



## 1.0 PRODUCT DESCRIPTION

### Available Sizes

- 2 – 8”/50 – 200 mm

### Pipe Material

- Types K, L, M and DWV hard drawn copper tubing

### Maximum Working Pressure

- Fitting pressure ratings are equivalent to the pressure ratings of the joints consisting of a coupling/*Vic-Flange* Adapter and Type of copper tubing (see section 7.0 for Reference Materials).
- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) up to 300 psi/2100 kPa.

### Function

- Connects pipe, provides change in direction, and adapts sizes or components.
- Full flow, standard radius wrought copper supplied roll grooved or bronze castings with “as cast” CTS grooves.
- Exclusively for use with Victaulic Style 607 QuickVic® Rigid Couplings or Victaulic Style 641 *Vic-Flange* Adapter for Copper.

### NOTES

- Victaulic CTS copper connection fittings in 2 – 8”/50 – 200 mm sizes are designed to be joined to roll grooved hard drawn (CTS) copper tubing meeting the requirements of ASTM B88.
- Victaulic *Vic-Easy* roll grooving tools VE272SFS, VE270FSD, VE268, VE416FSD and VE414MC can be used to roll groove Types K, L, M and DWV copper tubing from 2 – 8”/54.0 – 206.4 mm. The *Vic-Easy* VE226C can be used for 2 – 6”/54.0 – 155.6 mm copper tubing. The VE226C allows in-place manual grooving of 2 – 6”/54.0 – 155.6 mm copper tubing. Tools must be equipped only with Victaulic rolls designed specifically for grooving copper tube (color coded copper).
- A Go/No-Go Groove Diameter Cable for Copper Tube is available for checking groove diameters. See [Submittal 24.01](#): Victaulic Pipe Preparation Tools for more information.
- The Victaulic copper connection system is available in British Standard ([Submittal 22.08](#)); DIN Standard ([Submittal 22.09](#)); and Australian Standard ([Submittal 22.10](#)).

## 2.0 CERTIFICATION/LISTINGS



Victaulic copper fittings are UL Classified in accordance with ANSI/NSF 61 for cold +86°F/+30°C and hot +180F/+82°C potable water service and ANSI/NSF 372 for lead content.

### NOTES

- See [Submittal 10.01](#): Victaulic Fire Protection Approval Reference Guide .
- See [Submittal 02.06](#): Victaulic Approvals for Potable Water Products - ANSI/NSF 61 and ANSI/NSF 372.

**ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.**

System No.		Location	
Submitted By		Date	

Spec Section		Paragraph	
Approved		Date	

### 3.0 SPECIFICATIONS - MATERIAL

#### Copper Fittings:

Wrought copper per ASTM B75 C12200 or ASTM B152 C11000<sup>1</sup> and ANSI B 16.22.

Bronze sand cast conforming to UNS C89836.

Style 643 Adapter Nipple: Type L hard drawn copper tubing per ASTM B88.

<sup>1</sup> Applies to 6 x 4 No. 650 Concentric Reducer only.

### 4.0 DIMENSIONS

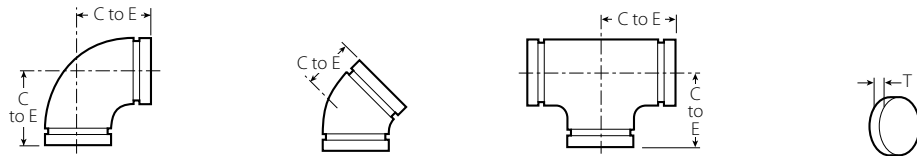
#### Elbows, Tee and Cap

**No. 610** 90° Elbow

**No. 611** 45° Elbow

**No. 620** Tee

**No. 660** Cap



Size		No. 610 90° Elbow		No. 611 45° Elbow		No. 620 Tee		No. 660 Cap	
Nominal inches	Actual inches mm	C to E inches mm	Approximate Weight (Each) lb kg	C to E inches mm	Approximate Weight (Each) lb kg	C to E inches mm	Approximate Weight (Each) lb kg	T inches mm	Approximate Weight (Each) lb kg
2	2.125	2.91	0.9	2.19	0.8	2.69	1.1 c	0.96	1.2 c
	54.0	74	0.4	56	0.4	68	0.5	24	0.5
2½	2.625	3.31	1.3	2.31	1.1	3.20	1.8 c	0.96	1.4 c
	66.7	84	0.6	59	0.5	81	0.8	24	0.6
3	3.125	3.81	4.1	2.59	1.6	3.52	3.2 c	0.96	1.4 c
	79.4	97	1.9	66	0.7	89	1.5	24	0.6
4	4.125	4.75	6.7 c	3.19	3.4	4.25	6.1 c	0.96	2.4 c
	104.8	121	3.0	81	1.5	108	2.8	24	1.1
5	5.125	5.94	15.0 c	3.25	10.0 c	5.94	18.5 c	0.96	3.5 c
	130.2	151	6.8	83	4.5	151	8.4	24	1.6
6	6.125	6.94	20.0 c	3.63	13.0 c	6.94	25.5 c	0.96	4.2 c
	155.6	176	9.1	92	5.9	176	11.6	24	1.9
8	8.125	7.75	26.0 c	4.25	15.6 c	7.75	45.0 c	-	-
	206.4	197	11.8	108	7.1	197	20.4		

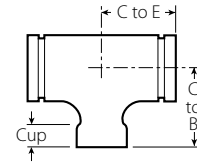
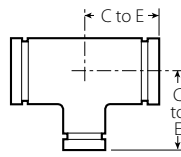
c = Bronze casting; all others, drawn copper.

## 4.1 DIMENSIONS

### Reducing Tee

No. 625 Grv. x Grv. x Grv.

No. 626 Grv. x Grv. x Cup



Size			No. 625 Grv. x Grv. x Grv.			No. 626 Grv. x Grv. x Cup						
Nominal inches	Actual Outside Diameter		C to E	C to B	Approx. Weight (Each)	C to E	C to B	Cup	Approx. Weight (Each)			
	inches	mm	inches	inches	lb kg	inches	inches	inches	lb kg			
2 × 2 × ¾	1	2.125 × 2.125 × 0.875	—	—	—	2.20	1.98	0.75	0.8			
		54.0 × 54.0 × 22.2	—	—	—	56	50	19	0.3			
		1.125	—	—	—	2.33	2.20	0.91	0.8			
		28.6	—	—	—	59	56	23	0.4			
		1.375	—	—	—	2.48	2.35	0.97	0.9			
2 × 2 × 1 ¼	1 ½	34.9	—	—	—	63	60	25	0.4			
		1.625	—	—	—	2.55	2.28	1.09	0.9			
		41.3	—	—	—	65	58	28	0.4			
		2 ½ × 2 ½ × ¾	1	2.625 × 2.625 × 0.875	—	—	—	2.26	2.23	0.75	1.0	
		66.7 × 66.7 × 22.2		—	—	—	57	57	19	0.5		
1.125	—	—		—	2.40	2.40	0.91	1.2				
28.6	—	—		—	61	61	23	0.5				
1.375	—	—		—	2.52	2.57	0.97	1.2				
2 ½ × 2 ½ × 1 ¼	1 ½	34.9	—	—	—	64	65	25	0.6			
		1.625	—	—	—	2.70	2.68	1.09	1.3			
		41.3	—	—	—	69	68	28	0.6			
		2 × 2 × ¾	1	2.125 × 3.28 × 3.38	3.28	3.38	1.6	—	—	—	—	
		53.9 × 83 × 86		83	86	0.7	—	—	—	—		
3 × 3 × ¾	1	3.125 × 3.125 × 0.875		—	—	—	2.41	2.56	0.75	1.4		
79.4 × 79.4 × 22.2		—		—	—	61	65	19	0.6			
1.125		—		—	—	2.54	2.79	0.91	1.5			
28.6		—	—	—	65	71	23	0.7				
1.375		—	—	—	2.63	2.89	0.97	1.7				
3 × 3 × 1 ¼	1 ½	34.9	—	—	—	67	73	25	0.8			
		1.625	—	—	—	2.85	3.00	1.09	1.7			
		41.3	—	—	—	73	76	28	0.8			
		2 × 2 × 2 ½	1	2.125 × 3.00 × 3.38	3.00	3.38	2.1 c	—	—	—	—	
		54.0 × 76 × 86		76	86	1.0	—	—	—	—		
3 × 3 × 2 ½	1	2.625 × 3.25 × 3.50		3.25	3.50	2.4 c	—	—	—	—		
66.7 × 83 × 89		83		89	1.1	—	—	—	—			
4 × 4 × ¾		1		4.125 × 4.125 × 0.875	—	—	—	3.04	2.97	0.75	2.8	
104.8 × 104.8 × 22.2			—	—	—	77	75	19	1.2			
1.125			—	—	—	3.10	3.22	0.91	2.9			
28.6	—		—	—	79	82	23	1.3				
1.375	—		—	—	3.25	3.47	0.97	3.0				
4 × 4 × 1 ¼	1 ½	34.9	—	—	—	83	88	25	1.4			
		1.625	—	—	—	3.35	3.65	1.09	3.2			
		41.3	—	—	—	85	93	28	1.4			
		2 × 2 × 2	1	2.125 × 3.66 × 4.13	3.66	4.13	5.3 c	—	—	—	—	
		54.0 × 93 × 105		93	105	2.4	—	—	—	—		
2 ½ × 2 ½ × 2	1	2.625 × 3.94 × 4.06		3.94	4.06	5.8 c	—	—	—	—		
66.7 × 100 × 103		100		103	2.6	—	—	—	—			
4 × 4 × 3		1		3.125 × 4.19 × 4.16	4.19	4.16	6.3 c	—	—	—	—	
79.4 × 106 × 106			106	106	2.8	—	—	—	—			

c = Bronze casting; all others, drawn copper.

## 4.1 DIMENSIONS (Continued)

### Reducing Tee

No. 625 Grv. x Grv. x Grv.

No. 626 Grv. x Grv. x Cup



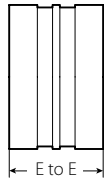
Size		No. 625 Grv. x Grv. x Grv.			No. 626 Grv. x Grv. x Cup				
Nominal inches	Actual Outside Diameter inches mm	C to E inches mm	C to B inches mm	Approx. Weight (Each) lb kg	C to E inches mm	C to B inches mm	Cup inches mm	Approx. Weight (Each) lb kg	
5 x 5 x 3	5.125 130.2 x 5.125 130.2 x	3.125 79.4	3.75 95	5.4 c 2.5	—	—	—	—	
		4.125 104.8	4.25 108	8.8 c 4.0	—	—	—	—	
6 x 6 x 2½	6.125 155.6 x 6.125 155.6 x	2.625 66.7	3.63 92	6.7 c 3.0	—	—	—	—	
		3.125 79.4	3.69 94	8.1 c 3.7	—	—	—	—	
		4.125 104.8	4.19 106	9.8 c 4.4	—	—	—	—	
		5.125 130.2	4.69 119	11.3 c 5.1	—	—	—	—	

c = Bronze casting; all others, drawn copper.

## 4.2 DIMENSIONS

### Nipple

No. 643 Copper Adapter Nipple



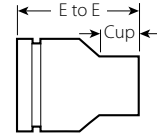
Size		No. 643 Adapter Nipple
Nominal inches	Actual inches mm	E to E inches mm
2	2.125 54.0	2.04 52
	2.625 66.7	2.04 52
3	3.125 79.4	2.04 52
	4.125 104.8	2.04 52

### 4.3 DIMENSIONS

#### Concentric Reducer

No. 650 Grv. x Grv.

No. 652 Grv. x Cup



Size		No. 650 Grv. x Grv.		No. 652 Grv. x Cup			
Nominal inches	Actual Outside Diameter inches mm	E to E inches mm	Approx. Weight (Each) lb kg	E to E inches mm	Cup inches mm	Approx. Weight (Each) lb kg	
2 × 1	2.125 × 1.125 54.0 × 28.6	—	—	2.70 69	0.91 23	0.5 0.2	
	1 ¼	—	—	3.00 76	0.97 25	0.5 0.2	
	1 ½	—	—	2.94 75	1.09 28	0.5 0.2	
2½ × 1	2.625 × 1.125 66.7 × 28.6	—	—	3.25 83	0.91 23	0.8 0.4	
	1 ¼	—	—	3.52 89	0.97 25	0.6 0.3	
	1 ½	—	—	3.45 88	1.09 28	0.7 0.3	
	2	2.125 54.0	3.29 84	1.0 0.5	3.30 84	1.34 34	0.7 0.3
3 × 1 ½	3.125 × 1.625 79.4 × 41.3	—	—	3.68 93	1.09 28	1.1 0.5	
	2	2.125 54.0	2.50 64	1.0 c 0.4	4.10 104	1.34 34	1.0 0.4
	2 ½	2.625 66.7	3.38 86	0.9 0.4	—	—	
4 × 2	4.125 × 2.125 104.8 × 54.0	4.75 121	1.7 c 0.7	4.75 121	1.34 34	2.0 0.9	
	2 ½	2.625 66.7	3.00 76	2.0 c 0.9	—	—	
	3	3.125 79.4	3.38 86	2.0 c 0.9	—	—	
5 × 3	5.125 × 3.125 130.2 × 79.4	3.88 99	6.3 c 2.9	—	—	—	
	4	4.125 104.8	3.38 86	6.3 c 2.9	—	—	
6 × 3	6.125 × 3.125 155.6 × 79.4	4.38 111	6.4 c 2.9	—	—	—	
	4	4.125 104.8	3.88 99	6.5 c 2.9	—	—	
	5	5.125 130.2	3.38 86	6.7 c 3.0	—	—	
8 × 6	8.125 × 6.125 206.4 × 155.6	5.00 127	10.0 c 4.5	—	—	—	

## 5.0 PERFORMANCE

Size	Type "K" ASTM B88			Type "L" ASTM B88			Type "M" ASTM B88			DWV ASTM B306		
	Nominal inches Actual Tubing mm	Wall Thickness inches mm	Max. Joint. Work. Press. psi kPa	Max. Permis. End Load lb N	Wall Thickness inches mm	Max. Joint. Work. Press. psi kPa	Max. Permis. End Load lb N	Wall Thickness inches mm	Max. Joint. Work. Press. psi kPa	Max. Permis. End Load lb N	Wall Thickness inches mm	Max. Joint. Work. Press. psi kPa
2 54.0	0.083 2.1	300 2065	1065 4737	0.070 1.8	300 2065	1065 4737	0.058 1.5	250 1725	890 3959	0.042 1.1	100 690	354 1575
2½ 66.7	0.095 2.4	300 2065	1625 7228	0.080 2.0	300 2065	1625 7228	0.065 1.7	250 1725	1350 6005	-	-	-
3 79.4	0.109 2.8	300 2065	2300 10231	0.090 2.3	300 2065	2300 10231	0.072 1.8	250 1725	1415 6294	0.045 1.1	100 690	765 3403
4 104.8	0.134 3.4	300 2065	4005 17815	0.110 2.8	300 2065	4005 17815	0.095 2.4	250 1725	3340 14857	0.058 1.5	100 690	1335 5938
5 130.2	0.160 4.1	300 2065	6190 27534	0.125 3.2	300 2065	6190 27534	0.109 2.8	200 1375	4125 18349	0.072 1.8	100 690	2060 9163
6 155.6	0.192 4.9	300 2065	8840 39322	0.140 3.6	300 2065	8840 39322	0.122 3.1	200 1375	5890 26200	0.083 2.1	100 690	2945 13100
8 206.4	0.271 6.9	300 2065	15550 69170	0.200 5.1	300 2065	15550 69170	0.170 4.3	200 1375	10370 46128	0.109 2.8	100 690	5180 23042

**NOTE**

- Working Pressure and End Load are total, from all internal and external loads, based on the indicated Type of hard drawn copper tubing, standard roll grooved in accordance with Victaulic specifications.

## 6.0 NOTIFICATIONS



- DO NOT use grooving rolls intended for steel, stainless steel, aluminum, or PVC pipe. Failure to follow this instruction could cause joint leakage, resulting in property damage.**

## 7.0 REFERENCE MATERIALS

- [22.01: Victaulic Copper Connection Systems for Copper Tubing \(CTS\)](#)
- [22.03: Victaulic Style 641 Vic-Flange Adapter for Copper](#)
- [22.07: Victaulic Copper Testing Data](#)
- [22.08: Victaulic British Standard Copper Products Design](#)
- [22.09: Victaulic DIN Standard Copper Products Design Data](#)
- [22.10: Victaulic Australian Standard Copper Products](#)
- [22.13: Victaulic Style 607 QuickVic® Rigid Coupling](#)
- [22.15: Victaulic Installation-Ready™ Fittings for Grooved Copper Tube](#)
- [24.01: Victaulic Pipe Preparation Tools](#)
- [I-600: Victaulic Field Assembly and Installation Instruction Handbook for Copper Products](#)
- [I-670/671: Victaulic Style 670 \(90° Elbow\) and Style 671 \(45° Elbow\) Installation-Ready™ Fittings for Copper Tubing Installation Instructions.](#)

**User Responsibility for Product Selection and Suitability**

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

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**Note**

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

**Installation**

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at [www.victaulic.com](http://www.victaulic.com).

**Warranty**

Refer to the Warranty section of the current Price List or contact Victaulic for details.

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