Victaulic® QuickVic™ Flexible Coupling Style 177N

06.24

2 – 8"/DN50 – DN200

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 8"/DN50 – DN200

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.

Applications

- Features Installation-Ready™ Technology.
- 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.

Pipe Preparation

- Cut or roll grooved in accordance with publication 25.01: Victaulic Standard Groove Specifications.

2.0 CERTIFICATION/LISTINGS

c UL LISTED FM

NOTES

- See publication 10.01: Victaulic Products for Fire Protection Piping Systems - Regulatory Approval Reference Guide for details.
- See publication 02.06: Victaulic Potable Water Approvals ANSI/NSF for potable water approvals if applicable.

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

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

☐ Optional: 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.

☐ Optional: Contact Victaulic with your requirements for other coatings.

Gasket: (specify choice[1])

☐ **Grade "EHP" EPDM**
EHP (Red 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[1]. UL Classified in accordance with ANSI/NSF61 for cold +86°F/+30°C and hot +180°F/+82°C potable water service and ANSI/NSF 372. 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 "CHP-2" Fluoroelastomer**
CHP-2 (Yellow and Copper stripes color code). Temperature range 0˚F to +180˚F/-18˚C to +82˚C. May be specified for hot water service plus varying concentrations of hot petroleum/water mixtures, hydrocarbons, halogenated hydrocarbons, air with oil vapors, vegetable and mineral oils, oxidizing acids, strongly alkaline and aggressive fluids and automotive fluids such as engine oil and transmission oil within the specified temperature range. UL Classified in accordance with 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 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.

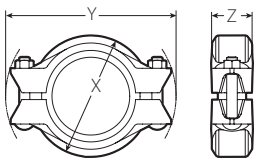
[2] Optional bolts/nuts are available in imperial size only.

4.0 DIMENSIONS

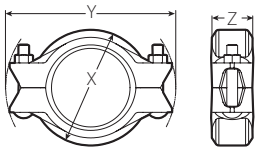
Style 177N - Dimensions for Determining Piping System Installation Clearances

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.



Style 177N Pre-Assembled
(Installation-Ready Condition)



Style 177N 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	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	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	12 x 76.2	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	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 9.5	2	16 x 101.6	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 9.5	2	⅝ x 4	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 9.5	2	20 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 9.5	2	20 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	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 9.5	2	20 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 9.5	2	20 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 9.5	2	¾ x 5	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 9.5	2	⅞ x 5½	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.

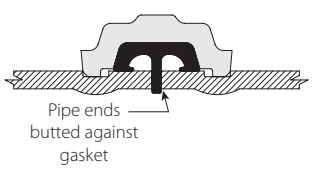


Figure 1

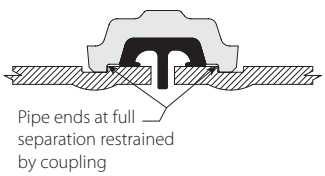


Figure 2

4.1 DIMENSIONS

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.

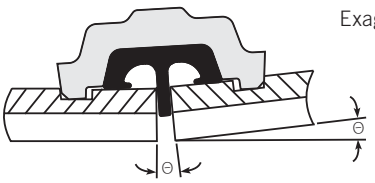
Size Range inches DN	Actual Outside Diameter inches mm	Linear Movement per Coupling[6,9] inches mm	Joint Deflection[9]	
			Angle at Coupling[7] Degrees per coupling	Slope of Pipe[8] in/ft mm/m
2 DN50	2.375 60.3	0.09 2.3	2.17	0.46 38.1
2½	2.875 73.0	0.09 2.3	1.79	0.38 31.5
DN65	3.000 76.1	0.09 2.3	1.72	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.

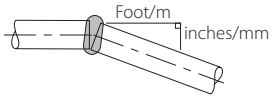
8 This is the actual net deflection angle available at each coupling listed as a slope of the pipe as illustrated in Figure 4.

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 – 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

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

Failure to use Victaulic 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.

NOTICE

- **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.**

WARNING

- **When assembling Style 177N Couplings onto end caps, take additional care to ensure the end cap is seated fully against the center leg of the gasket.**
- **Use only Victaulic No. 60 End Caps containing the "EZ QV" marking on the inside face.**
- **Victaulic recommends the use of Victaulic fittings with Style 177N Couplings.**
- **Victaulic No. 460-SS Stainless Steel End Caps shall not be used with Style 177N Couplings. No 460-SS End Caps shall be used only with Style 89 Rigid Couplings for stainless steel pipe.**

Failure to follow this instruction could cause improper product installation, resulting in personal injury and/or property damage.

7.0 REFERENCE MATERIALS

I-100: Victaulic Field Installation Handbook

I-177N: Victaulic QuickVic™ Installation-Ready™ Flexible Coupling Installation Instructions

02.06: Victaulic Potable Water Approvals

05.01: Victaulic Seal Selection Guide

10.01: Victaulic Regulatory Approval 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-ENDCAP: Victaulic End Caps Installation Instructions

