

Victaulic Suction Diffuser Series W731-D



1.0 PRODUCT DESCRIPTION

Available Sizes

- 14" x 10" – 24" x 24"/DN350 x DN250 – DN600 x DN600

Pressure Class

- Rated to the working pressure of the flange machined on the outlet end up to a maximum 300 psi/2065 kPa.

Application

- Provides optimum flow conditions at the inlet side of the pump.
- Removable basket and fine mesh sleeve act as start-up strainer.
- ½"/15 mm NPT pressure taps at the inlet and the outlet of the diffuser.
- Plug in the cap allows for ease of draining of the system ([Reference Section 6.0 Notifications](#))

2.0 CERTIFICATIONS/LISTINGS



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

3.0 SPECIFICATIONS – MATERIAL

Housing (Body, Coupling, End Cap): Ductile iron conforming to ASTM A536.

Housing Coating:

- ☐ Standard: Orange Coating
- ☐ Optional: Fusion bonded epoxy (External only)

Coupling Gasket¹: (specify choice)

☐ **Victaulic EPDM**

EPDM (Green color code). Temperature range –30°F to +230°F/–34°C to +110°C. NOT RECOMMENDED FOR PETROLEUM SERVICES OR STEAM SERVICES

☐ **Victaulic Nitrile**

Nitrile (Orange color code). Temperature range –20°F to +180°F/–29°C to +82°C. Not compatible for hot water services over +150°F/+66°C or for hot dry air over +140°F/60°C. NOT RECOMMENDED FOR HOT WATER SERVICES OR STEAM SERVICES

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.

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:

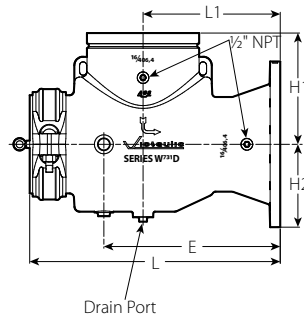
- ☐ **Standard:** Carbon steel oval neck track bolts meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial - heavy hex nuts) and ASTM A563M Class 9 (metric - hex nuts). Track bolts and hex nuts are zinc electroplated per ASTM B633 FE/ZN5, finish Type III (imperial) or Type II (metric).
- ☐ **Optional:** Stainless steel oval neck track bolts or studs meeting the mechanical property requirements of ASTM A193 Grade B8M, Class 2 (316 stainless steel). Stainless steel heavy hex nuts meeting the mechanical property requirements of ASTM A194 Grade 8M (316 stainless steel) with galling reducing coating.

Support: Boss for support. See table below for size. (Support not supplied.)

4.0 DIMENSIONS

ANSI Dimensions

Series W731-D with ANSI Class 150 Flange



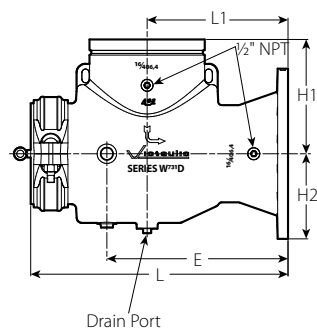
14 – 24"/350 – 600 mm

Size		Dimensions							Approx. Weight (Each)
System Side Grooved	Pump Side x Flange ANSI Class 150	Nominal Size inches mm	L inches mm	L1 inches mm	H1 inches mm	H2 inches mm	Drain Port Thread Size	E inches mm	
14 350	x	10	29	16.1	14.4	8.1	1.5-11.5 NPT	21.3	329
		250	737	410	365	205		540	149
		12	29	16.1	14.4	9.5	1.5-11.5 NPT	21.3	346
		300	737	410	365	241		540	157
16 400	x	14	29	16.1	14.4	10.6	1.5-11.5 NPT	21.3	368
		350	737	410	365	268		540	167
		12	36	19.6	15.9	9.5	1.5-11.5 NPT	25.2	465
		300	914	497	403	241		639	211
18 450	x	14	36	19.6	15.9	10.6	1.5-11.5 NPT	25.2	490
		350	914	497	403	268		639	222
		16	36	19.6	15.9	11.8	1.5-11.5 NPT	25.2	514
		400	914	497	403	300		639	233
20 500	x	14	39	21.7	17.2	10.6	1.5-11.5 NPT	27.6	789
		350	991	550	438	268		700	358
		16	39	21.7	17.2	11.8	1.5-11.5 NPT	27.6	813
		400	991	550	438	300		700	369
24 600	x	18	39	21.7	17.2	12.6	1.5-11.5 NPT	27.6	828
		450	991	550	438	321		700	376
		16	43	24.4	18.9	11.8	2-11.5 NPT	32.3	955
		400	1092	620	480	300		820	433
24 600	x	18	43	24.4	18.9	12.6	2-11.5 NPT	32.3	971
		450	1092	620	480	321		820	440
		20	43	24.4	18.9	14.1	2-11.5 NPT	32.3	1019
		500	1092	620	480	358		820	462
24 600	x	18	47	26.4	21.7	12.6	2-11.5 NPT	36.2	1256
		450	1194	670	550	321		920	570
		20	47	26.4	21.7	14.1	2-11.5 NPT	36.2	1337
		500	1194	670	550	358		920	607
24 600	x	24	47	26.4	21.7	16.5	2-11.5 NPT	36.2	1401
		600	1194	670	550	419		920	636

4.1 DIMENSIONS

DIN Dimensions

Series W731-D with EN1092-1 PN10
and PN16 flange



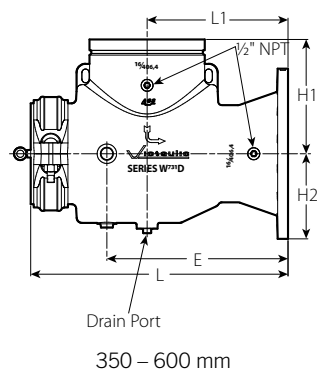
DN350 – DN600 mm

Size			Dimensions						Approx. Weight (Each) kg lb
System Side Grooved	x	Pump Side Flange PN10/PN16	L mm inches	L ₁ mm inches	H ₁ mm inches	H ₂ mm inches	Drain Port Thread Size	E mm inches	
350 14	×	250 10	737 29	410 16.1	365 14.4	205 8.1	1.5-11 ISO 7-1	540 21.3	149 329
		300 12	737 29	410 16.1	365 14.4	241 9.5	1.5-11 ISO 7-1	540 21.3	157 346
		350 14	737 29	410 16.1	365 14.4	268 10.6	1.5-11 ISO 7-1	540 21.3	167 368
		400 16	914 36	497 19.6	403 15.9	241 9.5	1.5-11 ISO 7-1	639 25.2	211 465
400 16	×	300 12	914 36	497 19.6	403 15.9	241 9.5	1.5-11 ISO 7-1	639 25.2	211 465
		350 14	914 36	497 19.6	403 15.9	268 10.6	1.5-11 ISO 7-1	639 25.2	222 490
		400 16	914 36	497 19.6	403 15.9	300 11.8	1.5-11 ISO 7-1	639 25.2	233 514
		450 18	991 39	550 21.7	438 17.2	268 10.6	1.5-11 ISO 7-1	700 27.6	358 789
450 18	×	350 14	991 39	550 21.7	438 17.2	268 10.6	1.5-11 ISO 7-1	700 27.6	358 789
		400 16	991 39	550 21.7	438 17.2	300 11.8	1.5-11 ISO 7-1	700 27.6	369 813
		450 18	991 39	550 21.7	438 17.2	321 12.6	1.5-11 ISO 7-1	700 27.6	376 828
		500 20	1092 43	620 24.4	480 18.9	300 11.8	2-11 ISO 7-1	820 32.3	433 955
500 20	×	400 16	1092 43	620 24.4	480 18.9	300 11.8	2-11 ISO 7-1	820 32.3	433 955
		450 18	1092 43	620 24.4	480 18.9	321 12.6	2-11 ISO 7-1	820 32.3	440 971
		500 20	1092 43	620 24.4	480 18.9	358 14.1	2-11 ISO 7-1	820 32.3	462 1019
		600 24	1194 47	670 26.4	550 21.7	321 12.6	2-11 ISO 7-1	920 36.2	570 1256
600 24	×	450 18	1194 47	670 26.4	550 21.7	321 12.6	2-11 ISO 7-1	920 36.2	570 1256
		500 20	1194 47	670 26.4	550 21.7	358 14.1	2-11 ISO 7-1	920 36.2	607 1337
		600 24	1194 47	670 26.4	550 21.7	419 16.5	2-11 ISO 7-1	920 36.2	636 1401

4.2 DIMENSIONS

GB Dimensions

Series W731-D with GB PN10 and PN16 Flange



350 – 600 mm

Size			Dimensions						Approx. Weight (Each) kg lb
System Side Grooved	x	Pump Side Flange GB	L mm inches	L ₁ mm inches	H ₁ mm inches	H ₂ mm inches	E mm inches		
Nominal Size mm inches							Drain Port Thread Size		
350 14	×	250 10	737 29	410 16.1	365 14.4	205 8.1	1.5-11 ISO 7-1	540 21.3	149 329
		300 12	737 29	410 16.1	365 14.4	241 9.5	1.5-11 ISO 7-1	540 21.3	157 346
		350 14	737 29	410 16.1	365 14.4	268 10.6	1.5-11 ISO 7-1	540 21.3	167 368
		377.0 14.843	914 36.00	498 19.63	403 15.88	262 10.30	1.5-11 ISO 7-1	641 25.25	196.0 432.0
400 16	×	300 12	914 36	497 19.6	403 15.9	241 9.5	1.5-11 ISO 7-1	639 25.2	211 465
		350 14	914 36	497 19.6	403 15.9	268 10.6	1.5-11 ISO 7-1	639 25.2	222 490
		400 16	914 36	497 19.6	403 15.9	300 11.8	1.5-11 ISO 7-1	639 25.2	233 514
		426.0 16.772	940 37.00	508 20.00	403 15.88	232 9.13	1.5-11 ISO 7-1	660 26.00	204.1 450.0
450 18	×	350 14	991 39	550 21.7	438 17.2	268 10.6	1.5-11 ISO 7-1	700 27.6	358 789
		400 16	991 39	550 21.7	438 17.2	300 11.8	1.5-11 ISO 7-1	700 27.6	369 813
		450 18	991 39	550 21.7	438 17.2	321 12.6	1.5-11 ISO 7-1	700 27.6	376 828
		500 20	1092 43	620 24.4	480 18.9	300 11.8	2-11 ISO 7-1	820 32.3	433 955
530.0 20.866	×	400 16	1118 44.00	630 24.80	480 18.90	292 11.50	2-11 ISO 7-1	842 33.14	401.0 884.0
		450 18	1194 47	670 26.4	550 21.7	321 12.6	2-11 ISO 7-1	920 36.2	570 1256
		500 20	1194 47	670 26.4	550 21.7	358 14.1	2-11 ISO 7-1	920 36.2	607 1337
		600 24	1194 47	670 26.4	550 21.7	419 16.5	2-11 ISO 7-1	920 36.2	636 1401
630.0 24.803	×	400 16	1219 48.00	681 26.80	552 21.75	292 11.50	2-11 ISO 7-1	940 37.00	541.1 1193.0

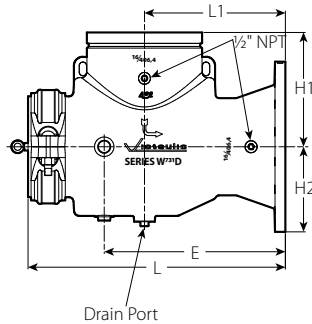
NOTE

- GB PN16 Flange for the 377X14", 426X12", 530X16", 630X16" sizes

4.3 DIMENSIONS

JIS Dimensions

Series W731-D with JIS 10K Flange



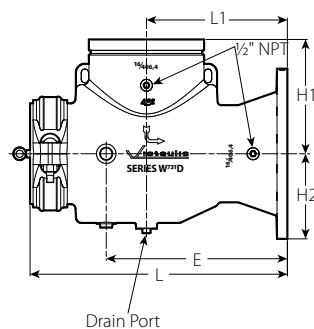
DN350A – DN600A mm

Size			Dimensions						Approx. Weight (Each) kg lb
System Side Grooved	x	Pump Side Flange 10K	L mm inches	L1 mm inches	H1 mm inches	H2 mm inches	Drain Port Thread Size	E mm inches	
350A 14	x	250A 10	737 29	410 16.1	365 14.4	205 8.1	1.5-11 ISO 7-1	540 21.3	149 329
		300A 12	737 29	410 16.1	365 14.4	241 9.5	1.5-11 ISO 7-1	540 21.3	157 346
		350A 14	737 29	410 16.1	365 14.4	268 10.6	1.5-11 ISO 7-1	540 21.3	167 368
400A 16	x	300A 12	914 36	497 19.6	403 15.9	241 9.5	1.5-11 ISO 7-1	639 25.2	211 465
		350A 14	914 36	497 19.6	403 15.9	268 10.6	1.5-11 ISO 7-1	639 25.2	222 490
		400A 16	914 36	497 19.6	403 15.9	300 11.8	1.5-11 ISO 7-1	639 25.2	233 514
450A 18	x	350A 14	991 39	550 21.7	438 17.2	268 10.6	1.5-11 ISO 7-1	700 27.6	358 789
		400A 16	991 39	550 21.7	438 17.2	300 11.8	1.5-11 ISO 7-1	700 27.6	369 813
		450A 18	991 39	550 21.7	438 17.2	321 12.6	1.5-11 ISO 7-1	700 27.6	376 828
500A 20	x	400A 16	1092 43	620 24.4	480 18.9	300 11.8	2-11 ISO 7-1	820 32.3	433 955
		450A 18	1092 43	620 24.4	480 18.9	321 12.6	2-11 ISO 7-1	820 32.3	440 971
		500A 20	1092 43	620 24.4	480 18.9	358 14.1	2-11 ISO 7-1	820 32.3	462 1019
600A 24	x	450A 18	1194 47	670 26.4	550 21.7	321 12.6	2-11 ISO 7-1	920 36.2	570 1256
		500A 20	1194 47	670 26.4	550 21.7	358 14.1	2-11 ISO 7-1	920 36.2	607 1337
		600A 24	1194 47	670 26.4	550 21.7	419 16.5	2-11 ISO 7-1	920 36.2	636 1401

4.4 DIMENSIONS

AS Dimensions

Series 731-D with
Australian Standard Flange Table "E"



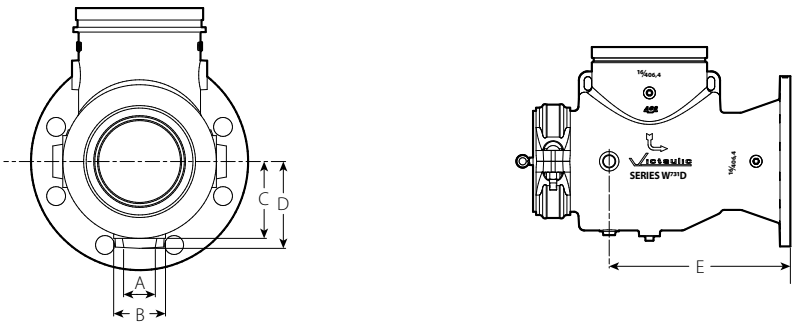
14 – 24/350 – 600 mm

Size			Dimensions						Approx. Weight (Each) kg lb
System Side Grooved	x	Pipe Side AS Flange Table "E"	L mm inches	L1 mm inches	H1 mm inches	H2 mm inches	Drain Port Thread Size	E mm inches	
Nominal Size									
mm inches									
350 14	×	250 10	737 29	410 16.1	365 14.4	205 8.1	1.5-11 ISO 7-1	540 21.3	149 329
		300 12	737 29	410 16.1	365 14.4	241 9.5	1.5-11 ISO 7-1	540 21.3	157 346
		350 14	737 29	410 16.1	365 14.4	268 10.6	1.5-11 ISO 7-1	540 21.3	167 368
		400 16	914 36	497 19.6	403 15.9	241 9.5	1.5-11 ISO 7-1	639 25.2	211 465
400 16	×	350 14	914 36	497 19.6	403 15.9	268 10.6	1.5-11 ISO 7-1	639 25.2	222 490
		400 16	914 36	497 19.6	403 15.9	300 11.8	1.5-11 ISO 7-1	639 25.2	233 514
		450 18	991 39	550 21.7	438 17.2	268 10.6	1.5-11 ISO 7-1	700 27.6	358 789
450 18	×	400 16	991 39	550 21.7	438 17.2	300 11.8	1.5-11 ISO 7-1	700 27.6	369 813
		450 18	991 39	550 21.7	438 17.2	321 12.6	1.5-11 ISO 7-1	700 27.6	376 828
		500 20	1092 43	620 24.4	480 18.9	300 11.8	2-11 ISO 7-1	820 32.3	433 955
500 20	×	450 18	1092 43	620 24.4	480 18.9	321 12.6	2-11 ISO 7-1	820 32.3	440 971
		500 20	1092 43	620 24.4	480 18.9	358 14.1	2-11 ISO 7-1	820 32.3	462 1019
		600 24	1194 47	670 26.4	550 21.7	321 12.6	2-11 ISO 7-1	920 36.2	570 1256
600 24	×	500 20	1194 47	670 26.4	550 21.7	358 14.1	2-11 ISO 7-1	920 36.2	607 1337
		600 24	1194 47	670 26.4	550 21.7	419 16.5	2-11 ISO 7-1	920 36.2	636 1401

4.5 DIMENSIONS

Support and tap boss location

Series W731-D Suction Diffuser



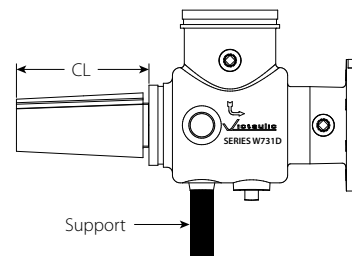
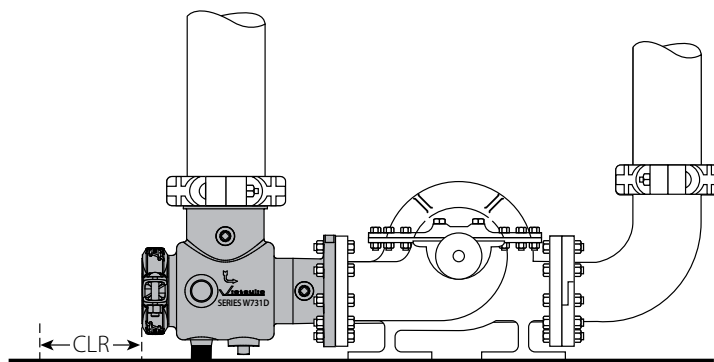
Inlet Size inches mm	Support Locations Three Places				
	A ² inches mm	B ² inches mm	C inches mm	D inches mm	E inches mm
14 350	1.80 45.7	2.70 68.6	8.53 216.7	9.05 229.9	21.3 540
14.843 377.0	1.80 46	2.75 70	8.53 217	9.05 230	25.2 639
16 400	1.80 45.7	2.70 68.6	9.73 247.1	10.25 260.4	25.2 639
16.772 426.0	1.80 46	2.75 70	9.75 248	10.25 260	26.0 660
18 450	2.80 71.1	4.00 101.6	10.93 277.6	11.45 290.8	27.6 700
20 500	2.80 71.1	4.00 101.6	12.13 308.1	12.65 321.3	32.3 820
20.866 530.0	2.80 71	4.00 102	12.13 308	12.63 321	33.1 842
24 600	2.80 71.1	4.00 101.6	14.53 369.1	15.05 382.3	36.2 920
24.803 630.0	2.80 71	4.00 102	14.53 369	15.05 382	37.0 940

² Listed as diameters.

4.6 DIMENSIONS

Assembly Clearance

The recommended basket access requirements and support leg pipe diameters are listed in the following table.



Recommended Minimum Clearance Required to Remove Diffuser Basket												
ANSI		DIN		GB		JIS		AS Table "E"			Rec. Support Leg Pipe Diameter ³ mm inches	
Size inches mm	Clearance "C" inches mm	Size mm inches	Clearance "C" mm inches	Size mm inches	Clearance "C" mm inches	Size mm inches	Clearance "C" mm inches	Size mm inches	Clearance "C" mm inches			
14 350	10 250	22 559	350 14	250 10	559 22	350 14	250A 10	559 22	350 14	250 10	559 22	60.3 2
	12 300	22 559		300 12	559 22		300A 12	559 22		300 12	559 22	
	14 350	22 559		350 14	559 22		350A 14	559 22		350 14	559 22	
				377.0 14.843	350 14							
					635 25							
16 400	12 300	25 635	400 16	300 12	635 25	400 16	300A 12	635 25	400 16	300 12	635 25	60.3 2
	14 350	25 635		350 14	635 25		350A 14	635 25		350 14	635 25	
	16 400	25 635		400 16	635 25		400A 16	635 25		400 16	635 25	
				426.0 16.772	300 12							
					660 26							
18 450	14 350	28 711	450 18	350 14	711 28	450 18	350A 14	711 28	450 18	350 14	711 28	88.9 3
	16 400	28 711		400 16	711 28		400A 16	711 28		400 16	711 28	
	18 450	28 711		450 18	711 28		450A 18	711 28		450 18	711 28	
				500 20	762 30		500A 20	762 30		500 20	762 30	
				530.0 20.866	400 16							
20 500	16 400	30 762	500 20	400 16	762 30	500 20	400A 16	762 30	500 20	400 16	762 30	88.9 3
	18 450	30 762		450 18	762 30		450A 18	762 30		450 18	762 30	
	20 500	30 762		500 20	762 30		500A 20	762 30		500 20	762 30	
				530.0 20.866	400 16							
					787 31							
24 600	18 450	34 864	600 24	450 18	864 34	600 24	450A 18	864 34	600 24	450 18	864 34	88.9 3
	20 500	34 864		500 20	864 34		500A 20	864 34		500 20	864 34	
	24 600	34 864		600 24	864 34		600A 24	864 34		600 24	864 34	
				630.0 24.803	400 16							
					889 35							

³ Based on Schedule 40 pipe diameter

5.0 PERFORMANCE

Flow Characteristics

Formulas for C_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

Formulas for K_v Values:

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

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

Where:

Q = Flow (m³/hr)

ΔP = Pressure Drop (Bar)

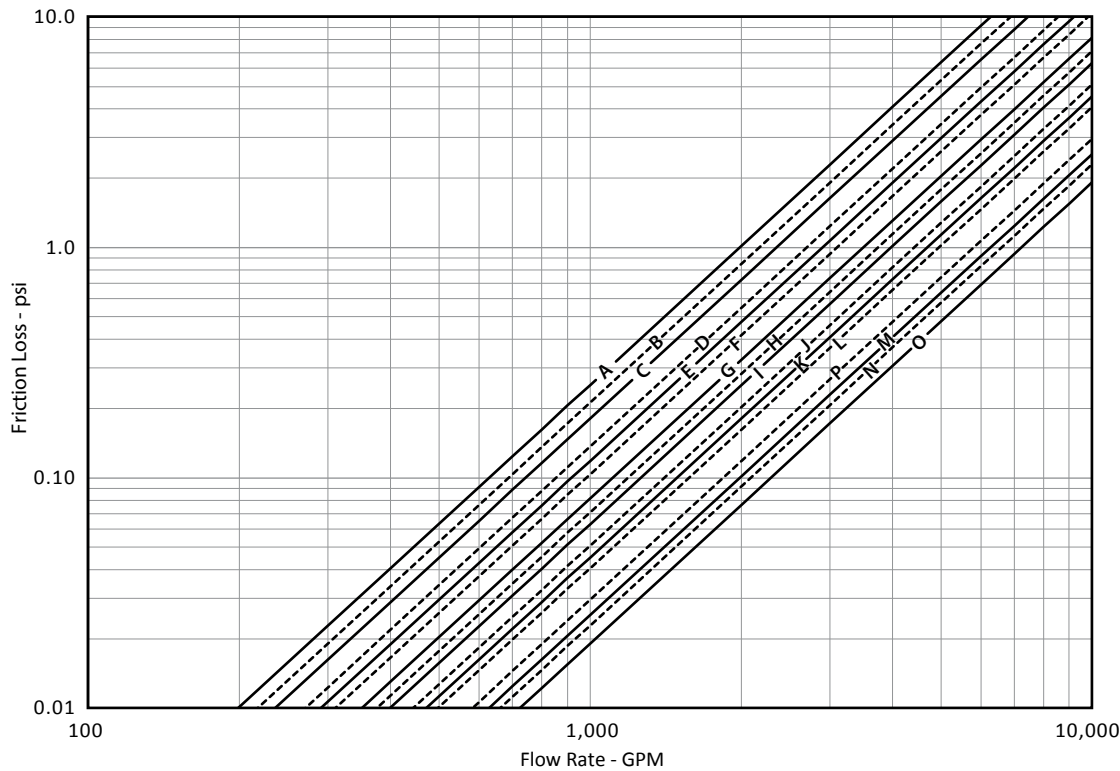
K_v = Flow Coefficient

Values for flow of water at +60°F/+16°C are shown in the table below.

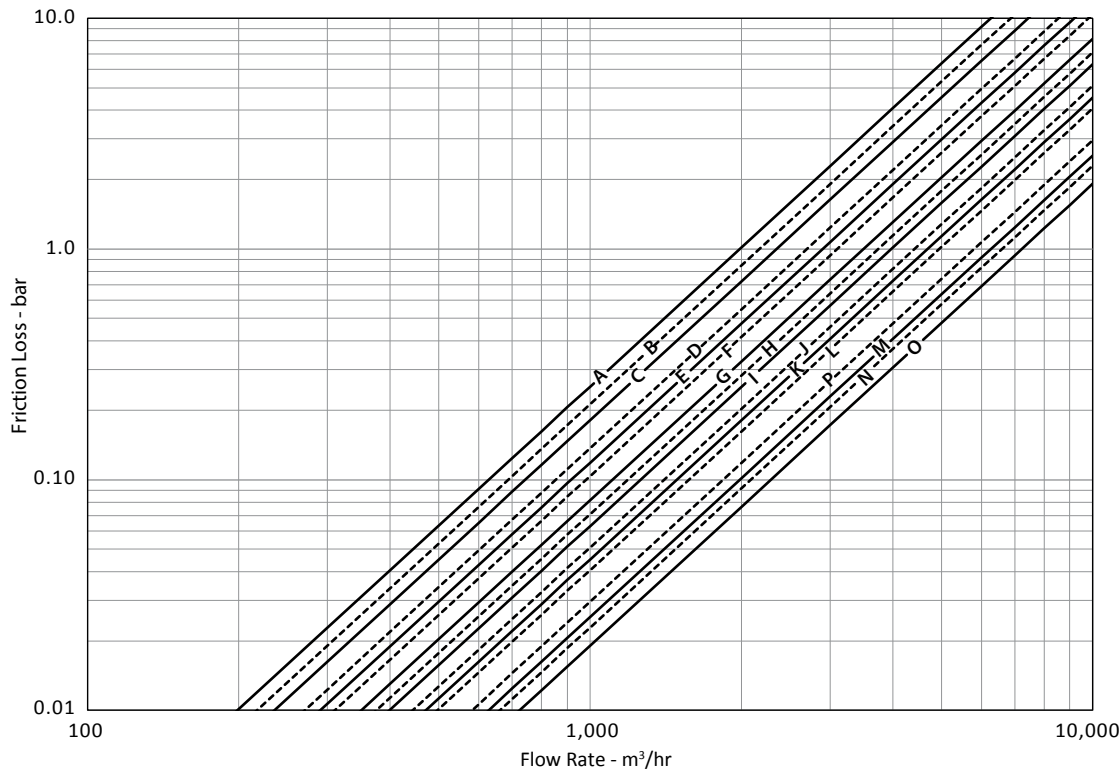
Size Inches/mm		Flow Rate	Cv/Kv Values
14 350	10	A	1984
	250		1716
	12	B	2170
	300		1877
	14	C	2350
	350		2033
14.843 377.0	14	E	2900
	350		2509
16 400	12	D	2700
	300		2336
	14	E	2900
	350		2509
	16	F	3100
	400		2682
16.772 426.0	12	D	2700
	300		2336
18 450	14	G	3500
	350		3028
	16	H	3750
	400		3244
	18	I	3980
	450		3443
20 500	16	J	4430
	400		3832
	18	K	4700
	450		4066
	20	L	4960
	500		4290
20.886 530.0	16	J	4430
	400		3832
24 600	18	M	6270
	450		5424
	20	N	6600
	500		5709
	24	O	7230
	600		6254
24.803 630.0	16	P	5812
	400		5027

5.0 PERFORMANCE (CONTINUED)

Flow Characteristics
Series W731-D Suction Diffuser

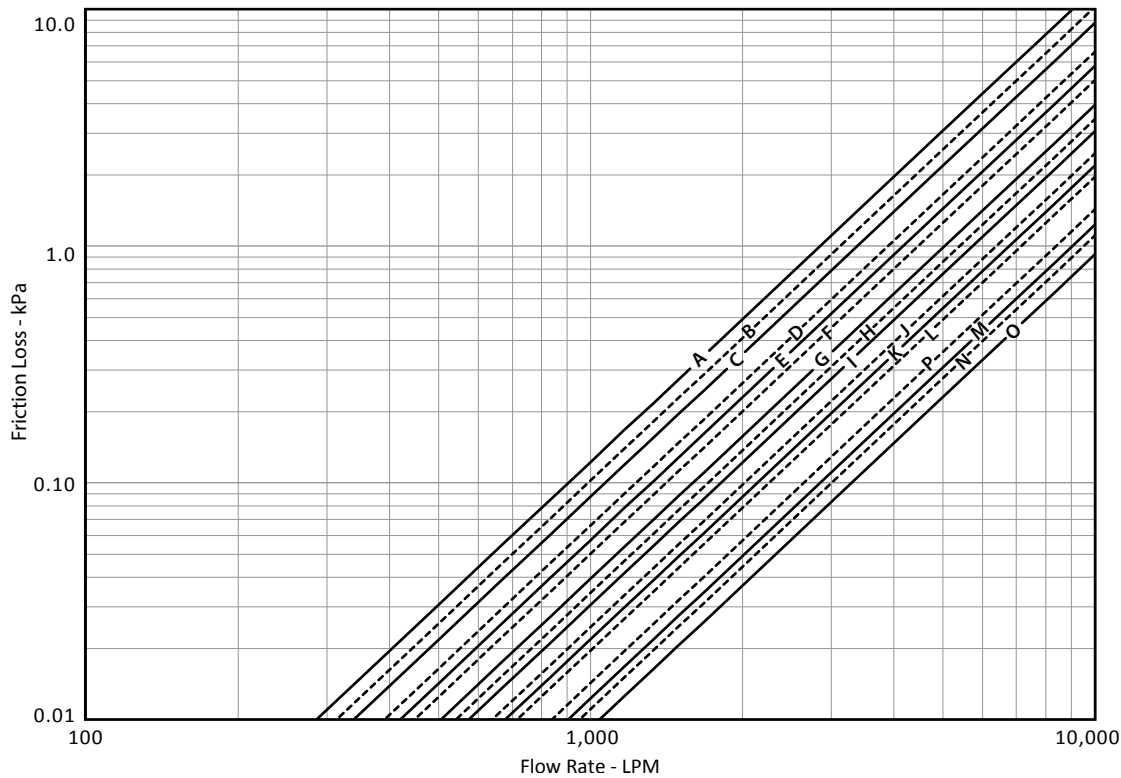


Series W731-D Suction Diffuser



5.0 PERFORMANCE (CONTINUED)

Flow Characteristics
Series W731-D Suction Diffuser



6.0 NOTIFICATIONS

⚠ WARNING



- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Confirm that any equipment, branch lines, or sections of piping that may have been isolated for/during testing or due to valve closures/positioning are identified, depressurized, and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Always reference Victaulic [publication I-ENDCAP](#) for important end cap installation safety instructions.
- Wear safety glasses, hardhat, foot protection, and hearing protection.

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

⚠ WARNING

- When grooving pipe for use with AGS products, Victaulic roll grooving tools shall be equipped with AGS roll sets (RW for steel or RWX for stainless steel).
- RWX grooving rolls are identified by a silver color and the designation "RWX" on the front of the roll sets.
- Victaulic AGS products SHALL NOT be installed on pipe that is prepared with original-type grooving roll sets.
- To ensure proper pipe end preparation, refer to [publication 25.09](#) for AGS groove specifications.

Failure to follow these instructions will cause grooves that are not within Victaulic AGS specifications, resulting in joint failure, serious personal injury, and property damage.

7.0 REFERENCE MATERIALS

[05.01: Victaulic® Seal Selection Guide](#)

[24.01: Victaulic® Pipe Preparation Tools](#)

[25.09: Victaulic® AGS Groove Specifications](#)

[I-W100: Victaulic® Field Installation Handbook Advanced Groove System Products](#)

[I-ENDCAP: Victaulic® End Caps Installation Safety 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.

Intellectual Property Rights

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Note

All products bearing a Victaulic trademark are manufactured by Victaulic or to Victaulic specifications. All products are to be installed only in accordance with the applicable Victaulic installation instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.