





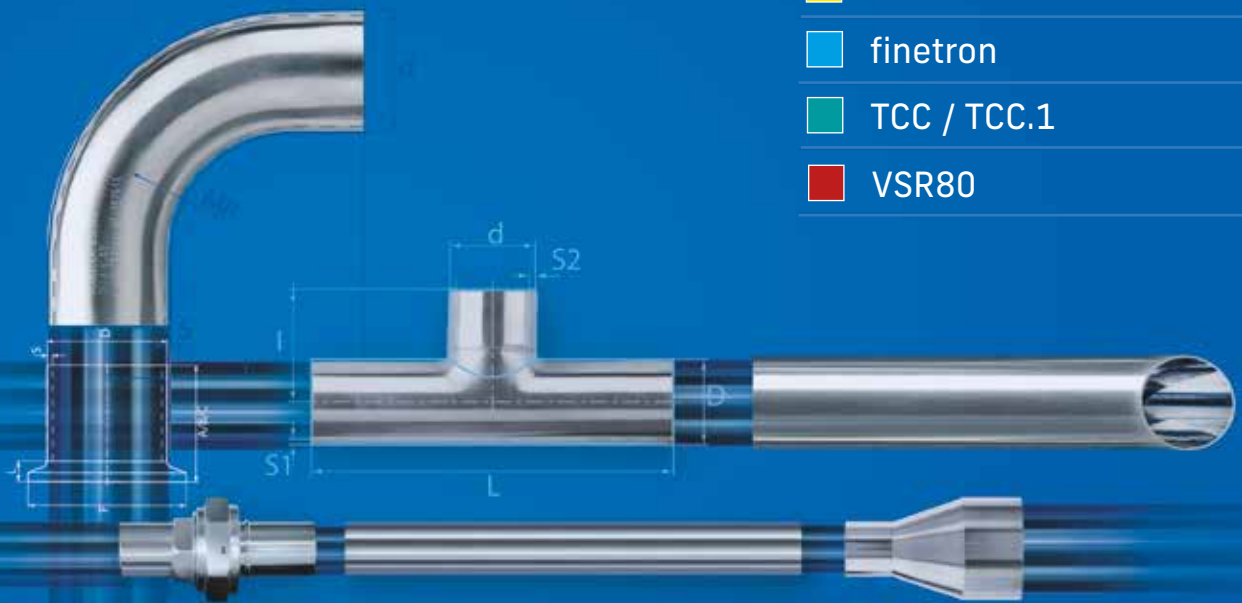
**D-ECKWEILER**  
connecting flow to **purity**

# MICROELECTRONICS

## TUBES, PIPES, FITTINGS AND CONNECTIONS

FOR SEMICONDUCTOR  
AND HIGH-TECH INDUSTRIES

-  ultron
-  finetron
-  TCC / TCC.1
-  VSR80



EMEA

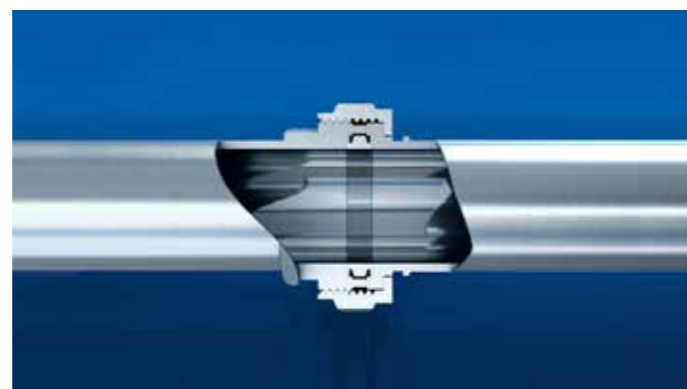




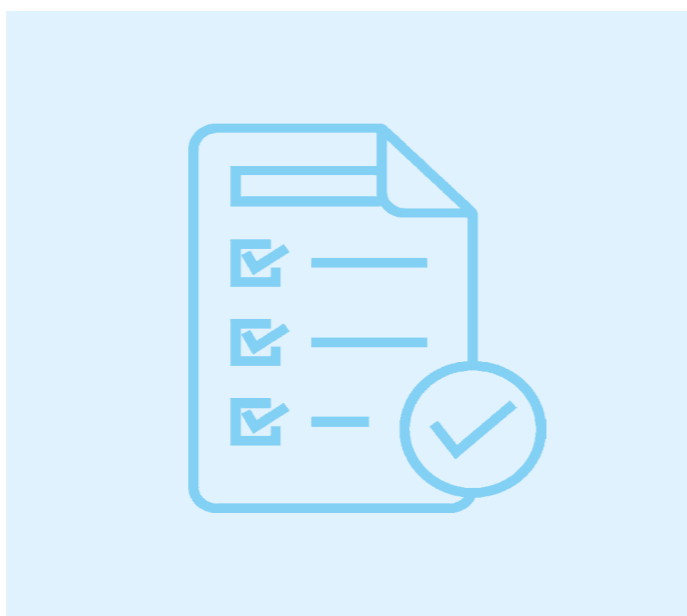
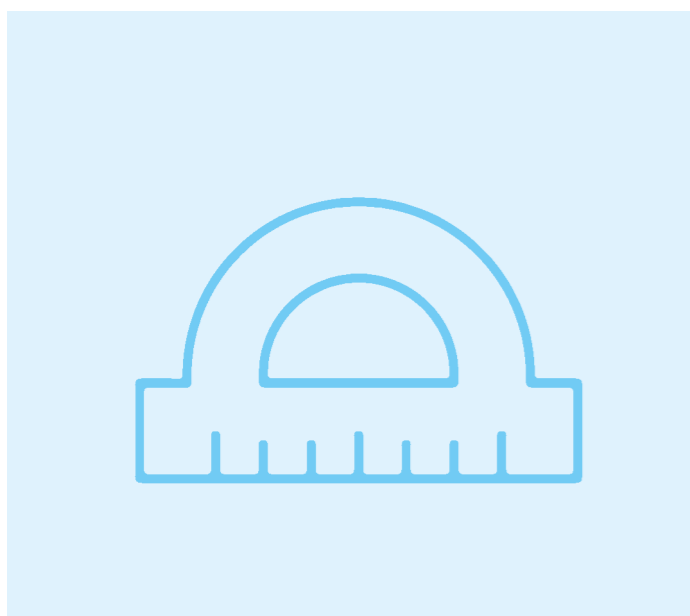
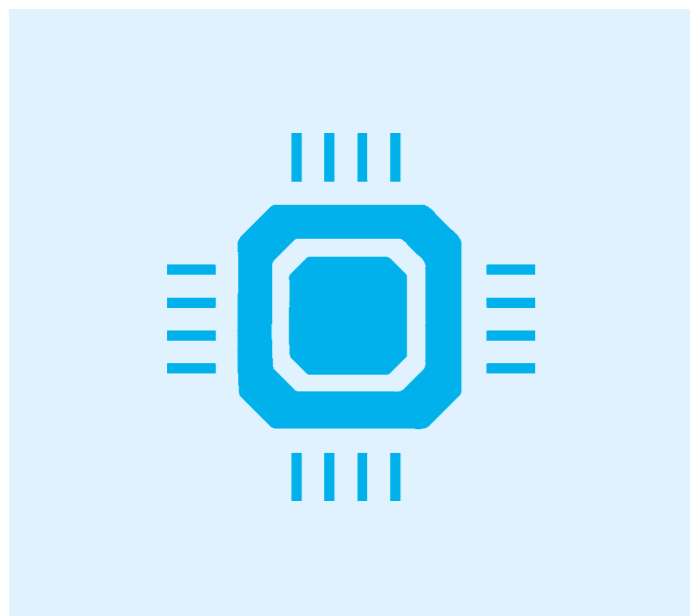
## Tubes, Fittings and Components for Microelectronic Applications

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## Technical Specifications

### Qualities, Materials, Dimensions, Testing, Documentation & Delivery

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**Specification**  
ultron

For UHP gas applications in semiconductor industry and fine chemistry

**ultron**

**ep** Electropolished



**1. SURFACES QUALITIES**

Tubes and fittings:	Inner surface (ep)	Outer surface
<b>ultron</b>	<b>Ra<sub>avg</sub> ≤ 0,25 μm (10 μin)</b>	<b>Ra<sub>avg</sub> ≤ 1.0 μm (40 μin)</b>

On request:	Ra <sub>avg</sub> ≤ 0,13 μm (5 μin) Ra <sub>avg</sub> ≤ 0,18 μm (7 μin) Ra <sub>avg</sub> ≤ 0,38 μm (15 μin)	
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Pipe:	Inner surface (ep)	Outer surface
<b>ultron</b>	<b>Ra<sub>avg</sub> ≤ 0,51 μm (20 μin)</b>	Mill finish, RA not defined

Additional notes:	<ul style="list-style-type: none"> <li>- Tube and Fittings are prepared for orbital welding (acc. to Dockweiler guideline Doc. 8.3-9/7).</li> <li>- Ra values may differ for 1/8" tubes</li> <li>- Pipe will be supplied with a square cut (acc. to Dockweiler guideline Doc. 8.3-9/7).</li> <li>- Other specified surfaces or ends are available upon request.</li> <li>- The Ra value in the cold worked area of fittings (inner and outer surface) and on the surface of circumferential welds is not defined. For dimensions OD &lt; 1/4" (6,35 mm) roughness is not defined.</li> <li>- Free of oil and grease acc. to CGA G-4.1-2018 and ASTM G93 – level A.</li> <li>- Electropolishing procedure acc. to Dockweiler guideline Doc. 8.4-40/3.1/3.3.1</li> <li>- Cleanroom cleaning and packing (ISO Class 4 / Federal Class 10)</li> </ul>	
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**2. MATERIALS**

<b>ultron</b>	1.4404 / UNS S31603 (316L) 1.4435 / UNS S31603 (316L) UNS S31603 (316L)
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Hardness equivalent to:	<ul style="list-style-type: none"> <li>- max. 180 HV* according to DIN EN ISO 6507-1</li> <li>- max. 90 HRB* according to DIN EN ISO 6508-1</li> </ul> <p>* comparable to ASTM E-384 (HV) and ASTM E 18-22 (HRB)</p>
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**3. DIMENSIONS**

Imperial:	Imperial according to ASTM A269 / A270 / A632	
OD x WT	1/8" x 0.022" to 6" x 0.109"	3,18 x 0,56 mm to 152,4 x 2,77 mm

Pipe:	Pipe according to ASTM A312	
Dimensions	NPS 8, 10, 12 Schedule 10S	Length: min. 19.36 ft to max. 19.98 ft

Metric:		
OD x WT	6,00 x 1,00 mm to 35,00 x 1,50 mm	Length: 6000 mm -100/+90

Manufacturing process:	Seamless tubes (≤ 1")	Welded or seamless tubes (> 1")
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**4. QUALITY AND TEST PROCEDURES**

Verification of basic test certificate	Visual inspection	Endoscopic inspection of bright finished tubes
Verification of dimensions	Roughness measurements	Conductivity test (DI water)
TOC-measurement of DI water	Particle measurements	Scanning electron microscope (SEM)
XPS / ESCA	Auger analysis (AES)	

**5. TECHNICAL TERMS OF DELIVERY**

Tubes and fittings are prepared for orbital welding:

**Tubes**

Acc. to ASTM A 632/ A 269 / A 312 (Pipe), DIN EN 10217-7 / 10216-5 with a length of 19.35 ft - 19.98 ft (5900 - 6090 mm), max. 10% short lengths of min. 9.84 ft (3000 mm)

**Tube fitting components**

Prematerial acc. to ASTM A 269 / A 632 / A 312 / A 403 (Pipe), DIN EN 10217-7 / 10216-5

**Machined components**

Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN 17440, ASTM A403 (Pipe)

**Marking always with**

DOCKWEILER / DW-Number / Dimension / Material / Heat number

Tube, pipe and fittings shall be permanently marked as per Dockweiler guideline AA 8.5.2-80. The marking must provide all necessary information to trace back the heat number and the material grade.

**6. DOCUMENTATION, PACKAGING & SHIPPING**

**Documentation**

The documentation result by the Dockweiler Inspection Certificate 3.1 according to DIN EN 10204. Optional online documentation WebCert.

**Packaging**

Tubes and fittings filled with N2 (99.9998% incl. inert gas), capped with PA/PE squares and yellow PE caps, double-bagged and sealed in PE-sleeves.

The batch label on the foil contains the information ultron.

**Shipping**

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

**Specification**  
finetron

For gas applications in semiconductor industry as well as in photovoltaics

**finetron**

**bf** bright finished



**1. SURFACES QUALITIES**

Tubes and fittings:	Inner surface (bf)	Outer surface
<b>finetron</b>	<b>Ra<sub>avg.</sub> ≤ 0,40 µm (16 µin)</b>	<b>Ra<sub>avg.</sub> ≤ 1.0 µm (40 µin)</b>
Additional notes:	<ul style="list-style-type: none"> <li>- Tubes and fittings are prepared for orbital welding.</li> <li>- Other specified surfaces or ends are available upon request.</li> <li>- The Ra value in the cold worked area of fittings (inner and outer surface) and on the surface of circumferential welds is not defined. For dimensions OD ≤ 3/8" (5.00 mm) roughness is not measured.</li> <li>- Cleaning and test procedure ASTM A 632, S3 – level C.</li> </ul>	

**2. MATERIALS**

Austenitic stainless steel tubes and fittings (seamless or welded / depending on diameter):	
<b>finetron</b>	1.4404 / UNS S31603 (316L) 1.4435 / UNS S31603 (316L) UNS S31603 (316L)
Hardness equivalent to:	<ul style="list-style-type: none"> <li>- max. 180 HV* according to DIN EN ISO 6507-1</li> <li>- max. 90 HRB* according to DIN EN ISO 6508-1</li> </ul> <p>* comparable to ASTM E-384 (HV) and ASTM E 18-22 (HRB)</p>

**3. DIMENSIONS**

Imperial:	according to ASTM A269 / A632	
OD x WT	1/4" to 6" (0.250 x 0.035 inch to 6.000 x 0.109 inch)	6,35 x 0,89 mm to 152,40 x 2,77 mm
Lenght	min. 19.36 ft to max. 19.98 ft	6000 mm -100/+90
Metric:		
OD x WT	6,00 x 1,00 mm to 35,00 x 1,50 mm	
Lenght	6000 mm -100/+90	
Manufacturing process:	Seamless tubes (≤ 1")	Welded or seamless tubes (> 1")

**4. QUALITY AND TEST PROCEDURES**

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

**5. TECHNICAL TERMS OF DELIVERY**

Tubes and fittings are prepared for orbital welding:

**Tubes**

Acc. to ASTM A 632 / A 269 / A 270, DIN EN 10217-7 / 10216-5 with a length of 5900 - 6090 mm (max. 10% short lengths of min. 3000 mm possible).

**Tube fitting components**

Prematerial acc. to ASTM A 269 / A 632 / A 312 / A 403 (Pipe), DIN EN 10217-7 / 10216-5

**Marking always with**

DOCKWEILER / DW-Number / Dimension / Material / Heat number

Tubes and fittings shall be permanently marked as per Dockweiler guideline AA 8.5.2-80. The marking must provide all necessary information to trace back the heat number and the material grade.

**6. DOCUMENTATION, PACKAGING & SHIPPING**

**Documentation**

The documentation result by the Dockweiler Inspection Certificate 3.1 according to DIN EN 10204. Optional online documentation WebCert.

**Packaging**

Bright finished tubes and fittings are capped with transparent PE caps and are individually sealed in PE foil.

The batch label on the foil contains the information finetron.

**Shipping**

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

**Specification**  
TCC/TCC.1

Widely used in production, process measurement and photovoltaic

**TCC / TCC.1**

**bf** bright finished  
**ac** anodical cleaned



**1. SURFACES QUALITIES**

Inner surface	Outer surface
<b>TCC (bf)</b>	<b>not defined</b>
<b>TCC.1 (ac)</b>	<b>not defined</b>

Inner surface	Outer surface
<b>TCC (bf)</b>	<b>not defined</b>
<b>TCC.1 (ac)</b>	<b>not defined</b>

**Additional notes:**

- Tubes and fittings are prepared for orbital welding.
- Other specified surfaces or ends are available upon request.
- Pipes and fitting will be supplied with a square cut. Different end preparations may be agreed on.
- The Ra value in the cold worked area of fittings (inner and outer surface) and on the surface of circumferential welds is not defined. For dimensions OD ≤ 3/8" (5.00 mm) roughness is not measured.
- TCC (bf): Cleaning and test procedure ASTM A 632, S3 and ASTM G93 – level D.
- TCC.1 (ac): Free of oil and grease acc. to CGA G-4.1-2018 and ASTM G93 – level B.

**2. MATERIALS**

Austenitic stainless steel tubes and fittings (seamless or welded) in:
<b>TCC / TCC.1</b>

1.4435 / UNS S31603 (316L)  
1.4404 / UNS S31603 (316L)  
UNS S31603 (316L)  
UNS S30403 (304L)

**Hardness equivalent to:**

- max. 180 HV\* according to DIN EN ISO 6507-1
- max. 90 HRB\* according to DIN EN ISO 6508-1

\* comparable to ASTM E-384 (HV) and ASTM E 18-22 (HRB)

**3. DIMENSIONS**

Imperial:	according to ASTM A269 / A270 / A632
OD x WT	1/8" x 0.022" to 6" x 0.109"      3.18 x 0.56 mm to 152.4 x 2.77 mm
Length	min. 19.36 ft to max. 19.98 ft (6000 mm -100/+90)

Pipe:	according to ASTM A312
Dimensions	NPS 8, 10, 12, 16, 20 Schedule 10S      219,08 x 3,76 mm to 508,00 x 5,54 mm
Length	min. 19.36 ft to max. 19.98 ft (6000 mm -100/+90)

Metric:	
Dimensions	3,00 x 0,50 mm to 35,00 x 1,50 mm
Length	min. 19.36 ft to max. 19.98 ft (6000 mm -100/+90)

Manufacturing process:	Seamless tubes (≤ 1/2")	Welded or seamless tubes (> 1/2")

**4. QUALITY AND TEST PROCEDURES**

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

**5. TECHNICAL TERMS OF DELIVERY**

Tubes and fittings are prepared for orbital welding:

**Tubes**

Acc. to ASTM A 632 / A 269 / A 270, DIN EN 10217-7 / 10216-5 with a length of 5900 - 6090 mm (max. 10% short lengths of min. 3000 mm possible).

**Fittings**

According to DIN 11865, ASTM A 403 (Pipe), ASTM A 182 (Pipe)

**Marking always with**

DOCKWEILER / DW-Number / Dimension / Material / Heat number

Tube and fittings shall be permanently marked as per Dockweiler guideline AA 8.5.2-80. The marking must provide all necessary information to trace back the heat number and the material grade.

**6. DOCUMENTATION, PACKAGING & SHIPPING**

**Documentation**

The documentation result by the Dockweiler Inspection Certificate 3.1 according to DIN EN 10204. Optional online documentation WebCert.

**Packaging**

Bright finished tubes and fittings are capped with white/transparent PE caps and packaged in PE foil. The batch label contains the information TCC.

Anodically cleaned tubes and fittings are capped with PE/PA squares and white/transparent PE caps and packed in PE foil. The batch label contains the information TCC.1.

**Shipping**

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

**Specification**  
VSR80

For leak-tight but detachable connections with controlled hardness for easy installation

**VSR80**

**bf** bright finished



**1. SURFACES QUALITIES**

Tubes:	Inner surface	Outer surface
<b>VSR80</b>	<b>Ra values are not defined</b>	<b>Ra<sub>avg.</sub> ≤ 1.0 μm (40 μin)</b> free of longitudinal and vertical scratches

**2. MATERIALS**

<b>VSR80</b>	1.4404 / UNS S31603 (316L) 1.4571 / S31635
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Hardness equivalent to:	- max. 70-90 HRB* according to DIN EN ISO 6508-1 * comparable to ASTM E-384 (HV) and ASTM E 18-22 (HRB)
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**3. DIMENSIONS**

Imperial:	according to ASTM A269 and DIN 11866 Series C	
OD x WT	1/16" (0,0625"x 0,010") to 1" (1,000" x 0,065 ")	1,59 mm x 0,25 mm to 25,40 mm x 1,65 mm
Length	min. 19.36 ft to max. 19.98 ft (6000 mm -100/+90)	

Metric:	according to DIN 11866 Series A	
Dimensions	3,00 mm x 0,50 mm to 28,00 mm x 1,50 mm	Length: 6000 mm -100/+90

Manufacturing process:	Seamless austenitic stainless steel tubes
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**4. QUALITY AND TEST PROCEDURES**



Verification of basic test certificate



Visual inspection



Endoscopic inspection of bright finished tubes



Verification of dimensions



Roughness measurements

**5. TECHNICAL TERMS OF DELIVERY**

Tubes according to the following standards:

**Tubes**

Acc. to ASTM A 632 / A 269 / A 270, DIN EN 10217-7 / 10216-5 with a length of 19.35 ft - 19.98 ft (max. 10% short lengths of 9.8 ft min. possible)

**Marking always with**

DOCKWEILER / DW-Number / Dimension / Material / Heat number

Tubes are permanently marked in accordance with Dockweiler guideline AA 8.5.2-80.

**6. DOCUMENTATION, PACKAGING AND SHIPPING**

**Documentation**

The documentation result by the Dockweiler Inspection Certificate 3.1 according to DIN EN 10204. Optional online documentation WebCert.

**Packaging**

The batch label on the foil contains the information VSR80.

**Shipping**

Delivery in tubular container or case for safe transport.

## How to Order Dockweiler Order Code System

Order Code for Dockweiler products:

- 1. Dockweiler quality** (Inner surface in combination with the material)
- 2. Product-Code**
- 3. Diameter**

Qualities highlighted in **blue colour** are stock products.  
Others articles are non-stock products.



Sample for **TCC.1 ac**, 90° Elbow, 1 Inch

IMPERIAL / DIN 11865

Dimensions	d1	s1	l1	l3	r1	316L				Code	
						TCC bf	TCC.1 ac	finetron bf	ultron ep		
Inch	mm										
1/4	6,35	0,89	66,70	52,40	14,30	T	T1	F	U	-	E9-04
3/8	9,53	0,89	66,70	38,10	28,60	T	T1	F	U	-	E9-06
1/2	12,70	1,24**	76,20	49,20	27,00	T	T1	F	U	-	E9-08
1/2	12,70	1,65	76,20	47,60	28,60	T	T1	F	U	-	E9-08
3/4	19,05	1,24**	76,20	50,20	26,00	T	1.	F	U	-	2. 3.
3/4	19,05	1,65	76,20	47,60	28,60	T	1.	F	U	-	2. 3.
<b>1</b>	<b>25,40</b>	<b>1,65</b>	<b>76,20</b>	<b>38,10</b>	<b>38,10</b>	T	<b>T1</b>	F	U	-	<b>E9-16</b>
1 1/2	38,10	1,65	95,30	38,10	57,20	T	T1	F	U	-	E9-24
2	50,80	1,65	120,70	44,50	76,20	T	T1	F	U	-	E9-32
2 1/2	63,50	1,65	139,70	44,40	95,30	T	T1	F	U	-	E9-40
3	76,20	1,65	158,80	44,50	114,30	T	T1	F	U	-	E9-48
4	101,60	2,11	203,20	50,80	152,40	T	T1	F	U	-	E9-64
6	152,40	2,77	292,10	63,50	228,60	T	T1	F	U	-	E9-96

Order Code: **T1-E9-16**



Sample for **ultron ep**, Coaxial 45° Elbow, 1/2 Inch

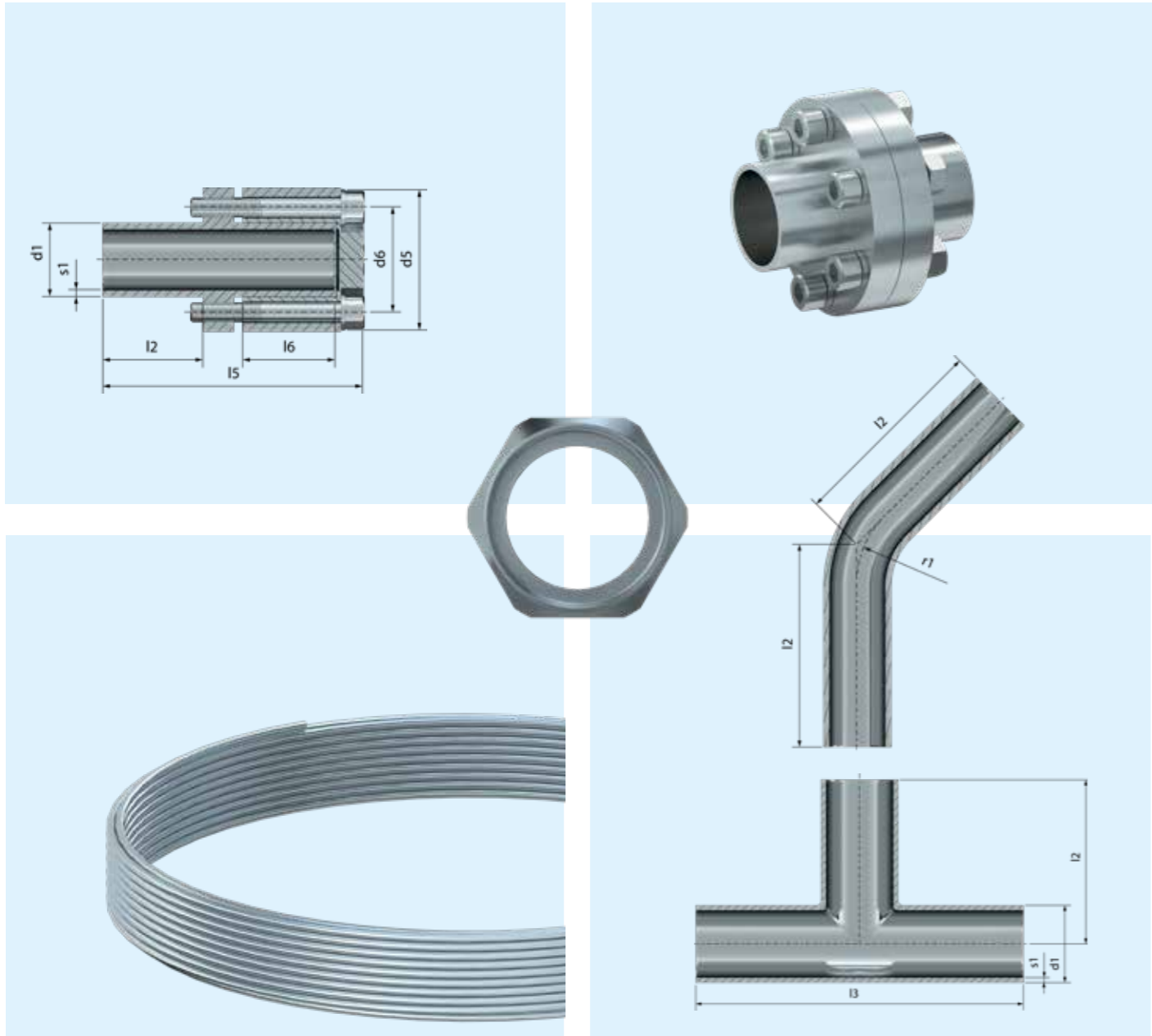
IMPERIAL

Inch	Inner Tube		Outer Tube		Dimensions			316L	Code
	d1	s1	d2	s2	l1	l2	MR1		
mm									
1/4	6,35	0,89	12,70	1,24	98,45	79,40	38,10	T	1. - CE4-08 bent
3/8	9,53	0,89	15,88	1,24	98,45	79,40	57,00	T	1. - 2. 3. bent
<b>1/2</b>	<b>12,70</b>	<b>1,24</b>	<b>19,05</b>	<b>1,65</b>	<b>109,26</b>	<b>90,21</b>	<b>85,00</b>	T	<b>U</b> - <b>CE4-08</b> bent
3/4	19,05	1,65	25,40	1,65	135,61	110,21	85,00	T	U - CE4-12 bent
1	25,40	1,65	38,10	1,65	88,90	63,50	38,10	T	U - CE4-16 welded









Order Code: **U-CE4-08**

If you require stainless steel grade **1.4435 / UNS S31603** or **1.4404 / UNS S31603**, please add **-35** or **-04** at the end of the order code.

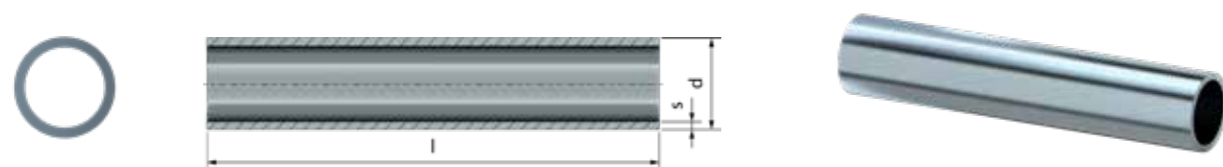




**Tubes, Fittings and Connections**  
**Microelectronics**

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**Tube**  
Imperial / PIPE NPS / Metric



**IMPERIAL**

Dimensions		d x s	Weight	VSR 80	TCC bf	TCC.1 ac	finetron bf	ultron ep	Code
Inch	mm			kg/m	316L*				
1/8	3,18	x 0,56	0,04	V	T			U	- 02
1/4	6,35	x 0,89	0,12	V	T	T1	F	U	- 04
3/8	9,53	x 0,89	0,20	V	T	T1	F	U	- 06
1/2	12,70	x 1,24	0,35	V	T	T1	F	U	- 08
1/2	12,70	x 1,65	0,46	V	T	T1	F	U	- 08-65
3/4	19,05	x 1,24	0,55	V	T	T1	F	U	- 12-49
3/4	19,05	x 1,65	0,72	V	T	T1	F	U	- 12
1	25,40	x 1,65	0,98	V	T	T1	F	U	- 16
1 1/2	38,10	x 1,65	1,51		T	T1	F	U	- 24
2	50,80	x 1,65	2,03		T	T1	F	U	- 32
2 1/2	63,50	x 1,65	2,56		T	T1	F	U	- 40
3	76,20	x 1,65	3,08		T	T1	F	U	- 48
4	101,60	x 2,11	5,26		T	T1	F	U	- 64
6	152,40	x 2,77	10,39		T	T1	F	U	- 96

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**PIPE NPS / SCHEDULE 10**

Dimensions		d x s	Weight	TCC bf	ultron ep	Code
NPS	mm			kg/m	316L*	
6*	168,28	x 3,40	14,04	T	U	- 96NPS
8	219,08	x 3,76	20,27	T	U	- 128NPS
10	273,05	x 4,19	28,21	T	U	- 160NPS
12	323,85	x 4,57	36,54	T	U	- 192NPS
16	406,40	x 4,78	48,07	T	-	- 256NPS
20	508,00	x 5,54	69,95	T	-	- 320NPS

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**METRIC**

Dimensions		d x s	Weight	VSR 80	TCC bf	TCC.1 ac	finetron bf	ultron ep	Code
DN	mm			kg/m	316L*				
2	3,00	x 0,50	0,03	V	T			U	- 02M
4	6,00	x 1,00	0,13	V	T	T1	F	U	- 04M
6	8,00	x 1,00	0,18	V	T	T1	F	U	- 06M
8	10,00	x 1,00	0,23	V	T	T1	F	U	- 08M
10	12,00	x 1,00	0,28	V	T	T1	F	U	- 10M
15	18,00	x 1,50	0,62	V	T	T1	F	U	- 15M
20	23,00	x 1,50	0,81	V	T	T1	F	U	- 20M
25	28,00	x 1,50	1,00	V	T	T1	F	U	- 25M

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

## Instrument Tubings



d / s	Weight	d / s	Weight
mm	kg/m	mm	kg/m
0,30 x 0,06	0,0004	5,00 x 1,00	0,1002
0,80 x 0,20	0,0030	6,00 x 0,50	0,0689
1,20 x 0,10	0,0028	6,00 x 1,00	0,1252
1,20 x 0,20	0,0050	6,00 x 1,50	0,1690
1,59 x 0,25	0,0084	6,35 x 0,89	0,1240
1,59 x 0,30	0,0097	7,00 x 0,50	0,0814
1,59 x 0,40	0,0119	8,00 x 0,50	0,0939
1,59 x 0,45	0,0128	8,00 x 1,00	0,1753
1,59 x 0,59	0,0148	8,00 x 1,50	0,2441
2,00 x 0,20	0,0090	9,53 x 0,89	0,1925
2,00 x 0,40	0,0160	9,53 x 1,65	0,3256
2,00 x 0,50	0,0188	10,00 x 0,50	0,1189
3,18 x 0,56	0,0367	10,00 x 1,00	0,2254
3,18 x 0,71	0,0432	12,00 x 0,20	0,0591
4,00 x 0,50	0,0438	12,00 x 2,00	0,5008
4,00 x 1,00	0,0751		

Further dimensions on request. Subject to alteration.

These dimensions are only a selection of instrumentation and capillary tubes and not all are available from stock. These tubes are available in various alloys (e.g. 304L, 316L, 316 Ti) and specifications (hard as drawn, annealed). Further dimensions and materials on request.

## Coil Tube Imperial / Metric

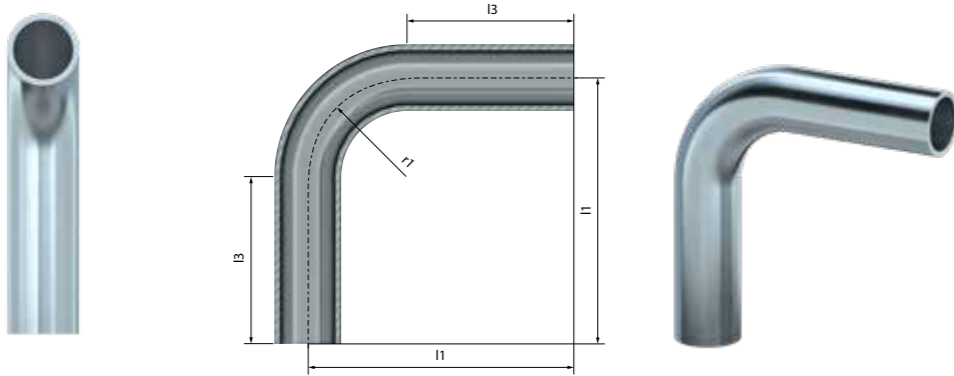


IMPERIAL	d / s	Weight	TCC bf	finetron bf	ultron ep	Code
Inch	mm	kg / m	316L*			
1/8	3,18 x 0,56	0,0368	T			CT-02
1/4	6,35 x 0,89	0,1241	T	F	U	CT-04
3/8	9,53 x 0,89	0,1966	T	F	U	CT-06
1/2	12,70 x 1,24**	0,3511	T	F	U	CT-08

METRIC	d / s	Weight	TCC bf	finetron bf	ultron ep	Code
DN	mm	kg / m	316L*			
2	3,00 x 0,50	0,0368	T			CT-02M
4	6,00 x 1,00	0,1241	T	F	U	CT-04M

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**Elbows 90°**  
Imperial / Metric



**IMPERIAL**

Dimensions	d1	s1	l1	l3	r1	TCC bf	TCC.1ac	finetron bf	ultron ep	Code
						■	■	■	■	
Inch	mm					316L*				
1/4	6,35	0,89	66,70	52,40	14,30	T	T1	F	U	- E9-04
3/8	9,53	0,89	66,70	38,10	28,60	T	T1	F	U	- E9-06
1/2	12,70	1,24	76,20	49,20	27,00	T	T1	F	U	- E9-08
1/2	12,70	1,65	76,20	47,60	28,60	T	T1	F	U	- E9-08-65
3/4	19,05	1,24	76,20	50,20	26,00	T	T1	F	U	- E9-12-49
3/4	19,05	1,65	76,20	47,60	28,60	T	T1	F	U	- E9-12
1	25,40	1,65	76,20	38,10	38,10	T	T1	F	U	- E9-16
1 1/2	38,10	1,65	95,30	38,10	57,20	T	T1	F	U	- E9-24
2	50,80	1,65	120,70	44,50	76,20	T	T1	F	U	- E9-32
2 1/2	63,50	1,65	139,70	44,40	95,30	T	T1	F	U	- E9-40
3	76,20	1,65	158,80	44,50	114,30	T	T1	F	U	- E9-48
4	101,60	2,11	203,20	50,80	152,40	T	T1	F	U	- E9-64
6	152,40	2,77	292,10	63,50	228,60	T	T1	F	U	- E9-96

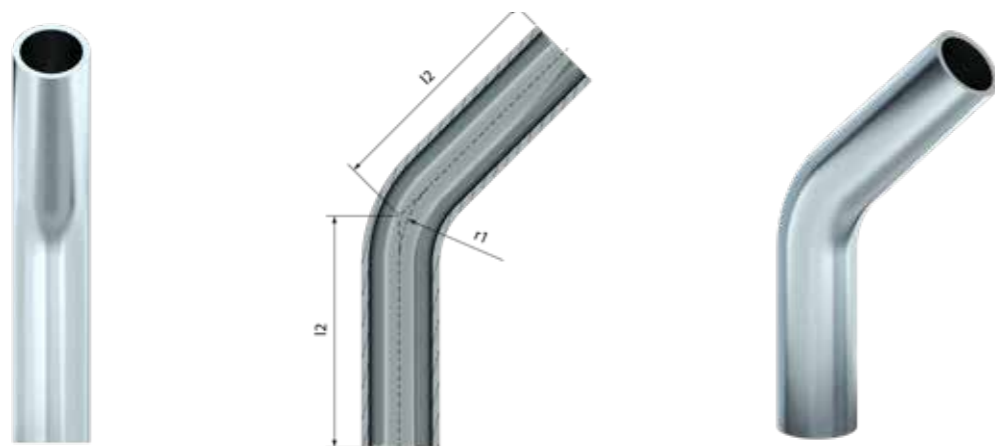
\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**METRIC**

Dimensions	d1	s1	l1	l3	r1	TCC bf	TCC.1ac	finetron bf	ultron ep	Code
						■	■	■	■	
DN / NW	mm					316L*				
4	6,00	1,00	40,00	24,00	16,00	T	T1	F	U	- E9-04M
6	8,00	1,00	45,00	25,00	20,00	T	T1	F	U	- E9-06M
8	10,00	1,00	50,00	25,00	25,00	T	T1	F	U	- E9-08M
10	12,00	1,00	51,00	25,00	26,00	T	T1	F	U	- E9-10M
15	18,00	1,50	60,00	25,00	35,00	T	T1	F	U	- E9-15M
20	23,00	1,50	65,00	25,00	40,00	T	T1	F	U	- E9-20M
25	28,00	1,50	90,00	40,00	50,00	T	T1	F	U	- E9-25M

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**Elbows 45°**  
Imperial / Metric



**IMPERIAL**

Dimensions	d1	s1	l2	r1	TCC bf	TCC.1 ac	finetron bf	ultron ep		Code
Inch	mm				316L*					
1/4	6,35	0,89	50,80	14,30	T	T1	F	U	-	E4-04
3/8	9,53	0,89	50,80	28,60	T	T1	F	U	-	E4-06
1/2	12,70	1,24	57,20	27,00	T	T1	F	U	-	E4-08
1/2	12,70	1,65	57,20	28,60	T	T1	F	U	-	E4-08-65
3/4	19,05	1,24	57,20	26,00	T	T1	F	U	-	E4-12-49
3/4	19,05	1,65	57,20	28,60	T	T1	F	U	-	E4-12
1	25,40	1,65	57,20	38,10	T	T1	F	U	-	E4-16
1 1/2	38,10	1,65	63,50	57,20	T	T1	F	U	-	E4-24
2	50,80	1,65	76,20	76,20	T	T1	F	U	-	E4-32
2 1/2	63,50	1,65	85,70	95,30	T	T1	F	U	-	E4-40
3	76,20	1,65	92,10	114,30	T	T1	F	U	-	E4-48
4	101,60	2,11	114,30	152,40	T	T1	F	U	-	E4-64
6	152,40	2,77	158,80	228,60	T	T1	F	U	-	E4-96

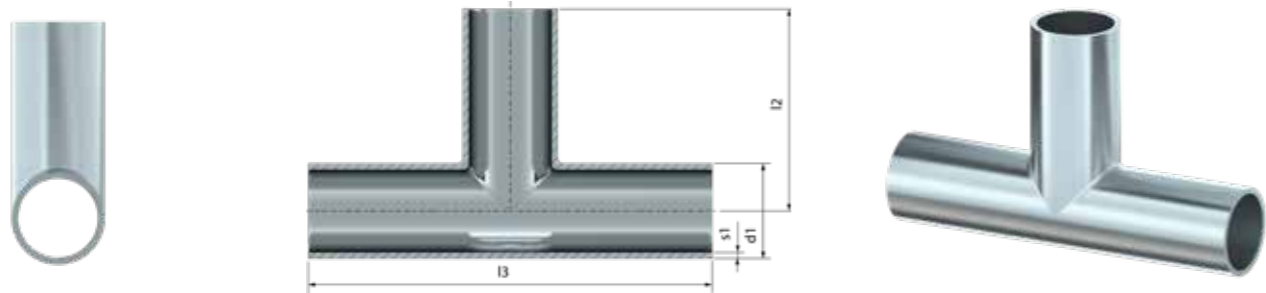
\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**METRIC**

Dimensions	d1	s1	l2	r1	TCC bf	TCC.1 ac	finetron bf	ultron ep		Code
DN / NW	mm				316L*					
4	6,00	1,00	32,10	16,00	T	T1	F	U	-	E4-04M
6	8,00	1,00	32,10	24,00	T	T1	F	U	-	E4-06M
8	10,00	1,00	33,30	24,00	T	T1	F	U	-	E4-08M
10	12,00	1,00	35,80	26,00	T	T1	F	U	-	E4-10M
15	18,00	1,50	35,80	26,00	T	T1	F	U	-	E4-15M
20	23,00	1,50	41,60	40,00	T	T1	F	U	-	E4-20M
25	28,00	1,50	60,70	50,00	T	T1	F	U	-	E4-25M

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**T-Pieces Equal and Reduced Imperial**



**IMPERIAL**

Size	d1 x d 2	s1	s2	l3	l2	TCC bf	TCC.1 ac	finetron bf	ultron ep	Code
Inch	mm	mm	mm	mm	mm	316L*				
1/4 x 1/4	6,35 x 6,35	0,89	0,89	89,00	44,50	T	T1	F	U	TE-04
3/8 x 1/4	9,53 x 6,35	0,89	0,89	89,00	44,50	T	T1	F	U	TR-06-04
3/8 x 3/8	9,53 x 9,53	0,89	0,89	89,00	44,50	T	T1	F	U	TE-06
1/2 x 1/4	12,70 x 6,35	1,24	0,89	95,20	47,60	T	T1	F	U	TR-08-04
1/2 x 3/8	12,70 x 9,53	1,24	0,89	95,20	47,60	T	T1	F	U	TR-08-06
1/2 x 1/2	12,70 x 12,70	1,24	1,24	95,20	47,60	T	T1	F	U	TE-08
1/2 x 1/4	12,70 x 6,35	1,65	0,89	101,60	47,60	T	T1	F	U	TR-08-65-04
1/2 x 3/8	12,70 x 9,53	1,65	0,89	101,60	47,60	T	T1	F	U	TR-08-65-06
1/2 x 1/2	12,70 x 12,70	1,65	1,65	101,60	47,60	T	T1	F	U	TE-08-65
3/4 x 1/4	19,05 x 6,35	1,24	0,89	101,60	50,80	T	T1	F	U	TR-12-49-04
3/4 x 3/8	19,05 x 9,53	1,24	0,89	101,60	50,80	T	T1	F	U	TR-12-49-06
3/4 x 1/2	19,05 x 12,70	1,24	1,24	101,60	50,80	T	T1	F	U	TR-12-49-08
3/4 x 3/4	19,05 x 19,05	1,24	1,24	101,60	50,80	T	T1	F	U	TE-12-49
3/4 x 1/4	19,05 x 6,35	1,65	0,89	101,60	50,80	T	T1	F	U	TR-12-04
3/4 x 3/8	19,05 x 9,53	1,65	0,89	101,60	50,80	T	T1	F	U	TR-12-06
3/4 x 1/2	19,05 x 12,70	1,65	1,65	101,60	50,80	T	T1	F	U	TR-12-08-65
3/4 x 3/4	19,05 x 19,05	1,65	1,65	101,60	50,80	T	T1	F	U	TE-12
1 x 1/4	25,40 x 6,35	1,65	0,89	108,00	54,00	T	T1	F	U	TR-16-04
1 x 3/8	25,40 x 9,53	1,65	0,89	108,00	54,00	T	T1	F	U	TR-16-06
1 x 1/2	25,40 x 12,70	1,65	1,24	108,00	54,00	T	T1	F	U	TR-16-08
1 x 1/2	25,40 x 12,70	1,65	1,65	108,00	54,00	T	T1	F	U	TR-16-08-65
1 x 3/4	25,40 x 19,05	1,65	1,24	108,00	54,00	T	T1	F	U	TR-16-12-49
1 x 3/4	25,40 x 19,05	1,65	1,65	108,00	54,00	T	T1	F	U	TR-16-12
1 x 1	25,40 x 25,40	1,65	1,65	108,00	54,00	T	T1	F	U	TE-16

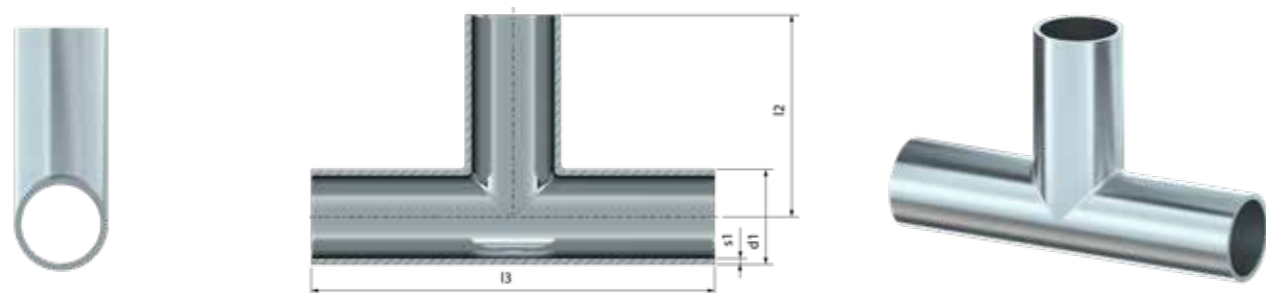
\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**IMPERIAL**

Size	d1 x d 2	s1	s2	l3	l2	TCC bf	TCC.1 ac	finetron bf	ultron ep	Code
Inch	mm	mm	mm	mm	mm	316L*				
1 1/2 x 1/2	38,10 x 12,70	1,65	1,24	120,60	60,30	T	T1	F	U	TR-24-08
1 1/2 x 1/2	38,10 x 12,70	1,65	1,65	120,60	60,30	T	T1	F	U	TR-24-08-65
1 1/2 x 3/4	38,10 x 19,05	1,65	1,24	120,60	60,30	T	T1	F	U	TR-24-12-49
1 1/2 x 3/4	38,10 x 19,05	1,65	1,65	120,60	60,30	T	T1	F	U	TR-24-12
1 1/2 x 1	38,10 x 25,40	1,65	1,65	120,60	60,30	T	T1	F	U	TR-24-16
1 1/2 x 1 1/2	38,10 x 38,10	1,65	1,65	120,60	60,30	T	T1	F	U	TE-24
2 x 1/2	50,80 x 12,70	1,65	1,24	146,00	66,70	T	T1	F	U	TR-32-08
2 x 1/2	50,80 x 12,70	1,65	1,65	146,00	66,70	T	T1	F	U	TR-32-08-65
2 x 3/4	50,80 x 19,05	1,65	1,24	146,00	66,70	T	T1	F	U	TR-32-12-49
2 x 3/4	50,80 x 19,05	1,65	1,65	146,00	66,70	T	T1	F	U	TR-32-12
2 x 1	50,80 x 25,40	1,65	1,65	146,00	66,70	T	T1	F	U	TR-32-16
2 x 1 1/2	50,80 x 38,10	1,65	1,65	146,00	66,70	T	T1	F	U	TR-32-24
2 x 2	50,80 x 50,80	1,65	1,65	146,00	73,00	T	T1	F	U	TE-32
2 1/2 x 1/2	63,50 x 12,70	1,65	1,24	158,80	73,00	T	T1	F	U	TR-40-08
2 1/2 x 1/2	63,50 x 12,70	1,65	1,65	158,80	73,00	T	T1	F	U	TR-40-08-65
2 1/2 x 3/4	63,50 x 19,05	1,65	1,65	158,80	73,00	T	T1	F	U	TR-40-12
2 1/2 x 1	63,50 x 25,40	1,65	1,65	158,80	73,00	T	T1	F	U	TR-40-16
2 1/2 x 1 1/2	63,50 x 38,10	1,65	1,65	158,80	73,00	T	T1	F	U	TR-40-24
2 1/2 x 2	63,50 x 50,80	1,65	1,65	158,80	73,00	T	T1	F	U	TR-40-32
2 1/2 x 2 1/2	63,50 x 63,50	1,65	1,65	158,80	79,40	T	T1	F	U	TE-40
3 x 1/2	76,20 x 12,70	1,65	1,24	171,50	79,40	T	T1	F	U	TR-48-08
3 x 1/2	76,20 x 12,70	1,65	1,65	171,50	79,40	T	T1	F	U	TR-48-08-65
3 x 3/4	76,20 x 19,05	1,65	1,65	171,50	79,40	T	T1	F	U	TR-48-12
3 x 1	76,20 x 25,40	1,65	1,65	171,50	79,40	T	T1	F	U	TR-48-16
3 x 1 1/2	76,20 x 38,10	1,65	1,65	171,50	79,40	T	T1	F	U	TR-48-24
3 x 2	76,20 x 50,80	1,65	1,65	171,50	79,40	T	T1	F	U	TR-48-32
3 x 2 1/2	76,20 x 63,50	1,65	1,65	171,50	79,40	T	T1	F	U	TR-48-40
3 x 3	76,20 x 76,20	1,65	1,65	171,40	85,70	T	T1	F	U	TE-48
4 x 1/2	101,60 x 12,70	2,11	1,24	209,60	92,10	T	T1	F	U	TR-64-08
4 x 1/2	101,60 x 12,70	2,11	1,65	209,60	92,10	T	T1	F	U	TR-64-08-65
4 x 3/4	101,60 x 19,05	2,11	1,65	209,60	92,10	T	T1	F	U	TR-64-12
4 x 1	101,60 x 25,40	2,11	1,65	209,60	92,10	T	T1	F	U	TR-64-16
4 x 1 1/2	101,60 x 38,10	2,11	1,65	209,60	92,10	T	T1	F	U	TR-64-24
4 x 2	101,60 x 50,80	2,11	1,65	209,60	98,40	T	T1	F	U	TR-64-32
4 x 2 1/2	101,60 x 63,50	2,11	1,65	209,60	98,40	T	T1	F	U	TR-64-40
4 x 3	101,60 x 76,20	2,11	1,65	209,60	98,40	T	T1	F	U	TR-64-48
4 x 4	101,60 x 101,60	2,11	2,11	209,60	104,80	T	T1	F	U	TE-64
6 x 3	152,40 x 76,20	2,77	1,65	285,80	130,20	T	T1	F	U	TR-96-48
6 x 4	152,40 x 101,60	2,77	2,11	285,80	130,20	T	T1	F	U	TR-96-64
6 x 6	152,40 x 152,40	2,77	2,77	285,80	142,90	T	T1	F	U	TE-96

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**T-Pieces Equal and Reduced**  
Metric

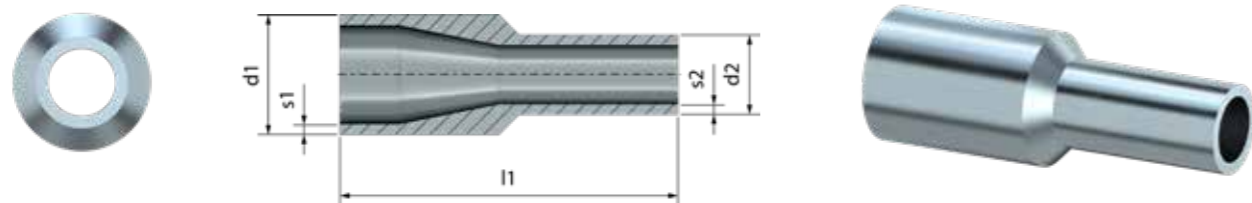


METRIC

Size	d1 x d 2	s1	s2	l3	l2	TCC bf	TCC.1 ac	finetron bf	ultron ep	Code
Inch	mm	mm				316L*				
4 x 4	6,00 x 6,00	1,00	1,00	60,00	30,00	T	T1	F	U	TE-04M
6 x 4	8,00 x 6,00	1,00	1,00	60,00	30,00	T	T1	F	U	TR-06M-04M
6 x 6	8,00 x 8,00	1,00	1,00	60,00	30,00	T	T1	F	U	TE-06M
8 x 6	10,00 x 8,00	1,00	1,00	60,00	30,00	T	T1	F	U	TR-08M-06M
8 x 8	10,00 x 10,00	1,00	1,00	60,00	30,00	T	T1	F	U	TE-08M
10 x 6	12,00 x 8,00	1,00	1,00	70,00	35,00	T	T1	F	U	TR-10M-06M
10 x 8	12,00 x 10,00	1,00	1,00	70,00	35,00	T	T1	F	U	TR-10M-08M
10 x 10	12,00 x 12,00	1,00	1,00	70,00	35,00	T	T1	F	U	TE-10M
15 x 6	18,00 x 8,00	1,50	1,00	70,00	35,00	T	T1	F	U	TR-15M-06M
15 x 8	18,00 x 10,00	1,50	1,00	70,00	35,00	T	T1	F	U	TR-15M-08M
15 x 10	18,00 x 12,00	1,50	1,00	70,00	35,00	T	T1	F	U	TR-15M-10M
15 x 15	18,00 x 18,00	1,50	1,50	70,00	35,00	T	T1	F	U	TE-15M
20 x 10	23,00 x 12,00	1,50	1,00	80,00	40,00	T	T1	F	U	TR-20M-10M
20 x 15	23,00 x 18,00	1,50	1,50	80,00	40,00	T	T1	F	U	TR-20M-15M
20 x 20	23,00 x 23,00	1,50	1,50	80,00	40,00	T	T1	F	U	TE-20M
25 x 10	28,00 x 12,00	1,50	1,00	100,00	50,00	T	T1	F	U	TR-25M-10M
25 x 15	28,00 x 18,00	1,50	1,50	100,00	50,00	T	T1	F	U	TR-25M-15M
25 x 20	28,00 x 23,00	1,50	1,50	100,00	50,00	T	T1	F	U	TR-25M-20M
25 x 25	28,00 x 28,00	1,50	1,50	100,00	50,00	T	T1	F	U	TE-25M

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**Reducers Concentric**  
Imperial / Metric



**IMPERIAL**

Size	d1 x d2	s1	s2	l1	TCC bf	TCC.1 ac	finetron bf	ultron ep	316L*	Code
Inch	mm	mm	mm	mm						
3/8 x 1/4	9,53 x 6,35	0,89	0,89	41,28	T	T1	F	U	-	RC-06-04
1/2 x 1/4	12,70 x 6,35	1,24	0,89	38,00	T	T1	F	U	-	RC-08-04
1/2 x 1/4	12,70 x 6,35	1,65	0,89	47,63	T	T1	F	U	-	RC-08-65-04
1/2 x 3/8	12,70 x 9,53	1,24	0,89	38,00	T	T1	F	U	-	RC-08-06
1/2 x 3/8	12,70 x 9,53	1,65	0,89	47,63	T	T1	F	U	-	RC-08-65-06
3/4 x 1/4	19,05 x 6,35	1,24	0,89	38,00	T	T1	F	U	-	RC-12-49-04
3/4 x 1/4	19,05 x 6,35	1,65	0,89	38,00	T	T1	F	U	-	RC-12-04
3/4 x 3/8	19,05 x 9,53	1,24	0,89	60,00	T	T1	F	U	-	RC-12-49-06
3/4 x 3/8	19,05 x 9,53	1,65	0,89	50,80	T	T1	F	U	-	RC-12-06
3/4 x 1/2	19,05 x 12,70	1,24	1,24	60,00	T	T1	F	U	-	RC-12-49-08
3/4 x 1/2	19,05 x 12,70	1,65	1,24	60,00	T	T1	F	U	-	RC-12-08
3/4 x 1/2	19,05 x 12,70	1,65	1,65	53,98	T	T1	F	U	-	RC-12-08-65
1 x 1/2	25,40 x 12,70	1,65	1,24	60,00	T	T1	F	U	-	RC-16-08
1 x 1/2	25,40 x 12,70	1,65	1,65	63,50	T	T1	F	U	-	RC-16-08-65
1 x 3/4	25,40 x 19,05	1,65	1,24	60,00	T	T1	F	U	-	RC-16-12-49
1 x 3/4	25,40 x 19,05	1,65	1,65	53,98	T	T1	F	U	-	RC-16-12
1 1/2 x 1/2	38,10 x 12,70	1,65	1,24	80,00	T	T1	F	U	-	RC-24-08
1 1/2 x 1/2	38,10 x 12,70	1,65	1,65	80,00	T	T1	F	U	-	RC-24-08-65
1 1/2 x 3/4	38,10 x 19,05	1,65	1,24	80,00	T	T1	F	U	-	RC-24-12-49
1 1/2 x 3/4	38,10 x 19,05	1,65	1,65	76,20	T	T1	F	U	-	RC-24-12
1 1/2 x 1	38,10 x 25,40	1,65	1,65	63,50	T	T1	F	U	-	RC-24-16
2 x 1	50,80 x 25,40	1,65	1,65	85,73	T	T1	F	U	-	RC-32-16
2 x 1 1/2	50,80 x 38,10	1,65	1,65	63,50	T	T1	F	U	-	RC-32-24
2 1/2 x 1	63,50 x 25,40	1,65	1,65	100,00	T	T1	F	U	-	RC-40-16
2 1/2 x 1 1/2	63,50 x 38,10	1,65	1,65	85,73	T	T1	F	U	-	RC-40-24
2 1/2 x 2	63,50 x 50,80	1,65	1,65	63,50	T	T1	F	U	-	RC-40-32
3 x 1 1/2	76,20 x 38,10	1,65	1,65	107,95	T	T1	F	U	-	RC-48-24
3 x 2	76,20 x 50,80	1,65	1,65	85,73	T	T1	F	U	-	RC-48-32
3 x 2 1/2	76,20 x 63,50	1,65	1,65	66,68	T	T1	F	U	-	RC-48-40
4 x 2	101,60 x 50,80	2,11	1,65	130,18	T	T1	F	U	-	RC-64-32
4 x 2 1/2	101,60 x 63,50	2,11	1,65	107,95	T	T1	F	U	-	RC-64-40
4 x 3	101,60 x 76,20	2,11	1,65	98,43	T	T1	F	U	-	RC-64-48
6 x 3	152,40 x 76,20	2,77	1,65	184,15	T	T1	F	U	-	RC-96-64
6 x 4	152,40 x 101,60	2,77	2,11	142,88	T	T1	F	U	-	RC-96-48

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

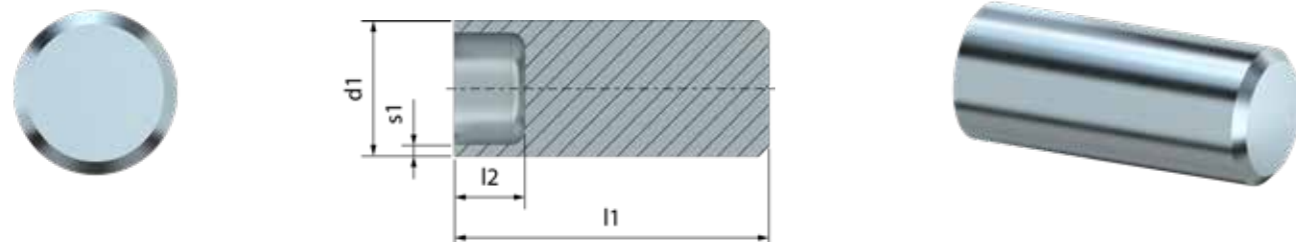
**METRIC**

Size	d1 x d2	s1	s2	l1	TCC bf	TCC.1 ac	finetron bf	ultron ep	316L*	Code
DN	mm	mm	mm	mm						
6 x 4	8,00 x 6,00	1,00	1,00	38,00	T	T1	F	U	-	RC-06M-04M
8 x 4	10,00 x 6,00	1,00	1,00	38,00	T	T1	F	U	-	RC-08M-04M
8 x 6	10,00 x 8,00	1,00	1,00	38,00	T	T1	F	U	-	RC-08M-06M
10 x 4	12,00 x 6,00	1,00	1,00	38,00	T	T1	F	U	-	RC-10M-04M
10 x 6	12,00 x 8,00	1,00	1,00	38,00	T	T1	F	U	-	RC-10M-06M
10 x 8	12,00 x 10,00	1,00	1,00	38,00	T	T1	F	U	-	RC-10M-08M
15 x 8	18,00 x 10,00	1,50	1,00	38,00	T	T1	F	U	-	RC-15M-08M
15 x 10	18,00 x 12,00	1,50	1,00	38,00	T	T1	F	U	-	RC-15M-10M
20 x 10	23,00 x 12,00	1,50	1,00	60,00	T	T1	F	U	-	RC-20M-10M
20 x 15	23,00 x 18,00	1,50	1,50	60,00	T	T1	F	U	-	RC-20M-15M
25 x 15	28,00 x 18,00	1,50	1,50	70,00	T	T1	F	U	-	RC-25M-15M
25 x 20	28,00 x 23,00	1,50	1,50	70,00	T	T1	F	U	-	RC-25M-20M
32 x 20	35,00 x 23,00	1,50	1,50	80,00	T	T1	F	U	-	RC-32M-20M
32 x 25	35,00 x 28,00	1,50	1,50	80,00	T	T1	F	U	-	RC-32M-25M

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request



**Weld Cap**  
Imperial / Metric



IMPERIAL	d1	s1	l1	l2	316L*				Code	
					TCC bf	TCC.1 ac	finetron bf	ultron ep		
Inch	mm									
1/4	6,35	0,89	34,75	5,00	T	T1	F	U	-	WC-04
3/8	9,53	0,89	44,45	5,00	T	T1	F	U	-	WC-06
1/2	12,70	1,24	44,45	5,00	T	T1	F	U	-	WC-08
1/2	12,70	1,65	44,45	5,00	T	T1	F	U	-	WC-08-65
3/4	19,05	1,24	44,45	10,00	T	T1	F	U	-	WC-12-49
3/4	19,05	1,65	44,45	10,00	T	T1	F	U	-	WC-12
1	25,40	1,65	44,45	10,00	T	T1	F	U	-	WC-16
1 1/2	38,10	1,65	50,80	10,00	T	T1	F	U	-	WC-24
2	50,80	1,65	50,80	15,00	T	T1	F	U	-	WC-32
2 1/2	63,50	1,65	50,80	15,00	T	T1	F	U	-	WC-40
3	76,20	1,65	50,80	15,00	T	T1	F	U	-	WC-48
4	101,60	2,11	63,50	22,50	T	T1	F	U	-	WC-64
6**	152,40	2,77	200,00	150,00	T	T1	F	U	-	WC-96

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.

\*\* Differing design: not machined but dished boiled end welded to tube stub.

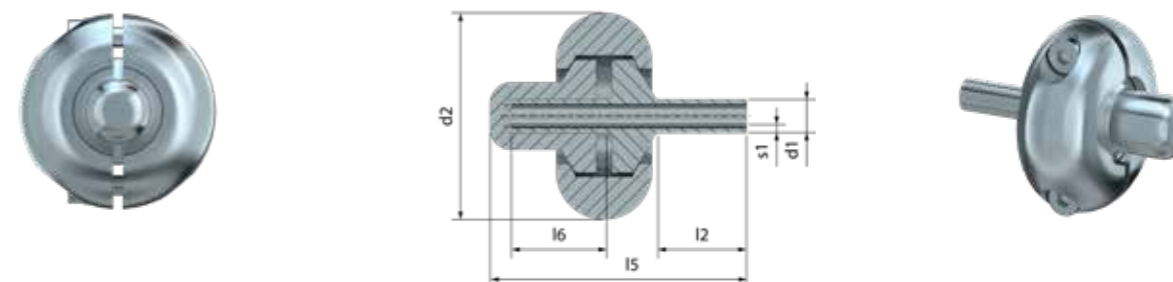
Blue marked = Stock item / Further dimesions on request

METRIC	DN	d1	s1	l1	l2	316L*				Code	
						TCC bf	TCC.1 ac	finetron bf	ultron ep		
		mm									
	10	12,00	1,00	37,00	5,00	T	T1	F	U	-	WC-10M
	15	18,00	1,50	37,00	10,00	T	T1	F	U	-	WC-15M
	20	23,00	1,50	45,00	10,00	T	T1	F	U	-	WC-20M
	25	28,00	1,50	45,00	10,00	T	T1	F	U	-	WC-25M
	32	35,00	1,50	45,00	10,00	T	T1	F	U	-	WC-32M

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.

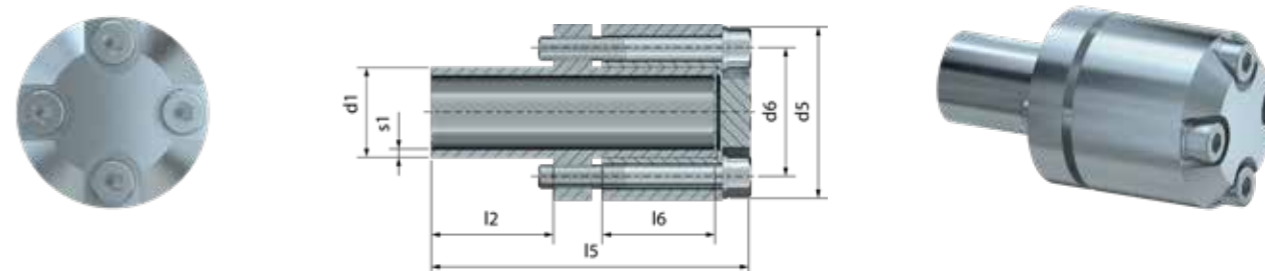
Blue marked = Stock item / Further dimesions on request

**Dockweiler Cap Type A & B**  
Imperial



IMPERIAL	Inch	Type	d1	s1	l2	l5	d5	d6	l6	316L*		Code	
										TCC.1 ac	ultron ep		
	1/4	A	6,35	0,89	19,05	48,40	39,00	-	26,65	T1	U	-	DC-04

**Cap Type B**

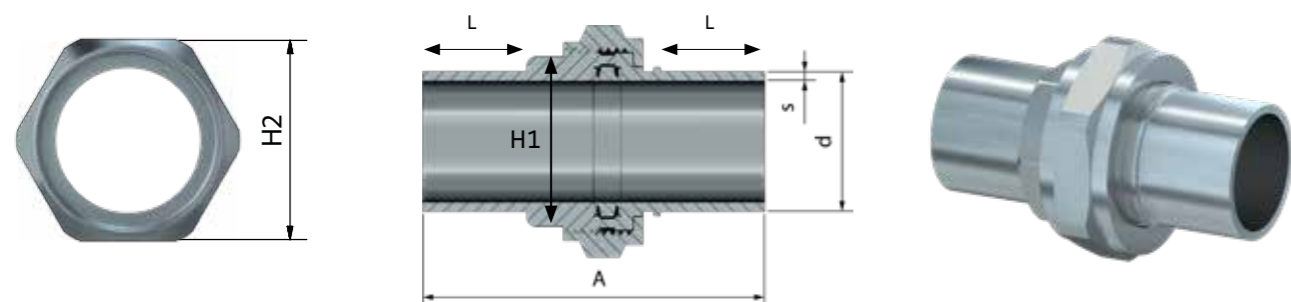


IMPERIAL	Inch	Type	d1	s1	l2	l5	d5	d6	l6	316L*		Code	
										TCC.1 ac	ultron ep		
	1/2	B	12,70	1,24	26,00	66,60	27,30	19,30	26,00	T1	U	-	DC-08
	1/2	B	12,70	1,65	26,00	66,30	27,30	19,30	26,00	T1	U	-	DC-08-65
	3/4	B	19,05	1,24	26,00	67,30	37,05	27,05	26,00	T1	U	-	DC-12-49
	3/4	B	19,05	1,65	26,00	67,30	37,05	27,05	26,00	T1	U	-	DC-12
	1	B	25,40	1,65	26,00	68,30	43,40	33,40	26,00	T1	U	-	DC-16
	1 1/2	B	38,10	1,65	30,00	77,30	57,90	46,90	30,00	T1	U	-	DC-24
	2	B	50,80	1,65	45,00	109,30	70,60	59,60	45,00	T1	U	-	DC-32
	2 1/2	B	63,50	1,65	45,00	110,30	83,30	72,30	45,00	T1	U	-	DC-40
	3	B	76,20	1,65	45,00	111,30	96,00	85,00	45,00	T1	U	-	DC-48
	4	B	101,60	2,11	55,00	132,30	121,40	110,40	55,00	T1	U	-	DC-64
	6	B	152,40	2,77	55,00	134,30	172,20	161,20	55,00	T1	U	-	DC-96

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.

Further dimesions on request.

**ZeroCon up to 1"**  
Complete Kit Screwed



IMPERIAL

Dimensions		d	s	A	L	H1	H2	finetron bf	ultron ep	Code
System	Inch	mm	mm	mm	mm	mm (Inch)	mm (Inch)	1.4435 / 316L		
20-1	1/4	6,35	0,89	62,80	19,00	11 (7/16")	19 (3/4")	F	U	Z-SK-04
40-2	3/8	9,53	0,89	62,80	19,00	14 (9/16")	24 (15/16")	F	U	Z-SK-06
60-3	1/2	12,70	1,24	62,80	19,00	16 (5/8")	27 (1 1/16")	F	U	Z-SK-08
50-3	1/2	12,70	1,65	62,30	19,00	16 (5/8")	27 (1 1/16")	F	U	Z-SK-08-65
100-4	3/4	19,05	1,24	62,30	19,00	22 (7/8")	32 (1 1/4")	F	U	Z-SK-12-49
90-4	3/4	19,05	1,65	62,80	19,00	22 (7/8")	32 (1 1/4")	F	U	Z-SK-12
130-5	1	25,40	1,65	62,80	19,00	27 (1 1/16")	38 (1 1/2")	F	U	Z-SK-16

Blue marked = Stock item / Further dimensions on request

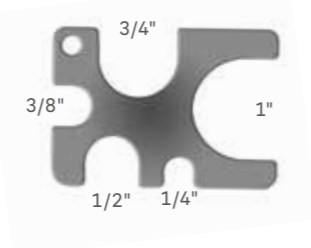
The ZeroCon Kit consists of:

- Pressure joint (1x)
- Screw joint (1x)
- Metal gasket (1x)
- Nut (1x)
- Assembly instruction

Please follow the assembly instructions for the correct use of the tool. The instruction is part of the ZeroCon kit.

The ZeroCon Disassembly Tool

Order Code: Z-SDT



**ZeroCon up to 1"**  
Parts



**Please note:** The system size for the screwed ZeroCon kit is always based on the number for the gasket and the number for the connecting nut



Gaskets

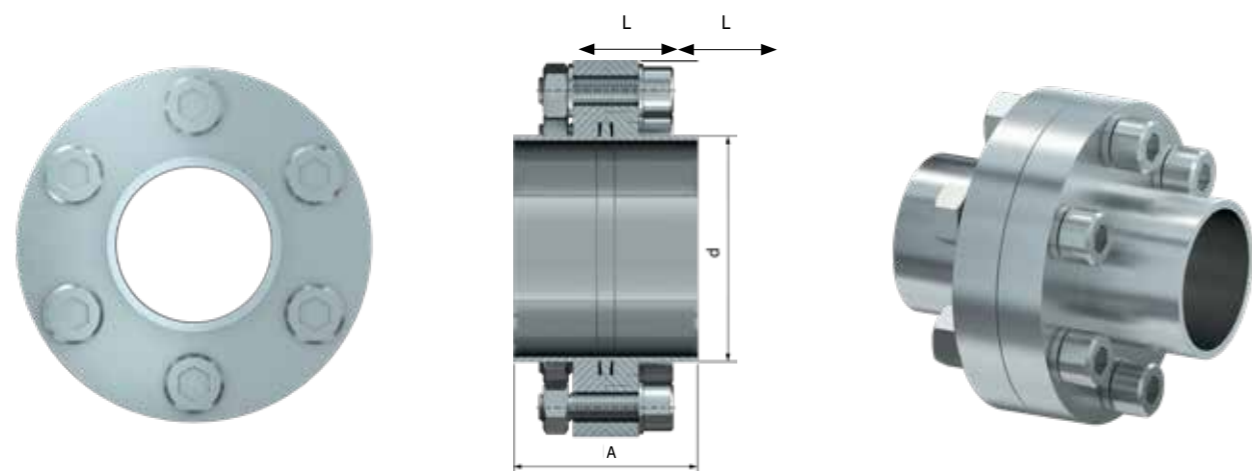
System	d	finetron bf	ultron*	Code
System	mm	1.4435 / 316L		
20	8,95	F	U	Z-SR-04
40	12,35	F	U	Z-SR-06
60	15,25	F	U	Z-SR-08
50	15,25	F	U	Z-SR-08-65
100	21,60	F	U	Z-SR-12-49
90	21,60	F	U	Z-SR-12
130	27,20	F	U	Z-SR-16

\* For technical reasons, the seal is not electropolished. The gasket has an RA value of 0,4 µm and is cleanroom cleaned.

Nuts

System	Tube (d)	Code
System	Inch	
1	1/4	Z-N-04
2	3/8	Z-N-06
3	1/2	Z-N-08
4	3/4	Z-N-12
5	1	Z-N-16

**ZeroCon from 1"**  
Complete Kit Flanged



Inch	Dimensions				Wrench Size			finetron bf	ultron ep	Code
	d	s	A	L	Screw Set	H1	H2			
	mm				mm (Inch)			1.4435 / 316L		
1	25,40	1,65	58,00	20,00	1F	10 (3/8")	5 (3/16")	F	U	- Z-FK-16
1 1/2	38,10	1,65	62,00	20,00	2F	13 (1/2")	6 (7/32")	F	U	- Z-FK-24
2	50,80	1,65	62,00	20,00	2F	13 (1/2")	6 (7/32")	F	U	- Z-FK-32
3	76,20	1,65	62,00	20,00	3F	16 (5/8")	8 (5/16")	F	U	- Z-FK-48
4	101,60	2,11	62,00	20,00	4F	16 (5/8")	8 (5/16")	F	U	- Z-FK-64

Blue marked = Stock item / Further dimensions on request

The ZeroCon Kit consists of:

- Fixed flange (1x)
- Rotatable flange (1x)
- Metal gasket (1x)
- Screw set (1x)
- Assembly instruction

Please follow the assembly instructions for the correct use of the tool. The instruction is part of the ZeroCon kit.



System	Bolt / mm	Code
1F	M6 x 30	Z-FDT-M6
2F	M8 x 35	Z-FDT-M8
3F	M10 x 35	Z-FDT-M10
4F	M10 x 35	Z-FDT-M10



**Gaskets**

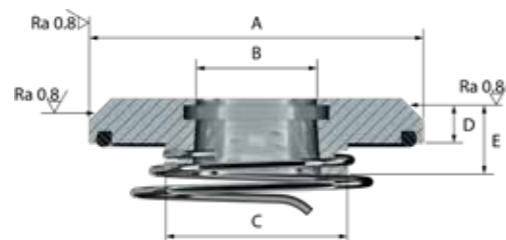
Inch	d (mm)	1.4435 / 316L		Code
		finetron bf	ultron**	
1	27,20	F	U	- Z-SR-16
1 1/2	42,90	F	U	- Z-SR-24
2	56,60	F	U	- Z-SR-32
3"	85,00	F	U	- Z-SR-48
4"	109,65	F	U	- Z-SR-64

\*\* For technical reasons, the seal is not electropolished. The gasket has an RA value of 0,4 µm and is cleanroom cleaned.

**Screw Set**

System	Dimensions of Screws		Amount of Screws	Lock washer	Code
	Bolt / mm	Nut / mm			
1F	M6 x 30	M6 x 1	6	SWS-M6	Z-SN-M6
2F	M8 x 35	M8 x 1	8	SWS-M8	Z-SN-M8
3F	M10 x 35	M10 x 1	8	SWS-M10	Z-SN-M10-8
4F	M10 x 35	M10 x 1	10	SWS-M10	Z-SN-M10-10

**CleanShut**  
Wall and Ceiling Feedthroughs



IMPERIAL

Size	OD Tube	A	B	C	D	E	Order Code				
Inch		mm					Code			PVDF	
1/2	12,70	64,00	12,90	34,00	10,00	18,00	WFT	-	08	-	PV
3/4	19,05	75,00	19,25	45,00	10,00	18,00	WFT	-	12	-	PV
1	25,40	75,00	25,60	45,00	10,00	18,00	WFT	-	16	-	PV
1 1/2	38,10	105,00	38,30	75,00	10,00	20,00	WFT	-	24	-	PV
2	50,80	105,00	51,00	75,00	10,00	20,00	WFT	-	32	-	PV
2 1/2	63,50	138,00	63,70	108,00	10,00	22,00	WFT	-	40	-	PV
3	76,20	138,00	76,40	108,00	10,00	22,00	WFT	-	48	-	PV
4	101,60	149,00	101,80	127,00	10,00	22,00	WFT	-	64	-	PV

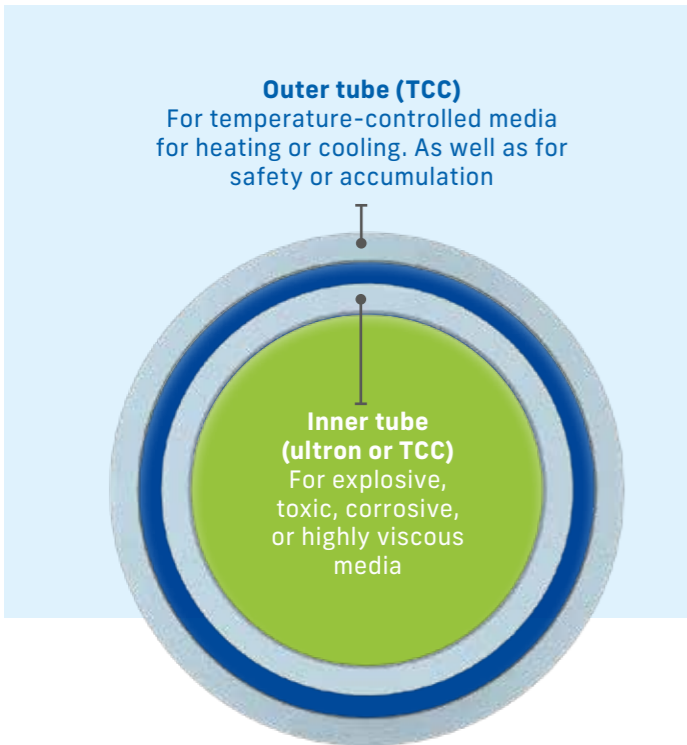
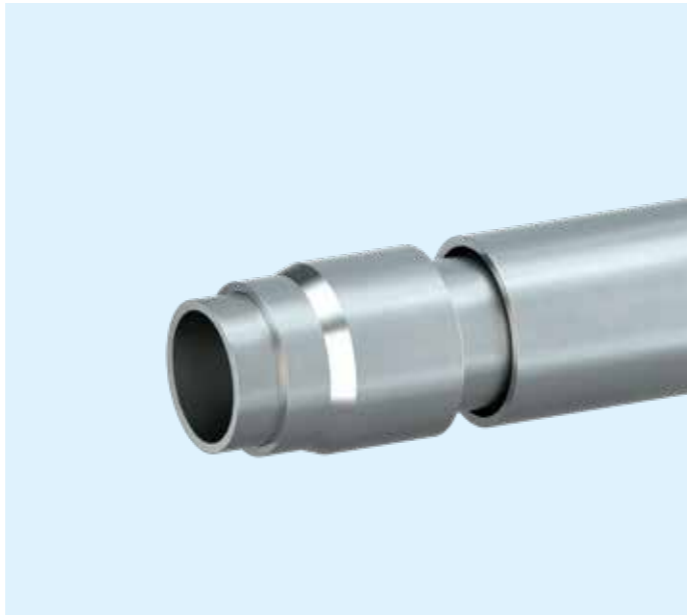
Blue marked = Stock item  
Further dimensions and materials on request. Subject to alteration.








METRIC

Size	OD Tube	A	B	C	D	E	Order Code				
DN		mm					Code			PVDF	
10	13,00	64,00	13,20	34,00	10,00	18,00	WFT	-	10M	-	PV
15	19,00	75,00	19,20	45,00	10,00	18,00	WFT	-	15M	-	PV
20	23,00	75,00	23,20	45,00	10,00	18,00	WFT	-	20M	-	PV
25	29,00	87,00	29,20	57,00	10,00	18,00	WFT	-	25M	-	PV
32	35,00	87,00	35,20	57,00	10,00	18,00	WFT	-	32M	-	PV
40	41,00	105,00	41,20	75,00	10,00	20,00	WFT	-	40M	-	PV
50	53,00	105,00	53,20	75,00	10,00	20,00	WFT	-	50M	-	PV
65	70,00	138,00	70,20	108,00	10,00	22,00	WFT	-	65M	-	PV
80	85,00	138,00	85,20	108,00	10,00	22,00	WFT	-	80M	-	PV
100	104,00	149,00	104,20	127,00	10,00	22,00	WFT	-	100M	-	PV

Blue marked = Stock item  
Further dimensions and materials on request. Subject to alteration.

**COAX – The Coaxial Tube System**  
**For Enhanced Safety**



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**Coaxial Tube System**  
Coaxial Tubes



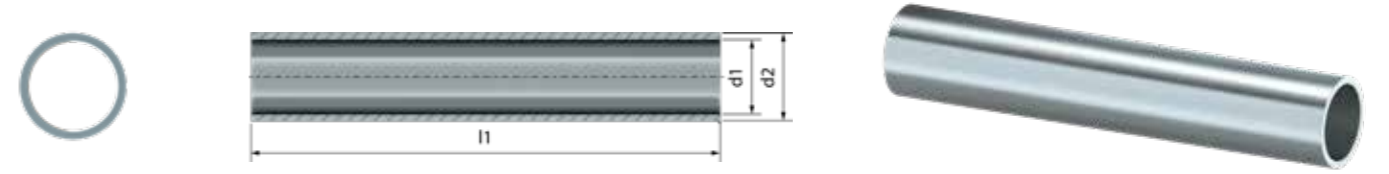
IMPERIAL	Inner Tube		Outer Tube		Weight**	TCC bf		ultron ep		Code
	d1	s1	d2	s2		316L*				
	mm				kg/m					
1/4	6,35	0,89	12,70	1,24	0,4752	T	U	-		CO-04
3/8	9,53	0,89	15,88	1,24	0,6512	T	U	-		CO-06
1/2	12,70	1,24	19,05	1,65	1,0709	T	U	-		CO-08
3/4	19,05	1,65	25,40	1,65	1,7022	T	U	-		CO-12
1	25,40	1,65	38,10	1,65	2,4901	T	U	-		CO-16

\* According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
\*\* Temp. 20 to 150 °C; static loading; rating depends on outer tube.

Blue marked = Stock item / Further dimensions on request



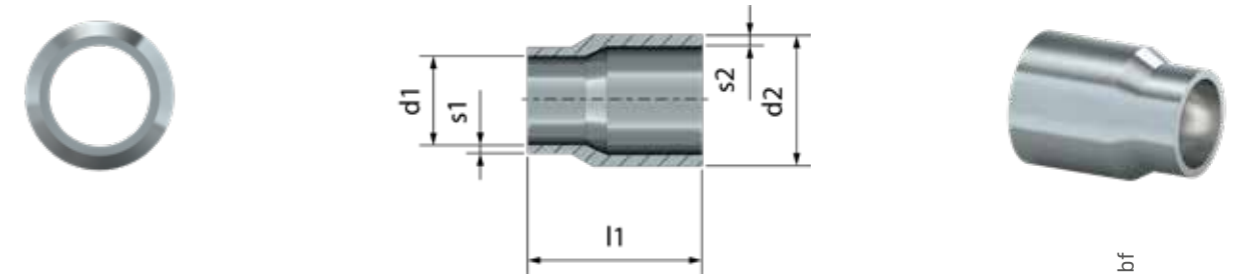
**Coaxial Tube System**  
Coaxial Weld Sleeve



IMPERIAL	For outer tube		Sleeve			TCC bf	Code
	d		d1	d2	l1		
	Inch	mm	mm			316L*	
	1/4	6,35	12,70	12,90	15,88	T	CS-04
	3/8	9,53	15,87	16,11	19,05	T	CS-06
	1/2	12,70	19,05	19,30	22,23	T	CS-08
	3/4	19,05	25,40	25,60	30,00	T	CS-12
	1	25,40	38,10	38,40	42,40	T	CS-16

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

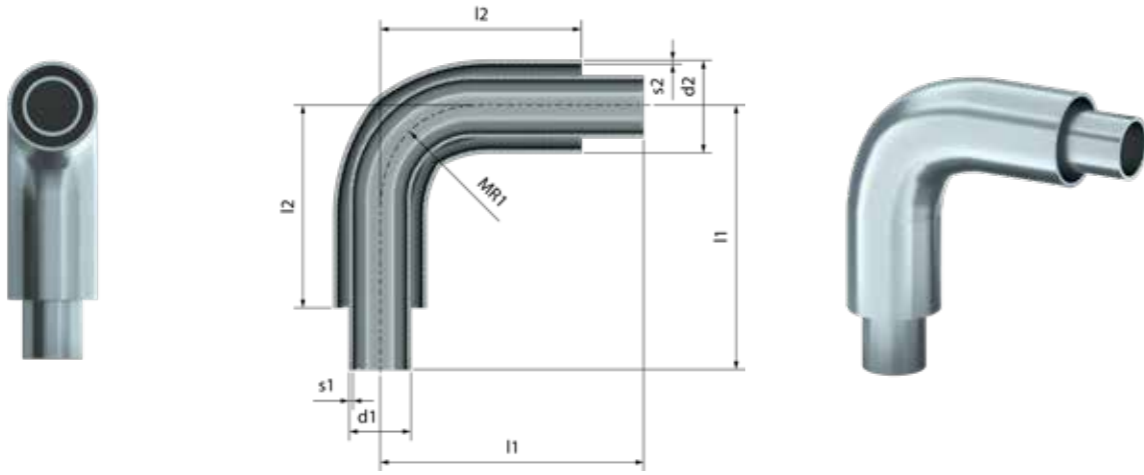
**Coaxial Terminator**



IMPERIAL	Sleeve			TCC bf	Code
	d1	d2	l1		
	Inch			316L*	
	1/4	6,35	12,70	25,40	CTM-04
	3/8	9,53	15,88	25,40	CTM-06
	1/2	12,70	19,05	25,40	CTM-08
	3/4	19,05	25,40	31,75	CTM-12
	1	25,40	38,10	31,75	CTM-16

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**Coaxial Tube System**  
Coaxial 90° Elbow

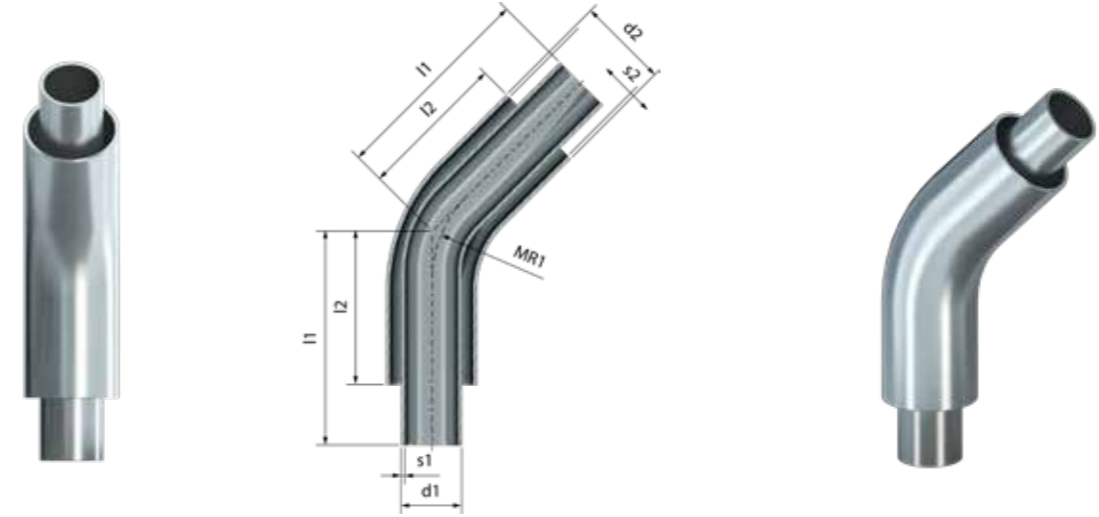


IMPERIAL

Inch	Inner Tube		Outer Tube		Dimensions			316L*	Code	Material	Finish
	d1	s1	d2	s2	l1	l2	MR1				
	mm										
1/4	6,35	0,89	12,70	1,24	120,70	101,65	38,10	T	U	-	CE9-04 bent
3/8	9,53	0,89	15,88	1,24	130,70	111,65	57,00	T	U	-	CE9-06 bent
1/2	12,70	1,24	19,05	1,65	184,40	165,35	85,00	T	U	-	CE9-08 bent
3/4	19,05	1,65	25,40	1,65	190,75	165,35	85,00	T	U	-	CE9-12 bent
1	25,40	1,65	38,10	1,65	107,97	82,57	38,10	T	U	-	CE9-16 welded

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**Coaxial Tube System**  
Coaxial 45° Elbow

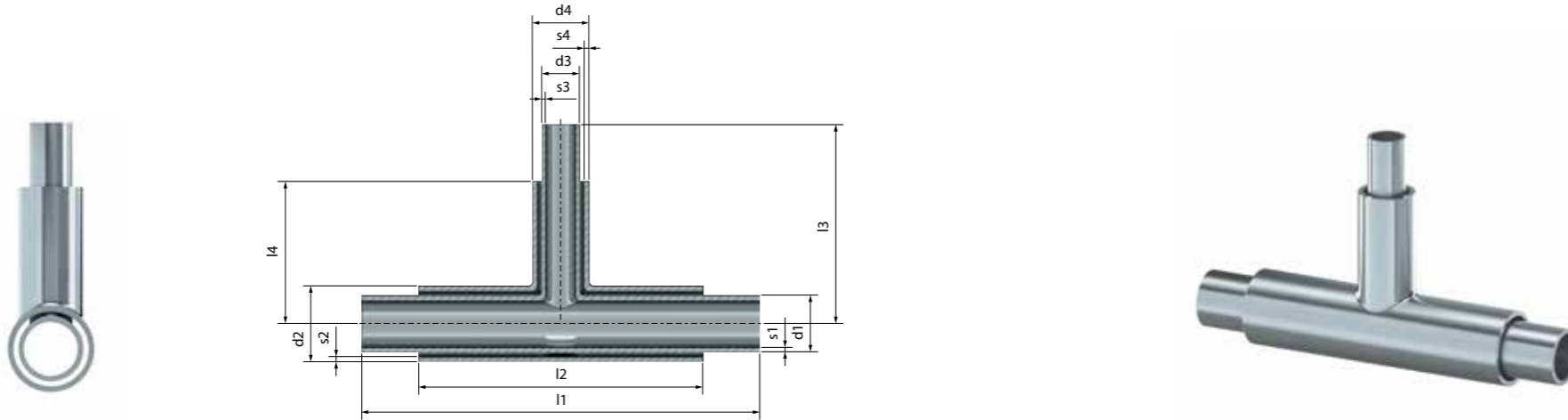


IMPERIAL

Inch	Inner Tube		Outer Tube		Dimensions			316L*	Code	Material	Finish
	d1	s1	d2	s2	l1	l2	MR1				
	mm										
1/4	6,35	0,89	12,70	1,24	98,45	79,40	38,10	T	U	-	CE4-04 bent
3/8	9,53	0,89	15,88	1,24	98,45	79,40	57,00	T	U	-	CE4-06 bent
1/2	12,70	1,24	19,05	1,65	109,26	90,21	85,00	T	U	-	CE4-08 bent
3/4	19,05	1,65	25,40	1,65	135,61	110,21	85,00	T	U	-	CE4-12 bent
1	25,40	1,65	38,10	1,65	88,90	63,50	38,10	T	U	-	CE4-16 welded

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**Coaxial Tube System**  
Coaxial Tee / Reducing Tee



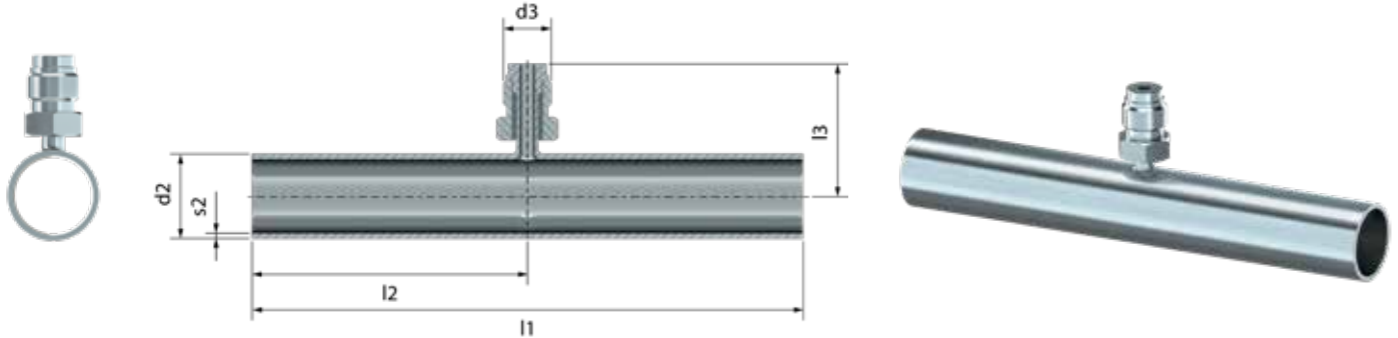
IMPERIAL

Inch	Inner Tube				Outer Tube				Main Tube		Branch		TCC bf	ultron ep	Code	
	Main Tube		Branch		Main Tube		Branch		Inner Tube	Outer Tube	Outer Tube	Inner Tube				
	d1	s1	d3	s3	d2	s2	d4	s4	l1	l2	l3	l4				
mm	mm	mm	mm	mm	mm	mm	mm	mm				316L*				
1/4 x 1/4	6,35	0,89	6,35	0,89	12,70	1,24	12,70	1,24	127,00	88,90	63,50	44,45	T	U	-	CTE-04
3/8 x 1/4	9,53	0,89	6,35	0,89	15,88	1,24	12,70	1,24	127,00	88,90	63,50	44,45	T	U	-	CTR-06-04
3/8 x 3/8	9,53	0,89	9,53	0,89	15,88	1,24	15,88	1,24	127,00	88,90	63,50	44,45	T	U	-	CTE-06
1/2 x 1/4	12,70	1,24	6,35	0,89	19,05	1,65	12,70	1,24	133,35	95,25	66,68	47,63	T	U	-	CTR-08-04
1/2 x 3/8	12,70	1,24	9,53	0,89	19,05	1,65	15,88	1,24	133,35	95,25	66,68	47,63	T	U	-	CTR-08-06
1/2 x 1/2	12,70	1,24	12,70	1,24	19,05	1,65	19,05	1,65	133,35	95,25	66,68	47,63	T	U	-	CTE-08
3/4 x 1/4	19,05	1,65	6,35	0,89	25,40	1,65	12,70	1,24	133,35	95,25	66,68	47,63	T	U	-	CTR-12-04
3/4 x 3/8	19,05	1,65	9,53	0,89	25,40	1,65	15,88	1,24	133,35	95,25	66,68	47,63	T	U	-	CTR-12-06
3/4 x 1/2	19,05	1,65	12,70	1,24	25,40	1,65	19,05	1,65	133,35	95,25	66,68	47,63	T	U	-	CTR-12-08
3/4 x 3/4	19,05	1,65	19,05	1,65	25,40	1,65	25,40	1,65	133,35	95,25	66,68	47,63	T	U	-	CTE-12
1 x 1/4	25,40	1,65	6,35	0,89	38,10	1,65	12,70	1,24	158,75	107,95	79,38	53,98	T	U	-	CTR-16-04
1 x 3/8	25,40	1,65	9,53	0,89	38,10	1,65	15,88	1,24	158,75	107,95	79,38	53,98	T	U	-	CTR-16-06
1 x 1/2	25,40	1,65	12,70	1,24	38,10	1,65	19,05	1,65	158,75	107,95	79,38	53,98	T	U	-	CTR-16-08
1 x 3/4	25,40	1,65	19,05	1,65	38,10	1,65	25,40	1,65	158,75	107,95	79,38	53,98	T	U	-	CTR-16-12
1 x 1	25,40	1,65	25,40	1,65	38,10	1,65	38,10	1,65	158,75	107,95	79,38	53,98	T	U	-	CTE-16

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request



**Coaxial Tube System**  
Coaxial Purge Tee



IMPERIAL	Inner Tube <sup>1</sup>		Outer Tube				VCR*	TCC bf	316L*	Code
	d1	s1	d2	s2	l1	l2				
Inch	mm							Inch		
1/4	6,35	0,89	12,70	1,24	146,00	73,00	33,30	1/4	T	- CPT-04
3/8	9,53	0,89	15,88	1,24	152,40	76,20	34,80	1/4	T	- CPT-06
1/2	12,70	1,24	19,05	1,65	152,40	76,20	36,40	1/4	T	- CPT-08
3/4	19,05	1,65	25,40	1,65	165,10	82,55	39,60	1/4	T	- CPT-12
1	25,40	1,65	38,10	1,65	165,10	82,55	45,85	1/4	T	- CPT-16

\*According to the Dockweiler standard, the material is usually double certified as 1.4404/316L or 1.4435/316L.  
Blue marked = Stock item / Further dimensions on request

**Dockweiler Quality.**  
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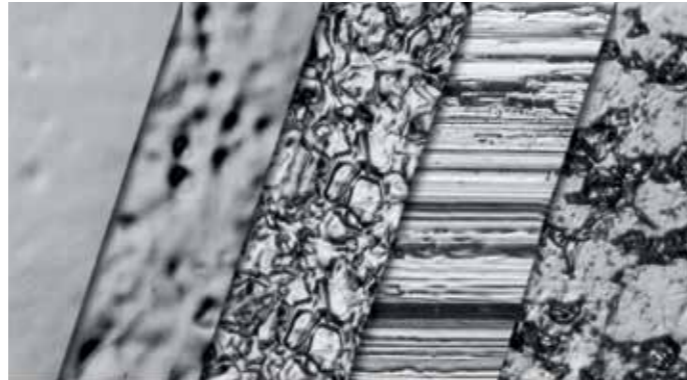


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