

# Victaulic® Suction Vibration Isolation Pump Drop

## Series 381/381G



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### 1.0 PRODUCT DESCRIPTION

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#### Available Sizes

- 3 – 12"/DN80 – DN300

#### Maximum Working Pressure

- Rated to the working pressure of the flange connection up to a maximum of 300 psi/2068 kPa/21 bar

#### Temperature Range

- –30°F to +230°F/–34°C to +110°C

#### End Preparation (specify choice)

**Series 381:** 3 – 12"/DN80 – DN300: Class 150 flange

**Series 381G:** 4 – 8"/DN100 – DN200: Original Groove System (OGS)

#### Application

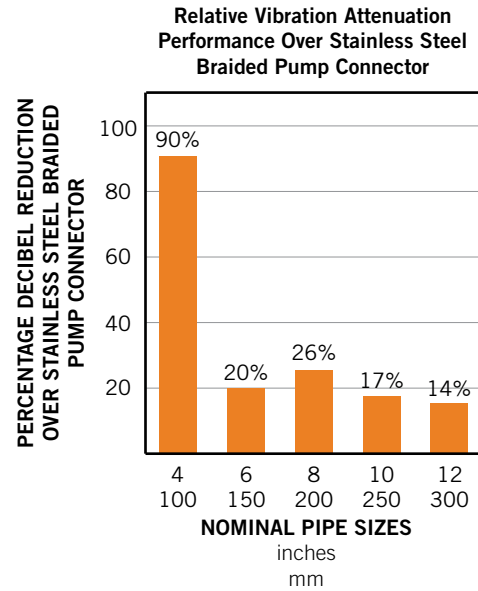
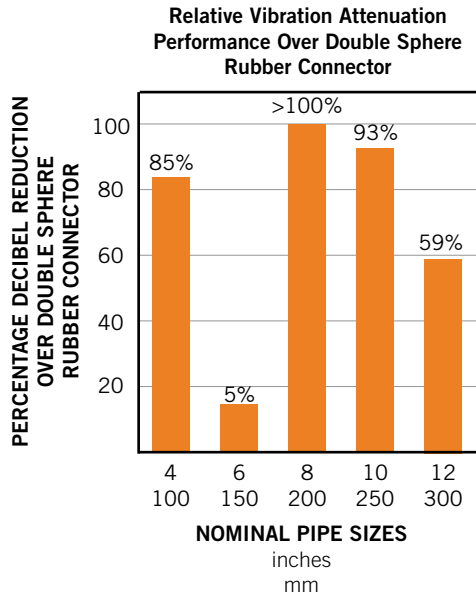
- This Suction Vibration Isolation Pump Drop connects the water flow intake to the pump in the mechanical room.
- Provides vibration isolation, noise reduction, expansion, contraction and deflection.

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

## 1.0 PRODUCT DESCRIPTION (CONTINUED)

### Vibration Attenuation Performance

- The following charts show the relative **vibration attenuation characteristics** of the Series 381/381G Suction Vibration Isolation Pump Drop compared to double sphere rubber connectors and stainless steel braided pump connectors, respectively, for typical HVAC pump speeds.
- For all sizes shown, the vibration attenuation provided by the Series 381/381G exceeds the vibration attenuation characteristics of the other products tested, for typical HVAC pump speeds.



- Additionally, the Series 381/381G provides **linear movement and angular deflection capabilities**, along with the ability to **accommodate piping misalignment**, which should reduce stresses at pump or equipment connections.
- The use of either cut grooved or roll grooved pipe offers the same vibration attenuation characteristics.

**NOTE**

- For more information, please refer to [publication 26.04](#): Victaulic Couplings Vibration Attenuation Characteristics.

## 2.0 CERTIFICATION/LISTINGS

Product designed and manufactured under the Victaulic Quality Management System, as certified by LPCB in accordance with ISO-9001:2015.

### 3.0 SPECIFICATIONS – MATERIAL

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- Standard weight carbon steel conforming to ASTM A53 Grade B.
- Victaulic Original Groove System (OGS).
- Standard orange coating.
- Gaskets: EPDM.
- Bolts/Nuts: Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449. Carbon steel heavy hex nuts meeting the mechanical property requirements of ASTM A563 Grade B. Track bolts and heavy hex nuts are zinc electroplated per ASTM B633 Fe/Zn5, finish Type III (imperial) or Type II (metric).

**Ductile iron butterfly valve:** Body, end face, and seal retainer conforming to ASTM A536, Grade 65-45-12 with black coating.

**Disc:** Ductile iron conforming to ASTM A536, Grade 65-45-12, with electroless nickel coating conforming to ASTM B733.

**Seat:** EPDM.

**Stem:** 416 stainless steel conforming to ASTM A582.

**Stem Seal Cartridge:** C36000 brass.

**Bearings:** Fiberglass and 316 stainless steel with TFE lining.

**Stem Seal:** Furnished in same materials as seat.

**Stem Retaining Ring:** Carbon steel.

**10-Position Handle:** Sizes 3 – 6"/DN80 – DN150: Zinc-plated carbon steel handle with zinc-plated carbon steel latch plate and zinc-plated carbon steel fasteners, infinitely variable, padlockable and includes memory stop. Optionally available with tamper-resistant hardware.

**Gear Operator:** Sizes 8 – 12"/DN200 – DN300: Provided with handwheel.

**Ductile iron suction diffuser:** Body, coupling and end cap conforming to ASTM A395, with orange coating.

**Diffuser:** Type 304 stainless steel, frame and perforated sheet with  $5/32$ "/4 mm diameter holes.

**Start-Up Pre-Filter:** 20 mesh stainless steel, Type 304.

**Bolts/Nuts:** Heat-treated plated carbon steel, trackhead meeting the physical and chemical requirements of ASTM A449 and physical requirements of ASTM A183.

**1 1/4" – 18 UNEF Female Thermometer Connection** (Fits most commercially available thermometers with the well removed)

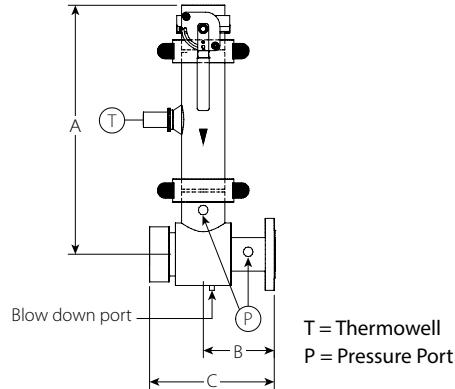
**NOTE**

- $3/4$ " female NPT thermometer connection also available. Contact Victaulic for more information.

## 4.0 DIMENSIONS

### Series 381 Suction Vibration Isolation Pump Drop

#### Class 150 Flanged End Connection

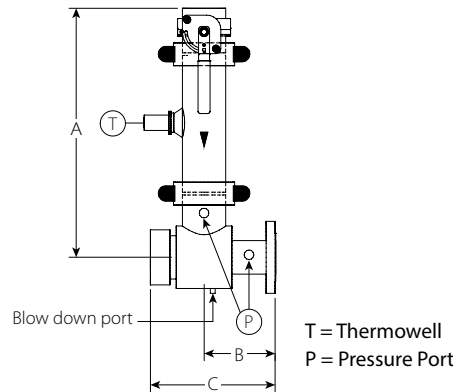


Size				Dimensions			Pressure Port Thread Size	Weight		
Nominal inches DN		Actual Outside Diameter inches mm		A inches mm	B inches mm	C inches mm		Approximate (Each)		
Valve Inlet x Flange Outlet		Valve Inlet x Flange Outlet						lb <sup>1</sup> kg		
3 DN80	x	2 DN50	3.500 88.9	x	2.375 60.3	21.88 556	6.31 1600	11.00 279	¼" NPT	44.9 20.4
						2.875 73.0	6.31 160	11.00 279	¼" NPT	50.8 23.0
						3.500 88.9	21.88 556	6.31 160	11.00 279	¼" NPT
4 DN100	x	2 DN50	4.500 114.3	x	2.375 60.3	28.00 711	6.31 160	11.00 279	¼" NPT	78.3 35.5
						2.875 73.0	7.38 187	13.00 330	¼" NPT	60.3 27.4
						3.500 88.9	7.38 187	13.00 330	¼" NPT	62.2 28.2
						4.500 114.3	7.38 187	13.00 330	¼" NPT	65.2 29.6
5	x	2½	5.563 141.3	x	2.875 73.0	29.82 757	7.38 187	13.00 330	¼" NPT	117.4 53.3
						3.500 88.9	8.38 213	15.00 381	½" NPT	96.1 43.6
						4.500 114.3	8.38 213	15.00 381	½" NPT	99.3 45.0
						5.563 141.3	8.38 213	15.00 381	½" NPT	102.2 46.4
6 DN150	x	3 DN80	6.625 168.3	x	3.500 88.9	32.31 821	8.38 213	15.00 381	½" NPT	151.3 68.6
						4.500 114.3	9.00 229	16.00 406	½" NPT	118.6 53.8
						5.563 141.3	9.00 229	15.81 402	½" NPT	121.9 55.3
						6.625 168.3	9.00 229	15.81 402	½" NPT	124.9 56.7

<sup>1</sup> Estimated weight using standard weight pipe.

### 4.0 DIMENSIONS (CONTINUED)

**Series 381 Suction Vibration Isolation Pump Drop**  
**Class 150 Flanged End Connection**



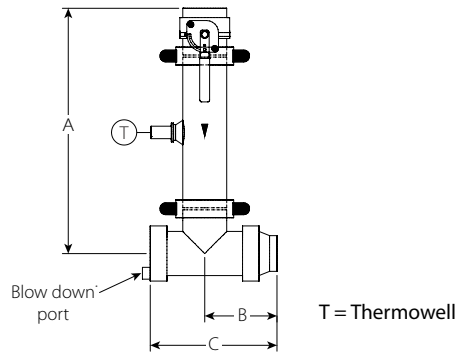
Size				Dimensions			Pressure Port Thread Size	Weight	
Nominal inches DN Valve Inlet x Flange Outlet		Actual Outside Diameter inches mm Valve Inlet x Flange Outlet		A inches mm	B inches mm	C inches mm		Approximate (Each) lb <sup>1</sup> kg	
8 DN200	x	4 DN100	8.625 219.1	4.500 114.3	33.31 846	9.00 229	16.00 406	½" NPT	229.8 104.2
		5		5.563 141.3	29.25 743	10.19 259	19.00 483	½" NPT	188.5 85.5
		6 DN150		6.625 168.3	29.25 743	10.19 259	19.00 483	½" NPT	192.1 87.1
		8 DN200		8.625 219.1	29.25 743	10.19 259	19.00 483	½" NPT	200.7 91.0
10 DN250	x	6 DN150	10.750 273.0	6.625 168.3	33.63 854	12.38 314	23.00 584	½" NPT	351.2 159.3
		8 DN200		8.625 219.1	33.63 854	12.38 314	22.50 572	½" NPT	360.5 163.5
		10 DN250		10.750 273.0	33.63 854	12.38 314	22.50 572	½" NPT	372.6 169.0
12 DN300	x	8 DN200	12.750 323.9	8.625 219.1	35.94 913	15.44 392	27.00 686	½" NPT	466.8 211.7
		10 DN250		10.750 273.0	35.94 913	15.44 392	26.81 681	½" NPT	481.7 218.5
		12 DN300		12.750 323.9	35.94 913	15.44 392	26.81 681	½" NPT	494.6 224.3

<sup>1</sup> Estimated weight using standard weight pipe.

## 4.0 DIMENSIONS

### Series 381G Suction Vibration Isolation Pump Drop

#### OGS Grooved End Connection



Size				Dimensions			Weight	
Nominal inches DN Valve Inlet x Groove Outlet	x	DN	Actual Outside Diameter		A inches mm	B inches mm	C inches mm	Approximate (Each)  lb <sup>1</sup> kg
			inches mm	inches mm				
4 DN100	x	4 DN100	4.500 114.3	x 4.500 114.3	28.31 719	9.13 232	16.00 406	95.3 43.2
5	x	4 DN100	5.563 141.3	x 4.500 114.3	30.94 786	9.13 232	16.00 406	105.2 47.7
6 DN150	x	4 DN100	6.625 168.3	x 4.500 114.3	33.06 840	9.13 232	16.00 406	130.3 59.1
		6 DN150			33.31 846			12.88 327
8 DN200	x	6 DN150	8.625 219.1	x 6.625 168.3	34.63 879	12.88 327	22.25 565	227.7 103.3
		8 DN200			35.00 889			15.13 384
10 DN250	x	6 DN150	10.750 273.0	x 6.625 168.3	37.44 951	12.88 327	22.25 565	348.8 158.2
		8 DN200			37.50 953			15.13 384
12 DN300	x	8 DN200	12.750 323.9	8.625 219.1	44.75 1137	15.13 384	27.13 689	568.9 258.0

<sup>1</sup> Estimated weight using standard weight pipe.

## 5.0 COMPONENT PERFORMANCE

### Butterfly Valve Flow Characteristics

C<sub>v</sub>/K<sub>v</sub> values for flow of water at +60°F/+16°C at full open are shown below.

Formulas for C<sub>v</sub>/K<sub>v</sub> values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

**Where:**

Q = Flow (GPM)

ΔP = Pressure Drop (psi)

C<sub>v</sub> = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

**Where:**

Q = Flow (m<sup>3</sup>/hr)

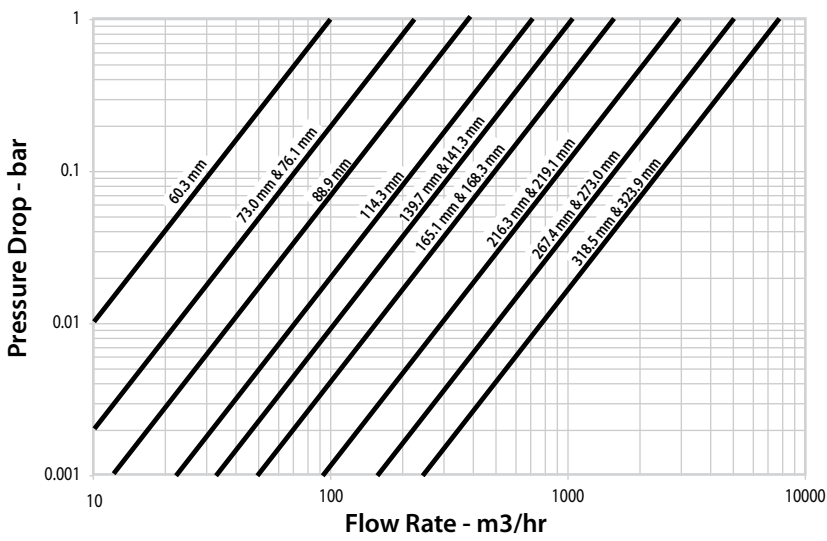
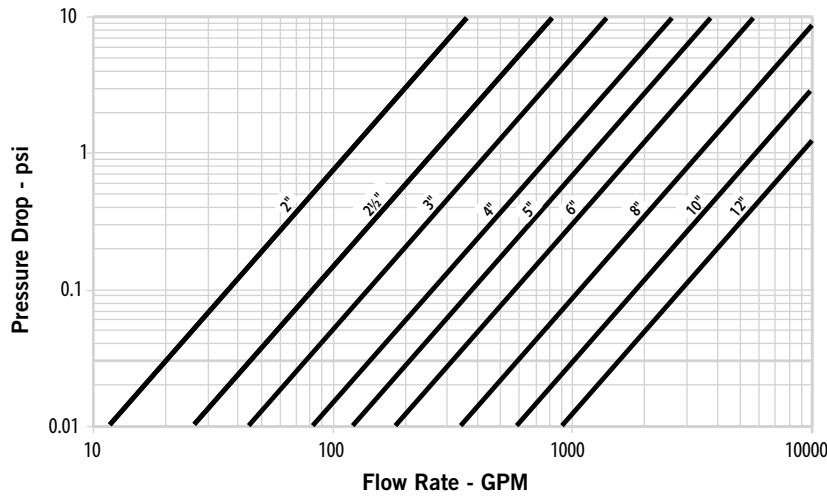
ΔP = Pressure Drop (Bar)

K<sub>v</sub> = Flow Coefficient

Size		C <sub>v</sub> K <sub>v</sub>
Nominal inches DN	Actual Outside Diameter inches mm	
3 DN80	3.500 88.90	440 379
4 DN100	4.500 114.30	820 707
5 DN125	5.563 141.30	1200 1034
6 DN150	6.625 168.30	1800 1552
8 DN200	8.625 219.10	3400 2931
10 DN250	10.750 273.00	5800 5000
12 DN300	12.750 323.90	9000 7758

## 5.0 COMPONENT PERFORMANCE (CONTINUED)

### Butterfly Valve Flow Characteristics





## 5.1 COMPONENT PERFORMANCE

### Suction Diffuser Flow Characteristics

Formulas for  $C_v/K_v$  values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

**Where:**  
 Q = Flow (GPM)  
 $\Delta P$  = Pressure Drop (psi)  
 $C_v$  = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

**Where:**  
 Q = Flow (m<sup>3</sup>/hr)  
 $\Delta P$  = Pressure Drop (Bar)  
 $K_v$  = Flow Coefficient

Size		Actual Outside Diameter		Flow Data	$C_v$ $K_v$
Nominal inches DN		inches	mm		
3 DN80	x 2 DN50	3.500 88.9	2.375 60.3	A	79 68
			2.875 73.0	A	79 68
	3 DN80	3.500 88.9	B	90 79	
4 DN100	x 2 DN50	4.500 114.3	2.375 60.3	A	79 68
			2.875 73.0	D	144 125
	3 DN80	3.500 88.9	D	144 125	
	4 DN100	4.500 114.3	E	161 139	
5	x 2½	5.563 141.3	2.875 73.0	D	144 125
			3.500 88.9	F	206 178
	4 DN100	4.500 114.3	G	232 200	
	5	5.563 141.3	H	251 217	
6 DN150	x 3 DN80	6.625 168.3	3.500 88.9	F	206 178
			4.500 114.3	I	295 255
	5	5.563 141.3	J	431 373	
	6 DN150	6.625 168.3	J	431 373	
8 DN200	x 4 DN100	8.625 219.1	4.500 114.3	I	295 255
			5.563 141.3	L	509 440
	6 DN150	6.625 168.3	M	554 479	
	8 DN200	8.625 219.1	N	561 485	
10 DN250	x 6 DN150	10.750 273.0	6.625 168.3	O	821 710
			8.625 219.1	P	917 793
	10 DN250	10.750 273.0	Q	1003 867	
12 DN300	x 8 DN200	12.750 323.9	8.625 219.1	R	1352 1170
			10.750 273.0	R	1352 1170
	12 DN0300	12.750 323.9	S	1445 1249	

## 5.1 COMPONENT PERFORMANCE (CONTINUED)

### Suction Diffuser Flow Characteristics

Formulas for  $C_v/K_v$  values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

**Where:**

Q = Flow (GPM)

$\Delta P$  = Pressure Drop (psi)

$C_v$  = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

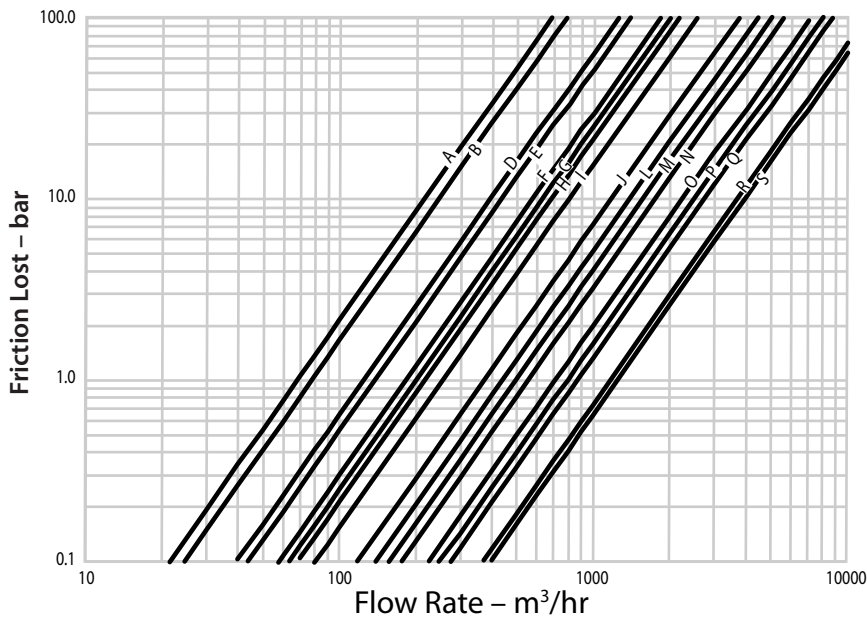
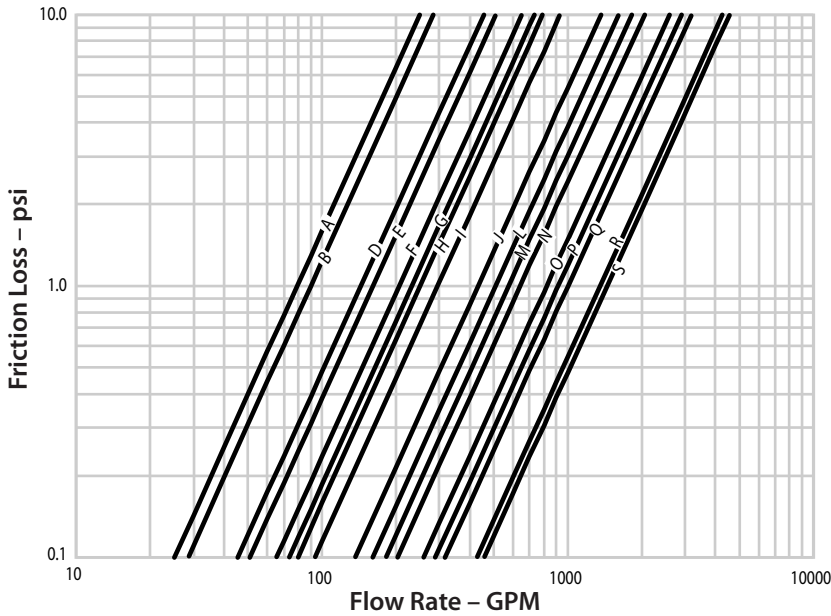
$$Q = K_v \times \sqrt{\Delta P}$$

**Where:**








Q = Flow (m<sup>3</sup>/hr)

$\Delta P$  = Pressure Drop (Bar)

$K_v$  = Flow Coefficient



## 6.0 NOTIFICATIONS

 <b>WARNING</b>					
					
<ul style="list-style-type: none"><li>• Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.</li><li>• Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.</li><li>• Wear safety glasses, hardhat, and foot protection.</li><li>• A Victaulic flexible coupling (not included) shall be installed in close proximity to the Series 381/381G Suction Vibration Isolation Pump Drop when using a vertical configuration with no reduction in pipe size.</li></ul> <p>Failure to follow these instructions could result in death or serious personal injury and property damage.</p>					

## 7.0 REFERENCE MATERIALS

- [05.01: Victaulic Seal Selection Guide](#)
- [06.15: Victaulic Pressure Ratings and End Loads for Victaulic Couplings on Steel Pipe](#)
- [08.20: Victaulic Vic-300 MasterSeal™ Butterfly Valve Series 761](#)
- [09.20: Victaulic Suction Diffuser Series 731-D](#)
- [26.01: Victaulic Design Data](#)
- [26.04: Victaulic Vibration Couplings Vibration Attenuation Characteristics](#)
- [29.01: Victaulic Terms and Conditions/Warranty](#)
- [I-100: Victaulic Field Installation Handbook](#)
- [I-177N: Victaulic Installation Instructions for QuickVic™ Flexible Coupling - Style 177N](#)
- [I-731D: Victaulic Installation & Servicing Instructions for Suction Diffuser - Series 731-D](#)

### 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](http://www.victaulic.com).

### Warranty

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

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