

# Victaulic® Grooved Coupling

## Style 31



### 1.0 PRODUCT DESCRIPTION

#### Available Sizes

- 3 – 36"/DN80 – DN900

#### Pipe Material

- Ductile Iron with a minimum wall thickness of ANSI/AWWA C151/A21.51, Class 53

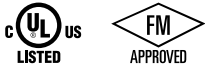
#### Maximum Working Pressure

- Up to 500 psi/3450 kPa

#### Function

- Provides a fully restrained pipe joint to the published maximum allowable working pressure.
- Joints are rigid or flexible depending on groove style.
- Rigid joints resist axial and angular movement.
- Flexible joints allow for restrained axial and angular movement to the couplings published capabilities.

### 2.0 CERTIFICATION/LISTINGS



Coupling design, materials and testing conform to the requirements of AWWA C606 standard for Grooved and Shouldered Joints.

#### NOTES

- Refer to Victaulic [Publication 10.01](#) 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, is available upon special request.

**Housing Coating: (specify choice)**

- Standard: Phenolic Alkyd Primer T37H-77 (2.5 mil).
- Optional: Two part liquid epoxy conforming to AWWA C210.
- Optional: Coal tar epoxy coating (3 mils).
- Organic zinc primer (3 mils).
- Bituminous coating.

**NOTE**

- Others available, contact Victaulic.

**Gasket: (specify choice<sup>1</sup>)**

**Grade “M” FlushSeal™**

Halogenated Butyl (Brown color code). Temperature range –20°F to +200°F/–29°C to +93°C. Specially compounded to conform to ductile pipe surfaces. Recommended for 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 +86° F/+30°C potable water service. NOT RECOMMENDED FOR PETROLEUM SERVICES.

**Grade “S” FlushSeal™**

Nitrile (Red color code). Temperature range –20°F to +180°F/–29°C to + 82°C. Specifically compounded to conform to ductile pipe surfaces. Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range; except hot air over +140° F/+60° C and water over +150° F/+66°C. NOT RECOMMENDED FOR HOT WATER SERVICES.

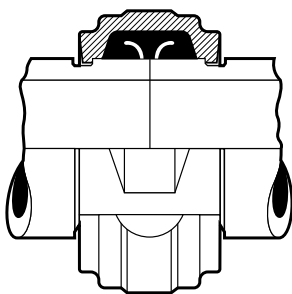
<sup>1</sup> Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to the latest [Victaulic Seal Selection Guide](#) for specific gasket service guidelines and for a listing of services which are not compatible.

**Bolts/Nuts: (specify choice)**

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 physical and chemical 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 requirements of ASTM F593, Group 2 (316 stainless steel), condition CW. Stainless steel heavy hex nuts meeting the requirements of ASTM F594, Group 2 (316 stainless steel), condition CW, with galling-resistant coating.<sup>2</sup>

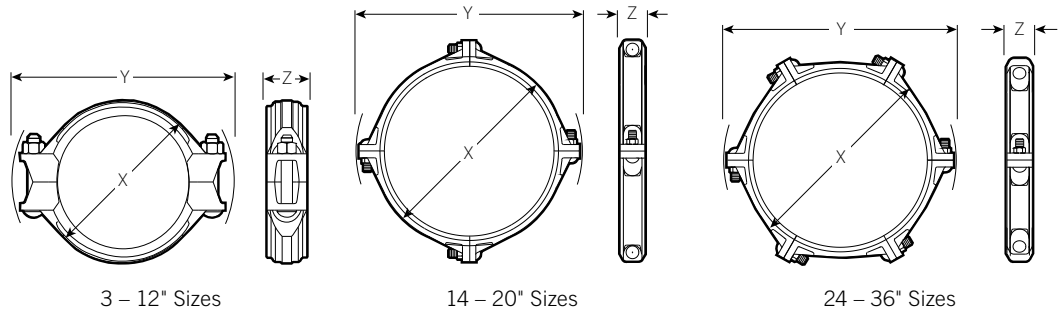
<sup>2</sup> Optional bolts/nuts are available in imperial size only.



*Exaggerated for Clarity*

## 4.0 DIMENSIONS

### Style 31



| Pipe Size               |   | Bolt/Nut <sup>3</sup> |                | Dimensions        |                   |                   | Weight                            |
|-------------------------|---|-----------------------|----------------|-------------------|-------------------|-------------------|-----------------------------------|
| Nominal<br>inches<br>DN | Actual<br>Outside<br>Diameter<br>inches<br>mm | Qty.                  | Size<br>inches | X<br>inches<br>mm | Y<br>inches<br>mm | Z<br>inches<br>mm | Approximate<br>(Each)<br>lb<br>kg |
| 3<br>DN80               | 3.960<br>100.6                                | 2                     | 1/2 x 2 3/4    | 5.50<br>140       | 7.63<br>194       | 2.13<br>54        | 4.8<br>2.2                        |
| 4<br>DN100              | 4.800<br>121.9                                | 2                     | 5/8 x 3 1/4    | 6.25<br>159       | 9.20<br>234       | 2.09<br>53        | 7.5<br>3.4                        |
| 6<br>DN150              | 6.900<br>175.3                                | 2                     | 5/8 x 3 1/4    | 8.28<br>210       | 11.19<br>284      | 2.22<br>56        | 9.4<br>4.3                        |
| 8<br>DN200              | 9.050<br>229.9                                | 2                     | 3/4 x 5        | 10.74<br>273      | 14.33<br>364      | 2.59<br>66        | 16.5<br>7.5                       |
| 10<br>DN250             | 11.100<br>281.9                               | 2                     | 3/4 x 5        | 12.84<br>326      | 16.44<br>418      | 2.75<br>70        | 22.5<br>10.2                      |
| 12<br>DN300             | 13.200<br>335.3                               | 2                     | 7/8 x 5        | 15.27<br>388      | 19.16<br>487      | 2.75<br>70        | 30.0<br>14.0                      |
| 14<br>DN350             | 15.300<br>388.6                               | 4                     | 1 x 3 1/2      | 17.21<br>437      | 21.96<br>558      | 2.75<br>70        | 40.8<br>18.5                      |
| 16<br>DN400             | 17.400<br>442.0                               | 4                     | 1 x 3 1/2      | 19.90<br>505      | 23.96<br>609      | 3.50<br>89        | 61.3<br>27.8                      |
| 18<br>DN450             | 19.500<br>495.3                               | 4                     | 1 x 3 1/2      | 22.03<br>560      | 26.33<br>669      | 3.50<br>89        | 80.0<br>36.3                      |
| 20<br>DN500             | 21.600<br>548.6                               | 4                     | 1 1/8 x 4      | 24.13<br>613      | 28.69<br>729      | 3.50<br>89        | 76.0<br>34.5                      |
| 24<br>DN600             | 25.800<br>655.3                               | 6                     | 1 1/8 x 4      | 28.31<br>719      | 33.06<br>840      | 3.50<br>89        | 104.0<br>47.2                     |
| 30<br>DN750             | 32.000<br>812.8                               | 6                     | 1 1/8 x 4      | 35.02<br>890      | 39.39<br>1001     | 4.38<br>111       | 162.0<br>73.5                     |
| 36<br>DN900             | 38.300<br>972.8                               | 6                     | 1 1/8 x 4      | 41.56<br>1056     | 46.04<br>1169     | 4.44<br>113       | 200.0<br>90.7                     |

<sup>3</sup> Number of bolts required equals number of housing segments. Metric thread size bolts are available (color coded gold) for all coupling sizes upon request. Contact Victaulic for details.

#### NOTES

- WARNING: Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.
- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 1/2 times the figures shown.

## 5.0 PERFORMANCE

### Style 31

| Size                    |   | Pipe End Separation <sup>4</sup> | Deflect FR. C.L. <sup>4</sup> |                       | Maximum Joint Working Pressure <sup>5</sup> | Maximum Permis. End Load <sup>5</sup> |
|-------------------------|---|----------------------------------|-------------------------------|-----------------------|---|---------------------------------------|
| Nominal<br>inches<br>DN | Actual Outside Diameter<br>inches<br>mm | Allowable<br>inches<br>mm        | Per Cplg. Degree              | Pipe<br>In./Ft.<br>mm |   |                                       |
| 3<br>DN80               | 3.960<br>100.6                          | 0 - 0.09<br>0 - 2.4              | 1° - 21'                      | 0.28<br>23            | 500<br>3450                                 | 6200<br>27,590                        |
| 4<br>DN100              | 4.800<br>121.9                          | 0 - 0.09<br>0 - 2.4              | 1° - 8'                       | 0.21<br>17            | 500<br>3450                                 | 9000<br>40,050                        |
| 6<br>DN150              | 6.900<br>175.3                          | 0 - 0.09<br>0 - 2.4              | 0° - 47'                      | 0.14<br>12            | 400<br>2750                                 | 14,950<br>66,528                      |
| 8<br>DN200              | 9.050<br>229.9                          | 0 - 0.09<br>0 - 2.4              | 0° - 36'                      | 0.11<br>9             | 400<br>2750                                 | 25,600<br>113,920                     |
| 10<br>DN250             | 11.100<br>281.9                         | 0 - 0.16<br>0 - 4.0              | 0° - 48'                      | 0.15<br>13            | 350<br>2410                                 | 33,850<br>150,632                     |
| 12<br>DN300             | 13.200<br>335.3                         | 0 - 0.16<br>0 - 4.0              | 0° - 41'                      | 0.13<br>11            | 350<br>2410                                 | 47,900<br>213,070                     |
| 14<br>DN350             | 15.300<br>388.6                         | 0 - 0.16<br>0 - 4.0              | 0° - 35'                      | 0.11<br>9             | 250<br>1725                                 | 45,950<br>204,470                     |
| 16<br>DN400             | 17.400<br>442.0                         | 0 - 0.25<br>0 - 6.4              | 0° - 49'                      | 0.16<br>13            | 250<br>1725                                 | 59,400<br>264,330                     |
| 18<br>DN450             | 19.500<br>495.3                         | 0 - 0.25<br>0 - 6.4              | 0° - 44'                      | 0.14<br>12            | 250<br>1725                                 | 74,650<br>332,190                     |
| 20<br>DN500             | 21.600<br>548.6                         | 0 - 0.25<br>0 - 6.4              | 0° - 40'                      | 0.12<br>10            | 150<br>1035                                 | 54,900<br>244,305                     |
| 24<br>DN600             | 25.800<br>655.3                         | 0 - 0.25<br>0 - 6.4              | 0° - 33'                      | 0.11<br>9             | 150<br>1035                                 | 78,400<br>348,740                     |
| 30<br>DN750             | 32.000<br>812.8                         | 0 - 0.47<br>0 - 11.9             | 0° - 51'                      | 0.17<br>14            | 150<br>1035                                 | 120,570<br>536,530                    |
| 36<br>DN900             | 38.300<br>972.8                         | 0 - 0.47<br>0 - 11.9             | 0° - 47'                      | 0.15<br>13            | 150<br>1035                                 | 172,815<br>769,030                    |

<sup>4</sup> Allowable Pipe End Separation and Deflection figures show the maximum nominal range of movement available at each joint for pipe prepared to flexible cut grooved specifications. Pipe cut grooved to rigid cut grooved specifications does not permit expansion and contraction.

<sup>5</sup> Working Pressure and End Load are total, from all internal and external loads, based on AWWA class 53 or higher ductile iron pipe radius cut grooved in accordance with Victaulic published radius cut groove dimensions.

**NOTE**

- WARNING: FOR ONE TIME FIELD TEST ONLY, the Maximum Joint Working Pressure may be increased to 1 ½ times the figures shown.

## 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.
- Wear safety glasses, hardhat, and foot protection.

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

## 7.0 REFERENCE MATERIALS

[23.01: AWWA Ductile Iron Pipe - Grooved System](#)

[23.05: AWWA \(Cast\) Fittings](#)

[25.05: Radius Cut Groove Specifications](#)

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

[I-300: Field Installation Handbook](#)

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

### 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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