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.

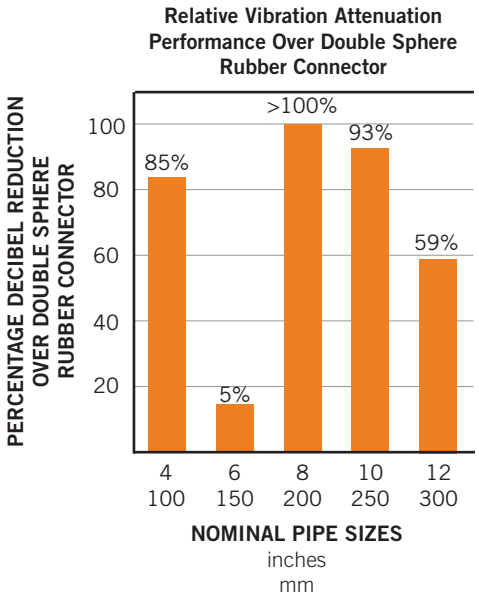
System No.		Location	
Submitted By		Date	

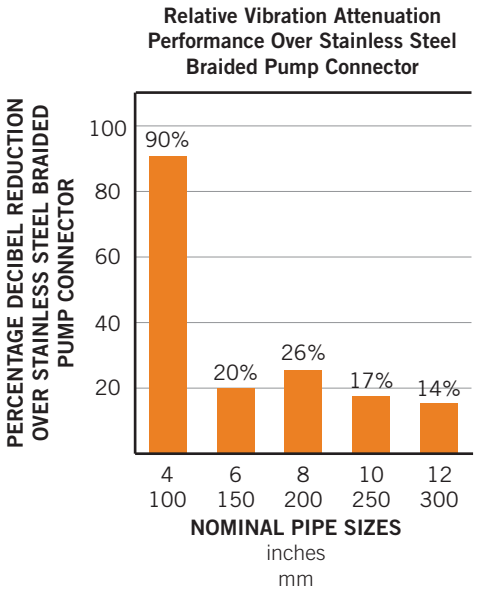
Spec Section		Paragraph	
Approved		Date	

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.

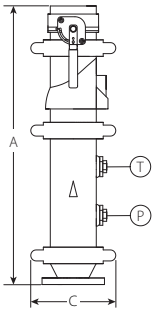
Pipe Plug: Sizes 4 – 12"/DN100 – DN300 only: Zinc plated carbon steel to ASTM B633.

Thermometer Connection: ¾" BSPT or ¾" BSPP outlet

Pressure Gauge Connection: ¾" BSPT or ¾" BSPP outlet

4.0 DIMENSIONS

Series 390 Vertical Discharge Vibration Isolation Pump Drop



Vertical Pump Installation

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

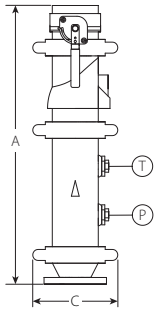
[1] Estimated weight using standard weight pipe.

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

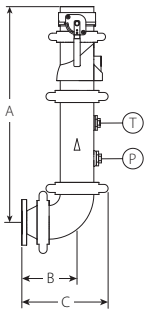
[1] Estimated weight using standard weight pipe.

NOTES

- The sizes marked with this symbol "*" are available in EMEAI only.
- The size marked with this symbol "†" 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 mm inches	B mm inches	C mm inches	Approximate (Each) kg[1] lb
88.9 3.500	x	60.3 2.375	765 30.12	178 7.01	265 10.43	22.5 49.6
		73.0 2.875	765 30.12	178 7.01	265 10.43	23.8 52.5
		76.1 3.000	765 30.12	178 7.01	265 10.43	23.3 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 2.375	810 31.89	213 8.39	314 12.36	32.8 72.3
		73.0 2.875	810 31.89	213 8.39	314 12.36	32.8 72.3
		76.1 3.000	810 31.89	213 8.30	314 12.36	32.8 72.3
		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 3.000	953 37.52	251 9.88	372 14.65	47.0 103.6
		88.9 3.500	953 37.52	251 9.88	372 14.65	47.8 105.4
		114.3 4.500	953 37.52	264 10.39	385 15.16	54.7 120.6
		139.7 5.500	956 37.64	140 5.51	261 10.28	43.6 96.1
141.3 5.563	x	73.0 2.875	953 37.52	251 9.88	372 14.65	47.0 103.6
		88.9 3.500	953 37.52	251 9.88	372 14.65	47.8 105.4
		114.3 4.500	953 37.52	251 9.88	359 14.13	48.2 106.3
		141.3 5.563	956 37.64	140 5.51	261 10.28	44.0 97.0
165.1 6.500	x	88.9 3.500	1080 42.52	276 10.87	415 16.34	70.6 155.6
		114.3 4.500	1080 42.52	276 10.87	415 16.34	61.9 136.5
		139.7 5.500	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

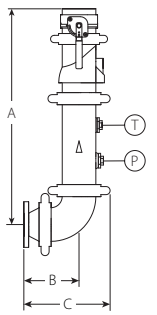
[1] Estimated weight using standard weight pipe.

NOTE

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

4.1 DIMENSIONS (Continued)

Series 390 Horizontal Discharge Vibration Isolation Pump Drop



Horizontal Pump Installation

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

[1] Estimated weight using standard weight pipe.

NOTE

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

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

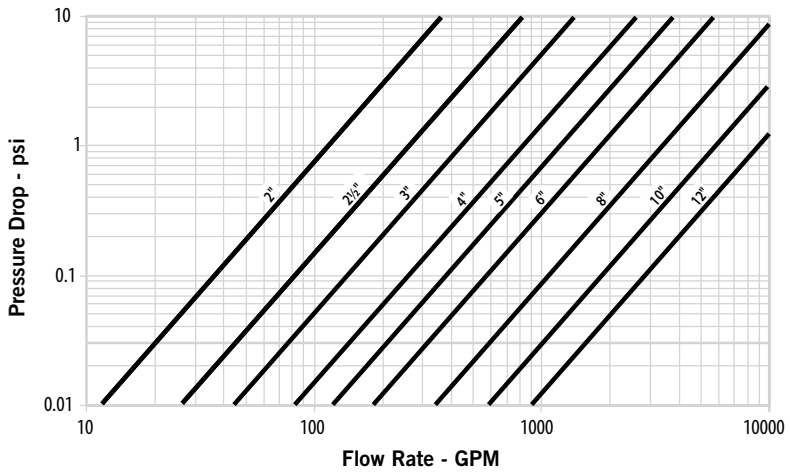
$$Q = K_v \times \sqrt{\Delta P}$$

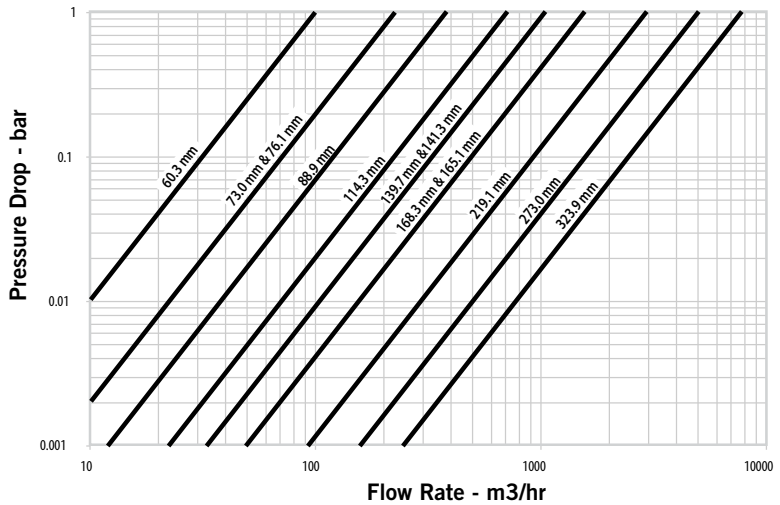
Where:
Q = Flow (m^3/hr)
ΔP = Pressure Drop (Bar)
K_v = Flow Coefficient

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

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

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

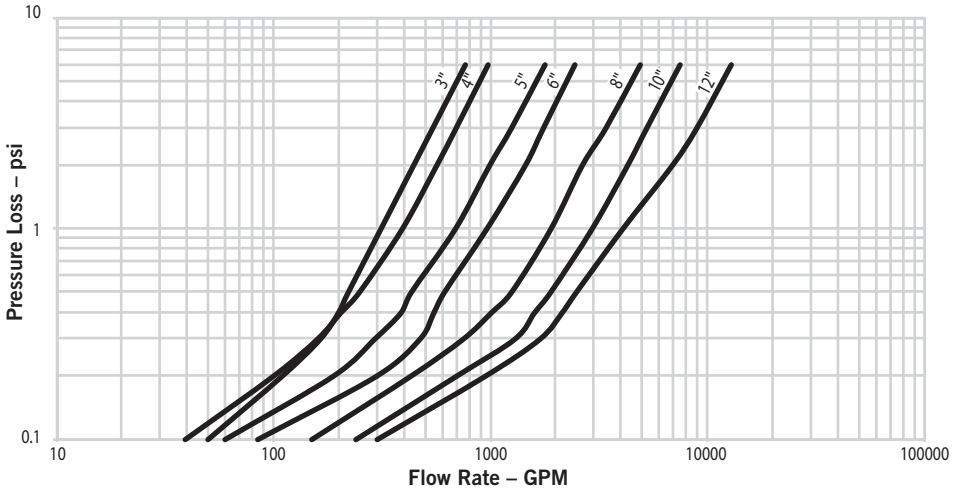
Where:
Q = Flow (GPM)
ΔP = Pressure Drop (psi)
C_v = Flow Coefficient

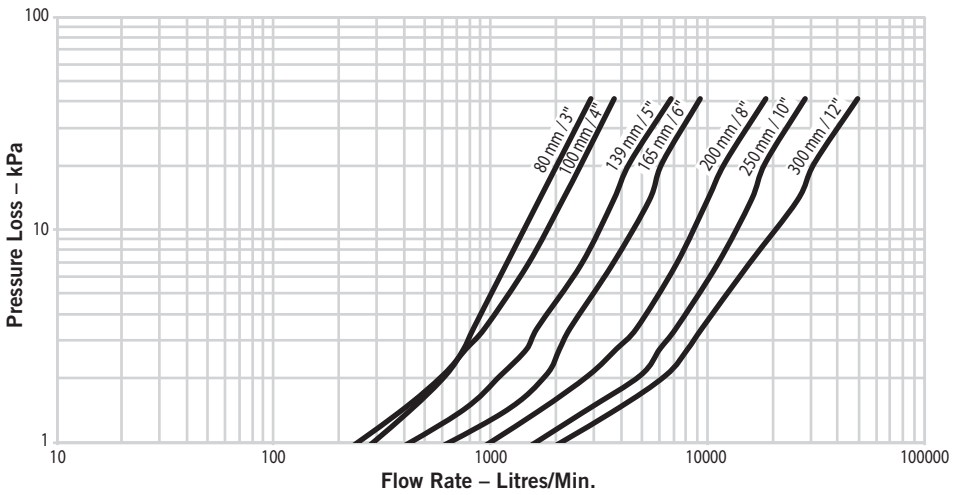
$$\Delta P = \frac{Q^2}{K_v^2}$$

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

Where:
Q = Flow (m^3/hr)
ΔP = Pressure Drop (Bar)
K_v = Flow Coefficient

Size		(Full Open)	Size		(Full Open)
Nominal inches DN	**Actual Outside Diameter** inches mm	C_v K_v	**Nominal** inches DN	**Actual Outside Diameter** inches mm	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

