

Victaulic® Standard Flexible Coupling Style 77



¾ – 12"/DN20 – DN300 sizes 14 – 24"/DN350 – DN600 sizes

1.0 PRODUCT DESCRIPTION

Available Sizes

- ¾ – 24"/DN20 – DN600

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) up to 1000 psi/6894 kPa.
- Working pressure dependent on material, wall thickness and size of pipe.

Application

- Joins standard roll grooved and cut grooved pipe, as well as grooved fittings, valves and accessories.
- Provides a flexible pipe joint with allows for expansion, contraction and deflection.
- Operating temperature dependent upon gasket and/or seal selection - see Section 3.0.
- Exclusively for use with pipe and Victaulic products which feature ends formed with the Victaulic OGS groove profile (See section 7.0 for Reference Materials).

Pipe Material

- Carbon steel.
- For use with stainless steel pipe, refer to Victaulic [publication 17.09](#) for pressure ratings and end loads.

2.0 CERTIFICATION/LISTINGS



NOTE

- 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 MATERIAL SPECIFICATIONS

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

Housing Coating: (specify choice)

Standard: Orange enamel.

Optional: Hot dipped galvanized and others.

Optional: Contact Victaulic with your requirements for other coatings.

Gasket: (specify choice¹)

Grade “E” EPDM

EPDM (Green stripe color code). Temperature range -30°F to +230°F/-34°C to +110°C. May be specified for cold and 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 and ANSI/NSF 372. NOT COMPATIBLE FOR PETROLEUM SERVICES OR STEAM 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 for hot water services over +150°F/+66°C or for hot dry air over +140°F/+60°C.

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 Seal Selection Guide](#) for specific gasket service guidelines and for a listing of services which are not compatible.

Bolts/Nuts: (specify choice²)

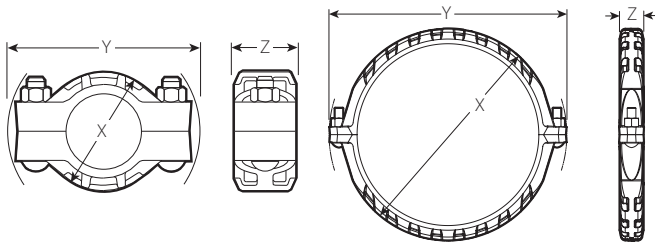
Standard: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (metric). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial - heavy hex nuts) and ASTM A563M Class 9 (metric - hex 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 hex 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 77



¾ – 12"/DN20 – DN300 sizes 14 – 24"/DN350 – DN600 sizes

Size		Pipe End Separation ³	Deflection from Centerline ³		Bolt/Nut		Dimensions			Weight
Nominal	Actual Outside Diameter	Allowable	Per Cplg.	Pipe	Qty.	Size	X	Y	Z	Approx. (Each)
inches DN	inches mm	inches mm	Degrees	inches/ft. mm/m		inches	inches mm	inches mm	inches mm	lb kg
¾ DN20	1.050 26.7	0–0.06 0–1.6	3°–24'	0.72 60	2	¾ x 2	2.13 54	4.00 102	1.75 44	1.1 0.5
1 DN25	1.315 33.4	0–0.06 0–1.6	2°–43'	0.57 48	2	¾ x 2	2.38 61	4.12 105	1.75 44	1.2 0.5
1¼ DN32	1.660 42.2	0–0.06 0–1.6	2°–10'	0.45 38	2	½ x 2½	2.65 67	5.00 127	1.88 48	2.0 0.9
1½ DN40	1.900 48.3	0–0.06 0–1.6	1°–56'	0.40 33	2	½ x 2½	3.13 79	5.38 137	1.88 48	2.1 1.0
2 DN50	2.375 60.3	0–0.06 0–1.6	1°–31'	0.32 26	2	½ x 2½	3.63 92	5.88 149	1.88 48	2.6 1.2
	2.664 57.0	0–0.06 0–1.6	1°–34'	0.33 27	2	½ x 2½	3.43 87	5.73 146	1.90 48	3.0 1.4
2½	2.875 73.0	0–0.06 0–1.6	1°–15'	0.26 22	2	½ x 2¾	4.25 108	6.50 165	1.88 48	3.1 1.4
DN65	3.000 76.1	0–0.06 0–1.6	1°–12'	0.26 22	2	½ x 2¾	4.38 111	6.63 168	1.88 48	3.2 1.5
3 DN80	3.500 88.9	0–0.06 0–1.6	1°–2'	0.22 18	2	½ x 2¾	5.00 127	7.13 181	1.88 48	3.7 1.7
3½ DN90	4.000 101.6	0–0.06 0–1.6	0°–54'	0.19 16	2	⅝ x 3¼	5.63 143	8.25 210	1.88 48	5.6 2.5
4 DN100	4.500 114.3	0–0.13 0–3.2	1°–36'	0.34 28	2	⅝ x 3¼	6.13 156	8.88 226	2.13 54	6.7 3.0
	4.250 108.0	0–0.13 0–3.2	1°–41'	0.35 29	2	16 x 82.5	6.00 152	8.63 219	2.13 54	11.0 5.0
5	5.563 141.3	0–0.13 0–3.2	1°–18'	0.27 23	2	2–¾ x 4¼	7.75 197	10.65 270	2.13 54	10.6 4.8

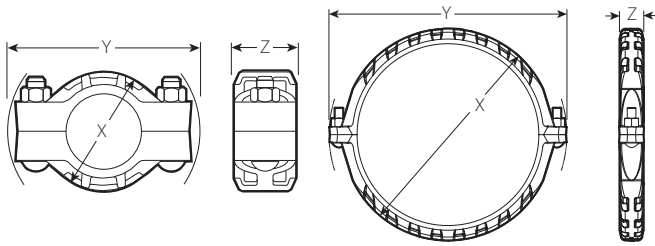
³ Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard **roll** grooved pipe. Figures for standard **cut** grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for ¾ – 3 ½"/DN20 – DN90; 25% for 4"/DN100 and larger.

NOTE

- Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

4.0 DIMENSIONS (Continued)

Style 77



3/4 – 12"/DN20 – DN300 sizes 14 – 24"/DN350 – DN600 sizes

Size		Pipe End Separation ³	Deflection from Centerline ³		Bolt/Nut		Dimensions			Weight
Nominal inches DN	Actual Outside Diameter inches mm	Allowable inches mm	Per Cplg. Degrees	Pipe inches/ft. mm/m	Qty.	Size inches	X inches mm	Y inches mm	Z inches mm	Approx. (Each) lb kg
	5.250 133.0	0-0.13 0-3.2	1°-21'	0.28 24	2	20 x 108	7.63 194	10.38 264	2.13 54	10.0 4.5
DN125	5.500 139.7	0-0.13 0-3.2	1°-18'	0.28 24	2	20 x 108	8.63 219	10.65 270	2.13 54	10.0 4.5
6 DN150	6.625 168.3	0-0.13 0-3.2	1°-5'	0.23 18	2	3/4 x 4 1/4	8.63 219	11.88 302	2.13 54	12.0 5.4
	6.250 159.0	0-0.13 0-3.2	1°-9'	0.24 20	2	20 x 108	8.63 219	11.50 292	2.13 54	13.2 6.0
	6.500 165.1	0-0.13 0-3.2	1°-6'	0.23 19	2	3/4 x 4 1/4	8.88 226	11.63 295	2.13 54	13.2 6.0
8 1/2 DN200	8.625 219.1	0-0.13 0-3.2	0°-50'	0.18 14	2	7/8 x 5	11.00 279	14.75 375	2.50 63	20.8 9.4
10 1/2 DN250	10.750 273.0	0-0.13 0-3.2	0°-40'	0.14 12	2	1 x 6	13.63 346	17.13 435	2.63 67	27.8 12.6
12 1/2 DN300	12.750 323.9	0-0.13 0-3.2	0°-34'	0.12 9	2	1 x 6 1/2	15.63 397	19.25 489	2.63 67	31.1 14.1
14 1/2 DN350	14.000 355.6	0-0.13 0-3.2	0°-31'	0.11 9	2	1 x 3 1/2	16.75 425	20.25 514	3.00 76	39.2 17.8
	14.842 377.0	0-0.13 0-3.2	0°-31'	0.11 9	2	1 x 3 1/2	17.39 442	20.96 531	2.80 71	48.8 22.1
16 1/2 DN400	16.000 406.4	0-0.13 0-3.2	0°-27'	0.10 9	2	1 x 3 1/2	18.75 476	22.25 565	3.00 76	45 20.4
	16.772 426.0	0-0.13 0-3.2	0°-27'	0.10 9	2	1 x 3 1/2	19.69 500	22.92 581	2.92 74	56.7 25.7
18 1/2 DN450	18.000 457.2	0-0.13 0-3.2	0°-24'	0.08 7	2	1 1/8 x 4	21.56 548	25.00 635	3.13 80	64.1 29.1
	18.898 480.0	0-0.13 0-3.2	0°-24'	0.08 7	2	1 1/8 x 4	22.38 569	25.86 655	3.04 77	77.2 35

³ Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard **roll** grooved pipe. Figures for standard **cut** grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for 3/4 – 3 1/2"/DN20 – DN90; 25% for 4"/DN100 and larger.

⁴ Couplings 8, 10, 12"/DN200, DN250, DN300 sizes available to JIS standards. Refer to Victaulic [publication 06.17](#) for details.

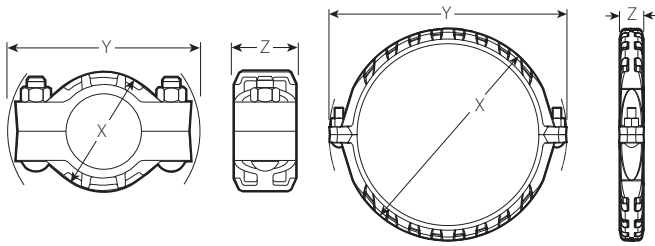
⁵ For 14 – 72"/DN350 – DN1800 Roll Groove systems Victaulic offers the Advanced Groove System (AGS) line of products. Refer to Victaulic [publication 20.03](#) for information on the Style W77 flexible AGS coupling.

NOTE


- Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

4.0 DIMENSIONS (Continued)

Style 77



¾ – 12"/DN20 – DN300 sizes 14 – 24"/DN350 – DN600 sizes

Size		Pipe End Separation ³	Deflection from Centerline ³		Bolt/Nut		Dimensions			Weight
Nominal	Actual Outside Diameter	Allowable	Per Cplg.	Pipe	Qty.	Size	X	Y	Z	Approx. (Each)
inches DN	inches mm	inches mm	Degrees	inches/ft. mm/m		inches	inches mm	inches mm	inches mm	lb kg
20 ⁵ DN500	20.000 508.0	0–0.13 0–3.2	0°–22'	0.08 7	2	1½ x 4	23.63 600	27.00 686	3.13 80	74.8 34
22 ⁵ DN550	22.000 559.0	0–0.13 0–3.2	0°–19'	0.07 6	2	1½ x 4	25.63 651	29.13 740	3.13 80	82.6 37.5
	20.866 530.0	0–0.13 0–3.2	0°–22'	0.08 7	2	1½ x 4	24.29 617	27.80 704	3.07 77	91.7 41.6
	22.835 580.0	0–0.13 0–3.2	0°–19'	0.07 6	2	1½ x 4	26.76 680	30.01 762	3.12 79	92.8 42.2
24 ⁵ DN600	24.000 609.6	0–0.13 0–3.2	0°–18'	0.07 6	2	1½ x 4	27.75 705	31.00 787	3.19 81	89.6 40.7
	24.803 630.0	0–0.13 0–3.2	0°–18'	0.07 6	2	1½ x 4	28.42 722	32.16 817	3.12 79	96.8 44
14–72 DN350– DN1800	AGS See Style W77, refer to Victaulic publication 20.03 									

³ Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for standard **roll** grooved pipe. Figures for standard **cut** grooved pipe may be doubled. These figures are maximums; for design and installation purposes these figures should be reduced by: 50% for ¾ – 3 ½"/DN20 – DN90; 25% for 4"/DN100 and larger.

⁵ For 14 – 72"/DN350 – DN1800 Roll Groove systems Victaulic offers the Advanced Groove System (AGS) line of products. Refer to Victaulic [publication 20.03](#) for information on the Style W77 flexible AGS coupling.

NOTE

- Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

5.0 PERFORMANCE

Style 77

Size		Working Pressure ⁶		End Load ⁶	
Nominal	Actual Outside Diameter	Maximum		Maximum	
inches DN	inches mm	psi kPa		lb N	
¾ DN20	1.050 26.7	1000 6894		865 3,850	
1 DN25	1.315 33.4	1000 6894		1360 6,050	
1¼ DN32	1.660 42.2	1000 6894		2160 9,610	
1½ DN40	1.900 48.3	1000 6894		2835 12,615	
2 DN50	2.375 60.3	1000 6894		4430 19,715	
	2.664 57.0	1000 6894		3955 17,592	
2½	2.875 73.0	1000 6894		6490 28,880	
	3.000 76.1	1000 6894		7070 31,460	
3 DN80	3.500 88.9	1000 6894		9620 42,810	
3½ DN90	4.000 101.6	1000 6894		12565 55,915	
4 DN100	4.500 114.3	1000 6894		15900 70,755	
	4.250 108.0	1000 6894		14180 63,100	
5	5.563 141.3	1000 6894		24300 108,135	

⁶ Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard **roll** or **cut** grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

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

5.0 PERFORMANCE (Continued)

Style 77

Size		Working Pressure ⁶		End Load ⁶	
Nominal inches DN	Actual Outside Diameter inches mm	Maximum psi kPa	Maximum lb N		
	5.250 133.0	1000 6894	21635 96,275		
DN125	5.500 139.7	1000 6894	23745 105,665		
6 DN150	6.625 168.3	1000 6894	34470 153,390		
	6.250 159.0	1000 6894	30665 136,460		
	6.500 165.1	1000 6894	33185 147,660		
8 ⁴ DN200	8.625 219.1	800 5515	46740 207,995		
10 ⁴ DN250	10.750 273.0	800 5515	73280 326,100		
12 ⁴ DN300	12.750 323.9	800 5515	102000 453,900		
14 ⁵ DN350	14.000 355.6	300 2068	46180 205,500		
	14.842 377.0	300 2068	51875 230,845		
16 ⁵ DN400	16.000 406.4	300 2068	60320 268,425		
	16.772 426.0	300 2068	66245 294,795		
18 ⁵ DN450	18.000 457.2	300 2068	76340 339,710		
	18.898 480.0	300 2068	84105 374,265		
20 ⁵ DN500	20.000 508.0	300 2068	94000 418,300		
22 ⁵ DN550	22.000 559.0	300 2068	114000 507,300		
	20.866 530.0	300 2068	102535 456,280		
	22.835 580.0	300 2068	102380 455,591		
24 ⁵ DN600	24.000 609.6	250 1723	113000 502,850		
	24.803 630.0	250 1723	102790 457,416		
14-72 DN350-DN1800	AGS See Style W77, refer to Victaulic publication 20.03				



⁴ Couplings 8, 10, 12"/DN200, DN250, DN300 sizes available to JIS standards. Refer to Victaulic [publication 06.17](#) for details.

⁵ For 14 – 72"/DN350 – DN1800 Roll Groove systems Victaulic offers the Advanced Groove System (AGS) line of products. Refer to Victaulic [publication 20.03](#) for information on the Style W77 flexible AGS coupling.

⁶ Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard **roll** or **cut** grooved in accordance with Victaulic specifications. Contact Victaulic for performance on other pipe.

NOTE

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

6.0 NOTIFICATIONS

- For 14 – 72"/DN350 – DN1800 flexible roll groove systems, Victaulic recommends Style W77 AGS couplings. For more information, refer to Victaulic [publication 20.03](#).

WARNING

- 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.**

7.0 REFERENCE MATERIALS

- [02.06: Victaulic® Potable Water Approvals ANSI/NSF](#)
- [05.01: Victaulic® Seal Selection Guide](#)
- [06.15: Pressure Ratings and End Loads for Victaulic® Couplings on Steel Pipe](#)
- [06.17: Victaulic® Couplings and Fittings for JIS Pipe](#)
- [10.01: Victaulic® Products for Fire Protection Piping Systems - Regulatory Approval](#)
- [17.01: Victaulic® Pipe Preparation for Use on Stainless Steel Pipe With Victaulic Products](#)
- [17.09: Victaulic® Ductile Iron Grooved Couplings Performance Data for Stainless Steel Pipe](#)
- [20.03: Victaulic® AGS Flexible Coupling Style W77](#)
- [25.01: Victaulic® Original Groove System \(OGS\) Groove Specifications](#)
- [26.01: Victaulic® Design Data](#)
- [26.04: Victaulic® Couplings Vibration Attenuation Characteristics](#)
- [26.12: Design Data for Seismic Applications of Victaulic® Grooved System](#)
- [29.01: Victaulic® Terms and Conditions of Sale](#)
- [I-100: Victaulic® Field Installation Handbook](#)

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.

Warranty

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

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