



Product Description:

The Victaulic copper connection system is for joining EN 1057 R250 (half hard) temper copper tubing in 54.0 – 159.0 mm sizes.

The system uses a proven pressure-responsive synthetic rubber gasket to seal on the outside diameter of the tubing. This means no heat is required and no lead is used. The coupling housing surrounds the gasket gripping into grooves rolled into the tubing. The housing is isolated from the fluid, but provides the gripping strength for pressure ratings up to 10 bar / 1000 kPa when installed on EN 1057 R250 (half hard) temper copper tubing.

Compatible wrought copper fittings in 90° and 45° elbows, tees, and reducing configurations are supplied grooved, ready for installation.

A Vic-Flange® adapter works in a similar manner with a pressure-responsive gasket and flange design which mates to PN10/PN16 flanged products. This permits easy adapting of flanged components.

Standard Victaulic Vic-Easy® roll grooving tools can be used to field or shop roll groove copper tubing from 54.0 – 159.0 mm. Tools must be equipped only with Victaulic rolls designed specifically for grooving EN 1057 copper tube. **DO NOT use rolls intended for steel or stainless steel pipe or U.S. copper tubing.**

Job/Owner

System No.	
Location	

Contractor

Submitted By	
Date	

Engineer

Spec Section	
Paragraph	
Approved	
Date	

Material Specifications:

Coupling Housing: Ductile iron conforming to ASTM A-536, grade 65-45-12. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Coupling Housing Coating: Copper colored alkyd enamel.

Coupling Bolts/Nuts: Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A-449 and physical requirements of ASTM A-183.

Coupling Gasket¹:

Grade "EW" EPDM

EPDM (Green W code). Temperature -30°F to +230°F / -34°C to +110°C. Recommended for hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL classified in accordance with ANSI/NSF 61 for cold +73°F/+23°C and hot +180°F/+82°C potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.²

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. Ductile iron conforming to ASTM A-395, grade 65-45-15, is available upon special request.

Flange Adapter Housing Coating: Copper colored alkyd enamel

Flange Adapter Gasket¹:

Grade "EW" EPDM

EPDM (Green W color code). Temperature range -30°F to +230°F/-34°C to +110°C. Recommended for hot water service within the specific temperature range plus a variety of dilute acids, oil-free air and many chemical services. UL Classified to ANSI/NSF 61 and NSF 372 for cold +86°F/+30°C and hot +180°F/+82°C potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.²

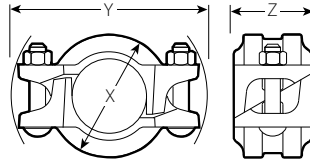
¹ Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

² This is a general gasket material description. Always reference the "Approvals/Listings" section of the actual product's submittal.

Dimensions:

Rigid Coupling

Style 606-EN



Tubing Actual Size mm inches	Dimensions			Bolt/Nut ³ No. – size mm	Approx. Weight Each kg lbs.
	X mm inches	Y mm inches	Z mm inches		
54.0 2.125	81 3.17	118 4.63	46 1.80	2 – M10 × 51	0.7 1.54
66.7 2.625	93 3.67	130 5.13	46 1.80	2 – M10 × 51	0.9 1.98
76.1 3.000	103 4.05	152 5.97	46 1.80	2 – M12 × 70	1.1 2.42
108.0 4.250	138 5.44	181 7.14	49 1.94	2 – M12 × 70	1.7 3.75
133.0 5.236	165 6.50	229 9.01	50 1.97	2 – M16 × 83	2.5 5.51
159.0 6.260	191 7.51	255 10.02	49 1.94	2 – M16 × 83	2.9 6.39

³ Number of bolts required equals number of housing segments.

Performance:

Rigid Coupling

Style 606-EN

Tubing Actual Size mm inches	Wall Thickness mm inches	Allowable Pipe End Separation ⁴ mm inches	Max. Joint Working Pressure ^{5,6} kPa psi	Max. End Load ⁶ N lbs.
54.0 2.125	1.2 0.05	0.76 0.03	1600 232	3664 824
54.0 2.125	2.0 0.08	0.76 0.03	2100 305	4809 1081
66.7 2.625	1.2 0.05	0.76 0.03	1500 220	5241 1178
66.7 2.625	2.0 0.08	0.76 0.03	2100 305	7338 1650
76.1 3.000	1.5 0.06	0.76 0.03	1600 232	7277 1636
76.1 3.000	2.0 0.08	0.76 0.03	1900 275	8642 1943
108.0 4.250	1.5 0.06	4.30 0.17	1800 260	16490 3707
133.0 5.236	1.5 0.06	4.60 0.18	1500 220	20839 4685
133.0 5.236	3.0 0.12	4.60 0.18	1600 232	22229 4997
159.0 6.260	2.0 0.08	4.60 0.18	1500 220	29783 6695
159.0 6.260	3.0 0.12	4.60 0.18	1500 220	29783 5803

⁴ For field installation only. Style 606-EN couplings are essentially rigid and do not accommodate expansion/contraction.

⁵ When combined with Victaulic wrought copper fittings the maximum joint working pressure rating for Style 606-EN couplings is reduced to 10 bar / 1,000 kPa.

⁶ 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 specification. Contact Victaulic for performance on other pipe.

NOTE: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increases to 1½ times the figures shown.

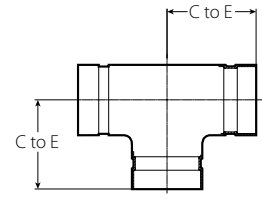
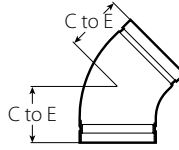
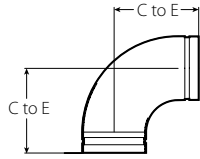
Dimensions:

Elbows, Tee

No. 610-EN 90° Elbow

No. 611-EN 45° Elbow

No. 620-EN Tee

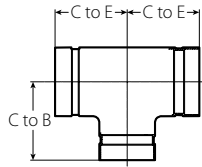


Tubing Actual Size mm inches	No. 610-EN 90° Elbow		No. 611-EN 45° Elbow		No. 620-EN Tee	
	C to E mm inches	Approx. Weight Each kg lbs.	C to E mm inches	Approx. Weight Each kg lbs.	C to E mm inches	Approx. Weight Each kg lbs.
54.0 2.125	74 2.91	0.4 0.9	56 2.19	0.4 0.9	68 2.69	0.5 1.1
66.7 2.625	84 3.31	0.6 1.3	59 2.32	0.5 1.1	81 3.19	0.8 1.8
76.1 3.000	101 3.98	0.6 1.3	56 2.20	0.4 0.9	80 3.15	0.6 1.3
108.0 4.250	143 5.63	1.8 3.9	80 3.15	1.1 2.4	108 4.25	2.3 5.1
133.0 5.236	168 6.61	2.6 5.6	90 3.54	1.6 3.4	125 4.92	3.2 7.1
159.0 6.260	194 7.64	4.4 9.7	101 3.98	2.5 5.4	135 5.31	4.7 10.3

NOTE: Wrought copper fittings manufactured to connect copper pipe in accordance with EN1057.

Reducing Tee

No. 625-EN



Tubing Actual Size mm inches	C to E mm inches	C to B mm inches	Approx. Weight Each kg lbs.
66.7 x 54.0 2.625 x 2.125	70 2.76	76 2.99	0.8 1.7
76.1 x 66.7 3.000 x 2.625	78 3.07	82 3.23	0.9 2.0
108.0 x 76.1 4.250 x 3.000	85 3.35	99 3.90	1.8 3.9
159.0 x 108.0 6.260 x 4.250	106 4.19	130 5.13	4.0 8.9

Cap

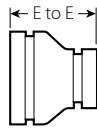
No. 660-EN



Tubing Actual Size mm inches	Dimensions	Approx. Weight Each (Bronze casting) kg lbs.
	Thickness T mm inches	
54.0 2.125	24 0.96	0.5 1.1
66.7 2.625	24 0.96	0.6 1.3
76.1 3.000	24 0.96	0.7 1.5
108.0 4.250	24 0.96	1.1 2.4
133.0 5.236	24 0.96	1.3 2.9
159.0 6.260	24 0.96	2.5 5.5

Concentric Reducer

No. 650-EN

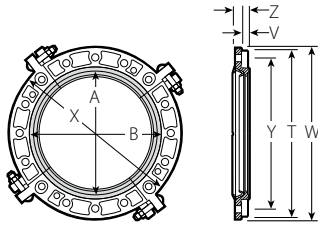


Tubing Actual Size mm inches	E to E mm inches	Approx. Weight Each kg lbs.
66.7 x 54.0 2.625 x 2.125	83 3.27	0.2 0.5
76.1 x 66.7 3.000 x 2.625	86 3.38	0.6 1.3
108.0 x 76.1 4.250 x 3.000	86 3.38	0.6 1.3
133.0 x 108.0 5.236 x 4.250	86 3.38	0.7 1.5
159.0 x 108.0 6.260 x 4.250	98 3.88	1.2 2.6
x 133.0 x 5.236	86 3.38	1.1 2.4

Dimensions:

Vic®-Flange Adapter

Style 641-EN



Note: Gray area of mating face must be free from gouges, undulations or deformities of any type for effective sealing.

Tubing Actual Size mm inches	Flange Dimensions				Seal Surface		Bolt/Nut ⁷ No. – size mm	Approx. Weight Each kg lbs.
	W mm inches	X mm inches	Y mm inches	Z mm inches	A Max. mm inches	B Min. mm inches		
54.0 2.125	175 6.89	152 6.00	125 4.92	20 0.78	54 2.13	78 3.07	4 – M16	1.7 3.75
66.7 2.625	200 7.87	178 7.00	145 5.71	22 0.88	67 2.64	92 3.62	4 – M16	2.1 4.63
76.1 ⁸ 3.000	208 8.19	185 7.28	145 5.71	20 0.78	76 2.99	101 3.98	4 – M16	2.5 5.51
76.1 ⁸ 3.000	215 8.48	200 7.87	160 6.30	22 0.88	76 2.99	101 3.98	8 – M16	2.5 5.51
108.0 4.250	243 9.57	220 8.66	180 7.09	24 0.94	108 4.25	133 5.24	8 – M16	3.1 6.84
133.0 5.236	274 10.78	249 9.84	210 8.27	25 1.00	133 5.24	160 6.30	8 – M16	3.9 8.60
159.0 6.260	307 12.09	285 11.22	240 9.45	26 1.02	159 6.26	186 7.32	8 – M16	4.5 9.92

⁷ Total bolts required to be supplied by installer. Bolt sizes for conventional flange-to-flange connection. Longer bolts are required when Vic-Flange adapter is utilized with wafer-type valves.

NOTES:

Style 641-EN Vic-Flange adapters for copper tubing provide rigid joints when used on copper tubing roll grooved to Victaulic dimensions and consequently allow no linear or angular movement at the joint.

Because of the outside flange dimension, Vic-Flange adapters should not be used within 90° of one another on a standard fitting. When wafer or lug-type valves are used adjoining a Victaulic fitting, check disc dimensions to assure proper clearance.

Vic-Flange adapters should not be used as anchor points for tie-rods across non-restrained joints. Mating rubber faced flanges, valves, etc., require the use of a Vic-Flange Washer.

Vic-Flange gaskets must always be assembled with the color coded lip on the pipe and the other lip facing the mating flange.

All flanges listed are fit for PN10/PN16.

Performance:

Vic-Flange Adapter

Style 641-EN

Tubing Actual Size mm inches	Wall Thickness mm inches	Max. Joint Working Pressure ^{8,9}		Max. End Load ⁹	
		kPa	psi	N	lbs.
54.0 2.125	1.2 0.05	1600 232		3664 824	
54.0 2.125	2.0 0.08	2100 305		4809 1081	
66.7 2.625	1.2 0.05	1000 145		3494 785	
66.7 2.625	2.0 0.08	2100 305		7338 1650	
76.1 3.000	1.5 0.06	1600 232		7277 1636	
76.1 3.000	2.0 0.08	1725 250		7846 1764	
108.0 4.250	1.5 0.06	1000 145		9161 2059	
108.0 4.250	2.5 0.10	1725 250		15803 3553	
133.0 5.236	1.5 0.06	1000 145		13893 3123	
133.0 5.236	3.0 0.12	1600 232		22229 4997	
159.0 6.260	2.0 0.08	1000 145		19856 4464	
159.0 6.260	3.0 0.12	1300 189		25812 5803	

⁸ 100 kPa = 1 bar

⁹ 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 specification. Contact Victaulic for performance on other pipe.

NOTE: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increases to 1½ times the figures shown.

Flange washer notes:

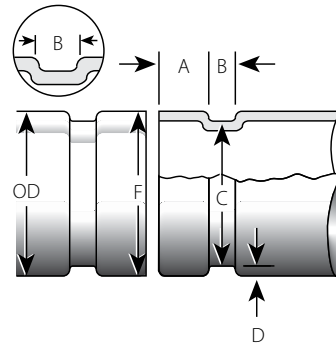
Style 641-EN Vic-Flange adapters require a smooth hard surface at the mating flange face for effective sealing. Some applications for which the Vic-Flange adapter is otherwise well suited do not provide an adequate mating surface. In such cases, it is recommended that a Flange Washer be inserted between 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. Installation procedures vary by market; consult your Victaulic representative for specific details.

Typical applications where a Flange Washer should be used are:

- 1 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.
- 2 When mating to a rubber faced flange:** The Flange Washer is placed between the Vic-Flange adapter and the rubber faced flange.
- 3 When mating to components (valves, strainers, etc.) where the component flange face has an insert:** follow the same arrangement as in Application 1. When connecting Vic-Flange adapters to iron body components, use of a bolt isolation kit is recommended.
- 4 When mating to a wafer valve:** Where 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 When mating AWWA Vic-Flange adapters or IPS Vic-Flange adapters to copper tubing Vic-Flange adapters:** The Flange Washer is placed between the two Vic-Flange adapters. If one flange is not a Vic-Flange adapter (e.g. flanged valve), then a flange gasket must be placed adjacent to that flange and the Flange Washer inserted between the flange gasket and the Vic-Flange adapter.

Groove Specifications:
EN 1057 Standard Copper



Actual O.D. mm inches			Dimensions mm inches				
			Gasket Seat "A"	Groove Width "B"	Groove Diameter "C"	Groove Depth "D"	Maximum Allowable "F" Flare Diameter
Basic	Min.	Max.	± 0.8 ± 0.03	$+ 0.76/- 0$ $+ 0.03/- 0$	$+ 0/- 0.51$ $+ 0/- 0.02$	Ref. Only	
54.0 2.125	53.63 2.123	54.07 2.129	15.88 0.625	7.62 0.300	51.51 2.028	1.25 0.049	56.39 2.220
66.7 2.625	66.63 2.623	66.77 2.629	15.88 0.625	7.62 0.300	64.14 2.525	1.27 0.050	69.09 2.720
76.1 3.000	76.03 2.993	76.17 2.999	15.88 0.625	7.62 0.300	73.41 2.890	1.35 0.053	78.61 3.095
108.0 4.250	107.93 4.249	108.07 4.255	15.88 0.625	7.62 0.300	104.80 4.126	1.60 0.063	110.54 4.352
133.0 5.236	132.80 5.228	133.20 5.244	15.88 0.625	7.62 0.300	129.29 5.090	1.85 0.073	135.79 5.346
159.0 6.260	158.80 6.252	159.20 6.268	15.88 0.625	7.62 0.300	155.30 6.114	1.85 0.073	161.80 6.370

Outside diameter: The outside diameter of roll grooved tubing shall not vary more than the tolerance listed. The maximum allowable tolerance from square cut ends is 0,76 mm (0.030") for 54,0 - 76,1 mm; 1,1 mm (0.045") for 108,0 - 159,0 mm, measured from a true square line.

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 seat for the gasket. All loose scale, dirt, chips and grease must be removed.

Groove width: Bottom of groove to be free of loose dirt, chips and scale that may interfere with proper coupling assembly.

Groove outside diameter: The groove must be uniform depth for the entire tubing circumference. Groove must be maintained within the "C" diameter tolerance listed.

Groove depth: For reference only. Groove must conform to the groove diameter "C" listed.

Maximum allowable end flare diameter: Measured at the most extreme tubing end diameter.

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, 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.

Warranty

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

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