

Victaulic® QuickVic™ Flexible Coupling

Style 177N

Victaulic®
06.24



2 – 8"/DN50 – DN200

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 8"/DN50 – DN200

Pipe Material

- Carbon steel; Stainless steel
- For exceptions, reference section 6.0 Notifications

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) up to 1000 psi/6900 kPa
- Working pressure dependent on material, wall thickness and size of pipe

Operating Temperature

- Dependent on gasket selection from section 3.0

Function

- Joins roll or cut grooved pipe, grooved fittings, valves, and accessories
- Provides a flexible pipe joint designed to accommodate a limited amount of linear and/or angular movement

NOTE

- Applications that require NSF 61-approved products should specify the Victaulic Installation-Ready™ Flexible Coupling Style 877N ([publication 06.29](#)).

Pipe Preparation

- Cut or roll grooved in accordance with [publication 25.01](#): Victaulic Original Groove System (OGS) Specifications

2.0 CERTIFICATIONS/LISTINGS



EN 10311
CPR (EU)
No. 305/2011

NOTE

- See [publication 10.01](#): Victaulic Products for Fire Protection Piping Systems - Regulatory Approval Reference Guide for details.

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

3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A536, Grade 65-45-12. Ductile iron conforming to ASTM A395, Grade 65-45-15 available upon special request.

Housing Coating: (specify choice)

- ☐ Standard: Orange enamel.
- ☐ Optional: Hot dipped galvanized conforming to ASTM A123.
- ☐ Optional: Contact Victaulic with your requirements for other coatings.

Gasket: (specify choice¹)

☐ **Grade "EHP" EPDM**

EHP (Red and Green or Yellow and Green Stripes color code). Temperature range –30°F to +250°F/–34°C to +121°C. 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. NOT COMPATIBLE WITH PETROLEUM SERVICES.

☐ **Grade "HMT" Nitrile**

Nitrile (Orange and Silver or Orange and Yellow Stripe color code). Temperature range –20°F to +180°F/–29°C to +82°C. May be specified for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not compatible with hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

☐ **Grade "O" Fluoroelastomer**

Fluoroelastomer (Blue stripe color code). Temperature range +20°F to +300°F/–7°C to +149°C. May be specified for many oxidizing acids, petroleum oils, halogenated hydrocarbons, lubricants, hydraulic fluids, organic liquids and air with hydrocarbons. NOT COMPATIBLE FOR USE WITH HOT WATER SERVICES OR STEAM SERVICES.

☐ **Others**

For alternate gasket selection, reference [publication 05.01](#). Victaulic Seal Selection Guide - Elastomeric Seal Construction.

¹ 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.

NOTE

- Victaulic reserves the right to substitute equivalent and/or higher grade elastomer products.

Bolts/Nuts: (specify choice²)

- ☐ Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and 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 A563 Grade B (imperial - heavy hex nuts) and ASTM A563M Class 9 (metric - hex nuts). Track bolts and hex nuts are zinc electroplated per ASTM B633 ZN/FE5, finish Type III (imperial) or Type II (metric).
- ☐ Optional: Stainless steel oval neck track bolts meeting the mechanical property requirements of ASTM F593, Group 2 (316 Stainless Steel), condition CW. Stainless steel heavy nuts meeting the mechanical property requirements of ASTM F594, Group 2 (316 stainless steel), condition CW, with galling reducing coating.
- ☐ Optional: Hot-dipped galvanized meeting the mechanical property requirements of ASTM A449 for bolts and ASTM A563 for heavy hex nuts.
- ☐ Optional: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and 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 A563 Grade B (imperial - heavy hex nuts) and ASTM A563M Class 9 (metric - hex nuts). Track bolts and hex nuts are thermally diffused galvanized per ASTM A1059.

² Optional bolts/nuts are available in imperial size only.

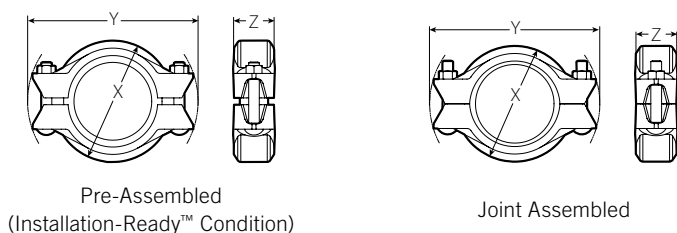
4.0 DIMENSIONS

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Dimensions for Determining Piping System Installation Clearances

Data in the below table is provided for system layout and installation purposes to ensure that adequate clearances are included in the piping system installation relative to other piping components or the building structure for both roll grooved and cut grooved pipe.

This is particularly important when the system is free floating, or contains no thrust anchors, and the coupling joints are installed with the pipe ends butted against the gasket⁴. If installed in this condition, when the piping is pressurized the joints will open to their full nominal pipe end separation⁵. This movement is cumulative and will be most significant in long runs of piping where multiple flexible couplings are installed in the butted condition.



Size		Nominal Range of Pipe End Separation ³		Bolt/Nut		Dimensions					Weight
Nominal	Actual	Pipe Ends	Full	Qty.	Size	Pre-Assembled (Installation-Ready™ Condition)		Joint Assembled			Approximate (Each)
inches DN	inches mm	Butted Against Gasket ⁴ inches mm	Nominal Separation ⁵ inches mm			X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	
2	2.375	0.13	0.25	2	½ x 3	4.38	6.25	3.75	6.38	2.13	3.3
DN50	60.3	3.3	6.4		M12 x 76	111	159	95	162	54	1.5
2½	2.875	0.13	0.25	2	½ x 3	4.88	6.88	4.38	6.88	2.13	3.8
	73.0	3.3	6.4		M12 x 76	124	175	111	175	54	1.7
DN65	3.000	0.13	0.25	2	½ x 3	5.00	6.88	4.38	6.91	2.13	4.0
	76.1	3.3	6.4		M12 x 76	127	175	111	176	54	1.8
3	3.500	0.13	0.25	2	½ x 3 ¼	5.63	7.38	5.00	7.50	2.13	4.3
DN80	88.9	3.3	6.4		M12 x 83	143	187	127	191	54	2.0
	4.250	0.18	0.38	2	⅝ x 4	6.88	9.13	5.88	9.25	2.38	7.1
	108.0	4.6	9.7		M16 x 101	175	232	149	235	60	3.2
4	4.500	0.18	0.38	2	⅝ x 4	7.13	9.38	6.38	9.50	2.38	7.4
DN100	114.3	4.6	9.7		M16 x 101	181	238	162	241	60	3.4
	5.250	0.18	0.38	2	¾ x 5	7.88	11.00	7.00	11.13	2.38	10.3
	133.0	4.6	9.7		M20 x 127	200	279	178	283	60	4.7
	5.500	0.18	0.38	2	¾ x 5	8.25	11.00	7.38	11.25	2.25	9.8
	139.7	4.6	9.7		M20 x 127	210	279	187	286	57	4.4
5	5.5625	0.18	0.38	2	¾ x 5	8.03	11.03	7.31	11.32	2.245	10
	141.3	4.6	9.7		M20 x 127	204	280	186	288	57	4.5
	6.250	0.18	0.38	2	¾ x 5	9.00	11.88	8.13	11.88	2.38	11.4
	159.0	4.6	9.7		M20 x 127	229	302	206	302	60	5.2
	6.500	0.18	0.38	2	¾ x 5	9.38	12.13	8.50	12.13	2.25	12.7
	165.1	4.6	9.7		M20 x 127	238	308	216	308	57	5.8
6	6.625	0.18	0.38	2	¾ x 5	9.38	12.38	8.63	12.25	2.38	12.8
DN150	168.3	4.6	9.7		M20 x 127	238	314	219	311	60	5.8
8	8.625	0.18	0.38	2	7/8 x 5 ½	11.00	15.13	10.00	15.13	2.63	20.7
DN200	219.1	4.6	9.7		M22 x 139	279	384	254	384	60	9.4

³ These columns provide the nominal range of pipe end separation that may exist at the time of installation.

⁴ The nominal pipe end separation when the pipe ends are butted against the gasket as illustrated in Figure 1.

⁵ The full nominal pipe end separation when the pipe ends are separated fully as illustrated in Figure 2.

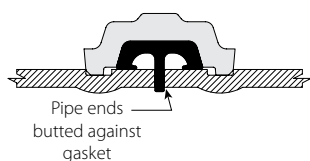


Figure 1

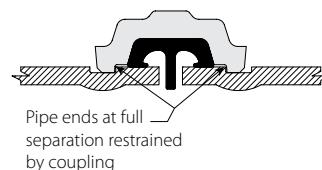


Figure 2

4.1 DIMENSIONS

Style 177N QuickVic™ Flexible Coupling

Design and Installation - Linear Movement and Angular Deflection

Data in the table below provides the linear movement and joint deflection capabilities of each coupling. These mechanical properties of the flexible coupling can be used in the design of the piping system to accommodate curves in the piping system, settlement of the building structure, seismic movement, or thermally induced expansion or contraction of the piping.

The linear movement⁷ can be used to accommodate any axial movement of the piping caused by thermally induced expansion or contraction of the pipe. When used in this manner, thrust anchors must be installed at changes in direction, at the ends of straight runs, or to divide long runs of pipe into more manageable sections and reduce movement at branch connections. Reference should be made to Victaulic [publication 26.02](#) for detailed instructions regarding determining thrust anchor or guide locations.

The joint deflection^{8,9} can also be used to accommodate the axial change in length of the piping caused by thermally induced expansion or contraction of the piping through the controlled deflection of offsets at existing changes in direction of the piping. Again, refer to Victaulic [publication 26.02](#) for detailed instructions.

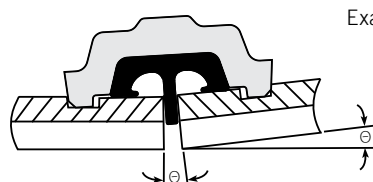
Size		Linear Movement per Coupling ^{6,9}	Joint Deflection ⁹	
Range inches DN	Actual Outside Diameter inches mm		Angle at Coupling ⁷ Degrees per coupling	Slope of Pipe ⁸ in/ft mm/m
2 DN50	2.375 60.3	0.09 2.3	2.17	0.46 38.1
2½	2.875 73.0	0.09 2.3	1.79	0.38 31.5
DN65	3.000 76.1	0.09 2.3	1.72	0.36 30.2
3 DN80	3.500 88.9	0.09 2.3	1.47	0.31 25.9
	4.250 108.0	0.18 4.6	2.43	0.51 42.6
4 DN100	4.500 114.3	0.18 4.6	2.29	0.48 40.3
	5.250 133.0	0.18 4.6	1.96	0.41 34.6
	5.500 139.7	0.18 4.6	1.88	0.39 32.9
5	5.5625 141.3	0.18 4.6	1.85	0.39 32.4
	6.250 159.0	0.18 4.6	1.65	0.35 28.9
	6.500 165.1	0.18 4.6	1.59	0.33 27.9
6 DN150	6.625 168.3	0.18 4.6	1.56	0.33 27.3
8 DN200	8.625 219.1	0.18 4.6	1.20	0.25 21.0

⁶ This is the actual net linear movement available at each coupling for design purposes as illustrated in Figures 1 and 2.

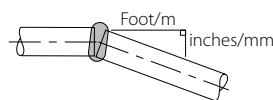
⁷ This is the actual net deflection angle available at each coupling listed in degrees as illustrated in Figure 3.

⁸ This is the actual net deflection angle available at each coupling listed as a slope of the pipe as illustrated in Figure 4.

⁹ These values are the net amount of linear movement or joint deflection available at the couplings. No further reduction, as detailed in Victaulic [publication 26.02](#), is needed to allow for design and installation purposes.



Deflection Angle at Each Coupling Listed in Degrees
Figure 3



Deflection Angle at Each Coupling Listed as a Slope of the Pipe
Figure 4

NOTE

- A coupling joint cannot provide the full linear movement and full angular deflection at the same time. If both linear movement and angular deflection are needed, sufficient couplings must be installed for each purpose. Refer to Victaulic [publication 26.02](#) for complete details.

5.0 PERFORMANCE

Style 177N QuickVic™ Flexible Coupling

ANSI/ISO Standards

Size		Schedule 10 and Thin Wall ISO (Steel Pipe)				Schedule 40 and ISO (Steel Pipe)			
Nominal inches DN	Actual Outside Diameter inches mm	ANSI Wall Thickness inches mm	ISO Wall Thickness inches mm	Max. ¹⁰ Joint Work Pressure psi kPa	Max. ¹⁰ Permis. End Load lbs N	ANSI Wall Thickness inches mm	ISO Wall Thickness inches mm	Max. ¹⁰ Joint Work Pressure psi kPa	Max. ¹⁰ Permis. End Load lbs N
2 DN50	2.375 60.3	0.109 2.77	0.091 2.3	750 5170	3322 14780	0.154 3.91	0.157 4.0	1000 6900	4430 19706
2 ½	2.875 73.0	0.120 3.05	– –	600 4135	3895 17326	0.230 5.84	– –	1000 6900	6492 28877
DN65	3.000 76.1	– –	0.150 3.8	600 4135	4240 18870	– –	0.200 5.1	1000 6900	7070 31460
3 DN80	3.500 88.9	0.120 3.05	0.114 2.9	600 4135	5773 25678	0.216 5.49	0.197 5.0	1000 6900	9621 42797
	4.250 108.0	– –	0.114 2.9	600 4135	8512 37861	– –	0.220 5.6	1000 6900	14186 63102
4 DN100	4.500 114.3	0.120 3.05	0.126 3.2	600 4135	9543 42448	0.237 6.02	0.220 5.6	1000 6900	15904 70746
	5.250 133.0	– –	0.126 3.2	600 4135	12989 57774	– –	0.248 6.3	1000 6900	21648 96290
	5.500 139.7	– –	0.150 3.8	500 3445	11879 52840	– –	0.220 5.1	1000 6900	23758 105680
5	5.563 141.3	0.134 3.4	– –	500 3448	12151 54046	0.258 6.55	– –	1000 6897	24301 108092
	6.250 159.0	– –	0.126 3.2	600 4135	18408 81879	– –	0.280 7.1	1000 6900	30680 136465
	6.500 165.1	– –	0.177 4.5	450 3100	14932 66243	– –	0.280 7.1	1000 6900	33183 147605
6 DN150	6.625 168.3	0.134 3.40	0.157 4.0	450 3100	15512 69000	0.280 7.11	0.280 7.1	1000 6900	34470 153390
8 DN200	8.625 219.1	0.148 3.76	0.177 4.5	300 2065	17525 77950	0.322 8.18	0.315 8.0	800 5500	46732 207836

¹⁰ Working Pressure and End Load are total, from all internal and external loads, based on (ANSI) steel pipe, grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTES

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1½ times the figures shown.
- Depressurize and drain the piping system before attempting to install, remove or adjust any Victaulic piping products.
- FM approved on Schedule 10 pipe: 2 – 6 inch sizes rated to 365 psi/25 bar; and 8 inch size (.188" wall thickness) rated to 365 psi/25 bar. Schedule 40 pipe: 2 – 8 inch sizes rated to 365 psi/25 bar.
- UL listed on Schedule 10 pipe: 2-6 inch sizes rated to 365 psi/25 bar; and 8 inch size (.188" wall thickness) rated to 365 psi/25 bar. Schedule 40 pipe: 2 – 3 inch sizes rated to 840 psi/58 bar; and 4-6 inch sizes rated to 600 psi/41 bar; and 8 inch size rated to 500 psi/34 bar.

6.0 NOTIFICATIONS

! WARNING



- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, foot protection, and hearing protection.
- When assembling Style 177N Couplings onto end caps, take additional time to inspect and verify that the end cap is seated fully against the center leg of the gasket.
- Use only Victaulic® End Caps containing the “QV” or “EZ QV” marking on the inside face.
- Always read and follow the [I-ENDCAP](#), Victaulic® End Cap Installation Safety Instructions, which can be downloaded at Victaulic.com.
- Victaulic recommends the use of Victaulic® fittings with Style 177N Couplings.

Failure to follow these instructions could result in death or serious personal injury and property damage.

! WARNING

FOR STYLE 177N COUPLINGS USED ON STAINLESS STEEL:

- Victaulic® RX roll sets shall be used when grooving light-wall/thin-wall stainless steel pipe. Victaulic® RX grooving rolls must be ordered separately. They are identified by a silver color and the designation RX on the front of the roll sets.
- It is the system designer's responsibility to verify suitability of stainless steel components for use with the intended fluid media within the piping system and external environment.
- The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on stainless steel components to confirm system life will be acceptable for the intended service.
- Always reference Victaulic publication [17.01](#) for stainless steel pipe end preparation and grooving roll set requirements.

Failure to follow these instructions may cause joint failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

[05.01: Victaulic Seal Selection Guide](#)

[06.29: Victaulic QuickVic™ Installation-Ready™ Flexible Coupling for Potable Water Applications Style 877N](#)

[10.01: Victaulic Fire Protection Certifications/Listings Reference Guide](#)

[17.01: Victaulic Pipe Preparation for Use on Stainless Steel Pipe With Victaulic Products](#)

[17.09: Victaulic Pressure Ratings and End Loads for Victaulic Ductile Iron Grooved Couplings on Stainless Steel Pipe](#)

[25.01: Victaulic Original Groove System Specifications](#)

[26.01: Victaulic Design Data](#)

[29.01: Victaulic Terms and Conditions/Warranty](#)

[I-100: Victaulic Field Installation Handbook](#)

[I-177N: Victaulic QuickVic™ Installation-Ready™ Flexible Coupling Installation Instructions](#)

[I-ENDCAP: Victaulic End Caps Installation Instructions](#)

[I-IMPACT: Victaulic Impact Tool Usage Guidelines](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for determining the suitability of Victaulic products for their end-use application, in accordance with industry standards, project specifications, and Victaulic's published performance, maintenance, and safety data, as well as all warnings and installation 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, warranty, installation instructions, or this disclaimer.

Installation

Always refer to and follow the [Victaulic Installation Handbook](#) or installation instructions for 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 victaulic.com.

Warranty

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

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Note

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