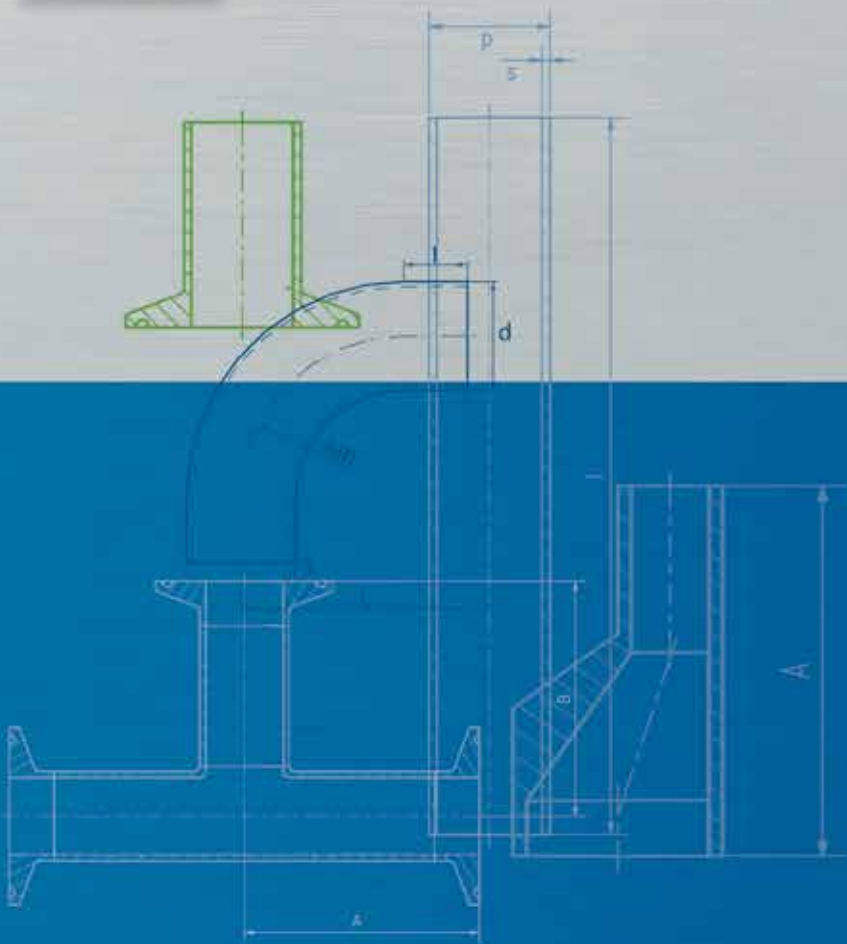




CERTIFIED
QUALITY

D-ECKWEILER
connecting flow to **purity**



ASME BPE

TUBES & FITTINGS ACCORDING TO ASME BPE STANDARD

Specification and Dimensions



ABOUT BPE-DIRECT

Dockweiler is the first and only certified manufacturer of stainless steel tubes and fittings according to the ASME BPE specification in Europe. The advantages at a glance:

The better, cheaper, faster source for your ASME BPE demands

BETTER

We supply only the highest quality levels: SF1 and SF4

CHEAPER

Bulk production and lean structures are the source of our competitive pricing.

FASTER

Extensive stocks in Europe and Asia will serve your needs well in time.

ASME BPE

The American Society of Mechanical Engineers first published this standard in 1997 for Bioprocessing Equipment and it has since become a standard specification worldwide for the biotechnological and pharmaceutical industries.

Our bpe-direct products are in accordance with the current revision.










BPE-DIRECT

bpe-direct is the Dockweiler tube and fitting program acc. to ASME BPE for the transport of liquid media in the biotechnology, cosmetic and pharmaceutical industry.

For further wide range of tubes and fittings visit our website at www.dockweiler.com

Overview New ASME BPE 2016 Descriptions

PAGE		NEW	OLD (ASME BPE 2009)	DESCRIPTION
3				About bpe-direct
7				Specification
12		DT-4.1	DT-1	Tube
13		DT-4.1.1-1	DT-7	Automatic Tube Weld: 90° Elbow
14		DT-4.1.1-2	DT-12	Automatic Tube Weld: Hygienic Clamp Joint, 90° Elbow
15		DT-4.1.1-3	DT-16	Hygienic Clamp Joint: 90° Elbow
16		DT-4.1.1-4	DT-8	Automatic Tube Weld: 45° Elbow
17		DT-4.1.1-5	DT-13	Automatic Tube Weld: Hygienic Clamp Joint, 45° Elbow
18		DT-4.1.1-6	DT-17	Hygienic Clamp Joint: 45° Elbow
19		DT-4.1.1-7	DT-23	Automatic Tube Weld: 180° Return Bend
20		DT-4.1.1-8	DT-24	Hygienic Clamp Joint: 180° Return Bend
22		DT-4.1.2-1	DT-9	Automatic Tube Weld: Straight Tee
23		DT-4.1.2-1	DT-9	Automatic Tube Weld: Straight Cross
24		DT-4.1.2-2	DT-15	Automatic Tube Weld: Short Outlet Hygienic Clamp Joint Tee
25		DT-4.1.2-3	DT-25	Hygienic Mechanical Joint: Short Outlet Run Tee
26		DT-4.1.2-4	DT-18	Hygienic Clamp Joint: Straight Tee
27		DT-4.1.2-4	DT-18	Hygienic Clamp Joint: Straight Cross

PAGE		NEW	OLD (ASME BPE 2009)	DESCRIPTION
28		DT-4.1.2-5	DT-27	Hygienic Clamp Joint: Short Outlet Tee
30		DT-4.1.2-6	DT-10	Automatic Tube Weld: Reducing Tee
32		DT-4.1.2-7	DT-14	Automatic Tube Weld: Short Outlet Hygienic Clamp, Joint Reducing Tee
34		DT-4.1.2-8	DT-19	Hygienic Clamp Joint: Reducing Tee
36		DT-4.1.2-9	DT-20	Hygienic Clamp Joint: Short Outlet Reducing Tee
38		DT-4.1.2-10	DT-28	Automatic Tube Weld: Instrument Tee
39		DT-4.1.2-11	DT-29	Hygienic Clamp Joint: Instrument Tee
42		DT-4.1.3-1		Automatic Tube Weld: Concentric Reducer
43		DT-4.1.3-1		Automatic Tube Weld: Eccentric Reducer
44		DT-4.1.3-2		Hygienic Clamp Joint: Tube Weld Concentric Reducer
45		DT-4.1.3-2		Hygienic Clamp Joint: Tube Weld Eccentric Reducer
46		DT-4.1.3-3		Hygienic Clamp Joint: Concentric Reducer
47		DT-4.1.3-3		Hygienic Clamp Joint: Eccentric Reducer
50		DT-4.1.4-1	DT-22	Automatic Tube Weld: Ferrule
52		DT-4.1.5-1	DT-30	Automatic Tube Weld: Cap
53		DT-4.1.5-2	DT-31	Hygienic Clamp Joint: Solid End Cap
55				Information

SPECIFICATION



bpe-direct



APPLICATIONS

bpe-direct is the Dockweiler tube and fitting program acc. to ASME BPE for the transport of liquid media in the biotechnology, cosmetic and pharmaceutical industry.



BIOTECHNOLOGICAL INDUSTRY



PHARMACEUTICAL INDUSTRY

DIMENSIONS

All tubes and fittings are available from stock in the following sizes:

Imperial (acc. to ASME BPE, Part DT)

1/4" (0.250 inch x 0.035 inch) to 6" (6.000 inch x 0.109 inch)
6.35 mm x 0.89 mm to 152.40 mm x 2.77 mm

TECHNICAL TERMS OF DELIVERY

Tubes and fittings are prepared for orbital welding acc. to following standards:

Tubes and fittings

acc. to ASME BPE, ASTM A 269/270, tubes with a length of 19.35 ft - 20.00 ft. (5900 - 6090 mm). Max. 10% short lengths of min. 9.8 ft. (3000 mm) possible.

Tubes are permanently marked over the full length.
Fittings are needle marked.

Marking always with:

- ASME BPE SF1 or SF4
- DOCKWEILER
- DW-Number
- Dimension
- Material
- Heat number



MATERIALS

Depending on outer diameter welded or seamless austenitic stainless steel tubes and fittings are available in the following materials in acc. to ASME BPE:

- UNS S31603 (316L) / 1.4404
- UNS S31603 (316L) / 1.4435
- UNS N08904 (904L) / 1.4539
- UNS N06022 (C22) / 2.4602
- UNS N08367 (AL6XN)

The hardness is equivalent to:

- max. 180 HV
- max. 90 HRB

SURFACES

Tubes and fittings are available with following inner surfaces in acc. to ASME BPE SF:

Bright finished (bf):	SF0: No finish requirement SF1: Ra max. ≤ 20 µin (0.51 µm) SF2: Ra max. ≤ 25 µin (0.64 µm) SF3: Ra max. ≤ 30 µin (0.76 µm)
Electropolished (ep):	SF4: Ra max. ≤ 15 µin (0.38 µm) SF5: Ra max. ≤ 20 µin (0.51 µm) SF6: Ra max. ≤ 25 µin (0.64 µm)

The outer surface has a Ra max. value ≤ 40 µin (1,00 µm)

For the machining of the inner surfaces following standards apply:

Bright finished: Cleaning and test procedure ASTM A 632, S3

Electropolished: Procedure acc. to Spec. Doc. 7.4-40/3.1/3.3.2
Free of oil and grease acc. to CGA G-4.1-2004

QUALITY AND TEST PROCEDURES

- Verification of basic test certificate
- Visual control
- Endoscopic inspection of bright finished tubes
- Verification of dimensions
- Roughness measurements

DOCUMENTATION, PACKAGING AND SHIPPING

The documentation result by the Dockweiler Inspection Certificate 3.1 acc. to DIN EN 10204.

Bright finished tubes and fittings are closed with transparent PE caps and are individually sealed in PE foil. The tubes and fittings as well as the batch label on the foil contain the information ASME BPE SF1.

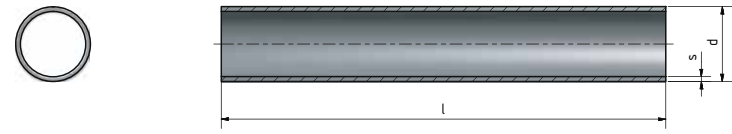
Electropolished tubes and fittings are closed with yellow PE caps and are individually sealed in PE foil. The tubes and fittings as well as the batch label on the foil contain the information ASME BPE SF4.

Delivery of tubes in tubular container or wooden crate, of fittings in strong cardboard box or wooden crate with shock absorbing filler.

TUBES AND ELBOWS



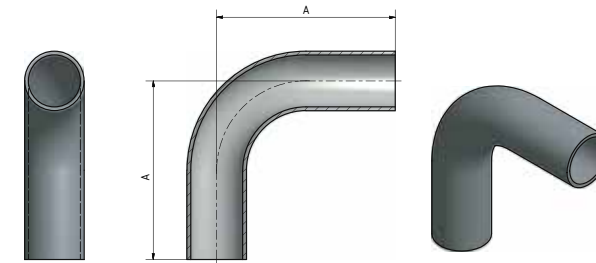
Tube



Nominal Size (d)		Wall Thickness (s)		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	0.035	0.89	SF1-04	SF4-04
3/8	9.53	0.035	0.89	SF1-06	SF4-06
1/2	12.70	0.065	1.65	SF1-08	SF4-08
3/4	19.05	0.065	1.65	SF1-12	SF4-12
1	25.40	0.065	1.65	SF1-16	SF4-16
1 1/2	38.10	0.065	1.65	SF1-24	SF4-24
2	50.80	0.065	1.65	SF1-32	SF4-32
2 1/2	63.50	0.065	1.65	SF1-40	SF4-40
3	76.20	0.065	1.65	SF1-48	SF4-48
4	101.60	0.083	2.11	SF1-64	SF4-64
6	152.40	0.109	2.77	SF1-96	SF4-96

Further dimensions on request. Subject to alteration.

Automatic Tube Weld: 90° Elbow



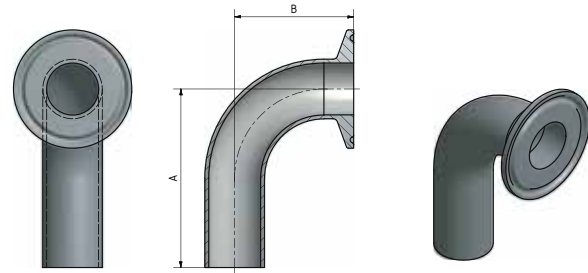
All dimensions on request available also in 88° and 92°.

Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.625	66.7	SF1-9L-04-1-1	SF4-9L-04-1-1
3/8	9.53	2.625	66.7	SF1-9L-06-1-1	SF4-9L-06-1-1
1/2	12.70	3.000	76.2	SF1-9L-08-1-1	SF4-9L-08-1-1
3/4	19.05	3.000	76.2	SF1-9L-12-1-1	SF4-9L-12-1-1
1	25.40	3.000	76.2	SF1-9L-16-1-1	SF4-9L-16-1-1
1 1/2	38.10	3.750	95.3	SF1-9L-24-1-1	SF4-9L-24-1-1
2	50.80	4.750	120.7	SF1-9L-32-1-1	SF4-9L-32-1-1
2 1/2	63.50	5.500	139.7	SF1-9L-40-1-1	SF4-9L-40-1-1
3	76.20	6.250	158.8	SF1-9L-48-1-1	SF4-9L-48-1-1
4	101.60	8.000	203.2	SF1-9L-64-1-1	SF4-9L-64-1-1
6	152.40	11.500	292.1	SF1-9L-96-1-1	SF4-9L-96-1-1

Further dimensions on request, Subject to alteration,

DT-4.1.1-2
(DT-12)

Automatic Tube Weld: Hygienic Clamp Joint, 90° Elbow

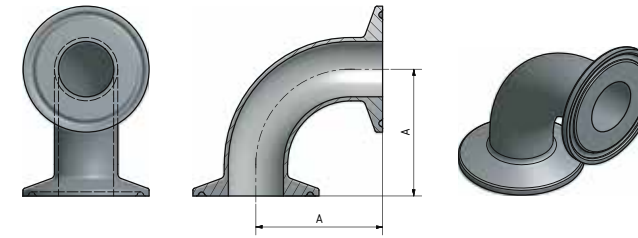


Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.625	66.7	1.625	41.3	SF1-9L-04-1-2	SF4-9L-04-1-2
3/8	9.53	2.625	66.7	1.625	41.3	SF1-9L-06-1-2	SF4-9L-06-1-2
1/2	12.70	3.000	76.2	1.625	41.3	SF1-9L-08-1-2	SF4-9L-08-1-2
3/4	19.05	3.000	76.2	1.625	41.3	SF1-9L-12-1-2	SF4-9L-12-1-2
1	25.40	3.000	76.2	2.000	50.8	SF1-9L-16-1-	SF4-9L-16-1-2
1 1/2	38.10	3.750	95.3	2.750	69.9	SF1-9L-24-1-2	SF4-9L-24-1-2
2	50.80	4.750	120.7	3.500	88.9	SF1-9L-32-1-2	SF4-9L-32-1-2
2 1/2	63.50	5.500	139.7	4.250	108.0	SF1-9L-40-1-2	SF4-9L-40-1-2
3	76.20	6.250	158.8	5.000	127.0	SF1-9L-48-1-2	SF4-9L-48-1-2
4	101.60	8.000	203.2	6.625	168.3	SF1-9L-64-1-2	SF4-9L-64-1-2
6	152.40	11.500	292.1	10.500	266.7	SF1-9L-96-1-2	SF4-9L-96-1-2

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

DT-4.1.1-3
(DT-16)

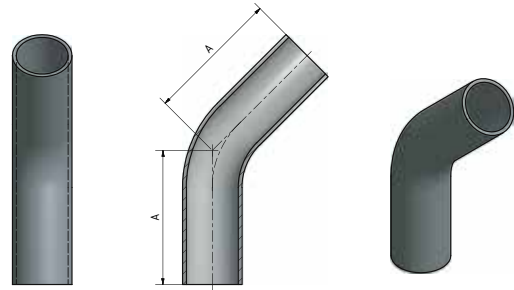
Hygienic Clamp Joint: 90° Elbow



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.625	41.3	SF1-9L-04-1-3	SF4-9L-04-1-3
3/8	9.53	1.625	41.3	SF1-9L-06-1-3	SF4-9L-06-1-3
1/2	12.70	1.625	41.3	SF1-9L-08-1-3	SF4-9L-08-1-3
3/4	19.05	1.625	41.3	SF1-9L-12-1-3	SF4-9L-12-1-3
1	25.40	2.000	50.8	SF1-9L-16-1-3	SF4-9L-16-1-3
1 1/2	38.10	2.750	69.9	SF1-9L-24-1-3	SF4-9L-24-1-3
2	50.80	3.500	88.9	SF1-9L-32-1-3	SF4-9L-32-1-3
2 1/2	63.50	4.250	108.0	SF1-9L-40-1-3	SF4-9L-40-1-3
3	76.20	5.000	127.0	SF1-9L-48-1-3	SF4-9L-48-1-3
4	101.60	6.625	168.3	SF1-9L-64-1-3	SF4-9L-64-1-3
6	152.40	10.500	266.7	SF1-9L-96-1-3	SF4-9L-96-1-3

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

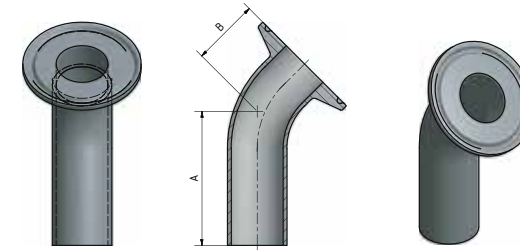
Automatic Tube Weld: 45° Elbow



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.000	50.8	SF1-4L-04-1-4	SF4-4L-04-1-4
3/8	9.53	2.000	50.8	SF1-4L-06-1-4	SF4-4L-06-1-4
1/2	12.70	2.250	57.2	SF1-4L-08-1-4	SF4-4L-08-1-4
3/4	19.05	2.250	57.2	SF1-4L-12-1-4	SF4-4L-12-1-4
1	25.40	2.250	57.2	SF1-4L-16-1-4	SF4-4L-16-1-4
1 1/2	38.10	2.500	63.5	SF1-4L-24-1-4	SF4-4L-24-1-4
2	50.80	3.000	76.2	SF1-4L-32-1-4	SF4-4L-32-1-4
2 1/2	63.50	3.375	85.7	SF1-4L-40-1-4	SF4-4L-40-1-4
3	76.20	3.625	92.1	SF1-4L-48-1-4	SF4-4L-48-1-4
4	101.60	4.500	114.3	SF1-4L-64-1-4	SF4-4L-64-1-4
6	152.40	6.250	158.8	SF1-4L-96-1-4	SF4-4L-96-1-4

Further dimensions on request. Subject to alteration.

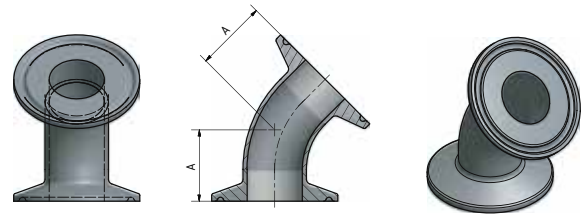
Automatic Tube Weld: Hygienic Clamp Joint, 45° Elbow



Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.000	50.8	1.000	25.4	SF1-4L-04-1-5	SF4-4L-04-1-5
3/8	9.53	2.000	50.8	1.000	25.4	SF1-4L-06-1-5	SF4-4L-06-1-5
1/2	12.70	2.250	57.2	1.000	25.4	SF1-4L-08-1-5	SF4-4L-08-1-5
3/4	19.05	2.250	57.2	1.000	25.4	SF1-4L-12-1-5	SF4-4L-12-1-5
1	25.40	2.250	57.2	1.125	28.6	SF1-4L-16-1-5	SF4-4L-16-1-5
1 1/2	38.10	2.500	63.5	1.438	36.5	SF1-4L-24-1-5	SF4-4L-24-1-5
2	50.80	3.000	76.2	1.750	44.5	SF1-4L-32-1-5	SF4-4L-32-1-5
2 1/2	63.50	3.375	85.7	2.063	52.4	SF1-4L-40-1-5	SF4-4L-40-1-5
3	76.20	3.625	92.1	2.375	60.3	SF1-4L-48-1-5	SF4-4L-48-1-5
4	101.60	4.500	114.3	3.125	79.4	SF1-4L-64-1-5	SF4-4L-64-1-5
6	152.40	6.250	158.8	5.250	133.4	SF1-4L-96-1-5	SF4-4L-96-1-5

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

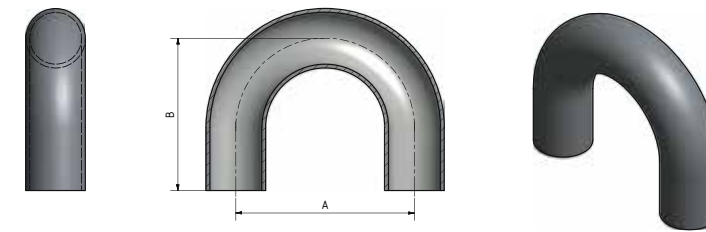
Hygienic Clamp Joint: 45° Elbow



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.000	25.4	SF1-4L-04-1-6	SF4-4L-04-1-6
3/8	9.53	1.000	25.4	SF1-4L-06-1-6	SF4-4L-06-1-6
1/2	12.70	1.000	25.4	SF1-4L-08-1-6	SF4-4L-08-1-6
3/4	19.05	1.000	25.4	SF1-4L-12-1-6	SF4-4L-12-1-6
1	25.40	1.125	28.6	SF1-4L-16-1-6	SF4-4L-16-1-6
1 1/2	38.10	1.438	36.5	SF1-4L-24-1-6	SF4-4L-24-1-6
2	50.80	1.750	44.5	SF1-4L-32-1-6	SF4-4L-32-1-6
2 1/2	63.50	2.063	52.4	SF1-4L-40-1-6	SF4-4L-40-1-6
3	76.20	2.375	60.3	SF1-4L-48-1-6	SF4-4L-48-1-6
4	101.60	3.125	79.4	SF1-4L-64-1-6	SF4-4L-64-1-6
6	152.40	5.250	133.4	SF1-4L-96-1-6	SF4-4L-96-1-6

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

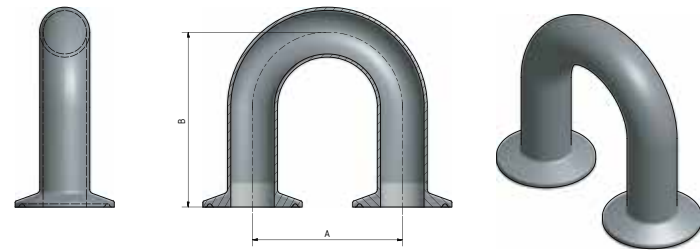
Automatic Tube Weld: 180° Return Bend



Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	4.500	114.3	2.625	66.7	SF1-UL-04-1-7	SF4-UL-04-1-7
3/8	9.53	4.500	114.3	2.625	66.7	SF1-UL-06-1-7	SF4-UL-06-1-7
1/2	12.70	4.500	114.3	3.000	76.2	SF1-UL-08-1-7	SF4-UL-08-1-7
3/4	19.05	4.500	114.3	3.000	76.2	SF1-UL-12-1-7	SF4-UL-12-1-7
1	25.40	3.000	76.2	3.000	76.2	SF1-UL-16-1-7	SF4-UL-16-1-7
1 1/2	38.10	4.500	114.3	4.500	114.3	SF1-UL-24-1-7	SF4-UL-24-1-7
2	50.80	6.000	152.4	5.000	127.0	SF1-UL-32-1-7	SF4-UL-32-1-7
2 1/2	63.50	7.500	190.5	5.750	146.1	SF1-UL-40-1-7	SF4-UL-40-1-7
3	76.20	9.000	228.6	6.500	165.1	SF1-UL-48-1-7	SF4-UL-48-1-7
4	101.60	12.000	304.8	8.500	215.9	SF1-UL-64-1-7	SF4-UL-64-1-7
6	152.40	18.000	457.2	11.500	292.1	SF1-UL-96-1-7	SF4-UL-96-1-7

Further dimensions on request. Subject to alteration.

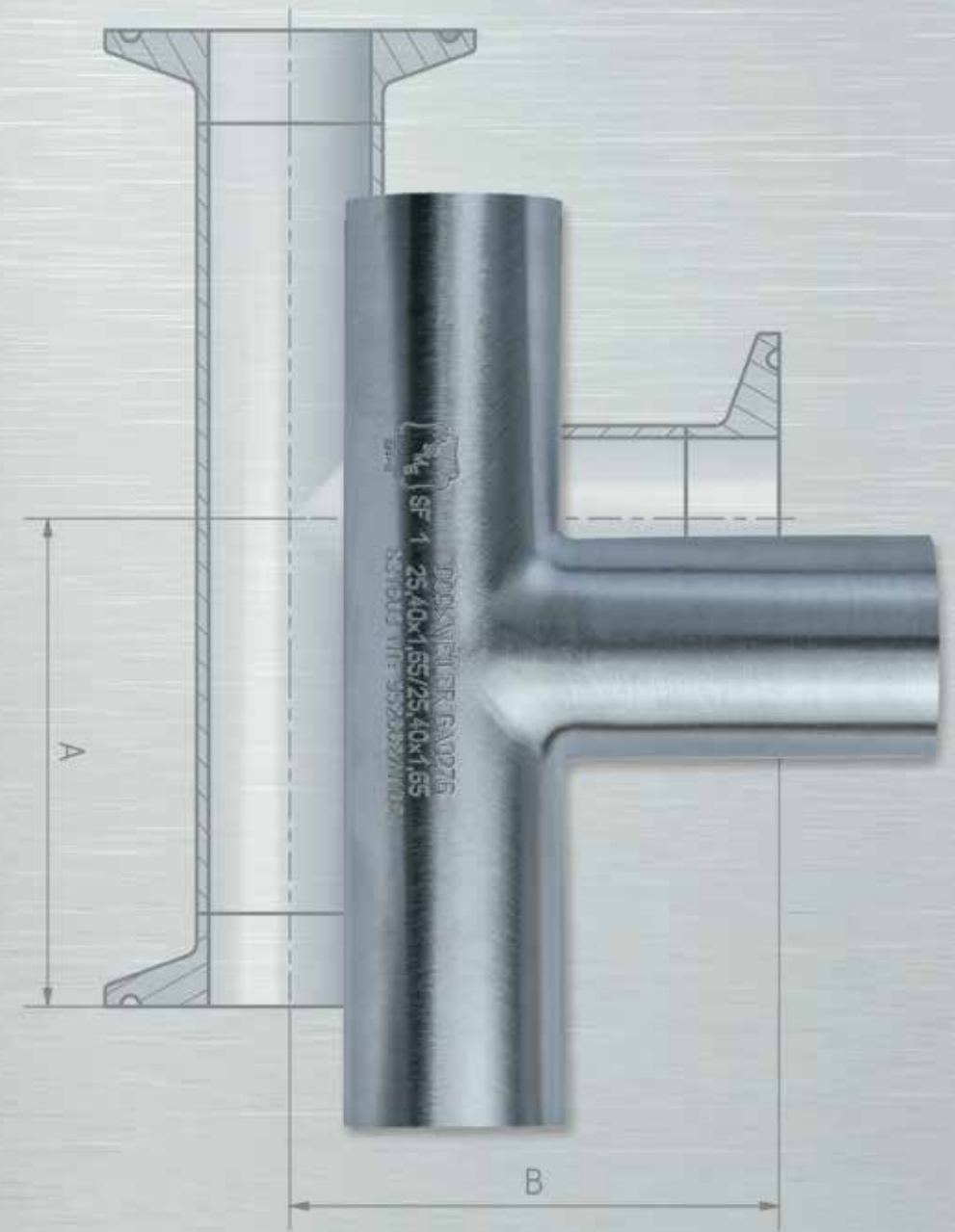
Hygienic Clamp Joint: 180° Return Bend



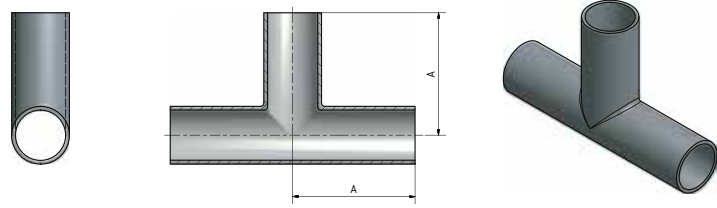
Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	4.500	114.3	3.125	79.4	SF1-UL-04-1-8	SF4-UL-04-1-8
3/8	9.53	4.500	114.3	3.125	79.4	SF1-UL-06-1-8	SF4-UL-06-1-8
1/2	12.70	4.500	114.3	3.500	88.9	SF1-UL-08-1-8	SF4-UL-08-1-8
3/4	19.05	4.500	114.3	3.500	88.9	SF1-UL-12-1-8	SF4-UL-12-1-8
1	25.40	3.000	76.2	3.500	88.9	SF1-UL-16-1-8	SF4-UL-16-1-8
1 1/2	38.10	4.500	114.3	5.000	127.0	SF1-UL-24-1-8	SF4-UL-24-1-8
2	50.80	6.000	152.4	5.500	139.7	SF1-UL-32-1-8	SF4-UL-32-1-8
2 1/2	63.50	7.500	190.5	6.250	158.8	SF1-UL-40-1-8	SF4-UL-40-1-8
3	76.20	9.000	228.6	7.000	177.8	SF1-UL-48-1-8	SF4-UL-48-1-8
4	101.60	12.000	304.8	9.125	231.8	SF1-UL-64-1-8	SF4-UL-64-1-8
6	152.40	18.000	457.2	13.000	330.2	SF1-UL-96-1-8	SF4-UL-96-1-8

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

T-PIECES



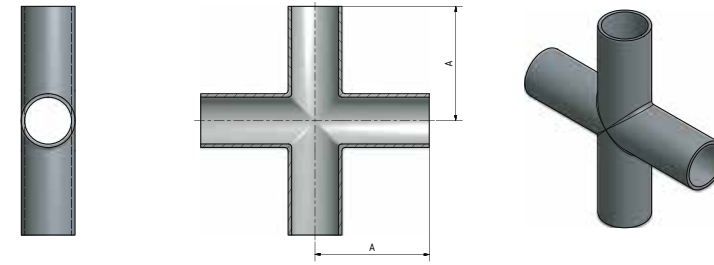
Automatic Tube Weld: Straight Tee



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	SF1-TE-04-2-1	SF4-TE-04-2-1
3/8	9.53	1.750	44.5	SF1-TE-06-2-1	SF4-TE-06-2-1
1/2	12.70	1.875	47.6	SF1-TE-08-2-1	SF4-TE-08-2-1
3/4	19.05	2.000	50.8	SF1-TE-12-2-1	SF4-TE-12-2-1
1	25.40	2.125	54.0	SF1-TE-16-2-1	SF4-TE-16-2-1
1 1/2	38.10	2.375	60.3	SF1-TE-24-2-1	SF4-TE-24-2-1
2	50.80	2.875	73.0	SF1-TE-32-2-1	SF4-TE-32-2-1
2 1/2	63.50	3.125	79.4	SF1-TE-40-2-1	SF4-TE-40-2-1
3	76.20	3.375	85.7	SF1-TE-48-2-1	SF4-TE-48-2-1
4	101.60	4.125	104.8	SF1-TE-64-2-1	SF4-TE-64-2-1
6	152.40	5.625	142.9	SF1-TE-96-2-1	SF4-TE-96-2-1

Further dimensions on request. Subject to alteration.

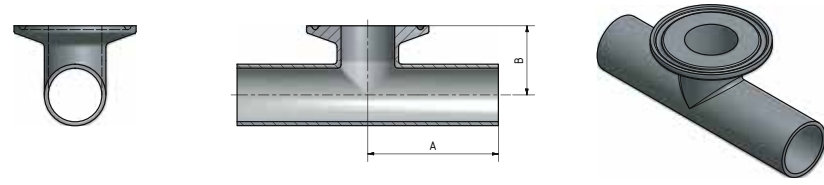
Automatic Tube Weld: Straight Cross



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	SF1-CE-04-2-1	SF4-CE-04-2-1
3/8	9.53	1.750	44.5	SF1-CE-06-2-1	SF4-CE-06-2-1
1/2	12.70	1.875	47.6	SF1-CE-08-2-1	SF4-CE-08-2-1
3/4	19.05	2.000	50.8	SF1-CE-12-2-1	SF4-CE-12-2-1
1	25.40	2.125	54.0	SF1-CE-16-2-1	SF4-CE-16-2-1
1 1/2	38.10	2.375	60.3	SF1-CE-24-2-1	SF4-CE-24-2-1
2	50.80	2.875	73.0	SF1-CE-32-2-1	SF4-CE-32-2-1
2 1/2	63.50	3.125	79.4	SF1-CE-40-2-1	SF4-CE-40-2-1
3	76.20	3.375	85.7	SF1-CE-48-2-1	SF4-CE-48-2-1
4	101.60	4.125	104.8	SF1-CE-64-2-1	SF4-CE-64-2-1
6	152.40	5.625	142.9	SF1-CE-96-2-1	SF4-CE-96-2-1

Further dimensions on request. Subject to alteration.

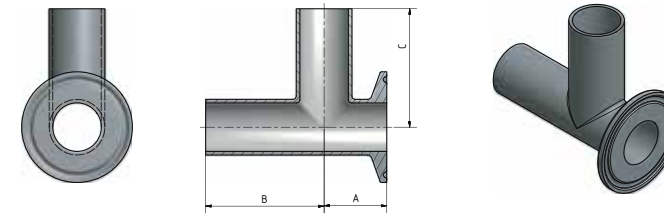
Automatic Tube Weld: Short Outlet Hygienic Clamp Joint Tee



Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	1.000	25.4	SF1-TE-04-2-2	SF4-TE-04-2-2
3/8	9.53	1.750	44.5	1.000	25.4	SF1-TE-06-2-2	SF4-TE-06-2-2
1/2	12.70	1.875	47.6	1.000	25.4	SF1-TE-08-2-2	SF4-TE-08-2-2
3/4	19.05	2.000	50.8	1.125	28.6	SF1-TE-12-2-2	SF4-TE-12-2-2
1	25.40	2.125	54.0	1.125	28.6	SF1-TE-16-2-2	SF4-TE-16-2-2
1 1/2	38.10	2.375	60.3	1.375	34.9	SF1-TE-24-2-2	SF4-TE-24-2-2
2	50.80	2.875	73.0	1.625	41.3	SF1-TE-32-2-2	SF4-TE-32-2-2
2 1/2	63.50	3.125	79.4	1.875	47.6	SF1-TE-40-2-2	SF4-TE-40-2-2
3	76.20	3.375	85.7	2.125	54.0	SF1-TE-48-2-2	SF4-TE-48-2-2
4	101.60	4.125	104.8	2.750	69.9	SF1-TE-64-2-2	SF4-TE-64-2-2
6	152.40	5.625	142.9	4.625	117.5	SF1-TE-96-2-2	SF4-TE-96-2-2

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

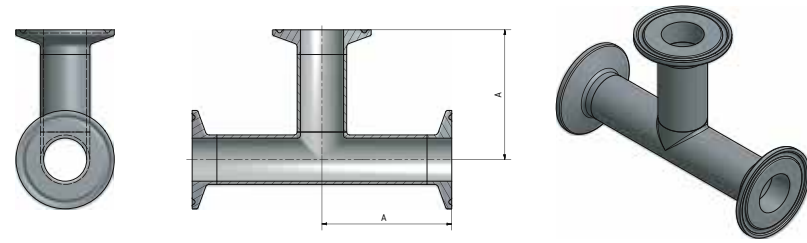
Hygienic Mechanical Joint: Short Outlet Run Tee



Nominal Size (d)		A		B		C		Order Code	
Inch	mm	Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	0.875	22.2	1.750	44.5	1.750	44.5	SF1-TE-04-2-3	SF4-TE-04-2-3
3/8	9.53	0.875	22.2	1.750	44.5	1.750	44.5	SF1-TE-06-2-3	SF4-TE-06-2-3
1/2	12.70	0.875	22.2	1.875	47.6	1.875	47.6	SF1-TE-08-2-3	SF4-TE-08-2-3
3/4	19.05	1.000	25.4	2.000	50.8	2.000	50.8	SF1-TE-12-2-3	SF4-TE-12-2-3
1	25.40	1.125	28.6	2.125	54.0	2.125	54.0	SF1-TE-16-2-3	SF4-TE-16-2-3
1 1/2	38.10	1.375	34.9	2.375	60.3	2.375	60.3	SF1-TE-24-2-3	SF4-TE-24-2-3
2	50.80	1.625	41.3	2.875	73.0	2.875	73.0	SF1-TE-32-2-3	SF4-TE-32-2-3
2 1/2	63.50	1.875	47.6	3.125	79.4	3.125	79.4	SF1-TE-40-2-3	SF4-TE-40-2-3
3	76.20	2.125	54.0	3.375	85.7	3.375	85.7	SF1-TE-48-2-3	SF4-TE-48-2-3
4	101.60	2.750	69.9	4.125	104.8	4.125	104.8	SF1-TE-64-2-3	SF4-TE-64-2-3
6	152.40	4.625	117.5	5.625	142.9	5.625	142.9	SF1-TE-96-2-3	SF4-TE-96-2-3

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

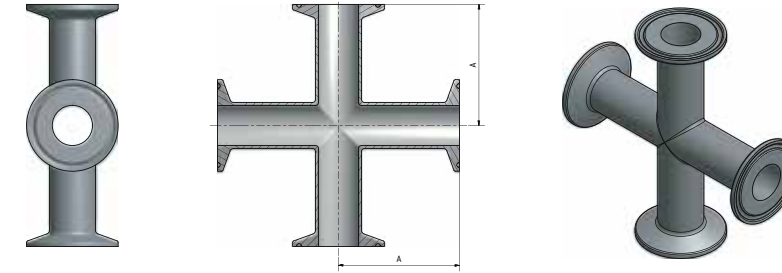
Hygienic Clamp Joint: Straight Tee



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.250	57.2	SF1-TE-04-2-4	SF4-TE-04-2-4
3/8	9.53	2.250	57.2	SF1-TE-06-2-4	SF4-TE-06-2-4
1/2	12.70	2.250	57.2	SF1-TE-08-2-4	SF4-TE-08-2-4
3/4	19.05	2.375	60.3	SF1-TE-12-2-4	SF4-TE-12-2-4
1	25.40	2.625	66.7	SF1-TE-16-2-4	SF4-TE-16-2-4
1 1/2	38.10	2.875	73.0	SF1-TE-24-2-4	SF4-TE-24-2-4
2	50.80	3.375	85.7	SF1-TE-32-2-4	SF4-TE-32-2-4
2 1/2	63.50	3.625	92.1	SF1-TE-40-2-4	SF4-TE-40-2-4
3	76.20	3.875	98.4	SF1-TE-48-2-4	SF4-TE-48-2-4
4	101.60	4.750	120.7	SF1-TE-64-2-4	SF4-TE-64-2-4
6	152.40	7.125	181.0	SF1-TE-96-2-4	SF4-TE-96-2-4

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

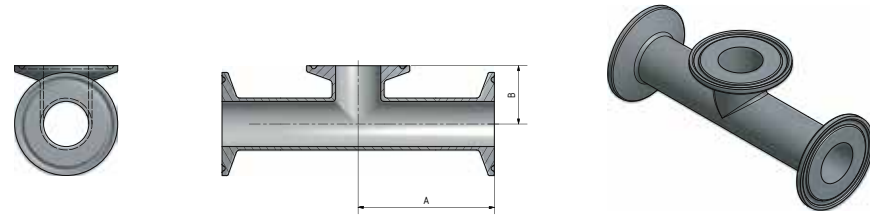
Hygienic Clamp Joint: Straight Cross



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.250	57.2	SF1-CE-04-2-4	SF4-CE-04-2-4
3/8	9.53	2.250	57.2	SF1-CE-06-2-4	SF4-CE-06-2-4
1/2	12.70	2.250	57.2	SF1-CE-08-2-4	SF4-CE-08-2-4
3/4	19.05	2.375	60.3	SF1-CE-12-2-4	SF4-CE-12-2-4
1	25.40	2.625	66.7	SF1-CE-16-2-4	SF4-CE-16-2-4
1 1/2	38.10	2.875	73.0	SF1-CE-24-2-4	SF4-CE-24-2-4
2	50.80	3.375	85.7	SF1-CE-32-2-4	SF4-CE-32-2-4
2 1/2	63.50	3.625	92.1	SF1-CE-40-2-4	SF4-CE-40-2-4
3	76.20	3.875	98.4	SF1-CE-48-2-4	SF4-CE-48-2-4
4	101.60	4.750	120.7	SF1-CE-64-2-4	SF4-CE-64-2-4
6	152.40	7.125	181.0	SF1-CE-96-2-4	SF4-CE-96-2-4

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

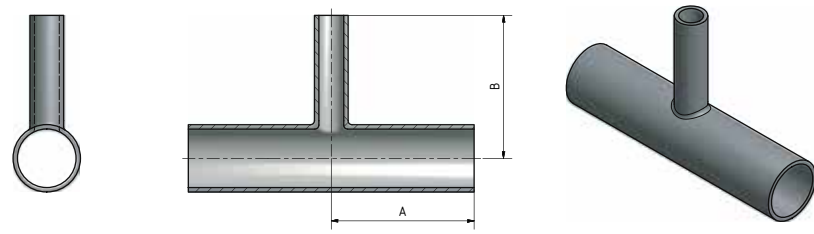
Hygienic Clamp Joint: Short Outlet Tee



Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/2	12.70	2.250	57.2	1.000	25.4	SF1-TE-08-2-5	SF4-TE-08-2-5
3/4	19.05	2.375	60.3	1.125	28.6	SF1-TE-12-2-5	SF4-TE-12-2-5
1	25.40	2.625	66.7	1.125	28.6	SF1-TE-16-2-5	SF4-TE-16-2-5
1 1/2	38.10	2.875	73.0	1.375	34.9	SF1-TE-24-2-5	SF4-TE-24-2-5
2	50.80	3.375	85.7	1.625	41.3	SF1-TE-32-2-5	SF4-TE-32-2-5
2 1/2	63.50	3.625	92.1	1.875	47.6	SF1-TE-40-2-5	SF4-TE-40-2-5
3	76.20	3.875	98.4	2.125	54.0	SF1-TE-48-2-5	SF4-TE-48-2-5
4	101.60	4.750	120.7	2.750	69.9	SF1-TE-64-2-5	SF4-TE-64-2-5
6	152.40	7.125	181.0	4.625	117.5	SF1-TE-96-2-5	SF4-TE-96-2-5

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

Automatic Tube Weld: Reducing Tee



Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	1.750	44.5	1.750	44.5	SF1-RT-06-04-2-6	SF4-RT-06-04-2-6
1/2 x 1/4	12.70 x 6.35	1.875	47.6	1.875	47.6	SF1-RT-08-04-2-6	SF4-RT-08-04-2-6
1/2 x 3/8	12.70 x 9.53	1.875	47.6	1.875	47.6	SF1-RT-08-06-2-6	SF4-RT-08-06-2-6
3/4 x 1/4	19.05 x 6.35	2.000	50.8	2.000	50.8	SF1-RT-12-04-2-6	SF4-RT-12-04-2-6
3/4 x 3/8	19.05 x 9.53	2.000	50.8	2.000	50.8	SF1-RT-12-06-2-6	SF4-RT-12-06-2-6
3/4 x 1/2	19.05 x 12.70	2.000	50.8	2.000	50.8	SF1-RT-12-08-2-6	SF4-RT-12-08-2-6
1 x 1/4	25.40 x 6.35	2.125	54.0	2.125	54.0	SF1-RT-16-04-2-6	SF4-RT-16-04-2-6
1 x 3/8	25.40 x 9.53	2.125	54.0	2.125	54.0	SF1-RT-16-06-2-6	SF4-RT-16-06-2-6
1 x 1/2	25.40 x 12.70	2.125	54.0	2.125	54.0	SF1-RT-16-08-2-6	SF4-RT-16-08-2-6
1 x 3/4	25.40 x 19.05	2.125	54.0	2.125	54.0	SF1-RT-16-12-2-6	SF4-RT-16-12-2-6
1 1/2 x 1/2	38.10 x 12.70	2.375	60.3	2.375	60.3	SF1-RT-24-08-2-6	SF4-RT-24-08-2-6
1 1/2 x 3/4	38.10 x 19.05	2.375	60.3	2.375	60.3	SF1-RT-24-12-2-6	SF4-RT-24-12-2-6
1 1/2 x 1	38.10 x 25.40	2.375	60.3	2.375	60.3	SF1-RT-24-16-2-6	SF4-RT-24-16-2-6
2 x 1/2	50.80 x 12.70	2.875	73.0	2.625	66.7	SF1-RT-32-08-2-6	SF4-RT-32-08-2-6
2 x 3/4	50.80 x 19.05	2.875	73.0	2.625	66.7	SF1-RT-32-12-2-6	SF4-RT-32-12-2-6
2 x 1	50.80 x 25.40	2.875	73.0	2.625	66.7	SF1-RT-32-16-2-6	SF4-RT-32-16-2-6
2 x 1 1/2	50.80 x 38.10	2.875	73.0	2.625	66.7	SF1-RT-32-24-2-6	SF4-RT-32-24-2-6

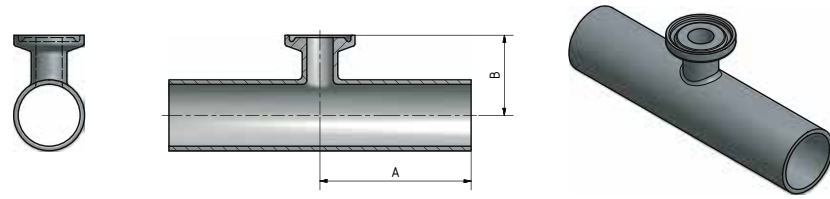
Further dimensions on request. Subject to alteration.

Automatic Tube Weld: Reducing Tee

Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
2 1/2 x 1/2	63.50 x 12.70	3.125	79.4	2.875	73.0	SF1-RT-40-08-2-6	SF4-RT-40-08-2-6
2 1/2 x 3/4	63.50 x 19.05	3.125	79.4	2.875	73.0	SF1-RT-40-12-2-6	SF4-RT-40-12-2-6
2 1/2 x 1	63.50 x 25.40	3.125	79.4	2.875	73.0	SF1-RT-40-16-2-6	SF4-RT-40-16-2-6
2 1/2 x 1 1/2	63.50 x 38.10	3.125	79.4	2.875	73.0	SF1-RT-40-24-2-6	SF4-RT-40-24-2-6
2 1/2 x 2	63.50 x 50.80	3.125	79.4	2.875	73.0	SF1-RT-40-32-2-6	SF4-RT-40-32-2-6
3 x 1/2	76.20 x 12.70	3.375	85.7	3.125	79.4	SF1-RT-48-08-2-6	SF4-RT-48-08-2-6
3 x 3/4	76.20 x 19.05	3.375	85.7	3.125	79.4	SF1-RT-48-12-2-6	SF4-RT-48-12-2-6
3 x 1	76.20 x 25.40	3.375	85.7	3.125	79.4	SF1-RT-48-16-2-6	SF4-RT-48-16-2-6
3 x 1 1/2	76.20 x 38.10	3.375	85.7	3.125	79.4	SF1-RT-48-24-2-6	SF4-RT-48-24-2-6
3 x 2	76.20 x 50.80	3.375	85.7	3.125	79.4	SF1-RT-48-32-2-6	SF4-RT-48-32-2-6
3 x 2 1/2	76.20 x 63.50	3.375	85.7	3.125	79.4	SF1-RT-48-40-2-6	SF4-RT-48-40-2-6
4 x 1/2	101.60 x 12.70	4.125	104.8	3.625	92.1	SF1-RT-64-08-2-6	SF4-RT-64-08-2-6
4 x 3/4	101.60 x 19.05	4.125	104.8	3.625	92.1	SF1-RT-64-12-2-6	SF4-RT-64-12-2-6
4 x 1	101.60 x 25.40	4.125	104.8	3.625	92.1	SF1-RT-64-16-2-6	SF4-RT-64-16-2-6
4 x 1 1/2	101.60 x 38.10	4.125	104.8	3.625	92.1	SF1-RT-64-24-2-6	SF4-RT-64-24-2-6
4 x 2	101.60 x 50.80	4.125	104.8	3.875	98.4	SF1-RT-64-32-2-6	SF4-RT-64-32-2-6
4 x 2 1/2	101.60 x 63.50	4.125	104.8	3.875	98.4	SF1-RT-64-40-2-6	SF4-RT-64-40-2-6
4 x 3	101.60 x 76.20	4.125	104.8	3.875	98.4	SF1-RT-64-48-2-6	SF4-RT-64-48-2-6
6 x 3	152.40 x 76.20	5.625	142.9	4.875	123.8	SF1-RT-96-48-2-6	SF4-RT-96-48-2-6
6 x 4	152.40 x 101.60	5.625	142.9	5.125	130.2	SF1-RT-96-64-2-6	SF4-RT-96-64-2-6

Further dimensions on request. Subject to alteration.

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



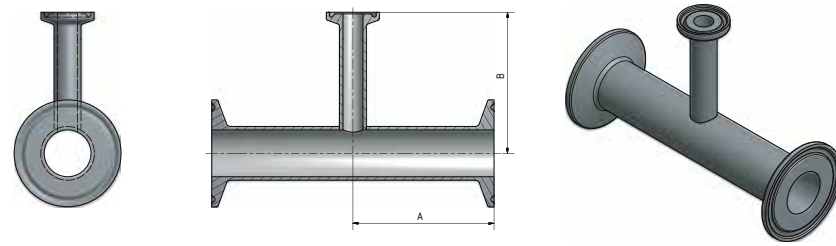
Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	1.750	44.5	1.000	25.4	SF1-RT-06-04-2-7	SF4-RT-06-04-2-7
1/2 x 1/4	12.70 x 6.35	1.875	47.6	1.000	25.4	SF1-RT-08-04-2-7	SF4-RT-08-04-2-7
1/2 x 3/8	12.70 x 9.53	1.875	47.6	1.000	25.4	SF1-RT-08-06-2-7	SF4-RT-08-06-2-7
3/4 x 1/4	19.05 x 6.35	2.000	50.8	1.000	25.4	SF1-RT-12-04-2-7	SF4-RT-12-04-2-7
3/4 x 3/8	19.05 x 9.53	2.000	50.8	1.000	25.4	SF1-RT-12-06-2-7	SF4-RT-12-06-2-7
3/4 x 1/2	19.05 x 12.70	2.000	50.8	1.000	25.4	SF1-RT-12-08-2-7	SF4-RT-12-08-2-7
1 x 1/4	25.40 x 6.35	2.125	54.0	1.125	28.6	SF1-RT-16-04-2-7	SF4-RT-16-04-2-7
1 x 3/8	25.40 x 9.53	2.125	54.0	1.125	28.6	SF1-RT-16-06-2-7	SF4-RT-16-06-2-7
1 x 1/2	25.40 x 12.70	2.125	54.0	1.125	28.6	SF1-RT-16-08-2-7	SF4-RT-16-08-2-7
1 x 3/4	25.40 x 19.05	2.125	54.0	1.125	28.6	SF1-RT-16-12-2-7	SF4-RT-16-12-2-7
1 1/2 x 1/2	38.10 x 12.70	2.375	60.3	1.375	34.9	SF1-RT-24-08-2-7	SF4-RT-24-08-2-7
1 1/2 x 3/4	38.10 x 19.05	2.375	60.3	1.375	34.9	SF1-RT-24-12-2-7	SF4-RT-24-12-2-7
1 1/2 x 1	38.10 x 25.40	2.375	60.3	1.375	34.9	SF1-RT-24-16-2-7	SF4-RT-24-16-2-7
2 x 1/2	50.80 x 12.70	2.875	73.0	1.625	41.3	SF1-RT-32-08-2-7	SF4-RT-32-08-2-7
2 x 3/4	50.80 x 19.05	2.875	73.0	1.625	41.3	SF1-RT-32-12-2-7	SF4-RT-32-12-2-7
2 x 1	50.80 x 25.40	2.875	73.0	1.625	41.3	SF1-RT-32-16-2-7	SF4-RT-32-16-2-7
2 x 1 1/2	50.80 x 38.10	2.875	73.0	1.625	41.3	SF1-RT-32-24-2-7	SF4-RT-32-24-2-7
2 1/2 x 1/2	63.50 x 12.70	3.125	79.4	1.875	47.6	SF1-RT-40-08-2-7	SF4-RT-40-08-2-7

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
2 1/2 x 3/4	63.50 x 19.05	3.125	79.4	1.875	47.6	SF1-RT-40-12-2-7	SF4-RT-40-12-2-7
2 1/2 x 1	63.50 x 25.40	3.125	79.4	1.875	47.6	SF1-RT-40-16-2-7	SF4-RT-40-16-2-7
2 1/2 x 1 1/2	63.50 x 38.10	3.125	79.4	1.875	47.6	SF1-RT-40-24-2-7	SF4-RT-40-24-2-7
2 1/2 x 2	63.50 x 50.80	3.125	79.4	1.875	47.6	SF1-RT-40-32-2-7	SF4-RT-40-32-2-7
3 x 1/2	76.20 x 12.70	3.375	85.7	2.125	54.0	SF1-RT-48-08-2-7	SF4-RT-48-08-2-7
3 x 3/4	76.20 x 19.05	3.375	85.7	2.125	54.0	SF1-RT-48-12-2-7	SF4-RT-48-12-2-7
3 x 1	76.20 x 25.40	3.375	85.7	2.125	54.0	SF1-RT-48-16-2-7	SF4-RT-48-16-2-7
3 x 1 1/2	76.20 x 38.10	3.375	85.7	2.125	54.0	SF1-RT-48-24-2-7	SF4-RT-48-24-2-7
3 x 2	76.20 x 50.80	3.375	85.7	2.125	54.0	SF1-RT-48-32-2-7	SF4-RT-48-32-2-7
3 x 2 1/2	76.20 x 63.50	3.375	85.7	2.125	54.0	SF1-RT-48-40-2-7	SF4-RT-48-40-2-7
4 x 1/2	101.60 x 12.70	4.125	104.8	2.625	66.7	SF1-RT-64-08-2-7	SF4-RT-64-08-2-7
4 x 3/4	101.60 x 19.05	4.125	104.8	2.625	66.7	SF1-RT-64-12-2-7	SF4-RT-64-12-2-7
4 x 1	101.60 x 25.40	4.125	104.8	2.625	66.7	SF1-RT-64-16-2-7	SF4-RT-64-16-2-7
4 x 1 1/2	101.60 x 38.10	4.125	104.8	2.625	66.7	SF1-RT-64-24-2-7	SF4-RT-64-24-2-7
4 x 2	101.60 x 50.80	4.125	104.8	2.625	66.7	SF1-RT-64-32-2-7	SF4-RT-64-32-2-7
4 x 2 1/2	101.60 x 63.50	4.125	104.8	2.625	66.7	SF1-RT-64-40-2-7	SF4-RT-64-40-2-7
4 x 3	101.60 x 76.20	4.125	104.8	2.625	66.7	SF1-RT-64-48-2-7	SF4-RT-64-48-2-7
6 x 1/2	152.40 x 12.70	5.625	142.9	3.625	92.1	SF1-RT-96-08-2-7	SF4-RT-96-08-2-7
6 x 3/4	152.40 x 19.05	5.625	142.9	3.625	92.1	SF1-RT-96-12-2-7	SF4-RT-96-12-2-7
6 x 1	152.40 x 25.40	5.625	142.9	3.625	92.1	SF1-RT-96-16-2-7	SF4-RT-96-16-2-7
6 x 1 1/2	152.40 x 38.10	5.625	142.9	3.625	92.1	SF1-RT-96-24-2-7	SF4-RT-96-24-2-7
6 x 2	152.40 x 50.80	5.625	142.9	3.625	92.1	SF1-RT-96-32-2-7	SF4-RT-96-32-2-7
6 x 2 1/2	152.40 x 63.50	5.625	142.9	3.625	92.1	SF1-RT-96-40-2-7	SF4-RT-96-40-2-7
6 x 3	152.40 x 76.20	5.625	142.9	3.625	92.1	SF1-RT-96-48-2-7	SF4-RT-96-48-2-7
6 x 4	152.40 x 101.60	5.625	142.9	3.750	95.3	SF1-RT-96-64-2-7	SF4-RT-96-64-2-7

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

Hygienic Clamp Joint: Reducing Tee



Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.250	57.2	2.250	57.2	SF1-RT-06-04-2-8	SF4-RT-06-04-2-8
1/2 x 1/4	12.70 x 6.35	2.375	60.3	2.375	60.3	SF1-RT-08-04-2-8	SF4-RT-08-04-2-8
1/2 x 3/8	12.70 x 9.53	2.375	60.3	2.375	60.3	SF1-RT-08-06-2-8	SF4-RT-08-06-2-8
3/4 x 1/4	19.05 x 6.35	2.500	63.5	2.500	63.5	SF1-RT-12-04-2-8	SF4-RT-12-04-2-8
3/4 x 3/8	19.05 x 9.53	2.500	63.5	2.500	63.5	SF1-RT-12-06-2-8	SF4-RT-12-06-2-8
3/4 x 1/2	19.05 x 12.70	2.500	63.5	2.500	63.5	SF1-RT-12-08-2-8	SF4-RT-12-08-2-8
1 x 1/4	25.40 x 6.35	2.625	66.7	2.625	66.7	SF1-RT-16-04-2-8	SF4-RT-16-04-2-8
1 x 3/8	25.40 x 9.53	2.625	66.7	2.625	66.7	SF1-RT-16-06-2-8	SF4-RT-16-06-2-8
1 x 1/2	25.40 x 12.70	2.625	66.7	2.625	66.7	SF1-RT-16-08-2-8	SF4-RT-16-08-2-8
1 x 3/4	25.40 x 19.05	2.625	66.7	2.625	66.7	SF1-RT-16-12-2-8	SF4-RT-16-12-2-8
1 1/2 x 1/2	38.10 x 12.70	2.875	73.0	2.875	73.0	SF1-RT-24-08-2-8	SF4-RT-24-08-2-8
1 1/2 x 3/4	38.10 x 19.05	2.875	73.0	2.875	73.0	SF1-RT-24-12-2-8	SF4-RT-24-12-2-8
1 1/2 x 1	38.10 x 25.40	2.875	73.0	2.875	73.0	SF1-RT-24-16-2-8	SF4-RT-24-16-2-8
2 x 1/2	50.80 x 12.70	3.375	85.7	3.125	79.4	SF1-RT-32-08-2-8	SF4-RT-32-08-2-8
2 x 3/4	50.80 x 19.05	3.375	85.7	3.125	79.4	SF1-RT-32-12-2-8	SF4-RT-32-12-2-8
2 x 1	50.80 x 25.40	3.375	85.7	3.125	79.4	SF1-RT-32-16-2-8	SF4-RT-32-16-2-8
2 x 1 1/2	50.80 x 38.10	3.375	85.7	3.125	79.4	SF1-RT-32-24-2-8	SF4-RT-32-24-2-8

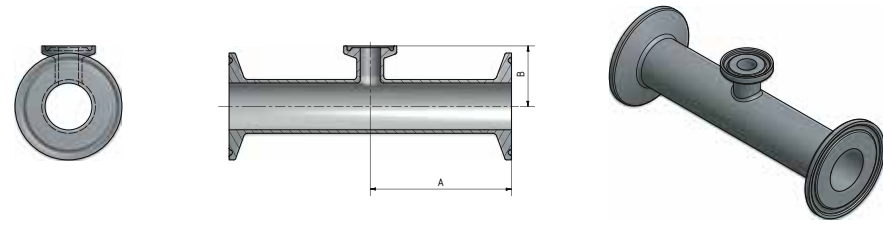
Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

Hygienic Clamp Joint: Reducing Tee

Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
2 1/2 x 1/2	63.50 x 12.70	3.625	92.1	3.375	85.7	SF1-RT-40-08-2-8	SF4-RT-40-08-2-8
2 1/2 x 3/4	63.50 x 19.05	3.625	92.1	3.375	85.7	SF1-RT-40-12-2-8	SF4-RT-40-12-2-8
2 1/2 x 1	63.50 x 25.40	3.625	92.1	3.375	85.7	SF1-RT-40-16-2-8	SF4-RT-40-16-2-8
2 1/2 x 1 1/2	63.50 x 38.10	3.625	92.1	3.375	85.7	SF1-RT-40-24-2-8	SF4-RT-40-24-2-8
2 1/2 x 2	63.50 x 50.80	3.625	92.1	3.375	85.7	SF1-RT-40-32-2-8	SF4-RT-40-32-2-8
3 x 1/2	76.20 x 12.70	3.875	98.4	3.625	92.1	SF1-RT-48-08-2-8	SF4-RT-48-08-2-8
3 x 3/4	76.20 x 19.05	3.875	98.4	3.625	92.1	SF1-RT-48-12-2-8	SF4-RT-48-12-2-8
3 x 1	76.20 x 25.40	3.875	98.4	3.625	92.1	SF1-RT-48-16-2-8	SF4-RT-48-16-2-8
3 x 1 1/2	76.20 x 38.10	3.875	98.4	3.625	92.1	SF1-RT-48-24-2-8	SF4-RT-48-24-2-8
3 x 2	76.20 x 50.80	3.875	98.4	3.625	92.1	SF1-RT-48-32-2-8	SF4-RT-48-32-2-8
3 x 2 1/2	76.20 x 63.50	3.875	98.4	3.625	92.1	SF1-RT-48-40-2-8	SF4-RT-48-40-2-8
4 x 1/2	101.60 x 12.70	4.750	120.7	4.125	104.8	SF1-RT-64-08-2-8	SF4-RT-64-08-2-8
4 x 3/4	101.60 x 19.05	4.750	120.7	4.125	104.8	SF1-RT-64-12-2-8	SF4-RT-64-12-2-8
4 x 1	101.60 x 25.40	4.750	120.7	4.125	104.8	SF1-RT-64-16-2-8	SF4-RT-64-16-2-8
4 x 1 1/2	101.60 x 38.10	4.750	120.7	4.125	104.8	SF1-RT-64-24-2-8	SF4-RT-64-24-2-8
4 x 2	101.60 x 50.80	4.750	120.7	4.375	111.1	SF1-RT-64-32-2-8	SF4-RT-64-32-2-8
4 x 2 1/2	101.60 x 63.50	4.750	120.7	4.375	111.1	SF1-RT-64-40-2-8	SF4-RT-64-40-2-8
4 x 3	101.60 x 76.20	4.750	120.7	4.375	111.1	SF1-RT-64-48-2-8	SF4-RT-64-48-2-8
6 x 3	152.40 x 76.20	7.125	181.0	5.375	136.5	SF1-RT-96-48-2-8	SF4-RT-96-48-2-8
6 x 4	152.40 x 101.60	7.125	181.0	5.750	146.1	SF1-RT-96-64-2-8	SF4-RT-96-64-2-8

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

Hygienic Clamp Joint: Short Outlet Reducing Tee



Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.250	57.2	1.000	25.4	SF1-RT-06-04-2-9	SF4-RT-06-04-2-9
1/2 x 1/4	12.70 x 6.35	2.375	60.3	1.000	25.4	SF1-RT-08-04-2-9	SF4-RT-08-04-2-9
1/2 x 3/8	12.70 x 9.53	2.375	60.3	1.000	25.4	SF1-RT-08-06-2-9	SF4-RT-08-06-2-9
3/4 x 1/4	19.05 x 6.35	2.500	63.5	1.000	25.4	SF1-RT-12-04-2-9	SF4-RT-12-04-2-9
3/4 x 3/8	19.05 x 9.53	2.500	63.5	1.000	25.4	SF1-RT-12-06-2-9	SF4-RT-12-06-2-9
3/4 x 1/2	19.05 x 12.70	2.500	63.5	1.000	25.4	SF1-RT-12-08-2-9	SF4-RT-12-08-2-9
1 x 1/4	25.40 x 6.35	2.625	66.7	1.125	28.6	SF1-RT-16-04-2-9	SF4-RT-16-04-2-9
1 x 3/8	25.40 x 9.53	2.625	66.7	1.125	28.6	SF1-RT-16-06-2-9	SF4-RT-16-06-2-9
1 x 1/2	25.40 x 12.70	2.625	66.7	1.125	28.6	SF1-RT-16-08-2-9	SF4-RT-16-08-2-9
1 x 3/4	25.40 x 19.05	2.625	66.7	1.125	28.6	SF1-RT-16-12-2-9	SF4-RT-16-12-2-9
1 1/2 x 1/2	38.10 x 12.70	2.875	73.0	1.375	34.9	SF1-RT-24-08-2-9	SF4-RT-24-08-2-9
1 1/2 x 3/4	38.10 x 19.05	2.875	73.0	1.375	34.9	SF1-RT-24-12-2-9	SF4-RT-24-12-2-9
1 1/2 x 1	38.10 x 25.40	2.875	73.0	1.375	34.9	SF1-RT-24-16-2-9	SF4-RT-24-16-2-9
2 x 1/2	50.80 x 12.70	3.375	85.7	1.625	41.3	SF1-RT-32-08-2-9	SF4-RT-32-08-2-9
2 x 3/4	50.80 x 19.05	3.375	85.7	1.625	41.3	SF1-RT-32-12-2-9	SF4-RT-32-12-2-9
2 x 1	50.80 x 25.40	3.375	85.7	1.625	41.3	SF1-RT-32-16-2-9	SF4-RT-32-16-2-9
2 x 1 1/2	50.80 x 38.10	3.375	85.7	1.625	41.3	SF1-RT-32-24-2-9	SF4-RT-32-24-2-9
2 1/2 x 1/2	63.50 x 12.70	3.625	92.1	1.875	47.6	SF1-RT-40-08-2-9	SF4-RT-40-08-2-9

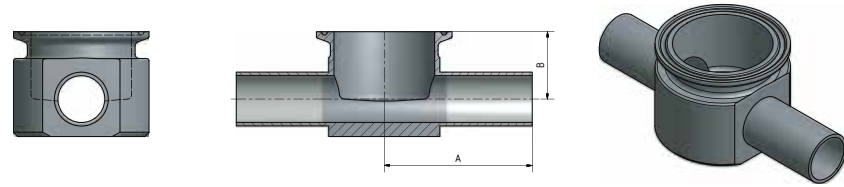
Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
2 1/2 x 3/4	63.50 x 19.05	3.625	92.1	1.875	47.6	SF1-RT-40-12-2-9	SF4-RT-40-12-2-9
2 1/2 x 1	63.50 x 25.40	3.625	92.1	1.875	47.6	SF1-RT-40-16-2-9	SF4-RT-40-16-2-9
2 1/2 x 1 1/2	63.50 x 38.10	3.625	92.1	1.875	47.6	SF1-RT-40-24-2-9	SF4-RT-40-24-2-9
2 1/2 x 2	63.50 x 50.80	3.625	92.1	1.875	47.6	SF1-RT-40-32-2-9	SF4-RT-40-32-2-9
3 x 1/2	76.20 x 12.70	3.875	98.4	2.125	54.0	SF1-RT-48-08-2-9	SF4-RT-48-08-2-9
3 x 3/4	76.20 x 19.05	3.875	98.4	2.125	54.0	SF1-RT-48-12-2-9	SF4-RT-48-12-2-9
3 x 1	76.20 x 25.40	3.875	98.4	2.125	54.0	SF1-RT-48-16-2-9	SF4-RT-48-16-2-9
3 x 1 1/2	76.20 x 38.10	3.875	98.4	2.125	54.0	SF1-RT-48-24-2-9	SF4-RT-48-24-2-9
3 x 2	76.20 x 50.80	3.875	98.4	2.125	54.0	SF1-RT-48-32-2-9	SF4-RT-48-32-2-9
3 x 2 1/2	76.20 x 63.50	3.875	98.4	2.125	54.0	SF1-RT-48-40-2-9	SF4-RT-48-40-2-9
4 x 1/2	101.60 x 12.70	4.750	120.7	2.625	66.7	SF1-RT-64-08-2-9	SF4-RT-64-08-2-9
4 x 3/4	101.60 x 19.05	4.750	120.7	2.625	66.7	SF1-RT-64-12-2-9	SF4-RT-64-12-2-9
4 x 1	101.60 x 25.40	4.750	120.7	2.625	66.7	SF1-RT-64-16-2-9	SF4-RT-64-16-2-9
4 x 1 1/2	101.60 x 38.10	4.750	120.7	2.625	66.7	SF1-RT-64-24-2-9	SF4-RT-64-24-2-9
4 x 2	101.60 x 50.80	4.750	120.7	2.625	66.7	SF1-RT-64-32-2-9	SF4-RT-64-32-2-9
4 x 2 1/2	101.60 x 63.50	4.750	120.7	2.625	66.7	SF1-RT-64-40-2-9	SF4-RT-64-40-2-9
4 x 3	101.60 x 76.20	4.750	120.7	2.625	66.7	SF1-RT-64-48-2-9	SF4-RT-64-48-2-9
6 x 1/2	152.40 x 12.70	7.125	181.0	3.625	92.1	SF1-RT-96-08-2-9	SF4-RT-96-08-2-9
6 x 3/4	152.40 x 19.05	7.125	181.0	3.625	92.1	SF1-RT-96-12-2-9	SF4-RT-96-12-2-9
6 x 1	152.40 x 25.40	7.125	181.0	3.625	92.1	SF1-RT-96-16-2-9	SF4-RT-96-16-2-9
6 x 1 1/2	152.40 x 38.10	7.125	181.0	3.625	92.1	SF1-RT-96-24-2-9	SF4-RT-96-24-2-9
6 x 2	152.40 x 50.80	7.125	181.0	3.625	92.1	SF1-RT-96-32-2-9	SF4-RT-96-32-2-9
6 x 2 1/2	152.40 x 63.50	7.125	181.0	3.625	92.1	SF1-RT-96-40-2-9	SF4-RT-96-40-2-9
6 x 3	152.40 x 76.20	7.125	181.0	3.625	92.1	SF1-RT-96-48-2-9	SF4-RT-96-48-2-9
6 x 4	152.40 x 101.60	7.125	181.0	3.750	95.3	SF1-RT-96-64-2-9	SF4-RT-96-64-2-9

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

DT-4.1.2-10
(DT-28)

Automatic Tube Weld: Instrument Tee

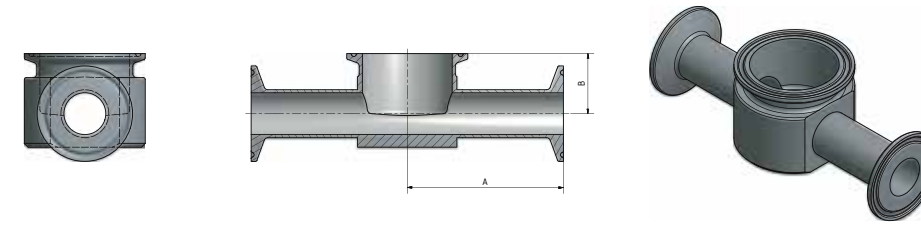


Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/2 x 1 1/2	12.70 x 38.10	2.500	63.5	0.875	22.2	SF1-RT-08-24-2-10	SF4-RT-08-24-2-10
3/4 x 1 1/2	19.05 x 38.10	2.500	63.5	1.000	25.4	SF1-RT-12-24-2-10	SF4-RT-12-24-2-10
1 x 1 1/2	25.40 x 38.10	2.500	63.5	1.125	28.6	SF1-RT-16-24-2-10	SF4-RT-16-24-2-10
1/2 x 2	12.70 x 50.80	2.750	69.9	1.000	25.4	SF1-RT-08-32-2-10	SF4-RT-08-32-2-10
3/4 x 2	19.05 x 50.80	2.750	69.9	1.125	28.6	SF1-RT-12-32-2-10	SF4-RT-12-32-2-10
1 x 2	25.40 x 50.80	2.750	69.9	1.250	31.8	SF1-RT-16-32-2-10	SF4-RT-16-32-2-10
1 1/2 x 2	38.10 x 50.80	2.750	69.9	1.500	38.1	SF1-RT-24-32-2-10	SF4-RT-24-32-2-10

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

DT-4.1.2-11
(DT-29)

Hygienic Clamp Joint: Instrument Tee



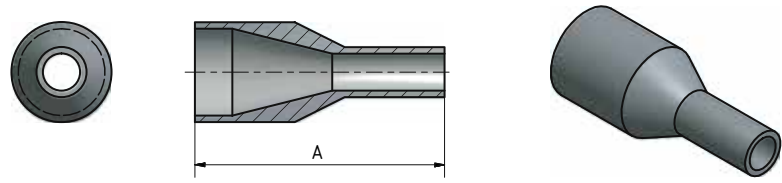
Nominal Size (d)		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/2 x 1 1/2	12.70 x 38.10	3.000	76.2	0.875	22.2	SF1-RT-08-24-2-11	SF4-RT-08-24-2-11
3/4 x 1 1/2	19.05 x 38.10	3.000	76.2	1.000	25.4	SF1-RT-12-24-2-11	SF4-RT-12-24-2-11
1 x 1 1/2	25.40 x 38.10	3.000	76.2	1.125	28.6	SF1-RT-16-24-2-11	SF4-RT-16-24-2-11
1/2 x 2	12.70 x 50.80	3.250	82.6	1.000	25.4	SF1-RT-08-32-2-11	SF4-RT-08-32-2-11
3/4 x 2	19.05 x 50.80	3.250	82.6	1.125	28.6	SF1-RT-12-32-2-11	SF4-RT-12-32-2-11
1 x 2	25.40 x 50.80	3.250	82.6	1.250	31.8	SF1-RT-16-32-2-11	SF4-RT-16-32-2-11
1 1/2 x 2	38.10 x 50.80	3.250	82.6	1.500	38.1	SF1-RT-24-32-2-11	SF4-RT-24-32-2-11

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

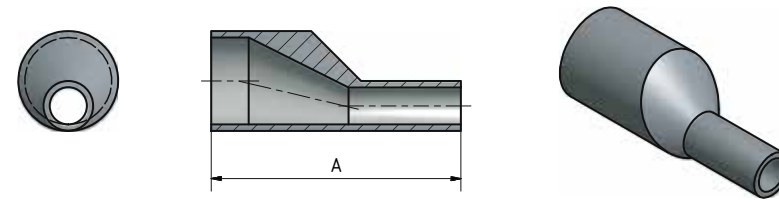
REDUCERS



Automatic Tube Weld: Concentric Reducer



Automatic Tube Weld: Eccentric Reducer



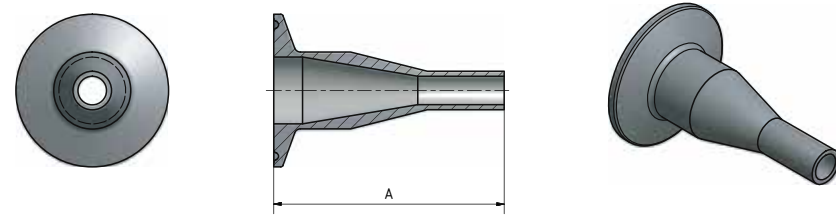
Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	1.625	41.3	SF1-CR-06-04-3-1	SF4-CR-06-04-3-1
1/2 x 1/4	12.70 x 6.35	1.875	47.6	SF1-CR-08-04-3-1	SF4-CR-08-04-3-1
1/2 x 3/8	12.70 x 9.53	1.875	47.6	SF1-CR-08-06-3-1	SF4-CR-08-06-3-1
3/4 x 3/8	19.05 x 9.53	2.000	50.8	SF1-CR-12-06-3-1	SF4-CR-12-06-3-1
3/4 x 1/2	19.05 x 12.70	2.125	54.0	SF1-CR-12-08-3-1	SF4-CR-12-08-3-1
1 x 1/2	25.40 x 12.70	2.500	63.5	SF1-CR-16-08-3-1	SF4-CR-16-08-3-1
1 x 3/4	25.40 x 19.05	2.125	54.0	SF1-CR-16-12-3-1	SF4-CR-16-12-3-1
1 1/2 x 3/4	38.10 x 19.05	3.000	76.2	SF1-CR-24-12-3-1	SF4-CR-24-12-3-1
1 1/2 x 1	38.10 x 25.40	2.500	63.5	SF1-CR-24-16-3-1	SF4-CR-24-16-3-1
2 x 1	50.80 x 25.40	3.375	85.7	SF1-CR-32-16-3-1	SF4-CR-32-16-3-1
2 x 1 1/2	50.80 x 38.10	2.500	63.5	SF1-CR-32-24-3-1	SF4-CR-32-24-3-1
2 1/2 x 1 1/2	63.50 x 38.10	3.375	85.7	SF1-CR-40-24-3-1	SF4-CR-40-24-3-1
2 1/2 x 2	63.50 x 50.80	2.500	63.5	SF1-CR-40-32-3-1	SF4-CR-40-32-3-1
3 x 1 1/2	76.20 x 38.10	4.250	108.0	SF1-CR-48-24-3-1	SF4-CR-48-24-3-1
3 x 2	76.20 x 50.80	3.375	85.7	SF1-CR-48-32-3-1	SF4-CR-48-32-3-1
3 x 2 1/2	76.20 x 63.50	2.625	66.7	SF1-CR-48-40-3-1	SF4-CR-48-40-3-1
4 x 2	101.60 x 50.80	5.125	130.2	SF1-CR-64-32-3-1	SF4-CR-64-32-3-1
4 x 2 1/2	101.60 x 63.50	4.250	108.0	SF1-CR-64-40-3-1	SF4-CR-64-40-3-1
4 x 3	101.60 x 76.20	3.875	98.4	SF1-CR-64-48-3-1	SF4-CR-64-48-3-1
6 x 3	152.40 x 76.20	7.250	184.2	SF1-CR-96-48-3-1	SF4-CR-96-48-3-1
6 x 4	152.40 x 101.60	5.625	142.9	SF1-CR-96-64-3-1	SF4-CR-96-64-3-1

Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	1.625	41.3	SF1-ER-06-04-3-1	SF4-ER-06-04-3-1
1/2 x 1/4	12.70 x 6.35	1.875	47.6	SF1-ER-08-04-3-1	SF4-ER-08-04-3-1
1/2 x 3/8	12.70 x 9.53	1.875	47.6	SF1-ER-08-06-3-1	SF4-ER-08-06-3-1
3/4 x 3/8	19.05 x 9.53	2.000	50.8	SF1-ER-12-06-3-1	SF4-ER-12-06-3-1
3/4 x 1/2	19.05 x 12.70	2.125	54.0	SF1-ER-12-08-3-1	SF4-ER-12-08-3-1
1 x 1/2	25.40 x 12.70	2.500	63.5	SF1-ER-16-08-3-1	SF4-ER-16-08-3-1
1 x 3/4	25.40 x 19.05	2.125	54.0	SF1-ER-16-12-3-1	SF4-ER-16-12-3-1
1 1/2 x 3/4	38.10 x 19.05	3.000	76.2	SF1-ER-24-12-3-1	SF4-ER-24-12-3-1
1 1/2 x 1	38.10 x 25.40	2.500	63.5	SF1-ER-24-16-3-1	SF4-ER-24-16-3-1
2 x 1	50.80 x 25.40	3.375	85.7	SF1-ER-32-16-3-1	SF4-ER-32-16-3-1
2 x 1 1/2	50.80 x 38.10	2.500	63.5	SF1-ER-32-24-3-1	SF4-ER-32-24-3-1
2 1/2 x 1 1/2	63.50 x 38.10	3.375	85.7	SF1-ER-40-24-3-1	SF4-ER-40-24-3-1
2 1/2 x 2	63.50 x 50.80	2.500	63.5	SF1-ER-40-32-3-1	SF4-ER-40-32-3-1
3 x 1 1/2	76.20 x 38.10	4.250	108.0	SF1-ER-48-24-3-1	SF4-ER-48-24-3-1
3 x 2	76.20 x 50.80	3.375	85.7	SF1-ER-48-32-3-1	SF4-ER-48-32-3-1
3 x 2 1/2	76.20 x 63.50	2.625	66.7	SF1-ER-48-40-3-1	SF4-ER-48-40-3-1
4 x 2	101.60 x 50.80	5.125	130.2	SF1-ER-64-32-3-1	SF4-ER-64-32-3-1
4 x 2 1/2	101.60 x 63.50	4.250	108.0	SF1-ER-64-40-3-1	SF4-ER-64-40-3-1
4 x 3	101.60 x 76.20	3.875	98.4	SF1-ER-64-48-3-1	SF4-ER-64-48-3-1
6 x 3	152.40 x 76.20	7.250	184.2	SF1-ER-96-48-3-1	SF4-ER-96-48-3-1
6 x 4	152.40 x 101.60	5.625	142.9	SF1-ER-96-64-3-1	SF4-ER-96-64-3-1

Further dimensions on request. Subject to alteration.

Further dimensions on request. Subject to alteration.

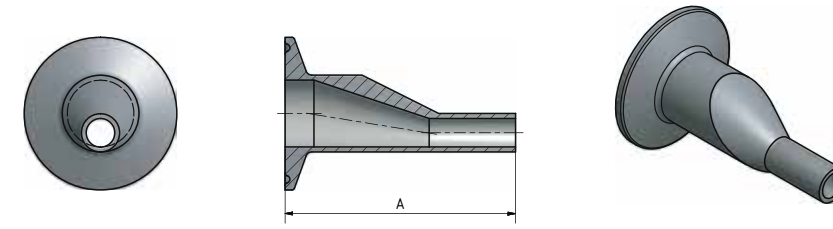
Hygienic Clamp Joint: Tube Weld Concentric Reducer



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.125	54.0	SF1-CR-06-04-3-2	SF4-CR-06-04-3-2
1/2 x 1/4	12.70 x 6.35	2.375	60.3	SF1-CR-08-04-3-2	SF4-CR-08-04-3-2
1/2 x 3/8	12.70 x 9.53	2.375	60.3	SF1-CR-08-06-3-2	SF4-CR-08-06-3-2
3/4 x 3/8	19.05 x 9.53	2.500	63.5	SF1-CR-12-06-3-2	SF4-CR-12-06-3-2
3/4 x 1/2	19.05 x 12.70	2.625	66.7	SF1-CR-12-08-3-2	SF4-CR-12-08-3-2
1 x 1/2	25.40 x 12.70	3.000	76.2	SF1-CR-16-08-3-2	SF4-CR-16-08-3-2
1 x 3/4	25.40 x 19.05	2.625	66.7	SF1-CR-16-12-3-2	SF4-CR-16-12-3-2
1 1/2 x 3/4	38.10 x 19.05	3.500	88.9	SF1-CR-24-12-3-2	SF4-CR-24-12-3-2
1 1/2 x 1	38.10 x 25.40	3.000	76.2	SF1-CR-24-16-3-2	SF4-CR-24-16-3-2
2 x 1	50.80 x 25.40	3.875	98.4	SF1-CR-32-16-3-2	SF4-CR-32-16-3-2
2 x 1 1/2	50.80 x 38.10	3.000	76.2	SF1-CR-32-24-3-2	SF4-CR-32-24-3-2
2 1/2 x 1 1/2	63.50 x 38.10	3.875	98.4	SF1-CR-40-24-3-2	SF4-CR-40-24-3-2
2 1/2 x 2	63.50 x 50.80	3.000	76.2	SF1-CR-40-32-3-2	SF4-CR-40-32-3-2
3 x 1 1/2	76.20 x 38.10	4.750	120.7	SF1-CR-48-24-3-2	SF4-CR-48-24-3-2
3 x 2	76.20 x 50.80	3.875	98.4	SF1-CR-48-32-3-2	SF4-CR-48-32-3-2
3 x 2 1/2	76.20 x 63.50	3.125	79.4	SF1-CR-48-40-3-2	SF4-CR-48-40-3-2
4 x 2	101.60 x 50.80	5.750	146.0	SF1-CR-64-32-3-2	SF4-CR-64-32-3-2
4 x 2 1/2	101.60 x 63.50	4.875	123.8	SF1-CR-64-40-3-2	SF4-CR-64-40-3-2
4 x 3	101.60 x 76.20	4.500	114.3	SF1-CR-64-48-3-2	SF4-CR-64-48-3-2
6 x 3	152.40 x 76.20	8.000	203.2	SF1-CR-96-48-3-2	SF4-CR-96-48-3-2
6 x 4	152.40 x 101.60	6.375	161.9	SF1-CR-96-64-3-2	SF4-CR-96-64-3-2

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

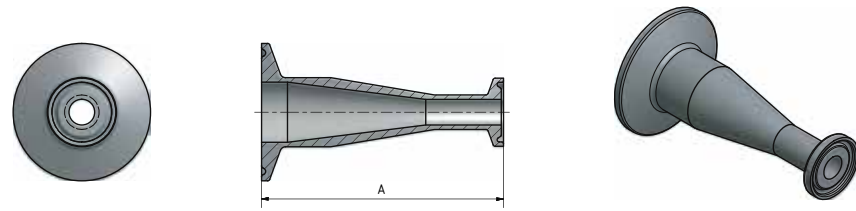
Hygienic Clamp Joint: Tube Weld Eccentric Reducer



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.125	54.0	SF1-ER-06-04-3-2	SF4-ER-06-04-3-2
1/2 x 1/4	12.70 x 6.35	2.375	60.3	SF1-ER-08-04-3-2	SF4-ER-08-04-3-2
1/2 x 3/8	12.70 x 9.53	2.375	60.3	SF1-ER-08-06-3-2	SF4-ER-08-06-3-2
3/4 x 3/8	19.05 x 9.53	2.500	63.5	SF1-ER-12-06-3-2	SF4-ER-12-06-3-2
3/4 x 1/2	19.05 x 12.70	2.625	66.7	SF1-ER-12-08-3-2	SF4-ER-12-08-3-2
1 x 1/2	25.40 x 12.70	3.000	76.2	SF1-ER-16-08-3-2	SF4-ER-16-08-3-2
1 x 3/4	25.40 x 19.05	2.625	66.7	SF1-ER-16-12-3-2	SF4-ER-16-12-3-2
1 1/2 x 3/4	38.10 x 19.05	3.500	88.9	SF1-ER-24-12-3-2	SF4-ER-24-12-3-2
1 1/2 x 1	38.10 x 25.40	3.000	76.2	SF1-ER-24-16-3-2	SF4-ER-24-16-3-2
2 x 1	50.80 x 25.40	3.875	98.4	SF1-ER-32-16-3-2	SF4-ER-32-16-3-2
2 x 1 1/2	50.80 x 38.10	3.000	76.2	SF1-ER-32-24-3-2	SF4-ER-32-24-3-2
2 1/2 x 1 1/2	63.50 x 38.10	3.875	98.4	SF1-ER-40-24-3-2	SF4-ER-40-24-3-2
2 1/2 x 2	63.50 x 50.80	3.000	76.2	SF1-ER-40-32-3-2	SF4-ER-40-32-3-2
3 x 1 1/2	76.20 x 38.10	4.750	120.7	SF1-ER-48-24-3-2	SF4-ER-48-24-3-2
3 x 2	76.20 x 50.80	3.875	98.4	SF1-ER-48-32-3-2	SF4-ER-48-32-3-2
3 x 2 1/2	76.20 x 63.50	3.125	79.4	SF1-ER-48-40-3-2	SF4-ER-48-40-3-2
4 x 2	101.60 x 50.80	5.750	146.0	SF1-ER-64-32-3-2	SF4-ER-64-32-3-2
4 x 2 1/2	101.60 x 63.50	4.875	123.8	SF1-ER-64-40-3-2	SF4-ER-64-40-3-2
4 x 3	101.60 x 76.20	4.500	114.3	SF1-ER-64-48-3-2	SF4-ER-64-48-3-2
6 x 3	152.40 x 76.20	8.000	203.2	SF1-ER-96-48-3-2	SF4-ER-96-48-3-2
6 x 4	152.40 x 101.60	6.375	161.9	SF1-ER-96-64-3-2	SF4-ER-96-64-3-2

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

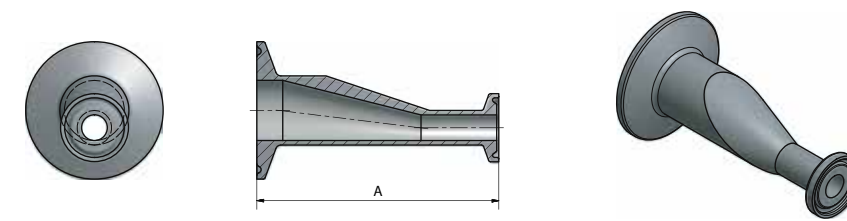
Hygienic Clamp Joint: Concentric Reducer



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.625	66.7	SF1-CR-06-04-3-3	SF4-CR-06-04-3-3
1/2 x 1/4	12.70 x 6.35	2.875	73.0	SF1-CR-08-04-3-3	SF4-CR-08-04-3-3
1/2 x 3/8	12.70 x 9.53	2.875	73.0	SF1-CR-08-06-3-3	SF4-CR-08-06-3-3
3/4 x 3/8	19.05 x 9.53	3.000	76.2	SF1-CR-12-06-3-3	SF4-CR-12-06-3-3
3/4 x 1/2	19.05 x 12.70	3.125	79.4	SF1-CR-12-08-3-3	SF4-CR-12-08-3-3
1 x 1/2	25.40 x 12.70	3.500	88.9	SF1-CR-16-08-3-3	SF4-CR-16-08-3-3
1 x 3/4	25.40 x 19.05	3.125	79.4	SF1-CR-16-12-3-3	SF4-CR-16-12-3-3
1 1/2 x 3/4	38.10 x 19.05	4.000	101.6	SF1-CR-24-12-3-3	SF4-CR-24-12-3-3
1 1/2 x 1	38.10 x 25.40	3.500	88.9	SF1-CR-24-16-3-3	SF4-CR-24-16-3-3
2 x 1	50.80 x 25.40	4.375	111.1	SF1-CR-32-16-3-3	SF4-CR-32-16-3-3
2 x 1 1/2	50.80 x 38.10	3.500	88.9	SF1-CR-32-24-3-3	SF4-CR-32-24-3-3
2 1/2 x 1 1/2	63.50 x 38.10	4.375	111.1	SF1-CR-40-24-3-3	SF4-CR-40-24-3-3
2 1/2 x 2	63.50 x 50.80	3.500	88.9	SF1-CR-40-32-3-3	SF4-CR-40-32-3-3
3 x 1 1/2	76.20 x 38.10	5.250	133.4	SF1-CR-48-24-3-3	SF4-CR-48-24-3-3
3 x 2	76.20 x 50.80	4.375	111.1	SF1-CR-48-32-3-3	SF4-CR-48-32-3-3
3 x 2 1/2	76.20 x 63.50	3.625	92.1	SF1-CR-48-40-3-3	SF4-CR-48-40-3-3
4 x 2	101.60 x 50.80	6.250	158.8	SF1-CR-64-32-3-3	SF4-CR-64-32-3-3
4 x 2 1/2	101.60 x 63.50	5.375	136.5	SF1-CR-64-40-3-3	SF4-CR-64-40-3-3
4 x 3	101.60 x 76.20	5.000	127.0	SF1-CR-64-48-3-3	SF4-CR-64-48-3-3
6 x 3	152.40 x 76.20	8.500	215.9	SF1-CR-96-48-3-3	SF4-CR-96-48-3-3
6 x 4	152.40 x 101.60	7.000	177.8	SF1-CR-96-64-3-3	SF4-CR-96-64-3-3

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

Hygienic Clamp Joint: Eccentric Reducer



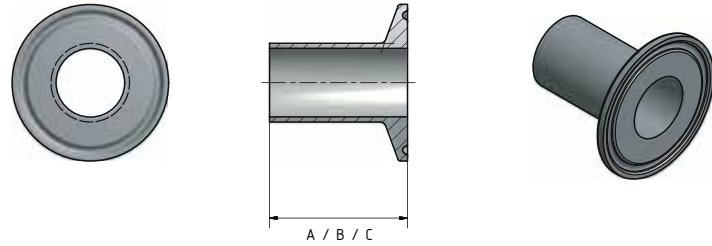
Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.625	66.7	SF1-ER-06-04-3-3	SF4-ER-06-04-3-3
1/2 x 1/4	12.70 x 6.35	2.875	73.0	SF1-ER-08-04-3-3	SF4-ER-08-04-3-3
1/2 x 3/8	12.70 x 9.53	2.875	73.0	SF1-ER-08-06-3-3	SF4-ER-08-06-3-3
3/4 x 3/8	19.05 x 9.53	3.000	76.2	SF1-ER-12-06-3-3	SF4-ER-12-06-3-3
3/4 x 1/2	19.05 x 12.70	3.125	79.4	SF1-ER-12-08-3-3	SF4-ER-12-08-3-3
1 x 1/2	25.40 x 12.70	3.500	88.9	SF1-ER-16-08-3-3	SF4-ER-16-08-3-3
1 x 3/4	25.40 x 19.05	3.125	79.4	SF1-ER-16-12-3-3	SF4-ER-16-12-3-3
1 1/2 x 3/4	38.10 x 19.05	4.000	101.6	SF1-ER-24-12-3-3	SF4-ER-24-12-3-3
1 1/2 x 1	38.10 x 25.40	3.500	88.9	SF1-ER-24-16-3-3	SF4-ER-24-16-3-3
2 x 1	50.80 x 25.40	4.375	111.1	SF1-ER-32-16-3-3	SF4-ER-32-16-3-3
2 x 1 1/2	50.80 x 38.10	3.500	88.9	SF1-ER-32-24-3-3	SF4-ER-32-24-3-3
2 1/2 x 1 1/2	63.50 x 38.10	4.375	111.1	SF1-ER-40-24-3-3	SF4-ER-40-24-3-3
2 1/2 x 2	63.50 x 50.80	3.500	88.9	SF1-ER-40-32-3-3	SF4-ER-40-32-3-3
3 x 1 1/2	76.20 x 38.10	5.250	133.4	SF1-ER-48-24-3-3	SF4-ER-48-24-3-3
3 x 2	76.20 x 50.80	4.375	111.1	SF1-ER-48-32-3-3	SF4-ER-48-32-3-3
3 x 2 1/2	76.20 x 63.50	3.625	92.1	SF1-ER-48-40-3-3	SF4-ER-48-40-3-3
4 x 2	101.60 x 50.80	6.250	158.8	SF1-ER-64-32-3-3	SF4-ER-64-32-3-3
4 x 2 1/2	101.60 x 63.50	5.375	136.5	SF1-ER-64-40-3-3	SF4-ER-64-40-3-3
4 x 3	101.60 x 76.20	5.000	127.0	SF1-ER-64-48-3-3	SF4-ER-64-48-3-3
6 x 3	152.40 x 76.20	8.500	215.9	SF1-ER-96-48-3-3	SF4-ER-96-48-3-3
6 x 4	152.40 x 101.60	7.000	177.8	SF1-ER-96-64-3-3	SF4-ER-96-64-3-3

Further dimensions on request. Subject to alteration. Clamp dimensions see table DT-4.1.4-1.

FERRULES AND CAPS



Automatic Tube Weld: Ferrule



Nominal Size (d)		A		Clamp Dimensions		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	0.984	25.0	SF1-FA-04-4-1	SF4-FA-04-4-1
3/8	9.53	1.750	44.5	0.984	25.0	SF1-FA-06-4-1	SF4-FA-06-4-1
1/2	12.70	1.750	44.5	0.984	25.0	SF1-FA-08-4-1	SF4-FA-08-4-1
3/4	19.05	1.750	44.5	0.984	25.0	SF1-FA-12-4-1	SF4-FA-12-4-1
1	25.40	1.750	44.5	1.984	50.5	SF1-FA-16-4-1	SF4-FA-16-4-1
1 1/2	38.10	1.750	44.5	1.984	50.5	SF1-FA-24-4-1	SF4-FA-24-4-1
2	50.80	2.250	57.2	2.516	64.0	SF1-FA-32-4-1	SF4-FA-32-4-1
2 1/2	63.50	2.250	57.2	3.047	77.5	SF1-FA-40-4-1	SF4-FA-40-4-1
3	76.20	2.250	57.2	3.579	91.0	SF1-FA-48-4-1	SF4-FA-48-4-1
4	101.60	2.250	57.2	4.682	119.0	SF1-FA-64-4-1	SF4-FA-64-4-1
6	152.40	3.000	76.2	6.570	167.0	SF1-FA-96-4-1	SF4-FA-96-4-1

Further dimensions on request. Subject to alteration.

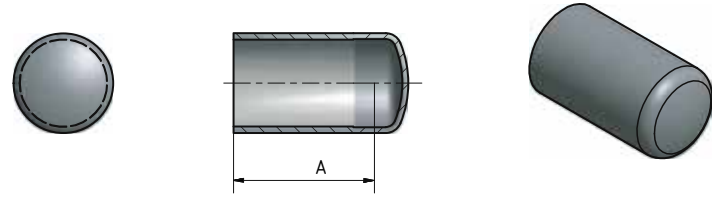
Automatic Tube Weld: Ferrule

Nominal Size (d)		B		Clamp Dimensions		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.130	28.7	0.984	25.0	SF1-FB-04-4-1	SF4-FB-04-4-1
3/8	9.53	1.130	28.7	0.984	25.0	SF1-FB-06-4-1	SF4-FB-06-4-1
1/2	12.70	1.130	28.7	0.984	25.0	SF1-FB-08-4-1	SF4-FB-08-4-1
3/4	19.05	1.130	28.7	0.984	25.0	SF1-FB-12-4-1	SF4-FB-12-4-1
1	25.40	1.130	28.7	1.984	50.5	SF1-FB-16-4-1	SF4-FB-16-4-1
1 1/2	38.10	1.130	28.7	1.984	50.5	SF1-FB-24-4-1	SF4-FB-24-4-1
2	50.80	1.130	28.7	2.516	64.0	SF1-FB-32-4-1	SF4-FB-32-4-1
2 1/2	63.50	1.130	28.7	3.047	77.5	SF1-FB-40-4-1	SF4-FB-40-4-1
3	76.20	1.130	28.7	3.579	91.0	SF1-FB-48-4-1	SF4-FB-48-4-1
4	101.60	1.130	28.7	4.682	119.0	SF1-FB-64-4-1	SF4-FB-64-4-1
6	152.40	1.500	38.1	6.570	167.0	SF1-FB-96-4-1	SF4-FB-96-4-1

Nominal Size (d)		C		Clamp Dimensions		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	0.500	12.7	0.984	25.0	SF1-FC-04-4-1	SF4-FC-04-4-1
3/8	9.53	0.500	12.7	0.984	25.0	SF1-FC-06-4-1	SF4-FC-06-4-1
1/2	12.70	0.500	12.7	0.984	25.0	SF1-FC-08-4-1	SF4-FC-08-4-1
3/4	19.05	0.500	12.7	0.984	25.0	SF1-FC-12-4-1	SF4-FC-12-4-1
1	25.40	0.500	12.7	1.984	50.5	SF1-FC-16-4-1	SF4-FC-16-4-1
1 1/2	38.10	0.500	12.7	1.984	50.5	SF1-FC-24-4-1	SF4-FC-24-4-1
2	50.80	0.500	12.7	2.516	64.0	SF1-FC-32-4-1	SF4-FC-32-4-1
2 1/2	63.50	0.500	12.7	3.047	77.5	SF1-FC-40-4-1	SF4-FC-40-4-1
3	76.20	0.500	12.7	3.579	91.0	SF1-FC-48-4-1	SF4-FC-48-4-1
4	101.60	0.625	15.9	4.682	119.0	SF1-FC-64-4-1	SF4-FC-64-4-1
6	152.40	0.750	19.05	6.570	167.0	SF1-FC-96-4-1	SF4-FC-96-4-1

Further dimensions on request. Subject to alteration.

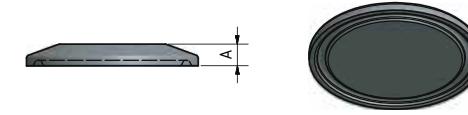
Automatic Tube Weld: Cap



Nominal Size (d)		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/2	12.70	1.500	38.10	SF1-WC-08-5-1	SF4-WC-08-5-1
3/4	19.05	1.500	38.10	SF1-WC-12-5-1	SF4-WC-12-5-1
1	25.40	1.500	38.10	SF1-WC-16-5-1	SF4-WC-16-5-1
1 1/2	38.10	1.500	38.10	SF1-WC-24-5-1	SF4-WC-24-5-1
2	50.80	1.500	38.10	SF1-WC-32-5-1	SF4-WC-32-5-1
2 1/2	63.50	1.500	38.10	SF1-WC-40-5-1	SF4-WC-40-5-1
3	76.20	1.750	44.50	SF1-WC-48-5-1	SF4-WC-48-5-1
4	101.60	2.000	50.80	SF1-WC-64-5-1	SF4-WC-64-5-1
6	152.40	2.500	63.50	SF1-WC-96-5-1	SF4-WC-96-5-1

Further dimensions on request. Subject to alteration.

Hygienic Clamp Joint: Solid End Cap



Nominal Size (d)		A		Flange Dimensions		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	0.187	4.7	0.984	25.0	SF1-FTC-04-12-5-2	SF4-FTC-04-12-5-2
3/8	9.53	0.187	4.7	0.984	25.0	SF1-FTC-04-12-5-2	SF4-FTC-04-12-5-2
1/2	12.70	0.187	4.7	0.984	25.0	SF1-FTC-04-12-5-2	SF4-FTC-04-12-5-2
3/4	19.05	0.187	4.7	0.984	25.0	SF1-FTC-04-12-5-2	SF4-FTC-04-12-5-2
1	25.40	0.250	6.4	1.984	50.5	SF1-FTC-16-24-5-2	SF4-FTC-16-24-5-2
1 1/2	38.10	0.250	6.4	1.984	50.5	SF1-FTC-16-24-5-2	SF4-FTC-16-24-5-2
2	50.80	0.250	6.4	2.516	64.0	SF1-FTC-32-5-2	SF4-FTC-32-5-2
2 1/2	63.50	0.250	6.4	3.047	77.5	SF1-FTC-40-5-2	SF4-FTC-40-5-2
3	76.20	0.250	6.4	3.579	91.0	SF1-FTC-48-5-2	SF4-FTC-48-5-2
4	101.60	0.312	7.9	4.682	119.0	SF1-FTC-64-5-2	SF4-FTC-64-5-2
6	152.40	0.437	11.1	6.570	167.0	SF1-FTC-96-5-2	SF4-FTC-96-5-2

Further dimensions on request. Subject to alteration.

Standard Gaskets

All standard sanitary gaskets according to DIN 32676 are moulded from FDA compliant compounds and fulfil USP class VI.

Total Traceability for the complete system

Dockweiler Gaskets are clearly, dried and permanently marked. Mix-ups after removal from the packaging are eliminated.

Lasermarking information:

DOCKWEILER / DW-No.

Materials



Material	PTFE	FKM	PTFE / FKM	EPDM	VMQ	PTFE / 316L	PTFE / EPDM
Material acc. to ISO 1629 / ASTM D1418	Polytetrafluoroethylene / Polytetrafluor-ethylen	Perfluorinated rubber / Perfluorierter Kautschuk	PTFE enveloped FKM / PTFE ummanteltes FKM	Ethylene propylene diene rubber / Ethylen-Propylen-Dien-Kautschuk	Platinum cured silicone rubber / Platin vernetztes Silikon-Kautschuk	Composite of stainless steel 316L and PTFE / Komposit aus Edelstahl 316L und PTFE	PTFE enveloped EPDM / PTFE ummanteltes EPDM
Trade name	Teflon® Dyneon®	Viton® Fluorel®		Buna® Nordel®	Silopren® Silastic®		
Diameter	Flangesize ≤ 25 mm: Gasket without Lip, Flangesize ≥ 34 mm: Gasket with Lip ISO 13.5 mm – 114.3 mm Metric 6.00 mm – 154.00 mm Imperial 1/4" – 6"						
Temperature variations	-	+	0	+	+	+	+
Continuous steam	+	+	+	+	+	+	+
Non-polar solvents	+	+	+	-	-	+	+
Polar solvents	+	-	+	-	-	+	+
Acid and active oxygen	+	+	+	+	+	+	+
Acid	+	+	+	+	+	+	+
Alkaline	+	+	+	+	-	+	+
Hardness	68 Shore A	82 Shore A	45 Shore A	45 Shore A	65 – 75 Shore A	80 Shore A	70 +/- 5 Shore A
Density	3.45 g/cm ³	1.28 g/cm ³	1.9 g/cm ³	2.1 g/cm ³	1.2 g/cm ³	1.85 g/cm ³	1.25 g/cm ³
Compression set	18.5 %	13 %	15 %	10 %	20 %	7 %	5 %
	70 Hour / Std.	24 Hour / Std.	24 Hour / Std.	24 Hour / Std.	24 Hour / Std.	24 Hour / Std.	24 Hour / Std.
	200 °C 392 °F	175 °C 347 °F	175 °C 347 °F	150 °C 302 °F	175 °C 347 °F	150 °C 302 °F	175 °C 347 °F
Temperature range	-15 to 230 °C 5 to 446 °F	-20 to 210 °C -4 to 410 °F	-60 to 180 °C -76 to 356 °F	-40 to 140 °C -40 to 284 °F	-60 to 200 °C -76 to 392 °F	-70 to 260 °C -94 to 500 °F	-70 to 180 °C -94 to 356 °F

Gaskets

Nominal Size	Flange Dimensions	PTFE	FKM	PTFE/FKM	EPDM	VMQ
1/4"	25.00	GK-IMP-04-P	GK-IMP-04-F	GK-IMP-04-FP	GK-IMP-04-E	GK-IMP-04-V
3/8"	25.00	GK-IMP-06-P	GK-IMP-06-F	GK-IMP-06-FP	GK-IMP-06-E	GK-IMP-06-V
1/2"	25.00	GK-IMP-08-P	GK-IMP-08-F	GK-IMP-08-FP	GK-IMP-08-E	GK-IMP-08-V
3/4"	25.00	GK-IMP-12-P	GK-IMP-12-F	GK-IMP-12-FP	GK-IMP-12-E	GK-IMP-12-V
1"	50.50	GK-IMP-16-P	GK-IMP-16-F	GK-IMP-16-FP	GK-IMP-16-E	GK-IMP-16-V
1 1/2"	50.50	GK-IMP-24-P	GK-IMP-24-F	GK-IMP-24-FP	GK-IMP-24-E	GK-IMP-24-V
2"	64.00	GK-IMP-32-P	GK-IMP-32-F	GK-IMP-32-FP	GK-IMP-32-E	GK-IMP-32-V
2 1/2"	77.50	GK-IMP-40-P	GK-IMP-40-F	GK-IMP-40-FP	GK-IMP-40-E	GK-IMP-40-V
3"	91.00	GK-IMP-48-P	GK-IMP-48-F	GK-IMP-48-FP	GK-IMP-48-E	GK-IMP-48-V
4"	119.00	GK-IMP-64-P	GK-IMP-64-F	GK-IMP-64-FP	GK-IMP-64-E	GK-IMP-64-V
6"	167.00	GK-IMP-96-P	GK-IMP-96-F	GK-IMP-96-FP	GK-IMP-96-E	GK-IMP-96-V

The following gaskets are optional available beside the standard gaskets:



Screen Gaskets
Screen Gaskets provide prefiltration for critical membrane filters, coalescence of water vapour from process exhaust lines, particulate removal before fill and finish and more.



Controlled Compression Gaskets
The controlled Compression Gaskets cannot be overtightened but controls clamp compression to exactly the correct amount, allowing the properly positioned gasket to make a perfect surface I.D. seal with ferrules.



Smart Gasket
The Smart Gasket values are proven when validating sterility in high purity pharmaceutical systems.



Orifice Plates
Orifice Plates advance your system's performance, adjust flow rates, balance backflow and equalize back pressure during SIP procedures.



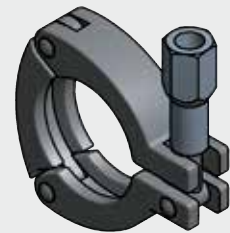
Nominal Size	Flange Diameter [mm]	Standard Clamp acc. to ASME BPE
1/4"	25.00	CLAMP-04-12
3/8"	25.00	CLAMP-04-12
1/2"	25.00	CLAMP-04-12
3/4"	25.00	CLAMP-04-12
1"	50.50	CLAMP-16-24
1 1/2"	50.50	CLAMP-16-24
2"	64.00	CLAMP-32
2 1/2"	77.50	CLAMP-40
3"	91.00	CLAMP-48
4"	119.00	CLAMP-64
6"	167.00	CLAMP-96

SPECIAL CLAMPS

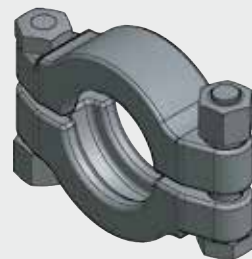
3-SEGMENT-CLAMP



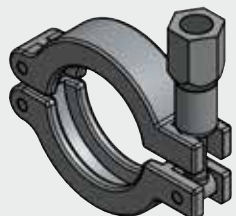
3-SEGMENT-CLAMP WITH HEXAGON



HIGH PRESSURE CLAMP



CLAMP WITH HEXAGON



SAFETY CLAMP



INFORMATION





AD 2000 HPO



DIN EN ISO 9001



DIN EN ISO 14001



DGR 97 23 EG and AD 2000 WO



ASME BPE

Further certificates are available on our website:

www.dockweiler.com

Elements in stainless steels

Steel is one of the most commonly used alloys and consists mainly of iron. In general the carbon content is less than 2%. It contains also other components that may emerge due to the manufacturing process or are added to obtain certain characteristics.

Stainless steels according to EN 10020 are alloyed and unalloyed steels with a special purity level like for example steels with a sulphur and phosphorous content (a so-called iron companion) that is not higher than 0.025%.

Stainless steels are characterized by an amount of chromium of more than 10.5%. Due to that high chromium content a protective and dense passive layer of chromium oxide establishes on the material surface. The term "stainless steel" is therefore misleading since materials cannot be stainless in any field of application.

The right choice of the convenient material is crucial for its application. A variety of steels and alloys have been developed to counteract against the possible forms of corrosion in the different industry branches. The requirement for a suitable, corrosion-resistant use of a material is still the appropriate manufacturing.

Regarding the application it is important to know and to assess besides the material also the process parameter like medium, concentration, time and temperature.

The most common elements

Aluminium (Al) has a high affinity to oxygen. Due to that it reacts while melting with dissolved oxygen. Therefore it is considered one of the most common deoxidizer in the manufacture of steel. Aluminium is also used to produce a fine-grained structure and to control the particle size.

Carbon (C): The parent metal iron is alloyed with carbon to produce steel. Carbon increases the severity and the solidity and makes therefore a variety of them possible. However the carbon has no effect on the corrosion properties of the steel.

Chromium (Cr) is alloyed in order to increase the corrosion resistance. Starting from a chromium content of 10.5% a passive layer is formed. This layer is under the absorption of oxygen a very thin surface layer which passivates the parent material and prevents corrosion under normal atmospheric conditions. If the chromium content is increased to 17 up to 20 % as in austenitic stainless steels or to 26 up to 29 % as in the new ferritic stainless steels it leads to a considerable stabilization of the passive layer. "Stainless steel" contains at least about 10.5 % chromium. Chromium also influences the Pitting Resistance Equivalent Number (PREN) which allows an estimation of the corrosion resistance of stainless steel.

Copper (Cu) is added to some higher alloyed material in order to increase the corrosion resistance towards salt and sulfuric acid.

Manganese (Mn) creates mainly three effects:

1. It is a mild antioxidant that carries as a cleaning detergent sulphur and oxygen from the melt into the slag.
2. It increases the hardenability and ultimate strength.
3. It reduces the toughness.

Increased concentrations of manganese cause primarily while welding electro-polished components the so-called manganese flags that generate

particle and discoloration. Especially in UHP applications such manganese flags cause larger problems. Manganese is therefore in the field of the semiconductor industry an unwanted accompanying component.

Molybdenum (Mo) in combination with chromium in stainless steels molybdenum provides a stabilization of the passive layer primarily in chloride-containing environments. As a result it increases in austenitic chromium-nickel steels the resistance against pitting corrosion especially through chlorides as well as the corrosion resistance in sulphuric and phosphoric acid.

Nickel (Ni) as an austenite is often used in combination with other alloying elements, particularly chromium and molybdenum. The standard stainless steels contain between 8% and 14% nickel. In highly alloyed materials such as 1.4539 (904L) or 254 SMO the proportion is higher. Nickel increases the resistance against reducing media and provides in austenitic alloys for ideal ductility, strong break resistance also at cryogenic temperatures and good weldability.

Nitrogen (N) is a strong austenite forming element. In higher alloyed stainless steels nitrogen has significant influence on the resistance towards pitting and crevice corrosion. Nitrogen achieves with the above mentioned PREN = % Cr + 3.3 % Mo + X % N at duplex steels the factor 16 and with highly alloyed austenite (e.g. 254 SMO) the factor 30.

Phosphorus (P): Although phosphorus increases the tensile strength of steel and improves machinability it is usually regarded as an undesirable impurity because of its effect of making the steel brittle and like Sulphur leads to hot cracks. Most steels do not exceed 0.05% phosphorus.

Silicon (Si) is available in a range of 0.05 / 0.35%. It acts like manganese and aluminium as a powerful reducing agent.

Sulphur(S) in small amounts sulphur improves the machinability of steel however it does not make it brittle. Hot shortness is reduced by the addition of manganese, which combines with the sulphur to form manganese sulphide. As manganese sulphide has a higher melting point than iron sulphide which would form if manganese was not present "Red Shortness" (break down of the grain boundaries through iron sulphide) is highly reduced during the process of hot working.

Sulphur reduces the corrosion resistance of the stainless steels. Sulphur is in austenitic stainless steels a strong surfactant element and thus has influence on the mass flow in the weld pool. As consequence smooth or rough welds or even an arc deviation (called Marangoni Effect) arise.

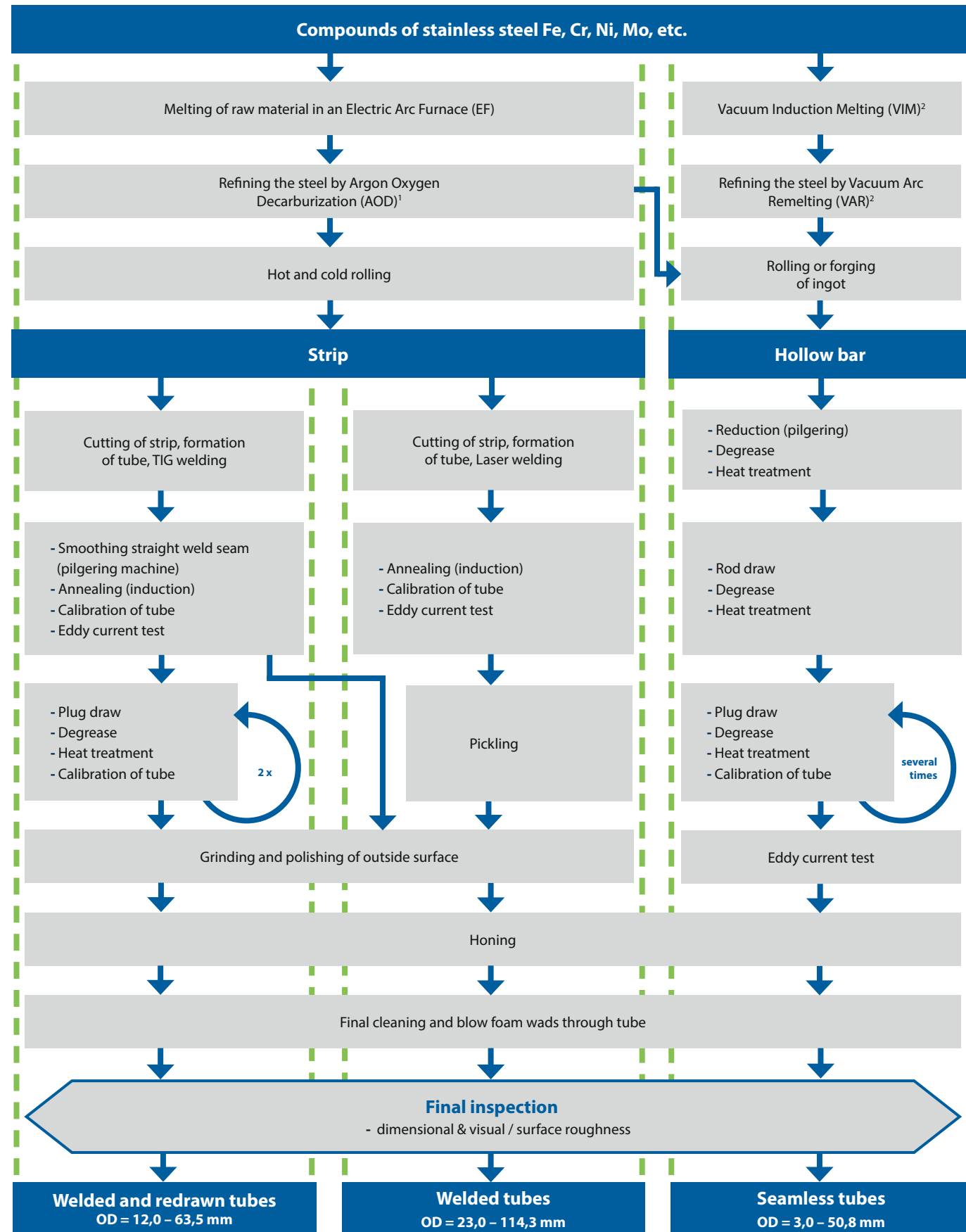
In higher alloyed steels such as 1.4435 sulphur is usually very low as the sulphur may form molybdenum sulphides which can cause problems during rolling of strips.

Titan (Ti) is mainly used as an alloying agent in steel to stabilize the carbides. Titan combines with carbon to form titanium carbides. These carbides are very stable and prevent the forming of Cr-carbides which as a result of the depletion of chromium at the grain boundaries could lead to an intergranular corrosion (IC). Through the lowered content of carbon in the material 316L a stabilization of this alloy is not required and the risk of the IC is not given.

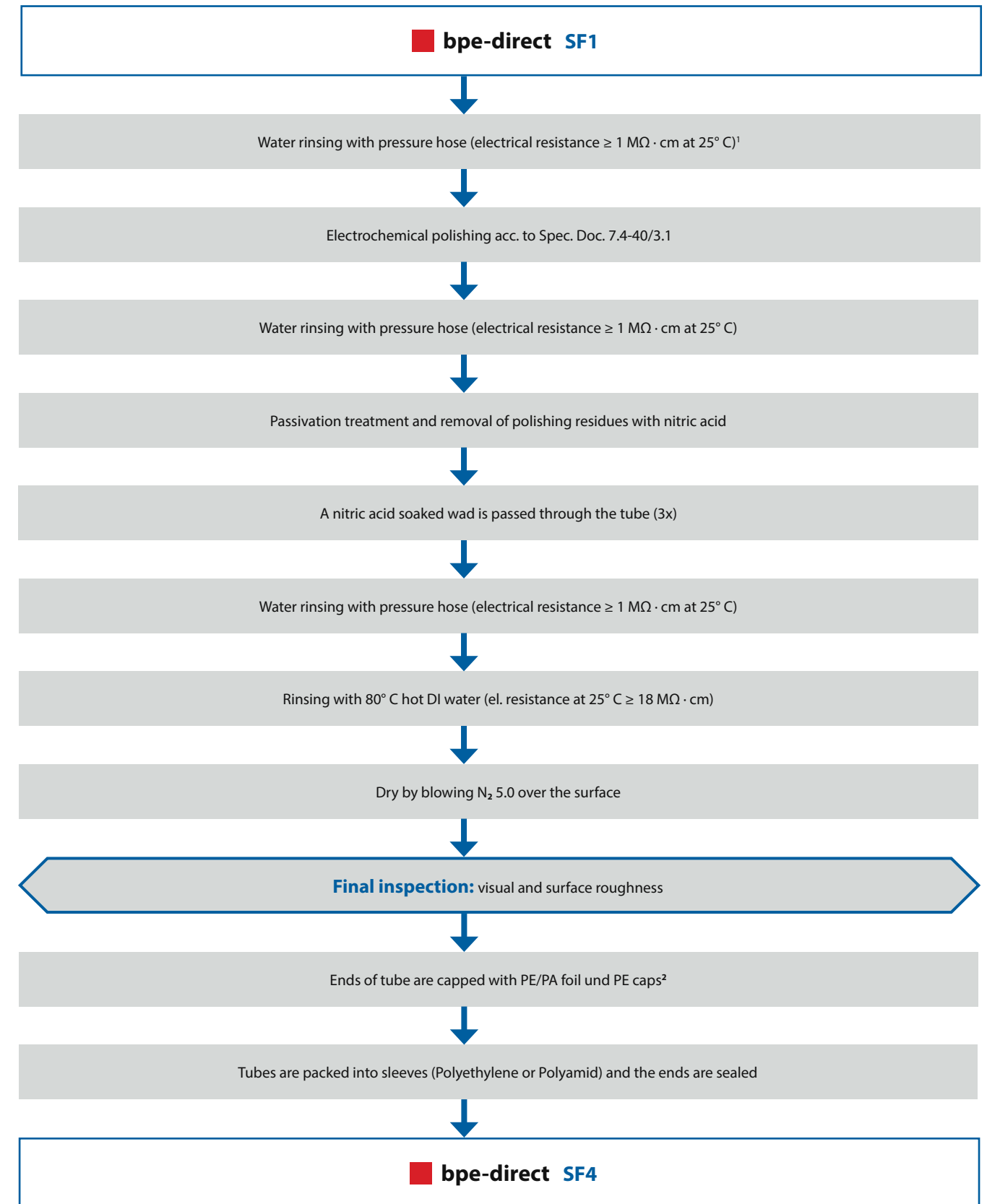
Type	Material	Short name	AISI	UNS	C	Mn	P	S	Si	Cr	Ni	Mo	W	V	Co	Ti	Cu	N	PREN
Austenite	1.4301	X5CrNi18-10	304	S30400	0.08	2	0.045	0.03	1	17.5-19.5	8.0-10.5	--	--	--	--	--	--	--	18
	1.4306	X2CrNi19-11	304L	S30403	0.03	2	0.045	0.015	1	18.0-20.0	10.0-13.0	--	--	--	--	--	--	--	18
	1.4307	X2CrNi18-9	304L	S30403	0.03	2	0.045	0.015	1	17.5-19.5	8.0-10.5	--	--	--	--	--	--	--	18
	1.4404	X2CrNiMo17-12-2	316L	S31603	0.03	2	0.045	0.015	1	16.5-18.5	10.0-14.5	2.00-2.50	--	--	--	--	--	--	23
	1.4435	X2CrNiMo18-14-3	316L	S31603	0.03	2	0.045	0.015	1	17.0-19.0	12.5-15.0	2.50-3.00	--	--	--	--	--	--	25
	1.4571	X6CrNiMoTi17-12-2	316Ti	S31635	0.08	2	0.045	0.015	1	16.5-18.5	10.0-13.5	2.00-2.50	--	--	--	0.5	--	--	23
Super Austenitic	1.4438	X2CrNiMoN-18-15-4	317L	S31703	0.03	2	0.045	0.03	1	17.5-19.5	13.0-17.0	3.0-4.0	--	--	--	--	--	0.11	31
	1.4539	X1NiCrMoCu25-20-5	904L	N08904	0.02	2	0.03	0.01	0,7	19.0-21.0	24.0-26.0	4.0-5.0	--	--	--	--	1.2 - 2.0	0.15	35
	1.4547	X2 NiCrMoCuN20-18-6	6Mo	S31254	0.02	1	0.03	--	1	19.5-20.5	17.5-18.5	6.0-7.0	--	--	--	--	0.50-1.00	0.18-0.25	45
	1.4529	AL-6XN		N08904	0.03	2	0.03	0.01	0,5	19.0-20.0	24.0-26.0	6.0-7.0	--	--	--	--	--	0.18	43
Duplex	1.4462	X2CrNiMoN22-5-3	318LN	S31803	0.03	2	--	--	1	21.0-23.0	4.5-6.5	2.50-3.5	--	--	--	--	--	0.10-0.22	31
	1.4410	X2CrNiMoN 25-7-4	F53	S32750	0.02	2	0.035	0.015	1	25	7	4	--	--	--	--	--	0.27	43
	1.4547	254 SMO	S31254	S31254	0.01	1	0.03	0.01	1	20	18	6.1	--	--	--	--	--	0.2	43
Nickel based alloy	2.4602	Hastelloy C-22	C22	N06022	0.01	0.5	--	--	0,08	22	56	13	3	0.35	2.5	0	0	0	46
	2.4819	Hastelloy C-276	C276	N10276	0.01	1	0.025	0.01	0,08	14.5	57	15	3	0.35	2.5	0	0	0	42

Pitting Resistance Equivalent (PREN)

Steel PREN = %Cr + 3,3 x %Mo + 16 x %N
 Nickel based Alloy PREN = %Cr + 1.5 x (%Mo + %W + Nb)
 Seawater resistance PREN ≥ 40



¹Alternatively Vacuum Oxygen Decarburization (VOD) is applied for refining instead of AOD ²Base material for Ultron LM



¹ If tubes are contaminated with dirt, dust or oil after mechanical treatment, e.g. honing, they are cleaned with an alkaline or acid detergent before any further treatment.

² If the marking is hardly legible after the frequent cleaning steps, tubes will be marked again.



DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

**HIGHEST STANDARDS
IN QUALITY AND PURITY**

Purest surfaces. Optimized weldability.
Stainless steel tube systems by Dockweiler.

YOUR PARTNER FOR STAINLESS STEEL TUBE SYSTEMS

Having begun in Hamburg in 1955 as a hardware store, Dockweiler AG is now based in Neustadt-Glewe and is one of the market leaders in the provision of high purity stainless steel tube systems to the pharmaceutical, semiconductor, biotechnology, and other high-tech industries

The company has subsidiaries in the Netherlands, the UK, Thailand, and Israel, along with offices in more than 30 countries around the globe. This ensures both short lead times and expert support for our international customers at their particular location.

Different tube systems for installations that last

The first products developed by Dockweiler for the semiconductor industry represent the ultimate in surface quality and purity standards. These standards are those still specified today for major projects in the semiconductor industry.

To meet the particular requirements of the pharmaceutical industry – for instance, high corrosion resistance and sterilizability – Dockweiler has also developed special stainless steel tube systems for a range of applications within the industry. This includes a cost-efficient range of tubes and fittings in accordance with ASME BPE.

Customized solutions: “If you can draw it, we can make it!”

In addition to selling and producing standard components, Dockweiler has built up a state-of-the-art facility for special production requirements, including Class 4 and 6 cleanroom for welding, assembling, and packing high purity assemblies for transporting UHP gases.

In close collaboration with the customer, an engineering team creates bespoke solutions for a whole range of different applications. With our specialist skills and experience as well as our sophisticated welding technology, we can manufacture even very complex solutions.



Specific surfaces for safe equipment

With decades of expertise and experience in surface optimization and finishing, we can give our customers the very best advice on how to implement the requirements of their specific application.

We keep moving forward!

We are always pushing ahead: for example, together with our international partners Evans Components and Carten Controls, we have developed a cost-efficient distribution system for UHP gases that significantly reduces the number of weld seams required for installation and minimizes dead space.

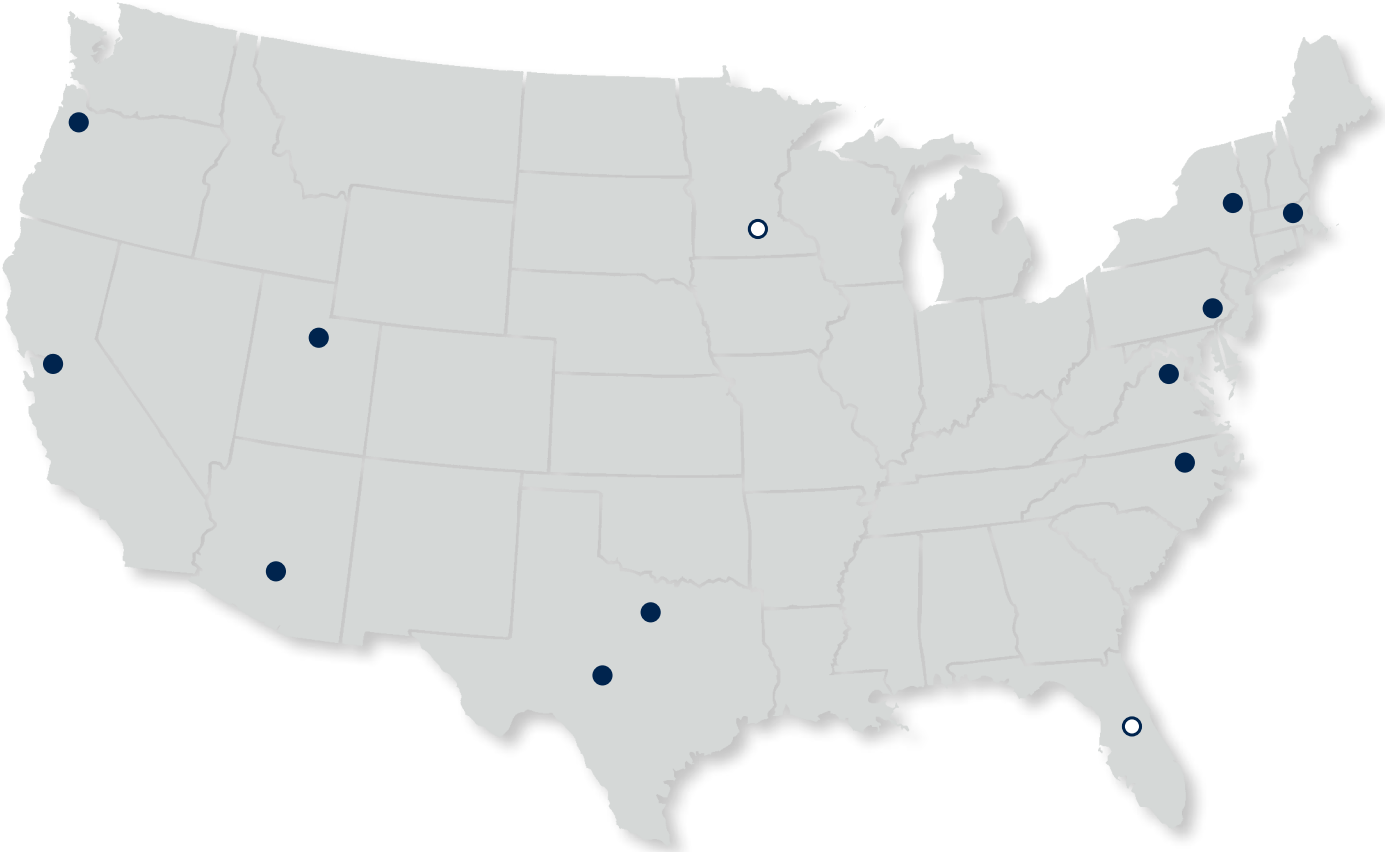
Furthermore, to deal with the ever increasing amount of documentation, we now offer our customers the use of a modern Internet portal, making this much easier.

Dockweiler customer service – meeting our own high standards

It is not only our high quality products that are key to the Dockweiler standard of quality but also our expert advice and outstanding customer service. Our advisers know exactly the specific requirements of the industries we supply to.

This means they can provide you with expert advice on the choice of the right tube system, plan bespoke assemblies with you, and provide installation support worldwide.





● Warehouse Locations
○ Field Offices

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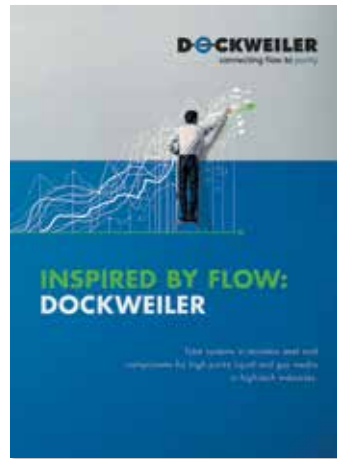
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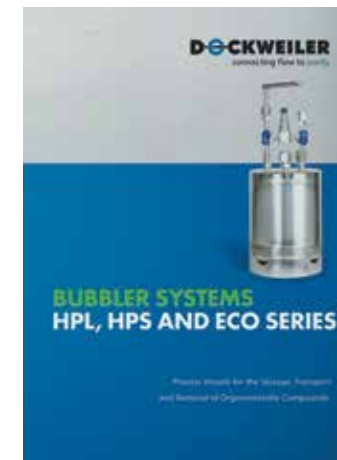
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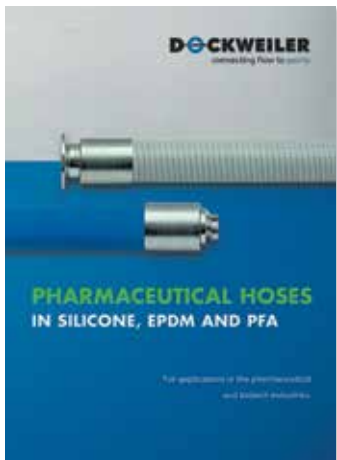
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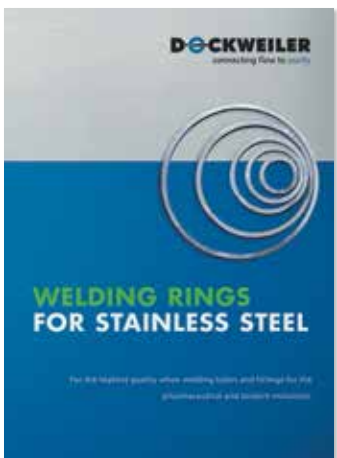
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