



# SERIES 2000

### DESIGN FEATURES

#### APPLICATIONS:

- HVAC
- Chemical/Petrochemical Processing
- Food and Beverage Industry
- Power and Utilities
- Pulp and Paper Industry

#### Stem Configuration:

Gives positive attachment for handles or actuators. (Double "D" 2"-24")

#### Mounting Flange:

Accommodates all types of actuators, handles and gear operators (2"-24" per ISO 5211)

#### One-Piece Thru Shaft:

Ensures dependability and positive disc positioning

#### Seat Face:

Negates need for flange gaskets

#### Precision Taper Pin:

Ensure positive, vibration proof, shaft to disc connection

#### Phenolic Backed Seat:

Non-Collapsible, stretch resistant, blow out proof, field replaceable.

#### Shaft Weather Seal

#### Bushings:

Stem bushing reduces torque and isolates the stem from the valve body, preventing seizure of the stem in the stem journal

#### O-Ring:

Provides further prevention of stem leakage

#### Smooth Finished Disc Flats:

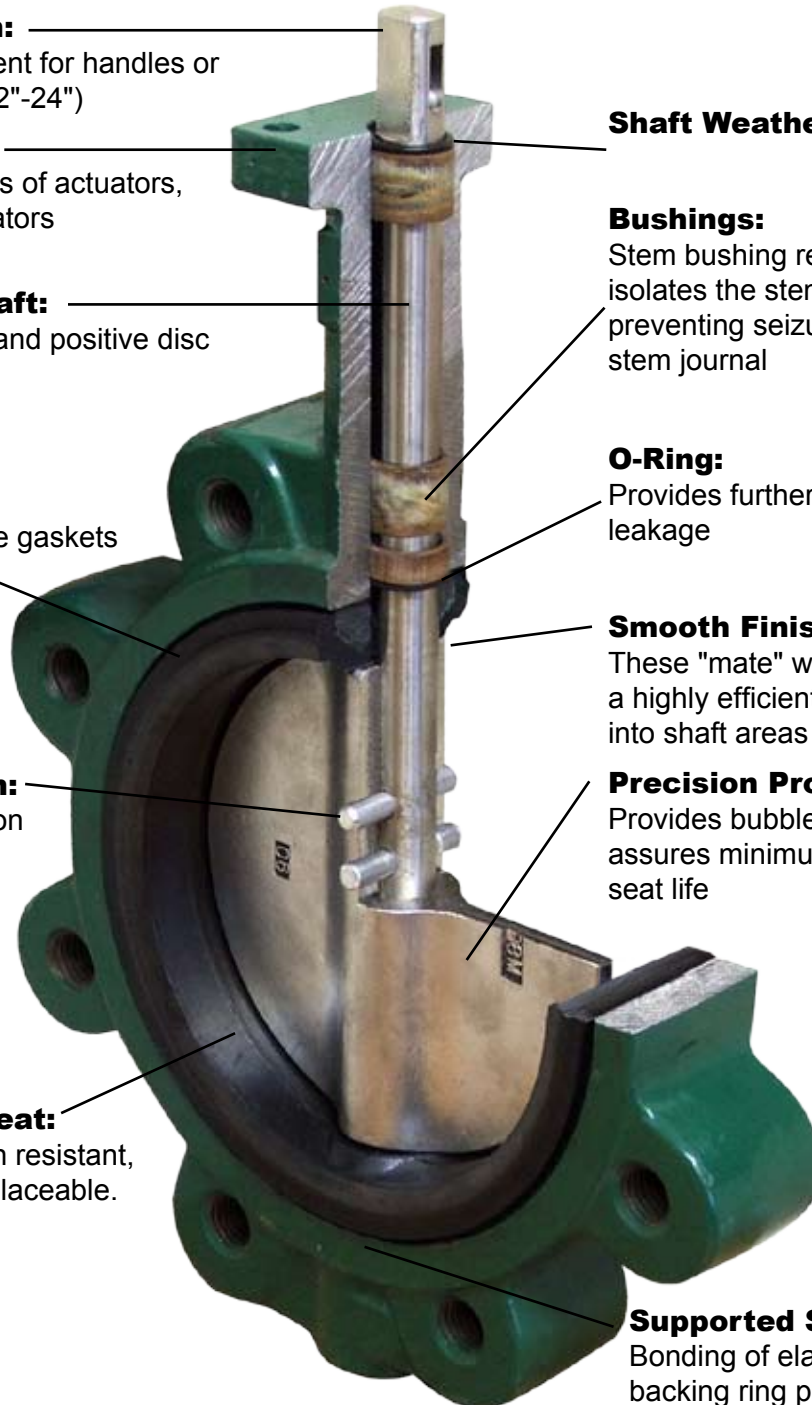
These "mate" with the seat flats to give a highly efficient seal; prevents leakage into shaft areas

#### Precision Profile Disc:

Provides bubble-tight shutoff and assures minimum torque and longer seat life

#### Supported Shaft Seal:

Bonding of elastomer to phenolic backing ring protects against distortion, a common cause of shaft leakage





**DESIGN FEATURES**

- Available in sizes 2" to 48"
- Available in Wafer or Lug body stylr (2" to 30")
- Full flange style body for 36" to 48" valves
- Wafer body features four alignment holes
- Pressure ratings for tight shut-off at temperatures up to the maximum limit of the seat material:  
 2" to 12" - 200psi, 125psi for PTFE seat  
 14" to 48" - 150psi
- Ideal for on-off or throttling services
- Available with handles (2" to 12"), manual gear operators (2" to 48") and electric or pneumatic actuators (2" to 48")
- Refer to Valve Solutions Inc. bulletins for details of pneumatic and electric actuators
- Designed to comply with MSS SP-67
- Compatible with ANSI 125/150 flanges
- Vavles 2" to 20" meet the intent and have passed AWWA C-504-87 Section 5 proof of design tests
- Type approval certification from ABS for marine applications (2" to 14")
- Uni-directional dead-end capability to 100psi
- Operators mounted perpendicular to pipe

Valve Size	Standard Disc Differential Pressure								Undercut Diff. Pressure	
	50 PSIΔP Bushing		100 PSIΔP Bushing		150 PSIΔP Bushing		200 PSIΔP Bushing		100 PSIΔP Bushing	
	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE	Bronze	PTFE
2"	106	100	117	106	129	111	140	117	102	92
2.5"	152	150	166	163	181	176	195	189	144	142
3"	213	207	230	220	248	232	265	244	226	191
4"	321	290	386	323	450	357	515	390	336	281
5"	481	423	598	481	715	540	832	598	520	418
6"	692	599	878	691	1063	783	1248	875	763	601
8"	1326	1060	1716	1183	2106	1307	2496	1430	1180	860
10"	2239	1671	3010	1872	3780	2074	4550	2275	1431	954
12"	3959	2568	4953	2795	5948	3023	6942	3250	2580	1517
14"	4881	2640	6226	3070	7570	3500			4652	2415
16"	7020	4260	8580	4880	10140	5500			6195	3750
18"	10105	6287	12202	7243	10300	8200			8715	5775
20"	13923	8360	16582	9180	19240	10000			11655	7035
24"	23617	15427	26953	16813	30290	18200			18165	12705
30"	39721	27313	43391	29407	47060	31500			28665	22155

All torques shown on the chart were derived from test data using water at 60°F. For torques using dry gases, multiply these numbers by 1.6. For torques involving other media, please contact Valve Solutions Inc.

There is no safety factor included in the numbers shown on this chart. For actuator sizing, Valve Solution Inc. recommends that these values be multiplied by 1.2 for single valve applications and 1.5 for 3-way ("tee") applications.

Under certain conditions, hydrodynamic torque can meet or exceed seating and unseating torques. When designing valve systems, hydrodynamic torque must be considered to help insure the correct selection for the application.

**DESIGN FEATURES**
**Seat Temperature Ratings**

Material	Temperature Ratings °F
Buna-N	+10 to 180
Abrasive Resistant Buna-N	+10 to 180
Neoprene	+20 to 200
EPDM (2"-16")	-30 to 275
EPDM (18" & Above)	-30 to 225
EPDM Food Grade (2"-12")	-30 to 225
Hypalon	0 to 275
Viton®	+10 to 275
Hightemp. Viton®	+10 to 400
PTFE over Buna-N (125psi, 2"-12")	+40 to 250
PTFE over Buna-N (75psi, 2"-12")	+40 to 250

Although elastomers have an effective operating temperature range, when used in valves, these ranges may have to be modified. The temperature ranges shown in the table have been adjusted accordingly.

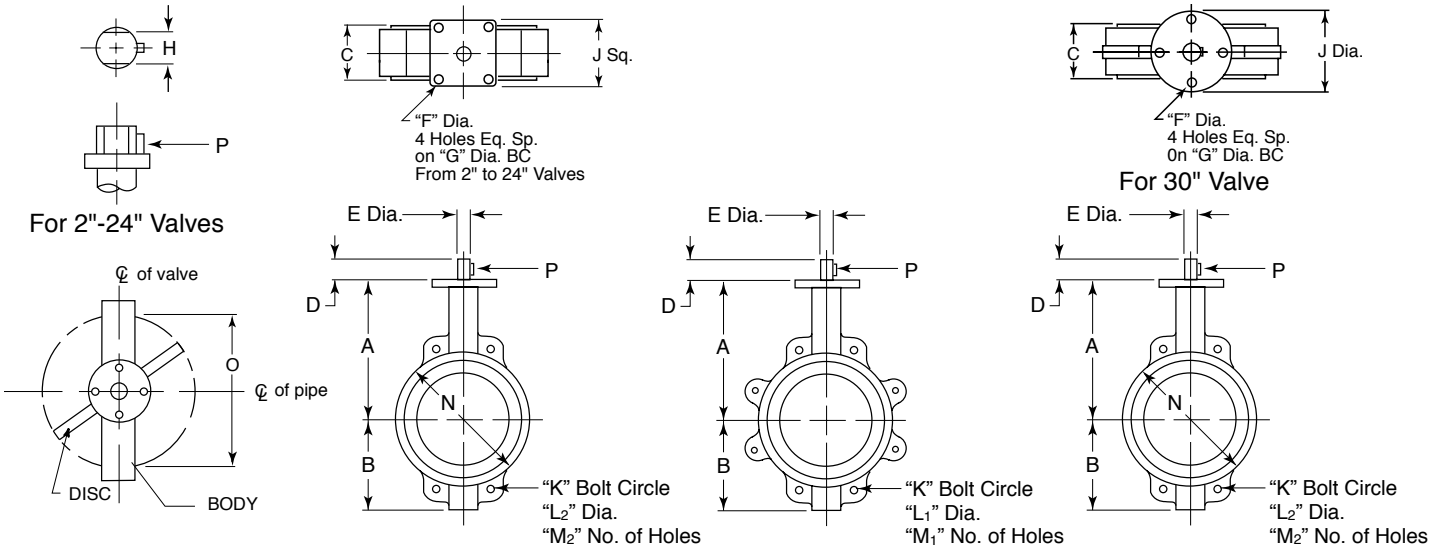
For Low Temperature: While the seat materials selected for use in Valve Solutions Inc. butterfly valves are capable of withstanding lower temperatures without damage, the durometer of the elastomer may change. This "hardening" of the seat may increase the operating torque beyond the structural limits of the stem and/or the disc to stem connection.

For High Temperature: When using High Temperature Viton®, the operating pressure of the valve is reduced above 275°F.

**C<sub>v</sub> Values - Valve Sizing Coefficients (US-GPM @ 1ΔP)**

Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
2"	0.06	3	7	15	27	44	70	105	115
2.5"	0.1	6	12	25	45	75	119	178	196
3"	0.2	9	18	39	70	116	183	274	302
4"	0.3	17	36	78	139	203	364	546	600
5"	0.5	29	61	133	237	392	620	930	1022
6"	0.8	45	95	205	366	605	958	1437	1579
8"	2	89	188	408	727	1202	1903	2854	3136
10"	3	151	320	694	1237	2047	3240	4859	5340
12"	4	234	495	1072	1911	3162	5005	7507	8250
14"	6	338	715	1549	2761	4568	7230	10844	11917
16"	8	464	983	2130	3797	6282	9942	14913	16388
18"	11	615	1302	2822	5028	8320	13168	19752	21705
20"	14	791	1647	3628	6465	10698	16931	25396	27908
24"	22	1222	2587	5606	9989	16528	26157	39236	43116
30"	37	2080	4406	9546	17010	28147	44545	66818	73426

**DIMENSIONS 2"-30"**

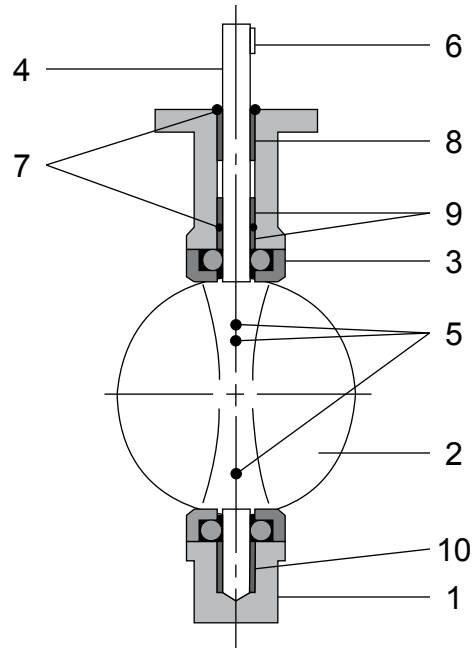


**Dimensions 2"-30"**

Inches/ mm	A	B	C	D	E	F	G	H	J	K	L <sub>1</sub> *	L <sub>2</sub> *	M <sub>1</sub> *	M <sub>2</sub> *	N	O	P
2" 50	6 3/8 161.93	3 1/4 82.55	1 3/4 44.45	1 1/4 31.75	1/2 12.70	3/8 9.53	2.76 70	0.39 10	2 3/4 69.85	4 3/4 120.65	5/8-11 17.46	11/16	4	4	4 101.60	1.26 32.0	No. 3 Wooduff #3
2.5" 65	6 3/8 161.93	3 1/4 82.55	1 3/4 44.45	1 1/4 31.75	1/2 12.70	3/8 9.53	2.76 70	0.39 10	2 3/4 69.85	5 1/2 139.70	5/8-11 17.46	11/16	4	4	4 3/4 120.65	1.83 46.5	No. 3 Wooduff #3
3" 75	7 1/8 180.98	4 101.60	1 7/8 47.63	1 1/4 31.75	1/2 12.70	3/8 9.53	2.76 70	0.39 10	2 3/4 69.85	6 152.40	4/8-11 17.46	11/16	4	4	5 1/8 130.8	2.54 64.5	No. 3 Wooduff #3
4" 100	7 7/8 200.03	4 7/8 123.83	2 1/8 53.98	1 1/4 31.75	5/8 15.88	3/8 9.53	2.76 70	0.47 12	2 3/4 69.85	7 1/2 190.50	5/8-11 17.46	11/16	8	4	6 3/4 171.45	3.54 89.9	No. 9 Wooduff #9
5" 125	8 3/8 212.73	5 3/8 134.53	2 1/4 57.15	1 3/4 20.64	3/4 19.05	3/8 9.53	2.76 70	0.55 14	2 3/4 69.85	8 1/2 215.90	3/4-10 20.64	13/16	8	4	7 3/4 196.85	4.36 110.7	No. 9 Wooduff #9
6" 150	8 7/8 225.43	5 7/8 149.23	2 1/4 57.15	1 1/4 31.75	3/4 19.05	3/8 9.53	2.76 70	0.55 14	2 3/4 69.85	9 1/2 241.30	3/4-10 20.64	13/16	8	4	8 5/8 219.08	5.72 145.3	No. 9 Wooduff #9
8" 200	10 1/4 260.35	7 1/8 180.98	2 1/2 63.50	1 3/4 44.45	7/8 22.23	7/16 11.11	4.02 102	0.67 17	3 3/4 95.33	11 3/4 298.45	3/4-10 20.64	13/16	8	4	10 9/16 268.29	7.6 193.0	No. 9 Wooduff #9
10" 250	11 1/2 292.10	8 1/4 209.55	2 3/4 69.85	1 3/4 44.45	1 1/8 28.58	7/16 11.11	4.02 102	0.87 22	3 3/4 95.33	14 1/4 361.95	7/8-9 23.81	15/16	12	4	13 1/16 331.79	9.5 241.3	No. 15 Wooduff #15
12" 300	13 1/4 336.55	9 3/4 247.65	3 1/8 79.38	1 3/4 44.45	1 1/4 31.75	7/16 11.11	4.02 102	0.95 24	3 3/4 95.33	17 431.80	7/8-9 23.81	15/16	12	4	16 1/8 409.58	11.45 290.8	No. 15 Wooduff #15
14" 350	14 1/2 368.30	11 279.40	3 1/8 79.38	1 3/4 44.45	1 1/4 31.75	7/16 11.11	4.02 102	0.95 24	3 3/4 95.33	18 3/4 476.25	1-8 26.99	1 1/16	12	4	17 1/8 434.98	12.78 324.6	No. 15 Wooduff #15
16" 400	15 3/4 400.05	12 304.80	3 1/2 88.90	2 50.80	1 5/16 33.34	7/8 22.23	6.50 165	1.06 27	6 1/2 165.10	21 1/4 539.75	1-8 26.99	1 1/16	16	4	20 508.00	14.97 380.2	5/16" Sq. x 1 3/4"
18" 450	16 5/8 422.28	14 3/8 365.13	4 1/4 107.95	2 50.80	1 1/2 38.10	7/8 22.23	6.50 165	1.06 27	2 1/2 165.10	22 3/4 577.85	1 1/8-7 31.75	1 1/4	16	4	21 3/8 542.93	16.83 427.5	3/8" Sq. x 1 1/2"
20" 500	18 4/8 479.43	14 5/8 371.48	5 1/4 133.35	2 1/2 63.50	1 5/8 41.28	7/8 22.23	6.50 165	1.26 32	6 1/2 165.10	25 635.00	1 1/8-7 31.75	1 1/4	20	4	23 5/16 592.14	18.67 474.2	3/8" Sq. x 1 3/4"
24" 600	22 1/8 561.98	18 457.20	6 1/8 155.58	2 3/4 69.85	2 50.80	7/8 22.23	6.50 165	1.42 36	6 1/2 165.10	29 1/2 749.30	1 1/4-7 34.93	1 1/4	20	4	27 7/8 708.03	22.62 574.5	1/2" Sq x 2 1/4"
30" 750	25 1/2 647.70	24 1/4 615.95	6 3/4 82.55	3 1/4 82.55	2 1/2 63.50	7/8 22.23	8.5 215.90	N/A	11 1/4 285.75	36 914.40	1 1/4-7 34.93	1 1/4-7	28	4	34 3/8 873.13	28.6 726.4	5/8" Sq x 2 5/8"

\*L<sub>1</sub> and \*M<sub>1</sub> refer to Lug style valves, L<sub>2</sub> and M<sub>2</sub> refer to Wafer style. "C" dimension is listed with elastomer in the relaxed condition. Approximatelt 1/8" total compression is required for proper seating with pipe flanges. Valves are designed for installation between ANSI B16.1 Class 125(Steel) flanges. Gaskets are not needed, and should not be used since the seat face seals against the mating flange. If the valve is to be installed in plastic or fiberglass flanges, flange rings, or Van Stone style flange, consult your Valve Solutions agent for additional information. Valve Solutions Inc. recommends using a blind flange on end of line applications. 1"O" dimension is the valve clearance dimention.

### BILL OF MATERIALS



### Bill of Materials 2" - 30"

Item	Description	Materials	Optional Materials
1	Body	Ductile Iron	
2	Disc	316 Stainless Steel Monel	Aluminum Bronze, Ductile Iron
3	Seat	EPDM	Neoprene, Hypalon, Viton, PTFE, FDA, Abrasion Resistant Buna
4	Shaft	416 Stainless Steel	316 Stainless Steel, Monel
5	Taper Pin	316 Stainless Steel	Monel
6	Key	Carbon Steel	No Option Available
7	O-Ring	Buna-N	No Option Available
8	Bushing	PTFE	Luberized Bronze
9	Bushing	PTFE	Luberized Bronze
10	Bushing	PTFE	Luberized Bronze

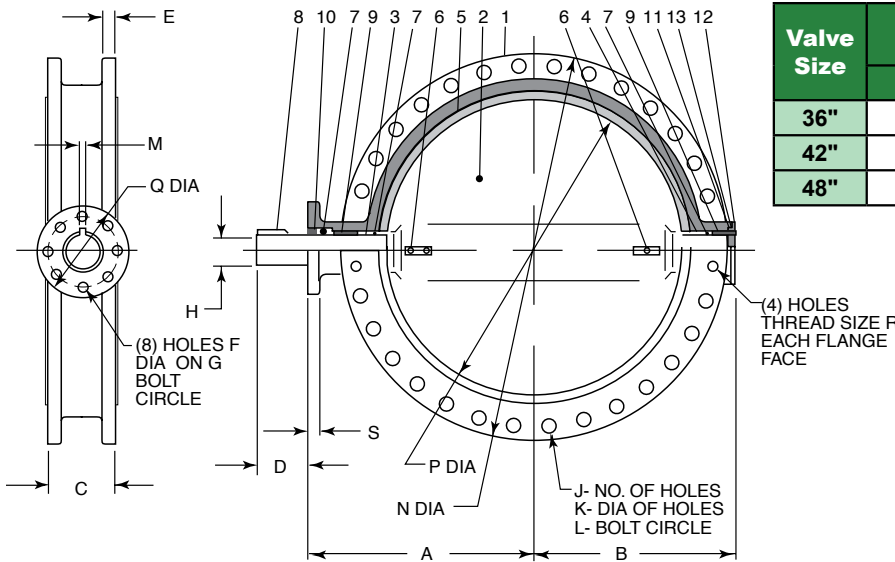
### Bill of Materials 36" - 48"

Item	Description	Materials	Optional Materials
1	Body	Ductile Iron	No Option Available
2	Disc	Ductile Iron	Aluminum Bronze, 316 Stainless Steel Monel
3	Upper Shaft	416 Stainless Steel	316 Stainless Steel
4	Lower Shaft	416 Stainless Steel	316 Stainless Steel
5	Seat	Buna-N or EPDM	Hypalon, Viton
6	Taper Pin	316 Stainless Steel	Monel
7	O-Ring	Buna-N	No Option Available
8	Key	Carbon Steel	No Option Available
9	Bushing	Luberized Bronze	No Option Available
10	Bushing	Luberized Bronze	No Option Available
11	Thrust Washer	Luberized Bronze	No Option Available
12	End Plate	Ductile Iron	No Option Available
13	O-Ring	Buna-N	No Option Available

### WEIGHTS AND DIMENSIONS

### Valve Seating Torques (in-lb)

Valve Size	Standard Disc Differential Pressure			Undercut Diff. Press.
	50 PSI	100 PSI	150 PSI	75 PSI
36"	54,667	57,035	59,400	39,600
42"	82,460	86,034	89,600	60,000
48"	108,022	112,704	117,379	78,600



### C<sub>v</sub> Values - Valve Sizing Coefficients (US-GPM @ 1ΔP)

Size	10°	20°	30°	40°	50°	60°	70°	80°	90°
36"	260	3050	6730	12740	20220	32500	52500	79600	87500
42"	350	4095	9040	17108	27150	43640	70500	106890	117500
48"	455	5365	11840	22400	30600	51200	92300	140000	154000

### \*Dimensions

	36"		42"		46"	
	Inches	mm	Inches	mm	Inches	mm
A	28.35	720.09	33.78	858.01	37	940.7
B	25.83	656.08	30.6	777.24	34	864
C	8 1/8	206.38	10	254	10.88	276.4
D	4.65	118.11	5.9	149.86	5.9	150
E	2.36	59.94	2.6	66.04	2.76	70
F	0.71	18.03	0.71	18.03	0.87	22
G	10	254	10	254	11.73	298
H	2.95	74.93	3.35	85.09	4.13	105
J	28	28	32	32	44	44
K	1 5/8	41.28	1 5/8	41.28	1 5/8	41.3
L	42 3/4	1058.85	49.5	1257.75	56	1422.4
M	.79 Sq.	20 Sq.	.87 Sq.	22 Sq.	1.1 Sq.	28 Sq.
N	46	1168.4	53	1346.59	56.49	1511
P	34.047	864.61	40.55	1029.97	45.67	1160
Q	11.81	299.97	11.81	299.97	13.78	350
R	1.5-6	-	.5-6	-	.6-6	-
S	1 1/4	31.75	1 1/4	31.75	-	-

\*Please note that dimensions apply to standard product only.  
For custom/domestic product dimensions, please consult Valve Solutions Inc.

### Weights

Size	Wafer	Lug
2"	6 (2.72)	7 (3.18)
2.5"	7 (3.18)	8 (3.63)
3"	10 (4.54)	14 (6.35)
4"	13 (5.9)	26 (11.79)
5"	18 (8.16)	28 (12.7)
6"	20 (9.07)	31 (14.06)
8"	32 (14.51)	49 (22.23)
10"	42 (19.05)	72 (32.66)
12"	70 (31.75)	105 (47.63)
14"	95 (43.09)	155 (70.31)
16"	117 (53.07)	195 (88.45)
18"	165 (74.84)	230 (104.33)
20"	275 (124.74)	396 (179.62)
24"	440 (199.58)	610 (276.7)
30"	740 (335.66)	1050 (476.27)
36"	1660 (754)	N/A
42"	2145 (975)	N/A
48"	3032 (1374)	N/A

NOTE: TECHNICAL DATA SUBJECT TO CHANGE WITHOUT NOTICE.

# VALVE SOLUTIONS INC.

**Commercial & Industrial Valve Automation**

**Authorized Distributor of**

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