

Victaulic® Discharge Vibration Isolation Pump Drop Series 390



1.0 PRODUCT DESCRIPTION

Available Sizes

- 3 – 12"/DN80 – DN300
- Offered in full or reduced port size (see Section 4.0 for details).

Maximum Working Pressure

- Rated to the working pressure of the PN10/PN16, the Class 150, or the Australian Table E flange connection.

Temperature Range

- –30°F to +230°F/–34°C to +110°C

Application

- This Discharge Vibration Isolation Pump Drop connects a pump to the interconnecting pipe/discharge header in the mechanical room.
- Provides noise reduction, expansion, contraction and deflection.

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

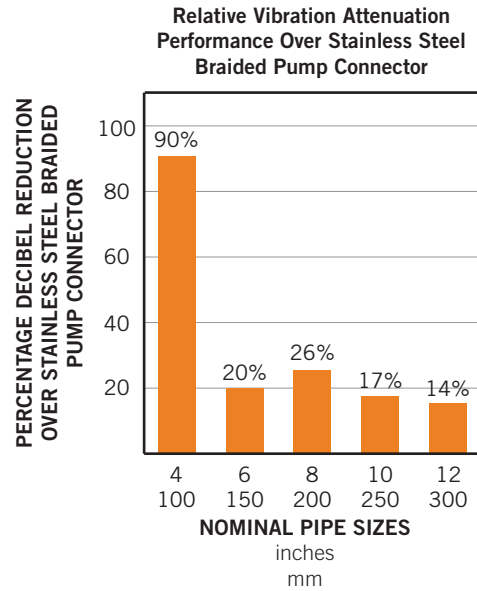
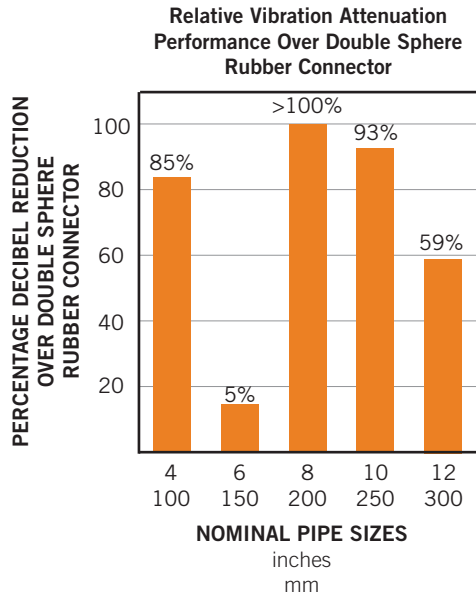
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1.0 PRODUCT DESCRIPTION (Continued)

Vibration Attenuation Performance

- The following charts show the relative **vibration attenuation characteristics** of the Series 390 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 390 exceeds the vibration attenuation characteristics of the other products tested, for typical HVAC pump speeds.



- Additionally, the Series 390 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-9001:2008.

3.0 SPECIFICATIONS – MATERIAL

- Standard weight carbon steel conforming to ASTM A53 Grade B or equal.
- Victaulic Original Groove System (OGS).
- Standard coating: Orange enamel.
- Gaskets are 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 ZN/FE5, 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 body black alkyd enamel coating.

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

Seat: EPDM.

Stems: 416 stainless steel conforming to ASTM A582.

Bearings: Fiberglass or 316 stainless steel with TFE lining.

Stem Seals: Furnished in same materials as seat.

Stem Retaining Ring: Carbon steel.

Lever Handle: Sizes 3 – 6"/DN80 – DN150: 10 Position (with Lever Lock) – 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 check valve conforming to ASTM A536, Grade 65-45-12.

Disc Coating/O-Ring: EPDM

Body Seat: Size 3"/DN80: Machined surfaces electroless nickel plated. Sizes 4 – 12"/DN100 – DN300: Threaded electroless nickel plated seat.

Discs: Size 3"/DN80: Stainless steel disc seats against the o-ring seal, which is mounted on the electroless nickel plated end face. Sizes 4 – 12"/DN100 – DN300: Elastomer encapsulated disc and electroless nickel plated seat.

Shaft: Size 3"/DN80: Brass. Sizes 4 – 12"/DN100 – DN300: Type 316 stainless steel.

Spring: Type 302/304 stainless steel.

Shaft Plug: Size 3"/DN80 only: Type 416 stainless steel.

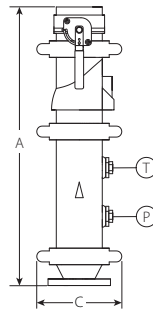
Pipe Plug: Sizes 4 – 12"/DN100 – DN300 only: Zinc plated carbon steel to ASTM B633.

Thermometer Connection: 3/4" BSPT or 3/4" BSPP outlet

Pressure Gauge Connection: 3/4" BSPT or 3/4" BSPP outlet

4.0 DIMENSIONS

Series 390 Vertical Discharge Vibration Isolation Pump Drop



Vertical Pump Installation

Size		Dimensions		Weight			
Actual Outside Diameter		A	C	Approximate (Each)			
mm	inches	mm	inches	kg ¹			
inches		inches		lb			
88.9 3.500	x	60.3	722.0	172.7	18.1		
		2.375	28.43	6.80	39.9		
		73.0	722.0	172.7	21.6		
		2.875	28.43	6.80	47.6		
		76.1*	722.0	172.7	19.0		
		3.000	28.43	6.80	41.9		
88.9 3.500	x	88.9	654.0	172.7	17.9		
		3.500	25.75	6.80	39.5		
		114.3 4.500	x	60.3	762.0	200.7	27.8
				2.375	30.00	7.90	61.3
				73.0	762.0	200.7	32.8
				2.875	30.00	7.90	72.3
76.1*	762.0			200.7	27.8		
3.000	30.00			7.90	61.3		
88.9 3.500	x	88.9	762.0	200.7	28.2		
		3.500	30.00	7.90	62.2		
		114.3	679.0	200.7	26.2		
		4.500	26.73	7.90	57.8		
		139.7 5.500	x	76.1*	918.0	241.3	39.3
				3.000	36.14	9.50	86.6
88.9*	918.0			241.3	40.1		
3.500	36.14			9.50	88.4		
114.3*	930.0			241.3	47.0		
4.500	36.61			9.50	103.6		
139.7 5.500	x	139.7*	810.0	241.3	37.0		
		5.500	31.89	9.50	81.6		
		141.3 5.563	x	73.0	918.0	241.3	39.3
				2.875	36.14	9.50	86.6
				88.9	918.0	241.3	40.1
				3.500	36.14	9.50	88.4
114.3	905.0			241.3	40.5		
4.500	35.63			9.50	89.3		
141.3 5.563	x	141.3	810.0	241.3	37.0		
		5.563	31.89	9.50	81.6		
		165.1 6.500	x	88.9*	1019.0	276.9	52.8
				3.500	40.12	10.90	116.4
				114.3*	1019.0	276.9	53.2
				4.500	40.12	10.90	117.3
139.7*	1019.0			276.9	53.7		
5.500	40.12			10.90	118.4		
165.1 6.500	x	165.1*	911.0	276.9	48.1		
		6.500	35.87	10.90	106.0		

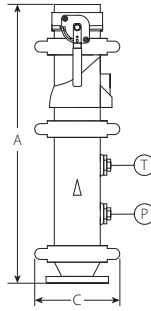
¹ Estimated weight using standard weight pipe.

NOTE

- The sizes marked with this symbol "*" are available in EMEAI only.

4.0 DIMENSIONS (Continued)

Series 390 Vertical Discharge Vibration Isolation Pump Drop



Vertical Pump Installation

Size		Dimensions		Weight	
Actual Outside Diameter		A	C	Approximate (Each)	
mm	inches	mm	mm	kg ¹	
inches		inches	inches	lb	
168.3 6.625	x	88.9	1019.0	276.9	52.8
		3.500	40.12	10.90	116.4
		114.3	1019.0	276.9	53.2
		4.500	40.12	10.90	117.3
		139.7*	1019.0	276.9	53.7
		5.500	40.12	10.90	118.4
		141.3	1019.0	276.9	53.7
5.563	40.12	10.90	118.4		
168.3	911.0	276.9	48.1		
6.625	35.87	10.90	106.0		
219.1 8.625	x	88.9 ⁱ	1251.0	375.9	79.1
		3.500	49.25	14.80	174.4
		114.3	1253.0	375.9	86.1
		4.500	49.33	14.80	190.0
		139.7*	1253.0	375.9	86.7
		5.500	49.33	14.80	191.1
		141.3	1253.0	375.9	86.7
		5.563	49.33	14.80	191.1
		165.1*	1253.0	375.9	87.4
		6.500	49.33	14.80	192.7
168.3	1253.0	375.9	87.4		
6.625	49.33	14.80	192.7		
219.1	1117.0	375.9	80.5		
8.625	43.98	14.80	177.5		
273.0 10.750	x	165.1*	1518.0	434.3	186.2
		6.500	59.76	17.10	410.5
		168.3	1518.0	434.3	186.2
		6.625	59.76	17.10	410.5
		219.1	1518.0	434.3	190.1
8.625	59.76	17.10	419.1		
273.0	1362.0	434.3	171.3		
10.750	53.62	17.10	377.7		
323.9 12.750	x	219.1	1762.0	490.2	245.9
		8.625	69.37	19.30	542.1
		273.0	1762.0	490.2	243.3
		10.750	69.37	19.30	536.4
323.9	1581.0	490.2	222.4		
12.750	62.24	19.30	490.3		

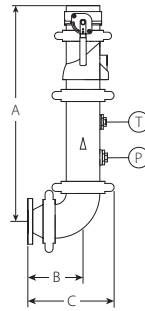
¹ Estimated weight using standard weight pipe.

NOTES

- The sizes marked with this symbol "*" are available in EMEAI only.
- The size marked with this symbol "i" is available in Australia only.

4.1 DIMENSIONS

Series 390 Horizontal Discharge Vibration Isolation Pump Drop



Horizontal Pump Installation

Size		Dimensions			Weight	
Actual Outside Diameter	mm inches	A	B	C	Approximate (Each) kg ¹ lb	
		mm inches	mm inches	mm inches		
88.9 3.500	x	60.3	765	178	265	22.5
		2.375	30.12	7.01	10.43	49.6
	73.0 2.875	76.1	765	178	265	23.8
		3.000	30.12	7.01	10.43	52.5
		76.1	765	178	265	23.3
		3.000	30.12	7.01	10.43	51.4
88.9 3.500	767 30.20	108 4.25	195 7.68	21.0 46.3		
114.3 4.500	x	60.3	810	213	314	32.8
		2.375	31.89	8.39	12.36	72.3
	73.0 2.875	76.1	810	213	314	32.8
		3.000	31.89	8.30	12.36	72.3
		76.1	810	213	314	32.8
	88.9 3.500	810 31.89	213 8.39	314 12.36	33.3 73.4	
	114.3 4.500	813 32.01	127 5.00	228 8.98	30.5 67.2	
139.7 5.500	x	76.1	953	251	372	47.0
		3.000	37.52	9.88	14.65	103.6
	88.9 3.500	88.9	953	251	372	47.8
		3.500	37.52	9.88	14.65	105.4
		88.9	953	264	385	54.7
	139.7 5.500	956 37.64	140 5.51	261 10.28	43.6 96.1	
141.3 5.563	x	73.0	953	251	372	47.0
		2.875	37.52	9.88	14.65	103.6
	88.9 3.500	88.9	953	251	372	47.8
		3.500	37.52	9.88	14.65	105.4
		88.9	953	251	359	48.2
	141.3 5.563	956 37.64	140 5.51	261 10.28	44.0 97.0	
	165.1 6.500	x	88.9	1080	276	415
3.500			42.52	10.87	16.34	155.6
114.3 4.500		114.3	1080	276	415	61.9
		4.500	42.52	10.87	16.34	136.5
		114.3	1080	276	415	62.0
165.1 6.500		1080 42.52	276 10.87	415 16.34	62.0 136.7	
165.1 6.500	1080 42.52	165 6.50	302 11.89	59.4 131.0		

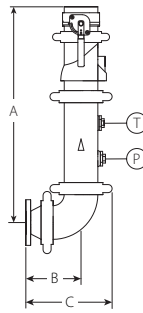
¹ Estimated weight using standard weight pipe.

NOTE

- All sizes of the Series 390 HORIZONTAL discharge vibration isolation pump drop are available in EMEA only.

4.1 DIMENSIONS (Continued)

Series 390 Horizontal Discharge Vibration Isolation Pump Drop



Horizontal Pump Installation

Size		Dimensions			Weight		
Actual Outside Diameter		A	B	C	Approximate (Each)		
mm	inches	mm	mm	mm	kg ¹		
		inches	inches	inches	lb		
168.3 6.625	x	88.9	1080	276	415	70.6	
		3.500	42.52	10.87	16.34	155.6	
			114.3	1080	276	415	61.9
			4.500	42.52	10.87	16.34	136.5
			139.7	1080	276	415	62.0
			5.500	42.52	10.87	16.34	136.7
			141.3	1080	276	415	62.0
			5.563	42.52	10.87	16.34	136.7
			168.3	1083	165	302	49.4
			6.625	42.64	6.50	11.89	109.0
219.1 8.625	x	114.3	1319	334	500	104.1	
		4.500	51.93	13.15	19.68	229.5	
			139.7	1319	334	500	105.2
			5.500	51.93	13.15	19.68	231.9
			141.3	1319	334	500	105.2
			5.563	51.93	13.15	19.68	231.9
			165.1	1319	334	500	101.1
			6.500	51.93	13.15	19.68	222.9
			168.3	1319	334	500	101.1
			6.625	51.93	13.15	19.68	222.9
		219.1	1322	197	363	96.7	
		8.625	52.05	7.76	14.29	213.2	
273.0 10.750	x	165.1	1595	384	602	225.6	
		6.500	62.80	15.12	23.70	497.4	
			168.3	1595	384	602	225.6
			6.625	62.80	15.12	23.70	497.4
			219.1	1595	384	602	190.5
			8.625	62.80	15.12	23.70	420.0
		273.0	1594	229	441	212.3	
		10.750	62.76	9.02	17.36	468.0	
323.9 12.750	x	219.1	1840	435	681	293.0	
		8.625	72.44	17.13	26.81	646.0	
			273.0	1840	435	681	292.9
			10.750	72.44	17.13	26.81	645.7
			323.9	1838	254	500	270.6
		12.750	72.36	10.00	19.68	596.6	

¹ Estimated weight using standard weight pipe.

NOTE

- All sizes of the Series 390 HORIZONTAL discharge vibration isolation pump drop are available in EMEA only.

5.0 COMPONENT PERFORMANCE

Butterfly Valve Flow Characteristics

C_v/K_v values for flow of water at +60°F/+16°C with various disc positions are shown in the table below.

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)

ΔP = 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 (m³/hr)

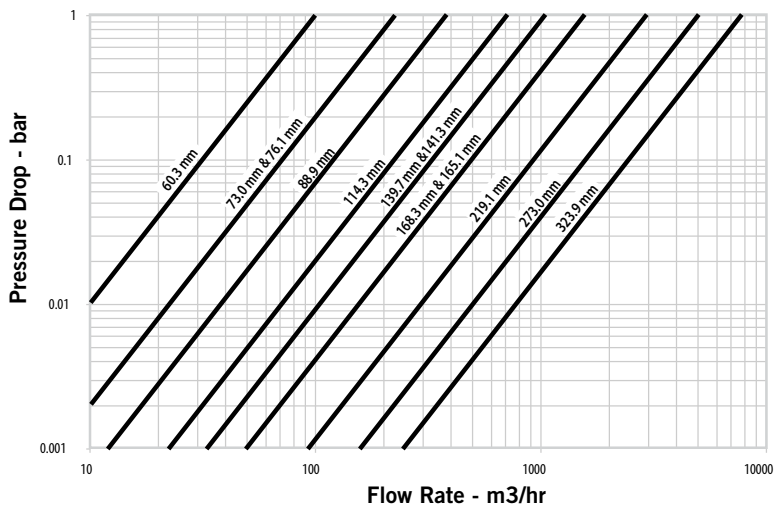
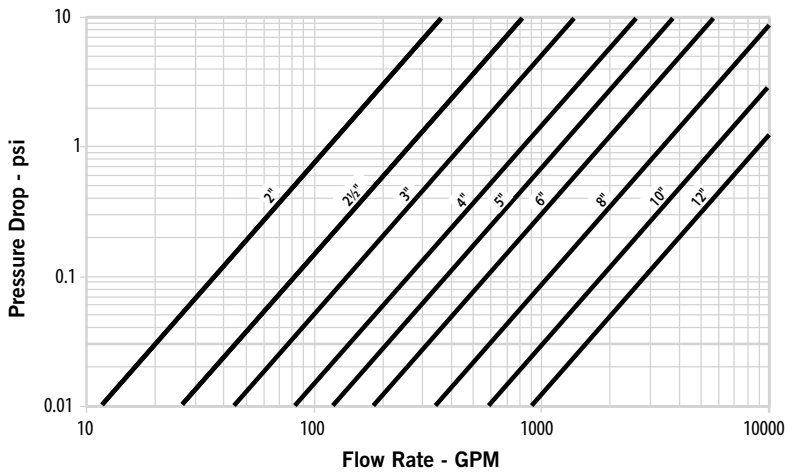
ΔP = Pressure Drop (Bar)







K_v = Flow Coefficient

Size		(Full Open) C _v K _v
Nominal inches DN	Actual Outside Diameter inches mm	
3 DN80	3.500 88.9	440 379
4 DN100	4.500 114.3	820 707
5 DN125	5.563 141.3	1200 1034
6 DN150	6.625 168.3	1800 1552
8 DN200	8.625 219.1	3400 2931
10 DN250	10.750 273.0	5800 5000
12 DN300	12.750 323.9	9000 7758

5.0 COMPONENT PERFORMANCE (Continued)

Butterfly Valve Flow Characteristics



Size		Flow Coefficients					
Nominal inches DN	Actual Outside Diameter inches mm	Disc Position (Degrees Open)					
		90	70	60	50	40	30
		 C _v K _v	 C _v K _v	 C _v K _v	 C _v K _v	 C _v K _v	 C _v K _v
3 DN80	3.500 88.9	440 379	230 198	140 121	90 78	50 43	26 22
4 DN100	4.500 114.3	820 707	430 371	250 216	160 138	100 86	50 43
5 DN125	5.563 141.3	1200 1034	620 534	370 319	240 207	140 121	70 60
6 DN150	6.625 168.3	1800 1552	940 8190	560 483	360 310	220 190	110 95
8 DN200	8.625 219.1	3400 2931	1770 1526	1050 905	670 578	410 353	200 172
10 DN250	10.750 273.0	5800 5000	3020 2603	1800 1552	1150 991	700 603	350 302
12 DN300	12.750 323.9	9000 7758	4680 4034	2790 2405	1780 1534	1080 931	540 465

5.1 COMPONENT PERFORMANCE

Check Valve Flow Characteristics

C_v/K_v values for flow of water at +60°F/+16°C at full open are shown in the table below.

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)
 ΔP = Pressure Drop (psi)
 C_v = Flow Coefficient

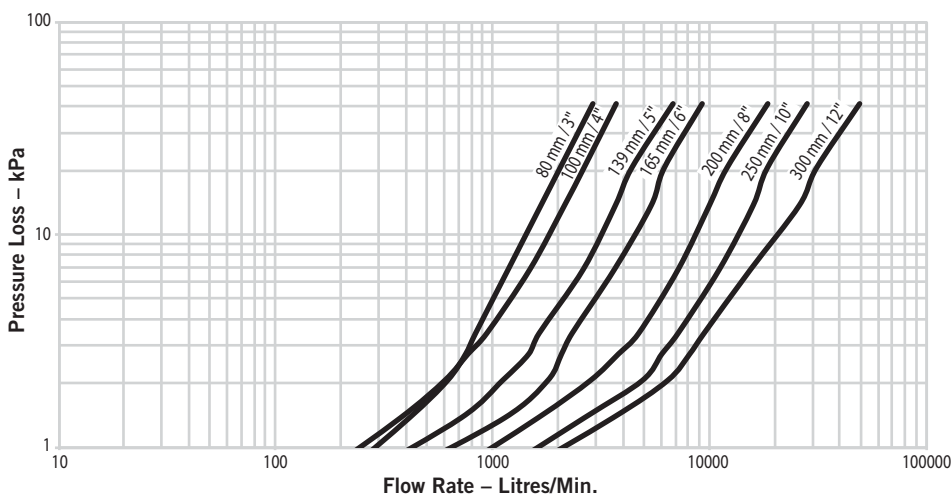
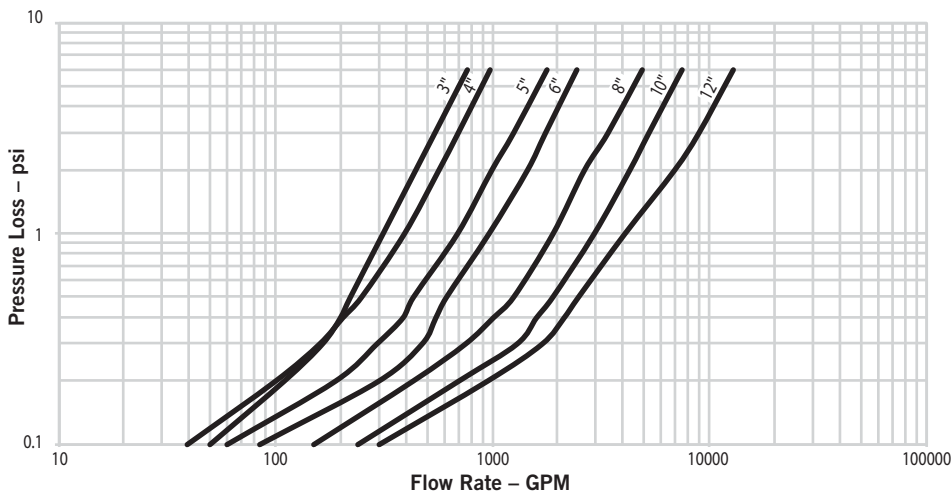
$$\Delta P = \frac{Q^2}{K_v^2}$$

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

Where:







Q = Flow (m³/hr)
 ΔP = Pressure Drop (Bar)
 K_v = Flow Coefficient

Size			Size		
Nominal inches DN	Actual Outside Diameter inches mm	(Full Open) C _v K _v	Nominal inches DN	Actual Outside Diameter inches mm	(Full Open) C _v K _v
3 DN80	3.500 88.9	315 273	8 DN200	8.625 219.1	1800 1557
4 DN100	4.500 114.3	390 337	10 DN250	10.750 273.0	3000 2595
5 DN125	5.563 141.3	700 606	12 DN300	12.750 323.9	4200 3633
6 DN150	6.625 168.3	1000 865			



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.
- A Victaulic flexible coupling (not included) must also be installed in the piping above the Series 390 Discharge Vibration Isolation Pump Drop when using a vertical configuration with no reduction in pipe size.

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

7.0 REFERENCE MATERIALS

- [05.01: Victaulic Seal Selection Guide](#)
- [06.15: Victaulic Pressure Ratings and End Loads for Victaulic Couplings on Steel Pipe](#)
- [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: Installation Instructions for QuickVic™ Flexible Coupling - Style 177N](#)
- [I-ENDCAP: Victaulic End Cap Installation Instructions](#)

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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