

AGS Butterfly Valve

Series W719



AGS[™]

1.0 PRODUCT DESCRIPTION

Available Sizes

- 14 – 60"/DN350 – DN1500

Pipe Material

- Carbon Steel
- For use with other pipe materials, contact Victaulic.

Maximum Working Pressure

- See Section 4.0 for Pressure Ratings/AWWA Pressure Class

NOTE

- Before startup, the test pressure may be increased to 1 ½ times the maximum working pressure. This is for a one-time system test and shall be performed at ambient conditions.

Operating Temperature

- 33°F – 125°F/0.5°C – 52°C

Function

- Used to isolate or regulate flow. Typically used on water services.
- Includes double-offset disc with a replaceable resilient seat for bi-directional service up to full working pressure. Refer to Section 3.0 for material specifications.

Pipe Preparation

- Exclusively for use with pipe and Victaulic products which feature ends formed with the Advanced Groove System (AGS), Cut Groove or Roll Groove (see Section 7.0 for Reference Materials).

2.0 CERTIFICATION/LISTINGS



VALVE
ANSI/NSF 61/372
6R44

WATER QUALITY

NOTE

- See [publication 02.06](#): Victaulic Potable Water Approvals ANSI/NSF for potable water approvals, if applicable.
- Valve design, materials, and testing conform to requirements of AWWA C504.

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

3.0 SPECIFICATIONS – MATERIAL

Body: Ductile iron conforming to ASTM A536, grade 65-45-12, Fusion bonded epoxy coating conforming to the requirements of AWWA C550.

Disc: Ductile iron conforming to ASTM A536, grade 65-45-12, Fusion bonded epoxy coating conforming to the requirements of AWWA C550.

Disc Seal:

☐ **EPDM**

EPDM. Temperature range +33°F to +125°F/+0.5°C to +52°C. NOT RECOMMENDED FOR PETROLEUM SERVICES.

Upper/Lower Shaft Bearing: Aluminum Bronze

Thrust Washer: Bronze

Stem Packing Gland: Ductile Iron conforming to ASTM A536, Grade 65-45-12

Stem Packing:

Graphite for 14" – 28"/DN350 – DN700

EPDM for 30" – 36"/DN750 – DN900

PTFE for 40" – 48"/DN1000 – DN1200

EPDM for 54" – 60"/DN1350 – DN1500

Stem Seals: EPDM

Gasket Retaining Segment: Type 304 Stainless Steel conforming to ASTM A240

Seal Retaining Screw: Type 304 stainless steel conforming to ASTM A240

Upper and Lower Shaft: 14 – 48"/DN350 – DN1200: Type 630, 17-4 stainless steel conforming to ASTM A564
54 – 60"/DN1350 – DN1500: Type 304 stainless steel conforming to ASTM A240

Disc Retaining Pin: Type 630, 17-4 Stainless Steel conforming to ASTM A564

3.1 GEAR OPERATOR MATERIAL SPECIFICATIONS

14 – 36" Series W719 Butterfly Valves

Gear Operator Body: Ductile iron conforming to ASTM A536 Grade 65-45-12, fully sealed

Gear Operator Cover: Ductile iron conforming to ASTM A536 Grade 65-45-12

Body Coating: Fusion bonded epoxy

Worm Gear: Ductile iron conforming to ASTM A536 Grade 65-45-12

Worm: Alloy steel conforming to ASTM A29 Grade 5140

Shaft: Carbon steel conforming to ASTM Grade 1045

Housing Gasket: Nitrile Butadiene Rubber (NBR) conforming to ASTM D2000

Bolts: High tensile strength steel conforming to ASTM A307 Grade B

Hand Wheel:

14 – 30"/DN350 – DN750: Carbon steel conforming to ASTM A29 Grade 1030

32 – 36"/DN800 – DN900: Carbon steel conforming to ASTM A29 Grade 1045

Hand Wheel Operation: Counter clockwise to open, clockwise to close

Limit Bolts: Stainless steel conforming to ASTM A193 Grade B6

Open/Close Markings: printed on housing

3.1 GEAR OPERATOR MATERIAL SPECIFICATIONS (CONTINUED)

40 – 60"/DN1000 – DN1500 Series W719 Butterfly Valves

Gear Operator Body: Ductile iron conforming to ASTM A536 Grade 65-45-12, fully sealed. Units requested for buried service shall be packed with 90% grease.

Gear Operator Cover: Ductile iron conforming to ASTM A536 Grade 65-45-12

Body Coating: Fusion bonded epoxy

Gear and Gear Box: Ductile iron conforming to ASTM A536 Grade 65-45-12

Worm Gear: Ductile iron conforming to ASTM A536 Grade 65-45-12

Worm Spindle: Carbon steel conforming to ASTM A29 Grade 1045

Housing Gasket: EPDM conforming to ASTM D2000

Bolts: High tensile strength steel conforming to ASTM A193 Grade B8

Hand Wheel: Carbon steel conforming to ASTM A29 Grade 1020

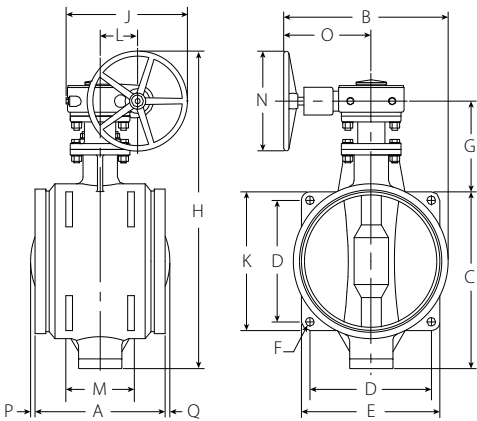
Hand Wheel Operation: Counter clockwise to open, clockwise to close

Limit Bolts: Stainless steel conforming to ASTM A276 Grade 420

Open/Close Markings: Cast into the housing

4.0 DIMENSIONS

Series W719



14 – 60"/DN350 – DN1500

Size		Dimensions																		Weight
Nominal inches DN	Actual Outside Diameter inches mm	Pressure/ AWWA Class psi kPa	A	B	C	D	E	ØF	G	H	J	K	L	M	ØN	O	P	Q	Approx. (Each) lb kg	
			inches mm																	
14 DN350	14.000 355.6	250B 1724	16.00 406	18.00 457	18.50 470	11.42 290	13.38 340	0.79 20	12.56 319	40.88 1038	17.25 438	13.38 340	4.13 105	7.88 200	19.69 500	11.25 286	0.00 0	0.00 0	357.1 162	
16 DN400	16.000 406.4	250B 1724	16.00 406	19.75 502	20.25 514	13.50 343	15.00 381	0.79 20	12.80 325	42.88 1089	17.25 438	15.00 381	4.13 105	8.66 220	19.69 500	11.25 286	0.00 0	0.00 0	414.5 188	
18 DN450	18.000 457.2	250B 1724	16.00 406	21.65 550	22.13 562	15.13 384	16.77 426	0.98 25	13.15 334	45.13 1146	18.75 476	16.77 426	5.13 130	8.66 220	19.69 500	16.00 406	0.31 8	0.31 8	507.1 230	
20 DN500	20.000 508.0	250B 1724	18.00 457	26.63 676	24.41 620	17.00 432	19.17 487	1.18 30	12.75 324	47.00 1194	18.75 476	19.17 487	5.13 130	9.50 241	19.69 500	16.00 406	0.28 7	0.28 7	621.7 282	
24 DN600	24.000 609.6	250B 1724	18.00 457	30.63 778	28.43 722	20.13 511	22.05 560	1.18 30	14.63 371	54.88 1394	23.31 592	22.05 560	7.17 182	9.50 241	23.63 600	18.03 458	2.25 57	2.25 57	1003.1 455	
26 DN650	26.000 660.4	250B 1724	20.00 508	31.75 806	30.88 784	21.26 540	24.00 610	1.18 30	15.31 389	58.00 1473	23.31 592	24.00 610	7.17 182	11.42 290	23.63 600	18.03 458	2.25 57	2.25 57	1179.5 535	
28 DN700	28.000 711.2	250B 1724	22.00 559	32.75 832	32.63 829	22.63 600	25.63 651	1.18 30	15.50 394	60.00 1524	23.31 592	25.63 651	7.17 182	11.42 290	23.63 600	18.03 458	2.17 55	2.17 55	1309.5 594	
30 DN750	30.000 762.0	250B 1724	22.00 559	37.28 947	36.50 927	25.25 641	27.56 700	1.18 30	14.00 356	62.05 1576	25.13 638	27.56 700	8.46 215	12.63 321	23.63 600	21.25 540	3.03 77	3.03 77	1534.4 696	
32 DN800	32.000 812.8	250B 1724	22.00 559	37.28 947	36.75 933	25.25 641	28.38 721	1.38 35	13.63 346	62.05 1576	25.13 638	28.38 721	8.46 215	11.02 280	23.63 600	21.25 540	3.03 77	3.03 77	1710.8 776	
36 DN900	36.000 914.4	250B 1724	22.00 559	40.38 1026	43.63 1108	30.31 770	33.88 860	1.42 36	14.88 378	72.28 1836	27.13 689	33.88 860	8.46 215	12.63 321	27.56 700	21.25 540	6.18 157	6.18 157	2257.5 1024	
40 DN1000	40.000 1016.0	250B 1724	24.00 610	41.13 1045	47.38 1203	32.25 819	37.00 940	1.63 41	22.50 572	77.75 1976	26.06 662	37.00 940	9.06 230	12.63 321	15.75 400	20.00 508	7.00 178	7.00 178	4189.0 1900	
42 DN1050	42.000 1066.8	250B 1724	24.00 610	44.65 1134	51.81 1316	35.43 900	40.16 1020	1.65 42	25.88 657	85.55 2173	34.50 876	40.16 1020	12.40 315	13.38 340	15.75 400	22.38 568	8.50 216	8.50 216	4899.0 2222	
48 DN1200	48.000 1219.2	250B 1724	26.00 660	47.68 1211	57.75 1467	40.16 1020	44.88 1140	1.65 42	29.17 741	94.80 2408	34.50 876	44.88 1140	12.40 315	15.75 400	15.75 400	22.38 568	10.50 267	10.50 267	5908.0 2680	
54 DN1350	54.000 1371.6	150B 1034	28.00 711	54.50 1384	65.38 1661	45.67 1160	52.00 1321	2.20 56	31.38 797	104.63 2657	41.42 1052	52.00 1321	16.25 413	16.54 420	15.75 400	26.00 660	12.38 314	12.38 314	9076.0 4117	
60 DN1500	60.000 1524.0	150B 1034	30.00 762	57.68 1465	71.25 1810	50.38 1280	56.75 1441	2.20 56	32.50 826	111.65 2836	41.42 1052	56.75 1441	16.25 413	18.13 460	15.75 400	26.00 660	14.38 365	14.38 365	11184.0 5073	
Additional sizes are available. Contact Victaulic for details.																				

5.0 PERFORMANCE

Series W719

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

Size		Cv at Opening Position						
Nominal inches DN	Actual Outside Diameter inches mm	Cv Value Kv Value						
		30	40	50	60	70	80	90
14	14.000	715	1549	2761	4568	7230	10844	11917
DN350	355.6	618	1340	2388	3951	6254	9380	10308
16	16.000	983	2130	3797	6282	9942	14913	16388
DN400	406.4	850	1842	3284	5434	8600	12900	14176
18	18.000	1302	2822	5028	8320	13168	19752	21705
DN450	457.2	1126	2441	4349	7197	11390	17085	18775
20	20.000	1674	3628	6465	10698	16931	25396	27908
DN500	508.0	1448	3138	5592	9254	14645	21968	24140
24	24.000	2587	5605	9989	16528	26157	39236	43116
DN600	609.6	2238	4848	8640	14297	22626	33939	37295
26	26.000	3036	6578	11723	19397	29263	46047	50600
DN650	660.4	2626	5690	10140	16778	25312	39831	43769
28	28.000	3522	7630	12599	20036	30482	46899	58696
DN700	711.2	3047	6600	10898	17331	26367	40568	50772
30	30.000	4050	8142	13152	20411	31226	47562	63328
DN750	762.0	3503	7043	11376	17656	27010	41141	54779
32	32.000	4791	8736	13788	20613	31395	48117	68250
DN800	812.8	4144	7557	11927	17830	27157	41621	59036
36	36.000	6063	11055	17449	26086	39731	60895	86375
DN900	914.4	5244	9563	15093	22564	34367	52674	74714
40	40.000	21256	33718	58983	76147	86966	97025	101454
DN1000	1016.0	18386	29166	51020	65867	75226	83927	87758
42	42.000	22468	35018	57364	76007	90133	96356	106315
DN1050	1066.8	19435	30291	49620	65746	77965	83348	91962
48	48.000	29723	46973	83244	117725	133190	138860	152779
DN1200	1219.2	25710	40632	72006	101832	115209	120114	132154
54	54.000	42958	68145	119203	153891	175756	196084	205036
DN1350	1371.6	37159	58945	103111	133116	152029	169613	177356
60	60.000	60586	89562	175895	196657	221859	242080	250913
DN1500	1524.0	52407	77471	152149	170108	191908	209399	217040

5.0 PERFORMANCE (CONTINUED)

Torque Values

Size		Breakaway Torque with Valve Seat Downstream of Pressure					
		Differential Pressure – psi/Bar					
Nominal inches DN	Actual Outside Diameter inches mm	0	50/3	100/7	150/10	200/14	250/17
		in-lbs N-m	in-lbs N-m	in-lbs N-m	in-lbs N-m	in-lbs N-m	in-lbs N-m
14 DN350	14.000 355.6	3054 345	5408 611	7771 878	10108 1142	12506 1413	14905 1684
16 DN400	16.000 406.4	4098 463	7293 824	10382 1173	13489 1524	16675 1884	19870 2245
18 DN450	18.000 457.2	5355 605	9550 1079	13736 1552	17887 2021	22153 2503	26402 2983
20 DN500	20.000 508.0	6727 760	12187 1377	17480 1975	22800 2576	28260 3193	33721 3810
24 DN600	24.000 609.6	10674 1206	19604 2215	28269 3194	36350 4107	45829 5178	54742 6185
26 DN650	26.000 660.4	10780 1218	20100 2271	29119 3290	38200 4316	47520 5369	56839 6422
28 DN700	28.000 711.2	14825 1675	27375 3093	39527 4466	52644 5948	64310 7266	76851 8683
30 DN750	30.000 762.0	18861 2131	34252 3870	49157 5554	64150 7248	79542 8987	94924 10725
32 DN800	32.000 812.8	18861 2131	34252 3870	49157 5554	64150 7248	79542 8987	94924 10725
36 DN900	36.000 914.4	29358 3317	54237 6128	78338 8851	102580 11590	127460 14401	152348 17213
40 DN1000	40.000 1016.0	122875 13883	144780 16358	166810 18847	188716 21322	210692 23805	232730 26295
42 DN1050	42.000 1066.8	135611 15322	159729 18047	183989 20788	208116 23514	232306 26247	247980 28018
48 DN1200	48.000 1219.2	175448 19823	216976 24515	242758 27428	276320 31220	309971 35022	350967 39654
54 DN1350	54.000 1371.6	171811 19412	221410 25016	271293 30652	335142 37866	NA	NA
60 DN1500	60.000 1524.0	224110 25321	289366 32694	355012 40111	419685 47418	NA	NA

Additional sizes are available. Contact Victaulic for details.

NOTE

- The torque values shown shall be used for sizing actuators on valves with a bare stem.

5.0 PERFORMANCE (CONTINUED)

Torque Values

Size		Breakaway Torque with Valve Seat Upstream of Pressure					
		Differential Pressure – psi/Bar					
Nominal inches DN	Actual Outside Diameter inches mm	0	50/3	100/7	150/10	200/14	250/17
		in-lbs N-m	in-lbs N-m	in-lbs N-m	in-lbs N-m	in-lbs N-m	in-lbs N-m
14 DN350	14.000 355.6	3009 340	5222 590	7435 840	9630 1088	11887 1343	14135 1597
16 DN400	16.000 406.4	4018 454	7010 792	9913 1120	10170 1149	15816 1787	18808 2125
18 DN450	18.000 457.2	5222 590	9161 1035	13250 1497	16985 1919	20985 2371	24986 2823
20 DN500	20.000 508.0	6514 736	11648 1316	16631 1879	21631 2444	26774 3025	31907 3605
24 DN600	24.000 609.6	10214 1154	18649 2107	26827 3031	35049 3960	43493 4914	51927 5867
26 DN650	26.000 660.4	10320 1166	19162 2165	27721 3132	36341 4106	45183 5105	54025 6104
28 DN700	28.000 711.2	13958 1577	25853 2921	37377 4223	48962 5532	60858 6876	72753 8220
30 DN750	30.000 762.0	17746 2005	32394 3660	46581 5263	60858 6876	75506 8531	90154 10186
32 DN800	32.000 812.8	17746 2005	32394 3660	46581 5263	60858 6876	75506 8531	90154 10186
36 DN900	36.000 914.4	26844 3033	50617 5719	73638 8320	96801 10937	120574 13623	144347 16309
40 DN1000	40.000 1016.0	122875 13883	133398 15072	143957 16265	154481 17454	165040 18647	175625 19843
42 DN1050	42.000 1066.8	135611 15322	147144 16625	158747 17936	170279 19239	181847 20546	186335 21053
48 DN1200	48.000 1219.2	175448 19823	199151 22501	207019 23390	222756 25168	238536 26951	261610 29558
54 DN1350	54.000 1371.6	171811 19412	198628 22442	229588 25940	267655 30241	NA	NA
60 DN1500	60.000 1524.0	224110 25321	261256 29518	298624 33740	335337 37888	NA	NA

Additional sizes are available. Contact Victaulic for details.

NOTE

- The torque values shown shall be used for sizing actuators on valves with a bare stem.

5.0 PERFORMANCE (CONTINUED)

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 nonabrasive, and the chemical effects upon the elastomer are minor).

Typical Fluid Torque Factors Commonly Used in the Industry:

Water: 1.0

Material Torque Factors:

"E" = 1.0

Cycling Factor:

Valve torque will typically increase and actuator output decrease as the valve is cycled. A factor of 1.5 should be applied for the first 5,000 cycles and another 1.5 applied for all additional cycles. The higher number should be used if there is more than one cycle per hour.

Actuation Factor:

A factor should be added to account for potential drift in the output of the actuator due to actuator performance, misalignment, or external inputs (i.e., air or power supply). For this, a factor of up to 1.25 may be used.

Combining Torque Factors:

When multiple torque factors apply, they are combined by multiplying them. Example: For an EPDM seal and a 5,000-cycle factor, the combined factor would be $1.0 \times (1.5) = 1.5$.

NOTES

- 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.

5.1 PERFORMANCE

Number of turns to fully open/close

Size	# of Turns
14"	14
16"	14
18"	78
20"	78
24"	117
26"	117
28"	117
30"	105
32"	105
36"	182
40"	382.2
42"	421.4
48"	421.4
54"	641.25
60"	641.25

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.
- When directly connecting a Victaulic End Cap to a Victaulic Butterfly Valve, use only a tapped end cap with a ball valve that can be opened to verify if the system is depressurized.
- Pressure shall be vented through the end cap's ball valve before attempting to remove the cap.
- 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

- Victaulic AGS products require pipe prepared with special Victaulic AGS roll sets.
- DO NOT attempt to assemble Victaulic AGS products on pipe that is grooved with Original Groove System (OGS) roll sets.

Failure to follow these instructions will cause improper assembly and joint failure, resulting in death or serious personal injury and property damage.

NOTICE

- For valve diameters 36"/DN900 and larger: In order to maintain valve integrity, it is important to avoid subjecting the valve to pipe loads that could deform the body out of round, such as the use of valve foundations or supports without proper pipe supports. Refer to Section A.5 of AWWA C504, "AWWA Standard for Rubber-Seated Butterfly Valves," for additional information.
- DO NOT install butterfly valves into the system with the disc in the fully-open position. Exposed disc may be damaged and prevent proper function of the valve. Verify that no part of the disc protrudes beyond the end of the valve body.
- To prevent valves from rotating in the system, Victaulic recommends installing butterfly valves with at least one Victaulic rigid coupling. If two Victaulic flexible couplings are used, additional support may be required to eliminate joint deflection or valve rotation at the coupling connection to the piping system. For proper installation, always refer to all instructions supplied with the product.

7.0 REFERENCE MATERIALS

- [05.01: Seal Selection Guide](#)
- [16.11: AGS Vic-Ring Systems](#)
- [20.02 Style W07 AGS Rigid Coupling](#)
- [20.03 Style W77 AGS Flexible Coupling](#)
- [20.05: AGS Fittings](#)
- [25.09: AGS Roll Groove Data](#)
- [26.01: Victaulic Design Data](#)
- [I-W100: Field Installation Handbook Advanced Groove System Products](#)

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 No statement concerning the use of any material, product, service, or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Victaulic or any of its affiliates, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries. Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries. 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.
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