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 +300ºF/+149ºC, 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 17–4 PH) 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 – 600 mm 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
System No. _____
Location _____

CONTRACTOR
Submitted By _____
Date _____

ENGINEER
Spec Sect _____ Para _____
Approved _____
Date _____

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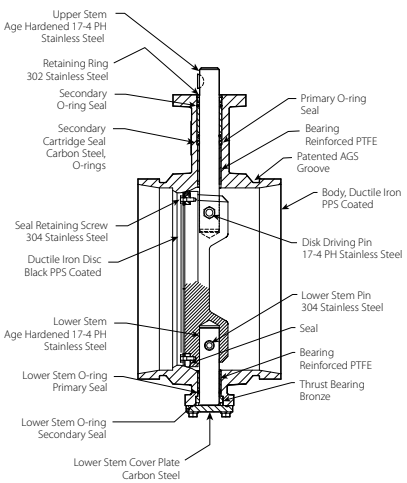
MATERIAL SPECIFICATIONS



Exaggerated for Clarity

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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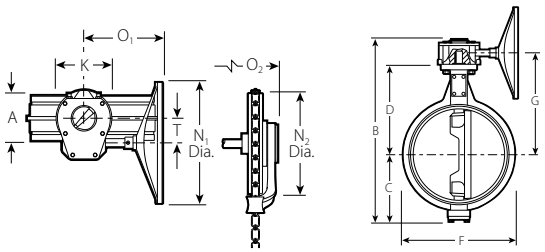
DIMENSIONS

Size		Dimensions – Inches/mm													Approx. Wgt. Each
									Handwheel		Chain Wheel				
Nominal Size In./mm	Actual Outside Diameter In./mm	E - E A	Overall Height B	C	D	F	G	K	N_1	O_1	N_2	O_2	T	Number Turns to Close	lbs. kg
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



AGS Vic®-300 Butterfly Valves

SERIES W761
(300 PSI/2065 KPA)

DIMENSIONS

Size		Dimensions – Inches/mm										Approx. Wgt. Each
									Mounting			
Nominal Size In./mm	Actual Outside Dia. In./mm	End to End A	Overall Height B	C	D	E	F	G	H_1	H_2	I Dia.	lbs. kg
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

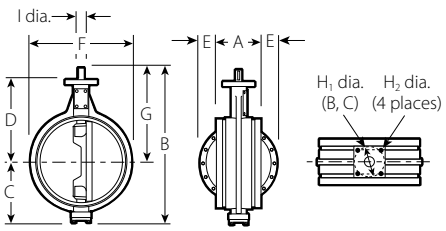
† MOUNTING KEY:

14"/350 mm – ⅜ Sq. × 1 ⅞
16"/400 mm – ⅜ Sq. × 2 ½
18"/450 mm – (2) ⅜ Sq. × 2
20"/500 mm – (2) ½ Sq. × 2 ¼
24"/600 mm – (2) ⅝ Sq. × 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.



AGS Vic®-300 Butterfly Valves

SERIES W761
(300 PSI/2065 KPA)

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 (m^3/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)
14 350	14.000 355.6	9360 7984	18 450	18.000 457.0	15900 13562	24 600	24.000 610.0	28900 24651
16 400	16.000 406.4	12400 10577	20 500	20.000 508.0	19800 16889			

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

AGS Vic®-300 Butterfly Valves

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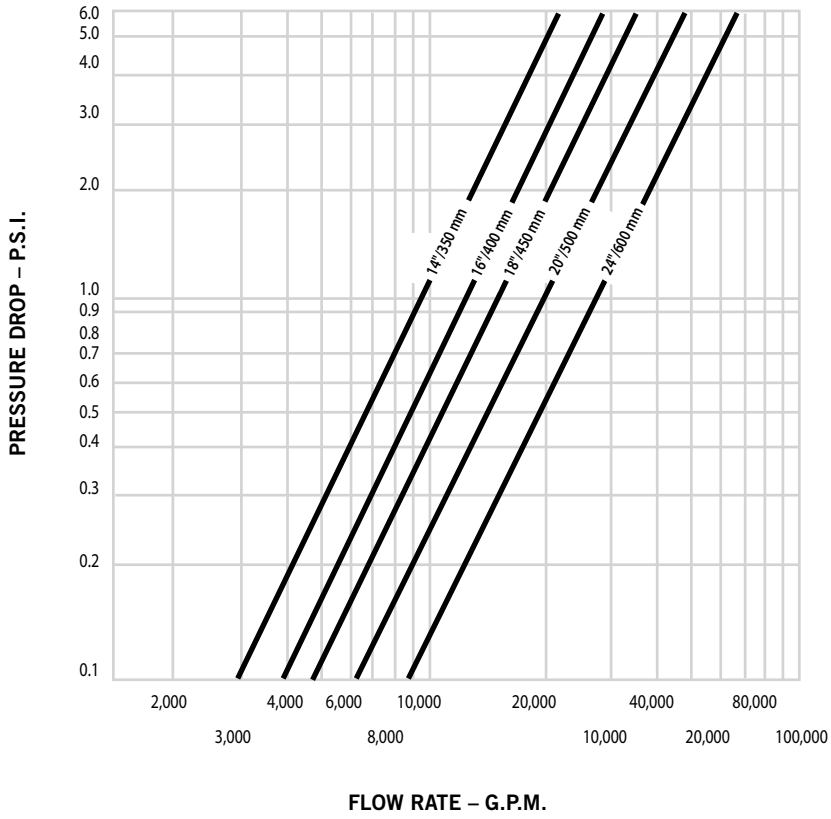
FLOW CHARACTERISTICS

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



AGS Vic®-300 Butterfly Valves

SERIES W761
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MAXIMUM ALLOWABLE PRESSURE DROPS

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

WARNING

⚠ WARNING

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

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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

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

WARNING

⚠ WARNING

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

NUMBERING SYSTEM

W - 180 - 1 5 8 2 - 20

Type	Size Act. In./mm	Size Fig. No.	Style	Body	Closure Coupling Gasket Grade	Bracket	Accessories*
W	14/350 16/400 18/450 20/500 24/600	140 160 180 200 240	1 - Series W761Vic-300	5 - PPS Coated Iron 9 - Special*	3 - Iron disc w/fluoro-elastomer Seat/ Stainless Steel stems - "O" 7 - Iron disc w/Nitrile Seat/Stainless Steel stems - "T" 8 - Iron disc w/EPDM Seat/Stainless Steel stems - "E" 9 - Special*	0 - No Bracket 2 - Standard 9 - Special*	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*

*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.

20.06 3856 REV E UPDATED 3/2008