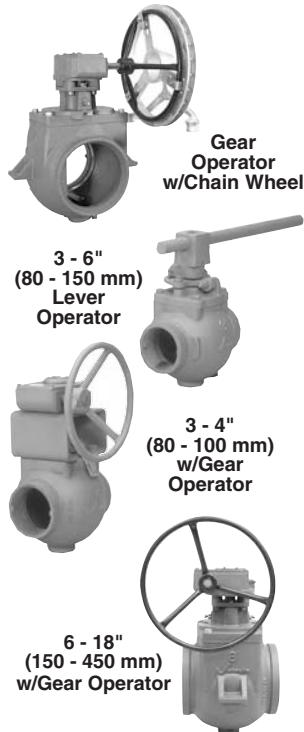


Series 365 (D.I. Ends) and Series 366 (IPS Ends) AWWA Vic-Plug™ Valves

PRODUCT DESCRIPTION



The Series 365 and Series 366 Vic-Plug valves are grooved end eccentric plug valves designed to ANSI/AWWA standards primarily for water and wastewater treatment services. Series 365 is available in 3 - 18" (80 - 450 mm) sizes. Series 366 is available in 14", 16", and 18" (350, 400, and 450 mm) sizes.

The body conforms to AWWA C-509 standard end-to-end dimensions. Series 365 grooved ends conform to ANSI/AWWA C-606 rigid groove specifications to allow easy installation with Victaulic® Style 31 couplings, Style 307 Transition couplings (3 - 12"/80 - 300 mm) or in combination with Style 341 Vic-Flange® adapters (3 - 18"/80 - 450 mm). 14 - 18" (350 - 450 mm) Series 366 have IPS ends suitable for use with Victaulic Style 07 ZeroFlex couplings, Style 77 flexible couplings, and Style 741 VicFlange adapters.

Various types of manual and automatic operators are available. Vic-Plug valves feature adjustable chevron packing and various body and plug coatings to meet specific service requirements. The standard outside coating is an alkyd phenolic primer unless otherwise specified. The eccentric plug design assures bubble-tight sealing up to 175 psi (1200 kPa) for 3 - 12" (80 - 300 mm) sizes and 150 psi (1034 kPa) for 14 - 18" (350 - 450 mm) sizes as the plug cams into the seat. Bi-directional sealing to 25 psi (172 kPa) is standard with full bidirectional sealing to 175 psi (1200 kPa) for 3 - 12" (80 - 300 mm) sizes and 150 psi (1034 kPa) for 14 - 18" (350 - 450 mm) sizes is optionally available. Self-lubricated stainless steel bearings with protective o-rings resist corrosion to prevent binding and prolong valve life.

Plug Valve Numbering System for Series 365 & Series 366

P - 080 - 7 1 1 1 - 71

Type	Act. In.	Fig. No.	Pressure Rating	Body Material	Plug Coating	Seat	Operator
P	3"	030	1 - 175/150 psi standard (1) (2)	1 - Iron with ductile iron ends	1 - Nitrile-"T"	1 - Nickel	00 - Bare
	4"	040		2 - Iron with IPS ends (5)	2 - EPDM-"E"	7 - Glass Lined/Nickel Seat	01 - 2" Square Nut Only
	6"	060	7 - 175/150 psi full bi-directional (2)	3 - Coated iron with ductile iron ends (3)	3 - Fluoroelastomer-"O"		10 - Std. Handle (6)
	8"	080		4 - Coated iron with IPS ends (5)	4 - Neoprene-"V"	9 - Special (3)	11 - Std. Handle with memory stop (6)
	10"	100	9 - Special (3)	7 - Glass lined with ductile iron ends	9 - Special (3)		70 - AWWA std. gear operator with hand-wheel, Model
	12"	120		8 - Glass lined with IPS ends (5)			71 - Model MV (7)
	14"	140					73 - Model MA (7)
	16"	160					74 - Model MC (7)
	18"	180		9 - Special (3)			75 - Model MX (7)
							76 - Model MFF (7)
							79 - Non-standard gear operator (4)
							90 - MZ with chain wheel
							91 - MV with chain wheel
							93 - MA with chain wheel
							94 - MC with chain wheel
							95 - MX with chain wheel
							96 - MFF with chain wheel
							99 - Special (3)
							VV - Pneumatic (4)
							WW - Electric (4)
							YY - Hydraulic (4)

(1) 3 - 12" valves are 175 psi, 14" and larger valves are 150 psi

(2) 3 - 6" valves are full bi-directional as standard. Code "7" must be used for full bi-directional valves 8" and larger.

(3) Details must be supplied with order.

(4) Details of operator must be supplied with order.

(5) Iron body valves with IPS ends are Series 366 (14, 16 and 18" only).

(6) 3, 4 and 6" only.

(7) Handwheel must be ordered.

23.06

1 Grooved Ends: Fast assembly with two Victaulic couplings. Grooves conform to AWWA C-606 rigid groove specifications.

2 Excellent Flow Characteristics: (not shown) Minimum 90% diameter (81% area) free flow circular port.

3 Self-Lubricating Bearings: Glass-filled teflon with Type 316 stainless steel upper and lower bearings maintain plug alignment.

4 Positive Seating Plug: Ductile plug/stem for cam-action sealing.

5 Corrosion Resistant Seat: Welded-in nickel seat overlay.

6 Durable Plug Coating: Plug encapsulated with resilient elastomers.

7 Standard Laying Length: (not shown) Designed to AWWA C-509 end-to-end dimensions.

8 Corrosion Resistant Body: Durable ductile iron body is 100% tested to 350 psi (2415 kPa) for 3 - 12" sizes and 300 psi (2065 kPa) for 14 - 18" sizes.

9 Thrust Bearings: Eccentric plug rides on low friction thrust washers.

10 Protective O-rings: Grit seals keep media from bearing areas.

11 True Top Entry Access: Rugged ductile iron bonnet allows bolted access.

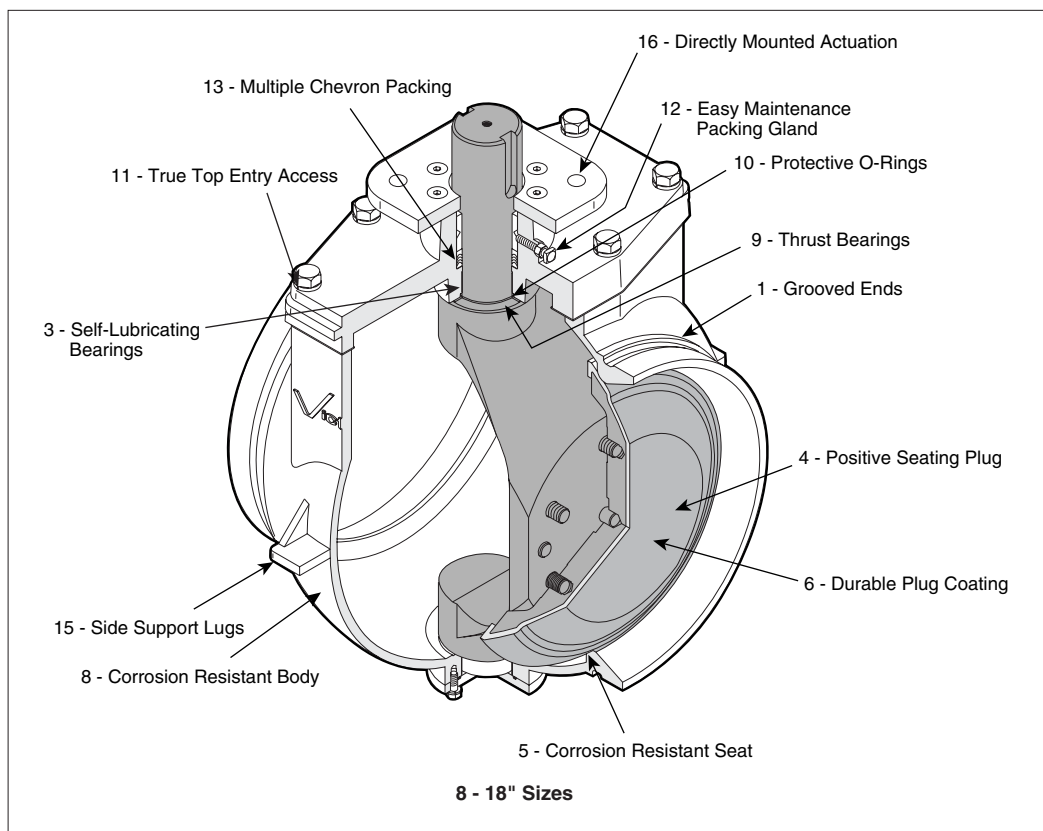
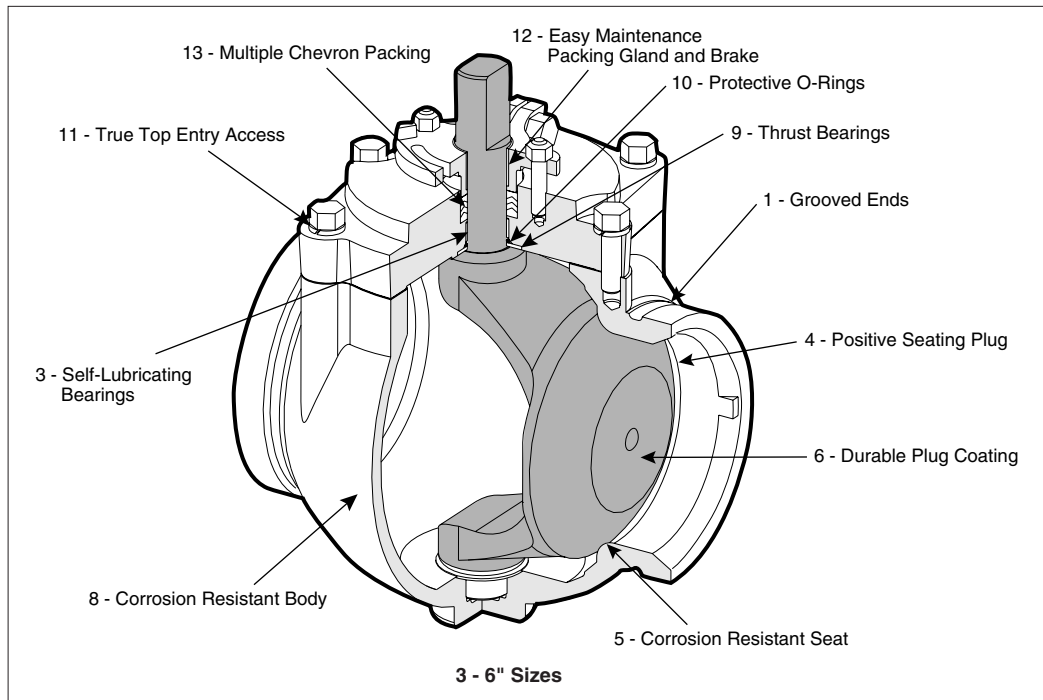
12 Easy Maintenance Packing Gland: Easy access for packing adjustment.

13 Multiple Chevron Packing: Provides a reliable, durable stem seal.

14 Adjustable Shaft Brake (3 - 6" Valves): External brake (not shown) is adjustable for non-slamming action or to lock plug in-place for throttle settings.

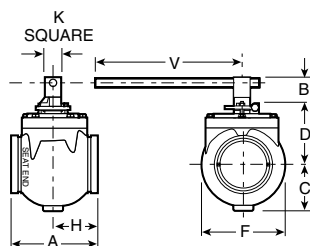
15 Side Support Lugs: (not required on 3 - 6" sizes) Integral mounting lugs on 8 - 18" sizes provide installation support.

16 Directly Mounted Actuation: (currently not available on 3 - 4" sizes) Top flange allows direct mount of operator to body of valve. Eliminates bracket, stem adapter and provides a lower profile, while reducing total valve weight.



DIMENSIONS

Manual Handle

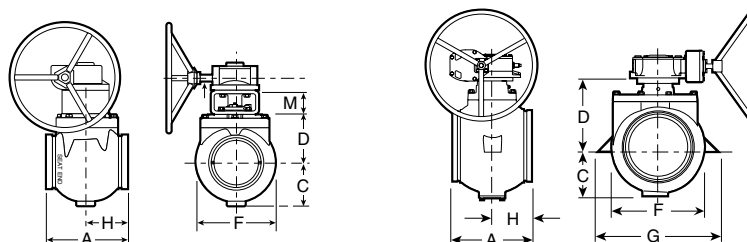


Valve Size		Dimensions Inches/millimeters								Approx. Wgt. Each w/o Handle Lbs./kg
Nominal Diameter Inches/mm	Actual Outside Diameter Inches/mm	End to End A	B	C	D	F	H	V	K	
3 80	3.960 100.6	8.00 203	4.06 103	3.75 95	4.25 108	6.56 167	4.00 102	18.50 470	2.00 51	25.0 11.3
4 100	4.800 121.9	9.00 229	4.06 103	4.44 113	4.75 121	7.74 197	4.50 114	18.50 470	2.00 51	35.0 15.9
6 150	6.900 175.3	10.50 267	3.20 81	5.50 140	7.50 191	10.32 262	5.25 133	18.50 470	2.00 51	70.0 31.8

Valve with Gear Operator †

The torque required to open Vic-Plug valves will vary with pressure differential across the closed valve. Using the maximum pressure differential select the correct gear operator from the chart on page 4.

A complete range of automatic operators and accessories are available with the Vic-Plug valve. Please contact Victaulic with your requirements.



3 - 6" Sizes

8 - 18" Sizes

Series 365

Valve Size		Dimensions Inches/millimeters							Approx. Weight Each Lbs./kg
Nominal Diameter In./mm	Actual Outside Diameter In./mm	End to End A	C	D	F	G	H	M	
3* 80	3.960 100.6	8.00 203	3.75 95	4.25 108	6.56 167	— —	4.00 102	4.00 102	32.0 14.5
4* 100	4.800 121.9	9.00 229	4.44 113	4.75 121	7.74 197	— —	4.50 114	4.00 102	42.0 19.1
6* 150	6.900 175.3	10.50 267	5.50 140	7.50 191	10.32 262	— —	5.25 133	— —	80.0 36.3
8 200	9.050 229.9	11.50 292	6.87 175	10.80 274	12.30 312	16.38 416	5.75 145	— —	120.0 55.0
10 250	11.100 281.9	13.00 330	8.00 203	12.00 305	14.78 375	18.75 476	6.50 165	— —	185.0 84.0
12 300	13.200 335.3	14.00 356	9.50 241	13.75 349	17.00 432	21.00 533	7.00 178	— —	240.0 109.0
14 350	15.300 388.6	17.00 432	11.25 286	15.56 395	20.44 519	23.94 608	8.50 216	— —	375.0 170.0
16 400	17.400 442.0	17.75 451	11.95 304	16.71 424	21.94 557	26.00 660	9.06 230	— —	450.0 204.0
18 450	19.500 495.3	21.50 546	13.97 355	20.05 509	26.06 662	30.58 777	10.94 278	— —	670.0 304.0

† Gear operators can be installed in various positions. Contact Victaulic for details.

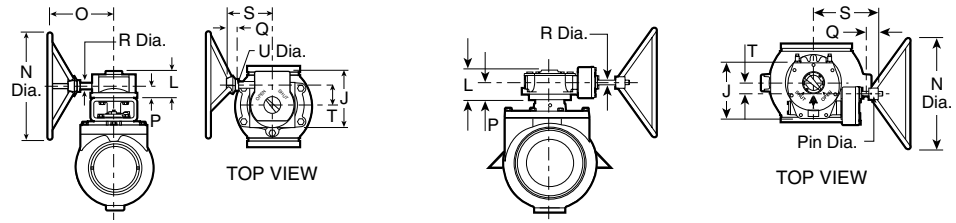
*3, 4, 6" (80, 100, 150 mm) valves do not include side support lugs.

Series 366

Valve Size		Dimensions Inches/millimeters							Approx. Weight Each Lbs./kg
Nominal Diameter In./mm	Actual Outside Diameter In./mm	End to End A	C	D	F	G	H	M	
14 350	14.00 355.6	19.00 483	11.25 286	15.56 395	20.44 519	23.94 608	8.50 216	— —	390.0 176.9
16 400	16.00 406.4	19.75 502	11.95 304	16.71 424	21.94 557	26.00 660	9.06 230	— —	470.0 213.2
18 450	18.00 457.2	23.50 597	13.97 355	20.05 509	26.06 662	30.58 777	10.94 278	— —	695.0 315.3

23.06

Gear Operator



3 - 4" Sizes

6 - 18" Sizes

Gear Oper. Style No.	Dimensions Inches/millimeters										No. Turns to Close	Approx. Wgt. Each Lbs./kg
	J	L	N Dia.	O	P	Q	R Dia.	S	T	U Dia.		
MX	4.76 121	2.07 53	6.00 152	4.00 102	1.13 29	1.30 33	0.63 16	4.00 102	1.95 50	0.19 5	7.5	7.5 3.4
MZ	5.50 140	2.62 67	10.00 250	5.00 127	1.25 32	1.30 33	0.63 16	4.50 114	2.36 60	0.19 5	7.5	15.0 6.8
MV	7.25 184	3.29 84	18.00 457	9.00 229	1.62 41	2.25 57	0.88 22	6.00 152	2.63 67	0.25 6	7.8	20.0 9.1
MA	8.24 209	3.55 90	18.00 457	10.00 254	1.75 45	2.25 57	0.88 22	7.00 178	3.38 86	0.25 6	7.8	33.0 15.0
MC	11.12 283	4.03 102	18.00 457	10.38 264	1.87 48	2.25 57	1.00 25	7.38 188	5.38 137	0.25 6	18	68.0 30.8
MFF-36	13.78 350	5.04 128	30.00 762	9.53 242	2.60 66	1.77 45	1.00 25	15.00 381	5.43 138	0.25 6	45	148.6 67.4

NOTES: A 2" square AWWA operating nut is available in place of lever operator (3, 4, 6"/80, 100, 150 mm) and in place of the handwheel on any gear operator. To get total height from centerline to top of operator, add dimensions "D", "M" and "L".

For "Rim-Pull" information on gear operators, contact Victaulic.

Gear Operator Ratings

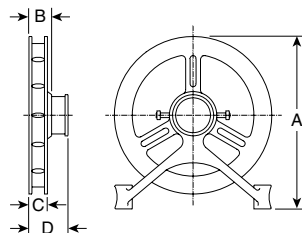
Valve Size		Manual Gear Operating Rating PSI/kPa					
Nominal Diameter In./mm	Actual Outside Diameter In./mm	MX	MZ	MV	MA	MC	MFF-36
3 80	3.960 100.6	0 - 175 † 0 - 1200	— —	— —	— —	— —	— —
4 100	4.800 121.9	0 - 175 † 0 - 1200	— —	— —	— —	— —	— —
6 150	6.900 175.3	— —	0 - 175 † 0 - 1200	— —	— —	— —	— —
8 200	9.050 229.9	— —	0 - 100 0 - 700	100 - 175 † 700 - 1200	— —	— —	— —
10 250	11.100 281.9	— —	— —	0 - 100 0 - 700	— —	100 - 175 † 700 - 1200	— —
12 300	13.200 335.3	— —	— —	— —	0 - 50 0 - 300	50 - 175 † 300 - 1200	— —
14 350	15.300 388.6	— —	— —	— —	0 - 50 0 - 300	50 - 100 345 - 700	100 - 150 † 700 - 1034
16 400	17.400 442.0	— —	— —	— —	— —	0 - 50 0 - 300	50 - 150 † 345 - 1034
18 450	19.500 495.3	— —	— —	— —	— —	0 - 50 0 - 300	50 - 150 † 345 - 1034

† Full bi-directional service included.

ACCESSORIES

Chain Wheels

Chain wheels with guides and chain are available mounted to gear operators in place of handwheels. Sprocket is cast iron. Guide arms are malleable iron. The chain is galvanized steel.



Hand Wheel Diameter Inches mm	Chain Wheel Required	Dimensions Inches/mm				Chain Size	Approx. Wgt. Lbs./kg
		A	B	C	D		
2 – 4 50,8 – 101,6	0	4.63 118	1.13 29	0.88 22	1.75 45	2	10 4,5
6 – 7 1/2 152,4 – 190,5	1 1/2	7.75 197	1.44 37	1.13 29	2.38 61	1/0	17.5 7,9
7 1/4 – 9 184,2 – 228,6	2	10.50 267	1.38 35	1.13 29	2.38 61	1/0	17.5 7,9
9 1/4 – 12 1/2 235,0 – 317,5	2 1/2	12.50 318	1.75 45	1.25 32	2.63 67	4/0	30 13,6
15 3/4 – 19 400,1 – 482,6	3 1/2	18.50 470	1.88 48	1.25 32	3.13 80	4/0	30 13,6
19 1/4 – 22 489,0 – 558,8	4	21.50 546	1.88 48	1.50 38	3.13 80	5/0	35 15,9
22 1/4 – 26 565,2 – 660,4	4 1/2	25.75 654	1.88 48	1.50 38	3.13 80	5/0	35 15,9
26 1/4 – 30 666,8 – 762,0	5	30.25 768	2.00 51	1.50 38	3.13 80	5/0	35 15,9
30 – 36 762,0 – 914,4	5*	30.25 768	2.00 51	1.50 38	3.13 80	5/0	35 15,9

* Special Clamps

Automation

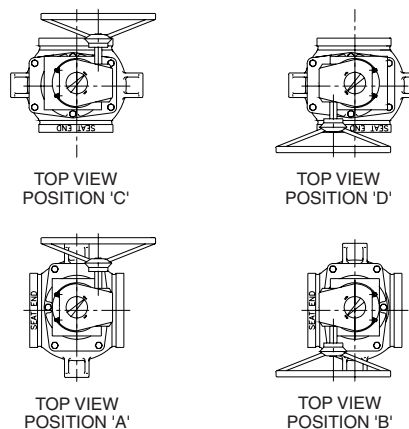


Vic-Plug valves are designed to easily accommodate a variety of remote actuators – electric, pneumatic, and hydraulic. The unique design with PTFE thrust washers, self-lubricating bearings and eccentric plug design, serves to reduce break-away torque requirements.

Actuators must be sized for the specific operating conditions of each service and may be used up to the full valve rating. Please include the direction of flow and expected service pressure.

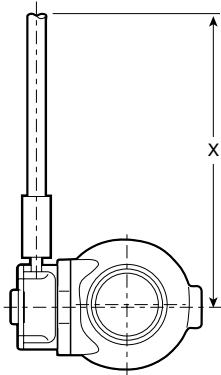
Gear Operating Mounting Orientation

Gear operators may be mounted in any of four positions (A, B, C, D) – standard position is position B. For further details, please contact Victaulic.

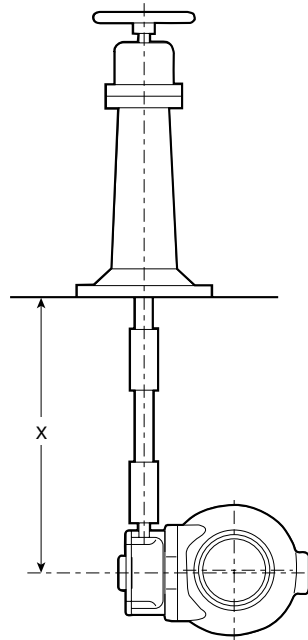


VALVE CONFIGURATIONS

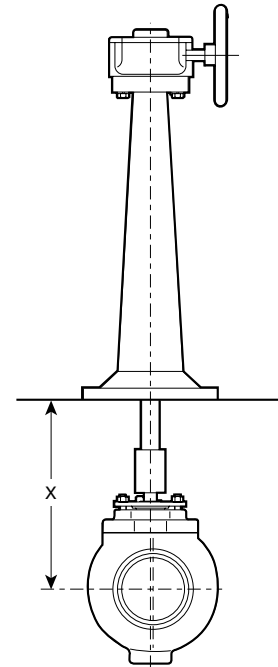
Please specify dimension "X" and other accessories required, i.e. stem guide, floor box, floor stand, etc., when ordering valves with extension handles.



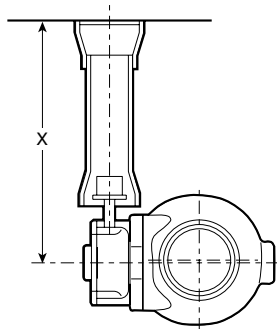
**Input Shaft Extension
Operator Mounted
on Valve**



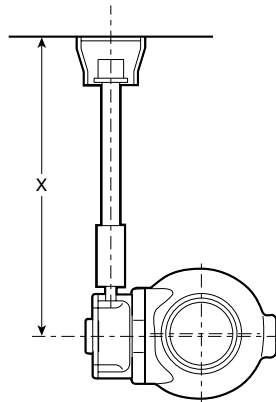
**Floor Stand Input
Shaft Extension Operator
Mounted on Valve**



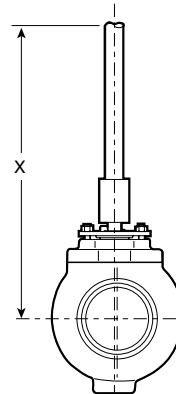
**Floor Stand and
Stem Extension Operator
Mounted on Stand**



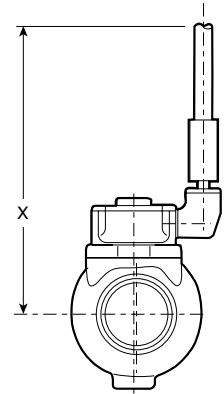
**Valve Box
Valve Supplied with
Operator and Square Nut**



**Floor Box and
Input Shaft Extension**



**Stem Extension
Operator not Included**



**Input Shaft Extension
90° Miter Operation
Mounted on Valve**

PERFORMANCE

C_V Values

C_V values for flow of water at +60°F (+16°C) with a fully open valve are shown in the table at right.

Formulas for C_V Values:

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

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

Where:

Q = Flow (GPM)

C_V = Flow Coefficient

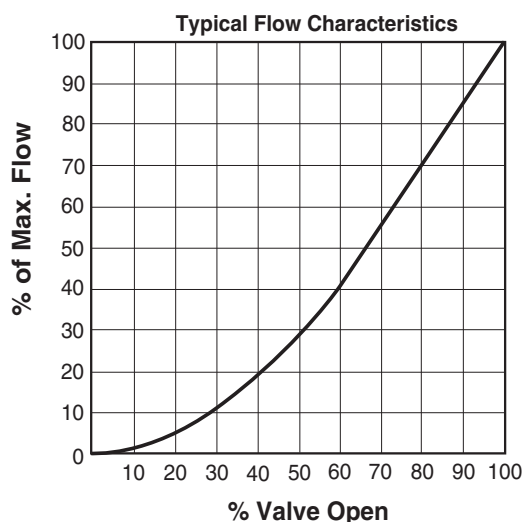
ΔP = Pressure Drop (psi)

Vic-Plug valve is well suited for throttling of liquids, semi-solids, and slurries. The straight-through flow pattern provides a nearly straight line flow characteristic. Both lever and gear operators can be used for throttling service. Memory stops are also available for both.

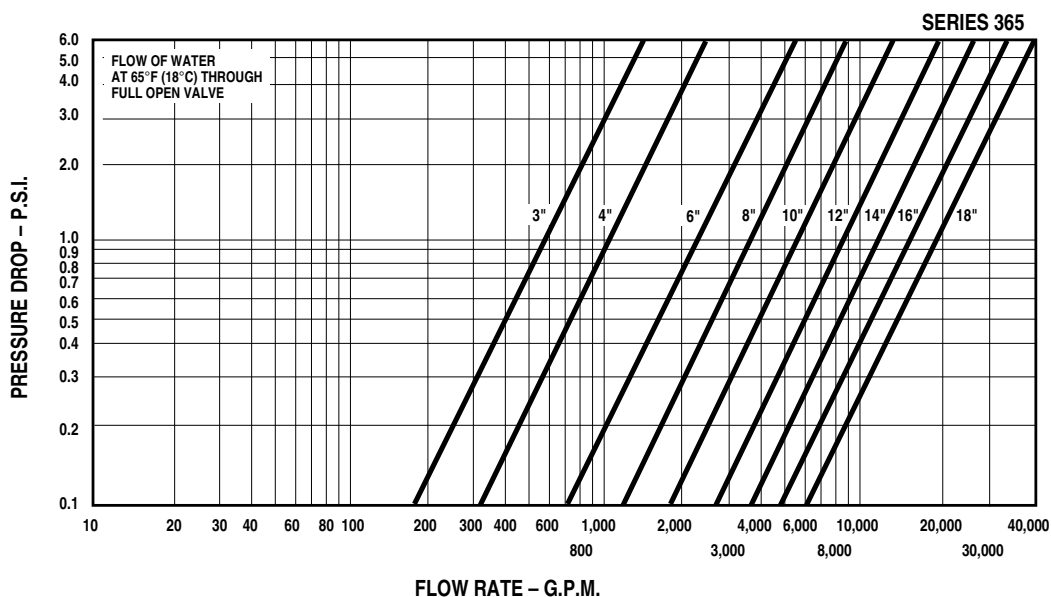
Vic-Plug valve provides exceptional flow with the round port and eccentric plug design. With the plug moving away from the flow path in the full open position excellent C_V values are obtained. Vic-Plug valve provides a minimum 90% diameter (81% area) free flow area.

Valve Size			Valve Size			Valve Size		
Nominal Diameter In./mm	Actual Outside Diameter In./mm	C _V (Full Open)	Nominal Diameter In./mm	Actual Outside Diameter In./mm	C _V (Full Open)	Nominal Diameter In./mm	Actual Outside Diameter In./mm	C _V (Full Open)
3 80	3.960 100.6	600	8 200	9.050 229.9	3850	14 350	15.300 388.6	12000
4 100	4.800 121.9	1040	10 250	11.100 281.9	5500	16 400	17.400 442.0	15000
6 150	6.900 175.3	2100	12 300	13.200 335.3	8400	18 450	19.500 495.3	19000

+ Contact Victaulic for details.



FLOW CHARACTERISTICS



MATERIAL SPECIFICATIONS

3 - 18" Body: Ductile iron conforming to ASTM A-536, grade 65-45-12.

Body Coating: Alkyd phenolic primer

- **Optional:** Other coatings (internal and/or external) available. Coating specification must be supplied with order.

Seat: Welded nickel

Bonnet: Ductile iron conforming to ASTM A-536, grade 65-45-12.

3 - 18" Plug: Ductile iron conforming to ASTM A-536, grade 65-45-12.

8 - 18" Shaft: Ductile iron conforming to ASTM A-536, grade 65-45-12.

Plug Coating/Seal: (Specify choice on order)

- **Grade "T" nitrile**
Nitrile (Orange color code). Temperature range -20°F to +180°F (-29°C to +82°C). Recommended for petroleum products, air with oil vapors, vegetable and mineral oils within the specified temperature range. Not recommended for hot water services over +150°F (+66°C) or for hot dry air over +140°F (+60°C).
- **Optional: Grade "V" neoprene**
Neoprene (Yellow color code). Temperature range from +30° to +180°F (+34°C to +82°C). Recommended for hot lubricating oils and certain chemicals. Good oxidation resistance. Will not support combustion.
- **Optional: Grade "E" EPDM**
EPDM (Green color code). Temperature range -30°F to +230°F (-34°C to +110°C). Recommended for hot 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) and hot +180°F (+82°C) potable water services. NOT RECOMMENDED FOR PETROLEUM SERVICES.
- **Optional: Grade "O" fluoroelastomer**
Fluoroelastomer (Blue color code). Temperature range from +20°F to +300°F (-6°C to +149°C). Recommended for many oxidizing acids, petroleum oils, halogenated hydrocarbons, lubricants, hydraulic fluids, organic liquids and air with hydrocarbons +300°F (+149°C).

*Services listed are General Service Recommendations only. It should be noted that there are services for which these gaskets are not recommended. Reference should always be made to the latest Victaulic Gasket Selection Guide for specific gasket service recommendations and for a listing of services which are not recommended.

Stem Packing: Adjustable chevron style – nitrile standard, same as Plug Coating/Seal available upon request.

Upper/Lower Bearing: Type 316 stainless steel backed TFE – self lubricating

Upper/Lower O-ring: Nitrile standard, same as Plug Coating/Seal available upon request.

Upper/Lower Thrust Washer:

3 - 12": Teflon/glass filled

14 - 18": Nylon

Bonnet Gasket: Non-asbestos

Packing Gland:

3 - 4": Ductile iron conforming to ASTM A-536, grade 65-45-12.

6 - 18": Steel zinc plated.

Packing Gland Studs/Nuts: Steel, zinc plated

Operator: (Specify choice on order)

- **AWWA 2" (50 mm) square nut** †
- **Manual lever handle (3 - 6" / 80 - 150 mm only)**
 - **Optional:** Memory stop
- **AWWA standard gear operator with handwheel**
 - **Optional:** Memory stop
 - **Optional:** Chain wheel
 - **Optional:** AWWA 2" (60,3 mm) square nut (in lieu of handwheel)
- **Non-standard gear operator**
- **Actuators:** Electric, pneumatic, hydraulic – contact Victaulic for details.
- **Stem/Handle extensions**

† AWWA 2" (50 mm) square nut provided for 3 - 6" (80 - 150 mm) sizes only.