Victaulic® QuickVic™ Flexible Coupling Style 177N

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 Standard Groove Specifications.

2.0 CERTIFICATION/LISTINGS

c UL us LISTED

FM APPROVED

CE
EN 10311
CPR (EU)
No. 305/2011

UKCA
BS EN 10311
CPR (UK)
2019 No. 465

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 choice[1])

☐ **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 "T" Nitrile**

Nitrile (Orange 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 "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 choice[2])

- ☐ 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.

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

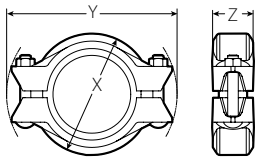
4.0 DIMENSIONS

Style 177N QuickVic™ Flexible Coupling

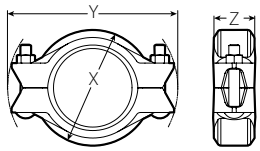
Dimensions for Determining Piping System Installation Clearances

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 gasket[4]. If installed in this condition, when the piping is pressurized the joints will open to their full nominal pipe end separation[5]. This movement is cumulative and will be most significant in long runs of piping where multiple flexible couplings are installed in the butted condition.



Pre-Assembled
(Installation-Ready™ Condition)



Joint Assembled

Size		Nominal Range of Pipe End Separation[3]		Bolt/Nut		Dimensions					Weight
						Pre-Assembled (Installation-Ready™ Condition)		Joint Assembled			
Nominal inches DN	Actual Outside Diameter inches mm	Pipe Ends Butted Against Gasket[4] inches mm	Full Nominal Separation[5] inches mm	Qty.	Size inches mm	X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	Approximate (Each) lb kg
2 DN50	2.375 60.3	0.13 3.3	0.25 6.4	2	½ x 3 M12 x 76	4.38 111	6.25 159	3.75 95	6.38 162	2.13 54	3.3 1.5
2½	2.875 73.0	0.13 3.3	0.25 6.4	2	½ x 3 M12 x 76	4.88 124	6.88 175	4.38 111	6.88 175	2.13 54	3.8 1.7
DN65	3.000 76.1	0.13 3.3	0.25 6.4	2	½ x 3 M12 x 76	5.00 127	6.88 175	4.38 111	6.91 176	2.13 54	4.0 1.8
3 DN80	3.500 88.9	0.13 3.3	0.25 6.4	2	½ x 3¼ M12 x 83	5.63 143	7.38 187	5.00 127	7.50 191	2.13 54	4.3 2.0
	4.250 108.0	0.18 4.6	0.38 9.7	2	⅝ x 4 M16 x 101	6.88 175	9.13 232	5.88 149	9.25 235	2.38 60	7.1 3.2
4 DN100	4.500 114.3	0.18 4.6	0.38 9.7	2	⅝ x 4 M16 x 101	7.13 181	9.38 238	6.38 162	9.50 241	2.38 60	7.4 3.4
	5.250 133.0	0.18 4.6	0.38 9.7	2	¾ x 5 M20 x 127	7.88 200	11.00 279	7.00 178	11.13 283	2.38 60	10.3 4.7
	5.500 139.7	0.18 4.6	0.38 9.7	2	¾ x 5 M20 x 127	8.25 210	11.00 279	7.38 187	11.25 286	2.25 57	9.8 4.4
5	5.5625 141.3	0.18 4.6	0.38 9.7	2	¾ x 5 M20 x 127	8.03 204	11.03 280	7.31 186	11.32 288	2.245 57	10 4.5
	6.250 159.0	0.18 4.6	0.38 9.7	2	¾ x 5 M20 x 127	9.00 229	11.88 302	8.13 206	11.88 302	2.38 60	11.4 5.2
	6.500 165.1	0.18 4.6	0.38 9.7	2	¾ x 5 M20 x 127	9.38 238	12.13 308	8.50 216	12.13 308	2.25 57	12.7 5.8
6 DN150	6.625 168.3	0.18 4.6	0.38 9.7	2	¾ x 5 M20 x 127	9.38 238	12.38 314	8.63 219	12.25 311	2.38 60	12.8 5.8
8 DN200	8.625 219.1	0.18 4.6	0.38 9.7	2	⅞ x 5½ M22 x 139	11.00 279	15.13 384	10.00 254	15.13 384	2.63 60	20.7 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.

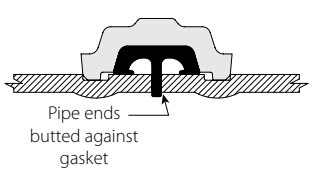


Figure 1

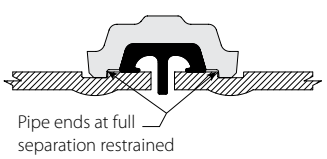


Figure 2

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 movement[7] 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] inches mm	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

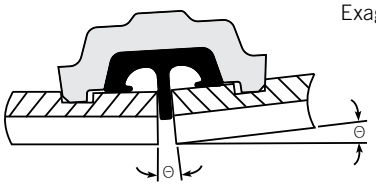
6 This is the actual net linear movement available at each coupling for design purposes as illustrated in Figures 1 and 2.

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

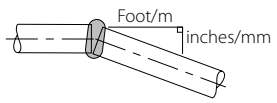
8 This is the actual net deflection angle available at each coupling listed as a slope of the pipe as illustrated in Figure 4.

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.

Exaggerated for clarity



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
2½	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/25bar.
- UL listed on Schedule 10 pipe: 2-6 inch sizes rated to 365 psi/25bar; 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, remove, adjust, or maintain any Victaulic piping products.**
- **Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.**
- **Always 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 working with an end cap.**
- **Wear safety glasses, hardhat, and foot protection.**

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

⚠ WARNING

- **Victaulic RX roll sets must be used when grooving light-wall/thin-wall stainless steel pipe for use with Victaulic Couplings.**
- **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.**

Failure to use Victauilc RX roll sets when grooving light-wall/thin-wall stainless steel pipe may cause joint failure, resulting in serious personal injury and/or property damage.

⚠ WARNING

- **When assembling Style 107V 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. Always read and follow the installation instructions provided with the product; these instructions can be downloaded at Victaulic.com.**
- **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.

NOTICE

- **Victaulic does not recommend the use of any furnace butt-welded pipe with sizes NPS 2"/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.**

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
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

