

for-BPE<sup>®</sup>

## BIO-TECH & PHARMACEUTICAL FITTINGS

Produced by an ASME-BPE certified manufacturer.



*"We know Stainless"*



### Winter Technologies LLC

1464 Hoelzer Court Pacific, MO 63069

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## Company Introduction



Winter Technologies LLC has over 30 years of experience in the pharmaceutical, biotech and semiconductor industries. We know and recognize the special needs of these industries, such as the documentation needed for validation. Many of the processes used today for the manufacturing, polishing and cleaning of tubing and fittings were developed by Winter Technologies' associates. This experience, plus successful timely innovation, and a willingness to take reasonable risks are key to achieving individual and company growth. Mutual understanding and trust characterize our relationship with customers, suppliers, community and government. We are committed to conducting our business in an ethical and responsible manner.

Winter Technologies LLC has divisions that can electropolish, passivate, pickle and clean your products or our own.

We sell and service projects, OEMs and MRO business

worldwide with strategically located distribution throughout the globe. We produce and process ASME-BPE compliant materials, semiconductor, instrumentation, analyzer and commercial tubing and fittings needs in 316L, 304L, and higher alloys.

Winter Technologies LLC manufactures and processes tubular products that help in solving developmental, manufacturing and process challenges in high purity piping applications for sanitary, hygienic and higher technology systems. We specialize in innovative and cost effective solutions for your technical applications with exceptional customer service and expert support. We are continuously improving our techniques for understanding and satisfying the high purity needs of our customers. The metallic tubing mills we work with are the foremost innovators, with superior tubular products, in their respective markets. This, with the knowledge and value added by Winter Technologies LLC makes for the best quality under the name of WinTech.

We recognize that loyal, productive employees are our most important resource. Therefore, we provide a safe, clean working environment and foster open communications, mutual respect and trust throughout the organization. We encourage all employees to participate in improving how we meet our customer's expectations and recognize and reward their efforts to meet those expectations.

Please browse our catalog, and contact our knowledgeable customer service staff with questions or inquiries concerning our products. Customer service is always first with Winter Technologies. We'll do "whatever it takes" to assure your product arrives on time, properly documented and surpasses your expectations.

In order to provide a high quality, cost effective solution to the demanding biopharm and semiconductor industries, we supply for-BPE tubing that meets or exceeds the newest ASME-BPE standard. WinTech tubing and fittings are produced without using mercury or ozone depleting chemicals in the processing of our for-BPE family of products.

### ■ Ultra-Clean, Exceptionally Smooth Surfaces

WinTech for-BPE stainless steel tubing is ideal for the pharmaceutical industry where ultra-cleanliness and extraordinarily smooth surfaces are required for product purity and flow characteristics. for-BPE is produced in accordance with ASTM standards and has dual A270-S2/A269 and A450 certification for manufacturing processes, testing, tolerances and surface finishes. Its electro-polished surface finish is measured to ANSI B46.1-1995 standards. It meets or exceeds the requirements of the ASME-BPE surface standard SF1 and SF4. Higher levels of polish are also available upon request.

### ■ Quality

To assure the highest quality, for-BPE is subjected to extensive testing and inspection programs that meet or exceed ASTM A270-S2/A269 and A450 test requirements, and to the bend and deformation test requirements of ASME SA249 or SA213.

### ■ Mechanical Testing

Mechanical testing is conducted in accordance with ASTM A450 requirements. Testing includes reverse bend, reverse flattening and flange tests. Eddy current tests are performed on 100 percent of the for-BPE tubing produced.

### ■ Electropolishing, Cleaning and Surface Treatments

for-BPE is certified to meet or exceed ASME-BPE SF4.

Electropolishing provides these advantages:

- Highly reflective, smoother surface
- Improved surface cleanliness to ensure product purity
- Significantly improved corrosion resistance
- Improved flow characteristics
- Enhanced cleanability

After for-BPE tubing is electropolished, it is rinsed with de-ionized water, then is passivated in a nitric acid solution to remove film and ensure a high-quality, chromium-enriched coating.

Upon request, for-BPE tubing and fittings are available cleaned for oxygen service (CFOS).

and ISO Class 5 Clean room cleaned and packaged.

### ■ Annealing

for-BPE is hydrogen bright annealed in line to 1900 degrees F (1040°C) minimum and rapidly quenched.

### ■ Packaging

As a final step to ensure purity standards, after passivation and cleaning each tube is capped on both ends with plastic end caps and bagged.

### ■ Marking

for-BPE tubing is line-stenciled with ASME-BPE surface designation, OD, wall, ASTM specifications, manufacturer, grade, heat number.

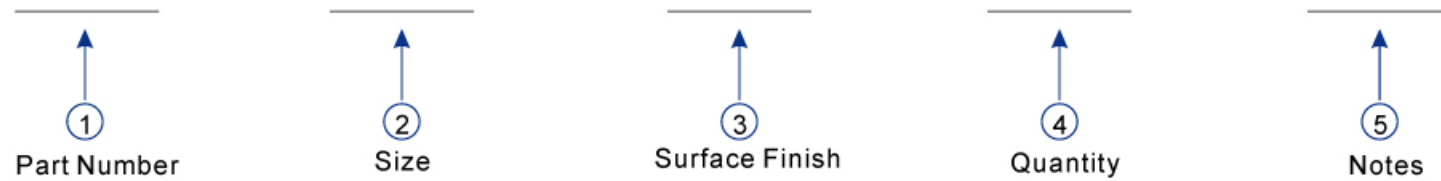




# Ordering Information

## SECTION INDEX

To ensure quick quotation response, be sure to clearly indicate the following information. Please see the example below.



For Example:  
DT-07-00050-SF1 means 1/2" ATW 90° Elbow with SF1 surface finish.

### Contact US

Please forward your inquiry to;

Address: 1464 Hoelzer Court Pacific, MO 63069

Telephone: 636-271-6400

Fax: 636-271-6401

Email: [sales@winter-technologies.com](mailto:sales@winter-technologies.com)



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**ASME BPE Standard Specifications:**

**Design requirement: Automatic welding, Ovality, Wall Thickness and Squareness.**

**Traceability ( permanently marked ) ASME-BPE: Heat number, Size,**

**Material type, Surface Finishes.**

**Packaging: Color-Coded End Caps, Transparent Plastic Bags and Detailed Label.**

**ASME BIOPROCESSING EQUIPMENT(BPE)**

**ACCEPTANCE CRITERIA FOR INTERIOR SURFACE FINISHES OF FITTINGS**

ANOMALY OR INDICATION	ACCEPTANCE CRITERIA
Cluster of pits	None accepted.
Discoloration(Demarcation)	If < 5% of the total area when visually inspected and Ra is met.
Grit lines	If Ra is met.
Longitudinal welds	If polished smooth, blended, and Ra is met.
Nicks	None accepted.
Oxides	None accepted.
Pits	If dia. < 0.020", and bottom is shiny.
Scratches	If length < 0.25", depth < 0.003", and Ra is met.
Star burst	None accepted.
Surface cracks	None accepted.
Surface inclusions	If Ra is met and there is no liquid penetrant indication.
Surface residuals	None accepted, visual inspection without magnification.
Surface roughness(Ra)	See Tables Surface Finishes.
Water stains	If no deposits.
Weld slag	None accepted.
Weld porosity	None accepted.

**SURFACE FINISHES:**

POLISH COMBINATION CODE	INTERNAL(ID) SURFACE		SURFACE FINISH	EXTERNAL(OD) SURFACE		ASME BPE SURFACE DESIGNATION	
	MAX. SURFACE ROUGHNESS*			MAX. SURFACE ROUGHNESS*			
	μ-in	μ-m	μ-in	μ-m			
3/PC	20	0.5	Mechanical polish			Unpolished	SF1
7/PL	20	0.5	Mechanical polish	32	0.8	Mechanical polish	SF1
3/PD	15	0.375	Mechanical polish& Electropolish			Unpolished	SF4
7/PM	15	0.375	Mechanical polish& Electropolish	32	0.8	Mechanical polish	SF4

**CONVERSION OF SURFACE FINISHES CHART:**

STANDARD GRIT	Ra		RMS	
	μ-in	μ-m	μ-in	μ-m
150grit	27-32	0.68-0.80	30-35	0.76-0.89
180grit	18-23	0.46-0.58	20-25	0.51-0.64
240grit	14-18	0.34-0.46	15-20	0.38-0.51
320grit	8-10	0.21-0.25	9-11	0.23-0.28

**GENERAL NOTE:** All Ra readings are taken across the lay.

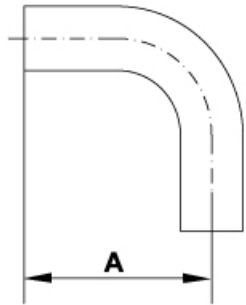
**NOTE:**

**The average Ra is derived from reading taken at four cross sections approximately 90 degrees apart. Other Ra readings are available if agreed upon between vendor and owner/user. No single reading exceeding Ra max.**



ATW 90 deg-Elbow

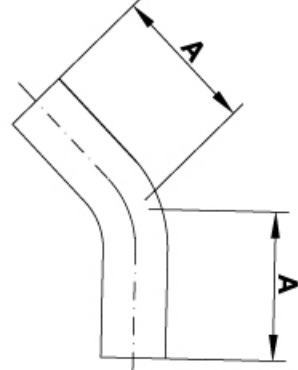
BPE TABLE #DT-4.1.1-1



NO.	SIZE	A Inch(mm)
DT-07-00025	1/4"	2.625 (66.7)
DT-07-00038	3/8"	2.625 (66.7)
DT-07-00050	1/2"	3.000 (76.2)
DT-07-00075	3/4"	3.000 (76.2)
DT-07-00100	1"	3.000 (76.2)
DT-07-00150	1 1/2"	3.750 (95.3)
DT-07-00200	2"	4.750 (120.7)
DT-07-00250	2 1/2"	5.500 (139.7)
DT-07-00300	3"	6.250 (158.8)
DT-07-00400	4"	8.000 (203.2)
DT-07-00600	6"	11.500 (292.1)

ATW 45 deg-Elbow

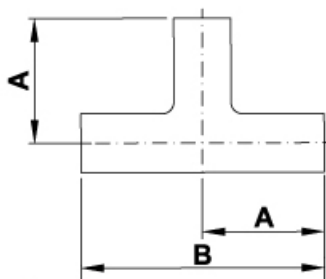
BPE TABLE #DT-4.1.1-4



NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-08-00025	1/4"	2.000 (50.8)	
DT-08-00038	3/8"	2.000 (50.8)	
DT-08-00050	1/2"	2.250 (57.2)	
DT-08-00075	3/4"	2.250 (57.2)	
DT-08-00100	1"	2.250 (57.2)	
DT-08-00150	1 1/2"	2.500 (63.5)	
DT-08-00200	2"	3.000 (76.2)	
DT-08-00250	2 1/2"	3.375 (85.7)	
DT-08-00300	3"	3.625 (92.1)	
DT-08-00400	4"	4.500 (114.3)	
DT-08-00600	6"	6.250 (158.8)	

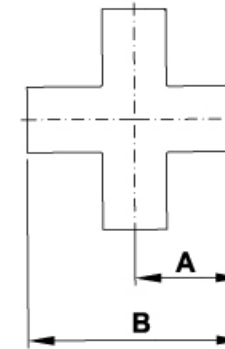
ATW Equal Tee

BPE TABLE #DT-4.1.2-1



NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-09-T-00025	1/4"	1.750 (44.5)	3.500 (89.0)
DT-09-T-00038	3/8"	1.750 (44.5)	3.500 (89.0)
DT-09-T-00050	1/2"	1.875 (47.6)	3.750 (95.3)
DT-09-T-00075	3/4"	2.000 (50.8)	4.000 (101.6)
DT-09-T-00100	1"	2.125 (54.0)	4.250 (108.0)
DT-09-T-00150	1 1/2"	2.375 (60.3)	4.750 (120.7)
DT-09-T-00200	2"	2.875 (73.0)	5.750 (146.1)
DT-09-T-00250	2 1/2"	3.125 (79.4)	6.250 (158.8)
DT-09-T-00300	3"	3.375 (85.7)	6.750 (171.5)
DT-09-T-00400	4"	4.125 (104.8)	8.250 (209.6)
DT-09-T-00600	6"	5.625 (142.9)	11.252 (285.8)

BPE TABLE #DT-4.1.2-1

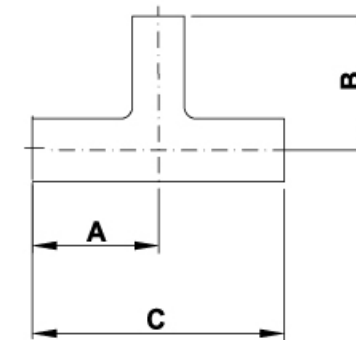


ATW Cross

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-09-C-00025	1/4"	1.750 (44.5)	3.500 (89.0)
DT-09-C-00038	3/8"	1.750 (44.5)	3.500 (95.2)
DT-09-C-00050	1/2"	1.875 (47.6)	3.748 (89.0)
DT-09-C-00075	3/4"	2.000 (50.8)	4.000 (101.6)
DT-09-C-00100	1"	2.125 (54.0)	4.252 (108.0)
DT-09-C-00150	1 1/2"	2.375 (60.3)	4.748 (120.6)
DT-09-C-00200	2"	2.875 (73.0)	5.748 (146.0)
DT-09-C-00250	2 1/2"	3.125 (79.4)	6.252 (158.8)
DT-09-C-00300	3"	3.375 (85.7)	6.748 (171.4)
DT-09-C-00400	4"	4.125 (104.8)	8.252 (209.6)
DT-09-C-00600	6"	5.625 (142.9)	11.252 (285.8)

ATW Reducing Tee

BPE TABLE #DT-4.1.2-6

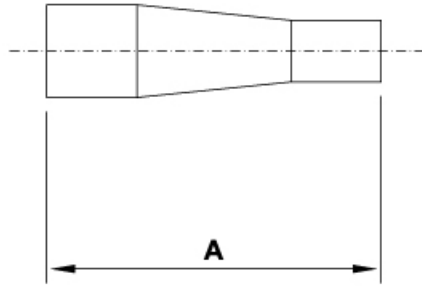


NO.	SIZE	A Inch(mm)	B Inch(mm)	C Inch(mm)
DT-10-03825	3/8"x1/4"	1.750 (44.5)	1.750 (44.5)	3.500 (89.0)
DT-10-05025	1/2"x1/4"	1.875 (47.6)	1.875 (47.6)	3.750 (95.2)
DT-10-07525	1/2"x3/8"	1.875 (47.6)	1.875 (47.6)	3.750 (95.2)
DT-10-07538	3/4"x3/8"	2.000 (50.8)	2.000 (50.8)	4.000 (101.6)
DT-10-07550	3/4"x1/2"	2.000 (50.8)	2.000 (50.8)	4.000 (101.6)
DT-10-01050	1.0"x1/2"	2.125 (54.0)	2.125 (54.0)	4.250 (108.0)
DT-10-01075	1.0"x3/4"	2.125 (54.0)	2.125 (54.0)	4.250 (108.0)
DT-10-01550	1 1/2"x1/2"	2.375 (60.3)	2.375 (60.3)	4.750 (120.7)
DT-10-01575	1 1/2"x3/4"	2.375 (60.3)	2.375 (60.3)	4.750 (120.7)
DT-10-01510	1 1/2"x1.0"	2.375 (60.3)	2.375 (60.3)	4.750 (120.7)
DT-10-02050	2.0"x1/2"	2.875 (73.0)	2.625 (66.7)	5.750 (146.1)
DT-10-02075	2.0"x3/4"	2.875 (73.0)	2.625 (66.7)	5.750 (146.1)
DT-10-02010	2.0"x1.0"	2.875 (73.0)	2.625 (66.7)	5.750 (146.1)
DT-10-02015	2.0"x1 1/2"	2.875 (73.0)	2.625 (66.7)	5.750 (146.1)
DT-10-02550	2 1/2"x1/2"	3.125 (79.4)	2.875 (73.0)	6.250 (158.8)
DT-10-02575	2 1/2"x3/4"	3.125 (79.4)	2.875 (73.0)	6.250 (158.8)
DT-10-02510	2 1/2"x1.0"	3.125 (79.4)	2.875 (73.0)	6.250 (158.8)
DT-10-02515	2 1/2"x1 1/2"	3.125 (79.4)	2.875 (73.0)	6.250 (158.8)
DT-10-02520	2 1/2"x2.0"	3.125 (79.4)	2.875 (73.0)	6.250 (158.8)
DT-10-03050	3.0"x1/2"	3.375 (85.7)	3.125 (79.4)	6.750 (171.5)
DT-10-03075	3.0"x3/4"	3.375 (85.7)	3.125 (79.4)	6.750 (171.5)
DT-10-03010	3.0"x1.0"	3.375 (85.7)	3.125 (79.4)	6.750 (171.5)
DT-10-03015	3.0"x1 1/2"	3.375 (85.7)	3.125 (79.4)	6.750 (171.5)
DT-10-03020	3.0"x2.0"	3.375 (85.7)	3.125 (79.4)	6.750 (171.5)
DT-10-03025	3.0"x2 1/2"	3.375 (85.7)	3.125 (79.4)	6.750 (171.5)
DT-10-04050	4.0"x3/4"	4.125 (104.8)	3.625 (92.1)	8.250 (209.6)
DT-10-04075	4.0"x3/4"	4.125 (104.8)	3.625 (92.1)	8.250 (209.6)
DT-10-04010	4.0"x1.0"	4.125 (104.8)	3.625 (92.1)	8.250 (209.6)
DT-10-04015	4.0"x1 1/2"	4.125 (104.8)	3.625 (92.1)	8.250 (209.6)
DT-10-04020	4.0"x2.0"	4.125 (104.8)	3.875 (98.4)	8.250 (209.6)
DT-10-04025	4.0"x2 1/2"	4.125 (104.8)	3.875 (98.4)	8.250 (209.6)
DT-10-04030	4.0"x3.0"	4.125 (104.8)	3.875 (98.4)	8.250 (209.6)
DT-10-06030	6.0"x3.0"	5.625 (142.9)	4.875 (123.8)	11.250 (285.8)
DT-10-06040	6.0"x4.0"	5.625 (142.9)	5.125 (130.2)	11.250 (285.8)

ATW Concentric Reducer

NO.	SIZE	A Inch(mm)
DT-11-C-03825	3/8"x1/4"	3.250(82.6)
DT-11-C-05025	1/2"x1/4"	3.250(82.6)
DT-11-C-05038	1/2"x3/8"	3.250(82.6)
DT-11-C-07538	3/4"x3/8"	3.250(82.6)
DT-11-C-07550	3/4"x1/2"	4.000(101.6)
DT-11-C-01050	1"x1/2"	4.500(114.3)
DT-11-C-01075	1"x3/4"	4.000(101.6)
DT-11-C-01575	1 1/2"x3/4"	5.000(127.0)
DT-11-C-01510	1 1/2"x1"	5.000(127.0)
DT-11-C-02010	2"x1"	7.250(184.2)
DT-11-C-02015	2"x1 1/2"	5.250(133.4)
DT-11-C-02515	2 1/2"x1 1/2"	7.250(184.2)
DT-11-C-02520	2 1/2"x2"	5.500(139.7)
DT-11-C-03015	3"x1 1/2"	9.250(235.0)
DT-11-C-03020	3"x2"	7.500(190.5)
DT-11-C-03025	3"x2 1/2"	5.500(139.7)
DT-11-C-04020	4"x2"	11.750(298.5)
DT-11-C-04025	4"x2 1/2"	9.750(247.7)
DT-11-C-04030	4"x3"	7.750(196.9)
DT-11-C-06030	6"x3"	10.000(254.0)
DT-11-C-06040	6"x4"	10.000(254.0)

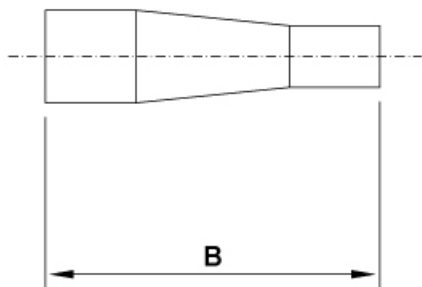
BPE TABLE #DT-4.1.3-1(a)



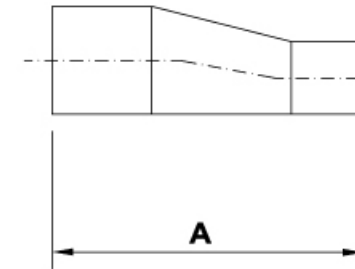
ATW Concentric Reducer

NO.	SIZE	B Inch(mm)
DT-11-C-03825	3/8"x1/4"	1.625(41.2)
DT-11-C-05025	1/2"x1/4"	1.875(47.6)
DT-11-C-05038	1/2"x3/8"	1.875(47.6)
DT-11-C-07538	3/4"x3/8"	2.000(50.8)
DT-11-C-07550	3/4"x1/2"	2.125(54.0)
DT-11-C-01050	1"x1/2"	2.500(63.5)
DT-11-C-01075	1"x3/4"	2.125(54.0)
DT-11-C-01575	1 1/2"x3/4"	3.000(76.0)
DT-11-C-01510	1 1/2"x1"	2.500(63.5)
DT-11-C-02010	2"x1"	3.375(85.7)
DT-11-C-02015	2"x1 1/2"	2.500(63.5)
DT-11-C-02515	2 1/2"x1 1/2"	3.375(85.7)
DT-11-C-02520	2 1/2"x2"	2.500(63.5)
DT-11-C-03015	3"x1 1/2"	4.250(107.9)
DT-11-C-03020	3"x2"	3.375(85.7)
DT-11-C-03025	3"x2 1/2"	2.625(66.6)
DT-11-C-04020	4"x2"	5.125(130.1)
DT-11-C-04025	4"x2 1/2"	4.250(107.9)
DT-11-C-04030	4"x3"	3.875(98.4)
DT-11-C-06030	6"x3"	7.250(184.1)
DT-11-C-06040	6"x4"	5.625(142.8)

BPE TABLE #DT-4.1.3-1(b)



BPE TABLE #DT-4.1.3-1(a)



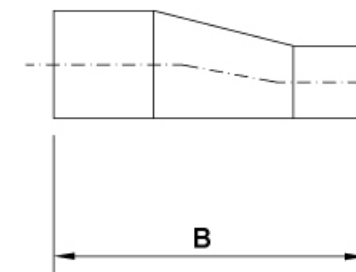
ATW Eccentric Reducer

NO.	SIZE	A Inch(mm)
DT-11-E-03825	3/8"x1/4"	4.000 (101.6)
DT-11-E-05025	1/2"x1/4"	4.000 (101.6)
DT-11-E-05038	1/2"x3/8"	4.000 (101.6)
DT-11-E-07538	3/4"x3/8"	4.000 (101.6)
DT-11-E-07550	3/4"x1/2"	4.000 (101.6)
DT-11-E-01050	1"x1/2"	4.500 (114.3)
DT-11-E-01075	1"x3/4"	4.000 (101.6)
DT-11-E-01575	1 1/2"x3/4"	5.000 (127.0)
DT-11-E-01510	1 1/2"x1"	5.000 (127.0)
DT-11-E-02010	2"x1"	7.250 (184.2)
DT-11-E-02015	2"x1 1/2"	5.250 (133.4)
DT-11-E-02515	2 1/2"x1 1/2"	7.250 (184.2)
DT-11-E-02520	2 1/2"x2"	5.500 (139.7)
DT-11-E-03015	3"x1 1/2"	9.250 (235.0)
DT-11-E-03020	3"x2"	7.500 (190.5)
DT-11-E-03025	3"x2 1/2"	5.500 (139.7)
DT-11-E-04020	4"x2"	11.750(298.5)
DT-11-E-04025	4"x2 1/2"	9.750 (247.7)
DT-11-E-04030	4"x3"	7.750 (196.9)
DT-11-E-06030	6"x3"	9.750 (247.7)
DT-11-E-06040	6"x4"	10.000(254.0)

ATW Eccentric Reducer

NO.	SIZE	B Inch(mm)
DT-11-E-03825	3/8"x1/4"	1.625(41.2)
DT-11-E-05025	1/2"x1/4"	1.875(47.6)
DT-11-E-05038	1/2"x3/8"	1.875(47.6)
DT-11-E-07538	3/4"x3/8"	2.000(50.8)
DT-11-E-07550	3/4"x1/2"	2.125(54.0)
DT-11-E-01050	1"x1/2"	2.500(63.5)
DT-11-E-01075	1"x3/4"	2.125(54.0)
DT-11-E-01575	1 1/2"x3/4"	3.000(76.0)
DT-11-E-01510	1 1/2"x1"	2.500(63.5)
DT-11-E-02010	2"x1"	3.375(85.7)
DT-11-E-02015	2"x1 1/2"	2.500(63.5)
DT-11-E-02515	2 1/2"x1 1/2"	3.375(85.7)
DT-11-E-02520	2 1/2"x2"	2.500(63.5)
DT-11-E-03015	3"x1 1/2"	4.250(107.9)
DT-11-E-03020	3"x2"	3.375(85.7)
DT-11-E-03025	3"x2 1/2"	2.625(66.6)
DT-11-E-04020	4"x2"	5.125(130.1)
DT-11-E-04025	4"x2 1/2"	4.250(107.9)
DT-11-E-04030	4"x3"	3.875(98.4)
DT-11-E-06030	6"x3"	7.250(184.1)
DT-11-E-06040	6"x4"	5.625(142.8)

BPE TABLE #DT-4.1.3-1(b)

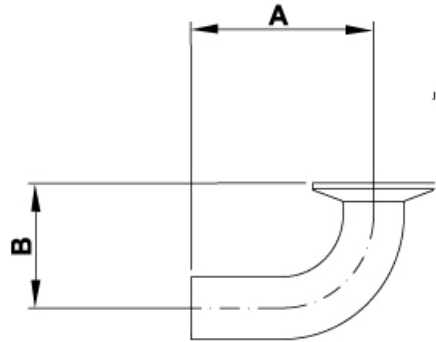




ATW Clamp 90 deg-Elbow

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-12-00025	1/4"	2.625(66.7)	1.625(41.3)
DT-12-00038	3/8"	2.625(66.7)	1.625(41.3)
DT-12-00050	1/2"	3.000(76.2)	1.625(41.3)
DT-12-00075	3/4"	3.000(76.2)	1.625(41.3)
DT-12-00100	1"	3.000(76.2)	2.000(50.8)
DT-12-00150	1 1/2"	3.750(95.3)	2.750(69.9)
DT-12-00200	2"	4.750(120.7)	3.500(88.9)
DT-12-00250	2 1/2"	5.500(139.7)	4.250(108.0)
DT-12-00300	3"	6.250(158.8)	5.000(127.0)
DT-12-00400	4"	8.000(203.2)	6.625(168.3)
DT-12-00600	6"	11.500(292.1)	10.500(266.7)

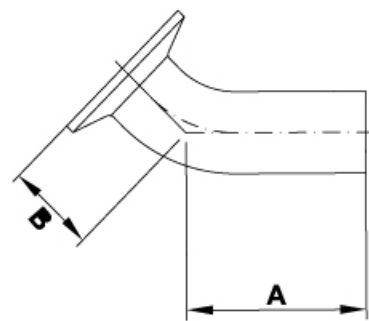
BPE TABLE #DT-4.1.1-2



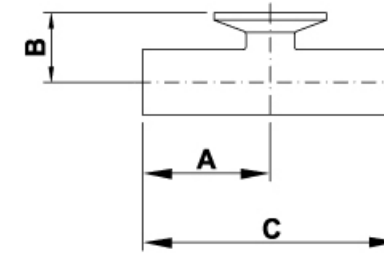
ATW Clamp 45 deg-Elbow

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-13-00025	1/4"	2.000(50.8)	1.000(25.4)
DT-13-00038	3/8"	2.000(50.8)	1.000(25.4)
DT-13-00050	1/2"	2.250(57.2)	1.000(25.4)
DT-13-00075	3/4"	2.250(57.2)	1.000(25.4)
DT-13-00100	1"	2.250(57.2)	1.125(28.6)
DT-13-00150	1 1/2"	2.500(63.5)	1.440(36.6)
DT-13-00200	2"	3.000(76.2)	1.750(44.5)
DT-13-00250	2 1/2"	3.375(85.7)	2.063(52.4)
DT-13-00300	3"	3.625(92.1)	2.375(60.3)
DT-13-00400	4"	4.500(114.3)	3.125(79.4)
DT-13-00600	6"	6.250(158.8)	5.250(133.4)

BPE TABLE #DT-4.1.1-5



BPE TABLE #DT-4.1.2-7



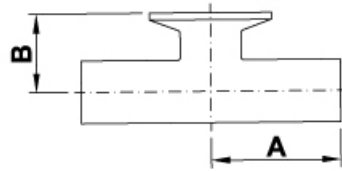
ATW Short Outlet Hygienic Clamp Joint Reducing Tee

NO.	SIZE	A Inch(mm)	B Inch(mm)	C Inch(mm)
DT-14-03825	3/8"x1/4"	1.750 (44.5)	1.000 (25.4)	3.500 (89.0)
DT-14-05025	1/2"x1/4"	1.875 (47.6)	1.000 (25.4)	3.750 (95.2)
DT-14-05038	1/2"x3/8"	1.875 (47.6)	1.000 (25.4)	3.750 (95.2)
DT-14-07525	3/4"x1/4"	2.000 (50.8)	1.000 (25.4)	4.000 (101.6)
DT-14-07538	3/4"x3/8"	2.000 (50.8)	1.000 (25.4)	4.000 (101.6)
DT-14-07550	3/4"x1/2"	2.000 (50.8)	1.000 (25.4)	4.000 (101.6)
DT-14-01050	1"x1/2"	2.125 (54.0)	1.125 (28.6)	4.250 (108.0)
DT-14-01075	1"x3/4"	2.125 (54.0)	1.125 (28.6)	4.250 (108.0)
DT-14-01550	1 1/2"x1/2"	2.375 (60.3)	1.375 (34.9)	4.750 (120.7)
DT-14-01575	1 1/2"x3/4"	2.375 (60.3)	1.375 (34.9)	4.750 (120.7)
DT-14-01510	1 1/2"x1"	2.375 (60.3)	1.375 (34.9)	4.750 (120.7)
DT-14-02050	2"x1/2"	2.875 (73.0)	1.625 (41.3)	5.750 (146.1)
DT-14-02075	2"x3/4"	2.875 (73.0)	1.625 (41.3)	5.750 (146.1)
DT-14-02010	2"x1"	2.875 (73.0)	1.625 (41.3)	5.750 (146.1)
DT-14-02015	2"x1 1/2"	2.875 (73.0)	1.625 (41.3)	5.750 (146.1)
DT-14-02550	2 1/2"x1/2"	3.125 (79.4)	1.875 (47.6)	6.250 (158.8)
DT-14-02575	2 1/2"x3/4"	3.125 (79.4)	1.875 (47.6)	6.250 (158.8)
DT-14-02510	2 1/2"x1"	3.125 (79.4)	1.875 (47.6)	6.250 (158.8)
DT-14-02515	2 1/2"x1 1/2"	3.125 (79.4)	1.875 (47.6)	6.250 (158.8)
DT-14-02520	2 1/2"x2"	3.125 (79.4)	1.875 (47.6)	6.250 (158.8)
DT-14-03050	3"x1/2"	3.375 (85.7)	2.125 (54.0)	6.750 (171.5)
DT-14-03075	3"x3/4"	3.375 (85.7)	2.125 (54.0)	6.750 (171.5)
DT-14-03010	3"x1"	3.375 (85.7)	2.125 (54.0)	6.750 (171.5)
DT-14-03015	3"x1 1/2"	3.375 (85.7)	2.125 (54.0)	6.750 (171.5)
DT-14-03020	3"x2"	3.375 (85.7)	2.125 (54.0)	6.750 (171.5)
DT-14-03025	3"x2 1/2"	3.375 (85.7)	2.125 (54.0)	6.750 (171.5)
DT-14-04050	4"x1/2"	4.125 (104.8)	2.625 (66.7)	8.250 (209.6)
DT-14-04075	4"x3/4"	4.125 (104.8)	2.625 (66.7)	8.250 (209.6)
DT-14-04010	4"x1"	4.125 (104.8)	2.625 (66.7)	8.250 (209.6)
DT-14-04015	4"x1 1/2"	4.125 (104.8)	2.625 (66.7)	8.250 (209.6)
DT-14-04020	4"x2"	4.125 (104.8)	2.625 (66.7)	8.250 (209.6)
DT-14-04025	4"x2 1/2"	4.125 (104.8)	2.625 (66.7)	8.250 (209.6)
DT-14-04030	4"x3"	4.125 (104.8)	2.625 (66.7)	8.250 (209.6)
DT-14-06030	6"x3"	5.625 (142.9)	3.625 (92.1)	11.250 (285.8)
DT-14-06040	6"x4"	5.625 (142.9)	3.750 (95.3)	11.250 (285.8)

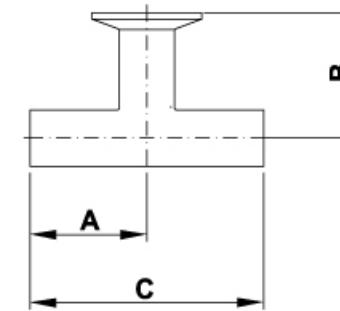
ATW Short Outlet Tee

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-15-00025	1/4"	1.750 (44.5)	1.000 (25.4)
DT-15-00038	3/8"	1.750 (44.5)	1.000 (25.4)
DT-15-00050	1/2"	1.875 (47.6)	1.000 (25.4)
DT-15-00075	3/4"	2.000 (50.8)	1.125 (28.6)
DT-15-00100	1"	2.125 (54.0)	1.125 (28.6)
DT-15-00150	1 1/2"	2.375 (60.3)	1.375 (34.9)
DT-15-00200	2"	2.875 (73.0)	1.625 (41.3)
DT-15-00250	2 1/2"	3.125 (79.4)	1.875 (47.6)
DT-15-00300	3"	3.375 (85.7)	2.125 (54.0)
DT-15-00400	4"	4.125 (104.8)	2.750 (69.9)
DT-15-00600	6"	5.625 (142.9)	4.625 (117.5)

BPE TABLE #DT-4.1.2-2



BPE TABLE #DT-4.1.2-7



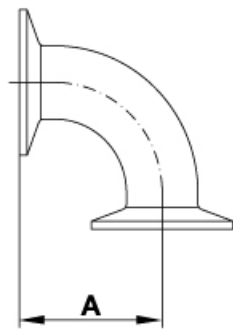
ATW Clamp Outlet Reducing Tee

NO.	SIZE	A Inch(mm)	B Inch(mm)	C Inch(mm)
DT-14-LO-07550	3/4"x1/2"	2.000 (50.8)	2.500 (63.5)	4.000 (101.6)
DT-14-LO-01050	1.0"x1/2"	2.125 (54.0)	2.625 (66.7)	4.250 (108.0)
DT-14-LO-01075	1.0"x3/4"	2.125 (54.0)	2.625 (66.7)	4.250 (108.0)
DT-14-LO-01550	1 1/2"x1/2"	2.375 (60.3)	2.875 (73.0)	4.750 (120.7)
DT-14-LO-01575	1 1/2"x3/4"	2.375 (60.3)	2.875 (73.0)	4.750 (120.7)
DT-14-LO-01510	1 1/2"x1.0"	2.375 (60.3)	2.875 (73.0)	4.750 (120.7)
DT-14-LO-02050	2.0"x1/2"	2.875 (73.0)	3.125 (79.4)	5.750 (146.1)
DT-14-LO-02075	2.0"x3/4"	2.875 (73.0)	3.125 (79.4)	5.750 (146.1)
DT-14-LO-02010	2.0"x1.0"	2.875 (73.0)	3.125 (79.4)	5.750 (146.1)
DT-14-LO-02015	2.0"x1 1/2"	2.875 (73.0)	3.125 (79.4)	5.750 (146.1)
DT-14-LO-02550	2 1/2"x1/2"	3.125 (79.4)	3.375 (85.7)	6.250 (158.8)
DT-14-LO-02575	2 1/2"x3/4"	3.125 (79.4)	3.375 (85.7)	6.250 (158.8)
DT-14-LO-02510	2 1/2"x1.0"	3.125 (79.4)	3.375 (85.7)	6.250 (158.8)
DT-14-LO-02515	2 1/2"x1 1/2"	3.125 (79.4)	3.375 (85.7)	6.250 (158.8)
DT-14-LO-02520	2 1/2"x2.0"	3.125 (79.4)	3.375 (85.7)	6.250 (158.8)
DT-14-LO-03050	3.0"x1/2"	3.375 (85.7)	3.625 (92.1)	6.750 (171.5)
DT-14-LO-03075	3.0"x3/4"	3.375 (85.7)	3.625 (92.1)	6.750 (171.5)
DT-14-LO-03010	3.0"x1.0"	3.375 (85.7)	3.625 (92.1)	6.750 (171.5)
DT-14-LO-03015	3.0"x1 1/2"	3.375 (85.7)	3.625 (92.1)	6.750 (171.5)
DT-14-LO-03020	3.0"x2.0"	3.375 (85.7)	3.625 (92.1)	6.750 (171.5)
DT-14-LO-03025	3.0"x2 1/2"	3.375 (85.7)	3.625 (92.1)	6.750 (171.5)
DT-14-LO-04050	4.0"x1/2"	4.125 (104.8)	4.125 (104.8)	8.250 (209.6)
DT-14-LO-04075	4.0"x3/4"	4.125 (104.8)	4.125 (104.8)	8.250 (209.6)
DT-14-LO-04010	4.0"x1.0"	4.125 (104.8)	4.125 (104.8)	8.250 (209.6)
DT-14-LO-04015	4.0"x1 1/2"	4.125 (104.8)	4.125 (104.8)	8.250 (209.6)
DT-14-LO-04020	4.0"x2.0"	4.125 (104.8)	4.375 (111.1)	8.250 (209.6)
DT-14-LO-04025	4.0"x2 1/2"	4.125 (104.8)	4.375 (111.1)	8.250 (209.6)
DT-14-LO-04030	4.0"x3.0"	4.125 (104.8)	4.375 (111.1)	8.250 (209.6)
DT-14-LO-06030	6.0"x3.0"	5.625 (142.9)	5.375 (136.5)	11.250 (285.8)
DT-14-LO-06040	6.0"x4.0"	5.625 (142.9)	5.750 (146.1)	11.250 (285.8)

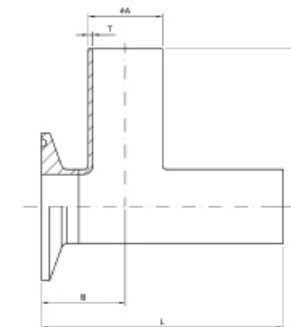
HCJ 90 deg Elbow

NO.	SIZE	A Inch(mm)
DT-16-0025	1/4"	1.625 (41.3)
DT-16-0038	3/8"	1.625 (41.3)
DT-16-0050	1/2"	1.626 (41.3)
DT-16-0075	3/4"	1.626 (41.3)
DT-16-0100	1"	2.000 (50.8)
DT-16-0150	1 1/2"	2.750 (69.9)
DT-16-0200	2"	3.500 (88.9)
DT-16-0250	2 1/2"	4.252 (108.0)
DT-16-0300	3"	5.000 (127.0)
DT-16-0400	4"	6.625 (168.3)
DT-16-0600	6"	10.50Q266.7)

BPE TABLE #DT-4.1.1-3



BPE TABLE #DT-4.1.2-3

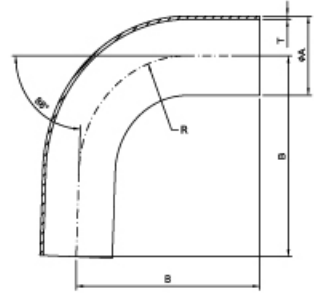


ATW HCJ Short Outlet Equal Run Tee

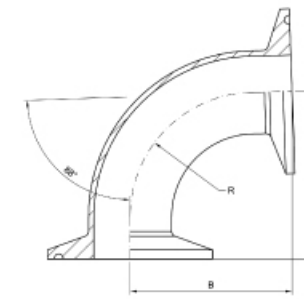
NO.	SIZE	A Inch(mm)	B Inch(mm)	C Inch(mm)	L Inch(mm)
DT-25-0025	1/4"	0.250 (6.35)	0.875 (22.2)	1.750 (44.5)	2.625 (66.7)
DT-25-0038	3/8"	0.380 (9.83)	0.875 (22.2)	1.750 (44.5)	2.625 (66.7)
DT-25-0050	1/2"	0.500 (12.7)	0.875 (22.2)	1.875 (47.6)	2.750 (69.8)
DT-25-0075	3/4"	0.750 (19.1)	1.000 (25.4)	2.000 (50.8)	3.000 (76.2)
DT-25-0100	1.0"	1.000 (25.4)	1.125 (28.6)	2.125 (54.0)	3.250 (82.6)
DT-25-0150	1 1/2"	1.500 (38.1)	1.375 (34.9)	1.650 (60.3)	3.750 (95.2)
DT-25-0200	2.0"	2.000 (50.8)	1.625 (41.3)	2.375 (73.0)	4.500 (114.3)
DT-25-0250	2 1/2"	2.500 (63.5)	1.875 (47.6)	1.650 (79.4)	5.000 (127.0)
DT-25-0300	3.0"	3.000 (76.2)	2.125 (54.0)	3.125 (85.7)	5.500 (139.7)
DT-25-0400	4.0"	4.000 (101.6)	2.750 (69.9)	4.125 (104.8)	6.875 (174.7)
DT-25-0600	6.0"	6.000 (152.4)	4.625 (117.5)	5.625 (142.9)	10.250 (260.4)



ATW 88 deg-Elbow



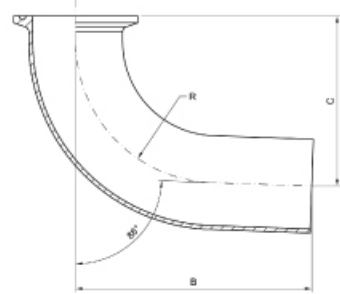
NO.	SIZE	A Inch(mm)	B Inch(mm)	R Inch(mm)
DT-07-0005088	1/2"	0.500(12.7)	3.075(78.2)	1.125(28.6)
DT-07-0007588	3/4"	0.750(19.1)	3.060(77.7)	1.125(28.6)
DT-07-0010088	1.0"	1.000(25.4)	3.050(77.4)	1.500(38.1)
DT-07-0015088	1 1/2"	1.500(38.1)	3.800(96.5)	2.250(57.2)
DT-07-0020088	2.0"	2.000(50.8)	4.800(122.0)	3.000(76.2)
DT-07-0025088	2 1/2"	2.500(63.5)	5.550(141.0)	3.750(95.3)
DT-07-0030088	3.0"	3.000(76.2)	6.300(160.0)	4.500(114.3)
DT-07-0040088	4.0"	4.000(101.6)	8.070(205.0)	6.000(152.4)



HCJ 88 deg-Elbow

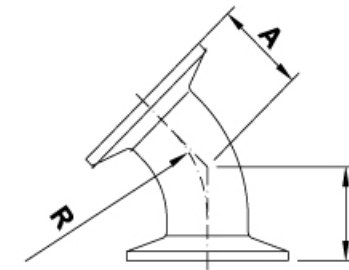
NO.	SIZE	B Inch(mm)	C Inch(mm)	R Inch(mm)
DT-16-0005088	1/2"	1.600(40.6)	1.675(42.2)	1.125(28.6)
DT-16-0007588	3/4"	1.575(40.1)	1.625(40.6)	1.125(28.6)
DT-16-0010088	1.0"	1.945(49.5)	2.015(51.3)	1.500(38.1)
DT-16-0015088	1 1/2"	2.700(68.6)	2.725(69.1)	2.250(57.2)
DT-16-0020088	2.0"	3.430(87.1)	3.550(90.2)	3.000(76.2)
DT-16-0025088	2 1/2"	5.500(140.0)	4.215(107.0)	3.750(95.3)
DT-16-0030088	3.0"	4.850(124.0)	5.075(129.0)	4.500(114.3)
DT-16-0040088	4.0"	8.000(204.0)	6.815(173.0)	6.000(152.4)

ATW HCJ 88 deg-Elbow



NO.	SIZE	B Inch(mm)	C Inch(mm)	R Inch(mm)
DT-12-0005088	1/2"	3.030(77.0)	1.600(40.6)	1.125(28.6)
DT-12-0007588	3/4"	3.020(76.7)	1.600(40.6)	1.125(28.6)
DT-12-0010088	1.0"	3.020(76.7)	1.950(49.5)	1.500(38.1)
DT-12-0015088	1 1/2"	3.770(95.8)	2.720(69.1)	2.250(57.2)
DT-12-0020088	2.0"	4.800(122.0)	3.630(92.2)	3.000(76.2)
DT-12-0025088	2 1/2"	5.500(140.0)	4.210(107.0)	3.750(95.3)
DT-12-0030088	3.0"	6.260(159.0)	4.960(126.0)	4.500(114.3)
DT-12-0040088	4.0"	8.030(204.0)	6.810(173.0)	6.000(152.4)

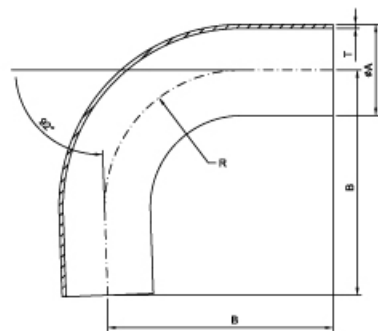
BPE TABLE #DT-4.1.1-6



HCJ 45 deg-Elbow

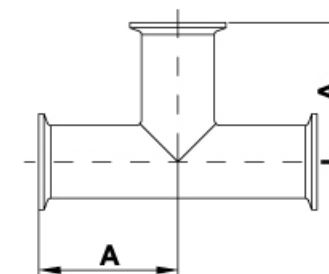
NO.	SIZE	A Inch(mm)
DT-17-0025	1/4"	1.000(25.4)
DT-17-0038	3/8"	1.000(25.4)
DT-17-0050	1/2"	1.000(25.4)
DT-17-0075	3/4"	1.000(25.4)
DT-17-0100	1.0"	1.125(28.6)
DT-17-0150	1 1/2"	1.438(36.5)
DT-17-0200	2.0"	1.750(44.5)
DT-17-0250	2 1/2"	2.063(52.4)
DT-17-0300	3.0"	2.375(60.3)
DT-17-0400	4.0"	3.125(79.4)
DT-17-0600	6.0"	5.250(133.4)

ATW 92 deg-Elbow



NO.	SIZE	A Inch(mm)	B Inch(mm)	R Inch(mm)
DT-07-00050-92	1/2"	0.500(12.7)	2.920(74.2)	1.125(28.6)
DT-07-00075-92	3/4"	0.750(19.1)	2.930(74.4)	1.125(28.6)
DT-07-00100-92	1.0"	1.000(25.4)	2.950(74.9)	1.500(38.1)
DT-07-00150-92	1 1/2"	1.500(38.1)	3.700(94.0)	2.250(57.2)
DT-07-00200-92	2.0"	2.000(50.8)	4.700(119.0)	3.000(76.2)
DT-07-00250-92	2 1/2"	2.500(63.5)	5.425(138.0)	3.750(95.3)
DT-07-00300-92	3.0"	3.000(76.2)	6.180(157.0)	4.500(114.3)
DT-07-00400-92	4.0"	4.000(101.6)	7.910(201.0)	6.000(152.4)

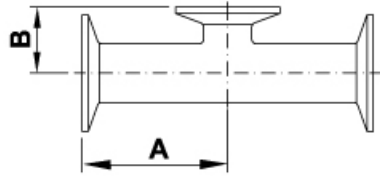
BPE TABLE #DT-4.1.2-4



HCJ Tee

NO.	SIZE	A Inch(mm)
DT-18-T-0025	1/4"	2.250(57.2)
DT-18-T-0038	3/8"	2.250(57.2)
DT-18-T-0050	1/2"	2.250(57.2)
DT-18-T-0075	3/4"	2.375(60.3)
DT-18-T-0100	1.0"	2.625(66.7)
DT-18-T-0150	1 1/2"	2.875(73.0)
DT-18-T-0200	2.0"	3.375(85.7)
DT-18-T-0250	2 1/2"	3.625(92.1)
DT-18-T-0300	3.0"	3.875(98.4)
DT-18-T-0400	4.0"	4.750(120.7)
DT-18-T-0600	6.0"	7.125(181.0)

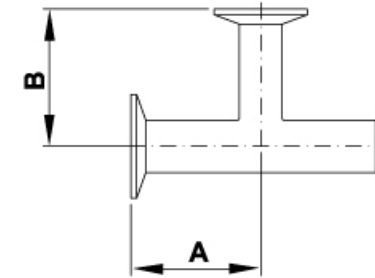
BPE TABLE #DT-4.1.2-9



HCJ Short Outlet Reducing Tee

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-20-07550	3/4"x1/2"	2.500 (63.5)	1.000 (25.4)
DT-20-01050	1.0"x1/2"	2.625 (66.7)	1.125 (28.6)
DT-20-01075	1.0"x3/4"	2.625 (66.7)	1.125 (28.6)
DT-20-01550	1 1/2"x1/2"	2.875 (73.0)	1.375 (34.9)
DT-20-01575	1 1/2"x3/4"	2.875 (73.0)	1.375 (34.9)
DT-20-01510	1 1/2"x1.0"	2.875 (73.0)	1.375 (34.9)
DT-20-02050	2.0"x1/2"	3.375 (85.7)	1.625 (41.3)
DT-20-02075	2.0"x3/4"	3.375 (85.7)	1.625 (41.3)
DT-20-02010	2.0"x1.0"	3.375 (85.7)	1.625 (41.3)
DT-20-02015	2.0"x1 1/2"	3.375 (85.7)	1.625 (41.3)
DT-20-02510	2 1/2"x1.0"	3.625 (92.1)	1.875 (47.6)
DT-20-02515	2 1/2"x1 1/2"	3.625 (92.1)	1.875 (47.6)
DT-20-02520	2 1/2"x2.0"	3.625 (92.1)	1.875 (47.6)
DT-20-03010	3.0"x1.0"	3.875 (98.4)	2.125 (54.0)
DT-20-03015	3.0"x1 1/2"	3.875 (98.4)	2.125 (54.0)
DT-20-03020	3.0"x2.0"	3.875 (98.4)	2.125 (54.0)
DT-20-03025	3.0"x2 1/2"	3.875 (98.4)	2.125 (54.0)
DT-20-04010	4.0"x1.0"	4.750 (120.7)	2.625 (66.7)
DT-20-04015	4.0"x1 1/2"	4.750 (120.7)	2.625 (66.7)
DT-20-04020	4.0"x2.0"	4.750 (120.7)	2.625 (66.7)
DT-20-04025	4.0"x1 1/2"	4.750 (120.7)	2.625 (66.7)
DT-20-04030	4.0"x3.0"	4.750 (120.7)	2.625 (66.7)
DT-20-06030	6.0"x3.0"	7.125 (181.0)	3.625 (92.1)
DT-20-06040	6.0"x4.0"	7.125 (181.0)	3.750 (95.3)

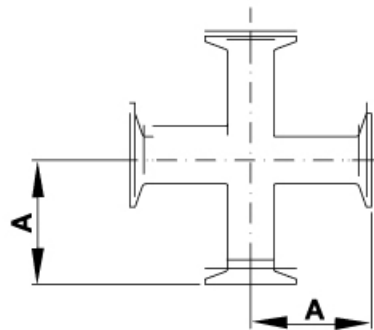
BPE TABLE #DT-4.1.2-8



HCJ Reducing Tee

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-19-R-03825	3/8"x1/4"	2.250 (60.3)	2.250 (60.3)
DT-19-R-05025	1/2"x1/4"	2.375 (60.3)	2.375 (60.3)
DT-19-R-05038	1/2"x3/8"	2.375 (60.3)	2.375 (60.3)
DT-19-R-07538	3/4"x3/8"	2.500 (63.5)	2.500 (63.5)
DT-19-R-07550	3/4"x1/2"	2.500 (63.5)	2.500 (63.5)
DT-19-R-01050	1.0"x1/2"	2.625 (66.7)	2.625 (66.7)
DT-19-R-01075	1.0"x3/4"	2.625 (66.7)	2.625 (66.7)
DT-19-R-01550	1 1/2"x1/2"	2.875 (73.0)	2.875 (73.0)
DT-19-R-01575	1 1/2"x3/4"	2.875 (73.0)	2.875 (73.0)
DT-19-R-01510	1 1/2"x1.0"	2.875 (73.0)	2.875 (73.0)
DT-19-R-02050	2.0"x1/2"	3.375 (85.7)	3.125 (79.4)
DT-19-R-02075	2.0"x3/4"	3.375 (85.7)	3.125 (79.4)
DT-19-R-02010	2.0"x1.0"	3.375 (85.7)	3.125 (79.4)
DT-19-R-02015	2.0"x1 1/2"	3.375 (85.7)	3.125 (79.4)
DT-19-R-02510	2 1/2"x1.0"	3.625 (92.1)	3.375 (85.7)
DT-19-R-02515	2 1/2"x1 1/2"	3.625 (92.1)	3.375 (85.7)
DT-19-R-02520	2 1/2"x2.0"	3.625 (92.1)	3.375 (85.7)
DT-19-R-03010	3.0"x1.0"	3.875 (98.4)	3.625 (92.1)
DT-19-R-03015	3.0"x1 1/2"	3.875 (98.4)	3.625 (92.1)
DT-19-R-03020	3.0"x2.0"	3.875 (98.4)	3.625 (92.1)
DT-19-R-03025	3.0"x2 1/2"	3.875 (98.4)	3.625 (92.1)
DT-19-R-04010	4.0"x1.0"	4.750 (120.7)	4.375 (111.1)
DT-19-R-04015	4.0"x1 1/2"	4.750 (120.7)	4.375 (111.1)
DT-19-R-04020	4.0"x2.0"	4.750 (120.7)	4.375 (111.1)
DT-19-R-04025	4.0"x2 1/2"	4.750 (120.7)	4.375 (111.1)
DT-19-R-04030	4.0"x3.0"	4.750 (120.7)	4.375 (111.1)
DT-19-R-06030	6.0"x3.0"	7.125 (181.0)	5.375 (136.5)
DT-19-R-06040	6.0"x4.0"	7.125 (181.0)	5.750 (146.1)

BPE TABLE #DT-4.1.2-4

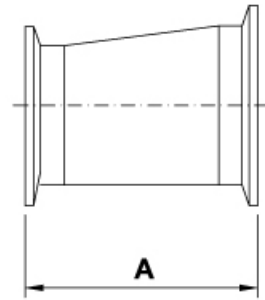


HCJ Cross

NO.	SIZE	A Inch(mm)
DT-18-C-0025	1/4"	2.250 (57.2)
DT-18-C-0038	3/8"	2.250 (57.2)
DT-18-C-0050	1/2"	2.250 (57.2)
DT-18-C-0075	3/4"	2.375 (60.3)
DT-18-C-0100	1.0"	2.625 (66.7)
DT-18-C-0150	1 1/2"	2.875 (73.0)
DT-18-C-0200	2.0"	3.375 (85.7)
DT-18-C-0250	2 1/2"	3.625 (92.1)
DT-18-C-0300	3.0"	3.875 (98.4)
DT-18-C-0400	4.0"	4.750 (120.7)
DT-18-C-0600	6.0"	7.125 (181.0)



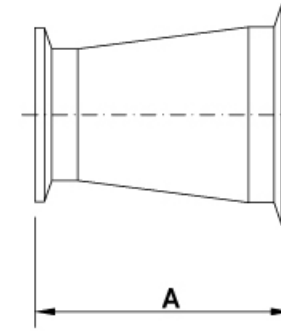
BPE TABLE #DT-4.1.3-3(a)



HCJ Eccentric Clamp End Reducer

NO.	SIZE	A Inch(mm)
DT-21-E-07550	3/4"x1/2"	2.000 (50.8)
DT-21-E-01050	1.0"x1/2"	2.500 (63.5)
DT-21-E-01075	1.0"x3/4"	2.000 (50.8)
DT-21-E-01575	1 1/2"x3/4"	3.000(76.2)
DT-21-E-01510	1 1/2"x1.0"	3.000 (76.2)
DT-21-E-02010	2.0"x1.0"	5.000 (127.0)
DT-21-E-02015	2.0"x1 1/2"	3.000 (76.2)
DT-21-E-02515	2 1/2"x1 1/2"	5.000 (127.0)
DT-21-E-02520	2 1/2"x2.0"	3.000 (76.2)
DT-21-E-03015	3.0"x1 1/2"	7.000(177.8)
DT-21-E-03020	3.0"x2.0"	5.000 (127.0)
DT-21-E-03025	3.0"x2 1/2"	3.000 (76.2)
DT-21-E-04020	4.0"x2.0"	9.125 (231.8)
DT-21-E-04025	4.0"x2 1/2"	7.125 (181.0)
DT-21-E-04030	4.0"x3.0"	5.125 (130.2)
DT-21-E-06030	6.0"x3.0"	7.625 (193.7)
DT-21-E-06040	6.0"x4.0"	7.625 (193.7)

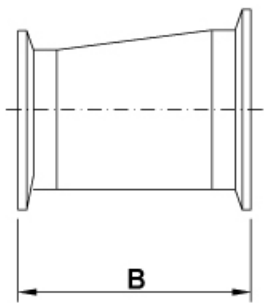
BPE TABLE #DT-4.1.3-3(a)



HCJ Concentric Clamp End Reducer

NO.	SIZE	A Inch(mm)
DT-21-C-07550	3/4"x1/2"	2.000 (50.8)
DT-21-C-01050	1.0"x1/2"	2.500 (63.5)
DT-21-C-01075	1.0"x3/4"	2.000 (50.8)
DT-21-C-01575	1 1/2"x3/4"	3.000 (76.2)
DT-21-C-01510	1 1/2"x1.0"	3.000 (76.2)
DT-21-C-02010	2.0"x1.0"	5.000 (127.0)
DT-21-C-02015	2.0"x1 1/2"	3.000 (76.2)
DT-21-C-02515	2 1/2"x1 1/2"	5.000 (127.0)
DT-21-C-02520	2 1/2"x2.0"	3.000 (76.2)
DT-21-C-03015	3.0"x1 1/2"	7.000 (177.8)
DT-21-C-03020	3.0"x2.0"	5.000 (127.0)
DT-21-C-03025	3.0"x2 1/2"	3.000 (76.2)
DT-21-C-04020	4.0"x2.0"	9.125 (231.8)
DT-21-C-04025	4.0"x2 1/2"	7.125 (181.0)
DT-21-C-04030	4.0"x3.0"	5.125 (130.2)
DT-21-C-06030	6.0"x3.0"	7.500 (190.5)
DT-21-C-06040	6.0"x4.0"	7.625 (193.7)

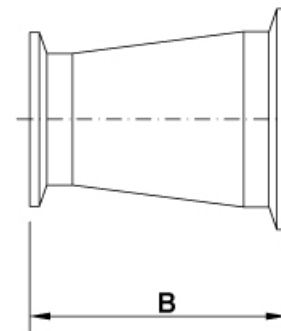
BPE TABLE #DT-4.1.3-3(b)



HCJ Eccentric Clamp End Reducer

NO.	SIZE	B Inch(mm)
DT-21-E-03825	3/8"x1/4"	2.625 (66.6)
DT-21-E-05025	1/2"x1/4"	2.875 (73.0)
DT-21-E-05038	1/2"x3/8"	2.875 (73.0)
DT-21-E-07538	3/4"x3/8"	3.000 (76.2)
DT-21-E-07550	3/4"x1/2"	3.125 (79.3)
DT-21-E-01050	1.0"x1/2"	3.500 (88.9)
DT-21-E-01075	1.0"x3/4"	3.125 (79.3)
DT-21-E-01575	1 1/2"x3/4"	4.000 (101.6)
DT-21-E-01510	1 1/2"x1.0"	3.500 (88.9)
DT-21-E-02010	2.0"x1.0"	4.375 (111.1)
DT-21-E-02015	2.0"x1 1/2"	3.500 (88.9)
DT-21-E-02515	2 1/2"x1 1/2"	4.375 (111.1)
DT-21-E-02520	2 1/2"x2.0"	3.500 (88.9)
DT-21-E-03015	3.0"x1 1/2"	5.250 (133.3)
DT-21-E-03020	3.0"x2.0"	4.375 (111.1)
DT-21-E-03025	3.0"x2 1/2"	3.625 (92.0)
DT-21-E-04020	4.0"x2.0"	6.250 (158.7)
DT-21-E-04025	4.0"x2 1/2"	5.375 (136.5)
DT-21-E-04030	4.0"x3.0"	5.000 (127.0)
DT-21-E-06030	6.0"x3.0"	8.500 (215.9)
DT-21-E-06040	6.0"x4.0"	7.000 (177.8)

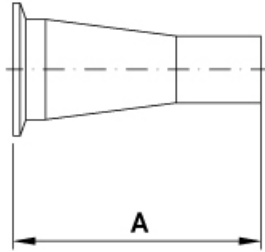
BPE TABLE #DT-4.1.3-3(b)



HCJ Concentric Clamp End Reducer

NO.	SIZE	B Inch(mm)
DT-21-C-03825	3/8"x1/4"	2.625 (66.6)
DT-21-C-05025	1/2"x1/4"	2.875 (73.0)
DT-21-C-05038	1/2"x3/8"	2.875 (73.0)
DT-21-C-07538	3/4"x3/8"	3.000 (76.2)
DT-21-C-07550	3/4"x1/2"	3.125 (79.3)
DT-21-C-01050	1.0"x1/2"	3.500 (88.9)
DT-21-C-01075	1.0"x3/4"	3.125 (79.3)
DT-21-C-01575	1 1/2"x3/4"	4.000 (101.6)
DT-21-C-01510	1 1/2"x1.0"	3.500 (88.9)
DT-21-C-02010	2.0"x1.0"	4.375 (111.1)
DT-21-C-02015	2.0"x1 1/2"	3.500 (88.9)
DT-21-C-02515	2 1/2"x1 1/2"	4.375 (111.1)
DT-21-C-02520	2 1/2"x2.0"	3.500 (88.9)
DT-21-C-03015	3.0"x1 1/2"	5.250 (133.3)
DT-21-C-03020	3.0"x2.0"	4.375 (111.1)
DT-21-C-03025	3.0"x2 1/2"	3.625 (92.0)
DT-21-C-04020	4.0"x2.0"	6.250 (158.7)
DT-21-C-04025	4.0"x2 1/2"	5.375 (136.5)
DT-21-C-04030	4.0"x3.0"	5.000 (127.0)
DT-21-C-06030	6.0"x3.0"	8.500 (215.9)
DT-21-C-06040	6.0"x4.0"	7.000 (177.8)

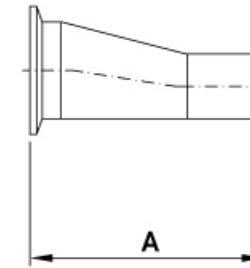
BPE TABLE #DT-4.1.3-2(a)



HCJ Concentric Reducer

NO.	SIZE	A Inch(mm)
DT-26-C-07550	3/4"x1/2"	3.000 (76.2)
DT-26-C-01550	1 1/2"x1/2"	3.500 (88.9)
DT-26-C-01075	1.0"x3/4"	3.000 (76.2)
DT-26-C-01575	1 1/2"x3/4"	4.000 (101.6)
DT-26-C-01050	1.0"x1/2"	4.000 (101.6)
DT-26-C-02010	2.0"x1.0"	6.000 (152.4)
DT-26-C-02015	2.0"x1 1/2"	4.000 (101.6)
DT-26-C-02515	2 1/2"x1 1/2"	6.000 (152.4)
DT-26-C-02520	2 1/2"x2.0"	4.250 (108.0)
DT-26-C-03015	3.0"x1 1/2"	8.000 (203.2)
DT-26-C-03020	3.0"x2.0"	6.250 (158.8)
DT-26-C-03025	3.0"x2 1/2"	4.250 (108.0)
DT-26-C-04020	4.0"x2.0"	10.375(263.5)
DT-26-C-04025	4.0"x2 1/2"	8.375 (212.7)
DT-26-C-04030	4.0"x3.0"	6.375 (161.9)
DT-26-C-06030	6.0"x3.0"	9.000 (228.6)
DT-26-C-06040	6.0"x4.0"	9.000 (228.6)

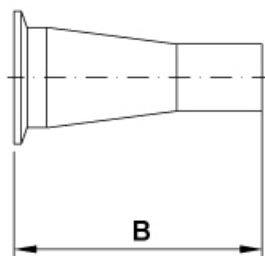
BPE TABLE #DT-4.1.3-2(a)



HCJ Eccentric Reducer

NO.	SIZE	A Inch(mm)
DT-26-E-07550	3/4"x1/2"	3.000 (76.2)
DT-26-E-01550	1 1/2"x1/2"	3.500 (88.9)
DT-26-E-01075	1.0"x3/4"	3.000 (76.2)
DT-26-E-01575	1 1/2"x3/4"	4.000 (101.6)
DT-26-E-01050	1.0"x1/2"	4.000 (101.6)
DT-26-E-02010	2.0"x1.0"	6.000 (152.4)
DT-26-E-02015	2.0"x1 1/2"	4.000 (101.6)
DT-26-E-02515	2 1/2"x1 1/2"	6.000 (152.4)
DT-26-E-02520	2 1/2"x2.0"	4.250 (108.0)
DT-26-E-03015	3.0"x1 1/2"	8.000 (203.2)
DT-26-E-03020	3.0"x2.0"	6.250 (158.8)
DT-26-E-03025	3.0"x2 1/2"	4.250 (108.0)
DT-26-E-04020	4.0"x2.0"	10.375(263.5)
DT-26-E-04025	4.0"x2 1/2"	8.375 (212.7)
DT-26-E-04030	4.0"x3.0"	6.375 (161.9)
DT-26-E-06030	6.0"x3.0"	9.000 (228.6)
DT-26-E-06040	6.0"x4.0"	9.000 (228.6)

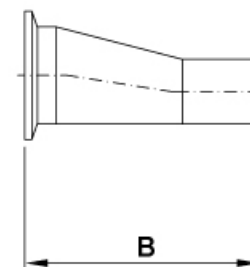
BPE TABLE #DT-4.1.3-2(b)



HCJ Concentric Reducer

NO.	SIZE	B Inch(mm)
DT-26-C-03825	3/8"x1/4"	2.125 (54.0)
DT-26-C-05025	1/2"x1/4"	2.375 (60.3)
DT-26-C-05038	1/2"x3/8"	2.375 (60.3)
DT-26-C-07538	3/4"x3/8"	2.500 (63.5)
DT-26-C-07550	3/4"x1/2"	2.625 (66.6)
DT-26-C-01550	1 1/2"x1/2"	3.000 (76.2)
DT-26-C-01075	1.0"x3/4"	2.625 (66.6)
DT-26-C-01575	1 1/2"x3/4"	3.500 (88.9)
DT-26-C-01050	1.0"x1/2"	3.000 (76.2)
DT-26-C-02010	2.0"x1.0"	3.875 (98.4)
DT-26-C-02015	2.0"x1 1/2"	3.000 (76.2)
DT-26-C-02515	2 1/2"x1 1/2"	3.875 (98.4)
DT-26-C-02520	2 1/2"x2.0"	3.000 (76.2)
DT-26-C-03015	3.0"x1 1/2"	4.750 (120.6)
DT-26-C-03020	3.0"x2.0"	3.875 (98.4)
DT-26-C-03025	3.0"x2 1/2"	3.125 (79.3)
DT-26-C-04020	4.0"x2.0"	5.750 (146.0)
DT-26-C-04025	4.0"x2 1/2"	4.875 (123.8)
DT-26-C-04030	4.0"x3.0"	4.500 (114.3)
DT-26-C-06030	6.0"x3.0"	8.000 (203.2)
DT-26-C-06040	6.0"x4.0"	6.375 (161.9)

BPE TABLE #DT-4.1.3-2(b)

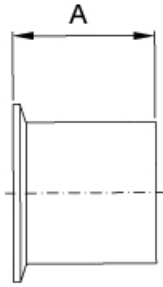


HCJ Eccentric Reducer

NO.	SIZE	B Inch(mm)
DT-26-E-03825	3/8"x1/4"	2.125 (54.0)
DT-26-E-05025	1/2"x1/4"	2.375 (60.3)
DT-26-E-05038	1/2"x3/8"	2.375 (60.3)
DT-26-E-07538	3/4"x3/8"	2.500 (63.5)
DT-26-E-07550	3/4"x1/2"	2.625 (66.6)
DT-26-E-01550	1 1/2"x1/2"	3.000 (76.2)
DT-26-E-01075	1.0"x3/4"	2.625 (66.6)
DT-26-E-01575	1 1/2"x3/4"	3.500 (88.9)
DT-26-E-01050	1.0"x1/2"	3.000 (76.2)
DT-26-E-02010	2.0"x1.0"	3.875 (98.4)
DT-26-E-02015	2.0"x1 1/2"	3.000 (76.2)
DT-26-E-02515	2 1/2"x1 1/2"	3.875 (98.4)
DT-26-E-02520	2 1/2"x2.0"	3.000 (76.2)
DT-26-E-03015	3.0"x1 1/2"	4.750 (120.6)
DT-26-E-03020	3.0"x2.0"	3.875 (98.4)
DT-26-E-03025	3.0"x2 1/2"	3.125 (79.3)
DT-26-E-04020	4.0"x2.0"	5.750 (146.0)
DT-26-E-04025	4.0"x2 1/2"	4.875 (123.8)
DT-26-E-04030	4.0"x3.0"	4.500 (114.3)
DT-26-E-06030	6.0"x3.0"	8.000 (203.2)
DT-26-E-06040	6.0"x4.0"	6.375 (161.9)



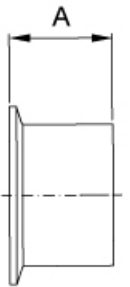
BPE TABLE #DT-4.1.4-1



ATW Long Butt-Weld Ferrule

NO.	SIZE	A Inch(mm)
DT-22-0025	1/4"	1.750 (44.5)
DT-22-0038	3/8"	1.750 (44.5)
DT-22-0050	1/2"	1.750 (44.5)
DT-22-0075	3/4"	1.750 (44.5)
DT-22-0100	1.0"	1.750 (44.5)
DT-22-0150	1 1/2"	1.750 (44.5)
DT-22-0200	2.0"	2.250 (57.2)
DT-22-0250	2 1/2"	2.250 (57.2)
DT-22-0300	3.0"	2.250 (57.2)
DT-22-0400	4.0"	2.250 (57.2)
DT-22-0600	6.0"	3.000 (76.2)

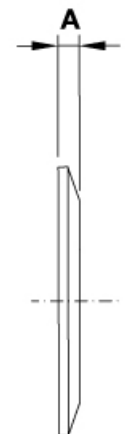
BPE TABLE #DT-4.1.4-2



ATW Short Butt-Weld Ferrule

NO.	SIZE	A Inch(mm)
DT-22-S-0025	1/4"	0.500 (12.7)
DT-22-S-0038	3/8"	0.500 (12.7)
DT-22-S-0050	1/2"	0.500 (12.7)
DT-22-S-0075	3/4"	0.500 (12.7)
DT-22-S-0100	1.0"	0.500 (12.7)
DT-22-S-0150	1 1/2"	0.500 (12.7)
DT-22-S-0200	2.0"	0.500 (12.7)
DT-22-S-0250	2 1/2"	0.500 (12.7)
DT-22-S-0300	3.0"	0.500 (12.7)
DT-22-S-0400	4.0"	0.625 (15.9)
DT-22-S-0600	6.0"	0.750 (19.1)

BPE TABLE #DT-4.1.5-2



Solid End Cap

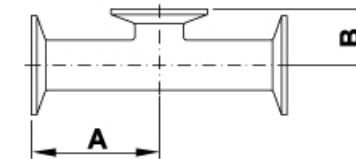
NO.	SIZE	A Inch(mm)
CAP-0025	1/4"	0.187 (4.7)
CAP-0038	3/8"	0.187 (4.7)
CAP-0050	1/2"	0.187 (4.7)
CAP-0075	3/4"	0.187 (4.7)
CAP-0100	1.0"	0.250 (6.4)
CAP-0150	1 1/2"	0.250 (6.4)
CAP-0200	2.0"	0.250 (6.4)
CAP-0250	2 1/2"	0.250 (6.4)
CAP-0300	3.0"	0.250 (6.4)
CAP-0400	4.0"	0.312 (7.9)
CAP-0600	6.0"	0.437 (11.1)



ASME BPE Tube

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-01-0025	1/4"	0.250 (6.4)	0.035 (0.89)
DT-01-0038	3/8"	0.380 (9.5)	0.035 (0.89)
DT-01-0050	1/2"	0.500 (12.7)	0.065 (1.65)
DT-01-0075	3/4"	0.750 (19.1)	0.065 (1.65)
DT-01-0100	1.0"	1.000 (25.4)	0.065 (1.65)
DT-01-0150	1 1/2"	1.500 (38.1)	0.065 (1.65)
DT-01-0200	2.0"	2.000 (50.8)	0.065 (1.65)
DT-01-0250	2 1/2"	2.500 (63.5)	0.065 (1.65)
DT-01-0300	3.0"	3.000 (76.2)	0.065 (1.65)
DT-01-0400	4.0"	4.000 (101.6)	0.083 (2.11)
DT-01-0600	6.0"	6.000 (152.4)	0.109 (2.77)

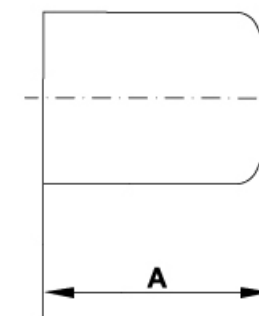
BPE TABLE #DT-4.1.2-5



HCJ Short Outlet Tee

NO.	SIZE	A Inch(mm)	B Inch(mm)
DT-27-0050	1/2"	2.250 (57.2)	1.000 (25.4)
DT-27-0075	3/4"	2.375 (60.3)	1.125 (28.6)
DT-27-0100	1.0"	2.625 (66.7)	1.125 (28.6)
DT-27-0150	1 1/2"	2.875 (73.0)	1.375 (34.9)
DT-27-0200	2.0"	3.375 (85.7)	1.625 (41.3)
DT-27-0250	2 1/2"	3.625 (92.1)	1.875 (47.6)
DT-27-0300	3.0"	3.875 (98.4)	2.125 (54.0)
DT-27-0400	4.0"	4.750 (120.7)	2.750 (69.9)
DT-27-0600	6.0"	7.125 (181.0)	4.625 (117.5)

BPE TABLE #DT-4.1.5-1



ATW Cap

NO.	SIZE	A Inch(mm)
DT-30-0050	1/2"	1.500 (44.5)
DT-30-0075	3/4"	1.500 (46.1)
DT-30-0100	1.0"	1.500 (47.6)
DT-30-0150	1 1/2"	1.500 (52.4)
DT-30-0200	2.0"	1.500 (69.9)
DT-30-0250	2 1/2"	1.500 (76.2)
DT-30-0300	3.0"	1.750 (82.6)
DT-30-0400	4.0"	2.000 (101.6)
DT-30-0600	6.0"	2.500 (127.0)