

AGS Vic[®]-300 Butterfly Valves



**SERIES W761
(300 PSI/2065 KPA)**

The AGS (Advanced Groove System) Vic-300 grooved end butterfly valve offers an easily installed choice to cumbersome, multi-bolt wafer or lug-type flanged valves. The valve offers excellent flow characteristics with low torque operation. The resilient EPDM seat is rated for water services up to +230°F/+110°C. For services with oil content, the valve is available with Grade "T" nitrile seat, rated for petroleum, air with oil vapors, vegetable and mineral oils up to +180°F/+82°C. For services with oxidizing acids, petroleum oils, halogenated hydrocarbons, lubricants, hydraulic fluids, organic liquids and air with hydrocarbons to +300°F/+149°C, the valve is available with a Grade "O" fluoroelastomer seat.

The offset disc is polyphenylene sulfide (PPS) coated for corrosion resistance. It securely retains the resilient seat for bi-directional working pressure to 300 psi/2065 kPa.

The single piece body is cast of durable ductile iron (ASTM A-536, grade 65-45-12), as is the narrow profile disc. The disc rides on a stout stainless steel (age hardened 17-4PH) cross bolt and upper and lower stems with all other wetted hardware of Series 300 stainless steel construction.

AGS Vic-300 butterfly valves 14 – 24"/350 – 600mm are available with a standard hand wheel gear operator. Memory stops and chain wheels are available options, as are electric, pneumatic or hydraulic actuators in two or three-way configurations.

AGS Vic-300 valves are designed for direct connection with Victaulic AGS grooved couplings. Request publication 20.02 for W07 AGS rigid or 20.03 for W77 AGS flexible coupling information.



WARNING

WARNING

- Victaulic AGS products use a patented groove profile that requires the use of special AGS rolls. AGS products must not be used on pipe that has been grooved using original grooving rolls.

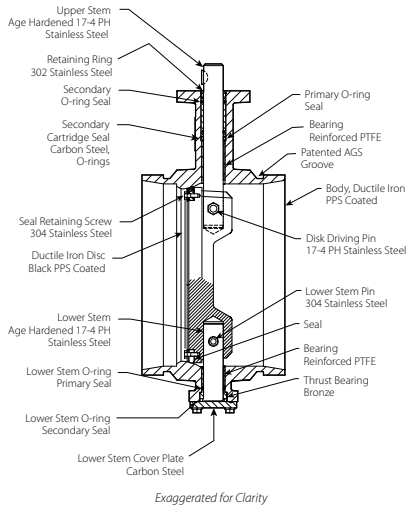
Failure to use AGS products on AGS grooved pipe could result in serious personal injury, property damage, joint leakage or joint separation.

JOB/OWNER	CONTRACTOR	ENGINEER
System No. _____	Submitted By _____	Spec Sect _____ Para _____
Location _____	Date _____	Approved _____
		Date _____

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MATERIAL SPECIFICATIONS



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

Body Coating:

Black polyphenylene sulfide (PPS) coating, UL classified in accordance with ANSI/NSF 61 for cold +86°F/+30°C and hot +180°F/+82°C potable water service

Disc: Ductile iron conforming to ASTM A-536, black PPS coated

Seat: PPS coated

Disc/Seal*:

- **Grade "E" EPDM**

EPDM (Green color code). Temperature range -30°F to +230°F/-34°C to +110°C. Recommended for cold and hot water service within the specified temperature range plus a variety of dilute acids, oil-free air and many chemical services. **NOT RECOMMENDED FOR PETROLEUM SERVICES.**

- **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.

- **Grade "O" Fluoroelastomer**

Fluoroelastomer (Blue color code). Recommended for many oxidizing acids, petroleum oils, halogenated hydrocarbons, lubricants, hydraulic fluids, organic liquids and air with hydrocarbons to +300°F/+149°C. **NOT RECOMMENDED FOR HOT WATER SERVICES.**

* 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-Upper/Lower: Stainless steel age hardened 17-4 PH

Bearing: Reinforced PTFE

Thrust Washer: Bronze

Disc Driving Pin: 17-4 PH stainless steel

Stem Seal: EPDM

- **Optional:** Nitrile

Bottom Cover Plate O-ring: EPDM

- **Optional:** Nitrile

Cover Plate: Steel

Gasket Retaining Segment: 304 stainless steel

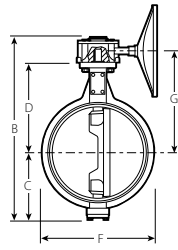
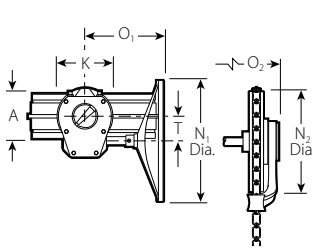
Seal Retaining Screw: 304 stainless steel

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DIMENSIONS

Size		Dimensions – Inches/mm												Number Turns to Close	Approx. Wgt. Each
Nominal Size In./mm	Actual Outside Diameter In./mm	E - E A	Overall Height B	C	D	F	G	K	Handwheel		Chain Wheel		T		
									N ₁	O ₁	N ₂	O ₂			
14 350	14.000 355.6	10.00 254	26.17 665	9.68 246	12.89 327	16.00 406	14.54 369	7.87 200	19.70 500	12.86 327	21.50 546	16.00 406	3.02 77	9.5	156.0 70.8
16 400	16.000 406.4	10.50 267	29.00 737	10.94 278	14.10 358	18.00 457	15.99 406	8.66 220	19.70 500	14.34 364	21.50 546	17.47 444	3.38 86	13.75	201.0 91.2
18 450	18.000 457.0	11.00 279	32.17 817	12.31 313	15.00 381	20.00 508	17.17 436	11.22 285	27.60 700	15.55 395	30.00 762	18.68 474	4.38 111	21	269.5 122.2
20 500	20.000 508.0	11.50 292	36.23 920	14.06 357	16.10 409	23.00 584	18.27 464	11.22 285	27.60 700	18.43 468	30.00 762	21.60 549	5.38 137	52	384.2 174.3
24 600	24.000 610.0	12.00 305	42.41 1017	16.06 408	20.10 511	26.70 678	22.42 569	14.57 370	27.60 700	20.51 521	30.00 762	23.60 599	5.38 137	79.25	605.0 274.4



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DIMENSIONS

Size		Dimensions – Inches/mm											Approx. Wgt. Each
Nominal Size In./mm	Actual Outside Dia. In./mm	End to End A	Overall Height B	C	D	E	F	G	Mounting			lbs. kg	
									H ₁	H ₂	I Dia.		
14 350	14.000 355.6	10.00 254	25.00 635	9.68 246	12.89 327	1.16 29	16.00 406	15.32 389	4.96 126	0.578 15	1.38 35	125.0 56.7	
16 400	16.000 406.4	10.50 267	27.94 710	10.94 278	14.10 358	1.90 48	18.00 457	17.00 432	4.96 126	0.578 15	1.50 38	153.0 69.4	
18 450	18.000 457.0	11.00 279	29.93 760	12.31 313	15.00 381	2.64 59	20.00 508	17.62 448	4.96 126	0.578 15	1.75 45	199.0 90.3	
20 500	20.000 508.0	11.50 292	33.16 842	14.06 357	16.10 409	3.42 87	23.00 584	19.10 485	5.51 140	0.672 17	2.00 51	285.0 129.3	
24 600	24.000 610.0	12.00 305	40.00 1016	16.06 408	20.10 511	5.17 131	26.70 678	23.95 608	6.50 165	0.844 21	2.25 57	451.0 204.6	

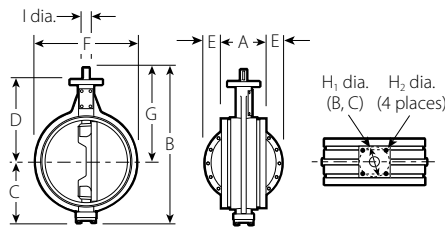
† MOUNTING KEY:

- 14"/350 mm – 3/8 Sq. x 1 7/8
- 16"/400 mm – 3/8 Sq. x 2 1/2
- 18"/450 mm – (2) 3/8 Sq. x 2
- 20"/500 mm – (2) 1/2 Sq. x 2 1/4
- 24"/600 mm – (2) 5/8 Sq. x 3

IMPORTANT NOTES:

Dimensions provided without operator are for sizing data only. The AGS Vic-300 should never be installed without operators.

The AGS Vic-300 valves have longer E to E dimensions and AGS groove dimensions and cannot be used to replace existing Series 706 butterfly valves.



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PERFORMANCE

The AGS Vic-300 butterfly valves have excellent flow characteristics due to the narrow profile disc design with separate upper and lower stems.

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

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

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

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

Where:

Q = Flow (m³/h)

ΔP = Pressure Drop (bar)

K_v = Flow Coefficient

Size			C _v / K _v	Size			C _v / K _v	Size			C _v / K _v
Nominal Size In./mm	Actual Outside Dia. In./mm	(Full Open)		Nominal Size In./mm	Actual Outside Dia. In./mm	(Full Open)		Nominal Size In./mm	Actual Outside Dia. In./mm	(Full Open)	
14	14.000	9360		18	18.000	15900		24	24.000	28900	
350	355.6	7984		450	457.0	13562		600	610.0	24651	
16	16.000	12400		20	20.000	19800					
400	406.4	10577		500	508.0	16889					

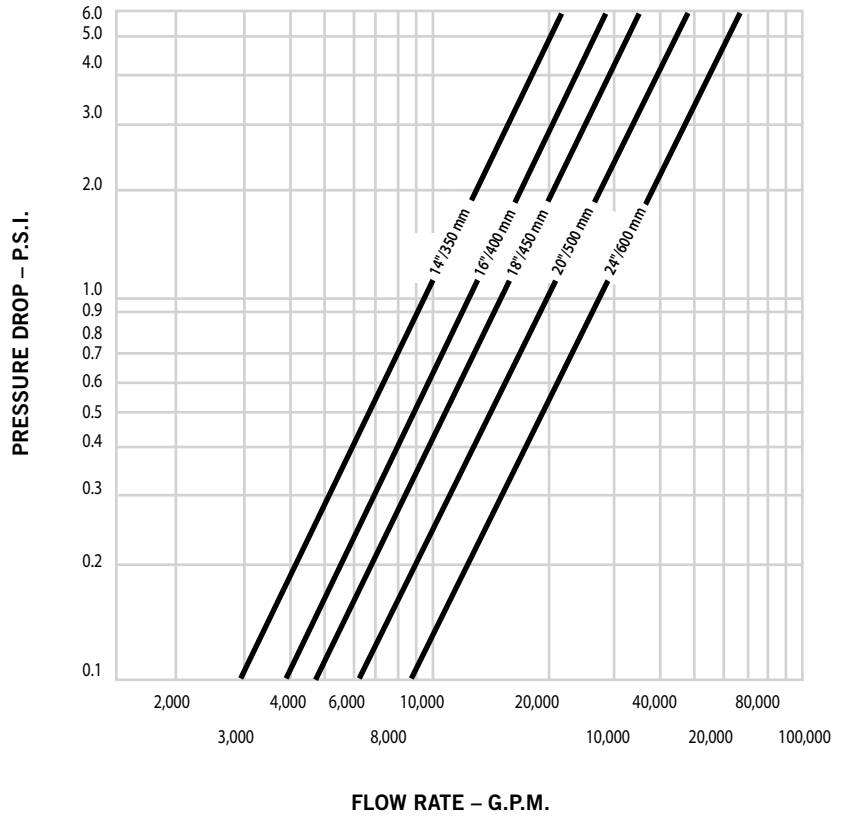
Size		FLOW COEFFICIENTS – C _v / K _v				
Nominal Size Inches/mm	Actual Outside Dia. Inches/mm	Disc Position (Degrees open)				
		70°	60°	50°	40°	30°
14	14.000	4350	3040	2130	1490	900
350	355.6	3711	2593	1817	1271	768
16	16.000	5680	3940	2730	1880	1130
400	406.4	4845	3361	2329	1604	963.89
18	18.000	7200	4970	3420	2340	1400
450	457.2	6142	3386	2917	1996	1194
20	20.000	8810	6010	4080	2740	1610
500	508.0	7515	5127	3480	2337	1373
24	24.000	12700	8580	5760	3800	2210
600	609.6	1083	7319	4913	3241	1885

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FLOW CHARACTERISTICS

The chart below expresses the flow of water at 65°F/18°C through a full open valve.



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MAXIMUM ALLOWABLE PRESSURE DROPS

Size		Maximum Allowable Pressure Drops – psi/kPa					
Nominal Size Inches/mm	Actual Outside Diameter Inches/mm	Disc Position (Degrees Open)					
		90°	70°	60°	50°	40°	30°
14	14.000	0.54	2.5	5.1	10	21	59
350	355.6	4	17	35	69	145	407
16	16.000	0.54	2.6	5.4	11	24	65
400	406.4	4	18	37	76	165	448
18	18.000	0.54	2.6	5.5	12	25	70
450	457.0	4	18	38	83	172	483
20	20.000	0.54	2.7	5.8	13	28	81
500	508.0	4	19	40	90	193	558
24	24.000	0.54	2.8	6.1	14	31	82
600	610.0	4	19	42	97	214	565



WARNING



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Failure to follow instructions, operating restrictions and warnings can result in serious personal injury and damage to the equipment.

- Do not exceed the maximum allowable pressure drop (psi/kPa) as described in the table above.

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MAXIMUM ALLOWABLE FLOW RATES

The maximum allowable flow rate has been determined using the maximum allowable pressure drop and the C_v values. The AGS Vic-300 butterfly valves are rated to the full valve working pressure for ON-OFF service. To ensure proper operation of the valves when the valves are open, flow through the valves should not exceed the values in the tables below.

Size		Maximum Allowable Flow Rates – gpm/lpm					
Nominal Size Inches/mm	Actual Outside Diameter Inches/mm	Disc Position (Degrees Open)					
		90°	70°	60°	50°	40°	30°
14	14.000	6880	6890	6900	6910	6910	6890
350	355.6	26050	26090	26130	26160	26160	26090
16	16.000	9120	9120	9130	9140	9130	9140
400	406.4	34530	34530	34570	34610	34570	34610
18	18.000	11700	11700	11700	11700	11700	11800
450	457.0	44300	44300	44300	44300	44300	44680
20	20.000	14600	14600	14600	14600	14600	14600
500	508.0	55280	55280	55280	55280	55280	55280
24	24.000	21300	21300	21200	21200	21200	17400
600	610.0	80650	80650	80270	80270	80270	65880



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VALVE TORQUE REQUIREMENTS

AGS Vic-300 valves have low torque requirements for operating the valve. This results in less manual effort, smaller gear operators or smaller actuators to open and close the valve.

Size		Operation Torques Inch Pounds psi/Newton Meters per kPa					
Nominal Size Inches/mm	Actual Outside Diameter Inches/mm	Disc Position (Degrees Open)					
		90°	70°	60°	50°	40°	30°
14	14.000	620	460	270	140	110	90
350	355.6	10.2	7.5	4.4	2.3	1.8	1.5
16	16.000	970	710	420	220	160	130
400	406.4	15.9	11.6	6.9	3.6	2.6	2.1
18	18.000	1430	1050	620	330	240	200
450	457.0	23.5	17.2	10.2	5.4	3.9	3.3
20	20.000	2050	1500	890	470	340	280
500	508.0	33.6	24.6	14.6	7.7	5.6	4.6
24	24.000	3700	2700	1600	830	600	490
600	610.0	60.7	44.3	26.2	13.6	9.8	8.0

WARNING



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- Do not exceed the maximum allowable pressure drop (psi) as described in the table above.

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VALVE TORQUE REQUIREMENTS

Source:

These torque values were derived from test data with non-lubricated valves in water at ambient temperatures with EPDM seals. For other material and service conditions, apply a suitable service factor.

Torque Factors:

All torque values are for normal conditions (i.e. the valve is operated at least once a quarter, disc corrosion is expected to be minor, the media is clean and non-abrasive, and the chemical effects upon the elastomer are minor).

Typical fluid torque factors commonly used in the industry are:

Water: 1.0; Lubricated service: 0.8; Dry gases: Lubricated nitrile "T" seat seals are recommended for dry gases wherever chemically appropriate. See material torque factor below.

Material Torque Factors:

"E" = 1.0; "O" = 1.2; "T" = 1.0

Cycling Factor:

Torque will typically increase as the valve is cycled. A factor of 1.5 should be applied for the first 5000 cycles and another 1.5 applied for all additional cycles. The higher number should be used if there are more than one cycle per hour.

Actuation Factor:

There are no actuation safety factors applied. A factor consistent with the consequences of not actuating should be applied. A minimum factor of 1.2 is recommended for directly actuated valves and 1.5 for 3-way assemblies.

Combining Torque Factors:

When multiple torque factors apply, they are combined by multiplying them. Example: For an EPDM seal and a 5000 cycle factor the combined factor would be $1.0 \times (1.5) = 1.5$.

Note:

Under certain high flow conditions, the hydrodynamic torque can exceed the seating torque. Large butterfly valves are not recommended for use in a free discharge condition, such as filling an empty line with fluid at the full rated pressure.

Contact Victaulic for other services.

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VALVE TORQUE REQUIREMENTS

Size		Seating/Unseating Torque Inch Pounds/Newton Meters						
Nominal Size In./mm	Actual Outside Diameter In./mm	Differential Pressure - psi/kPa						
		0/0	50/345	100/690	150/1035	175/1200	235/1620	300/2070
14	14.000	2970	3830	4600	5000	5500	7400	9660
350	355.6	335.6	432.7	519.8	565.0	621.5	836.2	1091.6
16	16.000	3875	4820	5620	6000	6500	10000	15200
400	406.4	437.8	544.6	635.1	678.0	734.5	1130.0	1717.6
18	18.000	4900	6005	6820	7100	7500	14000	25000
450	457.0	553.6	678.5	770.7	802.3	847.5	1582.0	2825.0
20	20.000	6060	7310	10200	14000	17500	27500	46400
500	508.8	684.7	825.9	1152.6	1582.0	1977.5	3107.5	5243.2
24	24.000	8720	10130	14800	20000	24000	48000	102000
600	610.0	985.2	1144.5	1672.4	2260.0	2712.0	5424.0	11526.0

NUMBERING SYSTEM

W - 180 - 1 5 8 2 - 20

Type	Size		Style	Body	Closure Coupling Gasket Grade	Bracket	Accessories*
	Act. In./mm	Fig. No.					
W	14/350	140	1 - Series W761Vic-300	5 - PPS Coated Iron	3 - Iron disc w/fluoro- elastomer Seat/ Stainless Steel stems - "O"	0 - No Bracket	00 - Bare 20 - Gear operator 21 - Gear operator with memory stop 22 - Gear operator with chain wheel 23 - Gear operator with AWWA square operating nut 24 - Gear operator with memory stop and chain wheel 29 - Non-std. gear operator* 9 - Special*
	16/400	160				2 - Standard	
	18/450	180		9 - Special*			
	20/500	200					
	24/600	240			7 - Iron disc w/Nitrile Seat/Stainless Steel stems - "T"		
					8 - Iron disc w/EPDM Seat/Stainless Steel stems - "E"		
					9 - Special*		

*Details required

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WARRANTY

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

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.

For complete contact information, visit www.victaulic.com

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