 1/2	3.000	1.500	3.000	3.250	1.125
S2USWWK-1X.75	1 X 3/4	3.000	1.500	3.000	3.125	1.125
S2USWWK-1.5X.50	1-1/2 X 1/2	4.500	2.250	4.500	5.000	1.375
S2USWWK-1.5X.75	1-1/2 X 3/4	4.500	2.250	4.500	4.875	1.375
S2USWWK-1.5X1	1-1/2 X 1	4.500	2.250	4.500	4.750	1.375
S2USWWK-2X.50	2 X 1/2	6.000	3.000	5.000	5.750	1.625
S2USWWK-2X.75	2 X 3/4	6.000	3.000	5.000	5.625	1.625
S2USWWK-2X1	2 X 1	6.000	3.000	5.000	5.500	1.625
S2USWWK-2X1.5	2 X 1-1/2	6.000	3.000	5.000	5.250	1.625
S2USWWK-2.5X.50	2-1/2 X 1/2	7.500	3.750	5.750	6.750	1.875
S2USWWK-2.5X.75	2-1/2 X 3/4	7.500	3.750	5.750	6.625	1.875
S2USWWK-2.5X1	2-1/2 X 1	7.500	3.750	5.750	6.500	1.875
S2USWWK-2.5X1.5	2-1/2 X 1-1/2	7.500	3.750	5.750	6.250	1.875
S2USWWK-2.5X2	2-1/2 X 2	7.500	3.750	5.750	6.000	1.875
S2USWWK-3X.50	3 X 1/2	9.000	4.500	6.500	7.750	2.125
S2USWWK-3X.75	3 X 3/4	9.000	4.500	6.500	7.625	2.125
S2USWWK-3X1	3 X 1	9.000	4.500	6.500	7.500	2.125
S2USWWK-3X1.5	3 X 1-1/2	9.000	4.500	6.500	7.250	2.125
S2USWWK-3X2	3 X 2	9.000	4.500	6.500	7.000	2.125
S2USWWK-3X2.5	3 X 2-1/2	9.000	4.500	6.500	6.750	2.125
S2USWWK-4X.50	4 X 1/2	12.000	6.000	8.500	10.250	2.625
S2USWWK-4X.75	4 X 3/4	12.000	6.000	8.500	10.125	2.625
S2USWWK-4X1	4 X 1	12.000	6.000	8.500	10.000	2.625
S2USWWK-4X1.5	4 X 1-1/2	12.000	6.000	8.500	9.750	2.625
S2USWWK-4X2	4 X 2	12.000	6.000	8.500	9.500	2.625
S2USWWK-4X2.5	4 X 2-1/2	12.000	6.000	8.500	9.250	2.625
S2USWWK-4X3	4 X 3	12.000	6.000	8.500	9.000	2.625

ALSO AVAILABLE WITH BUTT-WELD OUTLET

S14WA - STUB END - TYPE A



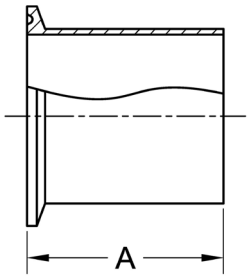


PART NUMBER	SIZE	A	B	C
S14WA-.50	1/2	2.750	1.500	.130
S14WA-.75	3/4	2.750	1.500	.130
S14WA-1	1	2.750	2.000	.130
S14WA-1.5	1-1/2	2.750	2.875	.130
S14WA-2	2	2.750	3.625	.130
S14WA-2.5	2-1/2	2.750	4.125	.130
S14WA-3	3	2.750	5.000	.166
S14WA-4	4	2.750	6.187	.166
S14WA-6	6	3.000	8.500	.218

STUB END FACE IS SERRATED

STL14AM7 - LONG WELD FERRULE



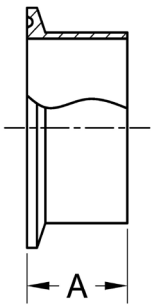


PART NUMBER	SIZE	A
STL14AM7-.50	1/2	1.750
STL14AM7-.75	3/4	1.750
STL14AM7-1A	1 (TYPE A)	1.750
STL14AM7-1	1	1.750
STL14AM7-1.5	1-1/2	1.750
STL14AM7-2	2	2.250
STL14AM7-2.5	2-1/2	2.250
STL14AM7-3	3	2.250
STL14AM7-4	4	2.250
STL14AM7-6	6	3.000

BPE TABLE DT-4.1.4-1

SL14AM7 - MEDIUM WELD FERRULE



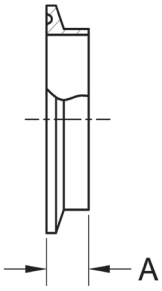


PART NUMBER	SIZE	A
SL14AM7-.50	1/2	1.125
SL14AM7-.75	3/4	1.125
SL14AM7-1	1	1.125
S14AM7-1.5	1-1/2	1.125
S14AM7-2	2	1.125
S14AM7-2.5	2-1/2	1.125
S14AM7-3	3	1.125
S14AM7-4	4	1.125
S14AM7-6	6	1.500

BPE TABLE DT-4.1.4-1

S14WMP - SHORT WELD FERRULE



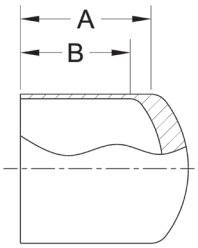


PART NUMBER	SIZE	A
S14WMP-.50	1/2"	.500
S14WMP-.75	3/4”	.500
S14WMP-1	1"	.500
S14WMP-1.5	1-1/2	.500
S14WMP-2	2	.500
S14WMP-2.5	2-1/2	.500
S14WMP-3	3	.500
S14WMP-4	4	.625
S14WMP-6	6	.750

BPE TABLE DT-4.1.4-1

S16W - LONG TANGENT WELD CAP



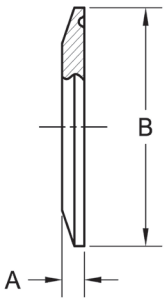


PART NUMBER	SIZE	A
S16W-.50	1/2	1.500
S16W-.75	3/4	1.500
S16W-1	1	1.629
S16W-1.5	1-1/2	1.660
S16W-2	2	1.762
S16W-2.5	2-1/2	1.505
S16W-3	3	1.750
S16W-4	4	2.000
S16W-6	6	2.500

BPE TABLE DT-4.1.5-1
“A” DIMENSION IS STRAIGHT TANGENT LENGTH
“B” MINIMUM I.D. STRAIGHT LENGTH = .375 ALL SIZES

S16AMP - CLAMP CAP



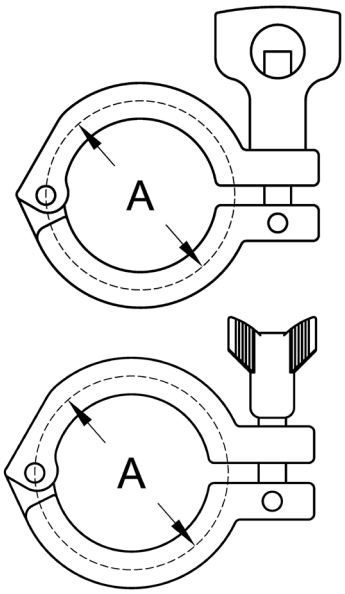


PART NUMBER	SIZE	A	B
S16AMP-.50	1/2" & 3/4"	.187	.984
S16AMP-1	1" & 1-1/2"	.250	1.984
S16AMP-2	2"	.250	2.516
S16AMP-2.5	2-1/2	.250	3.047
S16AMP-3	3	.250	3.579
S16AMP-4	4	.312	4.682
S16AMP-6	6	.437	6.570

BPE TABLE DT-4.1.5-2

13MHHM - SINGLE PIN CLAMP



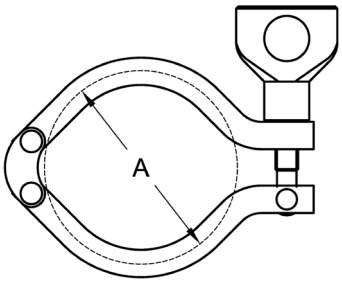


PART NUMBER	SIZE	A	PSI RATING @ 70°F	PSI RATING @ 250°F
13MHHM-.50	1/2 & 3/4	1.125	1500	1200
13MHHM-1	1 & 1-1/2	2.122	500	300
13MHHM-2	2	2.654	450	300
13MHHM-2.5	2-1/2	3.185	400	200
13MHHM-3	3	3.717	350	195
13MHHM-4	4	4.820	300	150
13MHHM-5	5	5.625	150	75
13MHHM-6	6	6.695	150	75
13MHHM-8	8	8.695	100	50
13MHHM-10	10	10.695	75	40
13MHHM-12	12	12.695	50	25

ALSO AVAILABLE WITH ROCKET WING NUT
AVAILABLE IN 304 OR 316 MATERIAL
PRESSURE RATINGS ARE MAXIMUM WORKING PRESSURE ONLY
PRESSURE RATINGS PERTAIN TO THE CLAMP “UNION”

13MHHM-DP - DOUBLE PIN CLAMP





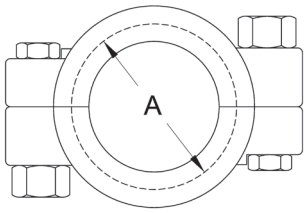
AVAILABLE IN 304 MATERIAL ONLY

PART NUMBER	SIZE	A	PSI RATING @ 70°F	PSI RATING @ 250°F
13MHHM-DP-.50	1/2 & 3/4	1.125	1500	1200
13MHHM-DP-1	1 & 1-1/2	2.122	500	300
13MHHM-DP-2	2	2.654	450	300
13MHHM-DP-2.5	2-1/2	3.185	400	200
13MHHM-DP-3	3	3.717	350	195
13MHHM-DP-4	4	4.820	300	150
13MHHM-DP-6	6	6.695	150	75
13MHHM-DP-8	8	8.695	100	50
13MHHM-DP-10	10	10.695	75	40

ROCKET WING NUTS ALSO AVAILABLE
PRESSURE RATINGS ARE MAXIMUM WORKING PRESSURE ONLY
PRESSURE RATINGS PERTAIN TO THE CLAMP “UNION”

13MHP - HIGH PRESSURE CLAMP





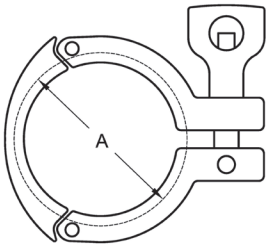
AVAILABLE IN 304 AND 316 MATERIAL

PART NUMBER	SIZE	A	PSI RATING @ 70°F	PSI RATING @ 250°F
13MHP-.50	1/2 & 3/4	1.125	1500	1200
13MHP-1	1 & 1-1/2	2.046	1000	800
13MHP-2	2	2.596	1000	800
13MHP-2.5	2-1/2	3.127	1000	800
13MHP-3	3	3.659	1000	800
13MHP-4	4	4.762	800	600
13MHP-5	5	5.762	300	200
13MHP-6	6	6.695	300	200
13MHP-8	8	8.695	250	150
13MHP-10	10	10.695	200	125
13MHP-12	12	12.695	150	100

PRESSURE RATINGS ARE MAXIMUM WORKING PRESSURE ONLY
PRESSURE RATINGS PERTAIN TO THE CLAMP “UNION”
SUPPLIED WITH BRASS HEX NUTS

13MHHS - THREE SEGMENT CLAMP



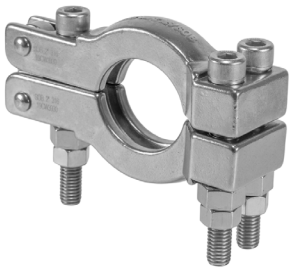


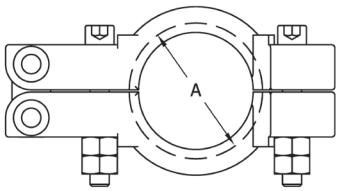
AVAILABLE IN 304 MATERIAL ONLY

PART NUMBER	SIZE	A	PSI RATING @ 70°F	PSI RATING @ 250°F
13MHHS-1	1 & 1-1/2	2.122	600	300
13MHHS-2	2	2.654	550	275
13MHHS-2.5	2-1/2	3.185	450	225
13MHHS-3	3	3.717	350	175
13MHHS-4	4	4.820	300	150

ROCKET WING NUTS ALSO AVAILABLE
PRESSURE RATINGS ARE MAXIMUM WORKING PRESSURE ONLY
PRESSURE RATINGS PERTAIN TO THE CLAMP “UNION”

13ASME - ASME DOUBLE BOLT CLAMP





AVAILABLE IN 316 MATERIAL ONLY

PART NUMBER	SIZE	A	PSI RATING @ 70°F	PSI RATING @ 250°F
13ASME-1	1 & 1-1/2	2.046	1485	1337
13ASME-2	2	2.578	1370	1233
13AMSE-3	3	3.640	1000	900
13ASME-4	4	4.744	874	787
13ASME-6	6	6.632	415	374
13ASME-8	8	8.632	299	269
13ASME-10	10	10.632	161	145
13ASME-12	12	12.632	102	92

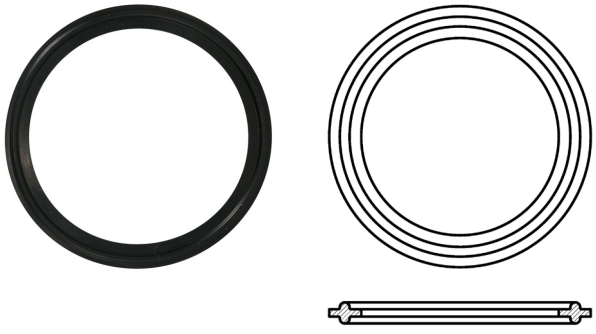
TO MEET THE PSI RATINGS ABOVE THE FERRULE (HUB) USED SHALL BE DESIGNED IN ACCORDANCE WITH ASME SECTION 8 DIVISION 1 MANDATORY APPENDIX 24
STANDARD FERRULES AND FULL FACE GASKET CAN BE USED HOWEVER PERFORMANCE MAY NOT MEET THE ABOVE RATINGS

CLAMP GASKET PERFORMANCE CHART

PROPERTY	BUNA-N	EPDM	PTFE	FKM/SFY	SILICONE
TENSILE STRENGTH	GOOD	GOOD - EXCELLENT	EXCELLENT	EXCELLENT	GOOD
ELECTRICAL PROPERTIES	POOR	EXCELLENT	EXCELLENT	GOOD	EXCELLENT
WEATHER RESISTANCE	GOOD	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
OZONE RESISTANCE	POOR	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT
HEAT RESISTANCE	200°F	300°F	500°F	400°F	450°F
COLD RESISTANCE	-30°F	-30°F	-100°F	-30°F	-40°F
STEAM RESISTANCE	EXCELLENT	EXCELLENT	EXCELLENT	EXCELLENT	GOOD
TEAR RESISTANCE	GOOD	GOOD	EXCELLENT	GOOD	GOOD
ABRASION RESISTANCE	GOOD	GOOD	EXCELLENT	GOOD	GOOD
ACID RESISTANCE	POOR - GOOD	GOOD - EXCELLENT	EXCELLENT	GOOD	GOOD
PETROLEUM OIL	EXCELLENT	POOR	EXCELLENT	EXCELLENT	POOR - GOOD
FLAME RESISTANCE	POOR	POOR	EXCELLENT	GOOD	POOR
VEGETABLE OIL	EXCELLENT	GOOD	EXCELLENT	EXCELLENT	POOR - GOOD
USP CLASS VI	NO	YES	YES	YES	YES
ANIMAL OILS & FATS	EXCELLENT	POOR	EXCELLENT	EXCELLENT	GOOD
ALCOHOL, GLYCOLS	EXCELLENT	EXCELLENT	EXCELLENT	GOOD	EXCELLENT
SOAPS, BLEACHES, DETERGENTS	POOR	EXCELLENT	EXCELLENT	GOOD	POOR

THE ABOVE CHART IS INTENDED AS A GUIDLINE, ACUTAL PERFORMANCE MAY VARY WITH EACH APPLICATION.

40MP - CLAMP GASKET

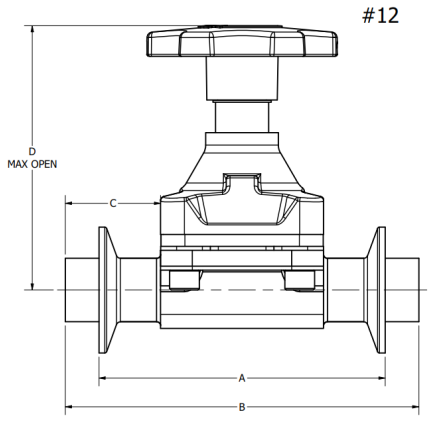


AVAILABLE IN THE FOLLOWING MATERIALS:
BUNA-N, EPDM, TEFLON, VITON, SILICONE
TUF-STEEL & STAINLESS
OTHER MATERIALS AVAILABLE UPON REQUEST

PART NUMBER	SIZE
40MP-.50	1/2
40MP-.75	3/4
40MP-1	1
40MP-1.5	1-1/2
40MP-2	2
40MP-2.5	2-1/2
40MP-3	3
40MP-4	4
40MP-5	5
40MP-6	6
40MP-8	8
40MP-10	10
40MP-12	12

TOP-FLO® BIOPRO® FORGED DIAPHRAGM VALVES





TOP-FLO® diaphragm valves, because of their unique design, reliability, versatility, and ease of maintenance have been the ideal choice for high purity process piping applications. Steel & O'Brien competes with the major suppliers in the industry in North and South America for weir-type diaphragm valves.

The forged body has always been the optimum choice for applications within the bioprocessing and pharmaceutical industries. BIOPRO® & regular forged body diaphragm valves will be the valves of choice when high purity mechanical and electropolished surface finishes are required. 100% BPE Compliant with full material traceability.

- Manufactured from ASTM A182 GR F316L material
- Sulfur content is maintained to meet and exceed the stringent requirements of BPE.
- All forgings are solution annealed to maintain the ferrite content to be .05% or less.
- Machining of the contours is performed by using state of the art cad/cam system assuring repeatability of the weir and valve cavity profiles for full drainability.
- Each forging contains two hash marks clearly indicating the drain angle plane for ease of installation.
- FDA compilant
- Available in sizes ranging from 1/2" through 6" with clamp or weld end connections and surface finishes ranging through 10 RA.

PART NUMBER	SIZE	A CLAMP END	B OD TUBE END	C WELD TANGENT	D CENTER TO TOP	DRAIN ANGLE
74L3-12-1K-50-20RA-316L-A	1/2	3.50	N/A	N/A	3.27	30°
74L3-12-1K-75-20RA-316L-A	3/4	4.00	N/A	N/A	3.66	25°
74L3-12-1K-10-20RA-316L-A	1	4.50	N/A	N/A	4.17	28°
74L3-12-1K-15-20RA-316L-A	1-1/2	5.50	N/A	N/A	6.10	20°
74L3-12-1K-20-20RA-316L-A	2	6.25	N/A	N/A	7.07	20°
74L3-12-2E-50-20RA-316L-A	1/2	3.50	N/A	N/A	3.27	30°
74L3-12-2E-75-20RA-316L-A	3/4	4.00	N/A	N/A	3.66	25°
74L3-12-2E-10-20RA-316L-A	1	4.50	N/A	N/A	4.17	28°
74L3-12-2E-15-20RA-316L-A	1-1/2	5.50	N/A	N/A	6.10	20°
74L3-12-2E-20-20RA-316L-A	2	6.25	N/A	N/A	7.07	20°
78L3-12-1K-50-20RA-316L-A	1/2	N/A	4.88	1.50	3.27	30°
78L3-12-1K-75-20RA-316L-A	3/4	N/A	5.31	1.50	3.66	25°
78L3-12-1K-10-20RA-316L-A	1	N/A	5.56	1.50	4.17	28°
78L3-12-1K-15-20RA-316L-A	1-1/2	N/A	6.63	1.50	6.10	20°
78L3-12-1K-20-20RA-316L-A	2	N/A	7.50	1.63	7.07	20°

FOR ADDITIONAL DETAILS AND VALVE SIZES, SEE FULL DIAPHRAGM VALVE CATALOG

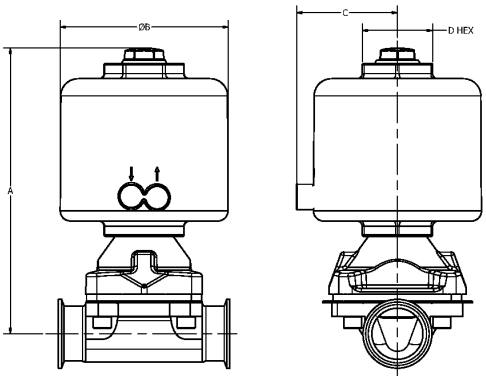
TOP-FLO® EZ SERIES DIAPHRAGM VALVE ACTUATOR



STANDARD MOUNT
2-WAY BODIES



STUD MOUNT
ZERODL BLOCK BODIES



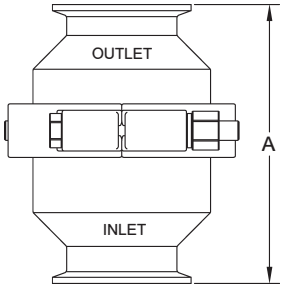
Designed to be both rugged and economical, EZ series piston type actuators are ideally suited for automatic control of hygienic weir type BioPro® 2-way and ZeroDL block style diaphragm valves.

Size: Fits Valve Sizes 1/2" Thru 2"
Type: Piston Type
Function: Fail Close, Fail Open, Double Acting
Construction: Polyamide Plastic Head, 304ss Mounting Base, Yellow Visual Position Indicator, 1/4" Fnpt Air Supply Connections
Operation: Operating Air Supply 80-100 Psig (5.5 Bar - 7 Bar), Maximum Air Supply 116 Psig (8 Bar), Maximum Temperature 120 Deg F (49 Deg C) **Not For Outdoor Use*
Topworks: Stonel, Westlock, and Burkert Controls Available

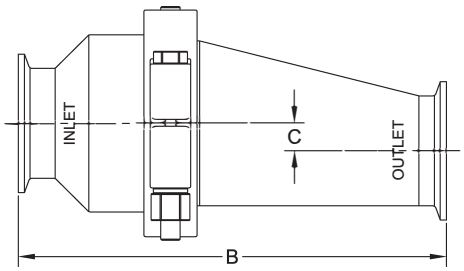
PART NUMBER	SIZE	A	B	C	D
74L3-E4-1K-50-20RA-316L-A	1/2	6.24	3.50	2.24	1.38
74L3-E4-1K-50-20RA-316L-A	1/2	6.24	3.50	2.24	1.38
74L3-E4-1K-75-20RA-316L-A	3/4	7.20	4.28	2.61	1.69
74L3-E4-1K-10-20RA-316L-A	1	7.49	4.28	2.61	1.69
74L3-E4-1K-15-20RA-316L-A	1-1/2	10.05	6.13	3.68	2.56
74L3-E4-1K-20-20RA-316L-A	2	10.39	6.13	3.68	2.56
74L3-E4-2E-50-20RA-316L-A	1/2	6.24	3.50	2.24	1.38
74L3-E4-2E-75-20RA-316L-A	3/4	7.20	4.28	2.61	1.69
74L3-E4-2E-10-20RA-316L-A	1	7.49	4.28	2.61	1.69
74L3-E4-2E-15-20RA-316L-A	1-1/2	10.05	6.13	3.68	2.56
74L3-E4-2E-20-20RA-316L-A	2	10.39	6.13	3.68	2.56
74L3-E7-1K-50-20RA-316L-A	1/2	6.24	3.50	2.24	1.38
74L3-E7-1K-75-20RA-316L-A	3/4	7.20	4.28	2.61	1.69
74L3-E7-1K-10-20RA-316L-A	1	7.49	4.28	2.61	1.69
74L3-E7-1K-15-20RA-316L-A	1-1/2	10.05	6.13	3.68	2.56
74L3-E7-1K-20-20RA-316L-A	2	10.39	6.13	3.68	2.56
78L3-E4-1K-50-20RA-316L-A	1/2	6.24	3.50	2.24	1.38
78L3-E4-1K-75-20RA-316L-A	3/4	7.20	4.28	2.61	1.69
78L3-E4-1K-10-20RA-316L-A	1	7.49	4.28	2.61	1.69
78L3-E4-1K-15-20RA-316L-A	1-1/2	10.05	6.13	3.68	2.56
78L3-E4-1K-20-20RA-316L-A	2	10.39	6.13	3.68	2.56

FOR ADDITIONAL DETAILS AND VALVE SIZES, SEE FULL DIAPHRAGM VALVE CATALOG

TOP-FLO® T45/T45E & MC/ME DISC CHECK VALVES



T45 / MC45



T45E / ME45

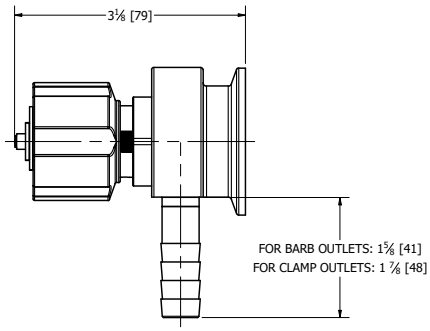
The TOP-FLO® 3A & BPE disc type 316L check valve can be used in a variety of hygienic processes depending on valve construction. Valves can be supplied either with clamp or extended butt weld type to facilitate orbital welding. Configurations in both concentric (T45/MC45) for vertical and eccentric outlet (T45E/ME45) for horizontal installation. Internal surface finishes available are BPE SF1, SF4, and SF5. Oxygen clean/cap/bag also available.

- Suitable for use in process and finished product lines, clean in place (CIP) and clean steam
- Material traceability on all wetted parts
- FDA compliant seal materials & USP Class VI certified
- 3A Certified
- Conforms to ASME BPE
- Operating temperature: T45/T45E - up to 250°F
  MC45/ME45 - up to 366° F
- Operating pressure: T45/T45E - up to 150 PSIG
  MC45/ME45 - up to 349 PSIG
- Clamp or extended butt weld connections
- Materials: 316L, AL6XN, Hastelloy, 2205
- Seals: FKM, EPDM, Silicone, PTFE, FFKM
- Disc: Flat or Guide Finger type
- Body Clamp: Single Pin (T45/T45E), High Pressure (MC/ME)
- ID Finish: 20RA (SF1), 20RA EP (SF5), 15RA EP (SF4)

VALVE SIZE	T45 / MC45 A	T45E / ME45 B	T45E / ME45 OFFESET C	EST. Cv	CRACKING PRESSURE STANDARD SPRING	CRACKING PRESSURE LOW PRESSURE
1/2"	3.500	5.687	0.500	8.3	0.5 - 1 PSIG	0.72 PSIG
3/4"	3.500	5.187	0.375	17.5	0.5 - 1 PSIG	0.72 PSIG
1"	4.125	9.692	0.750	35.2	0.5 - 1 PSIG	0.72 PSIG
1-1/2"	4.563	7.623	0.500	64.6	0.5 - 1 PSIG	0.72 PSIG
2"	5.063	7.805	0.500	113.3	0.5 - 1 PSIG	0.72 PSIG
2-1/2"	5.375	10.771	0.750	167.9	0.5 - 1 PSIG	0.72 PSIG
3"	6.125	9.107	1.000	271	0.5 - 1 PSIG	0.72 PSIG
4"	8.125	11.469	1.000	377	0.5 - 1 PSIG	0.72 PSIG
6"	8.125	CF	CF	502	1 - 3 PSIG	N/A
8"	11.050	CF	CF	CF	CF	N/A

SVN TYPE SAMPLE VALVE





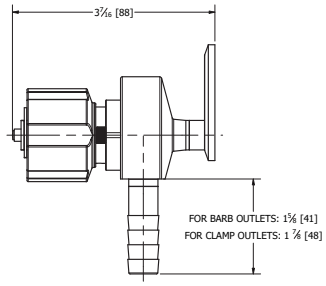
Kynar® is a registered trademark of Arkema
ULTEM® is a registered trademark of SABIC Global

Right-angle concentric (SVN) models are available in ½" – 4" sanitary clamp inlet sizes and right-angle eccentric (EVN) models are available in 1" – 4" sanitary clamp inlet sizes. Both valve types offer a variety of outlet connections. Fully autoclaveable without disassembly.

- **Product Contact Surfaces**
  Body: 316L Stainless Steel
  Stem: FDA/USP Class VI Certified Kynar® PVDF
  O-Ring: FDA/USP Class VI Certified EPDM or FKM
- **Non Product Contact Surfaces**
  Knob: ULTEM® Polytherimide/PEI
  Indicator: High temp yellow PVC
  Upper Stem: Alloy 218 non-galling stainless steel
  Bearing Washer: Virgin PTFE
  Hardware/Other Misc. Parts: Stainless Steel
- **Finish Specifications**
  Internal surface finishes per ASME BPE
  SF1: 20Ra maximum
  SF5: 20Ra maximum with Electropolish
  SF4: 15Ra maximum with Electropolish
  External surface finish: 32Ra maximum
- **Service Conditions**
  Maximum operating temperature: 300°F
  Maximum operating pressure: 250 PSIG
  Maximum SWP: 50 PSIG @ 298°F

TYPE	STEM MATERIAL	O-RING MATERIAL	INLET CONNECTION	OUTLET CONNECTION	ID SURFACE FINISH
SVN - RIGHT ANGLE CONCENTRIC	Y - PVDF	E - EPDM	50 - 1/2" TC	A - 1/4" HB	SF1 - 20Ra
			75 - 3/4" TC		
			10 - 1" TC	B - 3/8" HB	SF4 - 15Ra W/ EP
			15 - 1-1/2" TC		
		V - FKM	20 - 2" TC	C - 1/2" HB	SF5 - 20Ra W/ EP
			25 - 2-1/2" TC		
			30 - 3" TC	D - 1/2" TC	
			40 - 4" TC		



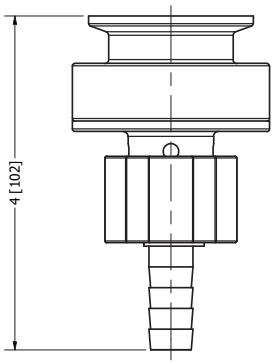


EVN TYPE SAMPLE VALVE

TYPE	STEM MATERIAL	O-RING MATERIAL	INLET CONNECTION	OUTLET CONNECTION	ID SURFACE FINISH
EVN - RIGHT ANGLE ECCENTRIC	Y - PVDF	E - EPDM	10 - 1" TC	A - 1/4" HB	SF1 - 20Ra
			15 - 1-1/2" TC	B - 3/8" HB	
			20 - 2" TC	C - 1/2" HB	SF4 - 15Ra W/ EP
		V - FKM	25 - 2-1/2" TC	D - 1/2" TC	
			30 - 3" TC		SF5 - 20Ra W/ EP
			40 - 4" TC		

INN TYPE SAMPLE VALVE





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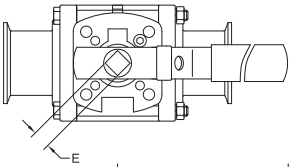
Inline (INN) models are available in ½" – 4" sanitary clamp inlet sizes and offer a variety of hose barb outlet sizes. Fully autoclaveable without disassembly.

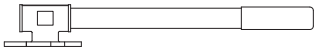
- **Product Contact Surfaces**
  Body: 316L Stainless Steel
  Stem: FDA/USP Class VI Certified Tecapeek® (PEEK)
  O-Ring: FDA/USP Class VI EPDM or FKM
- **Non Product Contact Surfaces**
  Knob: ULTEM® Polytherimide/PEI
  Indicator: High temp yellow PVC
  Hardware/Other Misc. Parts: Stainless Steel
- **Finish Specifications**
  Internal surface finishes per ASME BPE
  SF1: 20Ra maximum
  SF5: 20Ra maximum with Electropolish
  SF4: 15Ra maximum with Electropolish
  External surface finish: 32Ra maximum
- **Service Conditions**
  Maximum operating temperature: 300°F
  Maximum operating pressure: 250 PSIG
  Maximum SWP: 50 PSIG @ 298°F

TYPE	STEM MATERIAL	O-RING MATERIAL	INLET CONNECTION	OUTLET CONNECTION	ID SURFACE FINISH
INN - INLINE	K - PEEK	E - EPDM	50 - 1/2" TC	A - 1/4" HB	SF1 - 20Ra
			75 - 3/4" TC	B - 3/8" HB	SF4 - 15Ra W/ EP
			10 - 1" TC	C - 1/2" HB	SF5 - 20Ra W/ EP
			15 - 1-1/2" TC		
		V - FKM	20 - 2" TC		
			25 - 2-1/2" TC		
			30 - 3" TC		
			40 - 4" TC		

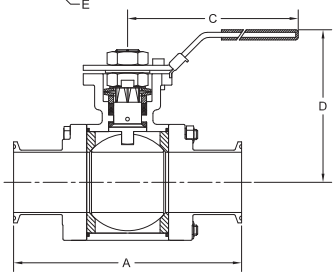
TOP-FLO® SERIES 77 BALL VALVES

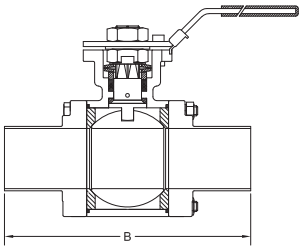






PIPE HANDLE - SIZES 2-1/2" THRU 6"





Series 77 3-pc ball valves feature a high-quality CF3M investment casting of center body and end caps with 316L ball & stem and are an excellent choice for use in clean steam systems.

Valve end connections are hygienic clamp or extended butt weld type for orbital welding. Standard seals are non-cavity filled modified PTFE (MPTFE) that are FDA conforming and USP Class VI certified. Internal surface finishes available are BPE codes SF1, SF4, and SF5. All stainless valve components are fully traceable with MTR's for the center body, end caps, ball, and stem. All valves feature direct mount ISO5211 mounting pad for easy automation and stem extension installation.

- **Features**
  CF3M/316L Wetted construction
  BPE controlled sulfur content - orbital weld ends
  Full traceability on all wetted parts
  Non-cavity filled MPTFE seats/seals ideal for clean steam systems
  Direct mount ISO pad, easy to automate
  Locking handle
- **Options**
  Pneumatic or electric actuation
  Stem extensions for insulation clearance
  Other seat materials (PTFE, 50/50 SS-PTFE)
  Tank bottom weld flange
  V-Port Ball (30 or 60 degree)
- **Compliance**
  ASME BPE & B16.34
  API 598 pressure testing
  FDA & USP CLASS VI Seats/Seals

SIZE	A	B	C	D	E	ISO MOUNTING PAD	NCF TORQUE (IN/LBS)	PRESSURE RATING (PSI)
1/2"	3.51	5.50	6.06	3.03	9MM	F03/F04/F05	80	1000
3/4"	4.00	5.75	6.16	3.28	9MM	F03/F04/F05	89	1000
1"	4.51	6.25	6.50	3.79	11MM	F04/F05	127	1000
1-1/2"	5.52	7.50	8.55	4.93	14MM	F05/F07	210	600
2"	6.26	8.50	8.52	5.28	14MM	F05/F07	354	600
2-1/2"	6.85	9.75	11.97	6.67	17MM	F07/F10	580	600
3"	7.61	10.50	14.44	7.13	17MM	F07/F10	755	507
4"	8.90	12.50	14.50	7.61	19MM	F07/F10	1317	393
6"	12.6	22.00	31.50	10.53	27MM	F12/F14	2255	250

FOR ADDITIONAL DETAILS AND VALVE SIZES, SEE FULL SERIES 77 CATALOG.

ASTM-A270 BPE TUBING



- Tubing is made from 316L material and is 100% borescoped.
- Mechanically polished on both I.D. and O.D. (20Ra I.D., 32Ra O.D.)
- Also available with 15Ra EP I.D., 32Ra O.D. finish
- Surface finish measured per ASME/ANSI B46.1
- Tubing is tested beyond the requirements of ASTM A269 and A270 by mechanically testing to ASME SA249 specifications.
- Tubing is bright annealed in line to 1900°F
- High purity tubing is also available which can include cleaned for gas/oxygen service, thermocouple cleaning or nitric acid cleaning with a deionized water rinse.
- High purity tubing is cleaned and packaged in a Class 100 Cleanroom.

Tubing Tolerances

PART NUMBER	OD SIZE (IN.)	WALL (IN.)	OD TOLERANCE	WALL TOLERANCE	LENGTH TOLERANCE	BOX QTY. (FT.)
SAN00507	.500	.065	+.005 / -.005	.065 ± 10%	+ .125 / -.000	300
SAN00757	.750	.065	+.005 / -.005	.065 ± 10%	+ .125 / -.000	300
SAN01007	1.000	.065	+.005 / -.005	.065 ± 10%	+ .125 / -.000	300
SAN01507	1.500	.065	+.008 / -.008	.065 ± 10%	+ .125 / -.000	300
SAN02007	2.000	.065	+.008 / -.008	.065 ± 10%	+ .125 / -.000	300
SAN02507	2.500	.065	+.010 / -.010	.065 ± 10%	+ .125 / -.000	200
SAN03007	3.000	.065	+.010 / -.010	.065 ± 10%	+ .125 / -.000	200
SAN04007	4.000	.083	+.015 / -.015	.083 ± 10%	+ .125 / -.000	100
SAN06007	6.000	.109	+.030 / -.030	.109 ± 10%	+ .188 / -.000	20

- Tubing available in numerous sizes and wall thicknesses not listed including rectangular shapes, call for details and pricing.
- Surcharges apply at time of shipment.

Chemical Composition - 316L (%)

(C) CARBON, MAX	(Mn) MANGANESE, MAX	(N) NITROGEN, MAX	(S) SULFUR	(Ni) NICKEL	(Cr) CHROMIUM	(Mo) MOLYBDENUM
.030	2.00	.10	.005 - .017	10.0 - 14.0	16.0 - 18.0	2.0 - 3.0

INDUSTRY CROSS REFERENCE

STEEL & O'BRIEN	ALFA-LAVAL	SPX	VNE	DIXON
S2S	B2S	S2S	TE2S	T2S
S2CKW	B2CMW	S2CKW	TE2C	T2CM
S2KS	B2KS	S2KS	TE2KS	T2KS
S2KKW	B2KMW	S2KKW	TE2KC	T2KM
S2CMP	B2CMP	S2CMP	TEG2C	T2CMP
S2KMP	B2KMP	S2KMP	TEG2K	T2KMP
S7WWW	B7WWW	S7WWW	TE7WWW	T7WWW
S7SWWK	B7WWMS	S7SWWK	TE7WWCS	T7WWMS
S7WWK	B7WWM	S7WWK	TE7WWC	T7WWM
S7WSKW	B7WMSW	S7WSKW	TE7WCSW	
S7MPS	B7MPS	S7MPS	TEG7S	T7MPS
S7MP	B7MP	S7MP	TEG7	T7MP
S7RWWW	B7RWWW	S7RWWW	TE7RWWW	T7RWWW
S7RWWK	B7RWWM	S7RWWK	TE7RWWC	T7WWM
S7RSWWK	B7RWWMS	S7RSWWK	TE7RWWCS	T7RWWMS
S7RMP	B7RMP	S7RMP	TEG7R	T7RMP
S7RMPS	B7RMPS	S7RMPS	TEG7RS	T7RMPS
S7IWWKS	B7IWWMS	S7RSGT	TE7IWWCS	T7IWWMS
S7IMPS	B7IMPS	S7RSGTMP	TEG7IS	T7IMPS
S9MP	B9MP	S9MP	TEG9	
S9WWWW	B9WWWW	S9WWWW	TE9WWWW	
S9RWWWW	B9RWWWW	S9RWWWW	TE9RWWWW	
S31S			TE31SWW	
S32S			TE32SWW	
S31SK			TE31SCW	
S32SK			TE32SCW	
S31S-14MP			TEG31SCC	
S32S-14MP			TEG32SCC	
S31	B31	S31	TE31WW	T31W
S32	B32	S32	TE32WW	T32W
S31K	B31M	S31K	TE31CW	T31M
S32K	B32M	S32K	TE32CW	T32M
S31-14MP	B31-14MP	S31-14MP	TEG31CC	T3114MP
S32-14MP	B32-14MP	S32-14MP	TEG32CC	T3214MP
S2UBWWK	B2UMPBOA	S2UBWWK	TE2UBWWW	
S2USWWK	B2UMPSOA	S2USWWK	TE2USWWC	
STL14AM7	BS14AM	S14AWF	TEG14AM7	TL14AM7
S16W	B16W	S16AWF	TE16W	T16W
S16AMP	16AMP	S16AMP	TEG16A	T16AMP
S14WA		S14WA	TE14WA	T14VB

PLEASE NOTE:
Reasonable care has been taken in preparing this catalog. Steel & O'Brien Manufacturing. Inc. reserves the right to make changes or corrections to any of the product information, including dimensions, listed herein without notice.

The BPE**xperts**

Steel & O'Brien is your **complete** source for ASME-BPE products for the Pharmaceutical and Biotech industries. We pride ourselves on our:

- **EXPERTISE IN THE BIOPROCESSING MARKET**
  4 members of our team sit on the committee that helps write BPE standards. Our team of experts have the experience necessary for selecting BPE products that fit your application.

- **QUALITY ASSURANCE**
  Every BPE fitting is inspected by our highly-trained staff to comply with the latest ASME-BPE specifications. Each piece is permanently marked for full traceability back to the original stainless steel used to make the part.

- **VAST SELECTION OF BPE PRODUCTS**
  Steel & O'Brien has diaphragm valves, sample valves, check valves and a broad assortment of 316L stainless steel BPE clamp fittings, weld fittings and a variety of end connections, configurations, sizes and interior surface finishes.

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Form No.002 10/26