



Patented

## 1.0 PRODUCT DESCRIPTION

### COUPLING

#### Available Sizes

- 54 – 159 mm

#### Tube Material

- EN 1057 R250 half hard copper tubing

#### Operating Temperature

- -30°F to +230°F/-34°C to +110°C

#### Maximum Working Pressure

- 21 bar/2100 kPa

#### NOTE

- This pressure rating is for a pipe to pipe connection only. When the Style 606-EN rigid coupling is used in combination with a EN 1057 fitting, the maximum pressure rating is 16 bar/1600 kPa.

#### Function

- Provides a rigid pipe joint designed to restrict axial and angular movement on copper tubing.
- This product is specifically designed to join roll grooved EN 1057 copper tubing.

#### Tube Preparation

- Use standard Victaulic *Vic-Easy* roll grooving tools to field or shop roll groove copper tubing from 54 – 159 mm. Tools must be equipped only with Victaulic rolls designed specifically for grooving EN 1057 copper tubing. DO NOT use rolls intended for steel or stainless steel pipe or U.S. copper tubing.
- A Go/No-Go Groove Diameter Cable for Copper Tube is available for taking circumferential measurements. See [publication 24.01](#): Victaulic Pipe Preparation Tools for more information.

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

## 1.0 PRODUCT DESCRIPTION (Continued)

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### FITTINGS

#### Available Sizes

- 54 – 159 mm

#### Maximum Working Pressure

- 16 bar/1600 kPa

#### Function

- Connects pipe, provides change in direction, and adapts sizes or components in copper tubing systems.
- All fittings are supplied with the EN 1057 Standard Copper Groove profile. Fittings are exclusively for use with Victaulic couplings, valves, accessories and pipe which feature ends formed with the EN 1057 Standard Copper Groove profile.

#### Tube OD Requirements

- Victaulic copper fittings are designed for EN 1057 R250 half hard copper tubing sizes.

### FLANGE ADAPTER

#### Available Sizes

- 54 – 159 mm

#### Maximum Working Pressure

- 16 bar/1600 kPa

#### Function

- Designed for directly incorporating flanged components with PN10 and PN16 into a grooved pipe system.

#### Tube OD Requirements

- Victaulic copper flange adapters are designed for EN 1057 R250 half hard copper tubing sizes.

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## 2.0 CERTIFICATION/LISTINGS

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Not specified – contact Victaulic with any questions.

### 3.0 SPECIFICATIONS - MATERIAL

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#### COUPLING

**Housing:** Ductile iron conforming to ASTM A536 Grade 65-45-12.

**Housing Coating Color:** Copper.

**Gasket:<sup>1</sup> Grade “EW” EPDM**

EPDM (Green "W" color code). May be specified for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. WRAS approved material to BS 6920 for cold and hot potable water service up to +149°F/+65°C. UL Classified to ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT COMPATIBLE FOR USE WITH PETROLEUM SERVICES OR STEAM SERVICES.

**Bolts/Nuts:** Carbon steel oval neck track bolts meeting the mechanical property requirements of ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563M Class 9 (metric – hex nuts). Track bolts and hex nuts are zinc electroplated per ASTM B633 FE/ZN5, finish Type II (metric).

#### FITTINGS

Wrought copper fittings manufactured to connect grooved copper tube in accordance with EN 1057.

#### FLANGE ADAPTER

**Housing:** Ductile iron conforming to ASTM A-536 Grade 65-45-12.

**Housing Coating:** Copper colored alkyd enamel.

**Gasket:<sup>1</sup> Grade “EW” EPDM**

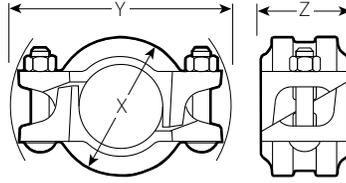
EPDM (Green "W" color code). May be specified for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. WRAS approved material to BS 6920 for cold and hot potable water service up to +149°F/+65°C. UL Classified to ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. NOT COMPATIBLE FOR USE WITH PETROLEUM SERVICES OR STEAM SERVICES.

<sup>1</sup> Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest [Victaulic Gasket Selection Guide](#) for specific gasket service guidelines and for a listing of services which are not compatible.

## 4.0 DIMENSIONS

### Rigid Coupling

#### Style 606-EN



Size	Bolt/Nut <sup>2</sup>		Dimensions			Weight
Nominal	Qty.	Size	X	Y	Z	Approx. (Each)
mm		mm	mm inches	mm inches	mm inches	kg lb
54	2	M10 x 51	81 3.17	118 4.63	46 1.80	0.7 1.5
66.7	2	M10 x 51	93 3.67	130 5.13	46 1.80	0.8 1.8
76.1	2	M12 x 70	103 4.05	152 5.97	46 1.80	1.1 2.4
108	2	M12 x 70	138 5.44	181 7.14	49 1.94	1.4 3.1
133	2	M16 x 83	165 6.50	229 9.01	50 1.97	2.2 4.9
159	2	M16 x 83	191 7.51	255 10.02	49 1.94	2.3 5.1

<sup>2</sup> Number of bolts required equals number of housing segments.

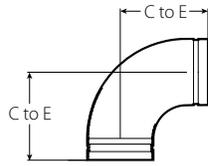
## 4.1 DIMENSIONS

### Elbows, Tee

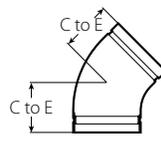
No. 610-EN 90° Elbow

No. 611-EN 45° Elbow

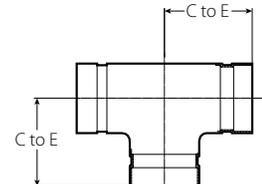
No. 620-EN Tee



No. 610-EN



No. 611-EN



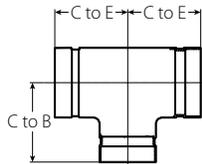
No. 620-EN

Size	No. 610-EN 90° Elbow		No. 611-EN 45° Elbow		No. 620-EN Tee	
	Nominal mm	C to E mm inches	Approx. Weight (Each) kg lb	C to E mm inches	Approx. Weight (Each) kg lb	C to E mm inches
54	74 2.91	0.5 1.0	56 2.19	0.4 0.9	68 2.69	0.5 1.1
66.7	84 3.31	0.7 1.6	59 2.32	0.5 1.1	81 3.19	0.8 1.8
76.1	101 3.98	0.7 1.6	56 2.20	0.4 0.9	80 3.15	0.8 1.8
108	143 5.63	1.8 3.9	80 3.15	1.1 2.4	108 4.25	2.3 5.1
133	168 6.61	2.6 5.6	90 3.54	1.6 3.4	125 4.92	3.2 7.1
159	194 7.64	4.4 9.7	101 3.98	2.5 5.4	135 5.31	4.7 10.3

## 4.2 DIMENSIONS

### Reducing Tee

No. 625-EN



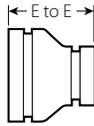
No. 625-EN

Size		C to E mm inches	C to B mm inches	Approx. Weight (Each) kg lb
Nominal mm				
66.7	x 54.0	70	76	0.6
		2.76	2.99	1.3
76.1	x 54.0	72	82	0.8
		2.84	3.23	1.8
	66.7	78	82	0.9
		3.07	3.23	2.0
108.0	x 54.0	74	99	1.7
		2.91	3.90	3.7
	66.7	80	99	1.8
		3.15	3.90	3.9
76.1	85	99	2.0	
	3.35	3.90	4.4	
159.0	x 108.0	106	130	5.5
		4.19	5.13	12.1

### 4.3 DIMENSIONS

#### Concentric Reducer

##### No. 650-EN



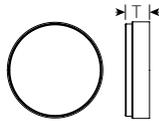
No. 650-EN

Size		E to E mm inches	Approx. Weight (Each) kg lb
Nominal mm			
66.7	x 54.0	83 3.27	0.2 0.5
76.1	x 66.7	86 3.38	0.6 1.3
108.0	x 76.1	86 3.38	0.6 1.3
159.0	x 108.0	98 3.88	1.2 2.6
	133.0	86 3.38	1.1 2.4

### 4.4 DIMENSIONS

#### Cap

##### No. 660-EN



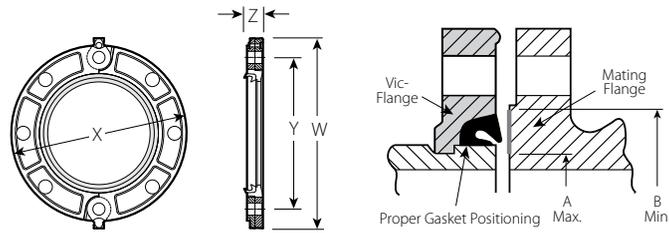
No. 660-EN

Size	Dimensions	Approx. Weight (Each) (Bronze casting) kg lb
Nominal mm	Thickness T mm inches	
54	24 0.96	0.5 1.1
66.7	24 0.96	0.6 1.3
76.1	24 0.96	0.7 1.5
108	24 0.96	1.1 2.4
133	24 0.96	1.3 2.9
159	24 0.96	2.5 5.5

## 4.5 DIMENSIONS

### Vic-Flange Adapter

#### Style 641-EN



Note: The shaded area of the mating face (shown above at right) must be free from gouges, undulations or deformities of any type for proper sealing.

Size	Bolt/Nut <sup>3</sup>		Flange Dimensions				Seal Surface		Approx. Weight (Each)
Nominal mm	Qty.	Size mm inches	W mm inches	X mm inches	Y mm inches	Z mm inches	A Maximum mm inches	B Minimum mm inches	
54	4	M16	175 6.89	152 6.00	125 4.92	20 0.78	54 2.13	78 3.07	1.7 3.8
66.7	4	M16	200 7.87	178 7.00	145 5.71	22 0.88	67 2.64	92 3.62	2.1 4.6
76.1	4	M16	208 8.19	185 7.28	145 5.71	20 0.78	76 2.99	101 3.98	2.5 5.5
76.1	8	M16	215 8.48	200 7.87	160 6.30	22 0.88	76 2.99	101 3.98	2.5 5.5
108	8	M16	243 9.57	220 8.66	180 7.09	24 0.94	108 4.25	133 5.24	3.1 6.8
133	8	M16	274 10.78	249 9.84	210 8.27	25 1.00	133 5.24	160 6.30	3.9 8.6
159	8	M16	307 12.09	285 11.22	240 9.45	26 1.02	159 6.26	186 7.32	4.5 9.9

<sup>3</sup> Total bolts required to be supplied by installer. Longer bolts are required when Vic-Flange adapter is utilized with wafer-type valves.

#### NOTE

- IMPORTANT NOTE: Style 641-EN Vic-Flange adapters provide rigid joints when used on pipe with standard cut or roll groove dimensions and consequently allow no linear or angular movement at the joint.

## 5.0 PERFORMANCE

### Rigid Coupling

#### Style 606-EN

EN 1057 R250 Half Hard Copper Tubing				
Tubing Actual Size mm inches	Wall Thickness mm inches	Allowable Pipe End Separation <sup>4</sup> mm inches	Maximum Joint Working Pressure <sup>5</sup> bar kPa	Maximum End Load <sup>5</sup> N lb
54.0 2.125	1.2 0.05	0.76 0.03	16 1600	3664 824
54.0 2.125	2.0 0.08	0.76 0.03	21 <sup>6</sup> 2100	4809 1081
66.7 2.625	1.2 0.05	0.76 0.03	16 1600	5241 1178
66.7 2.625	2.0 0.08	0.76 0.03	21 <sup>6</sup> 2100	7338 1650
76.1 3.000	1.5 0.06	0.76 0.03	16 1600	7277 1636
76.1 3.000	2.0 0.08	0.76 0.03	19 <sup>6</sup> 1900	8642 1943
108.0 4.250	1.5 0.06	4.30 0.17	18 <sup>6</sup> 1800	16490 3707
108.0 4.250	2.5 0.10	4.30 0.17	18 1800	9161 2059
133.0 5.236	1.5 0.06	4.60 0.18	16 1600	20839 4685
133.0 5.236	3.0 0.12	4.60 0.18	16 1600	22229 4997
159.0 6.260	2.0 0.08	4.60 0.18	16 1600	29783 6695
159.0 6.260	3.0 0.12	4.60 0.18	16 1600	29783 5803

<sup>4</sup> The allowable pipe end separation dimension shown is for system layout purposes only. Style 606-EN rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

<sup>5</sup> Working Pressure and End Load are total, from all internal and external loads based on copper tubing of the wall thickness indicated, roll grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

<sup>6</sup> This pressure rating is for a pipe to pipe connection only. When the Style 606-EN rigid coupling is used in combination with a EN 1057 fitting, the maximum pressure rating is 16 bar/1600 kPa.

#### NOTE

- FOR ONE-TIME FIELD TEST ONLY, the Style 606-EN joint may be pressure tested to 1 ½ times the applicable working pressure listed above.

## 5.1 PERFORMANCE

### Vic-Flange Adapter

#### Style 641-EN

Tubing Actual Size mm inches	Wall Thickness mm inches	Maximum Joint Working Pressure <sup>5</sup> bar kPa	Maximum End Load <sup>5</sup> N lb
54.0 2.125	2.0 0.08	16 1600	3661 823
66.7 2.625	1.2 0.05	16 1600	5586 1256
66.7 2.625	2.0 0.08	16 1600	5586 1256
76.1 3.000	1.5 0.06	16 1600	7297 1640
76.1 3.000	2.0 0.08	16 1600	7297 1640
108.0 4.250	1.5 0.06	16 1600	14644 3292
108.0 4.250	2.5 0.10	16 1600	14644 3292
133.0 5.236	1.5 0.06	16 1600	22227 4997
133.0 5.236	3.0 0.12	16 1600	22227 4997
159.0 6.260	2.0 0.08	16 1600	31771 7142
159.0 6.260	3.0 0.12	16 1600	31771 7142

<sup>5</sup> Working Pressure and End Load are total, from all internal and external loads based on copper tubing of the wall thickness indicated, roll grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

#### NOTE

- FOR ONE-TIME FIELD TEST ONLY, the Style 641-EN joint may be pressure tested to 1 ½ times the applicable working pressure listed above.

#### Flange Adapter notes:

Style 641-EN *Vic-Flange* adapters require a smooth hard surface at the mating flange face for effective sealing. Some applications for which the *Vic-Flange* adapter is otherwise well suited do not provide an adequate mating surface. In such cases, it is recommended that a flange washer be inserted between the *Vic-Flange* adapter and the mating flange to provide the necessary sealing surface.

#### NOTE:

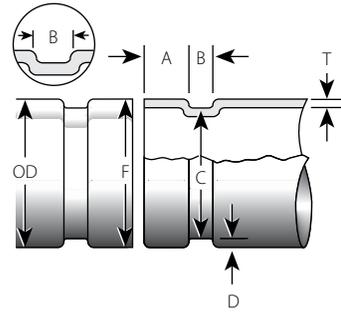
- Style 641-EN *Vic-Flange* adapters are supplied without a flange washer. If you require a flange washer, specify it clearly on your order.

Typical applications where a flange washer shall be used are:

- When mating to a serrated flange:** A flange gasket should be used adjacent to the serrated flange and then the flange washer is inserted between the *Vic-Flange* adapter and the flange gasket.
- When mating to a rubber faced flange:** The flange washer is placed between the *Vic-Flange* adapter and the rubber-faced flange.
- When mating to components (valves, strainers, etc.) where the flange face component has an insert:** Follow the same arrangement as in Application 1. When connecting *Vic-Flange* adapters to iron body components, use of a phenolic washer and a bolt isolation kit is recommended.
- When mating to a wafer valve:** When typical valves are rubber-lined and partially rubber-faced (smooth or not), the flange washer is placed between the valve and the *Vic-Flange* adapter.

## 5.2 PERFORMANCE

### Copper Tubing to European Standards - EN 1057



Size	Dimensions									Groove Depth "D" <sup>11</sup> (ref.) mm inches	Max Allow. Flare Diameter <sup>12</sup> "F" mm inches
	Actual OD <sup>7</sup>		Gasket Seat "A" <sup>8</sup>			Groove Width "B" <sup>9</sup>		Groove Diameter "C" <sup>10</sup>			
Nominal mm	Max. mm inches	Min. mm inches	Basic mm inches	Max. mm inches	Min. mm inches	Max. mm inches	Min. mm inches	Max. mm inches	Min. mm inches		
54	54.07 2.129	53.93 2.123	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	51.51 2.028	51.00 2.008	1.25 0.049	55.2 2.173
66.7	66.77 2.629	66.63 2.623	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	64.14 2.525	63.63 2.505	1.27 0.050	67.9 2.673
76.1	76.17 2.999	76.03 2.993	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	73.41 2.890	72.90 2.870	1.35 0.053	77.4 3.045
108	108.07 4.255	107.93 4.249	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	104.80 4.126	104.29 4.106	1.60 0.063	109.3 4.302
133	133.20 5.244	132.80 5.228	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	129.29 5.090	128.78 5.070	1.85 0.073	135.8 5.346
159	159.20 6.280	158.80 6.252	15.87 0.625	16.64 0.655	15.11 0.595	8.38 0.330	7.62 0.300	155.30 6.114	154.79 6.094	1.85 0.073	161.8 6.370

<sup>7</sup> Outside diameter: The outside diameter and tolerances of roll grooved tubing shall be in accordance with the standard referenced above. The maximum allowable tolerance from square cut ends is 0.030"/0.76 mm for 2 – 3"/50 – 80 mm; 0.045"/1.14 mm for 4 – 8"/100 – 200 mm, measured from true square line.

<sup>8</sup> Gasket seat: The tubing surface shall be free from indentations, roll marks, and projections from the end of the tubing to the groove to provide a leak-tight seal for the gasket. All loose scale, dirt, chips, and grease must be removed.

<sup>9</sup> Groove width: The bottom of the groove should be free of loose dirt, chips, and scale that may interfere with proper coupling assembly.

<sup>10</sup> Groove diameter: The groove must be uniform depth for the entire tubing circumference. Groove must be maintained within the "C" diameter tolerance listed.

<sup>11</sup> Groove depth: For reference only. Groove must conform to the groove diameter "C" listed.

<sup>12</sup> Maximum allowable end flare diameter. Measured at the most extreme tubing end diameter.

## 6.0 NOTIFICATIONS

<b>⚠ WARNING</b>					
					
<ul style="list-style-type: none"><li>• Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.</li><li>• Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.</li><li>• Wear safety glasses, hardhat, and foot protection.</li></ul> <p>Failure to follow these instructions could result in death or serious personal injury and property damage.</p>					

## 7.0 REFERENCE MATERIALS

[05.01: Victaulic Seal Selection Guide](#)

[24.01: Victaulic Pipe Preparation Tools](#)

[25.06: Victaulic Copper Tubing Roll Groove Specifications](#)

[I-600: Victaulic Field Assembly and Installation Instruction Handbook for Copper Products](#)

[I-ENDCAP: Victaulic End Cap Installation Safety 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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