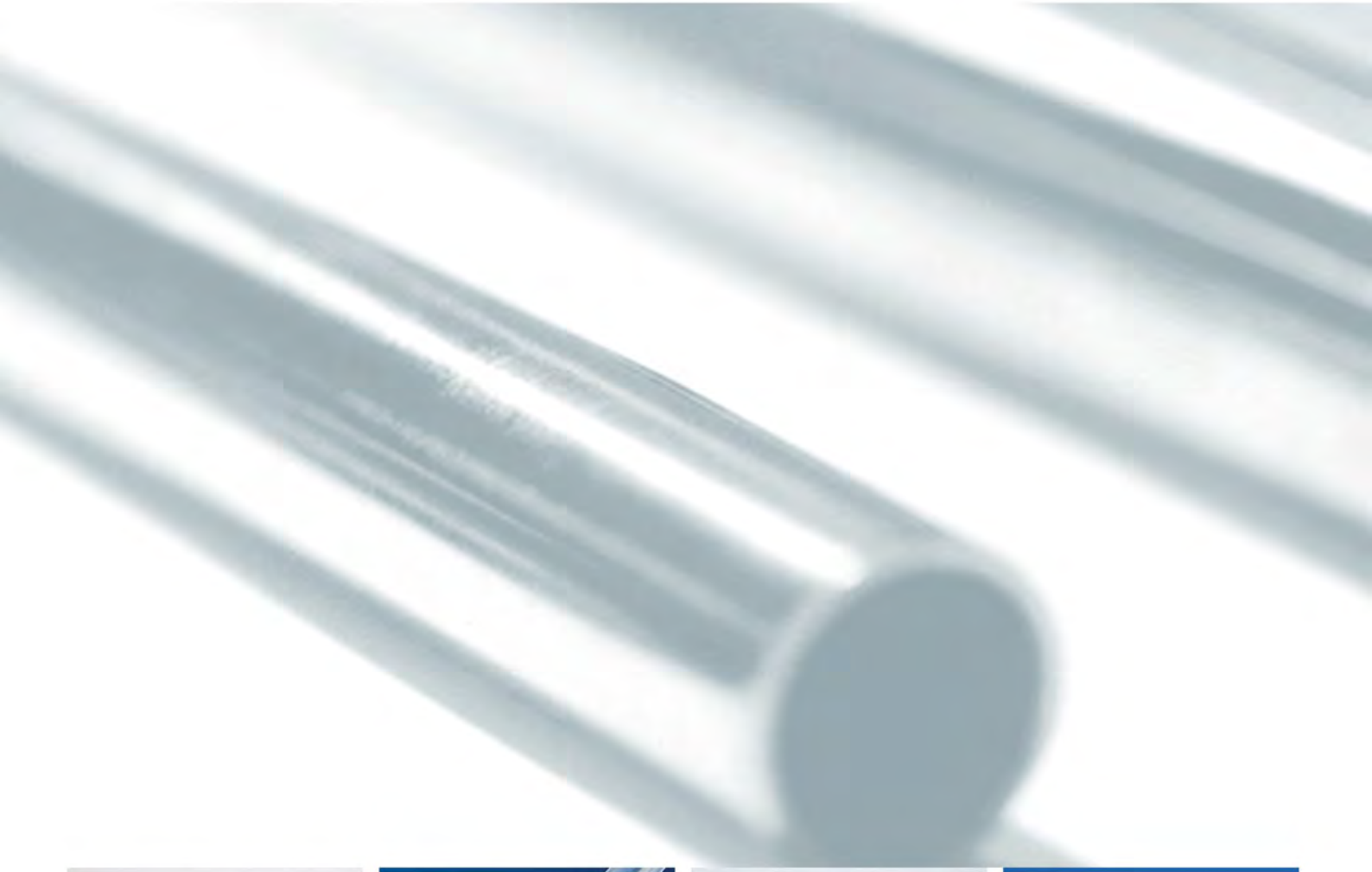
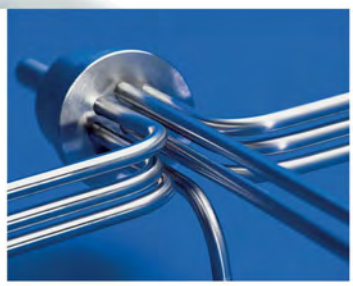
DOCKWEILER

TUBE SYSTEMS IN STAINLESS STEEL





02/2013

DOCKWEILER

TUBE SYSTEMS IN STAINLESS STEEL

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Dockweiler systems in stainless steel for production and transport of fluid media

Dockweiler tube systems

safetron	bright finish anodic clean electropolished
weldtron	bright finish anodic clean electropolished
DOCKWEILER BPE / bpe-direct®	acc. to ASME BPE

Additions to the systems

Manifolds with different branches,

CIP-lances and CIP-rings,

Prefabrications acc. to customer design,

Tube connections acc. to DIN 11864,

Gaskets and hoses

Typical applications

Pharmaceutical and Biotech Industries	a.o. WFI, parenteralia, lyophilization, API etc.
Cosmetics, Food Industry, Beverages	a.o. critical media, filling in aseptic area, lyophilization
Automotive	a.o. paint shop
Semiconductor, Photovoltaic, LED, Vacuum	a.o. pure media, slurry
Paper Industry	

CPKD/09/11

Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

safetron

Material	Welded or seamless austenitic stainless steel tubes, depending on outer diameter (see dimensions). 1.4435 BN2 / UNS S31603 (316L), δ-Ferrite content of the basic material and longitudinal weld ≤ 0.5%, for ISO dimensions app. also in circumferential welds. 1.4404 / UNS S31603 (316L), 1.4539 / UNS N08904 (904L), 316L UNS S31603
Dimensions	Stock dimensions: Imperial: 1/4" (6.35 x 0.89 mm) to 6" (152.40 x 2.77 mm) ISO: 13.50 x 1.60 mm to 219.10 x 2.60 mm Further dimensions on demand
Technical terms of delivery Tubes Length Fittings Tube components: Machined components: Tolerances Ends	 Acc. to DIN 11865/ 11866, ASTM A 269 / A 270, DIN EN 10217-7 / 10216-5 5900 - 6090 mm (max. 10% short lengths possible) Acc. to DIN 11865, Prematerial acc. to ASTM A 269 / A 270, DIN EN 10217-7 / DIN EN 10216-5 Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN 17440 Acc. to ASTM A 269 / A 270 (pharmaceutical tubes) or DIN EN ISO 1127 - D4/T3 Tubes and fittings are prepared for orbital welding
Surface options Tubes and Fittings Fittings	bright finish (H4)* anodic clean (H4)* electropolished (HE5)* Inner surface : Ra ≤ 0.40 µm (16 µin) Ra ≤ 0.40 µm (16 µin) Ra ≤ 0.25 µm (10 µin) Outer surface: Ra ≤ 1.00 µm (40 µin) a) Surface roughness of the cold worked area of fittings is not defined b) Specified roughness of total surface available on request
Inner surface treatment Tubes bf Tubes ac Tubes ep Fittings bf Fittings ac Fittings ep	 Cleaning and test procedure ASTM A 632, S3 Anodic cleaning procedure Spec. HE 175 3VNS Electropolishing procedure Spec. HE 175 4VN Cleaning and test procedure ASTM A 632, S3 Anodic cleaning procedure Spec. HE 111 3VNS Electropolishing procedure Spec. HE 111 4VN
Hardness	Max. 180 HV / 90 HRB
Test procedures	• Verification of basic test certificate • Verification of dimensions • Visual control • Roughness measurements • Endoscopic inspection of bright finished tubes
Marking Tubes Fittings	 Permanently marked Needle marking
Information	• DOCKWEILER • DW number • Dimensions • Material • Heat number
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for the prematerial
Packing and delivery	Bright finished tubes and fittings closed with transparent PE caps (anodic clean and electropolished tubes and fittings with PE/PA squares), sleeved and sealed in PE and marked with a green sticker „safetron". Electropolished tubes and fittings are closed with yellow PE caps and marked with a green sticker „safetron ep". Delivery of tubes in tubular container or wooden crate, fittings in strong cardboard box with shock-absorbing filler.

* Hygienic class acc. to DIN 11866 / 11865 / 11864

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Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

weldtron

Material	Welded or seamless austenitic stainless steel tubes, depending on outer diameter (see dimensions). 1.4435 BN2 / UNS S31603 (316L), δ-Ferrite content of the basic material and longitudinal weld ≤ 0.5%. 1.4404 / UNS S31603 (316L), 316L / UNS S31603
Dimensions	Stock dimensions: Imperial: 1/4" (6.35 x 0.89 mm) to 6" (152.40 x 2.77 mm) ISO: 13.50 x 1.60 mm to 219.10 x 2.60 mm Metric: 6.00 x 1.00 mm to 154.00 x 2.00 mm Further dimensions on demand
Technical terms of delivery Tubes Length Fittings Tube components: Machined components: Tolerances Ends	 Acc. to DIN 11865 / 11866, ASTM A 269 / A 270, DIN EN 10217-7 / 10216-5 5900 - 6090 mm (max. 10% short lengths possible) Prematerial acc. to ASTM A 269 / A 270, DIN EN 10217-7 / 10216-5 Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN 17440 Acc. to ASTM A 269 / A 270 (pharmaceutical Tubes) or DIN EN ISO 1127 - D4/T3 Tubes and fittings are prepared for orbital welding
Surface options Tubes and Fittings Fittings	bright finish (H3)* / anodic clean (H3)* / electropolished (HE3)* Inner surface : Ra ≤ 0.80 µm (32 µin) / Ra ≤ 0.80 µm (32 µin) / Ra ≤ 0.60 µm (24 µin) Outer surface: Ra ≤ 1.00 µm (40 µin) Ra value in the cold worked area of fittings (inner and outer surface) as well as on the longitudinal weld seam of electropolished tubes and fittings is not defined Specified roughness of total surface available on request
Inner surface treatment Tubes bf Tubes ac Tubes ep Fittings bf Fittings ac Fittings ep	 Cleaning and test procedure ASTM A 632, S3 Anodic cleaning procedure Spec. HE 175 3VNS Electropolishing procedure Spec. HE 175 3VN Cleaning and test procedure ASTM A 632, S3 Anodic cleaning procedure Spec. HE 111 3VNS Electropolishing procedure Spec. HE 111 3VN
Hardness	Max. 180 HV / 90 HRB
Test procedures	• Verification of basic test certificate • Visual control • Endoscopic inspection of bright finished tubes • Verification of dimensions • Roughness measurements
Marking Tubes Fittings	 Permanently marked Needle marking
Information	• DOCKWEILER • DW number • Dimensions • Material • Heat number
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for the prematerial
Packing and delivery	Bright finished tubes and fittings are closed with transparent PE caps (anodically cleaned and electropolished tubes and fittings with PE/PA squares), sleeved and sealed in PE and marked with a white sticker „weldtron". Electropolished parts with yellow caps and with a white sticker „weldtron ep". Delivery of tubes in tubular container or wooden crate, fittings in strong cardboard box with shock-absorbing filler.

* Hygienic class acc. to DIN 11866 / 11865 / 11864

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Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DOCKWEILER BPE
bpe-direct®

Material	UNS S31603 (316L), the chemical compositions in accordance to Table DT-3 ASME BPE Chemical Composition in weights% C max. 0.030 — Ni = 10.00 – 14.00 Cr = 16.00 – 18.00 — P max. 0.045 Mn max. 2.00 — Si max 1.0 Mo = 2.00 – 3.00 — S = 0.005 – 0.017 further materials acc. to ASME BPE
Dimensions	1/4" x 0.035 (6.35 x 0.89 mm) to 6" x 0.109 (152.40 x 2.77 mm)
Technical terms of delivery Tubes and Fittings Length Tolerances Ends	 According to ASME BPE, ASTM A 269 / A 270 5900 - 6090 mm (max. 10% short lengths possible) According to ASME BPE section MMOC Tubes and fittings are prepared for orbital welding
Surface options Tubes and fittings	inner surface: As per ASME BPE, section SF, bright finished SF1 — electropolished SF4 Ra max — Ra max 20 µin / 0.51 µm — 15 µin / 0.38 µm Outer surface: Tubes and Fittings Ra ≤ 1.00 µm (40 µin)
Inner surface treatment Tubes SF1 SF4 Fittings SF1 SF4	 Cleaning and test procedure ASTM A 632, S3 Electropolishing procedure Spec. HE 175 4VN Cleaning and test procedure ASTM A 632, S3 Electropolishing procedure Spec. HE 111 4VN
Hardness	Max. 180 HV / 90 HRB
Test procedures	• Verification of basic test certificate • Verification of dimensions • Visual control • Roughness measurements • Endoscopic inspection of bright finished tubes
Marking Tubes Fittings	 Permanently marked Needle marking
Information	• ASME BPE, Surface as per ASME BPE, section SF3 • DOCKWEILER • DW no. (batch no.) • Dimensions • Material • Heat number
Documentation	Certified Test Report 3.1 as per DIN EN 10204 for the prematerial
Packaging and Delivery	Ends are closed with transparent PE caps (electropolished parts with PE/PA squares). Tubes and fittings are individually sealed in PE foil, marked with a white sticker „ASME BPE SF1", electropolished parts with yellow caps and yellow sticker „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.

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Specification

DOCKWEILER NON-METALLIC

Gaskets for Clamp Connections

Material	EPDM, PTFE, Silikon (VMQ), Viton® (FKM), PTFE/FKM, Tuf Flex® [1], Tuf Steel® [1]
Dimensions	Imperial: 1/4” - 6” ISO: 13,50 - 114,30 mm Metric: 6,00 - 154,00 mm
Technical Terms of Delivery	DIN 32676, ASME BPE, U.S. Pharmacopeia Class VI Certification, FDA, Animal derived ingredients free (ADI)
Durability	Please see durability table
Surface	Cleaned, free of oil and fat according to DW cleaning specification
Quality control	Verification of manufacturer documentation Verification of dimensions Visual control
Marking	Laser engraved
Marking information	Subject to technical realization the gaskets are permanently marked with the following information in the order stated below: 1. Dockweiler (DW) and Dockweiler number 2. Material 3. Dimension 4. Flange size
Documentation	According to pharmaceutical standards
Packing options	Single packed, multiple packing: 10, 25, 50 pcs./package
Label	Logo Dockweiler number Batch / Barcode Material Dimension Flange size

[1] Available only in imperial dimensions

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Compound Selection for Fluids and Chemicals

Material acc. to ASTM D1418		Tuf-Steel®	Tuf-Flex®	PTFE/FKM	PTFE	SILICONE Platinum Cured	FKM Fluoro-elastomer	EPDM Peroxide Cured
Application		pharmaceutical applications, ultrapure water and critical food and beverage processes	pharmacy, biotechnology, ultrapure water, WFI and critical food and beverage processes	food and pharmaceutical applications, pharmacy, biotechnology	pharmacy, biotechnology, ultrapure water	pharmacy, biotechnology	general use for process equipment in pharma and biotechnology	general use for process equipment, not recommnded for SIP
Comment		stable to temperature variations, no flow properties like PTFE	full seal effect even in case of wide temperature variations	extended service life due to inert PTFE coat	long service life, not recommended wide temperature variations	very flexible even a temperature	flexible even at low temperatures, suitable for many solvents	suitable for low pressure steam
Material		composite of stainless 316L and PTFE	PTFE grafted onto an inner EPDM core	FKM with PTFE coat	Perfluor-Ethylene	platinum-cured silicone	Perfluor-Rubber	Ethylene-Propylene-Diene-Rubber
Temperature variations		+	++	(+)	_	+	+	+
Continuous Steam ++		++	++	++	+	++	++	
Unpolar solvents		++	++	++	++	_	++	-
Polar solvents		++	++	++	++	-	_	+
Acid + active Oxygen		++	++	++	++	+	+	+
Acid		++	++	++	++	+	+	+
Alkaline		++	++	++	++	_	+	+
Steam Cycles		100	100					
Compound number						296		CPO-196A
„Tensile Strenght“	Bar PSI	133 1928	0	0	0	48 700	0	138 2000
„Elongation at break“	%	270	160	150	150	800	200	400
Hardness	Shore A	68	82	45	45	65-75	80	70±5
Density	g/cm3	3,45	1,28	1,90	2,10	1,20	1,85	1,25
Compression Set	% hours T / °C/F	5 24 175/347	7 24 150/302	15 24 175/347	18,5 70 200/392	20 24 175/347	13 24 175/347	10 24 150/302
„Temperature range / °C“	Min Max	-70 260	-70 180	-60 180	-15 230	-60 200	-20 210	-40 140
„Temperature range / F“	Min Max	-94 500	-94 356	-76 356	5 446	-76 392	-4 410	-40 284

++	excellen
+	good
(+)	satisfactory
_	moderate
-	not suitable

Please note: Dockweiler AG does not take any liability for improper use
Table is subject to change without notice

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Dockweiler systems in stainless steel for transport of UHP, HP and P gases

Dockweiler tube systems

ULTRON

finetron / finetron❶

TCC / TCC❶

TCC 304L / TCC❶ 304L

COAX

VSR80

Additional items to the systems

UHP-Manifolds, manifolds with different branches, manifolds with ball valves, Dockweiler Cap

Products from Evans Components:

ball valves, gas-stick, mini ball valves, Purge tool, Pressfits

Typical applications

Semiconductor	a. o. wafer prod. (Epitaxy) chip production, LCD, LED
Photovoltaic and renewable energy	process gases, utility gases, slurry, superheated and kryogenic gases
Analytics	laboratories a. o. HPLC, GC
Automotive	a. o. motor tests
Pharmaceutical Industry	a. o. gassing

CPKD/09/11

Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

ULTRON

Material	Seamless or welded stainless steel tube, depending on outer diameter (see dimensions). 1.4404 / 1.4435 / UNS S31603 (316L)
Dimensions	Stock dimensions: Imperial: 1/8" (3.18 x 0.56 mm)* to 6" (152.40 x 2.77 mm) Pipe: NPS 8, 10, 12 Schedule 10S acc. to ASTM A 312 (219.08 x 3.76 mm to 323.85 x 4.57 mm) Metric: 3.00 x 0.50 mm* to 35.00 x 1.50 mm Further dimensions on demand: ISO: 13.50 x 1.60 mm to 219.10 x 2.60 mm
Technical terms of delivery Tubes Length Fittings Tube components Machined components Tolerances Weld ends	 Acc. to ASTM A 269 / A 632 / A312 / A 403 (Pipe), DIN EN 10217-7 / 10216-5 5900 - 6090 mm (max. 10% short lengths possible) Prematerial acc. to ASTM A 269 / A 632 / A 312 (Pipe), DIN EN 10217-7 / 10216-5 Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN 17440 Pipe dimensions acc. to ASTM A 182 According to ASTM A 269 / A 632 or DIN EN ISO 1127 - D4/T3 Tubes and fittings are prepared for orbital welding
Surface options Tubes and Fittings Fittings Pipes	 Inner surface: Ra ≤ 0.18 µm, Ra ≤ 0.25 µm and Ra ≤ 0.13 µm on request (7 µin, 10 µin, 5 µin) Outer surface: Ra ≤ 1.00 µm (40 µin) Inner and outer surface roughness of the cold worked area is not defined Specified roughness of total surface available on request Ra ≤ 0.51 µm (20 µin)
Inner surface treatment Tubes Fittings	 Electropolishing procedure Spec. HE 175 8VN Electropolishing procedure Spec. HE 111 8VN Cleanroom cleaning and packing
Hardness	Max. 180 HV / 90 HRB
Test procedures	• Verification of basic test certificate • Verification of dimensions • Visual inspection • Roughness measurements • Conductivity test (DI water) • TOC-measurement of DI water • Particle measurements • REM • XPS/ESCA • Auger analysis (AES) • Endoscopic inspection of bright finished tubes before electropolishing
Marking Tubes Fittings	 Permanently marked Needle marking
Information	• DOCKWEILER • DW number • Dimensions • Material • Heat number
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for the prematerial
Packing and delivery	Tubes and fittings filled with N2 (99.9998% incl. inert gas), closed with PA/PE squares and yellow PE caps, sleeved and sealed in PE with yellow sticker „ULTRON" – imperial dimensions double sleeved and sealed in PE. Delivery in tubular container or wooden crate, fittings in strong cardboard box with shock absorbing filler.

*For dimensions OD < 5.00 mm roughness is not defined. Length: 2950 ± 50 mm.

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Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

finetron/finetron 1

Material	Seamless or welded stainless steel tube, depending on outer diameter (see dimensions). 1.4404 / 1.4435 / UNS S31603 (316L)
Dimensions	Stock dimensions: Imperial: 1/4" (6.35 x 0.89 mm) to 6" (152.40 x 2.77 mm) Pipe: see section dimensions (tubes) Metric: 6.00 x 1.00 mm to 35.00 x 1.50 mm Further dimensions on demand: ISO, metric
Technical terms of delivery Tubes Length Fittings Tube components Machined components: Tolerances Ends	 Acc. to ASTM A 269 / A 632 / A312 (Pipe), DIN EN 10217-7 / 10216-5 5900 - 6090 mm (max. 10% short lengths possible) Prematerial acc. to ASTM A 269 / A 632 / A 312 / A 403 (Pipe), DIN EN 10217-7 / 10216-5 Prematerial according to ASTM A 479, DIN EN 10088-3, DIN 17440 Pipe dimensions acc. to ASTM A 182 According to ASTM A 269 / A 632 or DIN EN ISO 1127 - D4/T3 Tubes and fittings are prepared for orbital welding
Surface options Tubes and Fittings Fittings Pipes	 Inner surface: OD ≤ 63.50 mm: Ra ≤ 0.40 µm (16 µin), OD > 63.50 mm: Ra ≤ 0.60 µm (24 µin) Outer surface: Ra ≤ 1.00 µm (40 µin) Surface roughness of the cold worked area is not defined Specified roughness of total surface available on request Inner and outer surface an request
Inner surface treatment Tubes Fittings	 finetron: Cleaning and test procedure ASTM A 632, S3 finetron.1: Anodic cleaning procedure Spec. HE 175 3VNS finetron: Cleaning and test procedure ASTM A 632, S3 finetron.1: Anodic cleaning procedure Spec. HE 111 3VNS
Hardness	Max. 180 HV / 90 HRB
Test procedures	• Verification of basic test certificate • Verification of dimensions • Visual inspection • Roughness measurements • Endoscopic inspection of bright finished tubes
Marking Tubes Fittings	 Permanently marked Needle marking
Information	• DOCKWEILER • Material • DW number • Heat number • Dimensions
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for prematerial
Packing and delivery	Bright finished and anodic cleaned tubes and fittings closed with transparent PE caps (anodic clean tubes and fittings with PE/PA squares), sleeved and sealed in PE and marked with blue sticker „finetron" or „finetron.1". Delivery of tubes in tubular container or wooden crate, fittings in strong cardboard box with shock-absorbing filler.

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Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

TCC / TCC1

Material	Seamless or welded stainless steel tube, depending on outer diameter (see dimensions). 1.4404 / 1.4435 / UNS S31603 (316L)
Dimensions	Stock dimensions: Imperial: 1/8" (3.18 x 0.56 mm)* to 6" (152.40 x 2.77 mm) Pipe: NPS 8, 10, 12, 16, 20 Schedule 10S acc. to ASTM A 312 (219.08 x 3.76 mm to 508.00 x 5.54 mm) Metric: 3.00 x 0.50 mm* to 35.00 x 1.50 mm Further dimensions on demand: ISO: 13.50 x 1.60 mm to 219.10 x 2.60 mm
Technical terms of delivery Tubes Length Fittings Tube components Machined components: Tolerances Ends	 Acc. to ASTM A 269 / A 632 / A312 (Pipe), DIN EN 10217-7 / 10216-5 5900 - 6090 mm (max. 10% short lengths possible) Prematerial acc. to ASTM A 269 / A 632 / A 312 / A 403 (Pipe), DIN EN 10217-7 / 10216-5 Prematerial according to ASTM A 479, DIN EN 10088-3, DIN 17440 Pipe dimensions acc. to ASTM A 182 Acc. to ASTM A 269 / A 632 (only tubes Ra ≤ 0,80 µm) or DIN EN ISO 1127 - D4/T3 Tubes and fittings are prepared for orbital welding
Surface options Tubes and Pipes Fittings	 Inner surface: Ra not defined, on request: Ra ≤ 0.80 µm (32 µin), Outer surface: Ra ≤ 1.00 µm (40 µin) Surface roughness of the cold worked area is not defined Specified roughness of total surface available on request
Inner surface treatment Tubes Fittings	 TCC: Cleaning and test procedure ASTM A 632, S3 TCC.1: Anodic cleaning procedure Spec. HE 175 2VNS TCC: Cleaning and test procedure ASTM A 632, S3 TCC.1: Anodic cleaning procedure Spec. HE 111 2VNS
Hardness	Max. 180 HV / 90 HRB
Test procedures	• Verification of basic test certificate • Verification of dimensions • Visual inspection • Roughness measurements • Endoscopic inspection of bright finished tubes
Marking Tubes Fittings	 Permanently marked Needle marking
Information	• DOCKWEILER • DW number • Dimensions • Material • Heat number
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for the prematerial
Packing and delivery	Bright finished and anodic cleaned tubes and closed with transparent PE caps (anodic clean tubes and fittings with PE/PA squares), sleeved and sealed in PE and marked with green sticker „TCC" or „TCC.1". Delivery of tubes in tubular container or wooden crate, fittings in strong cardboard box with shock-absorbing filler.

* For dimensions OD < 5.00 mm roughness is not defined.
Length: 2950 ± 50 mm.

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Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

TCC 304L / TCC 1 304L

Material	Seamless or welded stainless steel tube, depending on outer diameter (see dimensions). 1.4307 / 1.4306 / UNS S30403 (304L) Fittings: 1.4404 / UNS S31603 (316L)
Dimensions	Stock dimensions: Imperial: 1/4" (6.35 x 0.89 mm) to 6" (152.40 x 2.77 mm) Pipe: NPS 8, 10, 12, 16, 20 Schedule 10S acc. to ASTM A 312 (219.08 x 3.76 mm to 508.00 x 5.54 mm) Further dimensions on request.
Technical terms of delivery Tubes Length Fittings Tube components Machined components Tolerances Ends	 Acc. to ASTM A 269 / A 312 (Pipe), DIN EN 10217-7 / 10216-5 5900 - 6090 mm (max. 10% short lengths possible) Prematerial acc. to ASTM A 269 / A 312 / A 403 (Pipe), DIN EN 10217-7 / 10216-5 Prematerial acc. to ASTM A 479, DIN EN 10088-3, DIN 17440 Pipe dimensions acc. to ASTM A 403 According to ASTM A 269 Tubes and fittings are prepared for orbital welding
Surface options Tubes and Pipes Fittings	 Inner surface: Ra not defined, on request: Ra ≤ 0.80 µm (32 µin), Outer surface: Ra not defined Surface roughness of the cold worked area is not defined Specified roughness of total surface available on request
Inner surface treatment Tubes Fittings	 TCC 304L: Cleaning and test procedure ASTM A 632, S3 TCC.1 304L: Anodic cleaning procedure Spec. HE 175 2VNS TCC 304L: Cleaning and test procedure ASTM A 632, S3 TCC.1 304L: Anodic cleaning procedure Spec. HE 111 2VNS
Test procedures	• Verification of basic test certificate • Verification of dimensions • Visual inspection • Endoscopic inspection of bright finished tubes
Hardness	Max. 180 HV / 90 HRB
Information	• DOCKWEILER • DW number • Dimensions • Material • Heat number
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for the prematerial
Packing and delivery	Tubes and fittings closed with red PE caps (anodic clean tubes and fittings with PE/PA squares), sleeved and sealed in PE and marked with orange coloured sticker „TCC 304L" or „TCC.1 304L". Delivery of tubes in tubular container or wooden crate, fittings in strong cardboard box with shock-absorbing filler.

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Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

COAX

Material	Inner and outer tube, seamless or welded from the DOCKWEILER programme. 1.4404 / 1.4435 / UNS S31603 (316L) Other material on demand
Dimensions	Stock dimensions: process tube from 1/4” (6.35 x 0.89 mm) to 1” (25.40 x 1.65 mm) Further dimensions on demand
Technical terms of delivery Tubes Length Fittings Tube components: Machined components: Tolerances Weld ends	 According to ASTM A 269 / A 632, DIN EN 10217-7 / 10216-5 5900 – 6090 mm Prematerial acc. to ASTM A 269 / A 632, DIN EN 10217-7 / 10216-5 Prematerial according to ASTM A 479, DIN EN 10088-3, DIN 17440 According to ASTM A 269 / A 632 Tubes and fittings are prepared for orbital welding
Surface options Tubes and Fittings Fittings	 Depending on product specification of the inner tube ULTRON, Finetron/Finetron.1, TCC/TCC.1 Inner and outer surface roughness of the cold worked area is not defined Specified roughness of total surface available on request
Hardness	Max. 180 HV / 90 HRB
Test procedures	Acc. to product specification of the inner tube
Marking Tubes Fittings	 Permanently marked Needle marking
Information	• DOCKWEILER • DW number • Dimensions • Material • Heat number
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for the prematerial
Packing and delivery	Tube ends and fitting ends closed with PA/PE squares and PE caps (colour acc. to specification of the inner tube), sleeved and sealed in PE with coloured labels. Delivery in tubular container or wooden crate, fittings in strong card-board box with shock-absorbing filler (look at specification for the inner tube).

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Specification

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

VSR80

Material	Seamless, stainless steel tube. 1.4404 / UNS S31603 (316L).
Dimensions	Stock dimensions: Imperial: 1/16" (1.59 x 0.25 mm) to 1" (25.40 x 1.65 mm) Metric: 3.00 x 0.50 mm to 35.00 x 1.50 mm Further dimensions on demand
Technical terms of delivery Tubes Length Tolerances	 According to ASTM A 269, DIN EN 10216-5 5950 ± 50 mm According to ASTM A 269, DIN EN ISO 1127 - D4/T3
Surface options Tubes	 Inner surface: roughness not defined Outer surface: Ra ≤ 1.00 µm (40 µin)
Hardness	70-90 HRB
Test procedures	• Verification of basic test certificate • Verification of dimension • Visual inspection
Marking Tubes	 Permanently marked
Information	• DOCKWEILER • DW number • Dimensions • Material • Heat number
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for prematerial
Packing and delivery	Delivery in tubular container or case for safe transport.

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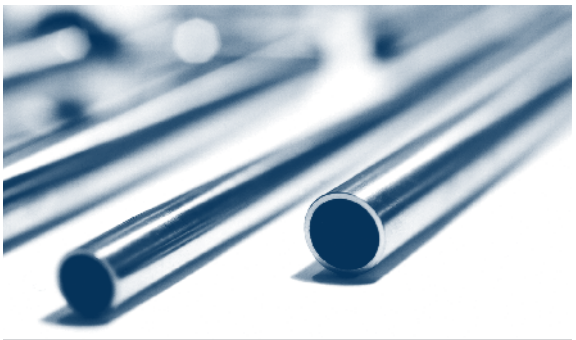
TUBE SYSTEMS IN STAINLESS STEEL

Dimensions

Dockweiler tube systems	Dimensions
ULTRON	Imperial / Pipe (10S) / ASME BPE
finetron/finetron❶	ISO / DIN 11866
TCC/TCC❶	Metric / DIN 11866
TCC 304L/TCC❶ 304L	
COAX	
VSR80	
safetron	
weldtron	
DOCKWEILER BPE / bpe-direct®	
Instrument tubing	

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

TUBES



• = seamless (standard programme)

▲ = welded (standard programme)

Ultron	finetron	TCC	TCC 304L	VSR 80	safetron	weldtron	Dockweiler BPE
•		•	•	•			
•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•
•	•	•	▲•	•			
•	•	•		•	▲	▲	▲
•	•	•		•			
•	•	•	▲•	•	▲	▲	▲
•	•	▲•	▲•	•	▲	▲	▲
▲•	▲•	▲	▲		▲	▲	▲
▲	▲	▲	▲		▲	▲	▲
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▲	▲	▲	▲		▲	▲	▲
▲	▲	▲	▲		▲	▲	▲

IMPERIAL Inch	d / s mm	Weight kg/m
1/8″	3.18 x 0.56	0.0368
1/4″	6.35 x 0.89	0.1241
3/8″	9.53 x 0.89	0.1966
1/2″	12.70 x 1.24	0.3511
1/2″	12.70 x 1.65	0.4571
3/4″	19.05 x 1.24	0.5453
3/4″	19.05 x 1.65	0.7198
1″	25.40 x 1.65	0.9824
1 1/2″	38.10 x 1.65	1.5077
2″	50.80 x 1.65	2.0331
2 1/2″	63.50 x 1.65	2.5585
3″	76.20 x 1.65	3.0838
4″	101.60 x 2.11	5.2627
6″	152.40 x 2.77	10.3909

PIPE NPS Schedule 10S	d / s mm	Weight kg/m
6*	168.28 x 3.40	14.0400
8	219.08 x 3.76	20.2700
10	273.05 x 4.19	28.2100
12	323.85 x 4.57	36.5400
16	406.40 x 4.78	48.0700
20	508.00 x 5.54	69.9500

* On request

Further dimensions on request. Subject to alteration.

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TUBE SYSTEMS IN STAINLESS STEEL

TUBES

Ultron	finetron	TCC	TCC 304L	VSR 80	safetron	weldtron	Dockweiler BPE	ISO / DIN 11866 DN / NW	d / s mm	Weight kg/m
					▲	▲		8	13.50 x 1.60	0.4773
					▲	▲		10	17.20 x 1.60	0.6257
					▲	▲		15	21.30 x 1.60	0.7902
					▲	▲		20	26.90 x 1.60	1.0148
					▲	▲		25	33.70 x 2.00	1.5894
					▲	▲		32	42.40 x 2.00	2.0257
					▲	▲		40	48.30 x 2.00	2.3215
					▲	▲		50	60.30 x 2.00	2.9232
					▲	▲		65	76.10 x 2.00	3.7154
					▲	▲		80	88.90 x 2.30	4.9934
					▲	▲		100	114.30 x 2.30	6.4580
					▲	▲		150	168.30 x 2.60	10.8007
						▲		200	219.10 x 2.60	14.1119

								METRIC / DIN 11866 DN / NW	d / s mm	Weight kg/m
•		•	•	•				-	3.00 x 0.50	0.0313
•	•	•	•	•		•		4	6.00 x 1.00	0.1254
•	•	•	•	•		•		6	8.00 x 1.00	0.1755
•	•	•	•	•		•		8	10.00 x 1.00	0.2256
•	•	•	•	•				10	12.00 x 1.00	0.2758
						▲		10	13.00 x 1.50	0.4325
•	•	•	•	•				15	18.00 x 1.50	0.6205
						▲		15	19.00 x 1.50	0.6581
•	•	•	•	•		▲		20	23.00 x 1.50	0.8085
•	•	•	•	•				25	28.00 x 1.50	0.9965
						▲		25	29.00 x 1.50	1.0341
•	•	•	•	•		▲		32	35.00 x 1.50	1.2598
						▲		40	41.00 x 1.50	1.4854
						▲		50	53.00 x 1.50	1.9367
						▲		65	70.00 x 2.00	3.4095
						▲		80	85.00 x 2.00	4.1616
						▲		100	104.00 x 2.00	5.1143
▲	▲	▲	▲			▲		150	154.00 x 2.00	7.6213

Further dimensions on request. Subject to alteration.

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TUBE SYSTEMS IN STAINLESS STEEL

INSTRUMENT TUBING

Dimensions in mm	ID in mm	Dimensions in mm	ID in mm
0.30 x 0.06	0.18	5.00 x 1.00	3.00
0.80 x 0.20	0.40	6.00 x 0.50	5.00
1.20 x 0.10	1.00	6.00 x 1.00	4.00
1.20 x 0.20	0.80	6.00 x 1.50	3.00
1.59 x 0.25	1.09	6.35 x 0.91	4.53
1.59 x 0.30	0.99	7.00 x 0.50	6.00
1.59 x 0.40	0.79	8.00 x 0.50	7.00
1.59 x 0.45	0.69	8.00 x 1.00	6.00
1.59 x 0.59	0.41	8.00 x 1.50	5.00
2.00 x 0.20	1.60	9.53 x 0.89	7.75
2.00 x 0.40	1.20	9.53 x 1.65	6.23
2.00 x 0.50	1.00	10.00 x 0.50	9.00
3.18 x 0.56	2.06	10.00 x 1.00	8.00
4.00 x 0.50	3.00	12.00 x 0.20	11.60
4.00 x 1.00	2.00	12.00 x 2.00	8.00

These dimensions are merely a selection of the instrumentation and capillary tubes in our stock. These tubes are available in various dimensions (e.g. 304L, 316L, 316 Ti) and specifications (e.g. hard as drawn, annealed).

For further dimensions and materials please contact our sales department.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Dimensions

Dockweiler orbital weld fittings	Dimensions
Elbows 45°	
Elbows 90°	
Elbows 180°	
T-pieces with short branches	Imperial / Pipe (10S)
T-pieces, equal and reduced	ISO / DIN 11865
Reducers concentric	Metric / DIN 11865
Reducers eccentric	
Endcaps	
Ferrules	
COAX	

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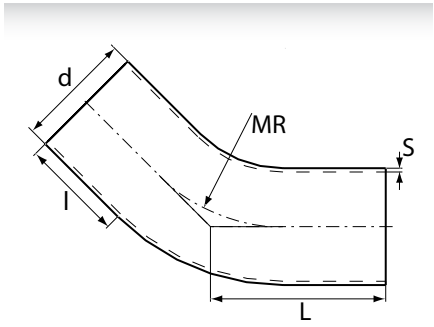
TUBE SYSTEMS IN STAINLESS STEEL

ELBOWS 45°



Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	d mm	S mm	L mm	l mm	MR mm
•	•	•	•	•	•	•	1/4″	6.35	0.89	50.80	44.88	14.30
•	•	•	•	•	•	•	3/8″	9.53	0.89	50.80	38.95	28.60
•	•	•	•				1/2″	12.70	1.24	57.20	46.02	27.00
•	•	•	•	•	•	•	1/2″	12.70	1.65	57.20	45.35	28.60
•	•	•	•				3/4″	19.05	1.24	57.20	46.43	26.00
•	•	•	•	•	•	•	3/4″	19.05	1.65	57.20	45.35	28.60
•	•	•	•	•	•	•	1″	25.40	1.65	57.20	41.42	38.10
•	•	•	•	•	•	•	1 1/2″	38.10	1.65	63.50	39.81	57.20
•	•	•	•	•	•	•	2″	50.80	1.65	76.20	44.64	76.20
•	•	•	•	•	•	•	2 1/2″	63.50	1.65	85.70	46.23	95.30
•	•	•	•	•	•	•	3″	76.20	1.65	92.10	44.79	114.30
•	•	•	•	•	•	•	4″	101.60	2.11	114.30	51.17	152.40
•	•	•	•	•	•	•	6″	152.40	2.77	158.80	64.11	228.60
•	•	•	•	•	•	•	6″	152.40	2.77	222.25	127.56	228.60*

							ISO / DIN 11865 DN / NW	d mm	S mm	L mm	l mm	MR mm
				•	•		8	13.50	1.60	33.30	25.02	20.00
				•	•		10	17.20	1.60	36.60	25.00	28.00
				•	•		15	21.30	1.60	37.40	24.97	30.00
				•	•		20	26.90	1.60	51.80	39.99	28.50
				•	•		25	33.70	2.00	55.70	39.96	38.00
				•	•		32	42.40	2.00	59.70	40.02	47.50
				•	•		40	48.30	2.00	63.60	55.05	57.00
				•	•		50	60.30	2.00	71.50	54.97	76.00
				•	•		65	76.10	2.00	94.40	55.07	95.00

Further dimensions on request. Subject to alteration. * on request

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TUBE SYSTEMS IN STAINLESS STEEL

ELBOWS 45°

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	ISO / DIN 11865 DN / NW	d mm	S mm	L mm	l mm	MR mm
				•	•		80	88.90	2.30	102.40	54.97	114.50
				•	•		100	114.30	2.30	118.20	55.07	152.40
				•	•		150*	168.30*	2.60	94.70	-	228.50
				•	•		150*	168.30*	2.60	149.70	55.05	228.50
							Metric / DIN 11865 DN / NW	**d mm**	**S mm**	**L mm**	**l mm**	**MR mm**
•	•	•	•		•		4	6.00	1.00	32.10	25.47	16.00
•	•	•	•		•		6	8.00	1.00	32.10	26.51	13.50
•	•	•	•		•		6	8.00	1.00	32.10	22.16	24.00
•	•	•	•		•		8	10.00	1.00	33.30	25.02	20.00
•	•	•	•		•		8	10.00	1.00	33.30	23.36	24.00
•	•	•	•				10	12.00	1.00	35.80	25.03	26.00
					•		10	13.00	1.50	35.80	25.03	26.00
•	•	•	•				15	18.00	1.50	35.80	25.03	26.00
					•		15	19.00	1.50	39.50	25.00	35.00
•	•	•	•		•		20	23.00	1.50	41.60	25.03	40.00
•	•	•	•				25	28.00	1.50	60.70	39.99	50.00
					•		25	29.00	1.50	60.70	39.99	50.00
•	•	•	•		•		32	35.00	1.50	62.80	40.02	55.00
					•		40	41.00	1.50	64.90	40.05	60.00
					•		50	53.00	1.50	69.00	40.01	70.00
					•		65	70.00	2.00	73.10	39.96	80.00
					•		80	85.00	2.00	92.30	55.02	90.00
					•		100	104.00	2.00	96.40	54.98	100.00
•	•	•	•		•		150	154.00	2.00	193.20	100.00	225.00

Further dimensions on request. Subject to alteration. * on request

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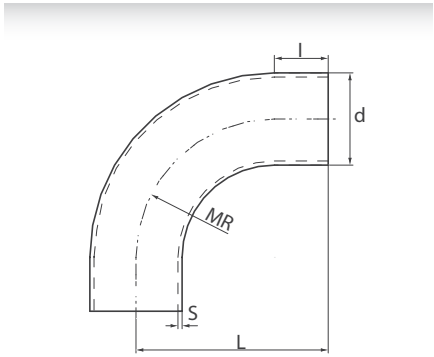
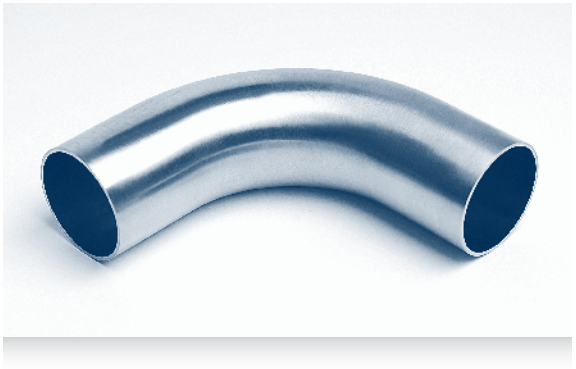
TUBE SYSTEMS IN STAINLESS STEEL

ELBOWS 90°





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	d mm	S mm	L mm	l mm	MR mm
•	•	•	•	•	•	•	1/4″	6.35	0.89	66.70	52.40	14.30
•	•	•	•	•	•	•	3/8″	9.53	0.89	66.70	38.10	28.60
•	•	•	•				1/2″	12.70	1.24	76.20	49.20	27.00
•	•	•	•	•	•	•	1/2″	12.70	1.65	76.20	47.60	28.60
•	•	•	•				3/4″	19.05	1.24	76.20	50.20	26.00
•	•	•	•	•	•	•	3/4″	19.05	1.65	76.20	47.60	28.60
•	•	•	•	•	•	•	1″	25.40	1.65	76.20	38.10	38.10
•	•	•	•	•	•	•	1 1/2″	38.10	1.65	95.30	38.10	57.20
•	•	•	•	•	•	•	2″	50.80	1.65	120.70	44.50	76.20
•	•	•	•	•	•	•	2 1/2″	63.50	1.65	139.70	44.40	95.30
•	•	•	•	•	•	•	3″	76.20	1.65	158.50	44.50	114.30
•	•	•	•	•	•	•	4″	101.60	2.11	203.20	50.80	152.40
•	•	•	•	•	•	•	6″	152.40	2.77	292.10	63.50	228.60
•	•	•	•	•	•	•	6″	152.40	2.77	355.60	127.00	228.60*

							ISO / DIN 11865 DN / NW	d mm	S mm	L mm	l mm	MR mm
				•	•		8	13.50	1.60	45.00	25.00	20.00
				•	•		10	17.20	1.60	53.00	25.00	28.00
				•	•		15	21.30	1.60	55.00	25.00	30.00
				•	•		20	26.90	1.60	68.50	40.00	28.50
				•	•		25	33.70	2.00	78.00	40.00	38.00
				•	•		32	42.40	2.00	87.50	40.00	47.50
				•	•		40	48.30	2.00	97.00	40.00	57.00
				•	•		50	60.30	2.00	116.00	40.00	76.00
				•	•		65	76.10	2.00	150.00	55.00	95.00
				•	•		80	88.90	2.30	169.50	55.00	114.50
				•	•		100	114.30	2.30	207.50	55.00	152.50

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TUBE SYSTEMS IN STAINLESS STEEL

ELBOWS 90°

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 11865 DN / NW	d mm	S mm	L mm	l mm	MR mm
•	•	•	•		•		4	6.00	1.00	40.00	24.00	16.00
•	•	•	•		•		6	8.00	1.00	45.00	21.00	24.00
•	•	•	•				6	8.00	1.00	45.00	25.00	20.00
•	•	•	•				8	10.00	1.00	45.00	25.00	20.00
•	•	•	•		•		8	10.00	1.00	50.00	25.00	25.00
•	•	•	•				10	12.00	1.00	51.00	25.00	26.00
					•		10	13.00	1.50	51.00	25.00	26.00
•	•	•	•				15	18.00	1.50	51.00	25.00	26.00
					•		15	19.00	1.50	60.00	25.00	35.00
•	•	•	•		•		20	23.00	1.50	65.00	25.00	40.00
•	•	•	•				25	28.00	1.50	90.00	40.00	50.00
					•		25	29.00	1.50	90.00	40.00	50.00
•	•	•	•		•		32	35.00	1.50	95.00	40.00	55.00
					•		40	41.00	1.50	100.00	40.00	60.00
					•		50	53.00	1.50	110.00	40.00	70.00
					•		65	70.00	2.00	120.00	40.00	80.00
					•		80	85.00	2.00	145.00	55.00	90.00
					•		100	104.00	2.00	155.00	55.00	100.00
•	•	•	•		•		150	154.00	2.00	325.00	100.00	225.00

Further dimensions on request. Subject to alteration.

Please find elbows with variable angles in section ”Products of Dockweiler fabrication”.

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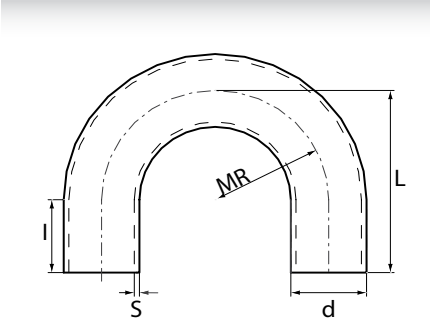
TUBE SYSTEMS IN STAINLESS STEEL

ELBOWS 180°



Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	d mm	S mm	L mm	l mm	MR mm
				•	•		1/2″	12.70	1.65	65.00	26.90	38.10
				•	•		3/4″	19.05	1.65	50.00	24.00	26.00
				•	•		1″	25.40	1.65	65.00	26.90	38.10
				•	•		1 1/2″	38.10	1.65	85.00	27.80	57.20
				•	•		2″	50.80	1.65	110.00	33.80	76.20
				•	•		2 1/2″	63.50	1.65	135.00	39.70	95.30
				•	•		3″	76.20	1.65	155.00	40.70	114.30
				•	•		4″	101.60	2.11	195.00	42.60	152.40
							ISO / DIN 11865 DN / NW	d mm	S mm	L mm	l mm	MR mm
				•	•		8	13.50	1.60	45.00	25.00	20.00
				•	•		10	17.20	1.60	53.00	25.00	28.00
				•	•		15	21.30	1.60	55.00	25.00	30.00
				•	•		20	26.90	1.60	82.00	40.00	42.00
				•	•		25	33.70	2.00	90.00	40.00	50.00
				•	•		32	42.40	2.00	112.50	40.00	72.50
				•	•		40	48.30	2.00	112.50	40.00	72.50
				•	•		50	60.30	2.00	135.00	40.00	95.00
				•	•		65	76.10	2.00	150.00	55.00	95.00
				•	•		80	88.90	2.30	169.50	55.00	114.50
				•	•		100	114.30	2.30	207.50	55.00	152.50

Further dimensions on request. Subject to alteration.

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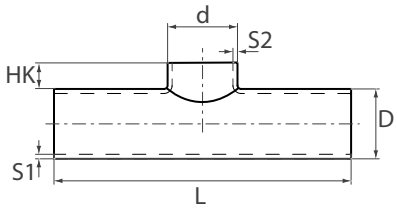
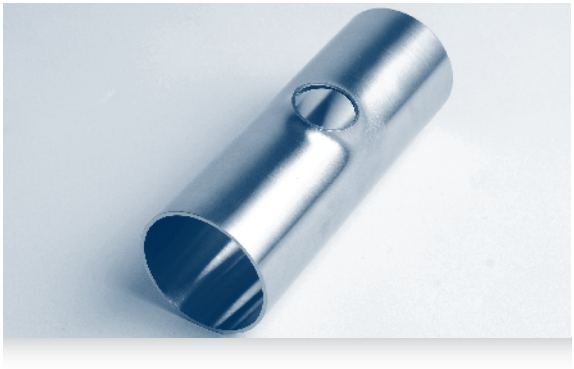
TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES
(short branch)





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D/d mm	S1/S2 mm	L mm	HK mm	Tol. HK mm
				•	•		1/2″ x 1/2″	12.70 x 12.70	1.65 / 1.65	95.20	5.00	+/-1.00
				•	•		3/4″ x 1/2″	19.05 x 12.70	1.65 / 1.65	101.60	1.50	+/-0.50
				•	•		x 3/4″	x 19.05	1.65 / 1.65	101.60	1.50	+/-0.50
				•	•		1″ x 1/2″	25.40 x 12.70	1.65 / 1.65	108.00	1.50	+/-0.50
				•	•		x 3/4″	x 19.05	1.65 / 1.65	108.00	1.50	+/-0.50
				•	•		x 1″	x 25.40	1.65 / 1.65	108.00	1.50	+/-0.50
				•	•		1 1/2″ x 3/4″	38.10 x19.05	1.65 / 1.65	120.60	1.50	+/-0.50
				•	•		x 1″	x 25.40	1.65 / 1.65	120.60	1.50	+/-0.50
				•	•		x 1 1/2″	x 38.10	1.65 / 1.65	120.60	2.00	+/-0.75
				•	•		2″ x 1″	50.80 x 25.40	1.65 / 1.65	146.00	1.50	+/-0.50
				•	•		x 1 1/2″	x 38.10	1.65 / 1.65	146.00	2.00	+/-0.75
				•	•		x 2″	x 50.80	1.65 / 1.65	146.00	3.50	+/-1.00
				•	•		2 1/2″ x 1 1/2″	63.50 x 38.10	1.65 / 1.65	158.80	2.00	+/-0.75
				•	•		x 2″	x 50.80	1.65 / 1.65	158.80	3.50	+/-1.00
				•	•		x 2 1/2″	x 63.50	1.65 / 1.65	158.80	3.50	+/-1.00
				•	•		3″ x 1″	76.20 x 25.40	1.65 / 1.65	171.50	2.50	+/-0.75
				•	•		x 1 1/2″	x 38.10	1.65 / 1.65	171.50	2.50	+/-0.75
				•	•		x 2″	x 50.80	1.65 / 1.65	171.50	3.50	+/-1.00
				•	•		3 x 21/2″	x 63.50	1.65 / 1.65	171.50	3.50	+/-1.00
				•	•		x 3″	x 76.20	1.65 / 1.65	171.50	5.00	+/-1.50
				•	•		4″ x 1 1/2″	101.60 x 38.10	2.11 / 1.65	209.60	3.50	+/-1.00
				•	•		x 2″	x 50.80	2.11 / 1.65	209.60	3.50	+/-1.00
				•	•		4 x 2 1/2″	x 63.50	2.11 / 1.65	209.60	3.50	+/-1.00
				•	•		x 3″	x 76.20	2.11 / 1.65	209.60	5.00	+/-1.50
				•	•		x 4″	x 101.60	2.11 / 1.65	209.60	6.00	+/-1.50

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TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES
(short branch)

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	ISO / DIN 11865 Inch	D/d mm	S1/S2 mm	L mm	HK mm	Tol. HK mm
				•	•		8 x 8	13.50 x 13.50	1.60 / 1.60	64.00	5.00	+/-1.00
				•	•		10 x 8	17.20 x 13.50	1.60 / 1.60	68.00	1.50	+/-0.50
				•	•		x 10	x 17.20	1.60 / 1.60	68.00	1.50	+/-0.50
				•	•		15 x 8	21.30 x 13.50	1.60 / 1.60	72.00	1.50	+/-0.50
				•	•		x 10	x 17.20	1.60 / 1.60	72.00	1.50	+/-0.50
				•	•		x 15	x 21.30	1.60 / 1.60	72.00	1.50	+/-0.50
				•	•		20 x 10	26.90 x 17.20	1.60 / 1.60	110.00	1.50	+/-0.50
				•	•		x 15	x 21.30	1.60 / 1.60	110.00	1.50	+/-0.50
				•	•		x 20	x 26.90	1.60 / 1.60	110.00	1.50	+/-0.50
				•	•		25 x 15	33.70 x 21.30	2.00 / 1.60	120.00	1.50	+/-0.50
				•	•		x 20	x 26.90	2.00 / 1.60	120.00	1.50	+/-0.50
				•	•		x 25	x 33.70	2.00 / 2.00	120.00	1.50	+/-0.50
				•	•		32 x 15	42.40 x 21.30	2.00 / 1.60	130.00	1.50	+/-0.50
				•	•		x 20	x 26.90	2.00 / 1.60	130.00	1.50	+/-0.50
				•	•		x 25	x33.70	2.00 / 2.00	130.00	1.50	+/-0.75
				•	•		x 32	x 42.40	2.00 / 2.00	130.00	2.00	+/-0.75
				•	•		40 x 15	48.30 x 21.30	2.00 / 1.60	130.00	1.50	+/-1.00
				•	•		x 20	x 26.90	2.00 / 1.60	130.00	1.50	+/-0.50
				•	•		x 25	x 33.70	2.00 / 2.00	130.00	1.50	+/-0.75
				•	•		x 32	x 42.40	2.00 / 2.00	130.00	2.00	+/-0.75
				•	•		x 40	x 48.30	2.00 / 2.00	130.00	2.50	+/-1.00
				•	•		50 x 20	60.30 x 26.90	2.00 / 1.60	180.00	2.50	+/-1.00
				•	•		x 25	x 33.70	2.00 / 2.00	180.00	1.50	+/-0.75
				•	•		x 32	x 42.40	2.00 / 2.00	180.00	2.00	+/-0.75
				•	•		x 40	x 48.30	2.00 / 2.00	180.00	2.50	+/-1.00
				•	•		x 50	x 60.30	2.00 / 2.00	180.00	3.50	+/-1.00
				•	•		65 x 25	76.10 x 33.70	2.00 / 2.00	220.00	2.50	+/-1.00
				•	•		x 32	x 42.40	2.00 / 2.00	220.00	2.00	+/-0.75
				•	•		x 40	x 48.30	2.00 / 2.00	220.00	2.50	+/-1.00
				•	•		x 50	x 60.30	2.00 / 2.00	220.00	3.50	+/-1.00
				•	•		x 65	x 76.10	2.00 / 2.00	220.00	5.00	+/-1.50
				•	•		80 x 32	88.90 x 42.40	2.30 / 2.00	260.00	2.50	+/-1.00
				•	•		x 40	x 48.30	2.30 / 2.00	260.00	2.50	+/-1.00
				•	•		x 50	x 60.30	2.30 / 2.00	160.00	3.50	+/-1.00

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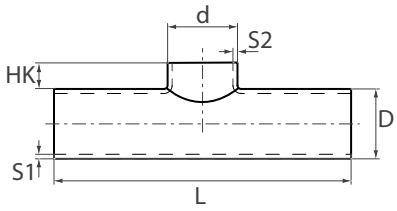
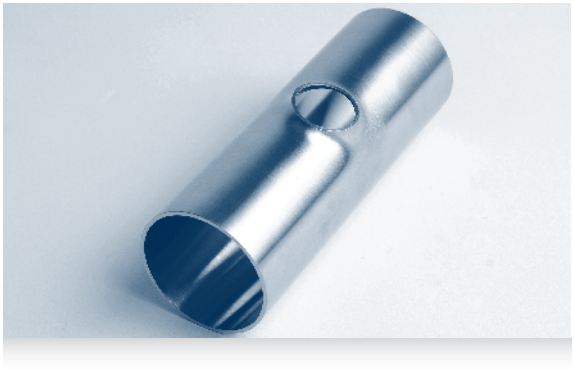
TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES
(short branch)





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	ISO / DIN 11865 DN/NW	D/d mm	S1/S2 mm	L mm	HK mm	Tol. HK mm
				•	•		80 x 65	x 76.10	2.30 / 2.00	260.00	5.00	+/-1.50
				•	•		x 80	x 88.90	2.30 / 2.30	260.00	5.00	+/-1.50
				•	•		100 x 50	114.30 x 60.30	2.30 / 2.00	320.00	3.50	+/-1.00
				•	•		x 65	x 76.10	2.30 / 2.00	320.00	5.00	+/-1.50
				•	•		x 80	x 88.90	2.30 / 2.30	320.00	5.00	+/-1.50
				•	•		x 100	x 114.30	2.30 / 2.30	320.00	6.00	+/-1.50
							Metric / DIN 11865 **DN/NW**	**D/d mm**	**S1/S2 mm**	**L mm**	**HK mm**	**Tol. HK mm**
					•		10 x 10	13.00 x 13.00	1.50 / 1.50	70.00	5.00	+/-1.00
					•		15 x 10	19.00 x 13.00	1.50 / 1.50	70.00	1.50	+/-0.50
					•		x 15	x 19.00	1.50 / 1.50	70.00	1.50	+/-0.50
					•		20 x 10	23.00 x 13.00	1.50 / 1.50	80.00	1.50	+/-0.50
					•		x 15	x 19.00	1.50 / 1.50	80.00	1.50	+/-0.50
					•		x 20	x 23.00	1.50 / 1.50	80.00	1.50	+/-0.50
					•		25 x 10	29.00 x 13.00	1.50 / 1.50	100.00	1.50	+/-0.50
					•		x 15	x 19.00	1.50 / 1.50	100.00	1.50	+/-0.75
					•		x 20	x 23.00	1.50 / 1.50	100.00	1.50	+/-0.75
					•		x 25	x 29.00	1.50 / 1.50	100.00	1.50	+/-0.75
					•		32 x 15	35.00 x 19.00	1.50 / 1.50	110.00	1.50	+/-0.75
					•		x 20	x 23.00	1.50 / 1.50	110.00	1.50	+/-0.75
					•		x 25	x 29.00	1.50 / 1.50	110.00	1.50	+/-0.75
					•		x 32	x 35.00	1.50 / 1.50	110.00	2.00	+/-0.75
					•		40 x 20	41.00 x 23.00	1.50 / 1.50	120.00	1.50	+/-0.75
					•		x 25	x 29.00	1.50 / 1.50	120.00	1.50	+/-0.75
					•		x 32	x 35.00	1.50 / 1.50	120.00	2.00	+/-0.75

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TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES
(short branch)

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 11865 DN/NW	D/d mm	S1/S2 mm	L mm	HK mm	Tol. HK mm
					•		x 40	x 41.00	1.50 / 1.50	120.00	2.50	+/-1.00
					•		50 x 25	53.00 x 29.00	1.50 / 1.50	160.00	1.50	+/-0.75
					•		x 32	x 35.00	1.50 / 1.50	160.00	2.00	+/-0.75
					•		x 40	x 41.00	1.50 / 1.50	160.00	2.50	+/-1.00
					•		x 50	x 53.00	1.50 / 1.50	160.00	3.50	+/-1.00
					•		65 x 32	70.00 x 35.00	2.00 / 1.50	210.00	2.00	+/-0.75
					•		x 40	x 41.00	2.00 / 1.50	210.00	2.50	+/-1.00
					•		x 50	x 53.00	2.00 / 1.50	210.00	3.50	+/-1.00
					•		65 x 65	x 70.00	2.00 / 2.00	210.00	5.00	+/-1.50
					•		80 x 40	85.00 x 41.00	2.00 / 1.50	260.00	2.50	+/-1.00
					•		x 50	x 53.00	2.00 / 1.50	260.00	3.50	+/-1.00
					•		x 65	x 70.00	2.00 / 2.00	260.00	5.00	+/-1.50
					•		x 80	x 85.00	2.00 / 2.00	260.00	5.00	+/-1.50
					•		100 x 65	104.00 x 70.00	2.00 / 2.00	310.00	5.00	+/-1.50
					•		x 80	x 85.00	2.00 / 2.00	310.00	5.00	+/-1.50
					•		x 100	x 104.00	2.00 / 2.00	310.00	6.00	+/-1.50

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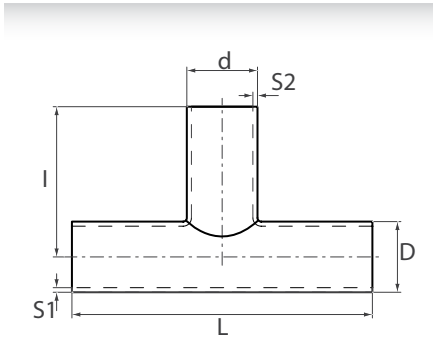
T-PIECES



Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D/d mm	S1/S2 mm	L mm	l mm
•	•	•	•	•	•	•	1/4″ x 1/4″	6.35 x 6.35	0.89 / 0.89	89.00	44.50
•	•	•	•	•	•	•	3/8″ x 1/4″	9.53 x 6.35	0.89 / 0.89	89.00	44.50
•	•	•	•	•	•	•	x 3/8″	x 9.53	0.89 / 0.89	89.00	44.50
•	•	•	•				1/2″ x 1/4″	12.70 x 6.35	1.24 / 0.89	95.20	47.60
•	•	•	•				1/2″ x 3/8″	x 9.53	1.24 / 0.89	95.20	47.60
•	•	•	•				x 1/2″	x 12.70	1.24 / 1.24	95.20	47.60
•	•	•	•	•	•	•	1/2″ x 1/4″	12.70 x 6.35	1.65 / 0.89	95.20	47.60
•	•	•	•	•	•	•	x 3/8″	x 9.53	1.65 / 0.89	95.20	47.60
•	•	•	•	•	•	•	x 1/2″	x 12.70	1.65 / 1.65	95.20	47.60
•	•	•	•				3/4″ x 1/4″	19.05 x 6.35	1.24 / 0.89	101.60	50.80
•	•	•	•				x 3/8″	x 9.53	1.24 / 0.89	101.60	50.80
•	•	•	•				x 1/2″	x 12.70	1.24 / 1.24	101.60	50.80
•	•	•	•				x 3/4″	x 19.05	1.24 / 1.24	101.60	50.80
•	•	•	•			•	3/4″ x 1/4″	19.05 x 6.35	1.65 / 0.89	101.60	50.80
•	•	•	•	•	•	•	x 3/8″	x 9.53	1.65 / 0.89	101.60	50.80
•	•	•	•	•	•	•	x 1/2″	x 12.70	1.65 / 1.65	101.60	50.80
•	•	•	•	•	•	•	x 3/4″	x 19.05	1.65 / 1.65	101.60	50.80
•	•	•	•	•	•	•	1″ x 1/4″	25.40 x 6.35	1.65 / 0.89	108.00	54.00
•	•	•	•	•	•	•	x 3/8″	x 9.53	1.65 / 0.89	108.00	54.00
•	•	•	•				x 1/2″	x 12.70	1.65 / 1.24	108.00	54.00
•	•	•	•	•	•	•	x 1/2″	x 12.70	1.65 / 1.65	108.00	54.00
•	•	•	•				x 3/4″	x 19.05	1.65 / 1.24	108.00	54.00
•	•	•	•	•	•	•	x 3/4″	x 19.05	1.65 / 1.65	108.00	54.00
•	•	•	•	•	•	•	x 1″	x 25.40	1.65 / 1.65	108.00	54.00
•	•	•	•				1 1/2″ x 1/2″	38.10 x 12.70	1.65 / 1.24	120.60	60.30

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T-PIECES

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D/d mm	S1/S2 mm	L mm	l mm
•	•	•	•	•	•	•	1 1/2″ x 1/2″	38.10 x 12.70	1.65 / 1.65	120.60	60.30
•	•	•	•				x 3/4″	x 19.05	1.65 / 1.24	120.60	60.30
•	•	•	•	•	•	•	x 3/4″	x 19.05	1.65 / 1.65	120.60	60.30
•	•	•	•	•	•	•	x 1″	x 25.40	1.65 / 1.65	120.60	60.30
•	•	•	•	•	•	•	x 1 1/2″	x 38.10	1.65 / 1.65	120.60	60.30
•	•	•	•				2″ x 1/2″	50.80 x 12.70	1.65 / 1.24	146.00	66.70
•	•	•	•	•	•	•	x 1/2″	x 12.70	1.65 / 1.65	146.00	66.70
•	•	•	•				x 3/4″	x 19.05	1.65 / 1.24	146.00	66.70
•	•	•	•	•	•	•	x 3/4″	x 19.05	1.65 / 1.65	146.00	66.70
•	•	•	•	•	•	•	x 1″	x 25.40	1.65 / 1.65	146.00	66.70
•	•	•	•	•	•	•	x 1 1/2″	x 38.10	1.65 / 1.65	146.00	66.70
•	•	•	•	•	•	•	x 2″	x 50.80	1.65 / 1.65	146.00	73.00
•	•	•	•	•	•	•	2 1/2″ x 1/2″	63.50 x 12.70	1.65 / 1.65 (1.24)	158.80	73.00
•	•	•	•	•	•	•	x 3/4″	x 19.05	1.65 / 1.65	158.80	73.00
•	•	•	•	•	•	•	x 1″	x 25.40	1.65 / 1.65	158.80	73.00
•	•	•	•	•	•	•	x 1 1/2″	x 38.10	1.65 / 1.65	158.80	73.00
•	•	•	•	•	•	•	x 2″	x 50.80	1.65 / 1.65	158.80	73.00
•	•	•	•	•	•	•	x 2 1/2″	x 63.50	1.65 / 1.65	158.80	79.40
•	•	•	•	•	•	•	3″ x 1/2″	76.20 x 12.70	1.65 / 1.65 (1.24)	171.50	79.40
•	•	•	•	•	•	•	x 3/4″	x 19.05	1.65 / 1.65	171.50	79.40
•	•	•	•	•	•	•	x 1″	x 25.40	1.65 / 1.65	171.50	79.40
•	•	•	•	•	•	•	x 1 1/2″	x 38.10	1.65 / 1.65	171.50	79.40
•	•	•	•	•	•	•	x 2″	x 50.80	1.65 / 1.65	171.50	79.40
•	•	•	•	•	•	•	x 2 1/2″	x 63.50	1.65 / 1.65	171.50	79.40
•	•	•	•	•	•	•	x 3″	x 76.20	1.65 / 1.65	171.50	85.70
•	•	•	•	•	•	•	4″ x 1/2″	101.60 x 12.70	2.11 / 1.65 (1.24)	209.60	92.10
•	•	•	•	•	•	•	x 3/4″	x 19.05	2.11 / 1.65	209.60	92.10
•	•	•	•	•	•	•	x 1″	x 25.40	2.11 / 1.65	209.60	92.10
•	•	•	•	•	•	•	x 1 1/2″	x 38.10	2.11 / 1.65	209.60	92.10
•	•	•	•	•	•	•	x 2″	x 50.80	2.11 / 1.65	209.60	98.40
•	•	•	•	•	•	•	x 2 1/2″	x 63.50	2.11 / 1.65	209.60	98.40
•	•	•	•	•	•	•	x 3″	x 76.20	2.11 / 1.65	209.60	98.40
•	•	•	•	•	•	•	x 4″	x 101.60	2.11 / 2.11	209.60	104.80
•	•	•	•	•	•		6″ x 4″	152.40 x 101.60	2.77 / 2.11	285.80	130.20
						•	x 6″	x 152.40	2.77 / 2.77	285.80	142.90

Further dimensions on request. Subject to alteration.

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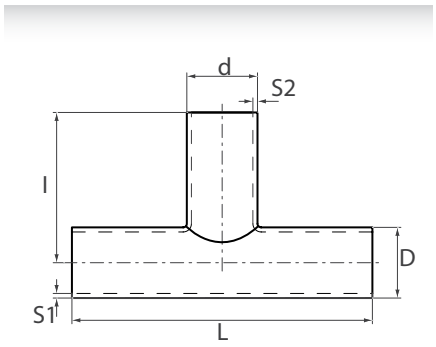
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES



Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	ISO / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm	l mm
				•	•		8 x 8	13.50 x 13.50	1.60 / 1.60	64.00	32.00
				•	•		10 x 8	17.20 x 13.50	1.60 / 1.60	68.00	34.00
				•	•		x 10	x 17.20	1.60 / 1.60	68.00	34.00
				•	•		15 x 8	21.30 x 13.50	1.60 / 1.60	72.00	36.00
				•	•		x 10	x 17.20	1.60 / 1.60	72.00	36.00
				•	•		x 15	x 21.30	1.60 / 1.60	72.00	36.00
				•	•		20 x 8	26.90 x 13.50	1.60 / 1.60	110.00	55.00
				•	•		x 10	x 17.20	1.60 / 1.60	110.00	55.00
				•	•		x 15	x 21.30	1.60 / 1.60	110.00	55.00
				•	•		x 20	x 26.90	1.60 / 1.60	110.00	55.00
				•	•		25 x 10	33.70 x 17.20	2.00 / 1.60	120.00	60.00
				•	•		x 15	x 21.30	2.00 / 1.60	120.00	60.00
				•	•		x 20	x 26.90	2.00 / 1.60	120.00	60.00
				•	•		x 25	x 33.70	2.00 / 2.00	120.00	60.00
				•	•		32 x 15	42.40 x 21.30	2.00 / 1.60	130.00	65.00
				•	•		x 20	x 26.90	2.00 / 1.60	130.00	65.00
				•	•		x 25	x 33.70	2.00 / 2.00	130.00	65.00
				•	•		x 32	x 42.40	2.00 / 2.00	130.00	65.00
				•	•		40 x 15	48.30 x 21.30	2.00 / 1.60	130.00	65.00
				•	•		x 20	x 26.90	2.00 / 1.60	130.00	65.00
				•	•		x 25	x 33.70	2.00 / 2.00	130.00	65.00
				•	•		x 32	x 42.40	2.00 / 2.00	130.00	65.00
				•	•		x 40	x 48.30	2.00 / 2.00	130.00	65.00
				•	•		50 x 20	60.30 x 26.90	2.00 / 1.60	180.00	90.00
				•	•		x 25	x 33.70	2.00 / 2.00	180.00	90.00

Further dimensions on request. Subject to alteration.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	ISO / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm	l mm
				•	•		50 x 32	x 42.40	2.00 / 2.00	180.00	90.00
				•	•		x 40	x 48.30	2.00 / 2.00	180.00	90.00
				•	•		x 50	x 60.30	2.00 / 2.00	180.00	90.00
				•	•		65 x 25	76.10 x 33.70	2.00 / 2.00	220.00	90.00
				•	•		x 32	x 42.40	2.00 / 2.00	220.00	90.00
				•	•		x 40	x 48.30	2.00 / 2.00	220.00	90.00
				•	•		x 50	x 60.30	2.00 / 2.00	220.00	90.00
				•	•		x 65	x 76.10	2.00 / 2.00	220.00	110.00
				•	•		80 x 32	88.90 x 42.40	2.30 / 2.00	260.00	110.00
				•	•		x 40	x 48.30	2.30 / 2.00	260.00	110.00
				•	•		x 50	x 60.30	2.30 / 2.00	260.00	110.00
				•	•		x 65	x 76.10	2.30 / 2.00	260.00	110.00
				•	•		x 80	x 88.90	2.30 / 2.30	260.00	130.00
				•	•		100 x 50	114.30 x 60.30	2.30 / 2.00	320.00	130.00
				•	•		x 65	x 76.10	2.30 / 2.00	320.00	130.00
				•	•		x 80	x 88.90	2.30 / 2.30	320.00	130.00
				•	•		x 100	x 114.30	2.30 / 2.30	320.00	160.00
							Metric / DIN 11865 DN / NW	**D/d mm**	**S1/S2 mm**	**L mm**	**l mm**
•	•	•	•		•		6 x 4	8.00 x 6.00	1.00 / 1.00	60.00	30.00
•	•	•	•		•		x 6	x 8.00	1.00 / 1.00	60.00	30.00
•	•	•	•		•		8 x 6	10.00 x 8.00	1.00 / 1.00	60.00	30.00
•	•	•	•		•		x 8	x 10.00	1.00 / 1.00	60.00	30.00
•	•	•	•				10 x 6	12.00 x 8.00	1.00 / 1.00	70.00	35.00
•	•	•	•				x 8	x 10.00	1.00 / 1.00	70.00	35 .00
•	•	•	•				x 10	x 12.00	1.50 / 1.50	70.00	35.00
					•		10 x 6	13.00 x 8.00	1.50 / 1.00	60.00	30.00
					•		x 8	x 10.00	1.50 / 1.00	60.00	30.00
					•		x 10	x 13.00	1.50 / 1.50	70.00	35.00
•	•	•	•				15 x 6	18.00 x 8.00	1.50 / 1.00	70.00	35.00
•	•	•	•				x 8	x 10.00	1.50 / 1.00	70.00	35.00
•	•	•	•				x 10	x 12.00	1.50 / 1.00	70.00	35.00
•	•	•	•				x 15	x 18.00	1.50 / 1.50	70.00	35.00
					•		15 x 10	19.00 x 10.00	1.50 / 1.00	70.00	35.00
					•		x 10	x 13.00	1.50 / 1.50	70.00	35.00
					•		x 15	x 19.00	1.50 / 1.50	70.00	35.00

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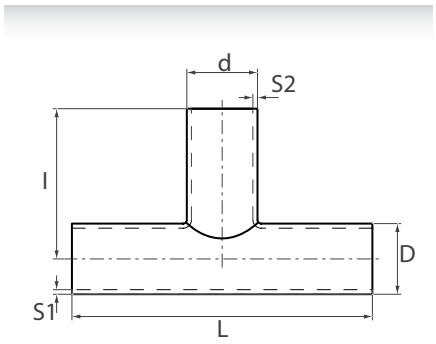
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES



Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm	l mm
•	•	•	•		•		20 x 10	23.00 x 12.00	1.50 / 1.00	80.00	40.00
					•		x 10	x 13.00	1.50 / 1.50	80.00	40.00
•	•	•	•				x 15	x 18.00	1.50 / 1.50	80.00	40.00
					•		x 15	x 19.00	1.50 / 1.50	80.00	40.00
•	•	•	•		•		x 20	x 23.00	1.50 / 1.50	80.00	40.00
•	•	•	•				25 x 10	28.00 x 12.00	1.50 / 1.00	100.00	50.00
•	•	•	•				x 15	x 18.00	1.50 / 1.50	100.00	50.00
•	•	•	•				x 20	x 23.00	1.50 / 1.50	100.00	50.00
•	•	•	•				x 25	x 28.00	1.50 / 1.50	100.00	50.00
					•		25 x 10	29.00 x 13.00	1.50 / 1.00	100.00	50.00
					•		x 15	x 19.00	1.50 / 1.50	100.00	50.00
					•		x 20	x 23.00	1.50 / 1.50	100.00	50.00
					•		x 25	x 29.00	1.50 / 1.50	100.00	50.00
					•		32 x 15	35.00 x 19.00	1.50 / 1.50	110.00	55.00
•	•	•	•		•		x 20	x 23.00	1.50 / 1.50	110.00	55.00
					•		x 25	x 29.00	1.50 / 1.50	110.00	55.00
•	•	•	•		•		x 32	x 35.00	1.50 / 1.50	110.00	55.00
					•		40 x 20	41.00 x 23.00	1.50 / 1.50	120.00	60.00
					•		x 25	x 29.00	1.50 / 1.50	120.00	60.00
					•		x 32	x 35.00	1.50 / 1.50	120.00	60.00
					•		x 40	x 41.00	1.50 / 1.50	120.00	60.00
					•		50 x 25	53.00 x 29.00	1.50 / 1.50	160.00	80.00
					•		x 32	x 35.00	1.50 / 1.50	160.00	80.00
					•		x 40	x 41.00	1.50 / 1.50	160.00	80.00

Further dimensions on request. Subject to alteration.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

T-PIECES

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm	l mm
					•		50 x 50	53.00 x 53.00	1.50 / 1.50	160.00	80.00
					•		65 x 32	70.00 x 35.00	2.00 / 1.50	210.00	80.00
					•		x 40	x 41.00	2.00 / 1.50	210.00	80.00
					•		x 50	x 53.00	2.00 / 1.50	210.00	80.00
					•		x 65	x 70.00	2.00 / 2.00	210.00	105.00
					•		80 x 40	85.00 x 41.00	2.00 / 1.50	260.00	105.00
					•		x 50	x 53.00	2.00 / 2.00	260.00	105.00
					•		x 65	x 70.00	2.00 / 2.00	260.00	105.00
					•		x 80	x 85.00	2.00 / 2.00	260.00	130.00
					•		100 x 50	104.00 x 53.00	2.00 / 2.00	310.00	130.00
					•		x 65	x 70.00	2.00 / 2.00	310.00	130.00
					•		x 80	x 85.00	2.00 / 2.00	310.00	130.00
					•		x 100	x 104.00	2.00 / 2.00	310.00	155.00
					•		150 x 100	154.00 x 104.00	2.00 / 2.00	450.00	187.50
•	•	•	•		•		x 150	x 154.00	2.00 / 2.00	450.00	225.00

Further dimensions on request. Subject to alteration.

Please find T-pieses (tees) with inclined branches in section ”Products of Dockweiler fabrication”.

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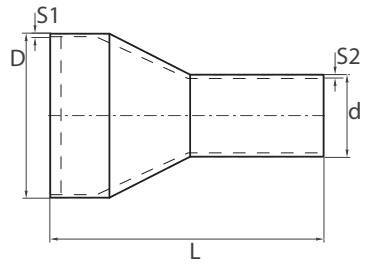
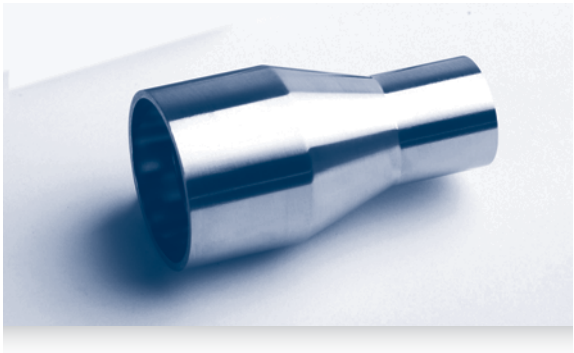
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CONCENTRIC REDUCERS





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D/d mm	S1/S2 mm	L mm
•	•	•	•	•	•	•	3/8" x 1/4"	9.53 x 6.35	0.89 / 0.89	41.28
•	•	•	•				1/2" x 1/4"	12.70 x 6.35	1.24 / 0.89	38.00
				•	•	•	x 1/4"	x 6.35	1.65 / 0.89	47.63
•	•	•	•				x 3/8"	x 9.53	1.24 / 0.89	38.00
				•	•	•	x 3/8"	x 9.53	1.65 / 0.89	47.63
•	•	•	•				3/4" x 1/4"	19.05 x 6.35	1.24 / 0.89	38.00
•	•	•	•				x 3/8"	x 9.53	1.24 / 0.89	60.00
•	•	•	•	•	•	•	x 3/8"	x 9.53	1.65 / 0.89	50.80
•	•	•	•				x 1/2"	x 12.70	1.24 / 1.24	60.00
•	•	•	•				x 1/2"	x 12.70	1.65 / 1.24	60.00
				•	•	•	x 1/2"	x 12.70	1.65 / 1.65	53.98
•	•	•	•				1" x 1/2"	25.40 x 12.70	1.65 / 1.24	60.00
				•	•	•	x 1/2"	x 12.70	1.65 / 1.65	63.50
•	•	•	•				x 3/4"	x 19.05	1.65 / 1.24	60.00
•	•	•	•	•	•	•	x 3/4"	x 19.05	1.65 / 1.65	53.98
•	•	•	•				1 1/2" x 3/4"	38.10 x 19.05	1.65 / 1.24	80.00
•	•	•	•	•	•	•	x 3/4"	x 19.05	1.65 / 1.65	76.20
•	•	•	•	•	•	•	x 1"	x 25.40	1.65 / 1.65	63.50
•	•	•	•	•	•	•	2" x 1"	50.80 x 25.40	1.65 / 1.65	85.73
•	•	•	•	•	•	•	x 1 1/2"	x 38.10	1.65 / 1.65	63.50
•	•	•	•	•	•		2 1/2" x 1"	63.50 x 25.40	1.65 / 1.65	100.00
•	•	•	•	•	•	•	x 1 1/2"	x 38.10	1.65 / 1.65	85.73
•	•	•	•	•	•	•	x 2"	x 50.80	1.65 / 1.65	63.50
•	•	•	•	•	•	•	3" x 1 1/2"	76.20 x 38.10	1.65 / 1.65	107.95
•	•	•	•	•	•	•	x 2"	x 50.80	1.65 / 1.65	85.73

Further dimensions on request. Subject to alteration.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CONCENTRIC REDUCERS

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D/d mm	S1/S2 mm	L mm
•	•	•	•	•	•	•	3" x 2 1/2"	76.20 x 63.50	1.65 / 1.65	66.68
•	•	•	•	•	•	•	4" x 2"	101.60 x 50.80	2.11 / 1.65	130.18
•	•	•	•	•	•	•	x 2 1/2"	x 63.50	2.11 / 1.65	107.95
•	•	•	•	•	•	•	x 3"	x 76.20	2.11 / 1.65	98.43
•	•	•	•	•	•	•	6" x 3"	152.40 x 76.20	2.77 / 1.65	184.15
•	•	•	•	•	•	•	x 4"	x 101.60	2.77 / 2.11	142.88
							ISO / DIN 11865 DN / NW	**D/d mm**	**S1/S2 mm**	**L mm**
				•	•		10 x 8	17.20 x 13.50	1.60 / 1.60	60.00
				•	•		15 x 8	21.30 x 13.50	1.60 / 1.60	60.00
				•	•		x 10	x 17.20	1.60 / 1.60	60.00
				•	•		20 x 8	26.90 x 13.50	1.60 / 1.60	60.00
				•	•		x 10	x 17.20	1.60 / 1.60	60.00
				•	•		x 15	x 21.30	1.60 / 1.60	60.00
				•	•		25 x 15	33.70 x 21.30	2.00 / 1.60	70.00
				•	•		x 20	x 26.90	2.00 / 1.60	70.00
				•	•		32 x 15	42.40 x 21.30	2.00 / 1.60	80.00
				•	•		x 20	x 26.90	2.00 / 1.60	80.00
				•	•		x 25	x 33.70	2.00 / 2.00	80.00
				•	•		40 x 15	48.30 x 21.30	2.00 / 1.60	90.00
				•	•		x 20	x 26.90	2.00 / 1.60	90.00
				•	•		x 25	x 33.70	2.00 / 2.00	90.00
				•	•		x 32	x 42.40	2.00 / 2.00	90.00
				•	•		50 x 20	60.30 x 26.90	2.00 / 1.60	100.00
				•	•		x 25	x 33.70	2.00 / 2.00	100.00
				•	•		x 32	x 42.40	2.00 / 2.00	100.00
				•	•		x 40	x 48.30	2.00 / 2.00	100.00
				•	•		65 x 25	76.10 x 33.70	2.00 / 2.00	110.00
				•	•		x 40	x 48.30	2.00 / 2.00	110.00
				•	•		x 50	x 60.30	2.00 / 2.00	110.00
				•	•		80 x 50	88.90 x 60.30	2.30 / 2.00	110.00
				•	•		x 65	x 76.10	2.30 / 2.00	110.00
				•	•		100 x 65	114.30 x 76.10	2.30 / 2.00	135.00
				•	•		x 80	x 88.90	2.30 / 2.30	135.00
				•	•		150 x 100	168.30 x 114.30	2.60 / 2.30	auf Anfrage

Further dimensions on request. Subject to alteration.

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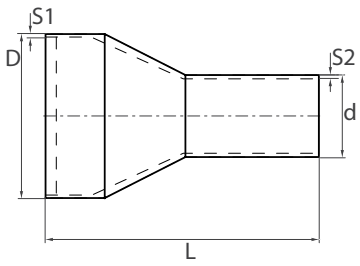
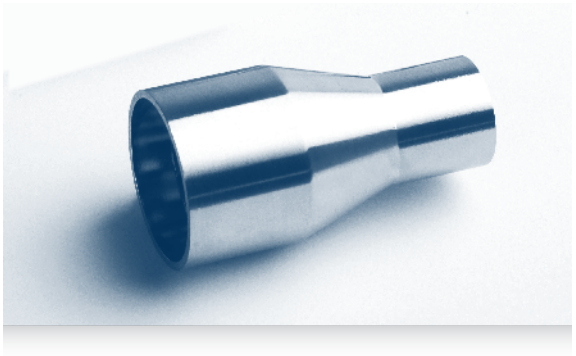
TUBE SYSTEMS IN STAINLESS STEEL

CONCENTRIC REDUCERS





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm
•	•	•	•		•		6 x 4	8.00 x 6.00	1.00 / 1.00	38.00
•	•	•	•		•		8 x 4	10 x 6.00	1.00 / 1.00	38.00
•	•	•	•		•		x 6	x 8.00	1.00 / 1.00	38.00
•	•	•	•				10 x 4	12.00 x 6.00	1.00 / 1.00	38.00
•	•	•	•				x 6	x 8.00	1.00 / 1.00	38.00
•	•	•	•				x 8	x 10.00	1.00 / 1.00	38.00
					•		10 x 6	13.00 x 8.00	1.50 / 1.00	38.00
					•		x 8	x 10.00	1.50 / 1.00	38.00
•	•	•	•				15 x 8	18.00 x 10.00	1.50 / 1.00	38.00
•	•	•	•				x 10	x 12.00	1.50 / 1.00	38.00
					•		15 x 8	19.00 x 10.00	1.50 / 1.00	60.00
					•		x 10	x 13.00	1.50 / 1.50	60.00
•	•	•	•				20 x 10	23.00 x 12.00	1.50 / 1.00	60.00
					•		x 10	x 13.00	1.50 / 1.50	60.00
•	•	•	•				x 15	x 18.00	1.50 / 1.50	60.00
					•		x 15	x 19.00	1.50 / 1.50	60.00
•	•	•	•				25 x 15	28.00 x 18.00	1.50 / 1.50	70.00
•	•	•	•				x 20	x 23.00	1.50 / 1.50	70.00
					•		x 15	29.00 x 19.00	1.50 / 1.50	70.00
					•		x 20	x 23.00	1.50 / 1.50	70.00
					•		32 x 15	35.00 x 19.00	1.50 / 1.50	80.00
•	•	•	•		•		x 20	x 23.00	1.50 / 1.50	80.00
					•		x 25	x 29.00	1.50 / 1.50	80.00
					•		40 x 20	41.00 x 23.00	1.50 / 1.50	90.00
					•		x 25	x 29.00	1.50 / 1.50	90.00

Further dimensions on request. Subject to alteration.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CONCENTRIC REDUCERS

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm
					•		40 x 32	41.00 x 35.00	1.50 / 1.50	90.00
					•		50 x 25	53.00 x 29.00	1.50 / 1.50	90.00
					•		x 32	x 35.00	1.50 / 1.50	90.00
					•		x 40	x 41.00	1.50 / 1.50	90.00
					•		65 x 40	70.00 x 41.00	2.00 / 1.50	110.00
					•		x 50	x 53.00	2.00 / 1.50	110.00
					•		80 x 50	85.00 x 53.00	2.00 / 1.50	110.00
					•		x 65	x 70.00	2.00 / 2.00	110.00
					•		100 x 65	104.00 x 70.00	2.00 / 2.00	135.00
					•		x 80	x 85.00	2.00 / 2.00	135.00
							150 x 80	154.00 x 85.00	2.00 / 2.00	170.00
					•		x 100	x 104.00	2.00 / 2.00	170.00

Further dimensions on request. Subject to alteration.

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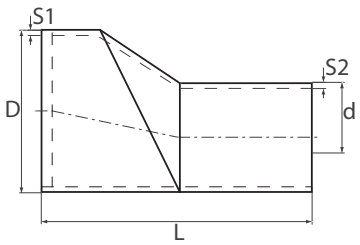
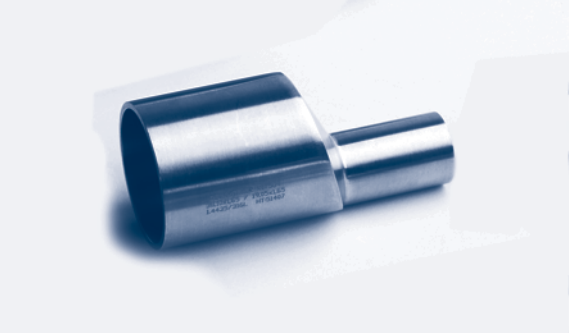
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

ECCENTRIC REDUCERS





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D/d mm	S1/S2 mm	L mm
•	•	•	•	•	•	•	3/8” x 1/4”	9.53 x 6.35	0.89 / 0.89	41.28
				•	•	•	1/2” x 1/4”	x 6.35	1.65 / 0.89	47.63
				•	•	•	x 3/8”	x 9.53	1.65 / 0.89	47.63
•	•	•	•	•	•	•	3/4” x 3/8”	x 9.53	1.65 / 0.89	50.80
				•	•	•	x 1/2”	x 12.70	1.65 / 1.65	53.98
				•	•	•	1” x 1/2”	x 12.70	1.65 / 1.65	63.50
•	•	•	•	•	•	•	x 3/4”	x 19.05	1.65 / 1.65	53.98
•	•	•	•	•	•		1 1/2” x 1/2"	38.10 x 12.70	1.65 / 1.65	88.90
•	•	•	•	•	•	•	x 3/4”	x 19.05	1.65 / 1.65	76.20
•	•	•	•	•	•	•	x 1”	x 25.40	1.65 / 1.65	63.50
•	•	•	•	•	•	•	2” x 1”	50.80 x 25.40	1.65 / 1.65	85.73
•	•	•	•	•	•	•	x 1 1/2”	x 38.10	1.65 / 1.65	63.50
•	•	•	•	•	•		2 1/2” x 1"	63.50 x 25.40	1.65 / 1.65	100.00
•	•	•	•	•	•	•	x 1 1/2”	50.80 x 38.10	1.65 / 1.65	85.73
•	•	•	•	•	•	•	x 2”	x 50.80	1.65 / 1.65	63.50
•	•	•	•	•	•	•	3” x 1 1/2”	76.20 x 38.10	1.65 / 1.65	107.95
•	•	•	•	•	•	•	x 2”	x 50.80	1.65 / 1.65	85.73
•	•	•	•	•	•	•	x 2 1/2”	76.20 x 63.50	1.65 / 1.65	66.68
•	•	•	•	•	•	•	4” x 2”	101.60 x 50.80	2.11 / 1.65	130.18
•	•	•	•	•	•	•	x 2 1/2”	x 63.50	2.11 / 1.65	107.95
•	•	•	•	•	•	•	x 3”	x 76.20	2.11 / 1.65	98.43
•	•	•	•	•	•	•	6” x 3”	152.40 x 76.20	2.77 / 1.65	184.15
•	•	•	•	•	•	•	x 4”	x 101.60	2.77 / 2.11	142.88

Further dimensions on request. Subject to alteration.

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TUBE SYSTEMS IN STAINLESS STEEL

ECCENTRIC REDUCERS

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	ISO / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm
				•	•		10 x 8	17.20 x 13.50	1.60 / 1.60	60.00
				•	•		15 x 8	21.30 x 13.50	1.60 / 1.60	60.00
				•	•		x 10	x 17.20	1.60 / 1.60	60.00
				•	•		20 x 8	26.90 x 13.50	1.60 / 1.60	60.00
				•	•		x 10	x 17.20	1.60 / 1.60	60.00
				•	•		x 15	x 21.30	1.60 / 1.60	60.00
				•	•		25 x 15	33.70 x 21.30	2.00 / 1.60	70.00
				•	•		x 20	x 26.90	2.00 / 1.60	70.00
				•	•		32 x 15	42.40 x 21.30	2.00 / 1.60	80.00
				•	•		x 20	x 26.90	2.00 / 1.60	80.00
				•	•		x 25	x 33.70	2.00 / 2.00	80.00
				•	•		40 x 15	48.30 x 21.30	2.00 / 1.60	90.00
				•	•		x 20	x 26.90	2.00 / 1.60	90.00
				•	•		x 25	x 33.70	2.00 / 2.00	90.00
				•	•		x 32	x 42.40	2.00 / 2.00	90.00
				•	•		50 x 20	60.30 x 26.90	2.00 / 1.60	100.00
				•	•		x 25	x 33.70	2.00 / 2.00	100.00
				•	•		x 32	x 42.40	2.00 / 2.00	100.00
				•	•		x 40	x 48.30	2.00 / 2.00	100.00
				•	•		65 x 25	76.10 x 33.70	2.00 / 2.00	110.00
				•	•		x 40	x 48.30	2.00 / 2.00	110.00
				•	•		x 50	x 60.30	2.00 / 2.00	110.00
				•	•		80 x 50	88.90 x 60.30	2.30 / 2.00	110.00
				•	•		x 65	x 76.10	2.30 / 2.00	110.00
				•	•		100 x 65	114.30 x 76.10	2.30 / 2.00	135.00
				•	•		x 80	x 88.90	2.30 / 2.30	135.00
				•	•		150 x 100	168.30 x 114.30	2.60 / 2.30	on request

Further dimensions on request. Subject to alteration.

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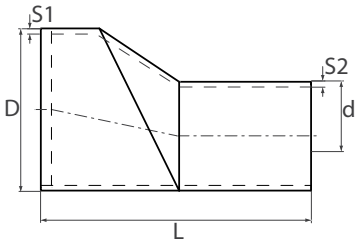
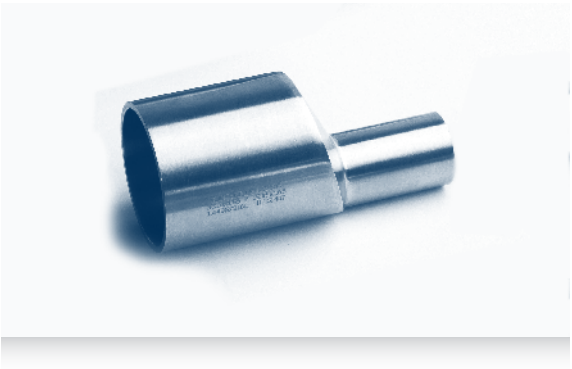
TUBE SYSTEMS IN STAINLESS STEEL

ECCENTRIC REDUCERS





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 11865 DN / NW	D/d mm	S1/S2 mm	L mm
					•		8 x 6	10.00 x 8.00	1.00 / 1.00	38.00
					•		10 x 6	13.00 x 8.00	1.50 / 1.00	38.00
					•		x 8	x 10.00	1.50 / 1.00	38.00
					•		15 x 8	19.00 x 10.00	1.50 / 1.00	60.00
					•		x 10	x 13.00	1.50 / 1.50	60.00
					•		20 x 10	23.00 x 13.00	1.50 / 1.50	60.00
					•		x 15	x 19.00	1.50 / 1.50	60.00
					•		25 x 15	29.00 x 19.00	1.50 / 1.50	70.00
					•		x 20	x 23.00	1.50 / 1.50	70.00
					•		32 x 15	35.00 x 19.00	1.50 / 1.50	80.00
					•		x 20	x 23.00	1.50 / 1.50	80.00
					•		x 25	x 29.00	1.50 / 1.50	80.00
					•		40 x 20	41.00 x 23.00	1.50 / 1.50	90.00
					•		x 25	x 29.00	1.50 / 1.50	90.00
					•		x 32	x 35.00	1.50 / 1.50	90.00
					•		50 x 25	53.00 x 29.00	1.50 / 1.50	90.00
					•		x 32	x 35.00	1.50 / 1.50	90.00
					•		x 40	x 41.00	1.50 / 1.50	90.00
					•		65 x 40	70.00 x 41.00	2.00 / 1.50	110.00
					•		x 50	x 53.00	2.00 / 1.50	110.00
					•		80 x 50	85.00 x 53.00	2.00 / 1.50	110.00
					•		x 65	x 70.00	2.00 / 2.00	110.00
					•		100 x 65	104.00 x 70.00	2.00 / 2.00	135.00
					•		x 80	x 85.00	2.00 / 2.00	135.00
					•		150 x 80	154.00 x 85.00	2.00 / 2.00	170.00
					•		x 100	x 104.00	2.00 / 2.00	170.00

Further dimensions on request. Subject to alteration.

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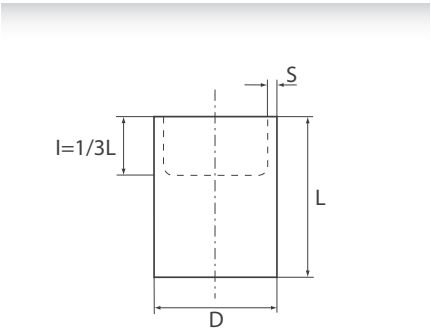
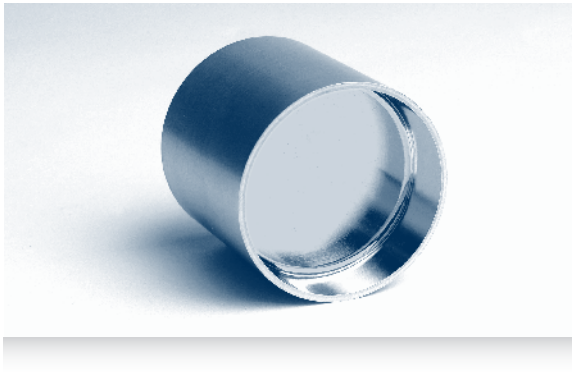
TUBE SYSTEMS IN STAINLESS STEEL

END CAPS





Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D mm	S mm	L mm	l mm
•	•	•	•				1/4″	6.35	0.89	34.75	5.00
•	•	•	•				3/8″	9.53	0.89	44.45	5.00
•	•	•	•				1/2″	12.70	1.24/1.65	44.45	5.00
•	•	•	•				3/4″	19.05	1.24/1.65	44.45	10.00
•	•	•	•				1″	25.40	1.65	44.45	10.00
•	•	•	•				1 1/2″	38.10	1.65	50.80	10.00
•	•	•	•				2″	50.80	1.65	50.80	15.00
•	•	•	•				2 1/2″	63.50	1.65	50.80	15.00
•	•	•	•				3″	76.20	1.65	50.80	15.00
•	•	•	•				4″	101.60	2.11	63.50	15.00
•	•	•	•				6″	152.40	2.77	200.00	150.00
							Metric / 11865 DW / NW	D mm	S mm	L mm	l mm
•	•	•	•				10	12.00	1.00	37.00	5.00
•	•	•	•				15	18.00	1.50	37.00	10.00
•	•	•	•				20	23.00	1.50	45.00	10.00
•	•	•	•				25	28.00	1.50	45.00	10.00
•	•	•	•				32	35.00	1.50	45.00	10.00

Further dimensions on request. Subject to alteration.

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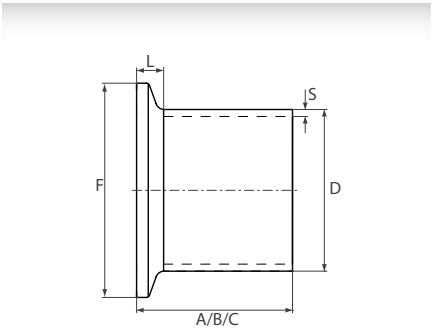
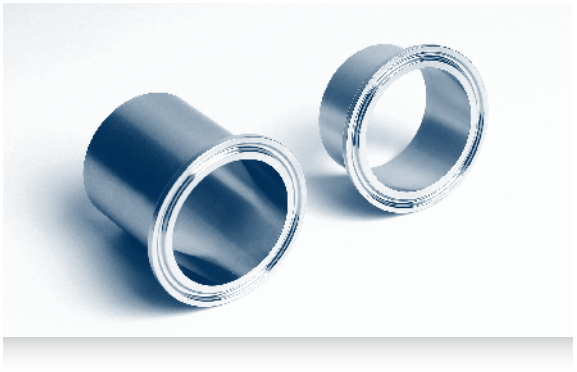
TUBE SYSTEMS IN STAINLESS STEEL

FERRULES





Caps please see section ASME BPE and Tube connection

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Imperial Inch	D mm	S mm	F mm	L mm	A mm	B mm	C mm
				•	•	•	1/4″	6.35	0.89	25.00	7.0	44.50	28.70	12.70
				•	•	•	1/8″	9.35	0.89	25.00	6.4	44.50	28.70	12.70
				•	•	•	1/2″	12.70	1.65	25.00	5.8	44.50	28.70	12.70
				•	•	•	3/4″	19.05	1.65	25.00	4.7	44.50	28.70	12.70
				•	•	•	1″	25.40	1.65	50.50	7.4	44.50	28.70	12.70
				•	•	•	1 1/2″	38.10	1.65	50.50	5.1	44.50	28.70	12.70
				•	•	•	2″	50.80	1.65	64.00	5.3	57.20	28.70	12.70
				•	•	•	2 1/2″	63.50	1.65	77.50	5.4	57.20	28.70	12.70
				•	•	•	3″	76.20	1.65	91.00	5.5	57.20	28.70	12.70
				•	•	•	4″	101.60	2.11	119.00	6.0	57.20	28.70	15.90
				•	•	•	6″	152.40	2.77	167.00	8.3	76.20	38.10	19.10

							ISO / DIN 32676 DN / NW	D mm	S mm	F mm	L mm	A mm	B mm
				•	•		8	13.50	1.60	25.00	5.70	28.60	12.70
				•	•		10	17.20	1.60	25.00	5.00	28.60	12.70
				•	•		15	21.30	1.60	50.50	8.20	36.00	21.50
				•	•		20	26.90	1.60	50.50	7.10	36.00	21.50
				•	•		25	33.70	2.00	50.50	5.90	36.00	21.50
				•	•		32	42.40	2.00	64.00	6.80	36.00	21.50
				•	•		40	48.30	2.00	64.00	5.70	36.00	21.50
				•	•		50	60.30	2.00	77.50	6.00	36.00	28.00
				•	•		65	76.10	2.00	91.00	5.60	48.00	28.00
				•	•		80	88.90	2.30	106.00	6.00	48.00	28.00
				•	•		100	114.30	2.30	130.00	5.70	48.00	28.00

Further dimensions on request. Subject to alteration.

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TUBE SYSTEMS IN STAINLESS STEEL

FERRULES

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Metric / DIN 32676 DN / NW	D mm	S mm	F mm	L mm	A mm	B mm
					•		6	8.00	1.00	25.00	6.70	28.60	12.70
					•		8	10.00	1.00	25.00	6.30	28.60	12.70
					•		10	13.00	1.50	34.00	6.70	28.60	18.00
					•		15	19.00	1.50	34.00	5.60	28.60	18.00
					•		20	23.00	1.50	34.00	4.90	28.60	18.00
					•		25	29.00	1.50	50.50	6.80	36.00	21.50
					•		32	35.00	1.50	50.50	5.70	36.00	21.50
					•		40	41.00	1.50	50.50	4.60	36.00	21.50
					•		50	53.00	1.50	64.00	4.90	36.00	21.50
					•		65	70.00	2.00	91.00	6.70	48.00	28.00
					•		80	85.00	2.00	106.00	6.70	48.00	28.00
					•		100	104.00	2.00	119.00	5.60	48.00	28.00
					•		150	154.00	2.00	183.00	10.90	66.00	28.00

TANK FERRULES

Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	ImperiaL Inch	OD tube mm	D mm	S mm	F mm	L mm	A mm
				•	•		1″	25.40	29.50	3.90	50.50	6.70	41.30
				•	•		1 1/2″	38.10	42.60	4.10	50.50	4.30	41.30
				•	•		2″	50.80	55.70	4.30	63.90	4.40	44.50
				•	•		2 1/2″	63.50	68.80	4.50	77.40	4.40	44.50
				•	•		3″	76.20	81.90	4.70	90.90	4.50	46.00
				•	•		4″*	101.60	108.10	5.70	119.00	4.80	54.00

Further dimensions on request. Subject to alteration.

* OD tubes

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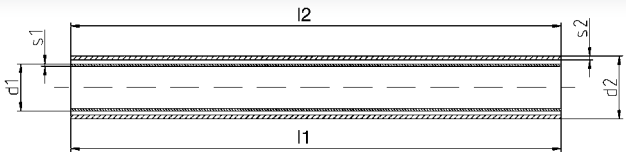
TUBE SYSTEMS IN STAINLESS STEEL

COAX

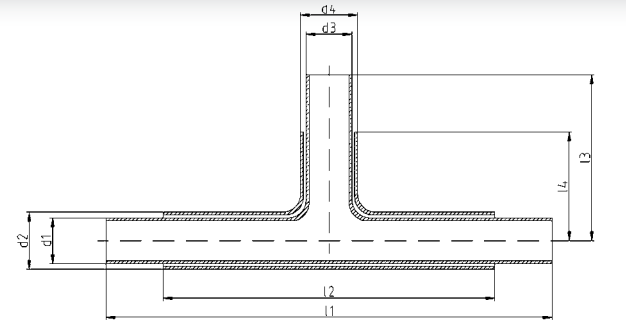
TUBES
(all dimensions in mm)



Inch	DIMENSIONS							
	Inner Tube				Outer Tube			
	d1	S1	l1	Tol.	d2	s2	l2	Tol.
1/4"	6.35	0.89	5950.00	+/-50	12.70	1.24	5950.00	+/-50
3/8"	9.53	0.89	5950.00	+/-50	15.88	1.24	5950.00	+/-50
1/2"	12.70	1.24	5950.00	+/-50	19.05	1.65	5950.00	+/-50
3/4"	19.05	1.65	5950.00	+/-50	25.40	1.65	5950.00	+/-50
1"	25.40	1.65	5950.00	+/-50	38.10	1.65	5950.00	+/-50

Five (5) distance clips have to be evenly fixed on a 6m tube.

T-PIECES
(all dimensions in mm)



Inch	Dimensions											
	Inner Tube				Outer Tube							
	Main Tube		Branch		Main Tube		Branch					
	d1	s1	d3	s3	d2	s2	d4	s4	l1	l2	l3	l4
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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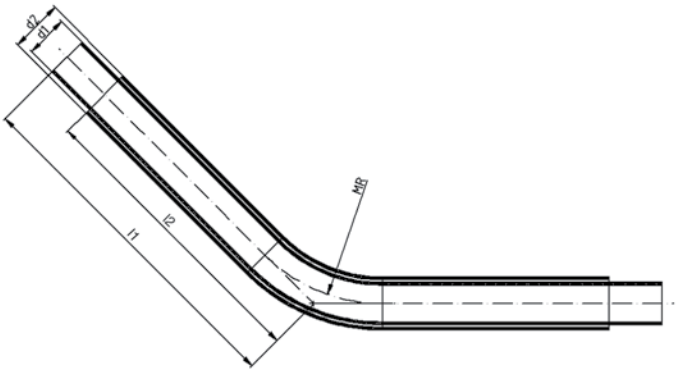
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

COAX

ELBOWS 45°
(all dimensions in mm)

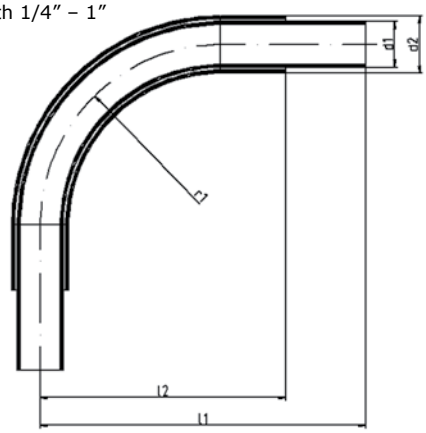
Nominal width 1/4" – 1"



Inch	Dimensions				
	d1	d2	l1	l2	r1
1/4"	6.35	12.70	98.45	79.40	38.10
3/8"	9.53	15.88	98.45	79.40	57.00
1/2"	12.70	19.05	109.26	90.21	85.00
3/4"	19.05	25.40	135.61	110.21	85.00
1"	25.40	38.10	203.20	177.80	150.00

ELBOWS 90°
(all dimensions in mm)

Nominal width 1/4" – 1"



Inch	Dimensions				
	d1	d2	l1	l2	r1
1/4"	6.35	12.70	120.70	101.65	38.10
3/8"	9.53	15.88	130.70	111.65	57.00
1/2"	12.70	19.05	184.40	165.35	85.00
3/4"	19.05	25.40	190.75	165.35	85.00
1"	25.40	38.10	107.97	82.57	38.10

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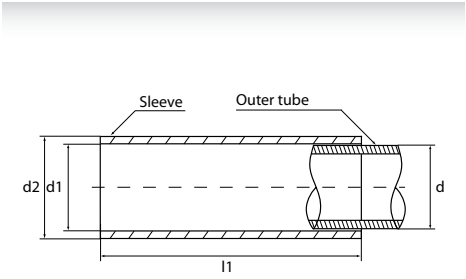
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

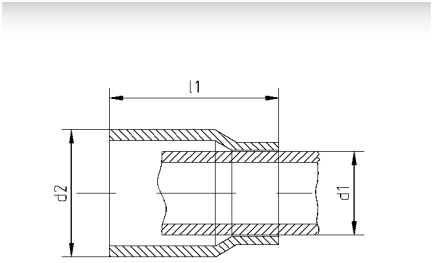
COAX

SLEEVE
(all dimensions in mm)



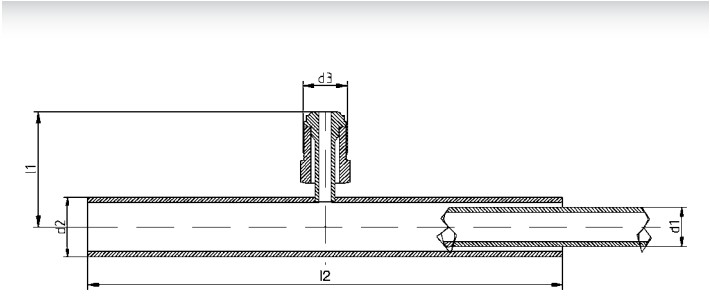
Process tube		Outer tube	Sleeve		
Inch	mm	d	d1	d2	l1
1/4″	6.35	12.70	12.90	15.88	101.60
3/8″	9.53	15.87	16.11	19.05	101.60
1/2″	12.70	19.05	19.30	22.23	101.60
3/4″	19.05	25.40	25.60	30.00	101.60
1″	25.40	38.10	38.40	42.40	101.60

TERMINATORS
(all dimensions in mm)



	Dimensions		
Inch	d1	d2	l1
1/4″	6.35	12.70	25.40
3/8″	9.53	15.88	25.40
1/2″	12.70	19.05	25.40
3/4″	19.05	25.40	31.75
1″	25.40	38.10	31.75

PURGE TEES
(all dimensions in mm)



	Dimensions				
Inch	d1	d2	l1	l2	d3
1/4″	6.35	12.70	33.3	146.00	1/4″ VCR*
3/8″	9.53	15.88	34.8	152.40	1/4″ VCR*
1/2″	12.70	19.05	36.4	152.40	1/4″ VCR*
3/4″	19.05	25.40	39.6	165.10	1/4″ VCR*
1″	25.40	38.10	42.8	165.10	1/4″ VCR*

* Trademark

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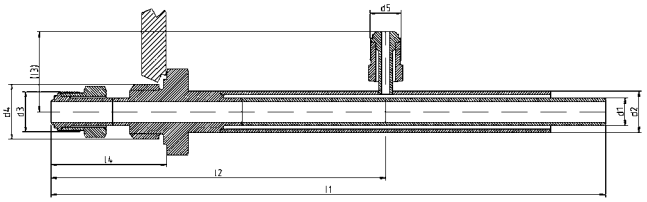
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

COAX

BULKHEAD PURGE TEES
(all dimensions in mm)

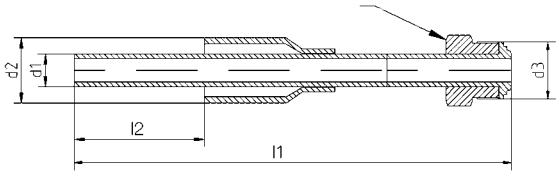


Inch	Dimensions								
	d1	d2	l1	l2	l3	l4	d3	d4	d5
1/4″	6.35	12.70	242.90	144.50	33.30	55.00	1/4″ VCR*	M20 x 1.5	1/4″ VCR*
3/8″	9.53	15.88	256.20	154.60	34.80	53.40	3/8″ VCR*	M30 x 2.0	1/4″ VCR*
1/2″	12.70	19.05	256.20	154.60	36.40	53.40	1/2″ VCR*	M30 x 2.0	1/4″ VCR*

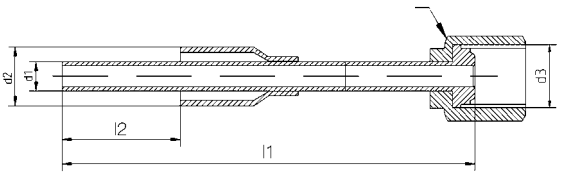
* Trademark

FEMALE / MALE
(all dimensions in mm)

VCR pressure screw (male)



VCR nut (female)



Inch / DN	Dimensions				
	d1	d2	l1	l2	d3
1/4″	6.35	12.70	33.3	146.00	1/4″ VCR*
3/8″	9.53	15.88	34.8	152.40	1/4″ VCR*
1/2″	12.70	19.05	36.4	152.40	1/4″ VCR*
3/4″	19.05	25.40	39.6	165.10	1/4″ VCR*
1″	25.40	38.10	42.8	165.10	1/4″ VCR*

* Trademark

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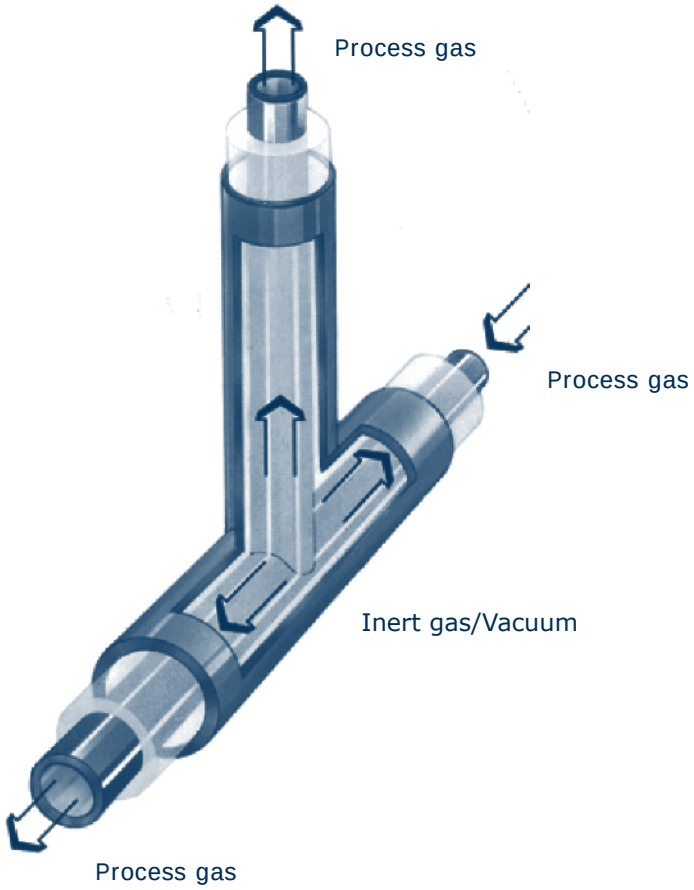
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

TWIN WALL TUBE SYSTEM

The special twin wall tube system consists of an inner electrochemically polished process tube and an outer safety tube. Both are prepared for orbital welding and manufactured from high quality stainless steel AISI 316L (the tube is also available in other alloys on demand).

Spacers centre the process tube and safeguard the gas flow between the outer and the inner tube. In case of a leak in the process tube the escaping medium flows into the safety space and can be neutralised and harmlessly discharged from the system.

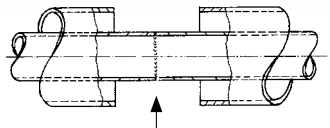
The twin wall tube system is easy to install by orbital welding and can also be integrated existing systems and plants.



Installation instructions for special twin tube

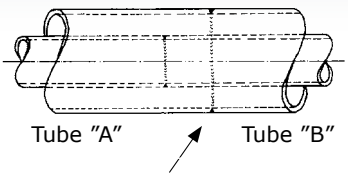
Tube to tube or tube to fitting

1



Orbital weld the process tube and helium leak test.

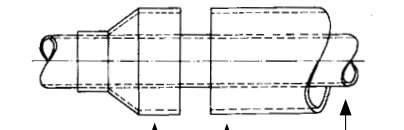
2



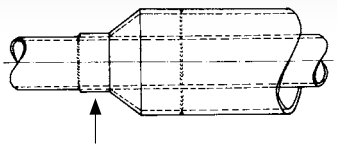
Slide the outer safety tubes together so that the weld on the inner process tube is covered. Orbital weld the outer tube and helium leak test.

Closing the outer safety tube

1



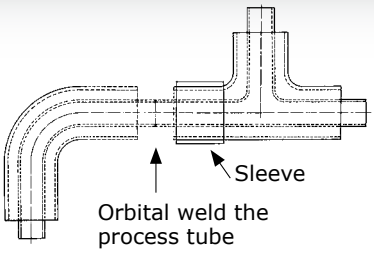
2



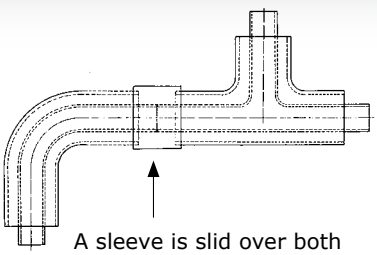
Orbital weld the closing piece to the process tube.

Fitting to fitting

1



2



A sleeve is slid over both ends of the safety tube and orbital welded.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

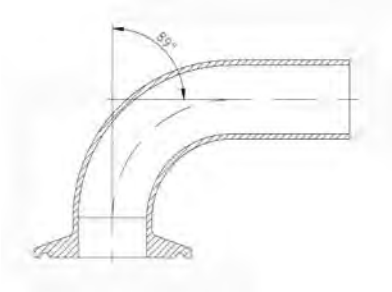
SPECIAL TUBE FITTINGS
ELBOWS

In addition to elbows 45°, 90° and 180° (see dimension tables) Dockweiler also produces elbows with variable angles, in each case following the customer requirements.

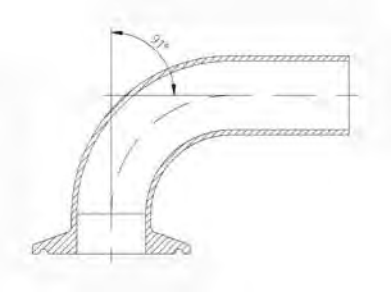
Material

Tube components:	Dockweiler stainless steel tube systems ULTRON, finetron/finetron.1, TCC/TCC.1, safetron, weldtron	Surfaces:	bright finish, anodic clean, electropolished
		Ra-values:	as per customer specification
Prematerial:	1.4404 / 1.4435 / UNS S 31603 (316L) 1.4539 / UNS NO 8904 (904L)	Dimensions: (tube)	Imperial, ISO/DIN 11866, Metric/DIN 11866

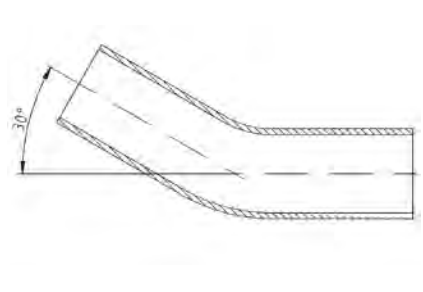
Examples



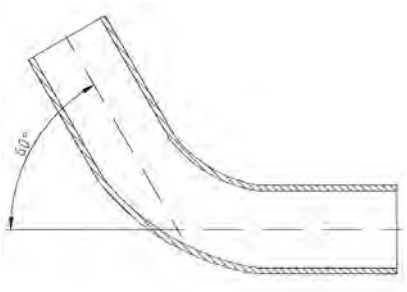
Elbow 89°



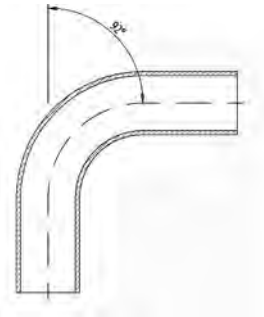
Elbow 91°



Elbow 30°



Elbow 60°



Elbow 92°

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

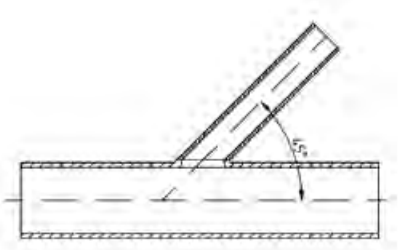
SPECIAL TUBE FITTINGS
T-pieces with inclined branch and Y-pieces

In addition to T-pieces with 90° branch (see dimension tables) Dockweiler also produces T-pieces with differently inclined branches.
Here the manufacture mostly follows customer specifications for the relevant special applications.

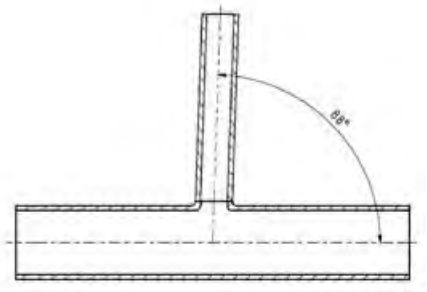
Material

Tube components:	Dockweiler stainless steel tube systems ULTRON, finetron/finetron.1, TCC/TCC.1, safetron, weldtron
Prematerial:	1.4404 / 1.4435 / UNS S 31603 (316L), 1.4539 / UNS NO 8904 (904L)
Surfaces:	bright finish, anodic clean, electropolished
Ra-values:	as per customer specification
Dimensions: (tube)	imperial, ISO/DIN 11866, metric/DIN 11866

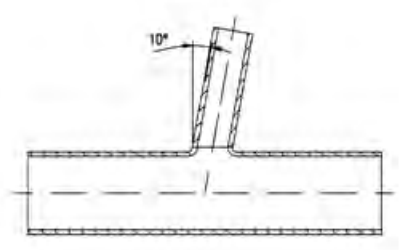
Examples



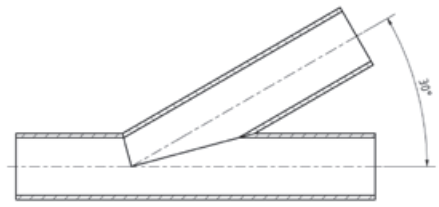
Branch 45°



Branch 88°



Branch 10°



Branch 30°

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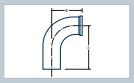
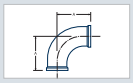
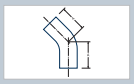
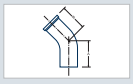
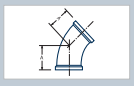
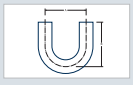
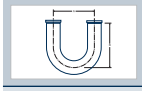
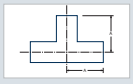
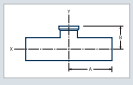
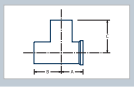
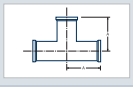
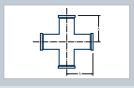
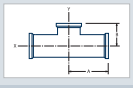
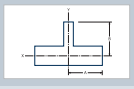
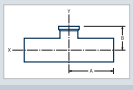
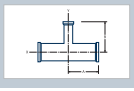
TUBE SYSTEMS IN STAINLESS STEEL

Dimensions according to ASME BPE

Tubes and fittings bpe-direct®	Dimensions
Tubes	Imperial / ASME BPE
Elbows with/without clamps	
T-pieces with/without clamps	
Reducers with/without clamps	
Ferrules	
Caps	

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Overview
New ASME BPE 2012 Descriptions

	New	Old (ASME BPE 2009)	Description
	**DT-4.1.1-1**	DT-7	Elbow 90° WW / Elbow 88° WW / Elbow 92° WW
	**DT-4.1.1-2**	DT-12	Elbow 90° CW
	**DT-4.1.1-3**	DT-16	Elbow 90° CC
	**DT-4.1.1-4**	DT-8	Elbow 45° WW
	**DT-4.1.1-5**	DT-13	Elbow 45° CW
	**DT-4.1.1-6**	DT-17	Elbow 45° CC
	**DT-4.1.1-7**	DT-23	Elbow 180° WW
	**DT-4.1.1-8**	DT-24	Elbow 180°, Return Bend CC
	**DT-4.1.2-1**	DT-9	T-Piece, Straight Tee WWW
	**DT-4.1.2-1**	DT-9	Straight Cross WWWW
	**DT-4.1.2-2**	DT-15	T-Piece, Equal Outlet WCW
	**DT-4.1.2-3**	DT-25	T-Piece, Short Outlet WWC
	**DT-4.1.2-4**	DT-18	T-Piece, Equal Tee CCC
	**DT-4.1.2-4**	DT-18	Equal Cross CCCC
	**DT-4.1.2-5**	DT-27	Short Outlet Tee CCC
	**DT-4.1.2-6**	DT-10	T-Piece, Reducing Tee WWW
	**DT-4.1.2-7**	DT-14	T-Piece, Reducing Tee WCW
	**DT-4.1.2-8**	DT-19	T-Piece, Reduced CCC

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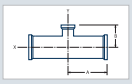
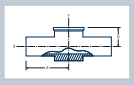
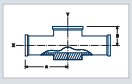
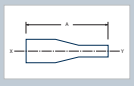
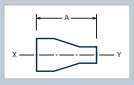
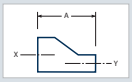
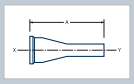
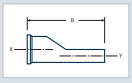
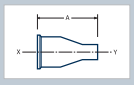
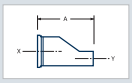
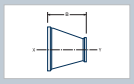
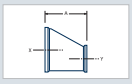
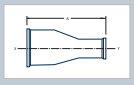
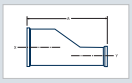
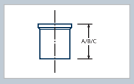
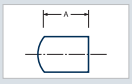
Overview
New ASME BPE 2012 Descriptions

	New	Old (ASME BPE 2009)	Description
	**DT-4.1.2-9**	DT-20	T-Piece, Outlet Tee CCC
	**DT-4.1.2-10**	DT-28	Instrument Tee WCW
	**DT-4.1.2-11**	DT-29	Instrument Tee CCC
	**DT-4.1.3-1 (a)**	DT-11	Concentric Reducer WW
	**DT-4.1.3-1 (a)**	DT-11	Eccentric Reducer WW
	**DT-4.1.3-1 (b)**		Concentric Reducer WW
	**DT-4.1.3-1 (b)**		Eccentric Reducer WW
	**DT-4.1.3-2 (a)**	DT-26	Concentric Reducer CW
	**DT-4.1.3-2 (a)**	DT-26	Eccentric Reducer CW
	**DT-4.1.3-2 (b)**		Concentric Reducer CW
	**DT-4.1.3-2 (b)**		Eccentric Reducer CW
	**DT-4.1.3-3 (a)**	DT-21	Concentric Reducer CC
	**DT-4.1.3-3 (a)**	DT-21	Eccentric Reducer CC
	**DT-4.1.3-3 (b)**		Concentric Reducer CC
	**DT-4.1.3-3 (b)**		Eccentric Reducer CC
	**DT-4.1.4-1**	DT-22	Ferrule A / Ferrule B / Ferrule C
	**DT-4.1.5-1**	DT-30	End Cap
	**DT-4.1.5-2**	DT-31	Clamp Cap

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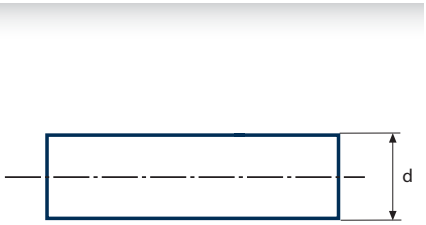
DT-4-1
TUBES



bpe-direct®

Nominal Size (d)		Tube Wall Thickness		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	0.035	0.9	01a1	01a4
3/8	9.53	0.035	0.9	01b1	01b4
1/2	12.70	0.065	1.7	01c1	01c4
3/4	19.05	0.065	1.7	01d1	01d4
1	25.40	0.065	1.7	01e1	01e4
1 1/2	38.10	0.065	1.7	01f1	01f4
2	50.80	0.065	1.7	01g1	01g4
2 1/2	63.50	0.065	1.7	01h1	01h4
3	76.20	0.065	1.7	01i1	01i4
4	101.60	0.083	2.1	01j1	01j4
6	152.40	0.109	2.8	01k1	01k4

Further dimensions on request. Subject to alteration.

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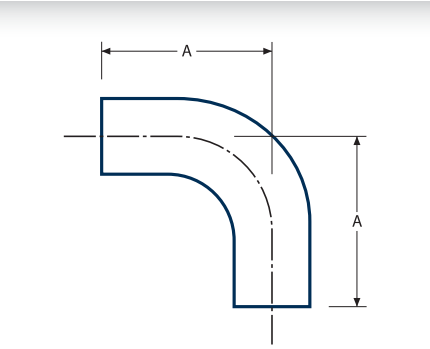
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.1-1
Automatic Tube Weld:
90° ELBOWS



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Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.625	66.7	1-1a1	1-1a4
3/8	9.53	2.625	66.7	1-1b1	1-1b4
1/2	12.70	3.000	76.2	1-1c1	1-1c4
3/4	19.05	3.000	76.2	1-1d1	1-1d4
1	25.40	3.000	76.2	1-1e1	1-1e4
1 1/2	38.10	3.750	95.3	1-1f1	1-1f4
2	50.80	4.750	120.7	1-1g1	1-1g4
2 1/2	63.50	5.500	139.7	1-1h1	1-1h4
3	76.20	6.250	158.8	1-1i1	1-1i4
4	101.60	8.000	203.2	1-1j1	1-1j4
6	152.40	11.500	292.1	1-1k1	1-1k4

Further dimensions on request. Subject to alteration.

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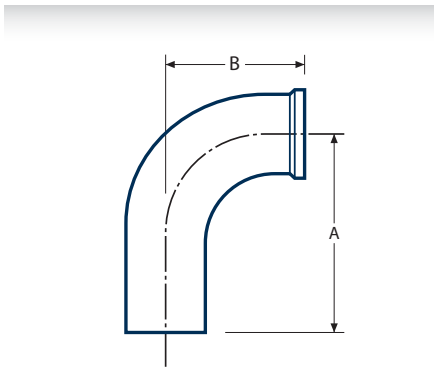
DT-4.1.1-2
Automatic Tube Weld:
HYGIENIC CLAMP JOINT, 90° ELBOWS



bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.625	66.7	1.625	41.3	1-2a1	1-2a4
3/8	9.53	2.625	66.7	1.625	41.3	1-2b1	1-2b4
1/2	12.70	3.000	76.2	1.625	41.3	1-2c1	1-2c4
3/4	19.05	3.000	76.2	1.625	41.3	1-2d1	1-2d4
1	25.40	3.000	76.2	2.000	50.8	1-2e1	1-2e4
1 1/2	38.10	3.750	95.3	2.750	69.9	1-2f1	1-2f4
2	50.80	4.750	120.7	3.500	88.9	1-2g1	1-2g4
2 1/2	63.50	5.500	139.7	4.250	108.0	1-2h1	1-2h4
3	76.20	6.250	158.8	5.000	127.0	1-2i1	1-2i4
4	101.60	8.000	203.2	6.625	168.3	1-2j1	1-2j4
6	152.40	11.500	292.1	10.500	266.7	1-2k1	1-2k4

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

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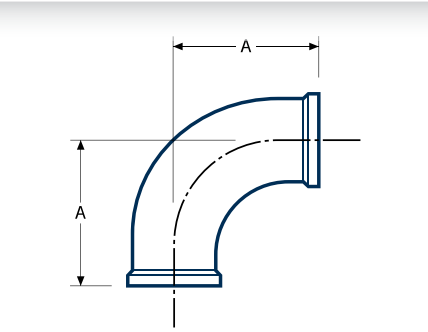
DT-4.1.1-3
Hygienic clamp joint:
90° ELBOWS



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Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.625	41.3	1-3a1	1-3a4
3/8	9.53	1.625	41.3	1-3b1	1-3b4
1/2	12.70	1.625	41.3	1-3c1	1-3c4
3/4	19.05	1.625	41.3	1-3d1	1-3d4
1	25.40	2.000	50.8	1-3e1	1-3e4
1 1/2	38.10	2.750	69.9	1-3f1	1-3f4
2	50.80	3.500	88.9	1-3g1	1-3g4
2 1/2	63.50	4.250	108.0	1-3h1	1-3h4
3	76.20	5.000	127.0	1-3i1	1-3i4
4	101.60	6.625	168.3	1-3j1	1-3j4
6	152.40	10.500	266.7	1-3k1	1-3k4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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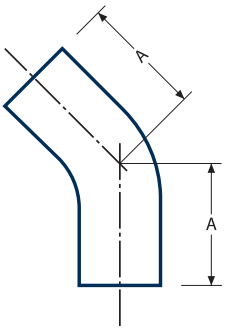
DT-4.1.1-4
Automatic Tube Weld:
45° ELBOWS



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Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.000	50.8	1-4a1	1-4a4
3/8	9.53	2.000	50.8	1-4b1	1-4b4
1/2	12.70	2.250	57.2	1-4c1	1-4c4
3/4	19.05	2.250	57.2	1-4d1	1-4d4
1	25.40	2.250	57.2	1-4e1	1-4e4
1 1/2	38.10	2.500	63.5	1-4f1	1-4f4
2	50.80	3.000	76.2	1-4g1	1-4g4
2 1/2	63.50	3.375	85.7	1-4h1	1-4h4
3	76.20	3.625	92.1	1-4i1	1-4i4
4	101.60	4.500	114.3	1-4j1	1-4j4
6	152.40	6.250	158.8	1-4k1	1-4k4

Further dimensions on request. Subject to alteration.

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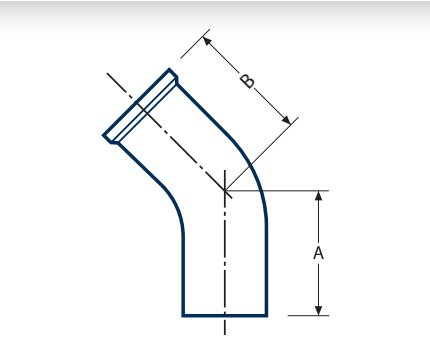
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.1-5
Automatic Tube Weld:
HYGIENIC CLAMP JOINT, 45° ELBOWS



bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.000	50.8	1.000	25.4	1-5a1	1-5a4
3/8	9.53	2.000	50.8	1.000	25.4	1-5b1	1-5b4
1/2	12.70	2.250	57.2	1.000	25.4	1-5c1	1-5c4
3/4	19.05	2.250	57.2	1.000	25.4	1-5d1	1-5d4
1	25.40	2.250	57.2	1.125	28.6	1-5e1	1-5e4
1 1/2	38.10	2.500	63.5	1.438	36.5	1-5f1	1-5f4
2	50.80	3.000	76.2	1.750	44.5	1-5g1	1-5g4
2 1/2	63.50	3.375	85.7	2.063	52.4	1-5h1	1-5h4
3	76.20	3.625	92.1	2.375	60.3	1-5i1	1-5i4
4	101.60	4.500	114.3	3.125	79.4	1-5j1	1-5j4
6	152.40	6.250	158.8	5.250	133.4	1-5k1	1-5k4

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

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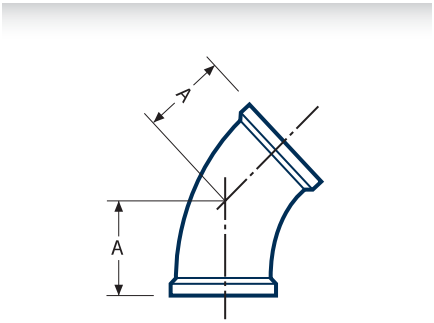
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.1-6
Hygienic clamp joint:
45° ELBOWS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.000	25.4	1-6a1	1-6a4
3/8	9.53	1.000	25.4	1-6b1	1-6b4
1/2	12.70	1.000	25.4	1-6c1	1-6c4
3/4	19.05	1.000	25.4	1-6d1	1-6d4
1	25.40	1.125	28.6	1-6e1	1-6e4
1 1/2	38.10	1.438	36.5	1-6f1	1-6f4
2	50.80	1.750	44.5	1-6g1	1-6g4
2 1/2	63.50	2.063	52.4	1-6h1	1-6h4
3	76.20	2.375	60.3	1-6i1	1-6i4
4	101.60	3.125	79.4	1-6j1	1-6j4
6	152.40	5.250	133.4	1-6k1	1-6k4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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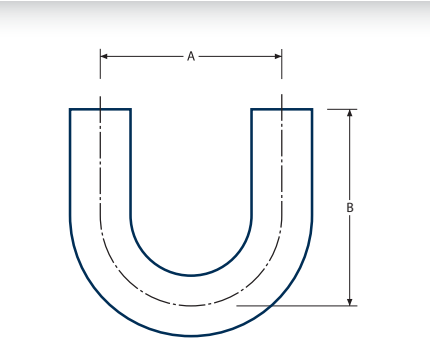
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.1-7
Automatic Tube Weld:
180° RETURN BEND



bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	4.500	114.3	2.625	66.7	1-7a1	1-7a4
3/8	9.53	4.500	114.3	2.625	66.7	1-7b1	1-7b4
1/2	12.70	4.500	114.3	3.000	76.2	1-7c1	1-7c4
3/4	19.05	4.500	114.3	3.000	76.2	1-7d1	1-7d4
1	25.40	3.000	76.2	3.000	76.2	1-7e1	1-7e4
1 1/2	38.10	4.500	114.3	4.500	114.3	1-7f1	1-7f4
2	50.80	6.000	152.4	5.000	127.0	1-7g1	1-7g4
2 1/2	63.50	7.500	190.5	5.750	146.1	1-7h1	1-7h4
3	76.20	9.000	228.6	6.500	165.1	1-7i1	1-7i4
4	101.60	12.000	304.8	8.500	215.9	1-7j1	1-7j4
6	152.40	18.000	457.2	11.500	292.1	1-7k1	1-7k4

Further dimensions on request. Subject to alteration.

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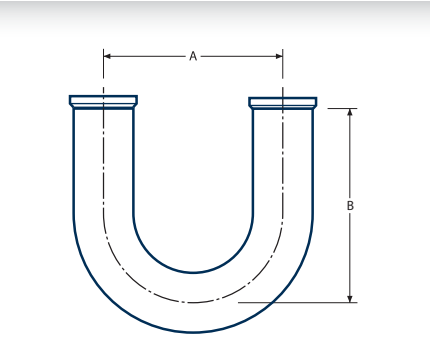
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.1-8
Hygienic clamp joint:
180° RETURN BEND



bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	4.500	114.3	3.125	79.4	1-8a1	1-8a4
3/8	9.53	4.500	114.3	3.125	79.4	1-8b1	1-8b4
1/2	12.70	4.500	114.3	3.500	88.9	1-8c1	1-8c4
3/4	19.05	4.500	114.3	3.500	88.9	1-8d1	1-8d4
1	25.40	3.000	76.2	3.500	88.9	1-8e1	1-8e4
1 1/2	38.10	4.500	114.3	5.000	127.0	1-8f1	1-8f4
2	50.80	6.000	152.4	5.500	139.7	1-8g1	1-8g4
2 1/2	63.50	7.500	190.5	6.250	158.8	1-8h1	1-8h4
3	76.20	9.000	228.6	7.000	177.8	1-8i1	1-8i4
4	101.60	12.000	304.8	9.125	231.8	1-8j1	1-8j4
6	152.40	18.000	457.2	13.000	330.2	1-8k1	1-8k4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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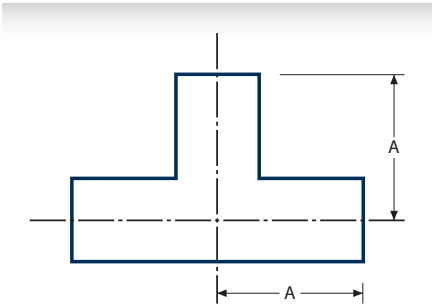
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-1
Automatic Tube Weld:
T-PIECES



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	2-1Ta1	2-1Ta4
3/8	9.53	1.750	44.5	2-1Tb1	2-1Tb4
1/2	12.70	1.875	47.6	2-1Tc1	2-1Tc4
3/4	19.05	2.000	50.8	2-1Td1	2-1Td4
1	25.40	2.125	54.0	2-1Te1	2-1Te4
1 1/2	38.10	2.375	60.3	2-1Tf1	2-1Tf4
2	50.80	2.875	73.0	2-1Tg1	2-1Tg4
2 1/2	63.50	3.125	79.4	2-1Th1	2-1Th4
3	76.20	3.375	85.7	2-1Ti1	2-1Ti4
4	101.60	4.125	104.8	2-1Tj1	2-1Tj4
6	152.40	5.625	142.9	2-1Tk1	2-1Tk4

Further dimensions on request. Subject to alteration.

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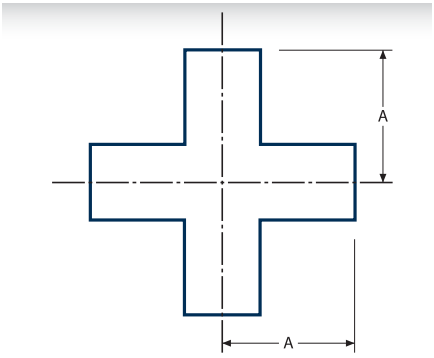
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-1
Automatic Tube Weld: CROSSES



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	2-1Xa1	2-1Xa4
3/8	9.53	1.750	44.5	2-1Xb1	2-1Xb4
1/2	12.70	1.875	47.6	2-1Xc1	2-1Xc4
3/4	19.05	2.000	50.8	2-1Xd1	2-1Xd4
1	25.40	2.125	54.0	2-1Xe1	2-1Xe4
1 1/2	38.10	2.375	60.3	2-1Xf1	2-1Xf4
2	50.80	2.875	73.0	2-1Xg1	2-1Xg4
2 1/2	63.50	3.125	79.4	2-1Xh1	2-1Xh4
3	76.20	3.375	85.7	2-1Xi1	2-1Xi4
4	101.60	4.125	104.8	2-1Xj1	2-1Xj4
6	152.40	5.625	142.9	2-1Xk1	2-1Xk4

Further dimensions on request. Subject to alteration.

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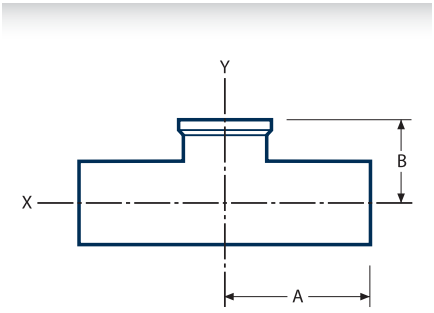
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-2
Automatic Tube Weld:
SHORT OUTLET HYGIENIC CLAMP JOINT TEES



bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	1.000	25.4	2-2a1	2-2a4
3/8	9.53	1.750	44.5	1.000	25.4	2-2b1	2-2b4
1/2	12.70	1.875	47.6	1.000	25.4	2-2c1	2-2c4
3/4	19.05	2.000	50.8	1.125	28.6	2-2d1	2-2d4
1	25.40	2.125	54.0	1.125	28.6	2-2e1	2-2e4
1 1/2	38.10	2.375	60.3	1.375	34.9	2-2f1	2-2f4
2	50.80	2.875	73.0	1.625	41.3	2-2g1	2-2g4
2 1/2	63.50	3.125	79.4	1.875	47.6	2-2h1	2-2h4
3	76.20	3.375	85.7	2.125	54.0	2-2i1	2-2i4
4	101.60	4.125	104.8	2.750	69.9	2-2j1	2-2j4
6	152.40	5.625	142.9	4.625	117.5	2-2k1	2-2k4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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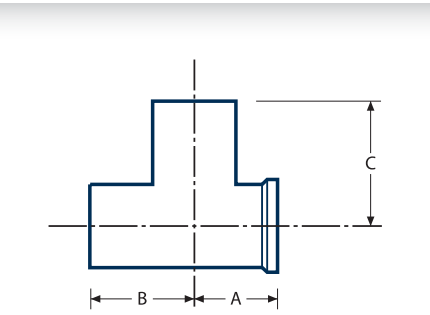
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-3
HYGIENIC MECHANICAL JOINT:
SHORT OUTLET RUN TEES



bpe-direct®

Nominal Size		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	2-3a1	2-3a4
3/8	9.53	0.875	22.2	1.750	44.5	1.750	44.5	2-3b1	2-3b4
1/2	12.70	0.875	22.2	1.875	47.6	1.875	47.6	2-3c1	2-3c4
3/4	19.05	1.000	25.4	2.000	50.8	2.000	50.8	2-3d1	2-3d4
1	25.40	1.125	28.6	2.125	54.0	2.125	54.0	2-3e1	2-3e4
1 1/2	38.10	1.375	34.9	2.375	60.3	2.375	60.3	2-3f1	2-3f4
2	50.80	1.625	41.3	2.875	73.0	2.875	73.0	2-3g1	2-3g4
2 1/2	63.50	1.875	47.6	3.125	79.4	3.125	79.4	2-3h1	2-3h4
3	76.20	2.125	54.0	3.375	85.7	3.375	85.7	2-3i1	2-3i4
4	101.60	2.750	69.9	4.125	104.8	4.125	104.8	2-3j1	2-3j4
6	152.40	4.625	117.5	5.625	142.9	5.625	142.9	2-3k1	2-3k4

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

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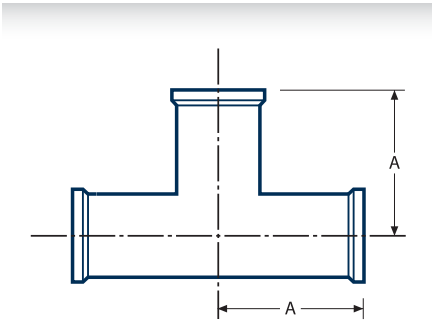
DT-4.1.2-4
Hygienic clamp joint:
STRAIGHT TEES



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.250	57.2	2-4Ta1	2-4Ta4
3/8	9.53	2.250	57.2	2-4Tb1	2-4Tb4
1/2	12.70	2.250	57.2	2-4Tc1	2-4Tc4
3/4	19.05	2.375	60.3	2-4Td1	2-4Td4
1	25.40	2.625	66.7	2-4Te1	2-4Te4
1 1/2	38.10	2.875	73.0	2-4Tf1	2-4Tf4
2	50.80	3.375	85.7	2-4Tg1	2-4Tg4
2 1/2	63.50	3.625	92.1	2-4Th1	2-4Th4
3	76.20	3.875	98.4	2-4Ti1	2-4Ti4
4	101.60	4.750	120.7	2-4Tj1	2-4Tj4
6	152.40	7.125	181.0	2-4Tk1	2-4Tk4

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

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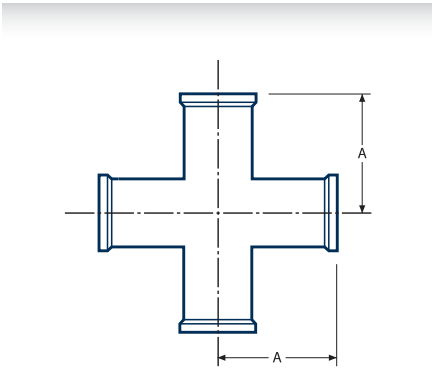
DT-4.1.2-4
Hygienic clamp joint:
STRAIGHT CROSSES



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	2.250	57.2	2-4Xa1	2-4Xa4
3/8	9.53	2.250	57.2	2-4Xb1	2-4Xb4
1/2	12.70	2.250	57.2	2-4Xc1	2-4Xc4
3/4	19.05	2.375	60.3	2-4Xd1	2-4Xd4
1	25.40	2.625	66.7	2-4Xe1	2-4Xe4
1 1/2	38.10	2.875	73.0	2-4Xf1	2-4Xf4
2	50.80	3.375	85.7	2-4Xg1	2-4Xg4
2 1/2	63.50	3.625	92.1	2-4Xh1	2-4Xh4
3	76.20	3.875	98.4	2-4Xi1	2-4Xi4
4	101.60	4.750	120.7	2-4Xj1	2-4Xj4
6	152.40	7.125	181.0	2-4Xk1	2-4Xk4

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

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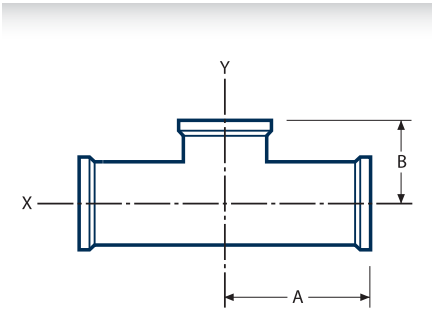
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-5
HYGIENIC CLAMP JOINT:
SHORT OUTLET TEES



bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/2	12.70	2.250	57.2	1.000	25.4	2-5c1	2-5c4
3/4	19.05	2.350	60.3	1.125	28.6	2-5d1	2-5d4
1	25.40	2.625	66.7	1.125	28.6	2-5e1	2-5e4
1 1/2	38.10	2.875	73.0	1.375	34.9	2-5f1	2-5f4
2	50.80	3.375	85.7	1.625	41.3	2-5g1	2-5g4
2 1/2	63.50	3.625	92.1	1.875	47.6	2-5h1	2-5h4
3	76.20	3.875	98.4	2.125	54.0	2-5i1	2-5i4
4	101.60	4.750	120.7	2.750	69.9	2-5j1	2-5j4
6	152.40	7.125	181.0	4.625	117.5	2-5k1	2-5k4

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

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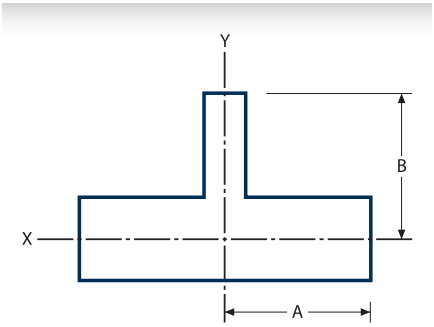
DT-4.1.2-6
Automatic Tube Weld:
REDUCING TEES



bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	1.750	44.4	1.750	44.5	2-6b-a1	2-6b-a4
1/2 x 1/4	12.70 x 6.35	1.875	47.6	1.875	47.6	2-6c-a1	2-6c-a4
x 3/8	x 9.53	1.875	47.6	1.875	47.6	2-6c-b1	2-6c-b4
3/4 x 1/4	19.05 x 6.35	2.000	50.8	2.000	50.8	2-6d-a1	2-6d-a4
x 3/8	x 9.53	2.000	50.8	2.000	50.8	2-6d-b1	2-6d-b4
x 1/2	x 12.70	2.000	50.8	2.000	50.8	2-6d-c1	2-6d-c4
1 x 1/4	25.40 x 6.35	2.125	54.0	2.125	54.0	2-6e-a1	2-6e-a4
x 3/8	x 9.53	2.125	54.0	2.125	54.0	2-6e-b1	2-6e-b4
x 1/2	x 12.70	2.125	54.0	2.125	54.0	2-6e-c1	2-6e-c4
x 3/4	x 19.05	2.125	54.0	2.125	54.0	2-6e-d1	2-6e-d4
1 1/2 x 1/2	38.10 x 12.70	2.375	60.3	2.375	60.3	2-6f-c1	2-6f-c4
x 3/4	x 19.05	2.375	60.3	2.375	60.3	2-6f-d1	2-6f-d4
x 1	x 25.40	2.375	60.3	2.375	60.3	2-6f-e1	2-6f-e4
2 x 1/2	50.80 x 12.70	2.875	73.0	2.625	66.7	2-6g-c1	2-6g-c4
x 3/4	x 19.05	2.875	73.0	2.625	66.7	2-6g-d1	2-6g-d4
x 1	x 25.40	2.875	73.0	2.625	66.7	2-6g-e1	2-6g-e4
x 1 1/2	x 38.10	2.875	73.0	2.625	66.7	2-6g-f1	2-6g-f4
2 1/2 x 1/2	63.50 x 12.70	3.125	79.4	2.875	73.0	2-6h-c1	2-6h-c4
x 3/4	x 19.05	3.125	79.4	2.875	73.0	2-6h-d1	2-6h-d4
x 1	x 25.40	3.125	79.4	2.875	73.0	2-6h-e1	2-6h-e4
x 1 1/2	x 38.10	3.125	79.4	2.875	73.0	2-6h-f1	2-6h-f4
x 2	x 50.80	3.125	79.4	2.875	73.0	2-6h-g1	2-6h-g4

Further dimensions on request. Subject to alteration.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-6
Automatic Tube Weld:
REDUCING TEES

bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3 x 1/2	76.20 x 12.70	3.375	85.7	3.125	79.4	2-6i-c1	2-6i-c4
x 3/4	x 19.05	3.375	85.7	3.125	79.4	2-6i-d1	2-6i-d4
x 1	x 25.40	3.375	85.7	3.125	79.4	2-6i-e1	2-6i-e4
x 1 1/2	x 38.10	3.375	85.7	3.125	79.4	2-6i-f1	2-6i-f4
x 2	x 50.40	3.375	85.7	3.125	79.4	2-6i-g1	2-6i-g4
x 2 1/2	x 63.50	3.375	85.7	3.125	79.4	2-6i-h1	2-6i-h4
4 x 1/2	101.60 x 12.70	4.125	104.8	3.625	92.1	2-6j-c1	2-6j-c4
x 3/4	x 19.05	4.125	104.8	3.625	92.1	2-6j-d1	2-6j-d4
x 1	x 25.40	4.125	104.8	3.625	92.1	2-6j-e1	2-6j-e4
x 1 1/2	x 38.10	4.125	104.8	3.625	92.1	2-6j-f1	2-6j-f4
x 2	x 50.40	4.125	104.8	3.875	98.4	2-6j-g1	2-6j-g4
x 2 1/2	x 63.50	4.125	104.8	3.875	98.4	2-6j-h1	2-6j-h4
x 3	x 76.20	4.125	104.8	3.875	98.4	2-6j-i1	2-6j-i4
6 x 3	152.40 x 76.20	5.625	142.9	4.875	123.8	2-6k-i1	2-6k-i4
x 4	x 101.60	5.625	142.9	5.125	130.2	2-6k-j1	2-6k-j4

Further dimensions on request. Subject to alteration.

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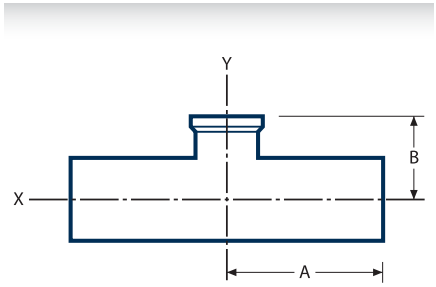
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-7
Automatic Tube Weld:
SHORT OUTLET HYGIENIC CLAMP JOINT REDUCING TEES



bpe-direct®

Nominal Size		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	2-7b-a1	2-7b-a4
1/2 x 1/4	12.70 x 6.35	1.875	47.6	1.000	25.4	2-7c-a1	2-7c-a4
x 3/8	x 9.53	1.875	47.6	1.000	25.4	2-7c-b1	2-7c-b4
3/4 x 1/4	19.05 x 6.35	2.000	50.8	1.000	25.4	2-7d-a1	2-7d-a4
x 3/8	x 9.53	2.000	50.8	1.000	25.4	2-7d-b1	2-7d-b4
x 1/2	x 12.70	2.000	50.8	1.000	25.4	2-7d-c1	2-7d-c4
1 x 1/4	25.40 x 6.35	2.125	54.0	1.125	28.6	2-7e-a1	2-7e-a4
x 3/8	x 9.53	2.125	54.0	1.125	28.6	2-7e-b1	2-7e-b4
x 1/2	x 12.70	2.125	54.0	1.125	28.6	2-7e-c1	2-7e-c4
x 3/4	x 19.05	2.125	54.0	1.125	28.6	2-7e-d1	2-7e-d4
1 1/2 x 1/2	38.10 x 12.70	2.375	60.3	1.375	34.9	2-7f-c1	2-7f-c4
x 3/4	x 19.05	2.375	60.3	1.375	34.9	2-7f-d1	2-7f-d4
x 1	x 25.40	2.375	60.3	1.375	34.9	2-7f-e1	2-7f-e4
2 x 1/2	50.80 x 12.70	2.875	73.0	1.625	41.3	2-7g-c1	2-7g-c4
x 3/4	x 19.05	2.875	73.0	1.625	41.3	2-7g-d1	2-7g-d4
x 1	x 25.40	2.875	73.0	1.625	41.3	2-7g-e1	2-7g-e4
x 1 1/2	x 38.10	2.875	73.0	1.625	41.3	2-7g-f1	2-7g-f4
2 1/2 x 1/2	63.50 x 12.70	3.125	79.4	1.875	47.6	2-71h-c1	2-7h-c4
x 3/4	x 19.05	3.125	79.4	1.875	47.6	2-7h-d1	2-7h-d4
x 1	x 25.40	3.125	79.4	1.875	47.6	2-7h-e1	2-7h-e4
x 1 1/2	x 38.10	3.125	79.4	1.875	47.6	2-7h-f1	2-7h-f4
x 2	x 50.80	3.125	79.4	1.875	47.6	2-7h-g1	2-7h-g4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-7
Automatic Tube Weld:
SHORT OUTLET HYGIENIC CLAMP JOINT REDUCING TEES

bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3 x 1/2	76.20 x 12.70	3.375	85.7	2.125	54.0	2-7i-c1	2-7i-c4
x 3/4	x 19.05	3.375	85.7	2.125	54.0	2-7i-d1	2-7i-d4
x 1	x 25.40	3.375	85.7	2.125	54.0	2-7i-e1	2-7i-e4
x 1 1/2	x 38.10	3.375	85.7	2.125	54.0	2-7i-f1	2-7i-f4
x 2	x 50.80	3.375	85.7	2.125	54.0	2-7i-g1	2-7i-g4
x 2 1/2	x 63.50	3.375	85.7	2.125	54.0	2-7i-h1	2-7i-h4
4 x 1/2	101.60 x 12.70	4.125	104.8	2.625	66.7	2-7j-c1	2-7j-c4
x 3/4	x 19.05	4.125	104.8	2.625	66.7	2-7j-d1	2-7j-d4
x 1	x 25.40	4.125	104.8	2.625	66.7	2-7j-e1	2-7j-e4
x 1 1/2	x 38.10	4.125	104.8	2.625	66.7	2-7j-f1	2-7j-f4
x 2	x 50.80	4.125	104.8	2.625	66.7	2-7j-g1	2-7j-g4
x 2 1/2	x 63.50	4.125	104.8	2.625	66.7	2-7j-h1	2-7j-h4
x 3	x 76.20	4.125	104.8	2.625	66.7	2-7j-i1	2-7j-i4
6 x 1/2	152.40 x 12.70	5.625	142.9	3.625	92.1	2-7k-c1	2-7k-c4
x 3/4	x 19.05	5.625	142.9	3.625	92.1	2-7k-d1	2-7k-d4
x 1	x 25.40	5.625	142.9	3.625	92.1	2-7k-e1	2-7k-e4
x 1 1/2	x 38.10	5.625	142.9	3.625	92.1	2-7k-f1	2-7k-f4
x 2	x 50.80	5.625	142.9	3.625	92.1	2-7k-g1	2-7k-g4
x 2 1/2	x 63.50	5.625	142.9	3.625	92.1	2-7k-h1	2-7k-h4
x 3	x 76.20	5.625	142.9	3.625	92.1	2-7k-i1	2-7k-i4
x 4	x 101.60	5.625	142.9	3.750	95.3	2-7k-j1	2-7k-j4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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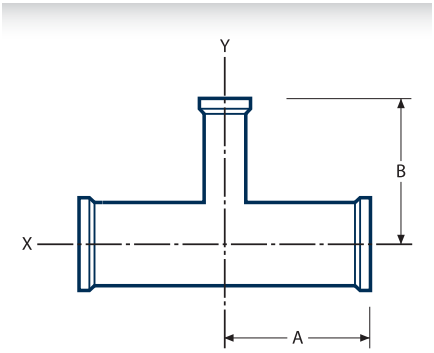
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-8
Hygienic clamp joint:
REDUCING TEES



bpe-direct®

Nominal Size		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	2-8b-a1	2-8b-a4
1/2 x 1/4	12.70 x 6.35	2.375	60.3	2.375	60.3	2-8c-a1	2-8c-a4
x 3/8	x 9.53	2.375	60.3	2.375	60.3	2-8c-b1	2-8c-b4
3/4 x 1/4	19.05 x 6.35	2.500	63.5	2.500	63.5	2-8d-a1	2-8d-a4
x 3/8	x 9.53	2.500	63.5	2.500	63.5	2-8d-b1	2-8d-b4
x 1/2	x 12.70	2.500	63.5	2.500	63.5	2-8d-c1	2-8d-c4
1 x1/4	25.40 x 6.35	2.625	66.7	2.625	66.7	2-8e-a1	2-8e-a4
x 3/8	x 9.53	2.625	66.7	2.625	66.7	2-8e-b1	2-8e-b4
x 1/2	x 12.70	2.625	66.7	2.625	66.7	2-8e-c1	2-8e-c4
x 3/4	x 19.05	2.625	66.7	2.625	66.7	2-8e-d1	2-8e-d4
1 1/2 x 1/2	38.10 x 12.70	2.875	73.0	2.875	73.0	2-8f-c1	2-8f-c4
x 3/4	x 19.05	2.875	73.0	2.875	73.0	2-8f-d1	2-8f-d4
x 1	x 25.40	2.875	73.0	2.875	73.0	2-8f-e1	2-8f-e4
2 x 1/2	50.80 x 12.70	3.375	85.7	3.125	79.4	2-8g-c1	2-8g-c4
x 3/4	x 19.05	3.375	85.7	3.125	79.4	2-8g-d1	2-8g-d4
x 1	x 25.40	3.375	85.7	3.125	79.4	2-8g-e1	2-8g-e4
x 1 1/2	x 38.10	3.375	85.7	3.125	79.4	2-8g-f1	2-8g-f4
2 1/2 x 1/2	63.50 x 12.70	3.625	92.1	3.375	85.7	2-8h-c1	2-8h-c4
x 3/4	x 19.05	3.625	92.1	3.375	85.7	2-8h-d1	2-8h-d4
x 1	x 25.40	3.625	92.1	3.375	85.7	2-8h-e1	2-8h-e4
x 1 1/2	x 38.10	3.625	92.1	3.375	85.7	2-8h-f1	2-8h-f4
x 2	x 50.80	3.625	92.1	3.375	85.7	2-8h-g1	2-8h-g4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-8
Hygienic clamp joint:
REDUCING TEES

bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3 x 1/2	76.20 x 12.70	3.875	98.4	3.625	92.1	2-8i-c1	2-8i-c4
x 3/4	x 19.05	3.875	98.4	3.625	92.1	2-8i-d1	2-8i-d4
x 1	x 25.40	3.875	98.4	3.625	92.1	2-8i-e1	2-8i-e4
x 1 1/2	x 38.10	3.875	98.4	3.625	92.1	2-8i-f1	2-8i-f4
x 2	x 50.80	3.875	98.4	3.625	92.1	2-8i-g1	2-8i-g4
x 2 1/2	x 63.50	3.875	98.4	3.625	92.1	2-8i-h1	2-8i-h4
4 x 1/2	101.60 x 12.70	4.750	120.7	4.125	104.8	2-8j-c1	2-8j-c4
x 3/4	x 19.05	4.750	120.7	4.125	104.8	2-8j-d1	2-8j-d4
x 1	x 25.40	4.750	120.7	4.125	104.8	2-8j-e1	2-8j-e4
x 1 1/2	x 38.10	4.750	120.7	4.125	104.8	2-8j-f1	2-8j-f4
x 2	x 50.80	4.750	120.7	4.375	111.1	2-8j-g1	2-8j-g4
x 2 1/2	x 63.50	4.750	120.7	4.375	111.1	2-8j-h1	2-8j-h4
x 3	x 76.20	4.750	120.7	4.375	111.1	2-8j-i1	2-8j-i4
6 x 3	152.40 x 76.20	7.125	181.0	5.375	136.5	2-8k-i1	2-8k-i4
x 4	x 101.60	7.125	181.0	5.750	146.1	2-8k-j1	2-8k-j4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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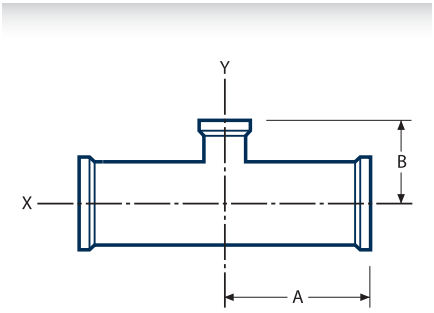
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-9
Hygienic clamp joint:
SHORT OUTLET REDUCING TEES



bpe-direct®

Nominal Size		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	2-9b-a1	2-9b-a4
1/2 x 1/4	12.70 x 6.35	2.375	60.3	1.000	25.4	2-9c-a1	2-9c-a4
x 3/8	x 9.53	2.375	60.3	1.000	25.4	2-9c-b1	2-9c-b4
3/4 x 1/4	19.05 x 6.35	2.500	63.5	1.000	25.4	2-9d-a1	2-9d-a4
x 3/8	x 9.53	2.500	63.5	1.000	25.4	2-9d-b1	2-9d-b4
x 1/2	x 12.70	2.500	63.5	1.000	25.4	2-9d-c1	2-9d-c4
1 x 1/4	25.40 x 6.35	2.625	66.7	1.125	28.6	2-9e-a1	2-9e-a4
x 3/8	x 9.53	2.625	66.7	1.125	28.6	2-9e-b1	2-9e-b4
x 1/2	x 12.70	2.625	66.7	1.125	28.6	2-9e-c1	2-9e-c4
x 3/4	x 19.05	2.625	66.7	1.125	28.6	2-9e-d1	2-9e-d4
1 1/2 x 1/2	38.10 x 12.70	2.875	73.0	1.375	34.9	2-9f-c1	2-9f-c4
x 3/4	x 19.05	2.875	73.0	1.375	34.9	2-9f-d1	2-9f-d4
x 1	x 25.40	2.875	73.0	1.375	34.9	2-9f-e1	2-9f-e4
2 x 1/2	50.80 x 12.70	3.375	85.7	1.625	41.3	2-9g-c1	2-9g-c4
x 3/4	x 19.05	3.375	85.7	1.625	41.3	2-9g-d1	2-9g-d4
x 1	x 25.40	3.375	85.7	1.625	41.3	2-9g-e1	2-9g-e4
x 1 1/2	x 38.10	3.375	85.7	1.625	41.3	2-9g-f1	2-9g-f4
2 1/2 x 1/2	63.50 x 12.70	3.625	92.1	1.875	47.6	2-9h-c1	2-9h-c4
x 3/4	x 19.05	3.625	92.1	1.875	47.6	2-9h-d1	2-9h-d4
x 1	x 25.40	3.625	92.1	1.875	47.6	2-9h-e1	2-9h-e4
x 1 1/2	x 38.10	3.625	92.1	1.875	47.6	2-9h-f1	2-9h-f4
x 2	x 50.80	3.625	92.1	1.875	47.6	2-9h-g1	2-9h-g4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-9
Hygienic clamp joint:
SHORT OUTLET REDUCING TEES

bpe-direct®

Nominal Size		A		B		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
3 x 1/2	76.20x 12.70	3.875	98.4	2.125	54.0	2-9i-c1	2-9i-c4
x 3/4	x 19.05	3.875	98.4	2.125	54.0	2-9i-d1	2-9i-d4
x 1	x 25.40	3.875	98.4	2.125	54.0	2-9i-e1	2-9i-e4
x1 1/2	x 38.10	3.875	98.4	2.125	54.0	2-9i-f1	2-9i-f4
x 2	x 50.80	3.875	98.4	2.125	54.0	2-9i-g1	2-9i-g4
x 2 1/2	x 63.50	3.875	98.4	2.125	54.0	2-9i-h1	2-9i-h4
4 x 1/2	101.60 x 12.70	4.750	120.7	2.625	66.7	2-9j-c1	2-9j-c4
x 3/4	x 19.05	4.750	120.7	2.625	66.7	2-9j-d1	2-9j-d4
x 1	x 25.40	4.750	120.7	2.625	66.7	2-9j-e1	2-9j-e4
x 1 1/2	x 38.10	4.750	120.7	2.625	66.7	2-9j-f1	2-9j-f4
x 2	x 50.80	4.750	120.7	2.625	66.7	2-9j-g1	2-9j-g4
x 2 1/2	x 63.50	4.750	120.7	2.625	66.7	2-9j-h1	2-9j-h4
x 3	x 76.20	4.750	120.7	2.625	66.7	2-9j-i1	2-9j-i4
6 x 1/2	152.40 x 12.70	7.125	181.0	3.625	92.1	2-9k-c1	2-9k-c4
x 3/4	x 19.05	7.125	181.0	3.625	92.1	2-9k-d1	2-9k-d4
x 1	x 25.40	7.125	181.0	3.625	92.1	2-9k-e1	2-9k-e4
x 1 1/2	x 38.10	7.125	181.0	3.625	92.1	2-9k-f1	2-9k-f4
x 2	x 50.80	7.125	181.0	3.625	92.1	2-9k-g1	2-9k-g4
x 2 1/2	x 63.50	7.125	181.0	3.625	92.1	2-9k-h1	2-9k-h4
x 3	x 76.20	7.125	181.0	3.625	92.1	2-9k-i1	2-9k-i4
x 4	x 101.60	7.125	181.0	3.750	95.3	2-9k-j1	2-9k-j4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

Dockweiler AG
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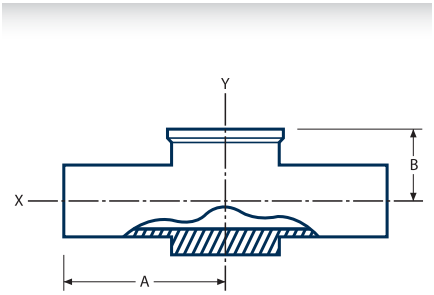
CPKD/10/11
02/2013

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-10
AUTOMATIC TUBE WELD:
INSTRUMENT TEES



bpe-direct®

Nominal Size		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	2-10c-f1	2-10c-f4
3/4 x 1 1/2	19.05 x 38.10	2.500	63.5	1.000	25.4	2-10d-f1	2-10d-f4
1 x 1 1/2	25.40 x 38.10	2.500	63.5	1.125	28.6	2-10e-f1	2-10e-f4
1/2 x 2	12.70 x 50.80	2.750	69.9	1.000	25.4	2-10c-g1	2-10c-g4
3/4 x 2	19.05 x 50.80	2.750	69.9	1.125	28.6	2-10d-g1	2-10d-g4
1 x 2	25.40 x 50.80	2.750	69.9	1.250	31.8	2-10e-g1	2-10e-g4
1 1/2 x 2	38.10 x 50.80	2.750	69.9	1.500	38.1	2-10f-g 1	2-10f-g4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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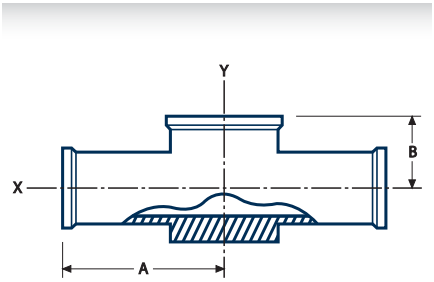
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.2-11
HYGIENIC CLAMP JOINT:
INSTRUMENT TEES



bpe-direct®

Nominal Size		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	2-11c-f1	2-11c-f4
3/4 x 1 1/2	19.05 x 38.10	3.000	76.2	1.000	25.4	2-11d-f1	2-11d-f4
1 x 1 1/2	25.40 x 38.10	3.000	76.2	1.125	28.6	2-11e-f1	2-11e-f4
1/2 x 2	12.70 x 50.80	3.250	82.6	1.000	25.4	2-11c-g1	2-11c-g4
3/4 x 2	19.05 x 50.80	3.250	82.6	1.125	28.6	2-11d-g1	2-11d-g4
1 x 2	25.40 x 50.80	3.250	82.6	1.250	31.8	2-11e-g1	2-11e-g4
1 1/2 x 2	38.10 x 50.80	3.250	82.6	1.500	38.1	2-11f-g1	2-11f-g4

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

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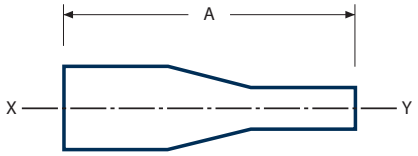
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.3-1 (a)
Automatic Tube Weld:
CONCENTRIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	3.250	82.6	3-1aKb-a1	3-1aKb-a4
1/2 x 1/4	12.70 x 6.35	3.250	82.6	3-1aKc-a1	3-1aKc-a4
x 3/8	x 9.53	3.250	82.6	3-1aKc-b1	3-1aKc-b4
3/4 x 3/8	19.05 x 9.53	3.250	82.6	3-1aKd-b1	3-1aKd-b4
x 1/2	x 12.70	4.000	101.6	3-1aKd-c1	3-1aKd-c4
1 x 1/2	25.40 x 12.70	4.500	114.3	3-1aKe-c1	3-1aKe-c4
x 3/4	x 19.05	4.000	101.6	3-1aKe-d1	3-1aKe-d4
1 1/2 x 3/4	38.10 x 19.05	5.000	127.0	3-1aKf-d1	3-1aKf-d4
x 1	x 25.40	5.000	127.0	3-1aKf-e1	3-1aKf-e4
2 x 1	50.8 x 25.40	7.250	184.2	3-1aKg-e1	3-1aKg-e4
x 1 1/2	x 38.10	5.250	133.4	3-1aKg-f1	3-1aKg-f4
2 1/2 x 1 1/2	63.50 x 38.10	7.250	184.2	3-1aKh-f1	3-1aKh-f4
x 2	x 50.80	5.500	139.7	3-1aKh-g1	3-1aKh-g4
3 x 1 1/2	76.20 x 38.10	9.250	235.0	3-1aKi-f1	3-1aKi-f4
x 2	x 50.80	7.500	190.5	3-1aKi-g1	3-1aKi-g4
x 2 1/2	x 63.50	5.500	139.7	3-1aKi-h1	3-1aKi-h4
4 x 2	101.60 x 50.80	11.750	298.5	3-1aKj-g1	3-1aKj-g4
x 2 1/2	x 63.50	9.750	247.7	3-1aKj-h1	3-1aKj-h4
x 3	x 76.20	7.750	196.9	3-1aKj-i1	3-1aKj-i4
6 x 3	152.40 x 76.20	10.000	254.0	3-1aKk-i1	3-1aKk-i4
x 4	x101.60	10.000	254.0	3-1aKk-j1	3-1aKk-j4

Further dimensions on request. Subject to alteration.

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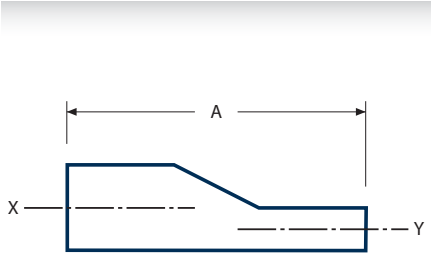
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.3-1 (a)
Automatic Tube Weld:
ECCENTIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	4.000	101.6	3-1aEb-a1	3-1aEb-a4
1/2 x 1/4	12.70 x 6.35	4.000	101.6	3-1aEc-a1	3-1aEc-a4
x 3/8	x 9.53	4.000	101.6	3-1aEc-b1	3-1aEc-b4
3/4 x 3/8	19.05 x 9.53	4.000	101.6	3-1aEd-b1	3-1aEd-b4
x 1/2	x 12.70	4.000	101.6	3-1aEd-c1	3-1aEd-c4
1 x 1/2	25.40 x 12.70	4.500	114.3	3-1aEe-c1	3-1aEe-c4
x 3/4	x 19.05	4.000	101.6	3-1aEe-d1	3-1aEe-d4
1 1/2 x 3/4	38.10 x 19.05	5.000	127.0	3-1aEf-d1	3-1aEf-d4
x 1	x 25.40	5.000	127.0	3-1aEf-e1	3-1aEf-e4
2 x 1	50.8 x 25.40	7.250	184.2	3-1aEg-e1	3-1aEg-e4
x 1 1/2	x 38.10	5.250	133.4	3-1aEg-f1	3-1aEg-f4
2 1/2 x 1 1/2	63.50 x 38.10	7.250	184.2	3-1aEh-f1	3-1aEh-f4
x 2	x 50.80	5.500	139.7	3-1aEh-g1	3-1aEh-g4
3 x 1 1/2	76.20 x 38.10	9.250	235.0	3-1aEi-f1	3-1aEi-f4
x 2	x 50.80	7.500	190.5	3-1aEi-g1	3-1aEi-g4
x 2 1/2	x 63.50	5.500	139.7	3-1aEi-h1	3-1aEi-h4
4 x 2	101.60 x 50.80	11.750	298.5	3-1aEj-g1	3-1aEj-g4
x 2 1/2	x 63.50	9.750	247.7	3-1aEj-h1	3-1aEj-h4
x 3	x 76.20	7.750	196.9	3-1aEj-i1	3-1aEj-i4
6 x 3	152.40 x 76.20	9.750	247.7	3-1aEk-i1	3-1aEk-i4
x 4	x 101.60	10.000	254.0	3-1aEk-j1	3-1aEk-j4

Further dimensions on request. Subject to alteration.

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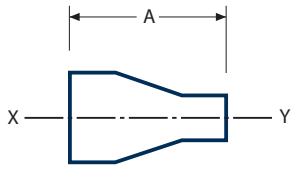
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.3-1 (b)
Automatic Tube Weld:
CONCENTRIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	1.625	41.3	3-1bKb-a1	3-1bKb-a4
1/2 x 1/4	12.70 x 6.35	1.875	47.6	3-1bKc-a1	3-1bKc-a4
x 3/8	x 9.53	1.875	47.6	3-1bKc-b1	3-1bKc-b4
3/4 x 3/8	19.05 x 9.53	2.000	50.8	3-1bKd-b1	3-1bKd-b4
x 1/2	x 12.70	2.125	54.0	3-1bKd-c1	3-1bKd-c4
1 x 1/2	25.40 x 12.70	2.500	63.5	3-1bKe-c1	3-1bKe-c4
x 3/4	x 19.05	2.125	54.0	3-1bKe-d1	3-1bKe-d4
1 1/2 x 3/4	38.10 x 19.05	3.000	76.2	3-1bKf-d1	3-1bKf-d4
x 1	x 25.40	2.500	63.5	3-1bKf-e1	3-1bKf-e4
2 x 1	50.8 x 25.40	3.375	85.7	3-1bKg-e1	3-1bKg-e4
x 1 1/2	x 38.10	2.500	63.5	3-1bKg-f1	3-1bKg-f4
2 1/2 x 1 1/2	63.50 x 38.10	3.375	85.7	3-1bKh-f1	3-1bKh-f4
x 2	x 50.80	2.500	63.5	3-1bKh-g1	3-1bKh-g4
3 x 1 1/2	76.20 x 38.10	4.250	108.0	3-1bKi-f1	3-1bKi-f4
x 2	x 50.80	3.375	85.7	3-1bKi-g1	3-1bKi-g4
x 2 1/2	x 63.50	2.625	66.7	3-1bKi-h1	3-1bKi-h4
4 x 2	101.60 x 50.80	5.125	130.2	3-1bKj-g1	3-1bKj-g4
x 2 1/2	x 63.50	4.250	108.0	3-1bKj-h1	3-1bKj-h4
x 3	x 76.20	3.875	98.4	3-1bKj-i1	3-1bKj-i4
6 x 3	152.40 x 76.20	7.250	184.2	3-1bKk-i1	3-1bKk-i4
x 4	x101.60	5.625	142.9	3-1bKk-j1	3-1bKk-j4

Further dimensions on request. Subject to alteration.

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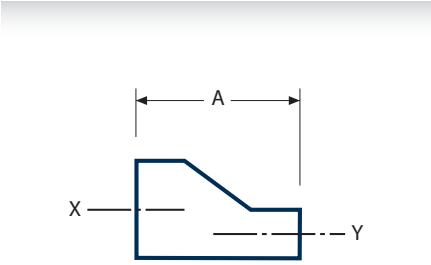
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.3-1 (b)
Automatic Tube Weld:
ECCENTIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	1.625	41.3	3-1bEb-a1	3-1bEb-a4
1/2 x 1/4	12.70 x 6.35	1.875	47.6	3-1bEc-a1	3-1bEc-a4
x 3/8	x 9.53	1.875	47.6	3-1bEc-b1	3-1bEc-b4
3/4 x 3/8	19.05 x 9.53	2.000	50.8	3-1bEd-b1	3-1bEd-b4
x 1/2	x 12.70	2.125	54.0	3-1bEd-c1	3-1bEd-c4
1 x 1/2	25.40 x 12.70	2.500	63.5	3-1bEe-c1	3-1bEe-c4
x 3/4	x 19.05	2.125	54.0	3-1bEe-d1	3-1bEe-d4
1 1/2 x 3/4	38.10 x 19.05	3.000	76.2	3-1bEf-d1	3-1bEf-d4
x 1	x 25.40	2.500	63.5	3-1bEf-e1	3-1bEf-e4
2 x 1	50.8 x 25.40	3.375	85.7	3-1bEg-e1	3-1bEg-e4
x 1 1/2	x 38.10	2.500	63.5	3-1bEg-f1	3-1bEg-f4
2 1/2 x 1 1/2	63.50 x 38.10	3.375	85.7	3-1bEh-f1	3-1bEh-f4
x 2	x 50.80	2.500	63.5	3-1bEh-g1	3-1bEh-g4
3 x 1 1/2	76.20 x 38.10	4.250	108.0	3-1bEi-f1	3-1bEi-f4
x 2	x 50.80	3.375	85.7	3-1bEi-g1	3-1bEi-g4
x 2 1/2	x 63.50	2.625	66.7	3-1bEi-h1	3-1bEi-h4
4 x 2	101.60 x 50.80	5.125	130.2	3-1bEj-g1	3-1bEj-g4
x 2 1/2	x 63.50	4.250	108.0	3-1bEj-h1	3-1bEj-h4
x 3	x 76.20	3.875	98.4	3-1bEj-i1	3-1bEj-i4
6 x 3	152.40 x 76.20	7.250	184.2	3-1bEk-i1	3-1bEk-i4
x 4	x101.60	5.625	142.9	3-1bEk-j1	3-1bEk-j4

Further dimensions on request. Subject to alteration.

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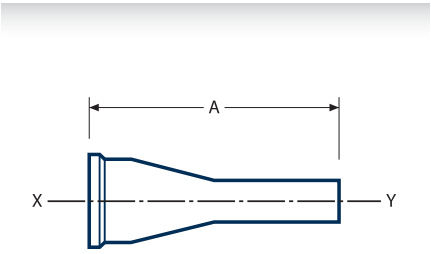
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.3-2 (a)
HYGIENIC CLAMP JOINT:
TUBE WELD CONCENTRIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/4 x 1/2	19.05 x 12.70	3.000	76.2	3-2aKd-c1	3-2aKd-c4
1 x 1/2	25.40 x 12.70	3.500	88.9	3-2aKe-c1	3-2aKe-c4
x 3/4	x 19.05	3.000	76.2	3-2aKe-d1	3-2aKe-d4
1 1/2 x 3/4	38.10 x 19.05	4.000	101.6	3-2aKf-d1	3-2aKf-d4
x 1	x 25.40	4.000	101.6	3-2aKf-e1	3-2aKf-e4
2 x 1	50.8 x 25.40	6.000	152.4	3-2aKg-e1	3-2aKg-e4
x 1 1/2	x 38.10	4.000	101.6	3-2aKg-f1	3-2aKg-f4
2 1/2 x 1 1/2	63.50 x 38.10	6.000	152.4	3-2aKh-f1	3-2aKh-f4
x 2	x 50.80	4.250	107.9	3-2aKh-g1	3-2aKh-g4
3 x 1 1/2	76.20 x 38.10	8.000	203.2	3-2aKi-f1	3-2aKi-f4
x 2	x 50.80	6.250	158.8	3-2aKi-g1	3-2aKi-g4
x 2 1/2	x 63.50	4.250	108.0	3-2aKi-h1	3-2aKi-h4
4 x 2	101.60 x 50.80	10.375	263.5	3-2aKj-g1	3-2aKj-g4
x 2 1/2	x 63.50	8.375	212.7	3-2aKj-h1	3-2aKj-h4
x 3	x 76.20	6.375	161.9	3-2aKj-i1	3-2aKj-i4
6 x 3	152.40 x 76.20	9.000	228.6	3-2aKk-i1	3-2aKk-i4
x 4	x 101.60	9.000	228.6	3-2aKk-j1	3-2aKk-j4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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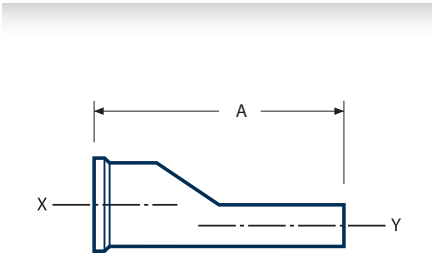
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.3-2 (a)
HYGIENIC CLAMP JOINT:
TUBE WELD ECCENTRIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/4 x 1/2	19.05 x 12.70	3.000	76.2	3-2aEd-c1	3-2aEd-c4
1 x 1/2	25.40 x 12.70	3.500	88.9	3-2aEe-c1	3-2aEe-c4
x 3/4	x 19.05	3.000	76.2	3-2aEe-d1	3-2aEe-d4
1 1/2 x 3/4	38.10 x 19.05	4.000	101.6	3-2aEf-d1	3-2aEf-d4
x 1	x 25.40	4.000	101.6	3-2aEf-e1	3-2aEf-e4
2 x 1	50.8 x 25.40	6.000	152.4	3-2aEg-e1	3-2aEg-e4
x 1 1/2	x 38.10	4.000	101.6	3-2aEg-f1	3-2aEg-f4
2 1/2 x 1 1/2	63.50 x 38.10	6.000	152.4	3-2aEh-f1	3-2aEh-f4
x 2	x 50.80	4.250	107.9	3-2aEh-g1	3-2aEh-g4
3 x 1 1/2	76.20 x 38.10	8.000	203.2	3-2aEi-f1	3-2aEi-f4
x 2	x 50.80	6.250	158.8	3-2aEi-g1	3-2aEi-g4
x 2 1/2	x 63.50	4.250	108.0	3-2aEi-h1	3-2aEi-h4
4 x 2	101.60 x 50.80	10.375	263.5	3-2aEj-g1	3-2aEj-g4
x 2 1/2	x 63.50	8.375	212.7	3-2aEj-h1	3-2aEj-h4
x 3	x 76.20	6.375	161.9	3-2aEj-i1	3-2aEj-i4
6 x 3	152.40 x 76.20	8.750	222.3	3-2aEk-i1	3-2aEk-i4
x 4	x 101.60	9.000	228.6	3-2aEk-j1	3-2aEk-j4

Further dimensions on request. Subject to alteration.

Flange dimensions see table DT-4.1.4-1

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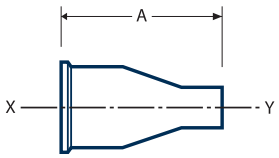
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.3-2 (b)
HYGIENIC CLAMP JOINT:
TUBE WELD CONCENTRIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.125	54.0	3-2bKb-a1	3-2bKb-a4
1/2 x 1/4	12.70 x 6.35	2.375	60.3	3-2bKc-a1	3-2bKc-a4
x 3/8	x 9.53	2.375	60.3	3-2bKc-b1	3-2bKc-b4
3/4 x 3/8	19.05 x 9.53	2.500	63.5	3-2bKd-b1	3-2bKd-b4
x 1/2	x 12.70	2.625	66.7	3-2bKd-c1	3-2bKd-c4
1 x 1/2	25.40 x 12.70	3.000	76.2	3-2bKe-c1	3-2bKe-c4
x 3/4	x 19.05	2.625	66.7	3-2bKe-d1	3-2bKe-d4
1 1/2 x 3/4	38.10 x 19.05	3.500	88.9	3-2bKf-d1	3-2bKf-d4
x 1	x 25.40	3.000	76.2	3-2bKf-e1	3-2bKf-e4
2 x 1	50.8 x 25.40	3.875	98.4	3-2bKg-e1	3-2bKg-e4
x 1 1/2	x 38.10	3.000	76.2	3-2bKg-f1	3-2bKg-f4
2 1/2 x 1 1/2	63.50 x 38.10	3.875	98.4	3-2bKh-f1	3-2bKh-f4
x 2	x 50.80	3.000	76.2	3-2bKh-g1	3-2bKh-g4
3 x 1 1/2	76.20 x 38.10	4.750	120.7	3-2bKi-f1	3-2bKi-f4
x 2	x 50.80	3.875	98.4	3-2bKi-g1	3-2bKi-g4
x 2 1/2	x 63.50	3.125	79.4	3-2bKi-h1	3-2bKi-h4
4 x 2	101.60 x 50.80	5.750	146.0	3-2bKj-g1	3-2bKj-g4
x 2 1/2	x 63.50	4.875	123.8	3-2bKj-h1	3-2bKj-h4
x 3	x 76.20	4.500	114.3	3-2bKj-i1	3-2bKj-i4
6 x 3	152.40 x 76.20	8.000	203.2	3-2bKk-i1	3-2bKk-i4
x 4	x101.60	6.375	161.9	3-2bKk-j1	3-2bKk-j4

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

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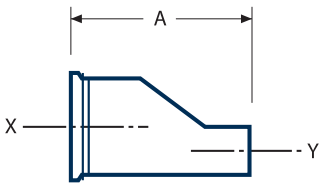
DT-4.1.3-2 (b)
HYGIENIC CLAMP JOINT:
TUBE WELD ECCENTRIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.125	54.0	3-2bEb-a1	3-2bEb-a4
1/2 x 1/4	12.70 x 6.35	2.375	60.3	3-2bEc-a1	3-2bEc-a4
x 3/8	x 9.53	2.375	60.3	3-2bEc-b1	3-2bEc-b4
3/4 x 3/8	19.05 x 9.53	2.500	63.5	3-2bEd-b1	3-2bEd-b4
x 1/2	x 12.70	2.625	66.7	3-2bEd-c1	3-2bEd-c4
1 x 1/2	25.40 x 12.70	3.000	76.2	3-2bEe-c1	3-2bEe-c4
x 3/4	x 19.05	2.625	66.7	3-2bEe-d1	3-2bEe-d4
1 1/2 x 3/4	38.10 x 19.05	3.500	88.9	3-2bEf-d1	3-2bEf-d4
x 1	x 25.40	3.000	76.2	3-2bEf-e1	3-2bEf-e4
2 x 1	50.8 x 25.40	3.875	98.4	3-2bEg-e1	3-2bEg-e4
x 1 1/2	x 38.10	3.000	76.2	3-2bEg-f1	3-2bEg-f4
2 1/2 x 1 1/2	63.50 x 38.10	3.875	98.4	3-2bEh-f1	3-2bEh-f4
x 2	x 50.80	3.000	76.2	3-2bEh-g1	3-2bEh-g4
3 x 1 1/2	76.20 x 38.10	4.750	120.7	3-2bEi-f1	3-2bEi-f4
x 2	x 50.80	3.875	98.4	3-2bEi-g1	3-2bEi-g4
x 2 1/2	x 63.50	3.125	79.4	3-2bEi-h1	3-2bEi-h4
4 x 2	101.60 x 50.80	5.750	146.0	3-2bEj-g1	3-2bEj-g4
x 2 1/2	x 63.50	4.875	123.8	3-2bEj-h1	3-2bEj-h4
x 3	x 76.20	4.500	114.3	3-2bEj-i1	3-2bEj-i4
6 x 3	152.40 x 76.20	8.000	203.2	3-2bEk-i1	3-2bEk-i4
x 4	x 101.60	6.375	161.9	3-2bEk-j1	3-2bEk-j4

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

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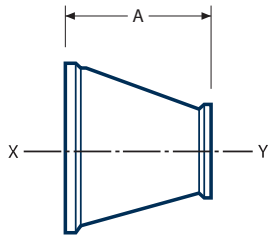
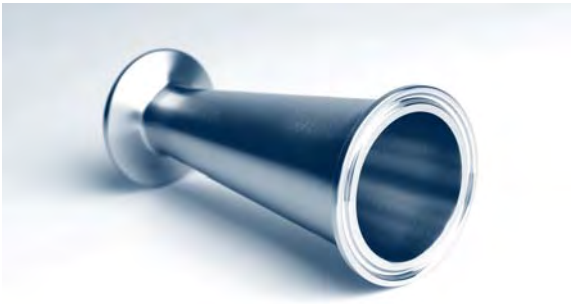
DT-4.1.3-3 (a)
Hygienic clamp joint:
CONCENTRIC REDUCERS





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Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/4 x 1/2	19.05 x 12.70	2.000	50.8	3-3aKd-c1	3-3aKd-c4
1 x 1/2	25.40 x 12.70	2.500	63.5	3-3aKe-c1	3-3aKe-c4
x 3/4	x 19.05	2.000	50.8	3-3aKe-d1	3-3aKe-d4
1 1/2 x 3/4	38.10 x 19.05	3.000	76.2	3-3aKf-d1	3-3aKf-d4
x 1	x 25.40	3.000	76.2	3-3aKf-e1	3-3aKf-e4
2 x 1	50.80 x 25.40	5.000	127.0	3-3aKg-e1	3-3aKg-e4
x 1 1/2	x 38.10	3.000	76.2	3-3aKg-f1	3-3aKg-f4
2 1/2 x 1 1/2	63.50 x 38.10	5.000	127.0	3-3aKh-f1	3-3aKh-f4
x 2	x 50.80	3.000	76.2	3-3aKh-g1	3-3aKh-g4
3 x 1 1/2	76.20 x 38.10	7.000	177.8	3-3aKi-f1	3-3aKi-f4
x 2	x 50.80	5.000	127.0	3-3aKi-g1	3-3aKi-g4
4 x 2	101.60 x 50.80	9.125	231.8	3-3aKj-g1	3-3aKj-g4
x 2 1/2	x 63.50	7.125	181.0	3-3aKj-h1	3-3aKj-h4
x 3	x 76.20	5.125	130.2	3-3aKj-i1	3-3aKj-i4
6 x 3	152.40 x 76.20	7.500	190.5	3-3aKk-i1	3-3aKk-i4
x 4	x101.60	7.625	193.7	3-3aKkj1	3-3aKk-j4

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

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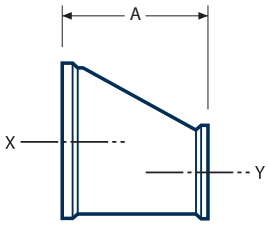
DT-4.1.3-3 (a)
Hygienic clamp joint:
ECCENTRIC REDUCERS



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Nominal Size		A		Order Code	
Zoll	mm	Zoll	mm	SF1	SF4
3/4 x 1/2	19.05 x 12.70	2.000	50.8	3-3aEd-c1	3-3aEd-c4
1 x 1/2	25.40 x 12.70	2.500	63.5	3-3aEe-c1	3-3aEe-c4
x 3/4	x 19.05	2.000	50.8	3-3aEe-d1	3-3aEe-d4
1 1/2 x 3/4	38.10 x 19.05	3.000	76.2	3-3aEf-d1	3-3aEf-d4
x 1	x 25.40	3.000	76.2	3-3aEf-e1	3-3aEf-e4
2 x 1	50.80 x 25.40	5.000	127.0	3-3aEg-e1	3-3aEg-e4
x 1 1/2	x 38.10	3.000	76.2	3-3aEg-f1	3-3aEg-f4
2 1/2 x 1 1/2	63.50 x 38.10	5.000	127.0	3-3aEh-f1	3-3aEh-f4
x 2	x 50.80	3.000	76.2	3-3aEh-g1	3-3aEh-g4
3 x 1 1/2	76.20 x 38.10	7.000	177.8	3-3aEi-f1	3-3aEi-f4
x 2	x 50.80	5.000	127.0	3-3aEi-g1	3-3aEi-g4
4 x 2	101.60 x 50.80	9.125	231.8	3-3aEj-g1	3-3aEj-g4
x 2 1/2	x 63.50	7.125	181.0	3-3aEj-h1	3-3aEj-h4
x 3	x 76.20	5.125	130.2	3-3aEj-i1	3-3aEj-i4
6 x 3	152.40 x 76.20	7.625	193.7	3-3aEk-i1	3-3aEk-i4
x 4	x 101.60	7.625	193.7	3-3aEkj1	3-3aEk-j4

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

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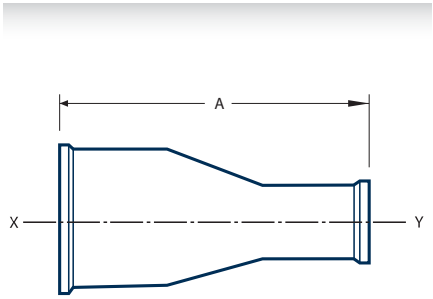
DT-4.1.3-3 (b)
Hygienic clamp joint:
CONCENTRIC REDUCERS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.625	66.7	3-3bKb-a1	3-3bKb-a4
1/2 x 1/4	12.70 x 6.35	2.875	73.0	3-3bKc-a1	3-3bKc-a4
x 3/8	x 9.53	2.875	73.0	3-3bKc-b1	3-3bKc-b4
3/4 x 3/8	19.05 x 9.53	3.000	76.2	3-3bKd-b1	3-3bKd-b4
x 1/2	x 12.70	3.125	79.4	3-3bKd-c1	3-3bKd-c4
1 x 1/2	25.40 x 12.70	3.500	88.9	3-3bKe-c1	3-3bKe-c4
x 3/4	x 19.05	3.125	79.4	3-3bKe-d1	3-3bKe-d4
1 1/2 x 3/4	38.10 x 19.05	4.000	101.6	3-3bKf-d1	3-3bKf-d4
x 1	x 25.40	3.500	88.9	3-3bKf-e1	3-3bKf-e4
2 x 1	50.80 x 25.40	4.375	111.1	3-3bKg-e1	3-3bKg-e4
x 1 1/2	x 38.10	3.500	88.9	3-3bKg-f1	3-3bKg-f4
2 1/2 x 1 1/2	63.50 x 38.10	4.375	111.1	3-3bKh-f1	3-3bKh-f4
x 2	x 50.80	3.500	88.9	3-3bKh-g1	3-3bKh-g4
3 x 1 1/2	76.20 x 38.10	5.250	133.4	3-3bKi-f1	3-3bKi-f4
x 2	x 50.80	4.375	111.1	3-3bKi-g1	3-3bKi-g4
x 2 1/2	x 63.50	3.625	92.1	3-3bKi-h1	3-3bKi-h4
4 x 2	101.60 x 50.80	6.250	158.8	3-3bKj-g1	3-3bKj-g4
x 2 1/2	x 63.50	5.375	136.5	3-3bKj-h1	3-3bKj-h4
x 3	x 76.20	5.000	127.0	3-3bKj-i1	3-3bKj-i4
6 x 3	152.40 x 76.20	8.500	215.9	3-3bKk-i1	3-3bKk-i4
x 4	x 101.60	7.000	177.8	3-3bKk-j1	3-3bKk-j4

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

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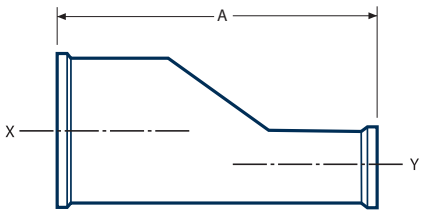
DT-4.1.3-3 (b)
Hygienic clamp joint:
ECCENTRIC REDUCERS



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Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
3/8 x 1/4	9.53 x 6.35	2.625	66.7	3-3bEb-a1	3-3bEb-a4
1/2 x 1/4	12.70 x 6.35	2.875	73.0	3-3bEc-a1	3-3bEc-a4
x 3/8	x 9.53	2.875	73.0	3-3bEc-b1	3-3bEc-b4
3/4 x 3/8	19.05 x 9.53	3.000	76.2	3-3bEd-b1	3-3bEd-b4
x 1/2	x 12.70	3.125	79.4	3-3bEd-c1	3-3bEd-c4
1 x 1/2	25.40 x 12.70	3.500	88.9	3-3bEe-c1	3-3bEe-c4
x 3/4	x 19.05	3.125	79.4	3-3bEe-d1	3-3bEe-d4
1 1/2 x 3/4	38.10 x 19.05	4.000	101.6	3-3bEf-d1	3-3bEf-d4
x 1	x 25.40	3.500	88.9	3-3bEf-e1	3-3bEf-e4
2 x 1	50.80 x 25.40	4.375	111.1	3-3bEg-e1	3-3bEg-e4
x 1 1/2	x 38.10	3.500	88.9	3-3bEg-f1	3-3bEg-f4
2 1/2 x 1 1/2	63.50 x 38.10	4.375	111.1	3-3bEh-f1	3-3bEh-f4
x 2	x 50.80	3.500	88.9	3-3bEh-g1	3-3bEh-g4
3 x 1 1/2	76.20 x 38.10	5.250	133.4	3-3bEi-f1	3-3bEi-f4
x 2	x 50.80	4.375	111.1	3-3bEi-g1	3-3bEi-g4
x 2 1/2	x 63.50	3.625	92.1	3-3bEi-h1	3-3bEi-h4
4 x 2	101.60 x 50.80	6.250	158.8	3-3bEj-g1	3-3bEj-g4
x 2 1/2	x 63.50	5.375	136.5	3-3bEj-h1	3-3bEj-h4
x 3	x 76.20	5.000	127.0	3-3bEj-i1	3-3bEj-i4
6 x 3	152.40 x 76.20	8.500	215.9	3-3bEk-i1	3-3bEk-i4
x 4	x101.60	7.000	177.8	3-3bEk-j1	3-3bEk-j4

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

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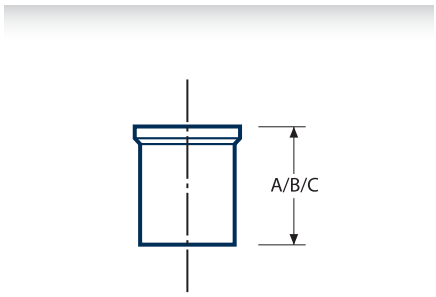
DT-4.1.4-1
Hygienic clamp joint:
FERRULES



bpe-direct®

Nominal Size		A		Flange Dimensions		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.750	44.5	0.984	25.0	4-1Aa1	4-1Aa4
3/8	9.53	1.750	44.5	0.984	25.0	4-1Ab1	4-1Ab4
1/2	12.70	1.750	44.5	0.984	25.0	4-1Ac1	4-1Ac4
3/4	19.05	1.750	44.5	0.984	25.0	4-1Ad1	4-1Ad4
1	25.40	1.750	44.5	1.984	50.5	4-1Ae1	4-1Ae4
1 1/2	38.10	1.750	44.5	1.984	50.5	4-1Af1	4-1Af4
2	50.80	2.250	57.2	2.516	64.0	4-1Ag1	4-1Ag4
2 1/2	63.50	2.250	57.2	3.047	77.5	4-1Ah1	4-1Ah4
3	76.20	2.250	57.2	3.579	91.0	4-1Ai1	4-1Ai4
4	101.60	2.250	57.2	4.682	119.0	4-1Aj1	4-1Aj4
6	152.40	3.000	76.2	6.570	167.0	4-1Ak1	4-1Ak4

Nominal Size		B		Flange Dimensions		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	1.130	28.7	0.984	25.0	4-1Ba1	4-1Ba4
3/8	9.53	1.130	28.7	0.984	25.0	4-1Bb1	4-1Bb4
1/2	12.70	1.130	28.7	0.984	25.0	4-1Bc1	4-1Bc4
3/4	19.05	1.130	28.7	0.984	25.0	4-1Bd1	4-1Bd4
1	25.40	1.130	28.7	1.984	50.5	4-1Be1	4-1Be4
1 1/2	38.10	1.130	28.7	1.984	50.5	4-1Bf1	4-1Bf4
2	50.80	1.130	28.7	2.516	64.0	4-1Bg1	4-1Bg4
2 1/2	63.50	1.130	28.7	3.047	77.5	4-1Bh1	4-1Bh4
3	76.20	1.130	28.7	3.579	91.0	4-1Bi1	4-1Bi4
4	101.60	1.130	28.7	4.682	119.0	4-1Bj1	4-1Bj4
6	152.40	1.500	38.1	6.570	167.0	4-1Bk1	4-1Bk4

Further dimensions on request. Subject to alteration.

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02/2013

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.4-1
Hygienic clamp joint:
FERRULES

bpe-direct®

Nominal Size		C		Flange Dimensions		Order Code	
Inch	mm	Inch	mm	Inch	mm	SF1	SF4
1/4	6.35	0.500	12.7	0.984	25.0	4-1Ca1	4-1Ca4
3/8	9.53	0.500	12.7	0.984	25.0	4-1Cb1	4-1Cb4
1/2	12.70	0.500	12.7	0.984	25.0	4-1Cc1	4-1Cc4
3/4	19.05	0.500	12.7	0.984	25.0	4-1Cd1	4-1Cd4
1	25.40	0.500	12.7	1.984	50.5	4-1Ce1	4-1Ce4
1 1/2	38.10	0.500	12.7	1.984	50.5	4-1Cf1	4-1Cf4
2	50.80	0.500	12.7	2.516	64.0	4-1Cg1	4-1Cg4
2 1/2	63.50	0.500	12.7	3.047	77.5	4-1Ch1	4-1Ch4
3	76.20	0.500	12.7	3.579	91.0	4-1Ci1	4-1Ci4
4	101.60	0.630	15.9	4.682	119.0	4-1Cj1	4-1Cj4
6	152.40	0.750	19.1	6.570	167.0	4-1Ck1	4-1Ck4

Further dimensions on request. Subject to alteration.

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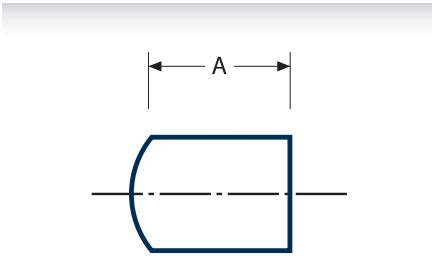
02/2013

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.5-1
AUTOMATIC TUBE WELD: ENDCAPS



bpe-direct®

Nominal Size		A		Order Code	
Inch	mm	Inch	mm	SF1	SF4
1/2	12.70	1.500	38.1	5-1c1	5-1c4
3/4	19.05	1.500	38.1	5-1d1	5-1d4
1	25.40	1.500	38.1	5-1e1	5-1e4
1 1/2	38.10	1.500	38.1	5-1f1	5-1f4
2	50.80	1.500	38.1	5-1g1	5-1g4
2 1/2	63.50	1.500	38.1	5-1h1	5-1h4
3	76.20	1.750	44.5	5-1i1	5-1i4
4	101.60	2.000	50.8	5-1j1	5-1j4
6	152.40	2.500	63.5	5-1k1	5-1k4

Further dimensions on request. Subject to alteration.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DT-4.1.5-2
Hygienic clamp joint:
CAPS

bpe-direct®

Nominal Size		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	5-2a1	5-2a4
3/8	9.53	0.187	4.7	0.984	25.0	5-2b1	5-2b4
1/2	12.70	0.187	4.7	0.984	25.0	5-2c1	5-2c4
3/4	19.05	0.187	4.7	0.984	25.0	5-2d1	5-2d4
1	25.40	0.250	6.4	1.984	50.5	5-2e1	5-2e4
1 1/2	38.10	0.250	6.4	1.984	50.5	5-2f1	5-2f4
2	50.80	0.250	6.4	2.516	64.0	5-2g1	5-2g4
2 1/2	63.50	0.250	6.4	3.047	77.5	5-2h1	5-2h4
3	76.20	0.250	6.4	3.579	91.0	5-2i1	5-2i4
4	101.60	0.312	7.9	4.682	119.0	5-2j1	5-2j4
6	152.40	0.437	11.1	6.570	167.0	5-2k1	5-2k4

Further dimensions on request. Subject to alteration.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

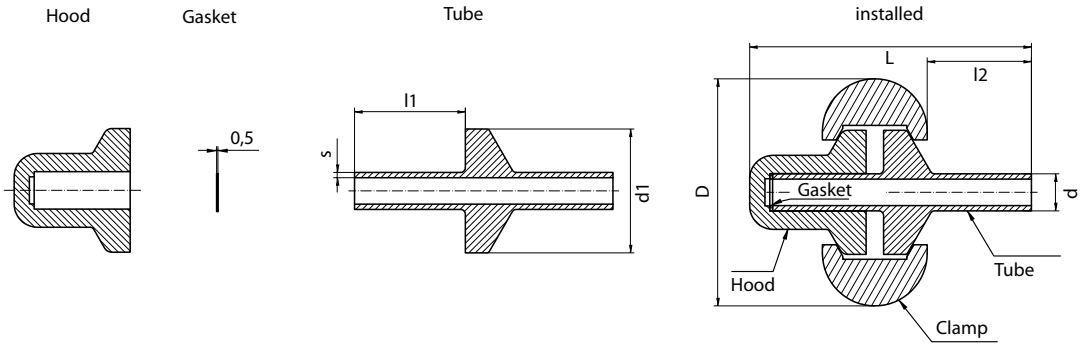
Dimensions

Dockweiler tube connections	Dimensions
Dockweiler Cap	Imperial
Clamp connection	Imperial, ISO, Metric
Screw acc. to DIN 11864	Imperial, ISO, Metric
Flange acc. to DIN 11864	Imperial, ISO, Metric
Clamp acc. to DIN 11864	Imperial, ISO, Metric

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

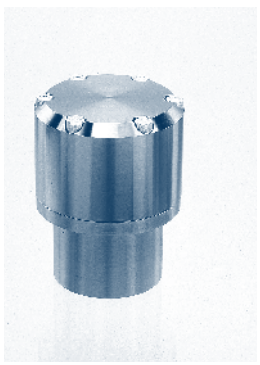
Dockweiler Caps

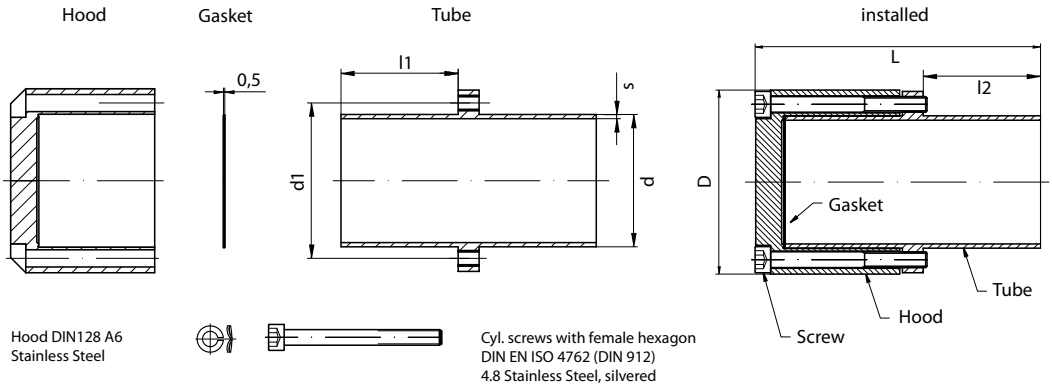
Typ A



Ultron	finetron	TCC	TCC 304L	safetron	weldtron	bpe-direct	Typ A Inch	IMPERIAL d mm	s mm	L mm	D mm	d1 mm	l1 mm	l2 mm
•		•					1/4"	6.35	0.89	48.40	39.00	-	19.05	26.65
							Typ B							
•		•					1/2"	12.70	1.24	64.35	39.00	-	26.40	26.40
•		•					1/2"	12.70	1.65	64.35	39.00	-	26.40	26.40
•		•					3/4"	19.05	1.24	67.30	37.05	27.05	26.00	26.00
•		•					3/4"	19.05	1.65	67.30	37.05	27.05	26.00	26.00
•		•					1"	25.40	1.65	68.30	43.40	33.40	26.00	26.00
•		•					1 1/2"	38.10	1.65	77.30	57.90	46.90	30.00	30.00
•		•					2"	50.80	1.65	109.30	70.60	59.60	45.00	45.00
•		•					2 1/2"	63.50	1.65	110.30	83.30	72.30	45.00	45.00
•		•					3"	76.20	1.65	111.30	96.00	85.00	45.00	45.00
•		•					4"	101.60	2.11	132.30	121.40	110.40	55.00	55.00
•		•					6"	152.40	2.77	134.30	172.20	161.20	55.00	55.00

Typ B





Hood DIN128 A6
Stainless Steel

Cyl. screws with female hexagon
DIN EN ISO 4762 (DIN 912)
4.8 Stainless Steel, silvered

Further dimensions on request. Subject to alteration.

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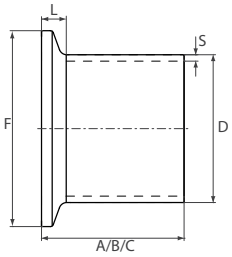
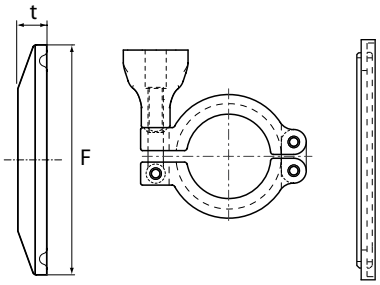
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CLAMP CONNECTION
Ferrules
Caps
Clamps
Gaskets





IMPERIAL		Ferrules					Caps		Clamps	Gaskets*
Inch	Tube size d x s mm	F	L	A	B	C	t	F	Size	
1/4"	6.35 x 0.89	25.00	7.0	44.50	28.70	12.70	4.75	25.00	1	6.35
3/8"	9.53 x 0.89	25.00	6.4	44.50	28.70	12.70	4.75	25.00	1	9.53
1/2"	12.70 x 1.65	25.00	5.8	44.50	28.70	12.70	4.75	25.00	1	12.70
3/4"	19.05 x 1.65	25.00	4.7	44.50	28.70	12.70	4.75	25.00	1	19.05
1"	25.40 x 1.65	50.50	7.4	44.50	28.70	12.70	6.35	50.50	2	25.40
1 1/2"	38.10 x 1.65	50.50	5.1	44.50	28.70	12.70	6.35	50.50	2	38.10
2"	50.80 x 1.65	64.00	5.3	57.20	28.70	12.70	6.35	64.00	3	50.80
2 1/2"	63.50 x 1.65	77.50	5.4	57.20	28.70	12.70	6.35	77.50	4	63.50
3"	76.20 x 1.65	91.00	5.5	57.20	28.70	12.70	6.35	91.00	5	76.20
4"	101.60 x 2.11	119.00	6.0	57.20	28.70	15.90	8.00	119.00	7	101.60
6"	152.40 x 2.77	167.00	8.3	76.20	38.10	19.10	14.00	167.00	9	152.40

Further dimensions on request. Subject to alteration.

* EPDM / PTFE / Silicone / Viton®

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CLAMP CONNECTION
Ferrules
Caps
Clamps
Gaskets

ISO NW	Tube size d x s mm	Ferrules F	L	A	B	C	Caps t	F	Clamps Size	Gaskets*
8	13.50 x 1.60	25.00	5.70	28.60	12.70		4.75	25.00	1	13.50
10	17.20 x 1.60	25.00	5.00	28.60	12.70		4.75	25.00	1	13.50
15	21.30 x 1.60	50.50	8.20	36.00	21.50		6.35	50.50	2	17.20
20	26.90 x 1.60	50.50	7.10	36.00	21.50		6.35	50.50	2	26.90
25	33.70 x 2.00	50.50	5.90	36.00	21.50		6.35	50.50	2	33.70
32	42.40 x 2.00	64.00	6.80	36.00	21.50		6.35	64.00	3	42.40
40	48.30 x 2.00	64.00	5.70	36.00	21.50		6.35	64.00	3	48.30
50	60.30 x 2.00	77.50	6.00	36.00	28.00		6.35	77.50	4	60.30
65	76.10 x 2.00	91.00	5.60	48.00	28.00		6.35	91.00	5	76.10
80	88.90 x 2.30	106.00	6.00	48.00	28.00		6.35	106.00	6	88.90
100	114.30 x 2.30	130.00	5.70	48.00	28.00		8.00	130.00	8	114.30
150	168.30 x 2.60	183.00	8.28	66.00	28.00		8.00	183.00	9	168.30

METRIC NW	Tube size d x s mm	Ferrules F	L	A	B	C	Caps t	F	Clamps Size	Gaskets*
10	13.00 x 1.50	34.00	6.70	28.60	18.00		6.35	34.00	0	13.00
15	19.00 x 1.50	34.00	5.60	28.60	18.00		6.35	34.00	0	19.00
20	23.00 x 1.50	34.00	4.90	28.60	18.00		6.35	34.00	0	23.00
25	29.00 x 1.50	50.50	6.80	36.00	21.50		6.35	50.50	2	29.00
32	35.00 x 1.50	50.50	5.70	36.00	21.50		6.35	50.50	2	35.00
40	41.00 x 1.50	50.50	4.60	36.00	21.50		6.35	50.50	2	41.00
50	53.00 x 1.50	64.00	4.90	36.00	21.50		6.35	64.00	3	53.00
65	70.00 x 2.00	91.00	6.70	48.00	28.00		6.35	91.00	5	70.00
80	85.00 x 2.00	106.00	6.70	48.00	28.00		6.35	106.00	6	85.00
100	104.00 x 2.00	119.00	5.60	48.00	28.00		8.00	119.00	7	104.00
150	154.00 x 2.00	183.00	10.90	66.00	28.00		14.00	183.00	10	154.00

Further dimensions on request. Subject to alteration.

* EPDM / PTFE / Silicone / Viton®

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02/2013

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

SCREW CONNECTION AS PER DIN 11864-1 FORM A

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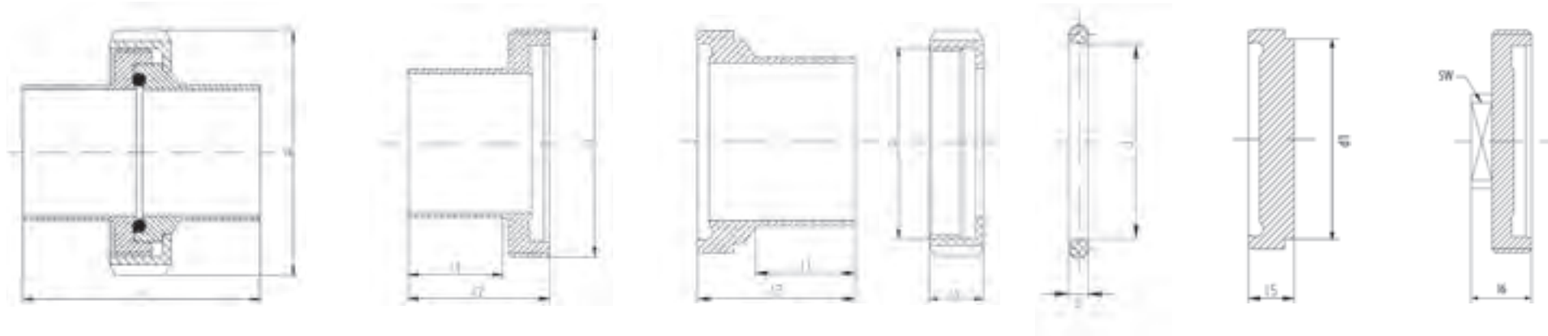
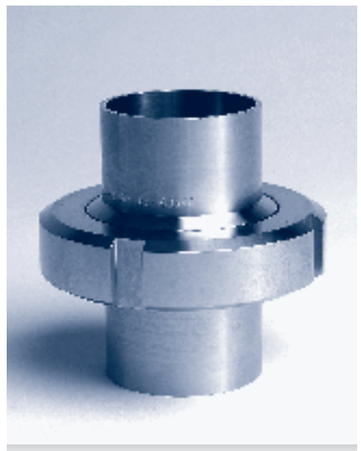
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL



SCREW CONNECTION AS PER DIN 11864-1 FORM A



IMPERIAL	Tube DIN 11866	Screw connection long		Threaded stub			Weld stub		Nut	O-ring	Blank weld stub		Blank threaded stub	
NW/Size	d x s mm	l	d	G	l1	l2	l1	l3	l4	Size	d1	l5	SW	l6
1/2”	12.70 x 1.65	76.0	38.0	28 x 1/8”	27.0	41.0	27.0	39.0	18.0	12.0 x 3.5	18.0	9.0	SW 19	24.0
3/4”	19.05 x 1.65	76.0	44.0	34 x 1/8”	27.0	41.0	27.0	39.0	18.0	18.0 x 3.5	24.0	9.0	SW 24	24.0
1”	25.40 x 1.65	77.0	63.0	52 x 1/6”	26.0	43.0	26.0	40.0	21.0	24.0 x 3.5	35.0	12.0	SW 41	24.0
1 1/2”	38.10 x 1.65	88.0	78.0	65 x 1/6”	30.0	49.0	30.0	46.5	21.0	37.0 x 5.0	48.0	13.0	SW 50	24.0
2”	50.80 x 1.65	89.0	92.0	78 x 1/6”	30.0	49.0	30.0	47.5	22.0	50.0 x 5.0	61.0	14.0	SW 65	24.0
2 1/2”	63.50 x 1.65	115.0	112.0	95 x 1/6”	40.0	60.0	40.0	63.0	25.0	62.0 x 5.0	79.0	16.0	SW 80	28.0
3”	76.20 x 1.65	117.0	127.0	110 x 1/4”	40.0	64.0	40.0	61.0	29.0	75.0 x 5.0	93.0	16.0	SW 95	28.0
4”	101.60 x 2.11	119.0	148.0	130 x 1/4”	40.0	64.0	40.0	65.0	31.0	100.0 x 5.0	114.0	20.0	SW 115	30.0

ISO	Tube DIN 11866	Screw connection long		Threaded stub			Weld stub		Nut	O-ring	Blank weld stub		Blank threaded stub	
NW/Size	d x s mm	l	d	G	l1	l2	l1	l3	l4	Size	d1	l5	SW	l6
8	13.50 x 1.60	76.0	38.0	28 x 1/8”	27.0	41.0	27.0	39.0	18.0	12.0 x 3.5	18.0	10.0	SW 19	22.0
10	17.20 x 1.60	76.0	44.0	34 x 1/8”	27.0	41.0	27.0	39.0	18.0	16.0 x 3.5	24.0	10.0	SW 24	22.0
15	21.30 x 1.60	78.0	54.0	44 x 1/6”	27.0	43.0	27.0	40.0	20.0	20.0 x 3.5	30.0	10.0	SW 30	24.0
20	26.90 x 1.60	78.0	63.0	52 x 1/6”	27.0	43.0	27.0	41.0	21.0	26.0 x 2.5	35.0	12.0	SW 41	24.0
25	33.70 x 2.00	88.0	70.0	58 x 1/6”	32.0	48.0	32.0	47.0	21.0	32.0 x 5.0	41.0	13.0	SW 46	24.0
32	42.40 x 2.00	88.0	78.0	65 x 1/6”	32.0	48.0	32.0	47.0	21.0	40.5 x 5.0	48.0	13.0	SW 50	24.0
40	48.30 x 2.00	90.0	92.0	78 x 1/6”	31.0	49.0	31.0	48.0	22.0	46.5 x 5.0	61.0	14.0	SW 65	24.0
50	60.30 x 2.00	114.0	112.0	95 x 1/6”	40.0	60.0	40.0	62.0	25.0	58.5 x 5.0	79.0	16.0	SW 80	28.0
65	76.10 x 2.00	117.0	127.0	110 x 1/4”	40.0	64.0	40.0	61.0	29.0	73.5 x 5.0	93.0	16.0	SW 95	28.0
80	88.90 x 2.30	122.0	148.0	130 x 1/4“	40.0	64.0	40.0	68.0	31.0	86.5 x 5.0	114.0	20.0	SW 115	30.0

METRIC	Tube DIN 11866	Screw connection long		Threaded stub			Weld stub		Nut	O-ring	Blank weld stub		Blank threaded stub	
NW/Size	d x s mm	l	d	G	l1	l2	l1	l3	l4	Size	d1	l5	SW	l6
10	13.00 x 1.50	76.0	38.0	28 x 1/8”	27.0	41.0	27.0	39.0	18.0	12.0 x 3.5	18.0	9.0	SW 19	24.0
15	19.00 x 1.50	76.0	44.0	34 x 1/8”	27.0	41.0	27.0	39.0	18.0	18.0 x 3.5	24.0	9.0	SW 24	24.0
20	23.00 x 1.50	76.0	54.0	44 x 1/6”	26.0	43.0	26.0	38.0	20.0	22.0 x 3.5	30.0	10.0	SW 30	24.0
25	29.00 x 1.50	77.0	63.0	52 x 1/6”	26.0	43.0	26.0	40.0	21.0	28.0 x 3.5	35.0	12.0	SW 41	24.0
32	35.00 x 1.50	88.0	70.0	58 x 1/6”	32.0	48.0	32.0	47.0	21.0	34.0 x 5.0	41.0	13.0	SW 46	24.0
40	41.00 x 1.50	88.0	78.0	65 x 1/6”	31.0	48.0	31.0	47.0	21.0	40.0 x 5.0	48.0	13.0	SW 50	24.0
50	53.00 x 1.50	89.0	92.0	78 x 1/6”	30.0	48.0	30.0	48.0	22.0	52.0 x 5.0	61.0	14.0	SW 65	24.0
65	70.00 x 2.00	113.0	112.0	95 x 1/6”	40.0	60.0	40.0	61.0	25.0	68.0 x 5.0	79.0	16.0	SW 80	28.0
80	85.00 x 2.00	117.0	127.0	110 x 1/4”	40.0	64.0	40.0	61.0	29.0	83.0 x 5.0	93.0	16.0	SW 95	28.0
100	104.00 x 2.00	120.0	148.0	130 x 1/4“	40.0	64.0	40.0	66.0	31.0	102.0 x 5.0	114.0	20.0	SW 115	30.0

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

FLANGE CONNECTION AS PER DIN 11864-2 FORM A

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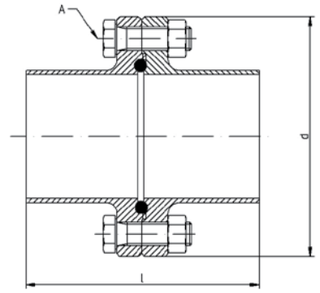
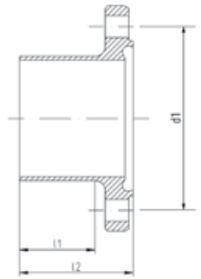
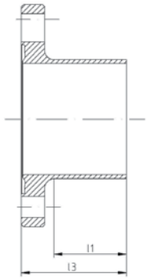
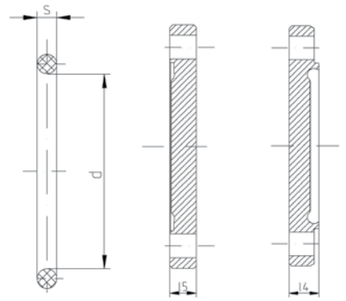
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

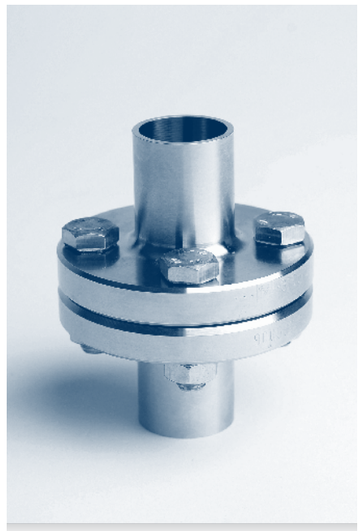








FLANGE CONNECTION AS PER DIN 11864-2 FORM A



IMPERIAL NW/Size	Tube d x s mm	Flanged connection d	Flanged connection l	Hexagonal-nut A	Female flange l2	Female flange l1	Female flange d1	Male flange l3	Flange bore A1	O-ring d x s	Blank male flange l4	Blank female flange l5
1/2″	12.7 x 1.65	54.0	80.0	4/M8 x 30	41.5	26.0	37.0	40.0	4 x Ø 9.0	12.0 x 3.5	10.0	11.5
3/4″	19.05 x 1.65	59.0	80.0	4/M8 x 30	41.5	26.0	42.0	40.0	4 x Ø 9.0	18.0 x 3.5	10.0	11.5
1″	25.4 x 1.65	66.0	80.0	4/M8 x 30	41.5	26.0	49.0	40.0	4 x Ø 9.0	24.0 x 3.5	10.0	11.5
1 1/2″	38.1 x 1.65	79.0	90.0	4/M8 x 30	46.5	31.0	62.0	45.0	4 x Ø 9.0	37.0 x 5.0	10.0	11.5
2″	50.8 x 1.65	92.0	90.0	4/M8 x 30	46.5	31.0	75.0	45.0	4 x Ø 9.0	50.0 x 5.0	10.0	11.5
2 1/2″	63.5 x 1.65	107.0	108.0	8/M8 x 30	55.5	42.0	89.0	54.0	8 x Ø 9.0	62.0 x 5.0	10.0	11.5
3″	76.2 x 1.65	125.0	112.0	8/M10 x 30	57.5	42.0	104.0	56.0	8 x Ø 11.0	75.0 x 5.0	12.0	13.5
4″	101.6 x 2.11	157.0	116.0	8/M10 x 35	59.5	42.0	135.0	58.0	8 x Ø 11.0	100.0 x 5.0	14.0	15.5

ISO NW/Size	Tube d x s mm	Flanged connection d	Flanged connection l	Hexagonal-nut A	Female flange l2	Female flange l1	Female flange d1	Male flange l3	Flange bore A1	O-ring d x s	Blank male flange l4	Blank female flange l5
8	13.50 x 1.60	54.0	80.0	4/M8 x 30	41.5	26.0	37.0	40.0	4 x Ø 9.0	12.0 x 3.5	10.0	11.5
10	17.20 x 1.60	59.0	80.0	4/M8 x 30	41.5	26.0	42.0	40.0	4 x Ø 9.0	16.0 x 3.5	10.0	11.5
15	21.30 x 1.60	62.0	80.0	4/M8 x 30	41.5	26.0	45.0	40.0	4 x Ø 9.0	20.0 x 3.5	10.0	11.5
20	26.90 x 1.60	69.0	80.0	4/M8 x 30	41.5	26.0	52.0	40.0	4 x Ø 9.0	26.0 x 3.5	10.0	11.5
25	33.70 x 2.00	74.0	90.0	4/M8 x 30	46.5	31.0	57.0	45.0	4 x Ø 9.0	32.0 x 5.0	10.0	11.5
32	42.40 x 2.00	82.0	90.0	4/M8 x 30	46.5	31.0	65.0	45.0	4 x Ø 9.0	40.5 x 5.0	10.0	11.5
40	48.30 x 2.00	88.0	90.0	4/M8 x 30	46.5	31.0	71.0	45.0	4 x Ø 9.0	46.5 x 5.0	10.0	11.5
50	60.30 x 2.00	103.0	108.0	4/M8 x 30	55.5	42.0	85.0	54.0	4 x Ø 9.0	58.5 x 5.0	10.0	11.5
65	76.10 x 2.00	125.0	112.0	8/M10 x 30	57.5	42.0	104.0	56.0	8 x Ø 11.0	73.5 x 5.0	12.0	13.5
80	88.90 x 2.30	137.0	116.0	8/M10 x 35	59.5	42.0	116.0	58.0	8 x Ø 11.0	86.5 x 5.0	12.0	13.5
100	114.30 x 2.30	168.0	116.0	8/M10 x 35	59.5	42.0	146.0	58.0	8 x Ø 11.0	111.0 x 5.0	14.0	15.5

METRIC NW/Size	Tube d x s mm	Flanged connection d	Flanged connection l	Hexagonal-nut A	Female flange l2	Female flange l1	Female flange d1	Male flange l3	Flange bore A1	O-ring d x s	Blank male flange l4	Blank female flange l5
10	13.0 x 1.50	54.0	80.0	4/M8 x 30	41.5	26.0	37.0	40.0	4 x Ø 9.0	12.0 x 3.5	10.0	11.5
15	19.0 x 1.50	59.0	80.0	4/M8 x 30	41.5	26.0	42.0	40.0	4 x Ø 9.0	18.0 x 3.5	10.0	11.5
20	23.0 x 1.50	64.0	80.0	4/M8 x 30	41.5	26.0	47.0	40.0	4 x Ø 9.0	22.0 x 3.5	10.0	11.5
25	29.0 x 1.50	70.0	80.0	4/M8 x 30	41.5	26.0	53.0	40.0	4 x Ø 9.0	28.0 x 3.5	10.0	11.5
32	35.0 x 1.50	76.0	90.0	4/M8 x 30	46.5	31.0	59.0	45.0	4 x Ø 9.0	34.0 x 5.0	10.0	11.5
40	41.0 x 1.50	82.0	90.0	4/M8 x 30	46.5	31.0	65.0	45.0	4 x Ø 9.0	40.0 x 5.0	10.0	11.5
50	53.0 x 1.50	94.0	90.0	4/M8 x 30	46.5	31.0	77.0	45.0	4 x Ø 9.0	52.0 x 5.0	10.0	11.5
65	70.0 x 2.00	113.0	108.0	8/M8 x 30	55.5	42.0	95.0	54.0	8 x Ø 9.0	68.0 x 5.0	10.0	11.5
80	85.0 x 2.00	133.0	116.0	8/M10 x 35	59.5	42.0	112.0	58.0	8 x Ø 11.0	83.0 x 5.0	12.0	13.5
100	104.0 x 2.00	159.0	116.0	8/M10 x 40	59.5	42.0	137.0	58.0	8 x Ø 11.0	102.0 x 5.0	14.0	15.5
125	129.0 x 2.00	183.0	120.0	8/M10 x 40	61.5	42.0	161.0	60.0	8 x Ø 11.0	127.0 x 5.0	14.0	15.5

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CLAMP CONNECTION AS PER DIN 11864-3 FORM A

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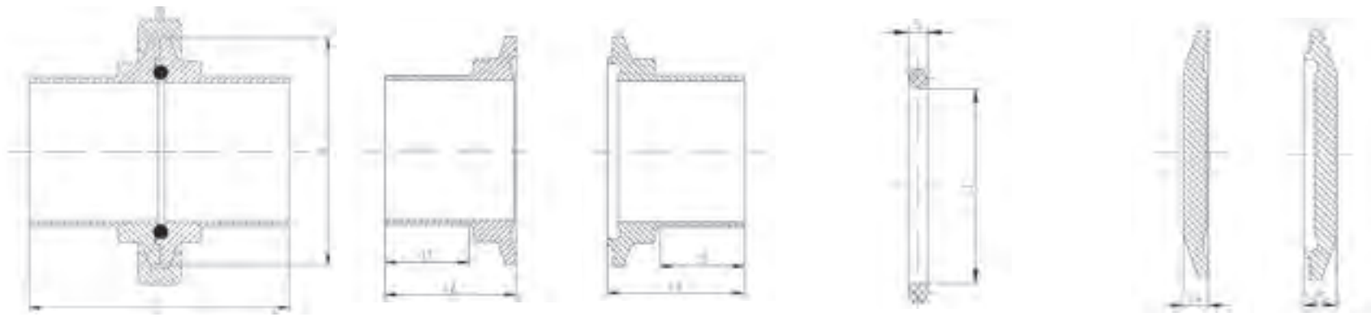
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL



CLAMP CONNECTION AS PER DIN 11864-3 FORM A

IMPERIAL	Tube	Clamp connection long		Clamp weld stub		Clamp nut		O-ring	Coupling	Blank weld stub	Blank nut stub
NW/Size	d x s mm	l	d	l1	l2	l1	l3	d x s	Size	l4	l5
1/2”	12.70 x 1.65	76.0	34.0	26.0	38.0	26.0	39.5	12.0 x 3.5	0	8.0	10.0
3/4”	19.05 x 1.65	76.0	34.0	26.0	38.0	26.0	39.5	18.0 x 3.5	0	8.0	10.0
1”	25.40 x 1.65	77.0	50.5	28.0	38.5	28.0	40.0	24.0 x 3.5	2	10.0	11.5
1 1/2”	38.10 x 1.65	88.0	64.0	30.0	44.0	30.0	45.5	37.0 x 5.0	3	10.0	11.5
2”	50.80 x 1.65	89.0	77.5	30.0	44.5	30.0	46.0	50.0 x 5.0	4	10.0	11.5
2 1/2”	63.50 x 1.65	115.0	91.0	40.0	57.5	40.0	59.0	62.0 x 5.0	5	10.0	11.5
3”	76.20 x 1.65	117.0	106.0	40.0	58.5	40.0	60.0	75.0 x 5.0	6	12.0	13.5
4”	101.60 x 2.11	119.0	130.0	40.0	59.5	40.0	61.0	100.0 x 5.0	8	14.0	15.5

ISO	Tube	Clamp connection long		Clamp weld stub		Clamp nut		O-ring	Coupling	Blank weld stub	Blank nut stub
NW/Size	d x s mm	l	d	l1	l2	l1	l3	d x s	Size	l4	l5
8	13.50 x 1.60	76.0	34.0	26.0	38.0	26.0	39.5	12.0 x 3.5	0	8.0	10.0
10	17.20 x 1.60	76.0	34.0	26.0	38.0	26.0	39.5	16.0 x 3.5	0	8.0	10.0
15	21.30 x 1.60	78.0	34.0	26.0	39.0	26.0	40.5	20.0 x 3.5	0	10.0	11.5
20	26.90 x 1.60	78.0	50.5	30.0	39.0	30.0	40.0	26.0 x 3.5	2	10.0	11.5
25	33.70 x 2.00	88.0	50.5	30.0	44.0	30.0	45.5	32.0 x 5.0	2	10.0	11.5
32	42.40 x 2.00	88.0	64.0	30.0	44.0	30.0	45.5	40.5 x 5.0	3	10.0	11.5
40	48.30 x 2.00	90.0	64.0	30.0	45.0	30.0	46.5	46.5 x 5.0	3	10.0	11.5
50	60.30 x 2.00	114.0	91.0	40.0	57.0	40.0	58.5	58.5 x 5.0	5	10.0	11.5
65	76.10 x 2.00	117.0	106.0	40.0	58.5	40.0	60.0	73.5 x 5.0	6	12.0	13.5
80	88.90 x 2.30	122.0	119.0	40.0	61.0	40.0	62.5	86.5 x 5.0	7	12.0	13.5

METRIC	Tube	Clamp connection long		Clamp weld stub		Clamp nut		O-ring	Coupling	Blank weld stub	Blank nut stub
NW/Size	d x s mm	l	d	l1	l2	l1	l3	d x s	Size	l4	l5
10	13.00 x 1.50	76.0	34.0	26.0	38.0	26.0	39.5	12.0 x 3.5	0	10.0	11.5
15	19.00 x 1.50	76.0	34.0	26.0	38.0	26.0	39.5	18.0 x 3.5	0	10.0	11.5
20	23.00 x 1.50	76.0	50.5	26.0	38.0	26.0	39.5	22.0 x 3.5	2	10.0	11.5
25	29.00 x 1.50	77.0	50.5	28.0	38.5	28.0	40.0	28.0 x 3.5	2	10.0	11.5
32	35.00 x 1.50	88.0	50.5	30.0	44.0	30.0	45.5	34.0 x 5.0	2	10.0	11.5
40	41.00 x 1.50	88.0	64.0	30.0	44.0	30.0	45.5	40.0 x 5.0	3	10.0	11.5
50	53.00 x 1.50	89.0	77.5	30.0	44.5	30.0	46.0	52.0 x 5.0	4	10.0	11.5
65	70.00 x 2.00	113.0	91.0	40.0	56.5	40.0	58.0	68.0 x 5.0	5	10.0	11.5
80	85.00 x 2.00	117.0	106.0	40.0	58.5	40.0	60.0	83.0 x 5.0	6	12.0	13.5
100	104.00 x 2.00	120.0	130.0	40.0	60.0	40.0	61.5	102.0 x 5.0	8	14.0	15.5

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Manifold systems for fluid media

Product information

Manifolds with different branches

CIP-lances and CIP-rings

Prefabrications acc. to customer design

Material

Tube systems:	safetron weldtron DOCKWEILER BPE / bpe-direct®
Surfaces:	bright finish anodic clean electropolished
Dimensions:	Imperial, ISO, DIN 11865 Metric / DIN 11865

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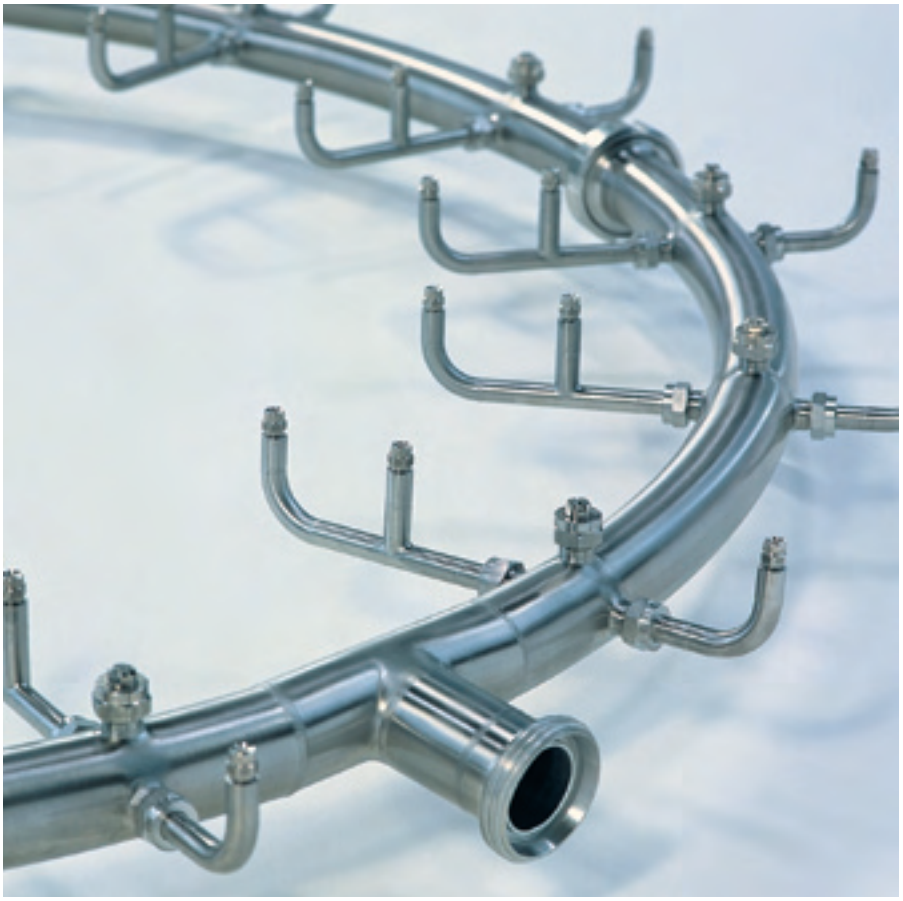
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CIP SYSTEMS



Effective cleaning guaranteed

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CIP-Lances

CIP lances are designed to fit the area of application they will be used in and are manufactured by Dockweiler in accordance with customer drawings usually up to a length of 7000 mm. The nozzles – often up to 50 per cip lance, are welded into transposed positions and often only a few millimetres apart – which means that specialised know how both for the collaring and for the complicated orbital welding is necessary.

CIP-Rings

Besides the production of CIP lances Dockweiler has built up a manufacturing base for CIP rings for use in applications such as freeze dryers for an optimum distribution of the cleaning solution in the equipment chambers. The size and form of the chamber define the design and diameter of the ring.

In the past Dockweiler has manufactured dimensions between 180 and 1500 mm.

Advantages

- Minimal dead volume on nozzles
- Close set nozzles possible
- Controlled welds, no manual welding
- No time consuming mechanical polishing of welds
- Electropolishing after welding is possible
- Short installation times on site

Material

Material:	1.4404 / 1.4435 / UNS S31603 (316L)
Dimensions:	imperial, ISO/DIN 11866, metric/DIN 11866
Surfaces:	bright finish and electropolished in accordance with customer specification

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

MANIFOLDS FOR FLUIDS

Dead volume free installation

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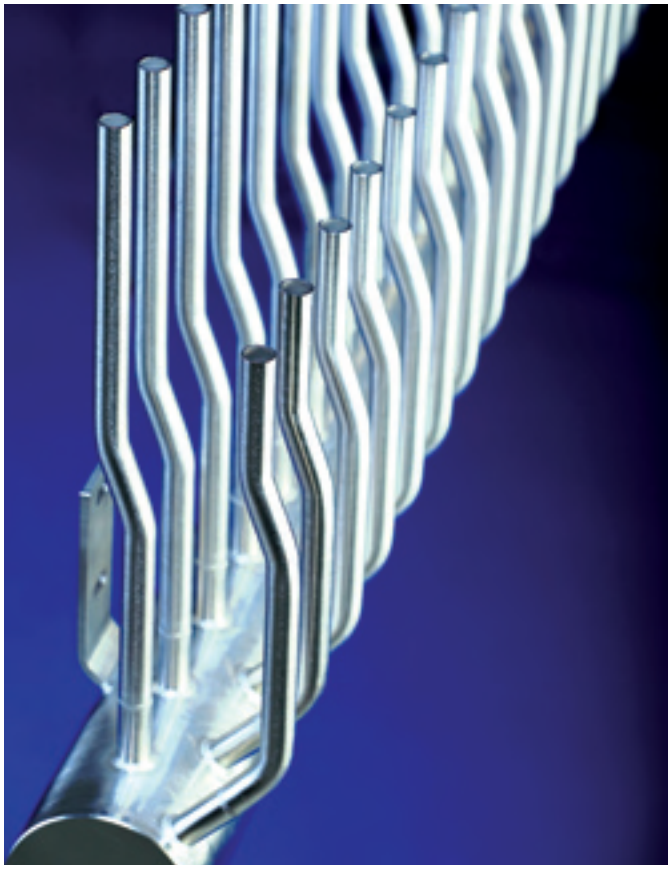
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

MANIFOLDS FOR FLUIDS

The prefabrication of tube installations and manifolds has come to the fore due to increased requirements in connection with a high cost and time pressure.
Dockweiler develops and produces numerous manifold types with different branches in various materials (e. g. 316L, C22) and surfaces with state of the art production facilities, sophisticated orbital welding technology according to customer drawing.
The manufactured parts are passing an extensive quality control after each production process. Upon request, the complete documentation is also available on DVD.



Advantages

- optimum quality of weld seems
- minimized number of weld seems
- optimized surface quality due to electro-polishing after the welding process
- complete documentation
- reduced installation time on the building site
- dead volume free installation through the use of orbitally welded stubs of exceptionally short length (facilitates cleaning of the installation)

Materials and surfaces

- all Dockweiler stainless steel systems possible
- special materials for instance C22 on request
- provision of customer material possible
- bright finished, pickled, anodic clean, electropolished

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DECKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Manifold systems for gases (classification UHP, HP, P)

Product information

Manifolds with different branches

Manifolds with ball valves

Manifolds acc. to customer design

Material

Tube systems:	ULTRON finetron/finetron❶ TCC/TCC❶ TCC 304L/TCC❶ 304
Surfaces:	electropolished (clean room) anodic clean bright finish
Dimensions:	Imperial, ISO, Metric

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

MANIFOLDS FOR GASES

Ready for gas
... faster, safer, cheaper

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

MANIFOLDS FOR GASES

- Choice of product quality in accordance with the purity demanded.
- Prefabrication of complex components.
- The Dockweiler welding process - from inside to out - makes mechanical polishing superfluous and ensures the integrity of the surface.
- Optimal branches in locations difficult to access.
- Reduction of the number of welds.
- Reduction in installation time and therefore cost savings.
- Improved surface quality by electropolishing after welding.
- Compliance with ultra high purity specifications as the components are packed under clean room conditions.
- Simplified documentation.

Dockweiler manifolds and headers can be manufactured in any of the products in the Dockweiler range and with a variety of branches such as tees, VCRs (dimensions 1/4“ to 1“) or simply with pulled stubs – all in accordance with the customer’s drawing. The dimensions may be any combination of the sizes in our product range.

Innovative manufacturing in Neustadt-Glewe

The modern production facility in Neustadt-Glewe enables Dockweiler to manufacture prefabrications with state of the art welding technology – special lengths – and to electropolish and pack under clean room conditions to fulfil ultra high purity specifications according to requirement. Ask for our complete literature.

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

UHP Prefabricated Laterals with Diaphragm Valve

New Option

Advantages

- All welds except tube stub to valve weld are electropolished
- Tube stub to valve weld is cleanroom welded
- Cleanroom packaging
- Lower valve costs
- Compliance with UHP specifications

State of the Art Manufacturing Technology

A new production facility with integrated cleanrooms for welding, cleaning and packaging as well as the innovative welding technology enables Dockweiler to manufacture laterals which fulfill the highest demands for purity and cleanliness.

An extensive test program is available on request.

Ask for our cost model calculation.

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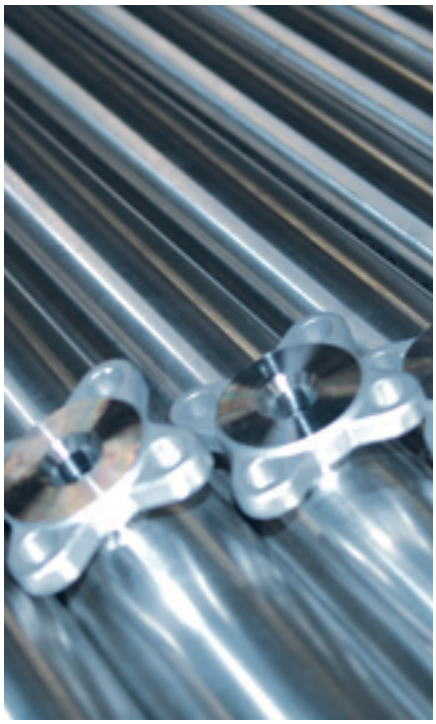
TUBE SYSTEMS IN STAINLESS STEEL

MANIFOLDS WITH BALL VALVES



A step ahead of state of the art

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

MANIFOLDS WITH BALL VALVES

Higher cost and time pressure combined with ever increasing demands on quality – especially for the „less“ critical gases call for new ways of cooperation. One possibility could be innovative prefabrication.

One example from the semiconductor industry:

Task: Installation of 3000 ball valves

Time: 4 months from between access to building site and tool hook up

Traditional installation

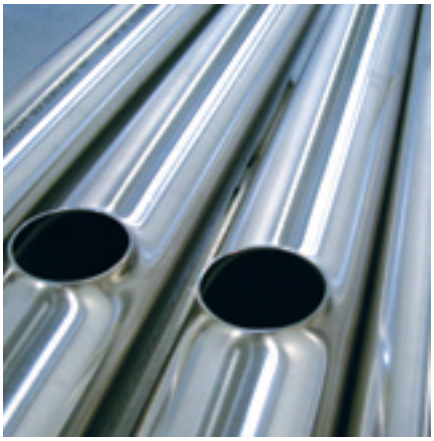
1. Single horizontal crosses:
   2 welds per valve
2. T-piece and valve with tube stubs:
   3 welds per valve

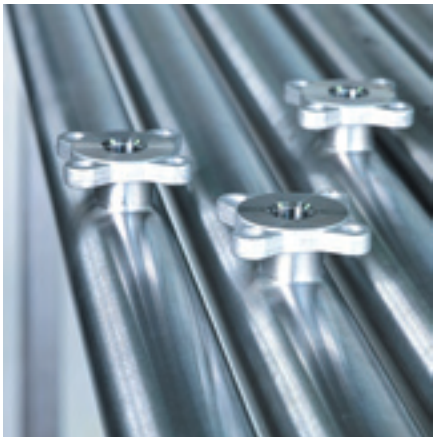
Manifolds installation

2 welds per manifold (6.00 m) with typically
3-5 valves = saving per manifold of 4 to 8 welds

Saving through manifold installation instead of

1. Single horizontal crosses: 4000 welds
2. T-piece and valve with tube stubs: 7000 welds





The sophisticated Dockweiler welding technology minimises the dead volume between tube and valve flange. Manifolds lengths in accordance with drawings and up to 6m or longer

Advantages of the Dockweiler Manifolds

- Fabrication in accordance with customer drawing
- Anodic cleaning/electropolishing after the final weld
- Short distance tube to valve
- Pressure and Helium leak test on the finished manifold
- Test documentation as part of the documentation package
- Spool and drawing no. marked on the manifold
- Reduced number of welds
- Simplified testing on site
- Reduced time of installation on site

Result:

High cost savings – optimisation of the quality of the total installation

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Containers and components

Product information

Bubbler 100 and Bubbler Crossover

Dockweiler Cap

Thermowell

Fittings – Elbows and T-pieces

Material

Tube Systems:	ULTRON finetron/finetron[1] TCC/TCC[1] safetron weldtron
Surfaces:	electropolished anodic clean bright finish
Cleanliness:	acc. Specification
Dimensions:	Imperial ISO Metric

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

BUBBLER 100
BUBBLER CROSSOVER

Product integrity
in stainless steel

Improved Safety · Purity · Efficiency

Bubbler Specification

Material:	UNS S31603 / 316L Hastelloy on request
Helium-Leak test:	Helium-leak tested to 4x10-9 mbar l/s
Pressure test:	300 psi (21 bar) – according to DOT*
Marking:	In accordance with DOT* Customer information optional
Documentation:	3.1, Certificate EN 10204
	DOT*
Test procedures:	Verification of dimensions Visual inspection Roughness measurements Conductivity test (DI water) TOC-measurement of DI-water Particle measurement
Packing and delivery:	Filled with N2 (99.9948%) and bagged in polythene PE, single packed in cartons crate

* Department of Transportation

Qualities:	finetron (P)	ULTRON (UHP, HP)
Surface Option:	Ra ≤ 0,40 µm (16 Min.)	Ra ≤ 0,25 µm, electropolished (16 Min.)
Cleanroom:	Class 100	Class 10

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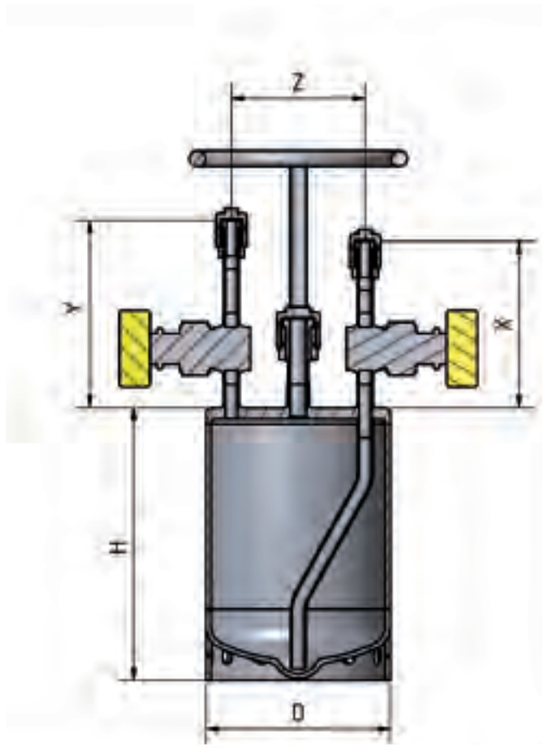
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

BUBBLER 100

Features

- Dockweiler orbital welding technology
- High quality diaphragm valves
- Helium-leak tested to 4 x 10-9 mbar l/s
- Pressure tested to 300 psi (21 bar), according to DOT
- Inspection port 1/2“
- Valve protection cap
- Available in 3 qualities
  - UHP: Ultron* final weld electropolished
  - HP: Ultron*
  - P: finetron*

*acc. to Dockweiler Product Specifications



User benefits

- Handle to protect valves
- Returnable and reusable
- Guaranteed quality through controlled process

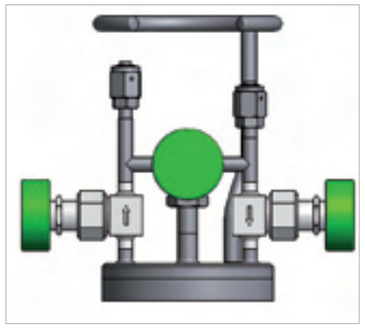
Dockweiler Bubbler 100 and Bubbler Crossover

Bubbler 100 Product Code	Bubbler 100 Crossover Product Code	Diameter D (mm)	Volume V (ml)	Height H (mm)	Inlet X (mm)	Outlet Y (mm)	Width Z (mm)
63-400/48		63.5	400	145	105	105	48
63-400	C63-400	63.5	400	145	139	152	83
114-1300	C114-1300	114.3	1300	170	114	127	83
114-3200	C114-3200	114.3	3200	400	114	127	83
168-3150	C168-3150	168.3	3150	170	114	127	83
168-8000	C168-8000	168.3	8000	400	114	127	83
168-22000	C168-22000	168.3	22000	1070	114	127	83

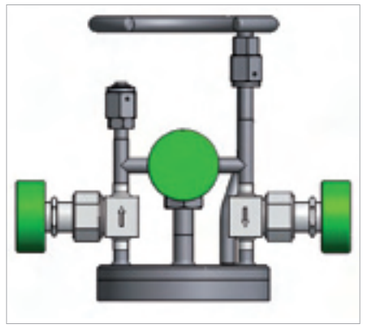
Dockweiler Bubbler with valve protection cap

273-56000	C273-56000	273.05	56000	1037	114	127	83

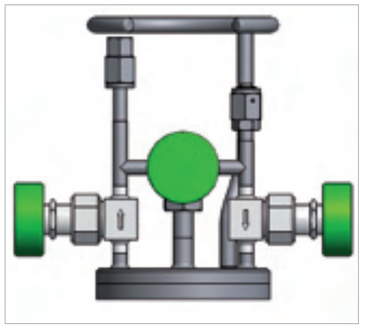
BUBBLER CROSSOVER



Standart Configuration



PFD* Configuration

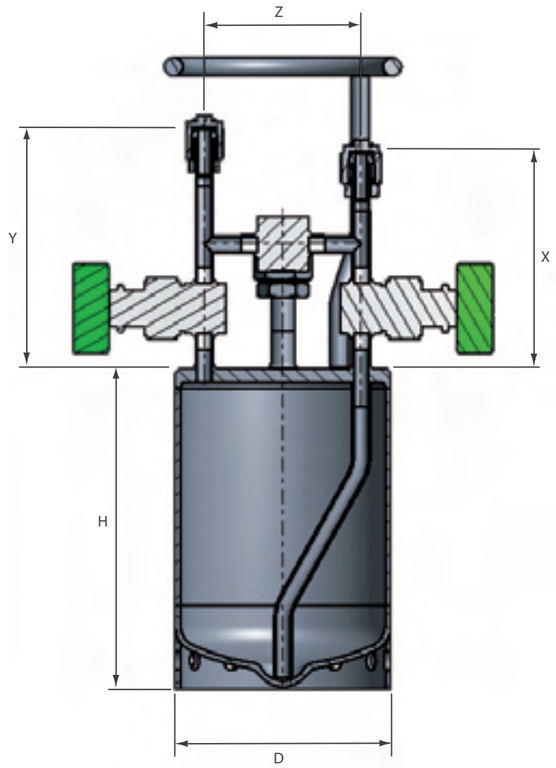


PMD* Configuration

* PMD: Polarized Male - Dip Tube, PFD: Polarized Female - Dip tube

Further features

- Integrated purge valve
  - Minimized dead volumes
  - Best possible purge practice
- Approvals for Transportation DOT (US)



User benefits

- Optimized and safer handling
- Faster commissioning
  - Complete rinseability
  - Reduced dead volume
  - Optimum chemical usage and cleaning times

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CPKD/1111
02/2013

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DOCKWEILER CAP SYSTEMS

The smart cap for flexible tube installation

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

DOCKWEILER CAP SYSTEMS

Advantages

Increased safety

- Secure closure at the end of a line with valve or on Manifolds, no leakage of the medium if the valve is opened by mistake
- Welds free of discouloration due to reliable purging
- No contamination of the line if installation is interrupted
- No particle contamination caused by cutting operations now superfluous

More flexibility

- Ease of extension work even in ultra high purity production areas

More economy

- Time saving due to simple and fast installation
- Reusable cap and clamp

Applications

- Semiconductor industry
- Pharmaceutical industry – pressure testing of prefabricated modules
- Vessels and equipment manufacture
- During interruptions in work, for leak testing on valve housing, Bubblers for weld connections
- During work on welded valves at the end of lines

Technical Information

Material:	UNS S31603 (316L)	
Surfaces:	Ultron, TCC (acc. specification)	
Working Pressure:	For example	
	1/2“ x 1.24	100 bar (1500 PSI)
	1“ x 1.65	60 bar (900 PSI)
	2“ x 1.65	40 bar (600 PSI)
	4“ x 2.11	20 bar (300 PSI)
Helium - Leak Rate:	1 x 10-9 mbar l / sec	

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

THERMOWELL

Sanitary thermowells form a closed system that enables the withdrawal of the measuring sensor for instance for calibration or replacement during ongoing operation. The measuring sensor is protected within the dip tube and does not have any contact with the aggressive media.

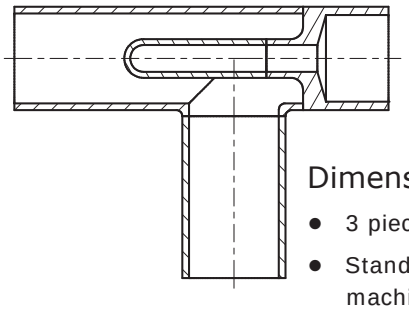
The heat transmission between the sleeve with an inside diameter of 6.6 mm and the thermocouple with an outside diameter of 6 mm - gap 0.3 mm - will be optimized by means of a special conductive paste.

Advantages

- Permanent process control
- Calibrate IP without line shut down
- All welds are controlled orbital welds

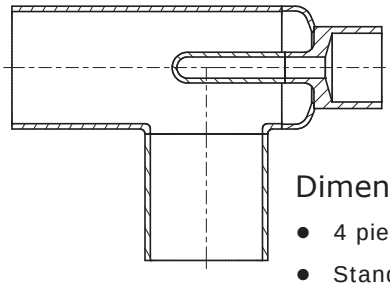
Services / Applications

- WFI
- Process water
- Steam
- Sensitive processes
- Highly corrosive media



Dimensions ≤ 1″

- 3 piece part
- Standard T-piece, machined part



Dimensions ≥ 1″

- 4 piece part
- Standard T-piece, dished end, machined part

Material

safetron
1.4435 BN2 / UNS S31603 (316L),
1.4404 / UNS S31603 (316L), 316L UNS S31603,
1.4539 / UNS N08904 (904L) on request
acc. to product specification

Material

weldtron
1.4435 BN2 / UNS S31603 (316L),
1.4404 / UNS S31603 (316L), 316L / UNS S31603
acc. to product specification

Dimensions

Imperial as standard, ISO and metric dimensions are available on request

Ends /Couplings

NPT/clamped end for probe and butt weld or clamped line ends

Surface finish

bright finish or anodic clean (Ra 0.4µm/16 µin); electropolished (Ra 0,25 µm/10 µin) acc. to ASME BPE in SF1 or SF4 (surface roughness of the cold worked area is not defined)

Immersion Depth

Dip pockets are available in different lengths to suit the IP probe length

Marking

Needle marking
Information: Dockweiler, Dockweiler number, dimensions, material, heat numbers

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

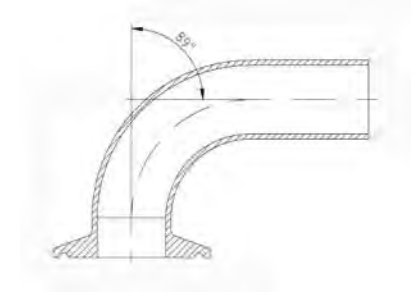
SPECIAL TUBE FITTINGS
ELBOWS

In addition to elbows 45°, 90° and 180° (see dimension tables) Dockweiler also produces elbows with variable angles, in each case following the customer requirements.

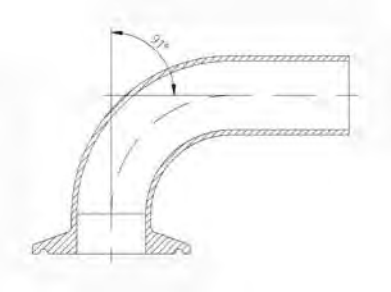
Material

Tube components:	Dockweiler stainless steel tube systems ULTRON, finetron/finetron.1, TCC/TCC.1, safetron, weldtron	Surfaces:	bright finish, anodic clean, electropolished
		Ra-values:	as per customer specification
Prematerial:	1.4404 / 1.4435 / UNS S 31603 (316L) 1.4539 / UNS NO 8904 (904L)	Dimensions: (tube)	Imperial, ISO/DIN 11866, Metric/DIN 11866

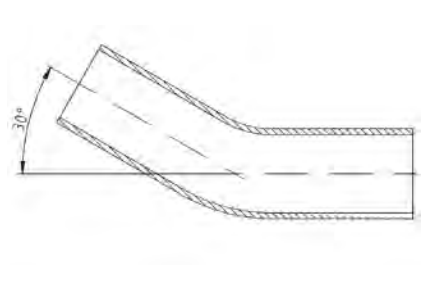
Examples



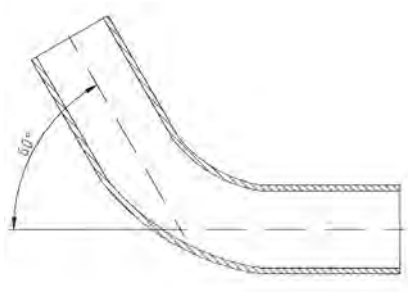
Elbow 89°



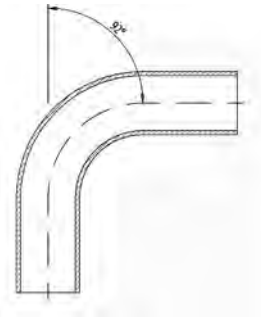
Elbow 91°



Elbow 30°



Elbow 60°



Elbow 92°

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

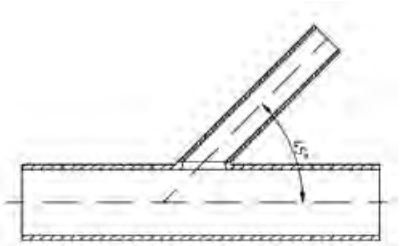
SPECIAL TUBE FITTINGS
T-pieces with inclined branch and Y-pieces

In addition to T-pieces with 90° branch (see dimension tables) Dockweiler also produces T-pieces with differently inclined branches.
Here the manufacture mostly follows customer specifications for the relevant special applications.

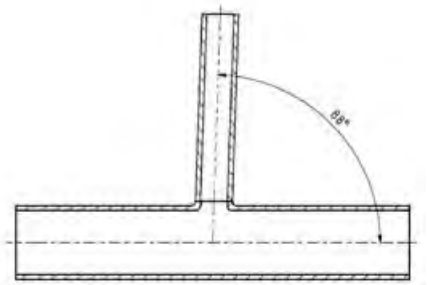
Material

Tube components:	Dockweiler stainless steel tube systems ULTRON, finetron/finetron.1, TCC/TCC.1, safetron, weldtron
Prematerial:	1.4404 / 1.4435 / UNS S 31603 (316L), 1.4539 / UNS NO 8904 (904L)
Surfaces:	bright finish, anodic clean, electropolished
Ra-values:	as per customer specification
Dimensions: (tube)	imperial, ISO/DIN 11866, metric/DIN 11866

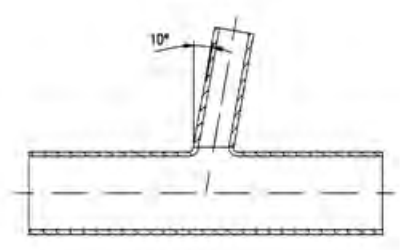
Examples



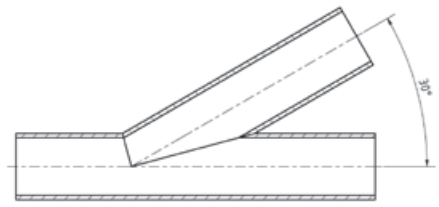
Branch 45°



Branch 88°



Branch 10°



Branch 30°

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DECKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Evans products

Product information

Ball valves

Mini ball valves

Purge Tool

G-Stick

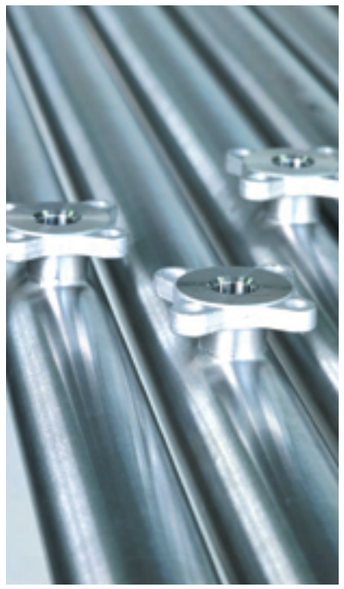
Pressfits

Material

Material: 316L / UNS S31603

Dimensions: Imperial

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL



High Purity Ball Valves for the Semiconductor Industry

EVANS PART NUMBERING / ORDER INFORMATION

SS-	08-	24-	DHC	M	C	08-	XP		
1	2	3	4	5	6	7	8	9	10

Above part number describes a 1/2" stainless steel, double Tee with a 1 1/2" stainless steel tube main, a 1/2" compression and a single, downstream compression purge port.

1. Material

SS- 316L Stainless Steel

2. Ball Valve size

04 - 1/4"
06 - 3/8"
08 - 1/2"
10 - 5/8
12 - 3/4"
16 - 1"
20 - 1-1/4"
24 - 1-1/2"
32 - 2"
40 - 2-1/2"
48 - 3"
64 - 4"
96 - 6"

3. Main Tube diameter

04 - 1/4"
06 - 3/8"
08 - 1/2"
10 - 5/8"
12 - 3/4"
14 - 7/8"
16 - 1"
20 - 1-1/4"
24 - 1-1/2"
32 - 2"
40 - 2-1/2"
48 - 3"
64 - 4"
96 - 6"
128 - 8"

4. Valve Assembly Pattern Designator

STR – Straight 2-way
SHC – Single Horizontal Cross
SHT – Single Horizontal Tee
DHC – Double Horizontal Cross
DHT – Double Horizontal Tee
DVT – Double Vertical Tee
DHA – Double Horizontal Angle (90°)

5. Main Tube Connection

C – Stainless Steel Compression Fitting
D – Plugged Stainless Steel Compression Fitting
F – Female NPT
M – 316L Stainless Steel Tube Extension
N – NW/KF Vacuum Fitting
R – Male Face Seal
T – Ferrule
Y – Dockweiler Weld Cap

6. Outlet Connection Designator

Same options as listed under 5.

7. Outlet Connection Size

(skip this designator for 2-way Valves)

04 - 1/4"
06 - 3/8"
08 - 1/2"
10 - 5/8"
12 - 3/4"
14 - 7/8"
16 - 1"
20 - 1-1/4"
24 - 1-1/2"
32 - 2"
40 - 2-1/2"
48 - 3"
64 - 4"

8. Purge Port Designator (Upstream/Downstream)

1/4" Purge port: 1/4" – 21/2"
1/2" Purge port: 3"-6"
X – No purge port:
V – Purge Valve
P – Compression
Z – Capped Male Face Seal

9. Options

E – Ra 0.25 µm electropolished ball and tube extension
Q – No lube
Z – Not high purity (cleanroom cleaning is standard)
NO – Normally open actuator – spring return
NC – Normally closed actuator – spring return
DA – Double acting actuator

10. Optional Colored Handle Designator

(leave blank for standard blue handle)

B - Black
G - Green
P - Purple
R - Red
S - Silver
Y - Yellow
W - White
I – Pink

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

The manufacturing processes in the semiconductor industry demand ball valves of the highest standard possible – for bulk gas or for process cooling water systems. Leak integrity, cleanliness, high flow rates, provided at low installation cost, make Evans High Purity Ball Valves the number one specified ball valve in the semiconductor industry worldwide.

Advantages

- Lower system cost
  – Reduced number of welds and fittings
  – No disassembly of ball valves necessary
  – Flexibility with system layout
- Full tube diameter allows unrestricted gas flow
- Speciality manufacture
  – Manifold assemblies, also special lengths
  – Wide variety of end connections
- End control of assembly in controlled environment
- Full selection of Ball Valves
  – (from 1/4” to 6”)
- Tube weld ends with Dockweiler Tubing (full traceability of melts)
- Locking handle as standard
- 100% leak test for all configurations (1 x 10^{-7} mbarL/sec)
- Cleanroom treatment and packaging (HP)
  – Visual inspection of all media contact surfaces
  – Capped, double bagged in PE foil
  – All Evans (HP) Ball Valves are assembled and tested in a cleanroom
  – Final DI-water rinsed and ovendried

Applications

- Inert bulk gas distribution
- Nitrogen for pneumatic applications
- Process vacuum exhaust
- Dry, oil free compressed air systems
- Solvents, e.g. isopropylalcohol
- Breathable air

Specification of Stainless Steel Body

Temperature range	-40 to 232 °C
Maximum working pressure acc. to CE marking requirements	in bar
1/4“	55*
3/8“	55*
1/2“	55*
3/4“	55*
1“	55*
1-1/2“	55
2“	55
3“	34
4“	34

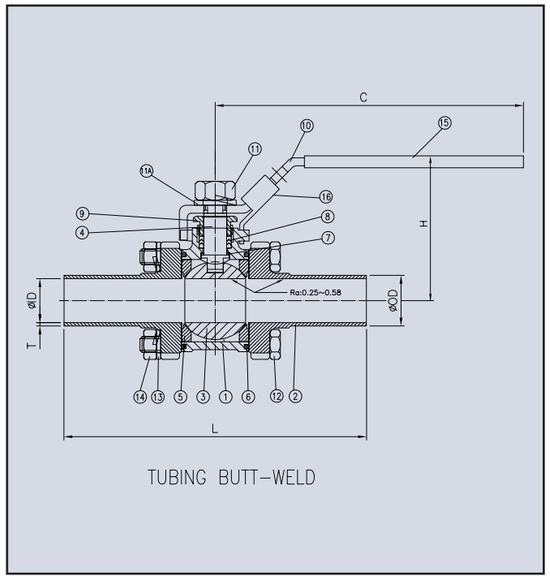
* ball valves of these sizes do not require CE marking tags

Available body configurations

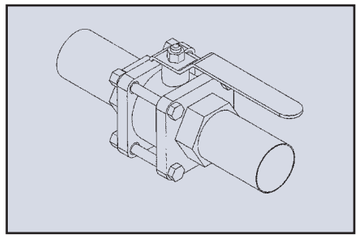
- Straight
- Simple Tee
- Double Tee

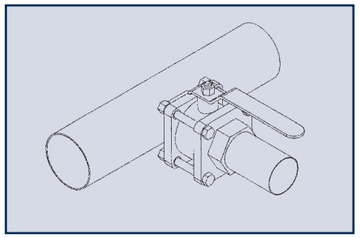
MATERIALS OF CONSTRUCTION

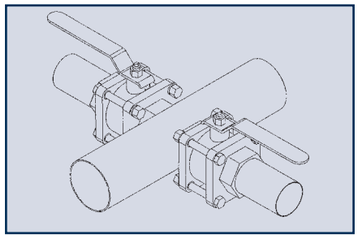
Item	Description	Material	Quantity
1	Body	CF8M	1
2	End Cap	CF3M/CF8M	2
3	Ball	CF8M	1
4	Stem	SS316	1
5	Ball Seat	PTFE, Teflon	2
6	Body Seal	PTFE, Teflon	2
7	Thrust Washer	PTFE, Teflon	1
8	Stem Packing	PTFE, Teflon	1
9	Stem Nut	SS304	1
10	Handle	SS304	1
11	Handle Nut	SS304	1
11a	Handle Washer	SS304	1
12	Body Bolt	SS304	4
13	Bolt Washer	SS304	4
14	Bold Nut	SS304	4
15	Handle Sleeve	SS304	1
16	Locking Device	SS304	1



TUBING BUTT–WELD







Dimensional Data – Stainless Steel Body (SS Series Ball Valve)															
Size		1/4"	3/8"	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"	6"	6"RP	8"	8"RP
Ø ID mm		4,60	7,50	10,21	15,81	22,11	34,81	47,52	60,22	72,93	97,42	150,17	125,02	197,18	150,17
Ø OD mm		6,35	9,53	12,70	19,05	25,40	38,10	50,80	63,50	76,20	110,60	152,40	152,40	203,20	203,20
T mm		0,89	0,99	1,25	1,65	1,65	1,65	1,65	1,65	1,65	2,11	2,77	2,77	3,05	3,05
Overall Length	L mm	66,43	65,43	135,05	138,05	152,05	190,07	204,07	254,10	280,02	306,19	376,58	320,17	521,16	376,58
Handel Swing	C mm	103,04	103,04	103,04	128,04	155,05	194,08	194,08	295,26	395,13	495,24	n/a	n/a	n/a	n/a
Center Tube Diameter/ Handle Ht.	H mm	53,03	53,03	58,01	63,02	73,03	90,03	98,03	139,04	149,06	178,07	231,23	197,94	n/a	231,23

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

80 SERIES
MINI BALL VALVES

Easy handling – Safe operating

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

80 SERIES
MINI BALL VALVES

Applications

- Inert bulk gas distribution
- Process vacuum exhaust

Features

- Bi-directional flow (fully opened or fully closed)
- Directional handle indicating on-off position
- Low operating torque
- Encapsulated low dead space seat
- One piece body to eliminate multiple seal points
- Unique top-loaded capsule design for easy seat packing adjustment while valve is in line
- Assembled utilizing Evans proprietary 111 high purity lubricant. Oxygen compatible, contains no hydrocarbons (oil), low vapor pressure rated to 1 x 10-7
- D.I. Water cleaned, cleanroom packed

Value Series	Pressure Rating	Temperature Rating „80“
82, 82A, 83A	172 Bar	
83	206 Bar	
84, 85	172 Bar	10°C bis 65°C
84A, 85A	103 Bar	

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

EVANS PURGE TOOL

Evans Components now provides an economical, reliable and more compact solution to purge gas delivery for high-purity welding and testing in semiconductor applications. All components are integrated into a single, compact, light-weight unit.

Specification

- 100% helium leak tested, 1x10-9
- Flowmeters rated to a maximum of 52L/min (Air)
- Assembly is rated to 15 bar (225 psi)
- Electropolished, Ra = 0.25 µm (10 µin)
- Dry down to less than 100 ppb
- Cleaned for oxygen service
- Helium Leak Test or Pressure Decay Port
- 1/2" UHP Diaphragm Valves, 0.01 µm Filter, Stainless Steel Element (75 SLPM)

Advantages

- Reduced assembly time
- Higher security
- Reduced oxidation and discoloration in the heat influenced area
- Improved economy

DM SERIES PURGE TOOL - PART NUMBER DESCRIPTION

DM	UHP	FM5	G	R
Series	Class 100 cleand and packed	5 Bank Flowmeter	G - 30"-0-300 UHP Gauge X – No Gauge	P – Argon Purifier R – UHP Regulator X – No Regulator V – Diaphragm Valve Z – No Diaphragm Valve

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

EVANS GAS STICK

Safe when space is tight

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

EVANS GAS STICK

The innovative stainless steel components from Evans fulfill the high purity demand of the semiconductor industry. Due to the combination of various elements the application of Evans gas sticks in installations saves both time and costs as well as increases the safety of the whole plant since the number of connections is reduced.

Specifications

Material:	Nickel plated forged brass body / Display: stainless steel
Dimensions:	6,35 mm – 25,40 mm
Technical specification:	Valve with full port, GS (0.187), GM/GL (0.406)
Pressure regulator:	Single stage, stainless diaphragm, PCTFE (kel F) seat
Pressure gauge:	30-0-200 psig/bar, 2” diameter
Helium leak test:	100% Helium leak tested to 1x10 $^{-7}$ scc/sec
Purity:	Ultra purity component (CFOS), packed in a class 100 clean room
Mounting:	Mounting holes 10-32 UNEF female thread with regulator and valve
Documentation:	Record of Helium leak test
Construction dimensions without filter:	Series GS: 205,75 mm Series GM: 261,60 mm Series GL: 261,60 mm

Concept / Construction

The G-Stick is a mounting combined of:

- Pressure gauge
- Filter (option)
- Pressure regulator
- Valve

Advantages

- Compact design – ideal for application with limited space
- Minimization of leakage risk due to reduced number of connections
- Full port ball valve
- Documentation
- 74 µm stainless pre-filter that eliminates the potential for particulate damage to regulator seat (option)

Use and area of applicaton

Gas supply during installation and operation

Series	CV	Working Pressure	Operating Temperature	Outlet Pressure Range
GS	0.14	34.47 bar	- 40°C bis 70°C	0 - 8.62 bar
GM	1.10	34.47 bar	- 40°C bis 70°C	0 - 8.62 bar
GL	1.80	34.47 bar	- 40°C bis 70°C	0 - 8.62 bar

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

PLHT - Pressfit® System

Innovation in gas supply

SPECIFICATIONS

FITTINGS	
Housing	Precision cold formed austenitic 304L stainless steel
O-ring seal	Material: "E" = EPDM , temperature range from -34°C to 110°C "V" = Viton , temperature range from -7°C to 149°C
Pressure rate	12.70 mm – 38.10 mm till 20 bar, 50.80 mm till 17 bar
Dimensions	12.70 x 1.24 to 50.80 x 1.65 for tubes and fittings
Helium leak test	Guaranteed leak rate of 1x10 - 7 scc/sec He, 100% of the welded fittings are Helium leak tested
Cleaning / Packing	Fittings and tubes are cleaned for O2 service and individually bagged

Tubes

EVANS / DOCKWEILER 304L PLHT SERIES STAINLESS STEEL TUBES	
Material	Seamless or welded stainless 304L steel tube, depending of outer diameter
Technical specification	According to ASTM A269/EN 10217-7/EN 10216-6, Length: 5900 mm – 6090 mm (max. 10% short length possible)
Dimensions	12.70 x 1.24 to 50.80 x 1.65 for tubes and fittings
Surface finish	Inner diameter: 0.8 µm; outer diameter: not defined
Treatment of the inner surface	Cleaning and test procedures according to ASTM A632.S3
Test procedures	Verification of basic test certificates, verification of dimensions, visual inspection, measuring of surface roughness, endoscopy of bright finished tubes
Marking	Heat number, manufacturer, material, dimensions
Documentation	Inspection certificate 3.1 according to DIN EN 10204 for the prematerial
Packing / Delivery	Bright finished tubes closed with PE caps and bagged in Polyethylen PE. Delivery in tubular container or wooden crate

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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

THE EVANS / DOCKWEILER PLHT-PRESSFIT® SYSTEM

Today, installation companies are forced to offer and install the most economic system for various applications more than ever. The connection of the innovative PLHT Pressfit® System with the Dockweiler tube program offers totally new alternatives.

ADVANTAGES

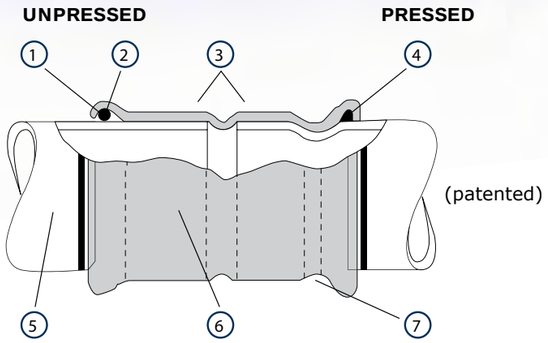
- Fast and economical
- Space saving
- Usable in cases where welding is a problem
- Complete system

USE / APPLICATION

- Relaxed specifications for semiconductor grade compression air
- Utility nitrogen
- Argon
- Oxygen
- Also usable for PV medium purity requirements as well as in analytics

CONCEPT / CONSTRUCTION

❶ O-Ring
❷ O-Ring pocket
❸ Tube stop
❹ O-Ring
❺ Insertion mark
❻ Housing
❼ Pressfit tool indent



(patented)

O-Ring

The precisely molded synthetic rubber o-ring compresses against the outer tube diameter and the inner housing in order to guarantee a lifelong, leak-tight seal.
Evans PLHT products must be used only on services compatible with o-ring and fitting materials.

Lubricant

The fittings are delivered with o-rings that are lubricated with Evans 111®, a high purity lube. Evans 111® does not contain any hydrocarbons and is oxygen compatible with a vapor pressure rating of 10 - 7 secc/sec HE. Therewith, it is ideally suited for the sophisticated applications of the semiconductor, solar, TFT/LCD as well as bio-pharmaceutical industries. The O-ring is guaranteed for total lifetime of installation.

Tubing

Dockweiler TCC and Vic-Evans 304L CFOS grade tubes guarantee a uniform and high quality press connection during assembly of the system

Tube stop

An integrated inner tube stop determines the exact tube position.

Housing

Precision formed of 304/304L stainless steel, the housing incorporates the o-ring and the tube stop. This unique design guarantees a permanent engagement onto the tube after pressing with the Evans PLHT tool has been effected. Using available adapters and space saver fittings, the Evans fitting system allows for easy field makeup of fitting combinations for reduction of mechanical components and space.

Insertion mark

Enables visual verification of full tube insertion to ensure proper installation.

Please note: Mark the tube! Tube end must be inserted into full contact with the tube stop to ensure full joint integrity. Always refer to the latest published “Tool Operation and Assembly Manual”, available from Evans free of charge.

O-ring pocket

Sized to contain the o-ring prior to the assembly, the o-ring pocket is deformed around the o-ring during the pressing operation to fully surround and compress it for complete leak-free sealing.

Pressfit tool indent

The Evans PLHT tool jaws engage the entire circumference of the bead on the fitting housing and uniformly compress it to indent the tube and provide a secure attachment of the tube to the fitting. The tube must be fully inserted into fitting to achieve proper assembly. The mechanical retention of the joint isgiven through the press tool indent. The separate o-ring seal is a completely encapsulated static seal. Both work independently of one another.

The Evans PLHT Pressfit System consists of tubes Dockweiler TCC 304L or Vic Evans as well as fittings acc. to the specification and a Pressfit tool. The tubes of these two manufacturers have been especially harmonized in material and tolerances to the fittings and thus ensure a uniform compression.
We cannot take over any guarantee for use of tubes originating from other manufacturers.

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02/2013

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DECKWEILER
NON-METALLIC

Gaskets

Product information	Material
Gaskets for	EPDM
Clamp connections	MVQ / Silicone
O-Rings	PTFE
Special gaskets e.g. Tuf flex®	FKM
Tuf steel®	Viton®

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DOCKWEILER NON-METALLIC

DOCKWEILER GASKETS

Total traceability for your high purity system

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DOCKWEILER NON-METALLIC

DOCKWEILER GASKETS

Total Traceabilty

- Dockweiler gaskets are clearly and permanently marked
- The laser marking shows Dockweiler – Dockweiler No. / gatch No – gimension – flange size - material

Dockweiler Quality Management

- Specified material in accordance with pharmaceutical standards
- Controlled geometries and tolerances
- Cleanliness
- Controlled surfaces

Advantages

- No mix-ups of material (the right gasket for the application)
- Improved corrective action options
- Easier, safer and faster auditing
- Cleaning after marking

Cleanliness

- No residues of separating agents
- Less TOC contamination after replacement
- Shorter downtimes

Material and Surface

Material:	EPDM, PTFE, Silicone, Viton®	
Cleanliness:	Cleaned after marking acc. to Dockweiler specification	
Packing:	Individually packed	
Dimensions:	Imperial	1/2“ up to 6“
	ISO	13.50 up to 168.30 mm
	Metric	13.00 up to 154.00 mm

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DOCKWEILER NON-METALLIC

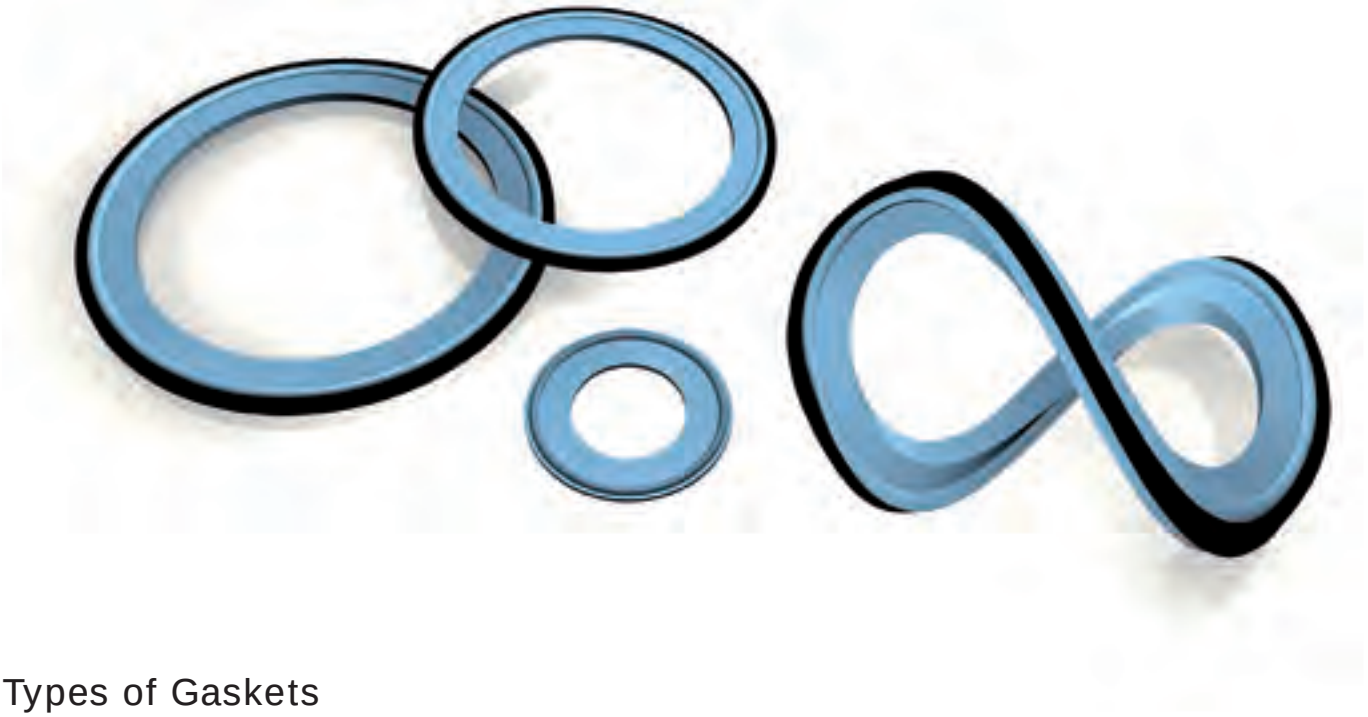
TUF-FLEX®

THE NEXT STEP FORWARD

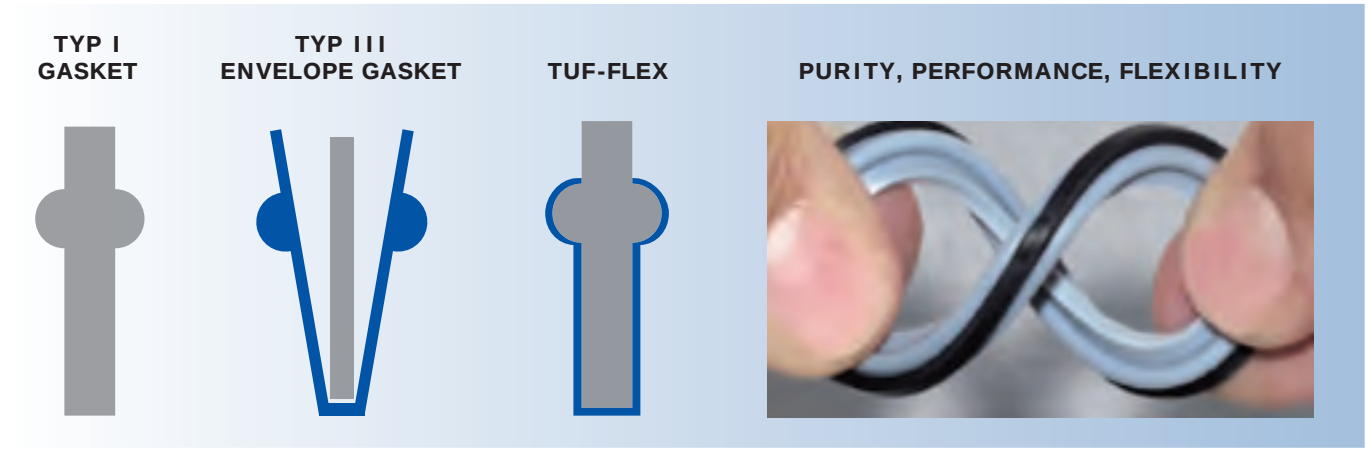
A Tuf-Flex® gasket `s contact surface is PTFE unitized to an EPDM inner core. This totally bonded construction provides the inert, non-stick benefits of PTFE with the memory of an elastomeric gasket without fear of risk of pigmentation.

Designed to meet critical requirements in biopharmaceutical, ultra-pure water, WFI (water for injection) and difficult aseptic processing applications.

Dimensions: ½“ – 4“



Types of Gaskets



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DOCKWEILER NON-METALLIC

DOCKWEILER GASKETS AT A GLANCE

ORIFICE PLATES
DOCKWEILER NON-METALLIC

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

TUF® FLEX
DOCKWEILER NON-METALLIC

Tuf-Flex designed to meet critical requirements in biopharmaceutical, ultrapure water, WFI and difficult aseptic processing applications

CONTROLLED COMPRESSION
DOCKWEILER NON-METALLIC

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® GASKETS
DOCKWEILER NON-METALLIC

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

SCREEN GASKETS
DOCKWEILER NON-METALLIC

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

STANDARD GASKETS
DOCKWEILER NON-METALLIC

All standards sanitary gaskets are moulded from FDA compliant compounds and USP class VI.

All Dockweiler Gaskets are also available without marking and/or in multi-packs.

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CPKD/11/11

DECKWEILER
NON-METALLIC

Hoses

Product information

Hoses for the
pharmaceutical-,
food- and cosmetic
industry.

Material

Silicone,
EPDM,
Teflon

DOCKWEILER
NON-METALLIC

THE DOCKWEILER
HOSES SYSTEM

High Purity
Hose Assemblies

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DOCKWEILER NON-METALLIC

THE DOCKWEILER HOSES SYSTEM

Dockweiler has integrated hoses made from different materials into its product range as a complement to its stainless steel program.

A complete range of high purity hose systems for the safe transfer of various media is now available.

Applications

- Pharmaceutical industry
- Biotechnology
- Cosmetics
- Food industry
- Semiconductor industry
- Analytics

Standards

Dockweiler hoses meet the requirements of the following standards:

Silicone:

USP Class VI, FDA 21 CFR 17.2600, ISO 10993, European Pharmacopoeia 3.1.9, 3A Sanitary Standards, NSF 51 (core)

EPDM:

FDA 21 CFR 177.2600, USDA, 3A Sanitary Standards, PMO (US Grade A Pasteurized Milk Ordinance)

PTFE:

3A Sanitary Standards, USP Class VI, FDA 21 CFR 177.1550

Advantages

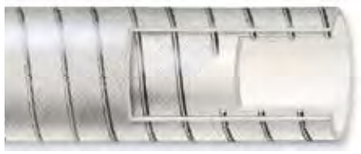
- Specified materials without plasticizer and additives
- Manufacturing certificate and marking ensure total traceability

Materials

Silicone, EPDM, PTFE

(see page 2: Overview selection of hose material / types of hoses)

MVQ 1



MVQ 2

EPDM 1

PTFE G1

For further details please contact your Dockweiler distributor.

Hose type	MVQ1	MVQ2	MVQ3	EPDM1	PTFE S1	PTFE S2	PTFE G1
Applications	aseptic filling, CIP, SIP processes	aseptic filling, CIP, SIP, pressure applications, vacuum applications	medical applications, dialysis, laboratory, biotechnology, peristaltic pumps	pharmaceutics, chemistry, biotechnology, filling technology, CIP transfer	chemistry, filling technology, mechanical engineering and toolbuilding, insulation, vapor applications, hot CIP solutions	filling technology also suitable for powder due to conductive Teflon, mechanical engineering and toolbuilding, insulation	filling of pharmaceutical and cosmetic products, CIP, SIP, WFI, vacuum applications, suitable for flavoring
Remarks	sterilisizable, platinum-cured	sterilizable, platinum-cured, wire reinforced for vacuum applications	only applications without mechanical load	especially neutral in oder and taste, resistant to bacteria and microbes	helix wire extremely flexible	helix wire extremely flexible, conductive Teflon	smooth surface that can be cleaned easily
Dimensions (inner diameter, in mm)	1,60 - 25,40	12,70 - 101,60	1,02 - 25,40	12,70 - 101,60	11,94 - 99,82	11,94 - 99,82	12,70 - 101,60
Temperature °C min	-73	-73	-73	-29	-29	-29	-40
max	204	204	204	149	177	177	149
Temperature variations	+	+	+	+	°	°	°
Continuous steam	+	+	+	++	++	++	++
Unpolar solvents	°	°	°	–	++	++	++
Polar solvents	–	–	–	+	++	++	++
Acid and active oxygen	+	+	+	+	++	++	++
Alkaline	°	°	°	+	++	++	++
Pressure	°	+	–	+	++	++	+
Vacuum	–	+	–	+	+	+	+
Flexibility	+	+	++	°	°	°	–
Resistance to light	°	°	°	+	+	+	+
Cleanability	+	+	°	+	–	–	++
Duration of Life	+	+	°	+	+	+	++
Oil and grease resistance	–	–	–	–	++	++	++

++ excellent
\+ good
(+) satisfactory
° moderate
– not suitable

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DECKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Information

Certificates
DIN EN ISO 9001-2000
DIN EN ISO 14001
PED
AD 2000 W0

DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

CERTIFICATES

DIN EN ISO 9001

AD 2000 HPO

DIN EN ISO 14001

DGRL 97 23 EG und AD 2000 WO

The current certificates you will find in the internet:
www.dockweiler.com

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DECKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

Information

Technical information

Melting process and manufacturing of tubes

Surface treatment of tubes (bright finished and electropolished)

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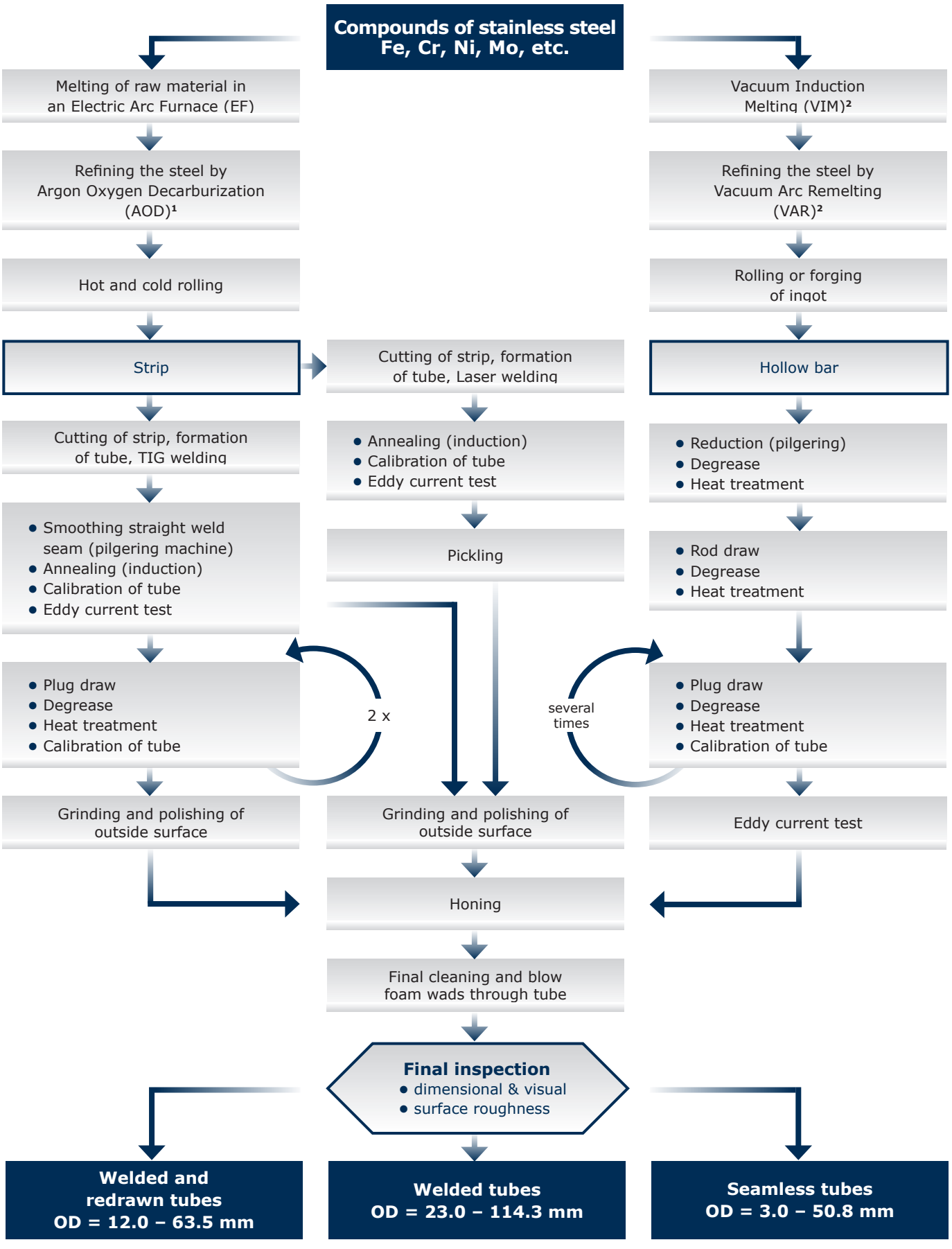
TUBE SYSTEMS IN STAINLESS STEEL

MELTING PROCESS AND MANUFACTURING OF TUBES



¹ Alternatively Vacuum Oxygen Decarburization (VOD) is applied for refining instead of AOD

² Base material for Ultron LM

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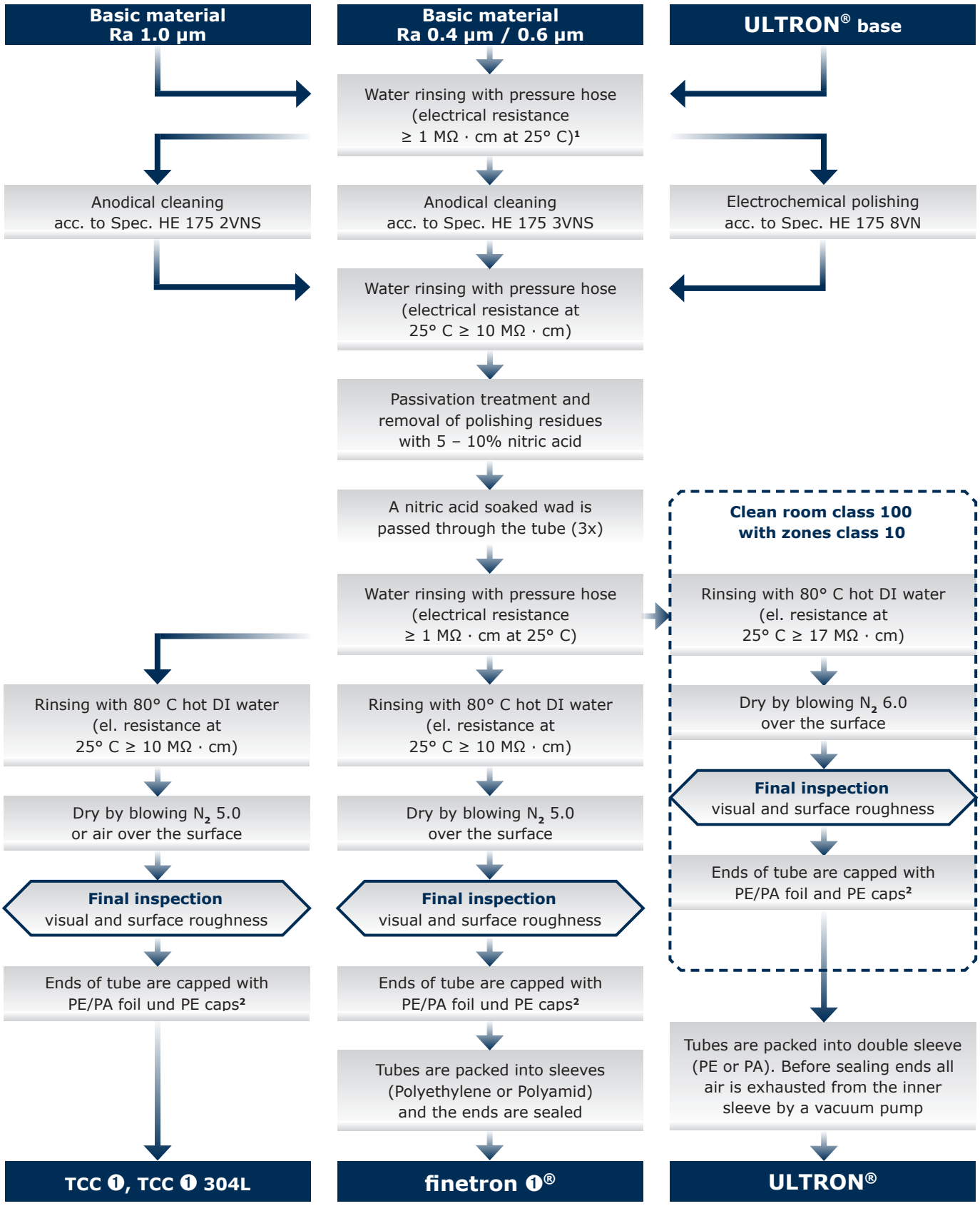
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

SURFACE TREATMENT OF TUBES



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.

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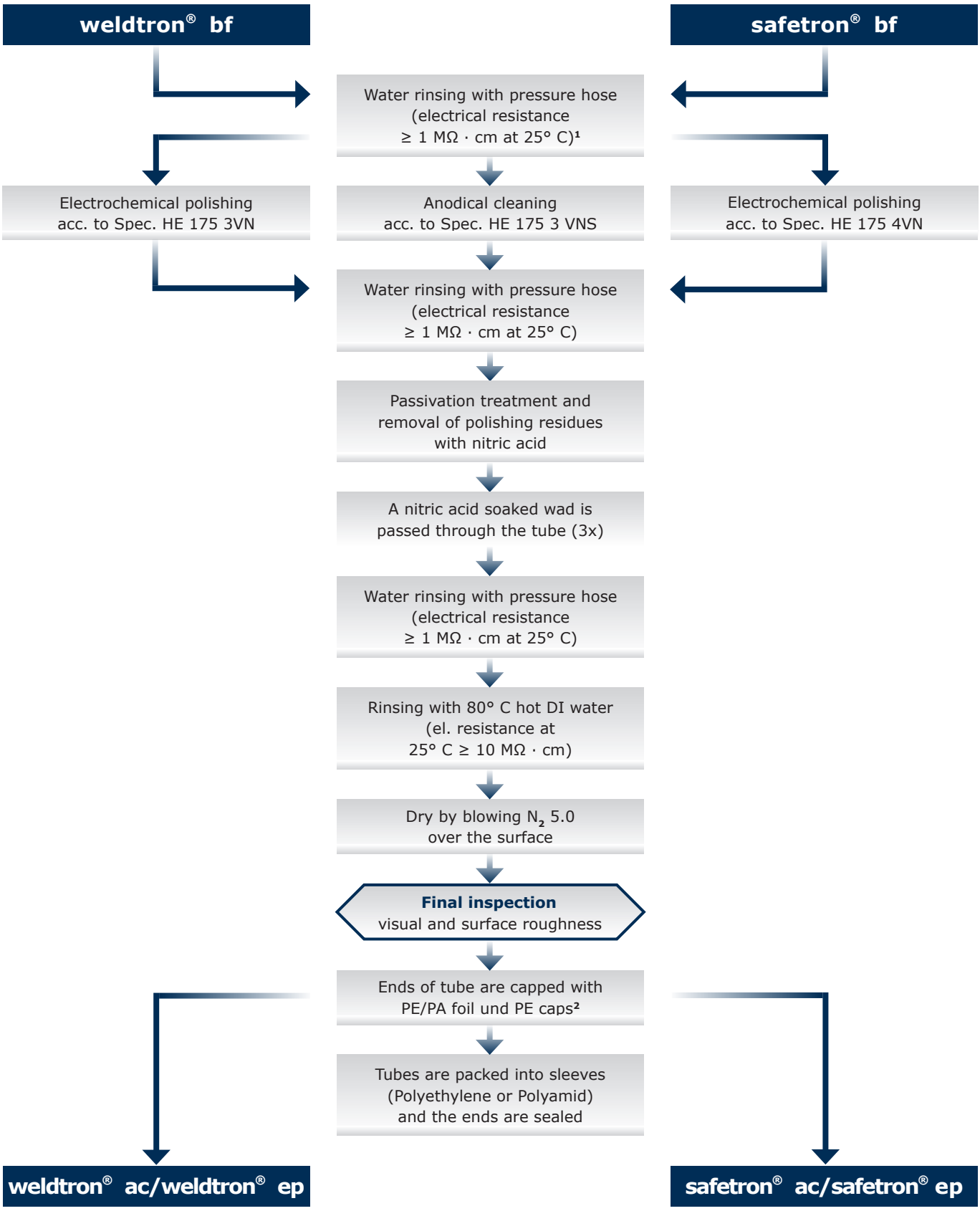
DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

SURFACE TREATMENT OF TUBES



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DOCKWEILER
TUBE SYSTEMS IN STAINLESS STEEL

SURFACE TREATMENT OF TUBES

ASME BPE SF1

Water rinsing with pressure hose
(electrical resistance ≥ 1 MΩ · cm at 25° C)[1]

↓

Electrochemical polishing
acc. to Spec. HE 175 4VN

↓

Water rinsing with pressure hose
(electrical resistance ≥ 1 MΩ · cm at 25° C)

↓

Passivation treatment and
removal of polishing residues with nitric acid

↓

A nitric acid soaked wad is
passed through the tube (3x)

↓

Water rinsing with pressure hose
(electrical resistance ≥ 1 MΩ · cm at 25° C)

↓

Rinsing with 80° C hot DI water
(el. resistance at 25° C ≥ 10 MΩ · cm)

↓

Dry by blowing N_2 5.0
over the surface

↓

Final inspection
visual and surface roughness

↓

Ends of tube are capped with
PE/PA foil und PE caps[2]

↓

Tubes are packed into sleeves
(Polyethylene or Polyamid)
and the ends are sealed

ASME BPE SF4

[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.

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Applications for stainless steel tube systems

Surfaces

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GLOSSARY PHARMACEUTICAL

API	Active Pharmaceutical Ingredient, also called Drug Substance.
Aseptic	Free of pathogenic microorganisms.
ASME	American Society of Mechanical Engineers
ASME BPE	ASME Bioprocessing Equipment: an American National Standard
Biotechnology	An industry that creates, develops, and markets a variety of techniques that use living organisms, or substances from those organisms, to make or modify a product by microbial and biochemical processes.
Bioprocessing	The creation of a product utilizing a living organism.
Bioreactor	A closed system used for bioprocessing (flask, roller bottle, tank, vessel, or other container), which supports the growth of cells, mammalian or bacterial, in a culture medium.
Clean Steam	Steam free from boiler additives that may be purified, filtered, or separated. When condensed, clean steam meets the specification for WFI. Usually utilized to sterilize process equipment.
CIP	Clean-in-place: Internally cleaning a piece of equipment without relocation or disassembly. The cleaning is normally done by acid or a caustic solution, or a combination of both, with Water-for-Injection (WFI) rinse
Contamination	The undesired introduction of impurities of a chemical or microbiological nature, or of foreign matter, into or onto a raw material, intermediate, or API (Active Pharmaceutical Ingredient) during production, sampling, packaging or repackaging, storage or transport.
Dead-leg	A stagnant section of a piping system, which has been defined as being 6 times longer than the diameter of the pipe involved in hot water systems and 3–4 diameters in cold water system (6d rule).
FDA	Food and Drug Administration: part of the US Department of Health and Human Services
Fermentation	The biochemical synthesis of organic compounds by micro-organisms or cultivated cells.

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GLOSSARY PHARMACEUTICAL

GMP	Good Manufacturing Practices
HPLC	High Performance Liquid Chromatography
ISPE	International Society for Pharmaceutical Engineering
Parenteralia	Drugs for injection directly into the blood system.
Pyrogen	A fever-producing substance.
Osmosis	The diffusion of a solvent through a semi-permeable membrane from a less concentrated solution to a more concentrated solution.
Self-draining	The elimination of all fluid from the system due to the force of gravity alone.
Sterile	Free from living organisms.
Validation	Establishing documented evidence that the system does what it purports to do.
WFI	Water for Injection

For more information use the internet:

www.ispe.org

www.high-q.com

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GLOSSARY SEMICONDUCTOR

Chip	Piece of semiconductor wafer containing the entire circuit.
CFOS	Cleaned for oxygen systems
Cleanroom	Defined in terms of particles 0.5 micrometer and larger per cubic foot of air; e.g. Class 10 = maximum 10 particles 0.5 micron and larger per ft3.
DI water, deionized water	Ultra-pure water used in semiconductor manufacturing. Produced by removing all ions of dissolved minerals using reverse osmosis and ion-exchange systems. DI water should also be free from particles, bacteria, organics, and dissolved oxygen; purity of deionized water is determined based on its resistivity, target resistivity is 18 megaohm-cm.
Epitaxy	Process by which thin layer of single-crystal material is deposited on singlecrystal substrate. Epitaxial growth occurs in such way that the crystallographic structure of the substrate is reproduced in the growing material. Also crystalline defects of the substrate are reproduced in the growing material.
HVAC	High VACuum
LCD	Liquid Crystal Display. Active matrix LCD uses arrays of thin film transistors (TFT) to control display process.
LEC	Liquid Encapsulated Czochralski growth
MEMS	Micro Electro Mechanical Systems micromachined in silicon, typically integrated with electronic microcircuits.
MOCVD	Metal-Organic Chemical Vapor Deposition: CVD process which uses metal-organic compounds as source materials; metal-organics thermally decompose at temperatures lower than other metal containing compounds. Method often used in epitaxial growth of very thin films of III-V semiconductors.
Nanotechnology	Domain of scientific and technical endeavor in which solid matter is manipulated in the molecular and atomic scale. Processing of functional, information carrying devices in the nanometer length scale („nano“ – 10-9; nanometer = 0.001 of a micrometer).
OEM	Original Equipment Manufacturer
RAM	Random Access Memory: memory cell designed to store information (data) temporarily.

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GLOSSARY SEMICONDUCTOR

Surface mount technology, SMT	A method used to connect packaged microchip to printed board, no throughholes in the board are required. Package leads are soldered to the board surface.
UHP	Ultra High Purity
UPS	Ultraviolet Electron Spectroscopy: Method of material characterization.
Wafer	Thin (thickness depends on wafer diameter, but is less than 1 mm), circular slice of single-crystal semiconductor material used in manufacturing of semiconductor devices and integrated circuits. Depending on material wafer diameter may range from about 25 mm to 300 mm, cut from the ingot of single crystal semiconductor.
Yield	In semiconductor industry synonymous with „manufacturing yield", i.e. number defining percentage of operational devices out of all devices manufactured.

You can find more information in the internet:

www.sematech.org

www.semiconductorglossary.com

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GLOSSARY
STAINLESS STEEL

AISI — American Iron and Steel Institute
An association of North American companies that mine iron ore and produce steel products. There are 31 member companies and 118 associate members, which include both suppliers and customers that distribute, process, or consume steel. The AISI represents the interests of Canada, Mexico, and the United States.

Annealing — A heat or thermal treatment process by which a previously cold-rolled steel coil is made more suitable for forming and bending. The steel sheet is heated to a designated temperature for a sufficient amount of time and then cooled.

Autogenous weld — A weld made by fusion of the base material without the addition of filler. (See also gas tungsten-arc welding.)

Automatic welding — Welding with equipment that performs the welding operation without adjustment of the controls by a welding operator. The equipment may or may not perform the loading and unloading of the work.

Bars — Stainless steel formed into long shapes from billets. They can be rounds, squares, hexagons, octagons or flats, either hot or cold finished.

Bright Annealing — Annealing in a controlled atmosphere (e.g., cracked ammonia, hydrogen, or vacuum) to prevent formation of oxides and scale. Eliminates the need for acid bath pickling and allows for natural passivation.

Coils — Metal sheet that has been wound. The metal, once rolled flat, is more than one-quarter mile long; coils are the most efficient way to store and transport sheet steel.

Corrosion — The gradual degradation or alteration of metal caused by atmosphere, moisture, or other agents.

Electropolishing — Electropolishing is an electrochemical removal process that selectively removes a thin layer of metal, including surface flaws and imbedded impurities. Electro-polishing is a required surface treatment process for all ultra high-purity components used in the gas distribution systems of semiconductor manufacturers worldwide and many sterile water distribution systems of pharmaceutical and biotechnology companies.

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Gas tungsten-arc welding (GTAW)	An arc welding process that produces coalescence of metals by heating them with an arc between a tungsten (nonconsumable) electrode and the work. Shielding is obtained from a gas or gas mixture. (This process is sometimescalled TIG welding, a non preferred term.) GTAW may be performed by adding filler material to the weld, or by a fusion process in which no filler is added.
Orbital welding	Automatic or machine welding of tubes or pipe in-place with the electrode rotating (or orbiting) around the work. Orbital welding can be done with the addition of filler material or as a fusion process without the addition of filler.
Oxide layer	An area usually located in the heat-affected zone of the weldment where an oxidation reaction has taken place.
Passivation	A final treatment/cleaning process used to remove free iron or other anodic contaminants from the surface of corrosion-resistant steel parts such that uniform formation of a passive layer is obtained.
Passive layer	A passive oxidized film that forms naturally on the stainless steel surface when exposed to air or similar oxidizing environment protecting the underlying base metal from corrosion.
Pickling	A process that removes surface scale and oxidation products by immersion in a chemically active solution, such as nitric acid or hydrochloric acid.
Pitting	Localized corrosion (in the form of pits) of a metal surface that is confined to a small area.
Slag	The impurities in a molten pool of iron. Flux such as limestone may be added to foster the congregation of undesired elements into a slag. Because slag is lighterthan iron, it will float on top of the pool, where it can be skimmed off.
Strip	Flat steel coil products, with widths of less than 600mm for hot rolled products and less than 500mm for cold rolled products.

For more information:

www.steel.or

www.amtuneco.com

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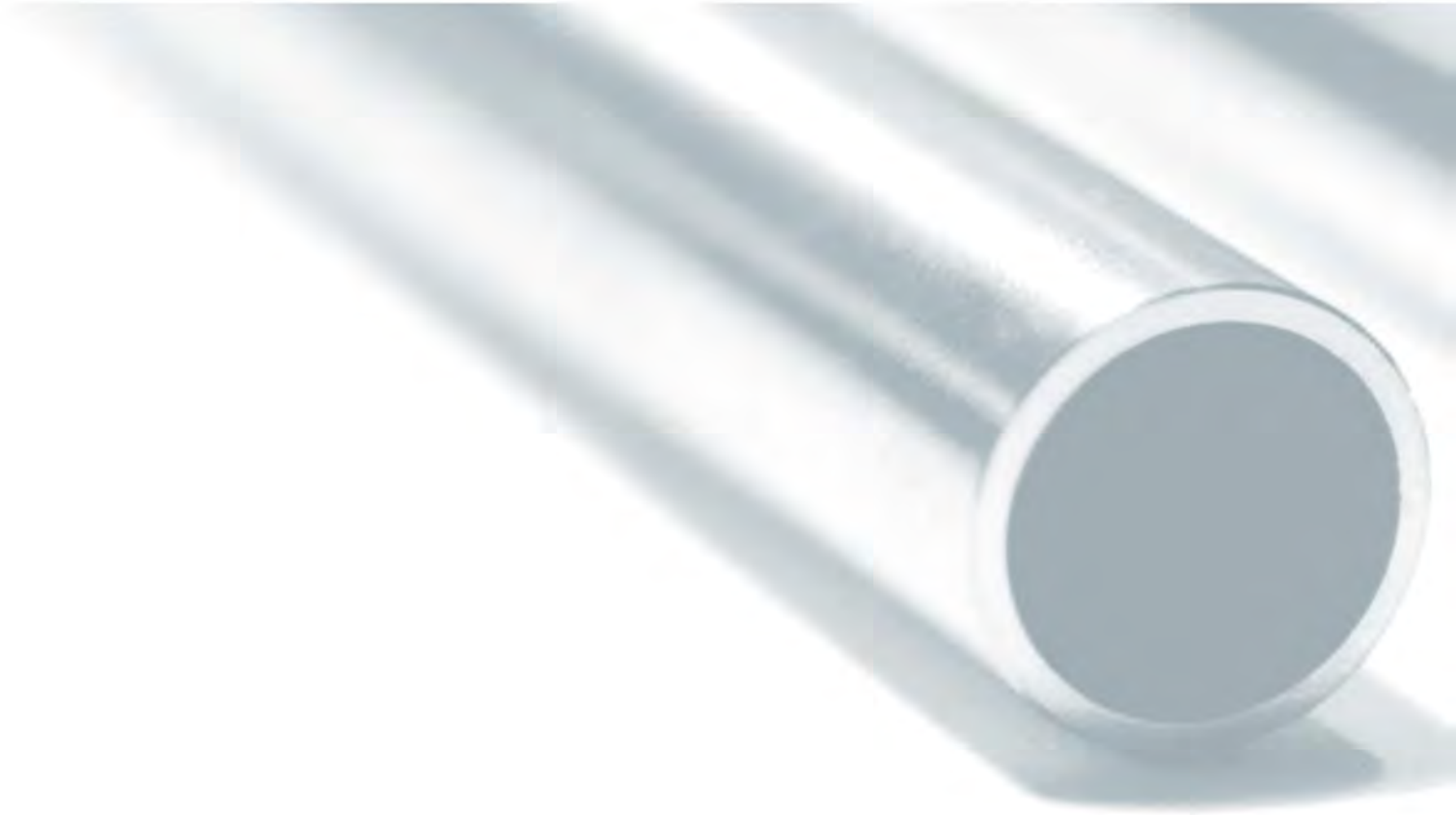

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